

Design Guidelines and Master Plan for the School of Aerospace Medicine Historic District

Brooks Development Authority
June 5, 2013



CITY OF
SAN ANTONIO



CITY OF SAN ANTONIO
OFFICE OF HISTORIC PRESERVATION
BROOKS DEVELOPMENT AUTHORITY

SCHOOL OF AEROSPACE MEDICINE HISTORIC DISTRICT
DESIGN GUIDELINES AND MASTER PLAN

June 5, 2013

ANN BENSON MCGLONE, LLC + ALAMO ARCHITECTS

SCHOOL OF AEROSPACE MEDICINE HISTORIC DISTRICT
DESIGN GUIDELINES AND MASTER PLAN

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ORGANIZATION and USE of GUIDELINES



INTRODUCTION

The introduction to these guidelines provides a very brief background and history of the creation of Brooks City-Base and specifically The Hill campus, known as the School of Aerospace Medicine Historic District. It describes the forces that have shaped it over time and the factors leading to the preparation of these Design Guidelines. The district boundaries are described as well as the purpose and goals of the design guidelines project.

It is recommended that all users of the Guidelines review this section to gain an understanding of the essential historic importance of the campus and the intent of the guidelines.

CHAPTER 1

MASTER PLAN

Chapter 2 provides a Master Plan showing non-contributing structures that may be removed, expansion areas, existing buildings that must remain, and areas for future parking decks. It also describes these allowable additions and changes in relation to the context of the site.

CHAPTER 2

USER'S GUIDE

Chapter 3 provides basic information on the use of the Guidelines including a description of the process for renovation of existing buildings, infill development and additions, as well as new construction. Chapter 2 specifically addresses the design review process.

CHAPTER 3



CHARACTER OF THE CAMPUS

Chapter 4 contains a general description of the character defining features of the campus in three important areas. The Public Realm includes the public areas such as streets, walkways, landscape, and historic elements; Site Character is defined by the configuration and relationship of buildings to one another and to the street as well as the placements of the principal and secondary facades; and Architectural Character refers to the style of the architecture.

CHAPTER 4



DESIGN GUIDELINES

Chapter 5 provides guidelines that address the Public Realm – streets, sidewalks, parking, landscaping, retaining walls, fences, and service locations. Site Development guidelines address the relationship of buildings to one another, location of additions and new construction, as well as building orientation. Building/Structure Design Guidelines identify the defining architectural elements specific to each building for alterations and modifications to existing structures such as massing, foundations, roof shape, window, entrances, and building materials. Additions and New Construction are also addressed in similar fashion. The chapter addresses common issues such as accessibility, exterior lighting, green features, and signage.

CHAPTER 5



DEMOLITION

Chapter 6 addresses issues of demolition for contributing and non-contributing structures by establishing a criteria for demolition including historical significance, construction date, environmental concerns, configuration, and conformance with the Master Plan.

CHAPTER 6



CHAPTER 1: INTRODUCTION

1.A PURPOSE

The School of Aerospace Medicine Historic District is a locally designated historic district situated within Brooks City-Base. The buildings and campus are an important part of San Antonio's history celebrating the community's role in the development of the United States Man in Space Program. It was here that many of the early experiments that led to manned space flight were developed and conducted. The purpose of the Design Guidelines is to recognize the historic importance of the campus, identify the significant design and architectural characteristics, and insure that as the campus and buildings are re-purposed in the future that they maintain their important sense of place and exterior architectural integrity.

The following design guidelines are a companion piece of the City of San Antonio Historic District Guidelines and were developed specifically for the School of Aerospace Medicine Historic District. The intent of the Design Guidelines is to provide specific guidance for the Brooks Development Authority (BDA), their tenants, and potential business owners as the campus of the former School of Aerospace

Medicine Historic District develops and expands over time. The guidelines are also intended to provide the City of San Antonio and the Historic and Design Review Commission (HDRC) with a consistent set of standards for evaluating potential changes to the campus.

The Design Guidelines are intended to encourage development that conforms to the size, orientation, and setting of existing buildings on the campus, reduce the need for lengthy review processes, foster development that is compatible, conserve historic resources, maintain property values, and encourage investment.

The guidelines should lay the groundwork for positive dialogue between the BDA, the City's Office of Historic Preservation (OHP), and other stakeholders. The hope is that the guidelines will be a source of inspiration that will help future tenants understand what it means to build structures that are compatible with the historic campus.

1.B AUTHORITY AND JURISDICTION

1.B. AUTHORITY AND JURISDICTION

1.B.1 Brooks Development Authority

Brooks Development Authority is the developer and owner of the School of Aerospace Medicine Historic District.

In 2000, Congress enacted Public Law 106-246, authorizing the creation of Brooks City-Base, a collaboration between the Air Force and the City of San Antonio to improve Air Force mission effectiveness and reduce the cost of providing quality installation support at Brooks. The resulting partnership also encouraged and enhanced future development in southeast San Antonio.

The 2005 Base Realignment and Closure (BRAC) decision relocated Air Force missions to other installations and brought to an end 95 years of active military operations at Brooks. In September of 2011 a new era of innovation began at Brooks City-Base as the Air Force officially left the development. For the first time in more than 95 years, Brooks City-Base became an open campus as part of that transition.

Today, Brooks City-Base represents a master planned community offering affordable housing and more than 1,200 acres of real estate for mixed-use development, including up to 400,000 square feet of available space for office, light industrial and retail opportunities. The Brooks Development Authority offers a variety of creative financial assistance programs to encourage business attraction and expansion.

1.B.2 City of San Antonio Office of Historic Preservation

The School of Aerospace Medicine Historic District is a City of San Antonio Historic District located within the boundaries of Brooks City-Base. The City of San Antonio Historic Design Guidelines ("Historic Design Guidelines") establish baseline guidelines for historic preservation and design. The Historic Design Guidelines apply to all exterior modifications for properties that are individually designated landmarks or within a locally designated historic district. All applicants are encouraged to review the Historic Design Guidelines early in their project to facilitate an efficient review process. In addition to compliance with the Unified Development Code ("UDC"), applicants must obtain a Certifi-

cate of Appropriateness ("COA") from the Office of Historic Preservation ("OHP") for all proposed exterior modifications as described in the Using the Historic Design Guidelines section of the Historic Design Guidelines.

The district-specific design guidelines for SAM have been developed to work alongside the Citywide provisions as an appendix and will be used by the OHP staff and the HDRC to review applications for Certificates of Appropriateness.

The OHP protects the historical, cultural, architectural, and archaeological resources that make San Antonio unique. The OHP promote preservation through the creation of local historic districts and local individual landmarks. Along with the Historic and Design Review Commission (HDRC), the OHP oversees a design review process for exterior alterations to historic landmarks and districts to ensure that modifications and changes are appropriate for historic resources.

1.B.3 National Historic Preservation Act and The Texas Historical Commission

The National Historic Preservation Act (NHPA) of 1966, as amended, requires that federal agencies take into account the effects of their undertakings on historic properties. In addition to direct actions of the federal government, federal undertakings are projects involving a permit or license, funding, or other assistance or approval from a federal agency. Section 106 of the NHPA and its implementing regulations at 36 CFR Part 800 lay out review procedures that ensure historic properties are considered in federal planning processes.

The Texas Historical Commission (The State Historic Preservation Office of Texas) reviews all projects within the School of Aerospace Medicine Historic District that use federal funds, or require federal permits.

SITE PLAN



**HISTORIC DISTRICT
BOUNDARIES** - - -

1.C BACKGROUND AND HISTORY



Figure 1: USAFSCHOOL OF AEROSPACE MEDICINE zero-g experiments using jet trainers, 1959.

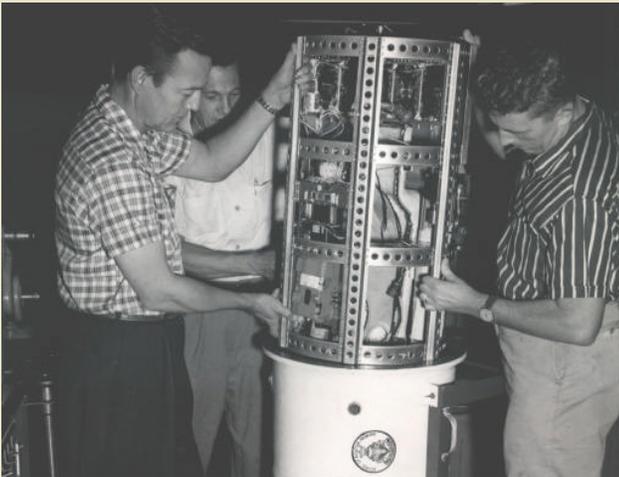


Figure 2: USAFSCHOOL OF AEROSPACE MEDICINE personnel preparing Bio-Pak capsule, 1959.



Figure 3: Brooks AFB volunteers in the two-man simulator at USAFSCHOOL OF AEROSPACE MEDICINE.

1.C HISTORY OF THE SCHOOL OF AEROSPACE MEDICINE HISTORIC DISTRICT

1960's

After the launch of Sputnik I in 1957 by the Soviets, the United States began an intensive effort known as the Man-In-Space Program. Crucial to such an endeavor was the work of the School of Aerospace Medicine, which developed innovative research involving man's ability to survive in space. School of Aerospace Medicine developed an early relationship with the National Aeronautics and Space Administration (NASA), providing it with vital aeromedical research which aided NASA's plan (Project Mercury) to send man into space.

Using specialized equipment such as F-100F aircraft, centrifuges, and space cabin simulators, School of Aerospace Medicine scientists tested and developed numerous aerospace medical innovations, including oxygen environments for space cabins, spacesuits, and onboard life-support systems for NASA's space program. School of Aerospace Medicine contributed much of its research to the Air Force's Manned Orbiting Laboratory (MOL) program, in which scientists studied the long-term effects of space on astronauts. MOL research included space food development, further spacesuit testing, and testing of cabin environments. Contributions by School of Aerospace Medicine during this decade proved essential to the success of NASA's Mercury, Gemini, and Apollo programs as well as the later Skylab and space shuttle programs.

President Kennedy visited Brooks on November 21, 1963 to dedicate the new School of Aerospace Medicine buildings. With a large crowd in attendance, Kennedy spoke in front of Building 150 and emphasized the importance of Brooks AFB and its contributions to aerospace medicine. Sadly, the visit marked Kennedy's last official act as President; the following day, November 22, Kennedy began his fateful day in Dallas.

During the mid-1960s, School of Aerospace Medicine introduced wartime medical research because of the growing war in Vietnam. School of Aerospace Medicine scientists provided the U.S. Air Force with military applications related to the safety and enhancement of its mission in Southeast Asia. The air evacuation program at

Brooks AFB proved vital to the care of wounded personnel in the Vietnam War.

1970s

Entering the 1970s, Brooks AFB expanded with the addition of the U.S. Air Force Occupational and Environmental Health Laboratory in 1976. The laboratory gave Brooks AFB the ability to analyze chemicals in any substance, and isolate chemicals that might prove harmful to Air Force personnel. Brooks AFB also was home to the Epidemiology Laboratory which was created to study diseases and how they might impact Air Force personnel.

1980s

In 1983, the Air Force Human Resources Laboratory was assigned to the base, greatly enhancing its research capabilities. No longer focused just on basic research, the laboratories and research centers of the Aerospace Medical Division (AMD - headquartered at Brooks AFB), incorporated engineering and development programs which allowed it to develop its own theoretical research into actual products, a shift known as technology transition. Examples of projects that utilized this shift involved chemical defense, on-board oxygen generating systems, crew systems technology, aeromedical system development, and epidemiological studies.

1990s

To meet the demands of the post-Cold War environment in 1991, Brooks was selected to house one of four super laboratories. The Air Force Center for Environmental Excellence (AF-CEE) also was created and located at Brooks. The center was responsible for managing base closure clean up and ensuring environmental safety at Air Force installations.

After the 1995 Base Realignment and Closure (BRAC) process identified Brooks for possible closure, Air Force and San Antonio leadership began to develop a unique "City-Base" concept to benefit both parties. Following enactment of federal, state and local statutes in 2000 and 2001, the Air Force transferred ownership of Brooks to The Brooks Development Authority in July 2002.

(Note all historic photos from the BDA archives.)



Figure 4: Oxygen generating photosynthesis experiments at USAFSCHOOL OF AEROSPACE MEDICINE, ca. 1966.



Figure 5: Captain May O'Hara (left) exhibits examples of US-AFSCHOOL OF AEROSPACE MEDICINE space food.



Figure 6: Rows of Curtiss JN-4 Trainers at Brooks Field, 1923.

1.D GOALS

GOALS of the DESIGN GUIDELINES

The goals of the for the School of Aerospace Medicine Historic District Design Guidelines are to serve as the over-arching ideals upon which all other guidelines are based. They are intended to capture the breadth and the depth of the vision for The Hill campus as the historic district changes, adapts, and grows into the future.

The goals are a reminder of the original intent to future stakeholders. They help to clarify and define the original reasons for the creation of the Design Guidelines. They represent the objectives of both the Brooks Development Authority and the City of San Antonio through it's Office of Historic Preservation. In the future when questions regarding the intentions or purpose of the guidelines are raised, the goals will help to inform all interested parties.



1

Retain existing historic character by preserving the visual continuity of the district.



2

Create a sustainable vision for long term value that protects BDA's property values and investment.



3

Create a framework for appropriate additions and modifications that ensures additions, alterations and new infill construction is compatible.



4

Encourage good design without stifling creativity.



5

Create a Marketing Tool to inform potential tenants what is possible within the campus.



6

Develop Guidelines that will guide OHP staff and the HDRC in making recommendations for approval of a Certificate of Appropriateness.



7

Establish additional criteria for determining when demolition is appropriate.





CHAPTER 2: MASTER PLAN

Design Guidelines are specifically intended to provide direction for the future development of the School of Aerospace Medicine Historic District. For this historic area to become a viable and thriving campus in the future, it is inevitable that changes will need to occur. Buildings will be added, some buildings removed and new uses will transform unused space into workable offices and classrooms for the future.

This Master Plan is an illustrative plan for a future that ensures the historic integrity of the original campus is maintained, while being responsive to the needs and challenges of future development. The Master Plan is also a shared vision of both the Brooks Development Authority and the City of San Antonio's Historic and Design Review Commission. It reflects both the desire to provide an economically feasible development opportunity and the desire to preserve the historic integrity of the Historic District.

It is important that Historic Districts remain an integral part of communities. They should not be locked into one historical moment as museum piece, but should move into the future with a clear plan that both respects and retains the character of the existing campus, The Master Plan provides the vision to achieve both goals.

MASTER PLAN



THE MASTER PLAN

The School of Aerospace Medicine Historic District is a visual reminder of a time and place in San Antonio when Brooks Air Force Base played an important national role in the development of space travel. As Brooks City-Base now transforms The Hill campus into a viable development with new uses and new tenants, the challenge is to manage the change in such a way that the historical integrity of the original campus remains.

A clear vision or Master Plan of what the area might become is an essential tool for both the Brooks Development Authority and the Office of Historic Preservation. The Master Plan establishes where and how the campus might grow in the future and still retain the historical identity of the past.

Campus Atmosphere

The original Master Plan of the campus by Ellerbe & Associates was completed in 1952. The plan envisioned the site to resemble a medical school campus. That original vision remains true today and is in fact one of the most character defining features of the campus. Rather than a formal, ceremonial layout, the architects chose an informal setting. Buildings were loosely located by function but rigorously arranged along an axis 30 degrees off of north.

The new Master Plan strives to preserve the campus-like atmosphere, while respecting the established patterns of the existing buildings. New buildings are grouped, perhaps by function, creating smaller campuses within the larger whole.

Common Greenspace

With the addition of the 1963 buildings, a significant green space was created between Buildings 150, 125, 155, 100 and 180. This green space helped reinforce the campus like atmosphere and united the campus with a series of sidewalks. The Master Plan recognizes the historic importance of the green lawn in front of Building 150, assuring that it remains an open green space. The Master Plan continues this tradition by creating two more campus clusters on the south, and one on the west. The clusters are connected through a series of paths.

As the campus expands and changes in the future it will be flexible enough that a cluster may house one company in multiple buildings, or provide a focal point for a number of different tenant groups.

Additions and Demolitions

The Master Plan anticipates that some buildings will be added in the future. Strategically locating new buildings in such a way that the new construction or additions reinforce the historic integrity of the campus is important. The Master Plan also anticipates the need for some demolition. The intent of the Master Plan is to reuse as many existing historic buildings as possible. However the Master Plan provides recommendations for replacement building footprints when demolition can not be avoided. As in the case of Building 175 the Master Plan anticipates that the new building uses the exact footprint of the original building, thereby preserving the character defining breezeway. For further discussion on Demolitions see Chapter 5.

Importance of Streets

The historic pattern of streets should be reinforced. New buildings should line Gillingham Drive, giving the street an edge. New street trees will help reinforce the importance of the street. Kennedy Circle is an important landscape feature and should remain. The perimeter streets of Dave Erwin Drive and George Schafer continue to ring the campus, allowing access to the perimeter parking.

Parking

The Master Plan generally has parking on the perimeter of campus. Two parking lots, one south of Building 110 and the other south of Building 175 are sized to be able to be converted to parking decks/garages if in the future additional parking is required.

New parking should not disrupt any historic landscape feature or spatial relationships within the campus.

3



CHAPTER 3: USER'S GUIDE

The User's Guide provides potential tenants, architects, engineers, designers, and others with an overview and general description of the steps to be used when considering maintenance and alterations, additions, and new construction in the School of Aerospace Medicine Historic District. The Guide is meant to assist anyone contemplating improvements to the grounds or buildings in an orderly process of evaluation, study of alternatives, and recommendations with BDA staff, City staff, and the Historic and Design Review Commission.

USE of GUIDELINES and APPLICATION PROCESS

1

TENANT OR OWNER INITIATES A PROJECT

A tenant decides to begin a project within the School of Aerospace Medicine Historic District. The project could be an interior remodel project with no exterior changes, an interior remodel with modifications to the exterior, a project requiring an addition to an existing building, construction of a new building, or a change of site such as with parking or mechanical equipment.

2

PROJECT IS "INTERIOR ONLY" WITH NO EXTERIOR CHANGES

Design Guidelines are for exterior projects. No review is required by the Office of Historic Preservation. The design does require coordination and approval from the BDA.

3

ALL OTHER PROJECTS: READ CHAPTER 1 TO UNDERSTAND THE PURPOSE AND AUTHORITIES

Chapter 1 will help the tenant/owner understand the purpose for the Guidelines, the Goals, and the future vision of the School of Aerospace Medicine Historic District as agreed upon by both the BDA and the City of San Antonio.

4

READ CHAPTER 3 TO BECOME FAMILIAR WITH ESTABLISHED CHARACTER OF THE DISTRICT

Chapter 3 will assist the architects/engineers/designers in understanding the character of the Historic District. This Chapter lays out those Public Realm, Site, and Building characteristics that distinguish School of Aerospace Medicine Historic District as a historically significant place.

5

READ CHAPTER 4 FOR THE SPECIFIC DESIGN GUIDELINES

This is the heart of the Design Guidelines. Section 4A guides the project in the public realm - the larger framework of the The Hill campus. Section 4B makes sure the building fits within the site. 4C gives specific architectural guidelines for alterations, additions, and new construction. There is also guidance on accessibility, lighting, green features, and signage.

6

READ CHAPTER 5 BEFORE CONTEMPLATING A DEMOLITION

Demolition is an order of last resort and should not be entered into lightly. This chapter provides insight into the criteria for determining whether demolition is even possible.

7

MEET WITH BDA STAFF

Meet with the BDA staff to review your general objectives for the project and your initial conclusions regarding specific guidelines. Review with staff any additional issues pertinent to the project such as provisions for utility services, trash, and access.

8

WORK WITH YOUR ARCHITECT/ENGINEER/DESIGNER

Work with your project designer, Architect, or Engineer to prepare a conceptual Design for the proposed project.

9

REVIEW WITH BDA STAFF FOR CONCEPTUAL APPROVAL, POSSIBLE OHP REVIEW

Projects should review Conceptual Design with the BDA staff for approval. Large projects at this point might want to initiate a meeting with OHP for staff review to make sure the projects in proceeding within the framework of the Design Guidelines.

10

FINISH PROJECT DESIGN DOCUMENTS

Make necessary adjustments after staff discussions and proceed with final documents.

11

SUBMIT TO BDA FOR PROJECT APPROVAL, THEN SUBMIT TO THE OHP

Gain approval of project from the BDA staff who will attest that the project meets the School of Aerospace Medicine Historic District Design Guidelines. Submit an application to the OHP for a Certificate of Appropriateness.

12

REVIEW OF APPLICATION BY THE HDRC

If project meets all of the Design Guidelines, the application will be recommended for approval and placed on the Consent Agenda. If Project deviates from the Design Guidelines, the Tenant will be required to individually present their project to the Historic and Design Review Commission following the standard HDRC application process.



CHAPTER 4: CHARACTER of the HISTORIC DISTRICT

Having an understanding of the existing architectural character of the School of Aerospace Medicine Historic District creates the basis for the Design Guidelines. If the Design Guidelines are to assist developers, business owners, and tenants in designing modifications, additions, and new construction to fit within the historic character of the established district, it is important to have a clear and agreed upon understanding of the existing character.

The intent of Chapter 3 is to establish what design elements make the historic district special and unique. The chapter defines what the architectural character of the district is, so that in the future, when change occurs they do not destroy or fundamentally alter the look and feel of the campus.

Defining the Character of the District in the beginning of the Guidelines will hopefully alleviate and inform future conflicts and discussions about what is important within the district. Design professionals can better spend their time designing within an established context, rather than having to re-invent the design priorities on each project.

The primary characteristic of the School of Aerospace Medicine Historic District, which distinguishes it from most other Historic Districts within San Antonio, is the campus like atmosphere. The design intent of the original architects was to create the feel of a medical school campus, rather than a military base. The Brooks Development Authority refers to this part of Brooks as The Hill campus, reinforcing the concept of a school setting.

Based on the importance of the campus atmosphere, the chapter looks at the character of the district at three different levels. First it looks at the public realm, the public areas between the buildings that create the campus environment. Second it looks at the way the buildings are placed within the site that contribute to the connectivity on the campus, and finally it looks at the architectural character of the buildings that create a cohesive design vocabulary.

4.A CHARACTER OF THE PUBLIC REALM



Figure 7: An aerial view of The School of Aerospace Medicine Historic District.



Site plan showing the boundary of the historic district, network of streets, sidewalks, and green spaces.

4.A CHARACTER OF THE PUBLIC REALM

The Public Realm is the area that can be seen from the public streets. It is the open space around the buildings, that blends the campus together. The Public Realm is also the streets and sidewalks that link place to place and provides a path of travel through the district. Parking is part of the Public Realm as it contributes to the overall campus experience.

4.A.1 Network of Streets

The School of Aerospace Medicine Historic District reflects the original street and block configuration of the campus that was laid out in the 1950's and 1960's. There are no "ordinary" rectangular blocks - in a traditional grid pattern. Rather the layout of the campus is more fluid, developed over a number of years, primarily between 1959 and 1969.

The most important street pattern is the semicircular street plan on the northern edge of the district. Accessed directly off South East Military Drive, the main entrance to this portion of the campus leads directly to the semicircular road located in front of Building 150. The road creates a large lawn in front of Building 150. A double loaded parking area is placed between the lawn and the road, creating parking on the perimeter of the lawn.

On either side of the semicircular drive a road extends to the east and west from the mid-point of the circle. These roads bend south on either side of the campus creating a visual edge to the east and west sides of the campus.

A connector road about two-thirds of the way through the campus connects these two side roads. This road serves as the primary east-west access through the campus. The southside of the road is lined with a number of one story buildings. Streets are asphalt with concrete curbs.

4.A.2 Courtyards and Open Space

Lawns and open space are an important part of the character of the School of Aerospace Medicine Historic District. From the formal lawn in front of Building 150 the precedent is set that landscaping is important. As the circular drive continues behind Building 150, the road slices through a lovely open green space. Not a formal courtyard, the open space is nonetheless, an area surrounded by buildings filled with trees and other landscaping.

The plan of the campus is not a formal plan, therefore the open spaces created are more fluid and informal. Rather than a rigid or planned grid, the open spaces created by the placement of the buildings link spaces and places in an informal way.

The layout of the northern part of campus with its semicircular drives and subsequent lawn is an important feature of the historic campus. Linking of buildings through shared open space is also an important part of the character of the district.

4.A.3 Sidewalks

Sidewalks crisscross the landscaped open spaces helping to connect the buildings for pedestrians. The sidewalks are laid out in straight runs, parallel to the buildings, intersecting at right angles. Sidewalks don't meander, nor do they represent a pathway of convenience created by years of foot traffic from one place to another.

The sense of connectivity is an important characteristic of the campus. It is a pedestrian campus. This sense of walkability enhances the feeling of a campus environment. Sidewalks are constructed of grey concrete.



The exterior of Building 155 provides a pedestrian link to the building next to it, as well as an informal public space.



The exterior courtyard of this building is surrounded by a low brick wall to enclose the space.



Stairs lead to the raised courtyard behind a low wall, creating a semi-enclosed public space.

4.A CHARACTER OF THE PUBLIC REALM



Figure 8: The building orientation is thirty degrees off of north and arranged in a linear pattern.



Stairs lead down from the ground floor to a submerged parking and service area.



Submerged parking and service area.

4.A.4 Pattern of Building Location

The plan of the School of Aerospace Medicine Historic District campus reflects the mid-century planning aesthetics of suburban development. Formality and grid patterns were shunned. The semicircular curve on the north side of campus is a reflection of the sweeping curves found in many suburban neighbors from the same period.

The buildings are located within easy walking distance of one another, adding to the campus feel.

The buildings are all aligned and parallel, thirty degrees off of north. The placement of buildings within the site was determined much more by the function of the building rather than a prearranged formal pattern.

4.A.5 Parking

Parking on the campus is primarily located on the periphery, off of the main roads. A significant parking lot is located adjacent to the large curved street at the north side of campus. The parking location reinforces the curve, leaving a large swath of grass between the parking and Building 150. Similarly on the west side of campus, the parking is four rows wide, and parallel to the street, located away from campus. This historic arrangement of parking on the site emphasizes that the original designers did not allow parking to dominate the campus. Instead they tucked it away on the outside edges of the campus.

When parking was allowed in the interior, it was sometimes submerged below the natural grade, screening it from view. An example of this can be found between Buildings 125 and 130. The area also serves as a service area.

The two parking lots on the east are more typical of large-lot suburban parking. Trees help buffer some of the lots from the street.

CHAPTER 4 CHARACTER OF THE HISTORIC DISTRICT

4.A.6 Landscaping

Landscaping on the campus is dominated by drought resistant or native plants tolerant of the arid conditions of South Texas. With the exception of the front semicircular lawn, the landscaping is not irrigated.

Trees are intermittently spaced in a random pattern throughout the campus. There are some trees that align along the street edges, but these are not consistent or spaced in a perceivable pattern. It is difficult to tell whether this random pattern is intentional or is due to loss of original trees.

Shrubs tend to be adjacent to buildings and can usually be found in clusters near front doors or secondary entrances. They are also sometimes located in internal corners of buildings.

Tended flower beds do not exist. Some buildings such as Building 130 have raised stone planter boxes near the front door that are currently unattended.

A walled garden courtyard can be found at Buildings 100 and 180. Some of the original garden plants can still be seen, although currently overgrown and unattended. These spaces have the potential to once again become a special amenity to the building and a destination point of the campus.



Clusters of shrubs frame the entry to this building.

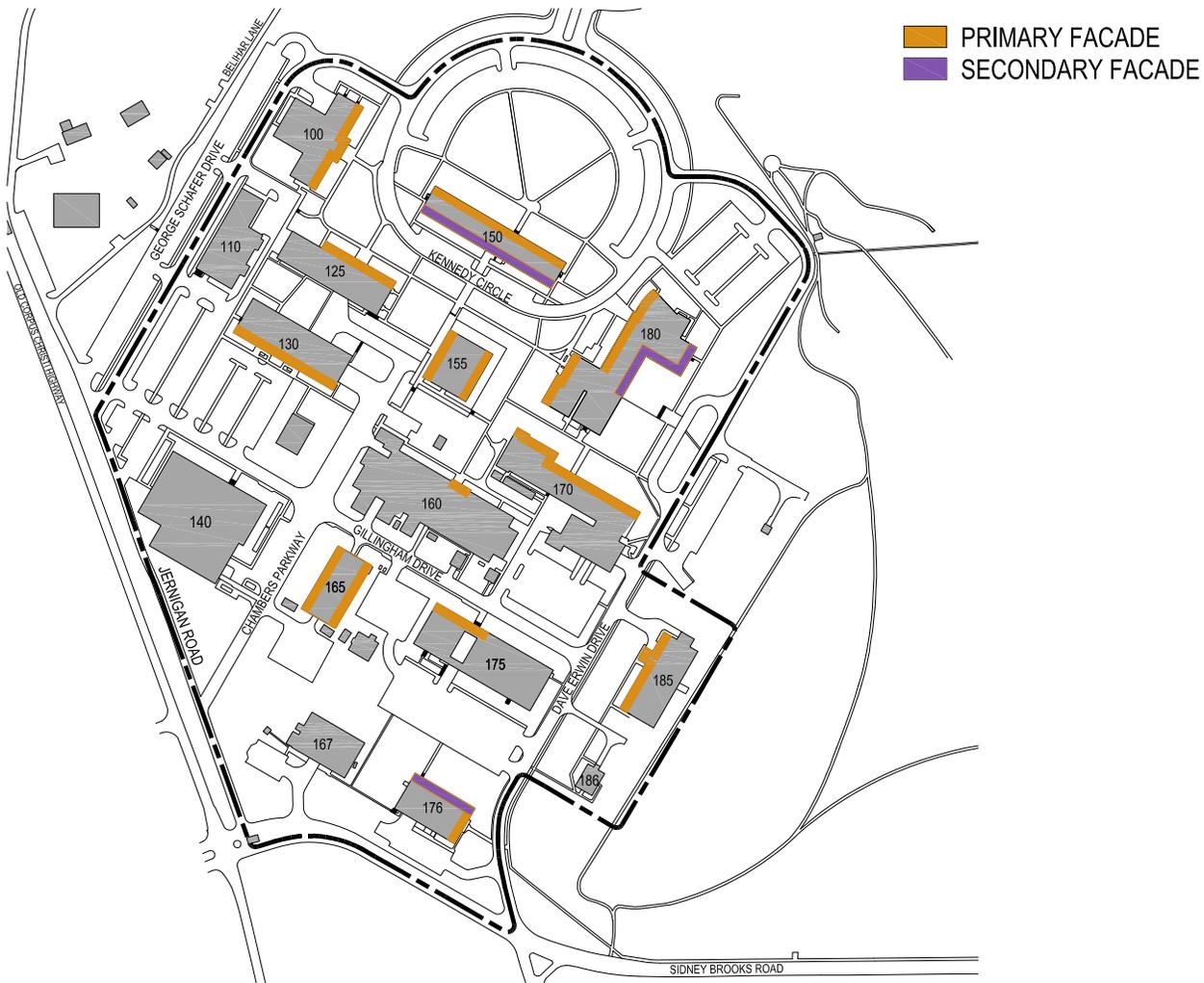


Trees line a street crossing through the campus. These define the pathways and provide shade for the pedestrian walks.



Interior courtyard

4.B CHARACTER OF THE SITE



4.B CHARACTER OF THE SITE

The Site refers to the way in which an individual building is situated within the campus. How buildings are oriented, where the front doors are located and where the service areas are placed are important elements in maintaining the historic campus feel. Location of service areas - the area ways, the loading docks, and the utility yards that provide the infrastructure for the campus - also contribute to the character of the campus.

4.B.1 Building Orientation

While there is not an established pattern for the direction of building fronts - there is a tendency to orient entrances either toward the center of campus or toward a major street. On the northern side of campus few buildings turn their backs to campus; however, on the southern end of campus, buildings are more likely to be oriented to the street.

4.B.2 Primary and Secondary Facades

Most buildings on campus have a primary facade, a secondary facade, and non-significant facades. The illustration above identifies the hierarchy of facades for each building. This diagram begins to identify the order of importance of the existing facades. See page 32-33.

Primary facades are those facades that contribute significantly to the character of campus. These facades are the most important. It is possible for a building to have more than one primary facade.

Secondary facades are those facades that have public entrances, or have some contributing architectural character, but are not the most important facades of the building.

All other facades are non-significant.

CHAPTER 4 CHARACTER OF THE HISTORIC DISTRICT

4.B.3 Service Areas

Service areas were originally placed so that they were unseen or visually unobtrusive. A number of design devices were used to help obscure the mechanical equipment, loading docks, and service areas.

Loading docks were located in the rear of buildings usually at different grade elevations. The change in grade visually hides these more unsightly areas. Low retaining walls or fences at the grade change helps to obscure the service areas.

A second method used to hide mechanical equipment was the use of an attractive brick screen. These brick screens are located throughout campus and are an effective way of improving an unsightly condition. More recent additions of mechanical equipment to the campus have not incorporated the brick screens instead surrounding the equipment with a chain link fence. These service areas are planned to receive screening.

A third method of hiding mechanical equipment was by locating it on the roof, set back significantly from the building edge. By placing the mechanical equipment away from the edge of the building, sight lines masked the equipment from ground level,



Loading dock located at the rear of a building.



Mechanical equipment screened behind a patterned brick wall.



Mechanical equipment located on the roof of a building to hide it from direct view.

4.C CHARACTER OF THE ARCHITECTURE

4.C.1 ARCHITECTURAL STYLE - MID-CENTURY MODERN



Mid-Century Modern Style

The Modern Style gained popularity among architects and their avant-garde clients between World War I and World War II, but didn't gain wide-spread popularity in the U.S. until the mid-1950's. A derivation of the International Style, Mid-Century Modern style has a unique set of common attributes that are readily identifiable.

Mid-century modern style buildings have clean lines, a strong horizontal emphasis, and expanses of unadorned walls. Structures are often low and feature a broad, raised foundation that serves as a base or platform for the main mass. The façade composition is asymmetrical, and usually features floor to ceiling windows, uninterrupted wall planes, exposed roof beams, deep eaves, and clerestory windows. Windows are often grouped as ribbons which can be either vertical or horizontal.

In general the Mid-Century Modern buildings of the School of Aerospace Medicine Historic District campus are unadorned simple rectangular shapes with little ornament. Buildings are typically brick with flat roofs. Floor to ceiling window openings, are offset by large sections of blank,

windowless walls. Vertical aluminum window with inset color panels are typical.

The façade is often asymmetrical but not always. Front entrances are subtle openings within the wall plane.

The typical materials used on the buildings are a light terra-cotta colored brick in a running bond pattern. The roofs and eaves are concrete. The windows are aluminum, and the color panels are generally small mosaic tiles that vary in color from light blue to turquoise. Metal spandrel panels are also common.

CHAPTER 4 CHARACTER OF THE HISTORIC DISTRICT

4.C.1.a MASSING/FORM

Massing is rectilinear - no curves, no angles. In plan and elevation the massing is simple and uncomplicated without setbacks or protrusions. Straight walls extend from foundation to roof.



4.C.1.b ROOF FORM

Roofs are flat. Roofs are not visible, except when the roof is extended as a flat cantilever above from the wall plane.



4.C.1.c WINDOWS

Windows are clear anodized aluminum. Generally they are vertical in configuration. Vertical strip windows with blue colored panels are the most common.



4.C.1.d FOUNDATIONS

Exposed foundations are concrete. They are recessed from the wall plane approximately one (1) foot.



4.C.1.e BUILDING MATERIALS

The primary building material is light terra-cotta brick in a bond pattern. Faceted metal panels are found only on utilitarian buildings and on mechanical rooms located on roofs. Limestone is used for surrounds and at entrances.



4.C.1.f ARCHITECTURAL ELEMENTS

Architectural details include flat slab canopies, cut stone door surrounds, capped walls, brick screens, suspended slab stairs, and ceramic tile insets.





CHAPTER 5: DESIGN GUIDELINES

The Design Guidelines for the School of Aerospace Medicine Historic District are intended to help maintain and enhance the character of the Historic District by providing direction for the design and construction of new facilities, additions, and modifications of the existing buildings.

While Chapter 3 described the existing character of the Historic District and is a valuable resource when determining if a design is compatible, Chapter 4 attempts to articulate the “how” of compatibility.

The guidelines deal first with the larger issues of the public realm. The purpose is to maintain the campus like atmosphere of the Historic District ensuring that as the campus develops and expands it does so in the spirit of the original campus. Open space, green space, configuration of roads, sidewalks, and landscaping are included in this portion of the guidelines.

The next level is to look at how the additions and new construction align with current site patterns. The assumption is that if the site design aligns with

the patterns of the campus and is in context with the historic buildings on the campus, then the design has already come a long way toward becoming compatible.

Finally if the design is in alignment with both the public realm and the site design, the architectural style and detailing can be applied in a productive manner. The long and arduous task of using architectural details to solve fundamental siting or scale issues can be avoided.

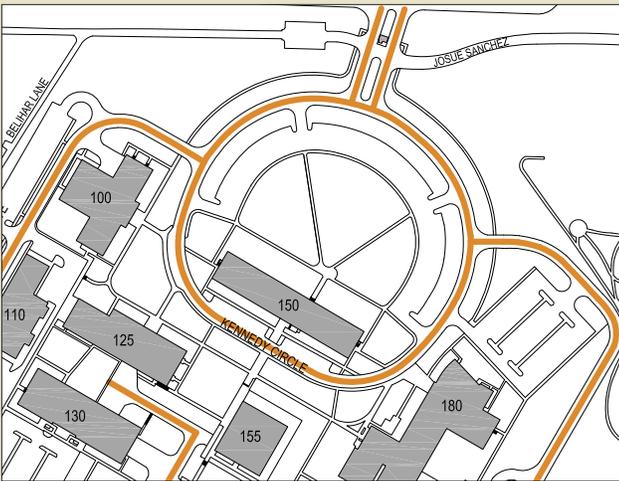
5.A PUBLIC REALM GUIDELINES



Retaining walls used on the campus to deal with changes in topographic elevations.



Streets are composed of asphalt or concrete with simple concrete curbs.



The semicircular drive on the north end of campus is a unique feature in the design of the streets.

5.A. PUBLIC REALM GUIDELINES

The intent of the Public Realm Guidelines is to maintain the natural and built elements that make the campus a unique and special place including the topography, vegetation, street patterns, and sidewalks.

5.A.1 Topography

- a. Original topographic elevations should be maintained. Earth work can occur during construction for subterranean development but upon completion the original topographic elevation should be retained.
- b. Change in topographic elevations should incorporate the use of retaining walls. When the change in elevation is less than 18 inches the retaining wall should appear as a curb on the higher elevation. When a larger change in elevation is required, the retaining wall should be capped with a low brick wall on the higher elevation.
- c. When there is a steep grade change across the building site, the floor elevation should be closer to the high end elevation, and the site should be sloped up to the floor on the lower elevation, similar to buildings on the south side of campus.

5.A.2 Street Patterns and Materials

- a. Improvements to the public right-of-way should retain the original layout of street patterns, especially the semicircular drive on the north end of campus, the two flanking streets, and the major cross streets. Slight modifications are acceptable, but the semicircular lawn defined by the parking pattern should remain.
- b. The width of existing streets contributes to the character of the districts and should be maintained.
- c. Streets should be constructed with asphalt or plain concrete with simple concrete curbs in keeping with the typical aesthetics of the 1950's and 1960's. Brick paving or stamped concrete in vehicular streets is not appropriate.

5.A.3 Street Trees

- a. Street trees should generally be planted along the edges of all streets.
- b. They should be planted between the building and the sidewalk, rather than in the parkway between the curb and the sidewalk. Planting the trees close to the sidewalk will help define the street edge, but the tree species should be kept in mind when choosing an appropriate distance from the sidewalk.
- c. Street trees found on the campus include live oak, sycamore, and cedar elm. A complete list of appropriate tree species can be found in Appendix A.
- d. Planting trees along the north side of the semicircular should be done in such away as to avoid blocking the view of the main campus, especially Building 150, from the South East Military Drive entrance.



Currently, there are trees lining many of the campus streets in a somewhat irregular manner.

5.A.4 Sidewalks

- a. Sidewalks should be constructed of grey concrete.
- b. Sidewalks should be laid out in a linear fashion, parallel to adjacent buildings or streets. Change in direction should generally be at right angles. Wandering, curvilinear sidewalks or meandering pathways are not appropriate.
- c. Generally sidewalks are 5-6 feet wide. At entrances to buildings they can align with the width of the entrance and can be much wider.
- d. Sidewalks adjacent to streets can be either directly adjacent to the street curb or can be inset with a parkway between the curb and the sidewalk.



Sidewalks are laid out in a linear fashion, which should be maintained with any additional sidewalks.



Sidewalk running perpendicular to meet a building.

5.A PUBLIC REALM GUIDELINES



5.A.5 Parking

- a. Parking should not impinge on existing green spaces, except for parking identified in the Master Plan.
- b. Parking should be screened from the street with perimeter tree planting, at a rate of 1 tree for every 4 perimeter spaces.
- c. Use of trees in the interior of parking lots to provide shade is encouraged. The shade coverage should be no less than what is required by City Code.
- d. The parking layout should provide continuous flow of traffic through the lot.
- e. The design should allow safe movement of pedestrians from parking to buildings.
- f. The design should allow for appropriate landscaping of the parking areas without conflicting with site lighting.

- g. The use of pervious materials such as parking pavers or pervious concrete is encouraged.
- h. In general, parking lots should be located on the rear or side of buildings. The standard suburban model of parking adjacent to the front door should be avoided.

5.A.6 Landscaping

- a. The circular lawn in front of Building 150 is a significant part of the character of the district. It is also an important historic site and should be retained as an open green space.
- b. Landscape materials and plants should be tolerant of the arid south Texas climate. Avoid the use of plant material that requires excessive water. An approved plant list can be found in Appendix A.
- c. Shade trees such as Live Oaks, Mexican Sycamores, and Cedar Elms are commonly found on the campus. The continued use of these trees is encouraged. Other acceptable trees are



Landscaping connects the buildings on campus with public green space.

Pecan, Shumard Red Oak, Mesquite, Burr Oak, and Pin Oak.

- d. Mountain Laurels, Persimmons, Texas Redbud, Esperanza, and Pride of Barbados are also appropriate.
- e. Formal planted flower beds should be avoided as they are not in keeping with the traditional landscape of the district.
- f. Lawns and open green space should use native grasses or drought tolerant species appropriate for the climate.

5.A.7 Retaining Walls, Fences and Screens

- a. Retaining walls taller than 18 inches should be clad in brick to match existing terra-cotta colored brick found on the campus. Walls should be topped with a 4 inch grey concrete cap.
- b. Fences should be constructed of terra-cotta colored brick. Fences may be solid or open, in patterns found historically on the campus.

- c. Screen walls around equipment and trash containers should be constructed of terra-cotta colored brick in patterns found on the historic campus.

5.A.8 Service Areas

- a. Service areas should be located away from the primary facade of a structure whenever possible.
- b. Change of grade should be considered when locating service areas as this is the historic precedent found in the district.
- c. Take into consideration the view of the service area from other campus buildings, and minimize the impact.
- d. If possible use landscaping and screening to mitigate the view of service areas.
- e. All trash containers should be screened from view.

5.B SITE DEVELOPMENT GUIDELINES



5.B. SITE DESIGN GUIDELINES

The intent of the Site Design Guidelines is to provide direction in the placement and orientation of structures so that the “campus-like” character of the district is maintained. Respect and maintain the traditional relationships to the street, adjacent buildings, established configuration of open space, and the common orientation of structures.

5.B.1 Location & Scale of Additions

Refer to the Master Plan for appropriate locations of additions.

a. It is acceptable to make additions to almost every building on the campus with the exception of Building 150 and Building 155. These two buildings are iconic to the district. They each have numerous sides that can be seen as architecturally significant. They are situated such that they can be seen from a variety of viewpoints. Therefore an addition on any side would significantly alter the character of the site.

b. New additions should not be made to the Primary Facades of structures. See 4.B.3 for a

listing of primary facades.

- c. New additions should not obscure or demolish character defining features of the original structure. Additions should be located inconspicuously on the least character defining elevation.
- d. New additions should not be so large that they overwhelm the original architecture because of location, size, height, or scale.
- e. Additions should be in keeping with the original architectural character, mass, scale and materials without mimicking the original design.
- f. If additions are made to the side of a structure, the addition should be recessed a minimum of 1 foot from the front facade for the entire length of the addition's facade.



Green space and landscaping improves the common areas located between the apartment buildings.

5.B.2 Location & Orientation of New Buildings

Refer to the Master Plan for appropriate locations of new buildings.

- a. In keeping with the existing development patterns, new buildings should be developed in grouped arrangements around common green space. Site development across the entire campus should not be formal or symmetrical in design.
- b. New buildings should align with existing buildings, being approximately 30 degrees off of north.
- c. New buildings should be sited in such a way as to create green open space on at least one side of the building.
- d. New buildings adjacent to streets or parking should be buffered with street trees and plants.
- d. New buildings should have both a formal entrance on the street side, and a secondary entrances onto the common green space.

5.B.3 Common Greenspace

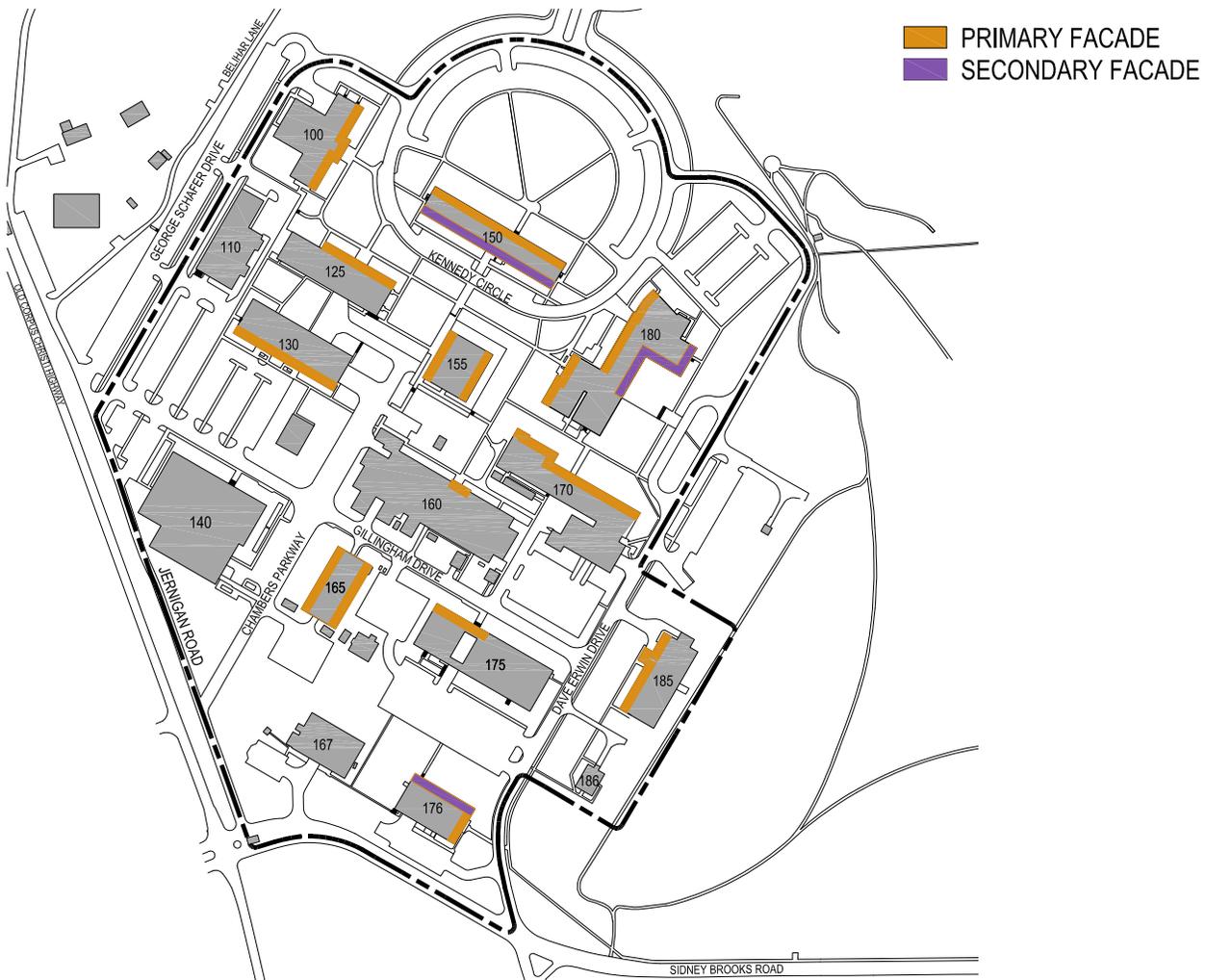
Refer to the Master Plan for appropriate locations of common greenspace.

- a. Common greenspace, adjacent to more than one structure is encouraged.
- b. Common greenspace should be accessible from the adjacent buildings.
- c. Common greenspace should be linked by an interconnected system of sidewalks.
- d. Greenspace should have both lawns and trees that can be enjoyed both physically and visually.
- e. Greenspaces should not be fenced or isolated from the rest of campus.
- f. Electric substations, HVAC equipment, and other large mechanical equipment should not be located within the common green space.

5.B SITE DEVELOPMENT GUIDELINES

5.B.4. Primary Building Orientation

There are certain structures on the campus that have historically significant facades. These special facades are part of the character defining features of the district and should not be modified or altered. In general, these facades face either major streets, entrances, or public open space. The guiding principle should be that if someone associated with these building in their period of significance were to return, they would immediately be able to recognize and identify these buildings.

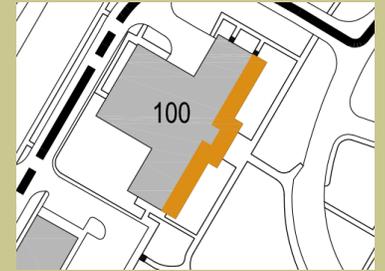


Significant Facades

100

PRIMARY FACADE

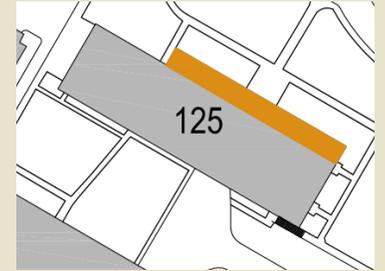
The central projecting front entrance facade is architecturally significant and should not be modified. The two flanking wings can be modified with the addition of windows.



125

PRIMARY FACADE

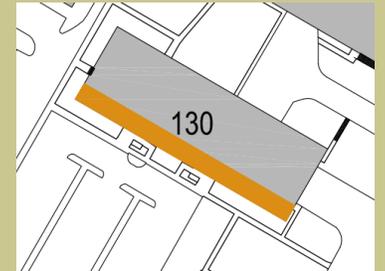
The entrance facade of Building 125 has prominent features that should be retained on the ground floor, but due to the lack of windows currently in the facade, some modifications may be made for daylighting purposes.



130

PRIMARY FACADE

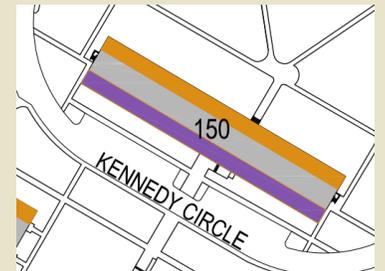
The primary facade of Building 130 is architecturally significant around the entrance, and should not be modified.



150

PRIMARY/SECONDARY FACADE

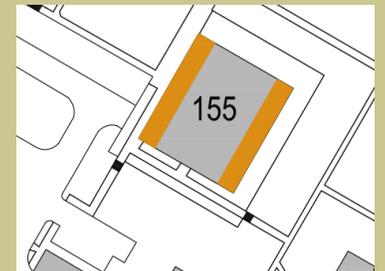
The front facade is an important element of the historic district & should not be modified. The rear facade contributes to the south open space & should only have minor modifications.



155

PRIMARY FACADES

The library building has two principal facades: the east and the west. These facades are unique in the district and should not be modified.



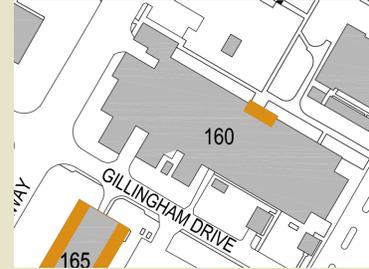
5.B SITE DEVELOPMENT GUIDELINES

Significant Facades

160

PRIMARY FACADE

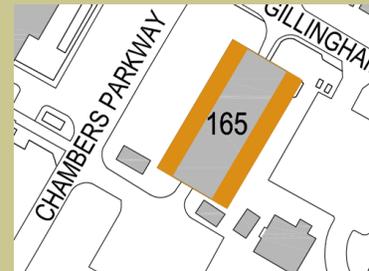
This small portion of the main facade on Building 160 is architecturally significant because of the unique glass entrance. It should not be modified.



165

PRIMARY FACADE

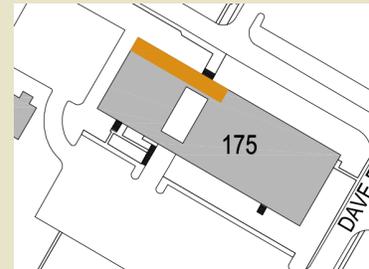
The power plant building's western facade is a unique on campus and should be retained.



175

PRIMARY FACADE

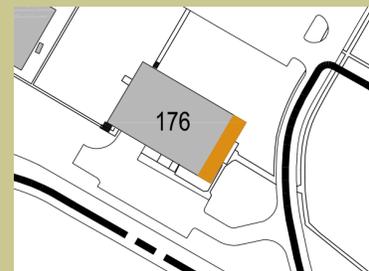
The breezeway and the remaining facade to the west are important elements in the district and should be retained.



176

PRIMARY FACADE

The entrance facade of Building 176 occupies a prominent position at the southern entrance to the campus. This facade should not be modified.



180

PRIMARY/SECONDARY FACADE

The two part western facade is architecturally significant and should not be modified. The eastern facade contributes to a green space just east of the building and should only have minor modifications.

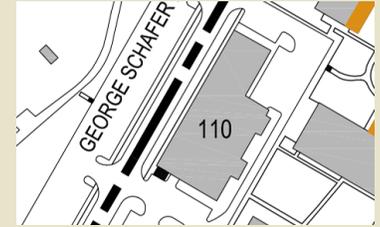


Insignificant Facades

110

INSIGNIFICANT FACADES

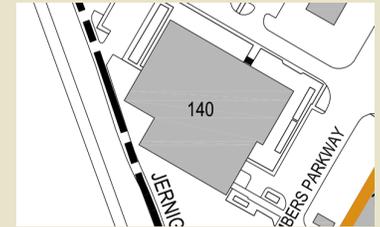
Building 110 contains no significant facade and can be modified on any side of the building.



140

INSIGNIFICANT FACADES

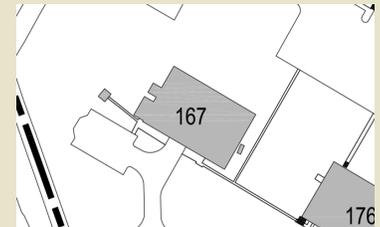
Building 140 contains no significant facade and can be modified on any side of the building.



167

INSIGNIFICANT FACADES

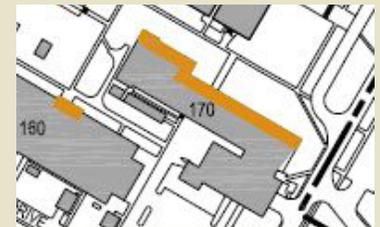
Building 167 contains no significant facade and can be modified on any side of the building.



170

INSIGNIFICANT/PRIMARY FACADES

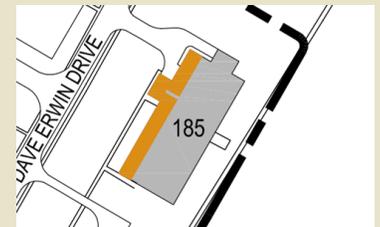
Building 170 contains a significant facade on the north side and all other facades can be modified on any side of the building.



185

INSIGNIFICANT FACADES

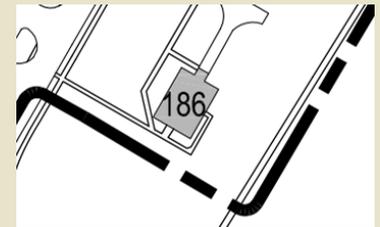
Building 185 contains no significant facade and can be modified on any side of the building.



186

INSIGNIFICANT FACADES

Building 186 contains no significant facade and can be modified on any side of the building.



5.C ARCHITECTURAL DESIGN GUIDELINES



Building 125 with no modifications to the exterior facade.

5.C. ARCHITECTURAL DESIGN GUIDELINES

The intent of the Architectural Design Guidelines is to provide guidance for alterations and modifications to existing buildings, additions to existing buildings, and for the design of new buildings.

5.C.1 GENERAL

Alterations and modifications, additions, and new construction should recognize and respect the historic elements and patterns that exist within the campus.

EXISTING BUILDINGS

The campus is made up of a variety of buildings that were built for very specific scientific purposes. To re-purpose the existing buildings for the future some alterations and modifications will need to be made. These alterations and modifications will need to be undertaken with great care, so as to make the buildings usable but still retain the spirit and character of the original design.

NEW CONSTRUCTION

The design of additions and new structures should respond to the character of existing structures, using them as a source of inspiration. New construction should avoid trying to slavishly copy an existing structure or to create an artificial history by duplicating historic styles and designs that are not associated with the campus. For example, even though Spanish Colonial Revival can be found at the historic base headquarters, it is not appropriate for School of Aerospace Medicine Historic District which was built primarily in the 1950's and 60's.



Building 125 showing an example of modifications. The additions are in keeping with the style of the campus.

5.C.2 ALTERATIONS AND MODIFICATIONS TO EXISTING STRUCTURES

Not all buildings on the campus of the School of Aerospace Medicine Historic District are equal. Based on earlier research conducted by the Air Force it has been determined that certain buildings have more historical or architectural significance. Those structures with significant architectural integrity should retain their character defining elements, and changes should be minimal on their primary facades. Their secondary facades can be modified within the character of the building. Their rear facades, service facades, or non-significant facades can tolerate a greater degree of change.

Other buildings, with less architectural significance, were often built as windowless boxes. Substantial modifications to these buildings within the vocabulary of the existing structures may be needed to make them viable in the future.

5.C.2.a. Exposed Foundations

1. Exposed concrete foundations should be retained.

2. They should not be covered with another material.
3. The foundations are generally a minimum of 1 foot above grade and no more than 4 feet above grade on the primary facade. The height may vary on the other elevations, depending on the grade conditions. Grade should not be substantially modified to change or obscure the exposure of the foundation.

5.C.2.b. Building Walls and Materials

1. Exposed concrete floor slabs provide a strong horizontal base for the masonry walls above. These exposed slabs should be retained.
2. Projecting out from the face of the foundation wall, exposed concrete floor slabs create a strong shadow line. This is an important character defining feature that should remain.
3. The primary building material is a medium terra-cotta colored brick. Modifications should the building should strive to remain.

5.C ARCHITECTURAL DESIGN GUIDELINES

3. The primary building material is a medium terra-cotta colored brick. Modifications to the buildings should strive to match this brick in color, texture, and size. The mortar color, size, and finish should also match as closely as possible.
4. Brick masonry walls should be flat and unadorned. No mouldings, or projecting courses should be used.
5. Specialty tile panels are used on the library. These are character defining and should be retained as wall material. Replacement tiles should match in color, size, and pattern.
6. Buildings 160 and parts of 170 use exterior formed metal panels as the primary building material. This material is not significant and could be replaced with another similar metal

panels that is in keeping with the scale and character of the original.

7. The color range of brick in the district is limited. Alterations and modifications to existing structures should use the color palette already in place. No new brick colors should be added.

5.C.2.c Roofs

1. Roofs are flat. Roofs should not have a visible pitch. Roofs should not be visible.
2. Roofs should be located behind a small parapet with a minimum of 6 inch vertical drop in the cap flashing.
3. The roof of Building 155 has a cantilevered eave that is an important character defining feature. It should not be removed. Awnings

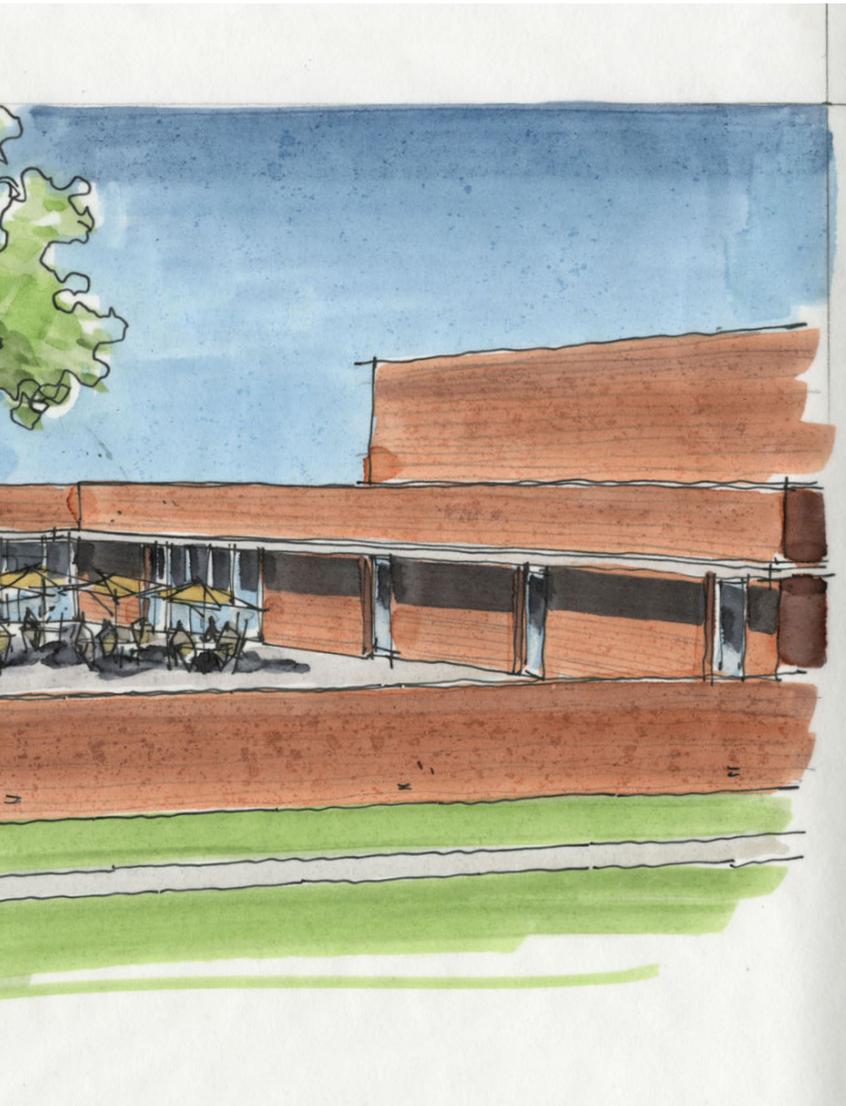


or other features should not be hung from the eave.

4. Flat, cantilevered slabs as canopies are appropriate.

5.C.2.d Rooftop Penthouses

1. Metal-sided rooftop penthouses are present on many of the buildings. These rooftop penthouses may be modified and readapted as clerestories to allow light to reach the interior spaces.
2. Modifications to the rooftop penthouses are appropriate as long as the modifications do not increase the height, and the additions are set well back from the edge of the roof.



5.C.2.e Doors and Entrances

1. Front entrances on significant buildings are visually apparent. However, there are a number of buildings on the campus that have no discernible entrance. In the future it might be necessary to create a more significant entrance to these structures. Adding a more visually apparent entrance would be appropriate as long as the new entrance is in keeping with the character of the district and appropriate to the specific structure.
2. New entrances should be delineated by a punched opening inset with an aluminum storefront consistent with other aluminum systems used on that particular building. Or if none is present, consistent with other aluminum storefronts on the campus. An alternative way of expressing the entrance is through the use of a contrasting masonry surround as found on Building 130.
3. Doors should be aluminum and glass, consistent with the aluminum storefront found on that specific building. In some cases the entrances doors are solid wooden doors, and on those buildings, wooden doors should be used to be consistent.
4. A projecting flat slab above the entrances is also appropriate. The slab should be masonry in appearance, cantilevered, and relatively thin in profile.

5.C.2.f Architectural Details and Features

1. Throughout the campus, there are a number of architectural features that add to the character of the campus. Low planters, slab steps, and projecting flat slab canopies are part of the architectural vocabulary that should be maintained and not removed.
2. Inappropriate additions, such as the metal cover on the courtyard of Building 180, may be removed if the addition is determined to be non-contributing.

There are many opportunities for enhancing existing elements throughout the campus, such as this courtyard at BLDG 180.

5.C ALTERATIONS AND MODIFICATIONS

5.C.2.g Windows

1. A variety of window systems used on the campus are all within a Mid-Century architectural vocabulary. All new windows added in an alteration or modification should be selected from the existing window patterns. No new window types should be added.
2. New windows should not be added to facades that are considered character defining. A list of these facades that should not have windows can be found on pages 32-33.
3. When adding new windows the rhythm and

spacing ratio of windows to massing on an existing building should preferably match the patterns of the existing building. In some cases it might be more appropriate to reflect patterns and ratios found on other parts of the campus.

4. Large expanses of uninterrupted brick can be found on almost all buildings on campus. It is important to maintain a strong presence of masonry in these buildings. The dominance of the original brick walls should remain as character defining with new windows subordinate to the solid mass.



These five examples are indicative of the typical window systems currently in use throughout the campus. New windows should be similar in character to these examples.



CHAPTER 5 DESIGN GUIDELINES

5. Windows should be clear anodized aluminum systems and/or storefront systems. Bronzed aluminum is prohibited.
6. The color panels in new windows should be a different color than the original blue/turquoise to differentiate original from new.

The four window systems below are examples of large feature windows found on various buildings on The Hill campus. These should be used sparingly.



AVOID



This last example of window design is currently found on The Hill campus - and should not be mimicked or replicated anywhere.

These windows are found only in an isolated occurrence within the campus and are not representative of typical windows from the time of The Hill campus original development.

The many other window system solutions found on campus should be used over this to reinforce the good design solutions of the historic buildings.

5.C ALTERATIONS AND MODIFICATIONS



Windows can be added to mostly window-less facades as long as they remain in the character of the historic windows.



Massing of buildings should be rectilinear.

5.C.3 ADDITIONS AND NEW CONSTRUCTION

Additions and new construction within the Historic District are encouraged. Over time as new uses are found for older buildings, changes will occur on the campus. The success of attracting new business often leads to a demand for more space. This is good for the long term health of the district. Viable uses and occupied spaces help keep buildings well maintained. New construction adds energy and people to the district.

It is the intent of these guidelines to first encourage reuse of existing buildings, secondly to promote additions, and lastly to guide the construction of new buildings.

5.C.3.a General

1. Building additions and new construction should be in keeping with the original architectural character, color, mass, scale, and materials.
2. New additions should not be so large as to overwhelm the original structure because of location, size, height, or scale.
3. New additions should not obscure or demolish character defining features of the original structure.
4. New construction should blend and balance with the existing buildings by acknowledging and echoing the primary design characteristics of the district.

5.C.3.b Location of Additions and New Construction

1. Refer to the Master Plan on page 8 to determine appropriate locations for additions and new construction.
2. Additions should be located inconspicuously on the least character defining elevations.
3. Additions should be to the rear of the existing structure or as far away from the public street unless there is sufficient width to the side.
4. When there is sufficient width to the side, additions should be recessed by at least one (1) foot behind the existing facade.

5.C.3.c Massing and Height

1. Massing of buildings should be rectilinear.
2. The massing should be horizontal, rather

than vertical. The horizontal dimension should at a minimum be twice as long as the vertical height. It is preferred that the horizontal dimension be three (3) times greater than the height.

3. The horizontal massing should be emphasized through the use of strong horizontal bands at top of walls, at rooflines, and at foundations.
4. New construction should be two stories in height, or not to exceed 35 feet. In a building addition, the new construction should not exceed the height of the existing structure.

5.C.3.d Roofs

1. Roofs should be flat. Any slope should not be visible from the ground.
2. Pitched roofs, shed roofs, gable roofs, hipped roofs, mansard roofs, curved roofs, etc. should be avoided.
3. Projecting roofs and canopies are allowed as long as the projection is flat.
4. Visual emphasis of a flat roof may be articulated through the use of a strong horizontal band/beam at the parapet.
5. Top of parapets should be flat.
6. Mechanical equipment should be located away from the edge of the roofs and screened with metal panels.

5.C.3.e Exterior Wall Materials

1. All brick used on campus should match the existing terra-cotta colored brick in color, size, and texture.
2. When constructing an addition the brick should also match the masonry pattern, spacing, and mortar joints of the original building.
3. New construction should be brick masonry, aluminum storefront, glass, pre-finished metal spandrel panels, or ceramic tile panels similar to materials on the historic campus.
4. Cementitious stucco, synthetic stucco - or EIFS systems, tilt wall, fiber cement siding, wood siding, and exposed concrete block are prohibited.
5. Stone is prohibited as a primary exterior material and should be limited to decorative surrounds and details that are consistent with existing decorative surrounds in type and size.



Projecting roofs and canopies are allowed as long as the projection is flat.



Existing terra-cotta colored brick.

5.C ALTERATIONS AND MODIFICATIONS



Exposed foundations should be set back from the face of the wall construction, similar to what can be seen on campus.



Windows on new additions should be similar in character and style with the windows on the original buildings.

6. Metal wall panel systems may be used when adding on to an existing metal sided building. Metal wall panel systems may not be used for any other additions or for new construction.
7. Any other exterior material not expressly prohibited may not be used without a Certificate of Appropriateness approving a specific material.

5.C.3.f Foundations

1. Exposed plinth foundations are encouraged.
2. If exposed, foundation walls should be made of exposed grey concrete to match those found on campus.
3. If exposed, the foundation stem wall should be set back from the face of the wall construction by no less than one (1) foot.

5.C.3.g Windows

1. Windows on new additions should be similar in character and style with the windows on the original building. For example if vertical floor to ceiling window panels are used on the original building, the new addition should use similar floor to ceiling vertical windows.
2. Sometimes it might be necessary to add windows to an existing building as described in Section 5.C.2.g. In this case the windows of the addition should be compatible with the new windows added to the original building and be similar in character and style.
3. The spacing and pattern of mass to void, or windows to walls, in new additions should have the same overall pattern as the original or modified facade.
4. The spacing and pattern of mass to void, or windows to walls, in new construction should have the same overall pattern as can be found in other historic buildings on campus.
5. In new construction the historic rhythms of mass to void may at times be reversed as long as the overall pattern is sympathetic to the original character of the campus.
6. Uninterrupted wall planes between windows is an important characteristic and should be mimicked in additions and new construction.
7. Windows should be clear anodized window

and/or storefront system, including doors. Bronze and other colored systems are prohibited. Painted hollow metal, and wood storefronts are prohibited.

8. Window types are described in Section 5.2.C.g as either common or unique. In new construction, common types of windows should be used for general windows, and unique patterns and types should be reserved for use as highlights or accents within a composition.

5.C.3.h Exterior Doors

1. Entrance doors should be easily distinguished as a place of entrance.
2. They should be articulated by using glass surrounds, and/or projecting canopies, and/or stone surrounds (as found in Bldg. 160.)
3. Entrance doors should be clear anodized aluminum frames with single glass lite panels.
4. A building may have more than one point of entrance. Each pedestrian entrance should be articulated, as defined above.
5. Service doors and emergency exit doors may be painted hollow metal doors without lites.

5.C.3.i Clerestory Additions

1. Many of the existing buildings on campus have mechanical penthouses that are one story in height, set back significantly from the edge of the roof, and constructed of fluted metal panels. It is acceptable to modify these structures as clerestories and light wells as long as the original shape and location of these roof structures are preserved.
2. Miscellaneous, unused mechanical equipment (exhaust fans, HVAC equipment) associated with these structures may be removed.



Entrance doors should be easily distinguished as a place of entrance with articulations.



Entrance doors may be articulated by using glass surrounds.



Roof additions can be modified as clerestories and light wells.

5.C ALTERATIONS AND MODIFICATIONS



Conceptual Design for replacement of Building 140. View from Gillingham Drive and Chambers Parkway



Conceptual Design for **partial** replacement of Building 175E, OPTION 1



Conceptual Design for **partial** replacement of Building 175E OPTION 2



These images show three different schemes for reconstruction that are in keeping with the historic character of the campus.

5.D COMMON ISSUES



Accessible ramp leading to the library. Does not interfere with the historic facade or character because of placement.



Figure 9: An example of a ramp leading to the entrance of a building that incorporated elements of the building.

5.D COMMON ISSUES

The following design guidelines are for use throughout the campus. They identify and define issues that are common to all areas and buildings on the campus.

5.D.1 Accessibility

a. Many of the historic buildings on the campus do not meet current accessibility standards. When bringing the structures into compliance, it is important not to remove or destroy character defining features such as the suspended slab staircases. The slab staircases should remain as a dominant feature while allowing accessibility ramps to slide in behind or to the side of the upper landings.

b. Inappropriate ramps have been added over the years. These should be removed and replaced with more sympathetic and integrated designs.

c. Because ramps were not part of the original vocabulary, they should not become dominant features in the landscape. Low brick walls with concrete caps are a part of the architectural vocabulary of the campus. Use low walls located parallel to structures as an appropriate way to screen ramps.

EXAMPLES OF POORLY DESIGNED RAMPS ON CAMPUS



While this ramp does not interfere with the primary facade, it should be integrated more with a wall or other element.



An example of an existing ramp on campus that should not be mimicked.

5.D.2 Exterior Lighting

a. General campus lighting should be mounted on individual poles no higher than fifteen (15) feet. Dark sky fixtures are mandatory. There should be no glare.

b. Parking lot lighting should be from poles no taller than thirty (30) feet. Ground level illumination with service directed light should be provided for pedestrians. Dark sky fixtures are mandatory.

c. Building lighting should produce no glare and have no visible light source. Indirect lighting of building surfaces is encouraged. Landscape lighting should be used to provide ground level illumination.

5.D.3 Green/Sustainable Features

a. Solar panels are acceptable on the roofs of historic buildings with the following caveats: 1) panels are only located on the southern portions of the roof; 2) panels are only visible from secondary or non-significant facades; 3) panels have no more than a 20% slope.

b. Water retention cisterns are encouraged, but should be located underground. They are not part of the historic vocabulary and should not become a dominant visual feature on the campus.

c. Bicycle racks are encouraged and may be located anywhere on campus.

d. Bus stops should be designed in character with the rest of the campus. An existing stop on Kennedy Circle should be re-used.

e. The continued use of recycled water for irrigation is encouraged.



Figure 10: Bicycle racks can be used throughout the campus.

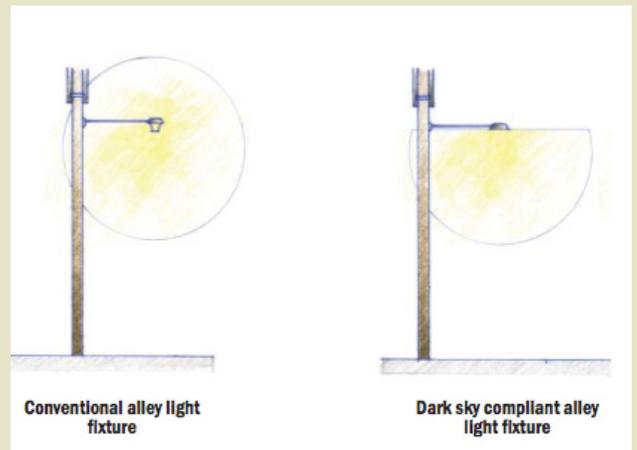


Figure 11: Dark sky compliant lighting diagram. Image source: apartmenttherapy.com



Figure 12: Underground water retention cisterns are encouraged.



Figure 13: Exterior lighting should produce no glare and have no visible light source. May illuminate building surface.

5.D COMMON ISSUES

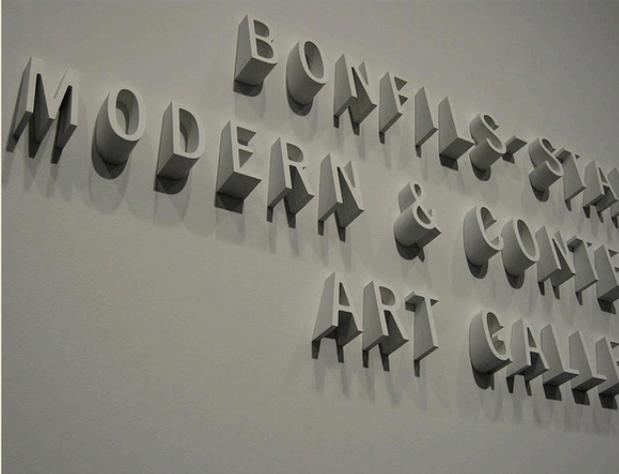


Figure 14: All signage must be three-dimensional



Figure 15: Three-dimensional Neutra font wayfinding numbers.



Historic signage on the campus.

5.D.4 Signage

5.D.4.a. Tenant Building Signage

1) Signing should be limited to trade name and logo only.

2) Signage should be three-dimensional and may be mounted no higher on the building surface than the finished height of the floor of the second level of the building or the first floor roof surface.

3) Primary tenant building-mounted signs located on building surface should be individual dimensional letter signs in reverse-channel halo form at a maximum of 16 inches tall and 4inches-6inches in depth.

4) All equipment, transformers, raceways, ballasts, crossovers, and conduit should be concealed within the building envelope.

5) All signage should be of the highest quality construction, materials, details, and finishes. All light sources should be concealed.

6) Tenants in Building 160 and 125 may place their name on the storefront glass at the entrance to the building.

5.D.4.b. Inappropriate Sign Materials

1) Exposed neon

2) Flashing lights

3) Animated components

4) Illuminated, acrylic-faced channel letters, or trim caps

5) Cabinet signs with illuminated, translucent background and silhouette letters or internally illuminated box-type plex-faced signs

6) Vacuum-formed plastic letters

7) Plastic materials of any kind, including acrylic letters

8) Signs utilizing paper, cardboard, stickers, or decals applied to entry glazing

9) Sandblasted wood signs in natural wood finish with painted, raised letters and/or logos

10) Exposed raceways, ballast boxes, transformers, crossovers, or conduit.

11) Translucent internally illuminated awning-type signs

12) The name, stamps, or decals of the sign manufacturer may not be displayed on any portion of any sign. Non-ornamental hardware used to attach sign to storefront may not be exposed to view.

5.D.4.c. Campus Wayfinding Signage

1) Campus wayfinding systems should respect the historic signage of the Hill campus in construction and selection of typeface font. Acceptable fonts are “Futura Medium” and “Neutra”. Other applications of alternate fonts are subject to review and will require a Certificate of Appropriateness.

ABCDEFGHIJKLMNOPQRSTUVWXYZ
 OPQRSTUVWXYZ
 abcdefghijklmn
 opqrstuvwxyz
 1234567890 – &

Figure 16: Futura Medium is appropriate for campus wayfinding signage.

ABCDEFGHIJKLMNOPQRSTUVWXYZÀ
 OPQRSTUVWXYZÀ
 abcdefghijklmnopqr
 stuvwxyzàåéîõøü&
 1234567890(\$£€.,!?)

Figure 17: Neutra is another appropriate font for campus signage.

6



CHAPTER 6: DEMOLITION

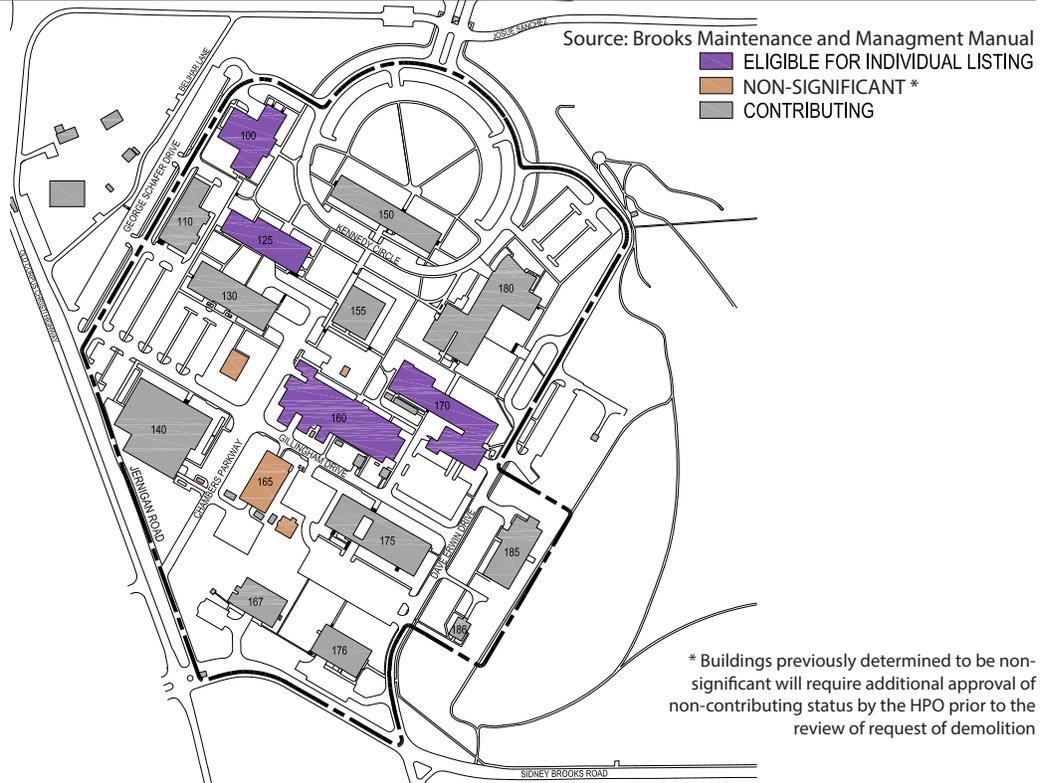
From time to time it may be necessary to demolish a structure within the Historic District. A demolition undertaking is an important and significant step and will permanently alter the character/integrity of the campus; therefore demolition should be an order of last resort. All other alternatives should be explored prior to seeking a demolition.

The following Chapter outlines a series of criteria to be used when determining if demolition is appropriate. A number of well written surveys and reports have already been conducted at Brooks. These were part of the Section 106 review mitigation during the conveyance process. Both the *Brooks Maintenance and Management Manual* and the *Historic American Building Survey and Report* address the significance and eligibility for individual listing on the National Register of Historic Places, a federal program administered by the Texas Historical Commission in coordination with the National Park Service that provides national recognition of the property's historic or architectural significance and denotes that it is worthy of preservation. These are excellent resources for further information.

The Chapter will explore Non-contributing and Contributing buildings. Other criteria will include construction date, historical events/ significance, environmental concerns and conformance to the Master Plan. Finally the idea of mitigation will be discussed as a part of demolition.

6.A ESTABLISHING A CRITERIA FOR DEMOLITION

HISTORICAL SIGNIFICANCE



CONSTRUCTION DATE



6.A. Demolition of Non-Contributing Structures

All structures identified in the Brooks Maintenance and Management Manual as Non-Contributing are eligible for approval of non-contributing status by the HPO, and if approved will be eligible for the non-contributing demolition process as outlined in the City of San Antonio Unified Development Code. An exception to this is Building 165, the Power Plant.

6.B. Demolition of Contributing Structures

Demolition of a contributing structure is a serious responsibility and should not be undertaken without serious consideration. Potential contributing structures are identified in the Brooks Maintenance and Management Manual. Demolitions should be an order of last resort. Each demolition should be considered individually. An earlier demolition should not serve as a precedent for the approval of another demolition.

Below are a list of considerations that can be used to evaluate whether a building may be eligible for demolition. These are not the only considerations for evaluation and in no way supersede the City of San Antonio's Unified Development Code.

6.B.1 Historical Significance

The historical significance of a structure refers to the particular historic events, people, construction, design, or style associated with a particular building. Is the building a visual reminder of something, or someone, or some event associated with the School of Aerospace Medicine? A thorough history of the buildings on campus is available in the Historic American Building Survey of the property.

6.B.2 Construction Date

The age of a building is an important consideration regarding the significance of a structure. There are certain events associated with the School of Aerospace Medicine Historic District that stand out as more important than others. The school's relationship and association with early space flight in the United States is important, and those buildings associated with the program in the early 1960's are more important than other events that occurred on the campus. Generally the earlier the building was constructed, the more significant. This is not always true and there are other factors besides age, that contribute to the significance.

6.B.3 Environmental and Functional Concerns

Throughout the country, as a result of base closure

decisions, many types of military facilities present problems for reuse due to their specific functional design and past activities that cannot be clearly evaluated. Several of the buildings within the School of Aerospace Medicine Historic District primarily functioned in the past as laboratories used for specific scientific research and medical testing. Prior to the relocation of the Department of Defense missions, all of The Hill campus buildings were thoroughly assessed for potential environmental impacts associated with past activities, and any necessary clean-up was completed when the facilities were vacated in 2011. Each of these structures was determined to be safe to reutilize. However, continued use of some of the buildings would be extremely difficult because of their highly specific functional design. While appropriate for 1950's and 60's era research, these facilities have become obsolete and would be extremely costly to renovate for other uses. Moreover, perceived concerns associated with the types of past research activities (e.g. radiological) that occurred within these facilities remain. Consideration should be given for the limited use of these facilities because of the past military research applications which have no functional counterpart today.

6.B.4 Conformance with the Master Plan

The campus for School of Aerospace Medicine Historic District is part of the larger Brooks City-Base development. It is no longer a military installation. The Master Plan lays out a vision for the future of the campus as part of a multi-use complex. Demolitions of individual buildings should be done in consideration of the greater complex. Adjacencies are important and how the campus relates to those adjacencies will have a long term effect on the viability of the campus. These factors should be carefully considered prior to the consideration for demolition.

5.B.5 Views, Focal Points and Terminus

Certain buildings are located in prominent positions on the campus. They help to anchor important corners or serve as a terminus of a vista at the end of a street. These significant sites should be taken into consideration when contemplating demolitions. It may be necessary to preserve a façade or to require the replacement structure provide an equally significant architectural focal point or terminus.

6.B.5 Mitigation

If a demolition is approved as per the Unified

Development Code, applicants should consider providing a mitigation for the loss. For example, restoration of Building 165, (a non-contributing building) might be considered as part of the replacement plans to offset the loss of any contributing building..

TREES

COMMON NAME	SCIENTIFIC NAME
Anacacho Orchid Tree	<i>Bauhinia lunarioides (congesta)</i>
Anaqua	<i>Boraginacea ehretia Anacua</i>
Arizona Cypress	<i>Cupressus Arizonica</i>
Bald Cypress	<i>Taxodium distichum</i>
Basswood	<i>Lilia caroliniana</i>
Big Tooth Maple	<i>Acer grandidentatum</i>
Blanco Crabapple	<i>Malus ioensis</i>
Bur Oak	<i>Quercus macrocarpa</i>
Carolina Buckthorn	<i>Rhamnus caroliniana</i>
Cedar Elm	<i>Ulmus crassifolia</i>
Chinkapin Oak	<i>Quercus muehlenbergii</i>
Desert Willow	<i>Chilopsis linearis</i>
Escarpment Cherry	<i>Prunus serotina var. eximia</i>
Escarpment Live Oak	<i>Quercus fusiformis</i>
Eve's Necklace	<i>Sophora affinis</i>
Flame Leaf Sumac	<i>Rhus lanceolata</i>
Golden Ball Lead Tree	<i>Leucaena retusa</i>
Gum Bumelia	<i>Bumelia lanuginosa</i>
Hoptree	<i>Ptelea trifoliata</i>
Kidneywood	<i>Eysenhardtia texana</i>
Lacey Oak	<i>Quercus glaucooides</i>
Littleleaf Walnut	<i>Juglans microcarpa</i>
Live Oak	<i>Quercus virginiana (fusiformis)</i>
Madrone	<i>Arbutus xalapensis</i>
Mexican Buckeye	<i>Ugnadia speciosa</i>
Mexican Olive	<i>Cordia boissieri</i>
Mexican Plum	<i>Prunus mexicana</i>
Mexican White Oak	<i>Quercus polymorpha</i>
Montezuma Cypress	<i>Taxodium mucronatum</i>
Mountain Laurel	<i>Sophora secundiflora</i>
Pecan	<i>Carya illinoensis</i>
Possumhaw Holly	<i>Ilex decidua</i>
Rough Leaf Dogwood	<i>Cornus drummondii</i>
Retama	<i>Parkinsonia aculeata</i>
Rusty Black-Haw	<i>Viburnum rufidulum</i>
Shumard Red Oak	<i>Quercus shumardii</i>
Smoke Tree	<i>Cotinus obovatus</i>
Soapberry	<i>Sapindus saponaria var drummondii</i>
Spicebush	<i>Lindera benzoin</i>
Texas Ash	<i>Fraxinus texensis</i>
Texas Persimmon	<i>Diospyros texana</i>
Texas Pistache	<i>Pistacia texana</i>
Texas Redbud	<i>Cercis canadensis var texensis</i>
Texas Walnut	<i>Juglans major</i>
Tracy Hawthorne	<i>Crataegus tracyi</i>
Wax Myrtle	<i>Myrica cerifera</i>
Witchhazel	<i>Hamamelis virginiana</i>
Yaupon Holly	<i>Ilex vomitoria</i>

APPENDIX A: BDA APPROVED PLANT LIST

SHRUBS

COMMON NAME	SCIENTIFIC NAME
Agarita	<i>Berberis trifoliolata</i>
American Beautyberry	<i>Callicarpa americana</i>
Aromatic Sumac	<i>Rhus aromatica</i>
Bird of Paradise	<i>Caesalpinia gilliesii</i>
Blue Shrub Sage	<i>Savlia ballotaeflora</i>
Buttonbush	<i>Cephalanthus occidentalis</i>
Catclaw Acacia	<i>Acacia greggii</i>
Canyon Mock Orange	<i>Philadelphius texensis</i>
Cenizo (Purple Sage)	<i>Leucophyllum frutescens</i>
Cherry Sage	<i>Salvia greggii</i>
Evergeen Senna	<i>Cassia corymbosa</i>
Evergreen Sumac	<i>Rhus virens</i>
Flame Acanthus	<i>Anisacanthus wrightii</i>
Fragrant Mimosa	<i>Mimosa borealis</i>
Granjeño (Spiny Hackberry)	<i>Celtis pallida</i>
Guyacan	<i>Guaiacum angustifolium</i>
Mexican Oregano	<i>Poliomenantha longiflora</i>
Mountain Mahogany	<i>Cericasous montanus</i>
Mountain Sage	<i>Salvia regla</i>
Red Buckeye	<i>Aesculus paera var. flauescens</i>
Roemer Catclaw (Acacia)	<i>Acacia roemeriana</i>
Silktassel	<i>Garrya lindheimeri</i>
Texas Indigo Bush	<i>Amorpha roemerana</i>
Wright Acacia	<i>Acacia wrightii</i>
Yellow Buckeye	<i>Aesculus pavia var. flauescens</i>
Yellow Bells	<i>Tacoma stans</i>

FLOWERS and GROUND COVER

COMMON NAME	SCIENTIFIC NAME
Bat Face Cuphea	<i>Cuphea llavea</i>
Big Red Sage	<i>Salvia penstemonoides</i>
Black Dalea	<i>Dalea frutescens</i>
Black Eyed Susan	<i>Rudbeckia fulgida</i>
Black Foot Daisy	<i>Melampodium leucanthum</i>
Blue Amsonia	<i>Amsonia Cileata</i>
Bluebells	<i>Gentianaceae Custom grandiflorum</i>
Blue Eyed Grass	<i>Sisyrinchium ensigerum</i>
Brazos Penstemon	<i>Penstemon tenuis</i>
Brush Sunflower	<i>Compositae Simsia Calva</i>
Butterfly Milkweed	<i>Asclepias tuberosa</i>
Cardinal Flower	<i>Lobelia cardinalis</i>
Cedar Sage	<i>Salvia roemeriana</i>
Chocolate Daisy	<i>Berlandiera lyrata</i>
Clover Fern	<i>Marsilea macropoda</i>
Copper Canyon Daisy	<i>Compositae Tagetes lemmonii</i>
Cut Leaf Daisy	<i>Englmannia pinnatifida</i>
Damianita	<i>Chrysactina Mexicana</i>
Dwarf Petunia	<i>Ruellia brittoniana 'Katie'</i>

FLOWERS and GROUND COVER, continued

COMMON NAME	SCIENTIFIC NAME
Flaxleaf Bouchea	<i>Bouchea linifolia</i>
Fluttermills	<i>Oenothera missouriensis</i>
Four Nerve Daisy	<i>Hymenoxys scaposa</i>
Foxglove	<i>Penstemon cobraea</i>
Frogfruit	<i>Phyla incisa</i>
Gayfeather	<i>Liatris mucronata</i>
Golden Eyed Daisy	<i>Viguiera stenoloba</i>
Grey Shrub Sage	<i>Salvia chamaedryoides</i>
Havard Penstemon	<i>Penstemon havardii</i>
Heartleaf Hibiscus	<i>Hibiscus cardiophyllus</i>
Horse Herb	<i>Calyptocarpus vialis</i>
Indigo Spires Sage	<i>Salvia longespicata x farinacea</i>
Ironweed	<i>Vernonia lindheimeri</i>
Jerusalem Sage	<i>Phlomis fruticosa</i>
La Trinidad Sage	<i>Labiataea Salvia Microphylla</i>
Larkspur	<i>Delphinium carolinianum</i>
Lavender Lantana	<i>Lantana Montevidensis</i>
Lavender Skullcap	<i>Scutellaria seleniana</i>
Lindheimer Senna	<i>Cassia lindheimeri</i>
Lyre Leaf Sage	<i>Salvia lyrata</i>
Majestic Sage	<i>Salvia guaranitica</i>
Maximillian sunflower	<i>Helianthus maximiliani</i>
Mealy Blue Sage	<i>Salvia farinacea</i>
Mexican Bush Sage	<i>Salvia leucanthum</i>
Mexican Marigold	<i>Tagetes lucida</i>
Mexican Red Sage	<i>Salvia darcyii</i>
Mountain Pea	<i>Leguminosae</i>
New Gold Lantana	<i>Lantana Hybrid</i>
Pennyroyal (annual)	<i>Hedeoma acinoides</i>
Pigeonberry	<i>Rivina humilis</i>
Pink Evening Primrose	<i>Oenothera speciosa</i>
Pink Guara	<i>Guara lindheimeri</i>
Pink Lantana	<i>Lantana camara</i>
Pink Little Leaf Sage	<i>Salvia Grahamii</i>
Powis Castle Artemisia	<i>Artemisia hybrid</i>
Prairie Goldenrod	<i>Solidago nemoralis</i>
Prairie Phlox	<i>Phlox pilosa</i>
Purple Coneflower	<i>Echinacea angustifolia</i>
Purple Skullcap	<i>Scutellaria wrightii</i>
Purple Winecup	<i>Callirhoe involucrata</i>
Red Columbine	<i>Aguilegia canadensis</i>
Rock Daisy	<i>Compositae perityle Lindheimeri</i>
Rock Rose	<i>Pavonia lasiopetala</i>
Russian Sage	<i>Perropskiu atriplicifolia</i>
San Luis Sage	<i>Labiatae Salvia microphylla</i>
Scarlet Penstemon	<i>Penstemon triflorus</i>
Showy Mendora	<i>Menodora longiflora</i>
Simpson Rosinweed	<i>Silphium simpsonii var wrightii</i>
Skullcap (pink)	<i>Scutellaria suffrutescens</i>
Snake Herb	<i>Dyschoriste linearis</i>

APPENDIX A: BDA APPROVED PLANT LIST

FLOWERS and GROUND COVER, continued

COMMON NAME	SCIENTIFIC NAME
Square-Bud Primrose	<i>Calylophus drummondianus</i>
Standing Cypress	<i>Ipomopsis rubra</i>
White Milkweed	<i>Asclepias texana</i>
Tall Goldenrod	<i>Solidago altissima</i>
Texas Betony	<i>Stachys coccinea</i>
Texas Lantana	<i>Lantana horrida</i>
Thoroughwort	<i>Eupatorium havanense</i>
Tropical Milkweed	<i>Asclepias curassavica</i>
Two Leaf Senna	<i>Cassia roemeriana</i>
Turk's Cap	<i>Malvaviscus arboreus</i> var. <i>drummondii</i>
Violet	<i>Viola missouriensis</i>
White Winecup	<i>Callirhoe involucrata</i>
Wooly Butterfly Bush	<i>Buddleia murrubiiifolia</i>
Yellow columbine	<i>Aquilegia hinckleyana</i>
Yellow Tropical Milkweed	<i>Asclepiadaceae Curassavica</i>
Zexmenia	<i>Zexmenia hispida</i>

VINES

COMMON NAME	SCIENTIFIC NAME
Alamo Vine	<i>Ipomoea sinuata</i>
Coral Honeysuckle	<i>Lonicera sempervirens</i>
Cross Vine	<i>Bignonia capreolata</i>
Cyanchum	<i>Cyanchum barbigerum</i>
Cypress Vine	<i>Ipomoea quamoclit</i>
Lindheimer Morning Glory	<i>Ipomoea lindheimeri</i>
Mustang Grape	<i>Vitis mustangensis</i>
Passionflower, Purple	<i>Passiflora incarnata</i>
Passionflower, Yellow	<i>Passiflora lutea</i>
Purple Leatherflower	<i>Clematis pitcheri</i>
Scarlet Leatherflower	<i>Clematis texensis</i>
Slenderlobe Passion Flower	<i>Passiflora tenuiloba</i>
Snail Seed	<i>Cocculus carolinus</i>
Snapdragon Vine	<i>Maurandya antirrhiniflora</i>
Texas Wisteria	<i>Wisteria macrostachya</i>
Virginia Creeper	<i>Parthenocissus quinquefolia</i>
White Bush Honeysuckle	<i>Lonicera albiflora</i>
Yellow Honeysuckle	<i>Lonicera sempervirens</i> var. <i>sulphurea</i>

GRASSES

COMMON NAME	SCIENTIFIC NAME
Bear Grass	<i>Nolina texana</i>
Big Blue Stem	<i>Andropogon gerardii</i>
Big Muhly	<i>Muhlenbergia lindheimeri</i>
Buffalo grass	<i>Buchloe dactyloides</i>
Bushy Bluestem	<i>Andropogon glomeratus</i>
Gulf Muhly	<i>Muhlenbergia capillaris</i>

GRASSES, continued

COMMON NAME

Inland Sea oats
 Indian Grass
 Little Bluestem
 Pine Muhly
 Sand Love Grass
 Seep Muhly
 Sideoates Grama
 Switchgrass
 Weeping Muhly

SCIENTIFIC NAME

Chasmanthium latifolium
Sorghastrum nutans
Schizachyrium scoparium var. frequens
Muhlenbergia dubia
Eragrostus trichodes
Muhlenbergia reverchonii
Bouteloua curtipendula
Panicum virgatum
Muhlenbergia dubioides

OTHERS

COMMON NAME

Buckley Yucca
 Century Plant
 Chili Pequin
 False Agave
 Nolina
 Red Yucca
 Soft Leaf Yucca
 Sotol
 Twisted Yucca
 Yellow Yucca

SCIENTIFIC NAME

Yucca Constricta
Agave scabra
Capsicum annuum
Hechtia texensis
Nolina lindheimeriana
Hesperaloe parviflora
Yucca recurvifolia
Dasyllirion leiophyllum
Yucca rupicola
Hesperaloe parvifolia

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IMAGE SOURCES

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