





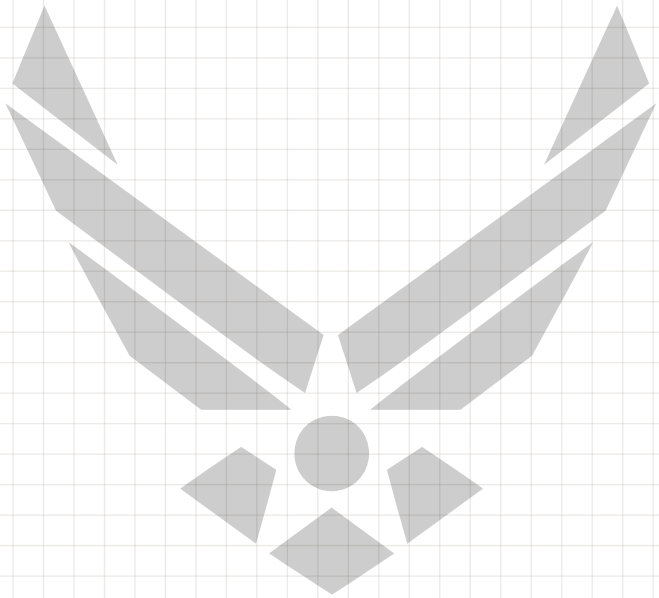
HILL AIR FORCE BASE







HILL AIR FORCE BASE
ARCHITECTURAL COMPATIBILITY PLAN



Hill Air Force Base







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INTRODUCTION

The Architectural Compatibility Plan (ACP) defines a clear design vocabulary to be used throughout Hill Air Force Base (HAFB), providing specific standards for all aspects of exterior design. Compatible architecture is accomplished with similar buildings, using common design forms, details, materials, site features, landscaping, and streetscapes. Quality and compatibility are achieved through creating a unified visual environment that is based on an Architecture of Community, similar to a campus or small town. The principal design goal is to direct development at Hill AFB toward a livable, attractive, and cohesive installation. The ACP provides the design standards that will help to build compatible facilities and a quality environment. Implementation of the standards will result in the creation of community.

BACKGROUND

Hill AFB is named in honor of Major Ployer Peter Hill (1894–1935), the Chief of the Flying Branch of the U.S. Army Air Corps Material Division of Wright Field, Dayton, Ohio. Major Hill died as a result of injuries he received from the crash of the Boeing Aircraft Company's experimental aircraft Boeing Model 299 at Wright Field, the prototype airplane for what became the famous B-17 Flying Fortress.

Hill Air Force Base traces its origins back to the ill-fated U.S. Army's Air Mail "experiment" of 1934, when the idea originated for a permanent air depot in the Salt Lake City area. In the following years, the Army Air Corps surveyed the region for a suitable location for the permanent western terminus of the air mail. Several sites in Utah were considered, and the present site near Ogden emerged as the clear favorite.

In July 1939, Congress appropriated $8.0 million for the establishment and construction of the Ogden Air Depot. Hill Field officially opened on 7 November 1940. Following American entry into World War II in December 1941, Hill Field quickly became an important maintenance and supply base, with round-the-clock operations geared to supporting the war effort. Battle-worn warplanes like the B-26, B-17, B-24, B-29, P-40, P-47, P-61, and others depended on the men and women of Hill Field for structural repairs, engine overhauls, and spare parts. The peak wartime employment at Hill Field was reached in 1943 with a total of just over 22,000 military and civilian personnel. These dedicated men and women rehabilitated and returned thousands of warplanes to combat.

Hill Field became the Hill Air Force Base on 5 February 1948, following the 1947 transition of the new U.S. Air Force away from the U.S. Army and the United States Army Air Forces, into an independent service, as called for by the National Security Act of 1947. This transition actually took place in October 1947, but it took many months to fully implement.

During the Korean War, Hill AFB was assigned a major share of the Air Materiel Command's logistical effort to support the combat in Korea. Hill AFB personnel quickly removed needed warplanes from storage, renovated them, and added them to active-service USAF flying squadrons.

Then during the 1960s, Hill AFB began to perform the maintenance support for various kinds of jet warplanes, mainly the F-4 Phantom II during the Vietnam War, and then afterwards, the more modern F-16 Fighting Falcons, A-10 Thunderbolt IIs, and C-130 Hercules, air combat missile systems and air-to-ground rockets. Hill AFB continues to carry out these tasks to the present day.

In this decade Hill AFB is still the sixth-largest employer in the state of Utah, and the third-largest, excluding the State Government and Higher Education. Hill AFB is the home of the Air Force Materiel Command's (AFMC) Ogden Air Logistics Complex which is the worldwide manager for a wide range of aircraft, engines, missiles, software, avionics, and accessories components. The Ogden Air Logistics Complex is part of the Air Force Sustainment Center. With its headquarters at Tinker Air Force Base, Oklahoma, the Air Force Sustainment Center is one of five specialized centers assigned to the Air Force Materiel Command. The host unit at Hill AFB is the Air Force Material Command's 75th Air Base Wing (75 ABW), which provides services and support for the Ogden Air Logistics Complex and its subordinate organizations. Additional tenant units at Hill AFB include operational fighter wings of the Air Combat Command (ACC) and the Air Force Reserve Command (AFRC). Ogden Air Logistics Complex provides worldwide engineering and logistics management for the F-16 Fighting Falcon, F-35, F-22, A-10 Thunderbolt II, and Minuteman III intercontinental ballistic missile and a myriad of other aircraft types.

PURPOSE

The purpose of the Architectural Compatibility Plan (ACP) is to define design standards for buildings, site development, and streetscapes that serve to integrate the visual character

throughout the Base. The ACP will help ensure consistent quality design decisions by commanders, planners, architects, engineers, maintenance staff, and residents. It promotes clear, concise communication between the Hill AFB personnel and design professionals. This plan applies to self-help initiatives, small projects, and operations and maintenance activities as well as large construction efforts. The ACP is referenced from and supports the Hill AFB General Plan as a key component plan.

This Architectural Compatibility Plan sets a minimum standard for quality control, and is intended as a baseline, or beginning point, for the built environment on Hill Air Force Base. All structures, regardless of size, typology, or placement must adhere to the standards set forth in this ACP. However, architects and designers are encouraged to further explore design options within the framework of this ACP.

VISION

Although budgets are generally conservative, in response to tax payer funding, buildings should strive to have strong sense of design, and reflect the Architectural Mission and Vision of the United States Air Force and Hill Air Force Base:

United States Air Force Mission:

To fly, fight and win...in air, space and cyberspace.

United States Air Force Vision:

The United States Air Force will be a trusted and reliable joint partner with our sister services known for integrity in all of our activities, including supporting the joint mission first and foremost. We will provide compelling air, space, and cyber capabilities for use by the combatant commanders. We will excel as stewards of all Air Force resources in service to the American people, while providing precise and reliable Global Vigilance, Reach and Power for the nation.

Hill Air Force Base Architectural Mission:

To provide a physical, functional and visionary support to the Mission of the United States Air Force.

Hill Air Force Base Architectural Vision:

- Provide structures that reflect strength, integrity, safety and respect to surroundings, users and the general public.
- Define a process and Plan that will create a minimum standard, but allow for flexibility and diversity in design.

The mission and vision statements above should be referenced and used at all times when a project is being designed.

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HOW TO USE THIS PLAN

This document shall be used in conjunction with the current International Code Council publications, ABA Accessibility Standard for Department of Defense Facilities (ABA-DoD), Anti-Terrorism/Force Protection, and other publications as noted. It shall be used in combination with Whole Building Design Plans (wbdg.org) focusing on:

- Accessibility
- Aesthetics
- Cost Effectiveness
- Functional/Operational
- Historical Preservation (where applicable)
- Productivity
- Security/Safety
- Sustainability

The ACP defines six architectural settings, or Groups: Industrial Complex, Administration/Support, East Side Development, Falcon Hill Nation Aerospace Research Park, UTTR (Oasis Compound) and Little Mountain. Maps showing the extent of these areas are provided. Groups may contain one or more building types, listed below, sometimes adjacent to one another. Designs for all buildings within a Group must be compatible with nearby adjacent buildings, site characteristics and context, regardless of building type.

The Installation Development Plan (separate document) refers to Planning Districts on base, which closely correlates with some of these Architectural Setting Groups. The Group descriptions reference the Planning Districts that relate to the particular Group.

General and specific design standards for all buildings are included in the Building Types section. There are 5 types of buildings generally found on base: Industrial Buildings, Office/Support Buildings, Storage Buildings, Ancillary Buildings and Housing (Dormitories).

Specific guidance on design elements, materials, fenestrations, interior design, sustainability and landscaping is given in the Design Standards section.

The Implementation Section defines methods to facilitate the coordination and approval of design submittals. It outlines key elements to ensure success in designing and constructing excellent facilities. It discusses the traditional design process, highlights the importance of site analysis, and describes the role of the Architectural Review Board (ARB).

The Appendices provide additional information including acceptable building materials and colors, landscape materials, Architectural Conceptual Details, examples of Acceptable vs. Prohibited Designs and examples of Architecturally Significant Buildings. Use the Appendices in conjunction with the general text of the ACP as a quick reference to specific materials and color specifications.

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ARCHITECTURAL SETTINGS

THIS PLAN APPLIES TO 6 ARCHITECTURAL SETTINGS, OR GROUPS OF BUILDINGS:

Group 1: Industrial Complex
Group 2: Administration/Support
Group 3: East Side Development
Group 4: Falcon Hill National Aerospace Research Park (Falcon Hill)
Group 5: UTTR (Oasis Compound)
Group 6: Little Mountain

GROUP 1: INDUSTRIAL COMPLEX

The Industrial Complex of buildings encompasses aircraft hangars and maintenance facilities, on the west side of the flight line, north of Wardleigh Road, and the warehouse facilities west of F Avenue, incorporating the Missile And Munitions Storage (MAMS) area. These areas are identified in the Installation Development Plan as the Industrial, Air Field and Munitions Districts.

Group consists of existing and new facilities directly related to mission functions:

- Aircraft and vehicle maintenance buildings
- Aircraft hangars
- Administrative facilities
- Warehousing
- Munitions Maintenance and Storage Buildings
- New buildings and renovations shall conform to the standards for Industrial Type buildings.
- Other building types are also occasionally located in this Group, such as Administration Types and Ancillary Types. These types of buildings shall conform to the standards for their respective buildings, but shall also be sensitive to the adjacent architecture and context.
- Buildings in the Munitions Assembly, Maintenance & Storage (MAMS) area are industrial buildings and primarily shall be designed to the standards for industrial buildings.

GROUP 2: ADMINISTRATIVE/SUPPORT

The Administrative/Support Group of buildings is located in the heart of the base, near its southern edge. It is bounded by 3rd Street on the north, Southgate Road on the east, the base boundary on the south, and F Avenue on the west. The area totals approximately 174 acres. This area includes most of the major Commercial and Community Service facilities related to support functions and base personnel, such as the Fitness Center, Medical Clinics, unaccompanied Housing and Visitor Quarters, and the Education Center. The commissary, theater, dorms, chapel, and other such buildings are also included in this group. This area is identified in the Installation Development Plan as the Community District.

Group consists of existing and new facilities directly related to mission support functions:

- Community support buildings (.e.g. libraries, theatres, retail, worship, fitness facilities)
- Dormitories, firefighting facilities
- Administrative facilities

- New design must comply with the standards set forth in the Office/Support Building Types.
- The goal of the Administrative/Support Group is to provide grouped, accessible community facilities in an efficient arrangement with associated centralized parking and pedestrian walkways.
- Other Building Types are also occasionally located in this Group, such as Industrial and Ancillary Types. These types of buildings shall conform to the standards for their respective buildings, but shall also be sensitive to the adjacent architecture and context.

GROUP 3: EAST SIDE DEVELOPMENT

The East Side is bordered on the north by the old alert area, on the east by the base eastern perimeter, on the south generally by Hubbard Golf Course, and on the west by the main runway and its associated imaginary surface. The eastern perimeter may be expanded to include off-base land to accommodate new requirements. The East Side is planned to accommodate a number of functions in the future, although its primary focus is and will be depot-level aircraft repairs/maintenance and upgrades. This area is identified in the Installation Development Plan as the East Side District.

- Group consists of existing facilities directly related to mission functions:
  - Aircraft maintenance buildings
  - Aircraft hangars
  - Aircraft Support Buildings
  - Administrative facilities
  - Warehousing & Storage
- Other building types are also occasionally located in this Group, such as Administration Types and Ancillary Types. These types of buildings shall conform to the standards for their respective buildings, but shall also be sensitive to the adjacent architecture and context.

GROUP 4: FALCON HILL NATIONAL AEROSPACE RESEARCH PARK

In response to the installation's need to replace 1.5 million Square Feet of inadequate facilities, Hill Air Force Base leased 550 acres of land to a private developer as part of the Enhanced Use Leasing (EUL) project known as the Falcon Hill National Aerospace Research Park (Falcon Hill). The Falcon Hill EUL is the first Air Force commercial office and retail EUL. It is also anticipated to be the largest and most financially successful office EUL project in Department of Defense history.

During the development of the EUL site, the existing Air Force tenants in the 1200 zone buildings will remain in place until new facilities can be constructed. Personnel will be relocated into new office space on a building-by-building basis, at which time 1200 zone buildings will be demolished.

New buildings in the Falcon Hill architectural setting of the base shall match materials, glazing & colors of the new privatized multi-story buildings in this area. Although the scale, architecture and style of buildings may vary from the EUL, it is still preferable to match the materials, colors and glazing of the EUL to extent possible. Design may not conform with the compatibility standards for the rest of the base, as much as it needs to reflect the state -of-the-art architecture for commercial design, innovations and sustainability of the EUL. This area is identified in the Installation Development Plan as the EUL District.

- Other Building Types may also occasionally be located in this Group, such as Administrative, Industrial and Ancillary Types. These types of buildings shall conform to the standards for their respective buildings, but shall also be sensitive to the adjacent architecture and context of the Falcon Hill Development.

Group consists of existing and new facilities directly related to mission support functions:

- Primarily administrative buildings

The Falcon Hill Group also includes Historical Residential Buildings.

- Refer to Historical Preservation for requirements related to these buildings.

GROUP 5: UTTR (OASIS COMPOUND)

For the UTTR (Oasis Compound), all new design and construction must comply with the standards set forth for the specific building type required - in general for UTTR - industrial and administrative support.

Group consists of existing and new facilities directly related to mission functions:

- Administrative facilities
- Warehousing
- Munitions Maintenance/storage
- Storage

GROUP 6: LITTLE MOUNTAIN

For Little Mountain, all new design and construction must comply with the standards set forth for the specific building type required - in general for Little Mountain - industrial and administrative support.

Group consists of existing and new facilities directly related to mission functions:

- Administrative facilities
- Warehousing
- Munitions Maintenance/storage
- Storage

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BUILDING TYPES

INDUSTRIAL BUILDINGS:

These are typically large hangar buildings and their support structures, as well as maintenance, missile and munitions facilities. Primarily located in the Industrial setting of the Base and the East Side Development, but could occur anywhere.

- Design will primarily address and reflect the functional aspects of the building, but be smartly attractive in a military fashion.
- These buildings shall be a combination of masonry, metal wall panels or concrete panels. Typically, the administration portion of these type facilities shall be full height masonry. Masonry shall typically be split face CMU, or Atlas jumbo brick or a combination thereof. See Appendix 2 for Conceptual Details.
- Provide masonry wainscots at all buildings at minimum. Wainscots shall be a minimum of 4'-0 height, but otherwise be proportional to the overall height of the building. Wainscots shall typically be splitface CMU.
- Do not use metal panels or concrete panels as the sole material for any structure for this type without ARB approval. In some areas of the Base where a small utility building is required, modular precast concrete buildings (ex. " Easi-set ") may be acceptable, but only with ARB approval and shall be strictly taken into the context of the location.
- Masonry accents such as honed CMU, jumbo brick - stacked bond or soldier course are acceptable. Smooth face CMU is discouraged and may only be used as accent with ARB approval.
- Provide building contrasting accent by way of door and window trim, as well as by roof flashing components - including gutters, downspouts, fascias and soffits, See Appendix 3 for acceptable fascia examples.
- Materials and Colors shall comply with Appendix 1: Materials and Colors.
- Consider using non-reflective, light colored walls and roofs to reduce solar gain.
- Light color roofs are preferred, although, dark may be considered.
- Landscaping - see Appendix 4: Landscape Plants, Materials and Irrigation for types of plants suitable for this area.
- Structure may be steel or concrete for wide span structures.
- Entrance and exterior exit canopies shall be designed to enhance entry/exit and integrate into the building overall architecture. See Appendix 3 for appropriate/ acceptable canopy types.

OFFICE/ADMINISTRATIVE/SUPPORT BUILDINGS:

Primarily located in, but not limited to, the Administration Support setting. Includes Community Facilities such as the commissary, theater, dorms, fitness facilities, chapels, and other such buildings.

- Consider massing, scale and proportions befitting of a human scale.
- Design shall be aesthetic looking, reflect the function of the building, be welcoming and inviting.
- Buildings shall be brick, and/or split-faced CMU or a combination thereof. Use full-height solid masonry.
- Use accents, by way of brick profile coursing (soldier etc.), honed CMU, door and window trim, and glazing; as well as by roof flashing components - including gutters, downspouts, fascias and soffits.
- Concrete wainscots, accents, columns are encouraged for architectural definition of the building.
- Colors shall comply with Appendix 1: Materials and Colors.

Exception: New buildings in the Falcon Hill architectural setting of the base shall match materials, glazing & colors of the new privatized multi-story buildings in this area. Although the scale, architecture and style of buildings may vary from the EUL, it is still preferable to match the materials, colors and glazing of the EUL to extent possible.

- Earth berming (3:1 slope maximum) is encouraged for these buildings, both for aesthetics and energy savings. Refer to Appendix 3 for examples.
- Buildings shall have an aluminum storefront main entry, associated sidelights, air lock vestibule, walk off mat and accompanying canopy.
- Landscaping - see Appendix 4: Landscape Plants, Materials and Irrigation for types of plants suitable for this area.
- Use pathways, canopies, landscape and exterior furnishings to visually reinforce and enhance the entrance to the building.
- Standard bronze or clear anodized aluminum window frame with insulated clear or bronze tinted windows shall be used.
- Daylight shall be maximized in all office buildings.
- Sun control shall be considered as part of the design of the building.
- Roofing and roofline design in this group shall have a higher level of articulation than simply utilitarian. See Appendix 3 for Acceptable vs. Prohibited examples.
- Canopy for the main entry to the building shall be designed and integrated into the overall building architecture to provide a strong sense of entry. See Appendix 3: Acceptable vs. Prohibited Designs.

- Other materials such as metal panel, EIFS, stucco, Trespa or similar shall be considered on a case by case basis. But, the primary palette shall be masonry (split-faced CMU or jumbo brick, or a combination thereof).

STORAGE BUILDINGS

Primarily located in, but not limited to, the Industrial complex setting of the Base.

- Design shall reflect the function of the building, but be smartly attractive in a military fashion.
- These buildings shall be split-faced CMU; metal wall panel siding; tilt-up concrete panels, or a combination thereof.
- CMU Wainscot on metal wall panel buildings shall be minimum of 4'-0 height, but otherwise be proportional to the overall height of the building.
- Provide contrasting building accent by way of doors, windows, louvers and associated trim; as well as by roof flashing components- including gutters, downspouts, fascias and soffits.
- Colors shall comply with Appendix 1: Materials and Colors.
- Landscaping - see Appendix 4: Landscape Plants, Materials and Irrigation for types of plants suitable for this area.

ANCILLARY STRUCTURES

These buildings are located in all Architectural settings of the Base.

These structures include, but are not limited to: pavilions, bus shelters, smoking shelters, small storage buildings, temporary trailers.

- Designs for these structures shall be consistent in color, material, shape, form and proportion – all across the Base in order to provide continuity in the outdoor spaces and reduce visual clutter.
- See Appendix 3: Acceptable vs. Prohibited Designs for good/bad examples of these type structures.
- All proposed ancillary structures shall be reviewed and approved by the Architectural Review Board (ARB) before procurement and installation. Typical procedural approval is through the Base AF 332 review process.

Coordinate the siting of all ancillary structures with each other and adjacent buildings.

- Use non-weathering, corrosion resistant permanent materials.
- Landscape ancillary structures consistent with larger structures.
- Integrate the structure with landscaping, and other site elements.

- Temporary facilities are prohibited unless special approval is granted as specified in Air Force Instruction (AFI) 32-1021 Chapter 6.
- Minimize the use and number of storage buildings, and consolidate in low-visibility areas.
- Colors shall comply with Appendix 1: Materials and Colors.

PAVILIONS

- Locate pavilions centrally among several facilities to create multipurpose use.
- Construct new pavilions with brick columns and low-sloped gable, standing seam metal roofs at high-visibility locations.
- Use manufactured pavilions in low visibility locations with ARB approval only.
- Wood gazebos are not allowed.

PASSENGER WAITING AND SMOKING SHELTERS

- Provide a combination of pre-finished metal, glass and standing seam metal roof.
- Provide glazing front and back to allow for views and wind protection for the user.
- Use brick pavers or scored pavement patterns as accent.

KIOSKS

- Locate kiosks at high public use areas such as shopping areas, housing areas, and recreation areas.
- Design kiosks with metal roofs, brick, wood and precast concrete details compatible with surrounding architecture.

TEMPORARY STRUCTURES

Temporary Structures include trailers or temporary storage spaces – Consult Architectural Review Board (ARB) for temporary structures.

Tuff sheds (or temporary storage – small usually 10’ x 10’) are a frequent occurrence across the Base.

- Tuff sheds shall be designed and detailed in accordance with Appendix 2: Architectural Conceptual Details. No other alternatives shall be acceptable. Also, see Appendix 3 for Acceptable vs. Prohibited Designs.
- Locate temporary structures among several facilities to create multipurpose use.
- All Tuff sheds require ARB approval and shall be submitted for approval through the AF Form 332 on-line system. The ARB should be engaged very early on in the design process with the vendor to insure that Base Architectural Standards are met circumventing needless misunderstandings, delays and unwelcome additional costs at a later date.

HOUSING (DORMITORIES):

Housing dormitories are located in the Administration/ Support setting of the Base.

- These are mid-density buildings that house enlisted personnel.
- Dormitories should include community spaces.
- Designs for these structures shall match dormitory Building #341 in style, detailing, shape & organization.
- This Building Type is considered to be “Architecturally Significant“. See Appendix 5: Architecturally Significant Buildings.
- Carefully consider using forms and proportions to create an inviting structure that relates to the human scale.
- Every unit shall have natural daylight.
- Brick shall be the primary exterior material.
- Provide contrasting building accent by way of doors, windows, louvers and associated trim; as well as by roof flashing components- gutters, downspouts, fascias and soffits.
- Colors shall comply with Appendix 1: Materials and Colors.
- Roofs shall be standing seam metal.
- Landscaping - see Appendix 4: Landscape Plants, Materials and Irrigation for types of plants suitable for this area.

HISTORICAL:

These buildings are located primarily in the Administration/ Support setting of the Base, as well as in the Falcon Hill setting of the Base.

- Designs for these structures shall match the adjoining adjacent structures in style, detailing, shape & form. See Photos this page for typical matching architecture.

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DESIGN STANDARDS

Design standards for buildings and supporting elements are outlined in this section. These standards encourage architectural compatibility using common forms, materials, colors, and architectural details. The goal is to design excellent facilities that satisfy all of these priorities.

- The first priority is to achieve architectural compatibility for Hill Air Force Base as a whole.
- The second priority is compatibility within an architectural setting or Group.
- Outstanding designs for individual buildings or facilities are the third priority.

Hill AFB has a foundation for architectural unity. The existing architecture depicts a predominant materials palette and a consistency of material detailing.

- The following design standards are applicable to the entire installation, to both host and tenant organizations.
- Site planning and site development issues contribute significantly to the architectural context.
- Building setbacks and the scale and definition of space are as fundamental to creating architectural compatibility as consistent fascia designs. Always provide a minimum building setback of 30’-0 from street level access unless dictated otherwise by ATFP standards.
- Develop exterior spaces to promote pedestrian use and activity and to connect buildings and the landscape.
- Use the landscape with other visual elements to create greater continuity.
- Develop a strong relationship between buildings and exterior spaces.
- From parking lots to front entry: Consider a clear pedestrian path, use of delineated pathways, sufficient lighting and accessible routes.
- Providing Pedestrian connections between buildings is also imperative.
- Buildings should be oriented to meet the best solar exposure possible.
- Attention to views, neighboring structures should influence the orientation of the building.

ARCHITECTURALLY SIGNIFICANT BUILDINGS

Buildings of significance require a higher level of design articulation in the exterior look of the building than simply meeting the Base Architectural Design Standards. The Base Architectural Design Standards are required to be met as a minimum baseline. However, the architectural features described in this book are to be combined, articulated, accentuated and taken to a higher level of overall design pronunciation or expression—in order to meet what would be considered to be an "Architecturally Significant Building".

Metal buildings, in and of themselves, are not buildings of significance, nor are simple rectangular buildings with gable roof designs.

Buildings of significance shall be defined by building angles, recesses, roof overhangs, varying roof line and fascia elevations, earth berms, incorporated daylighting, clerestories, large window expanses (floor to ceiling), articulation in varying wall fascia facing materials (split face, smooth face, honed, coursing), use of metal wall panel in selected locations and pronounced major entry with associated landscaping. Not all of the above may be required or necessary, but enough of the above shall be used to make the building befit an "Architecturally Significant Building." See Appendix 5 for examples.

The ARB (Architectural Review Board) shall review all "Architecturally Significant Building" designs at the 35% design review meeting. Submittal requirements shall include the following:

- Site plan showing parking, sidewalks and landscape design intent
- Rendered (colored) exterior elevations—minimum of two sides (front major entry and secondary)
- Bird's eye perspective showing the best overall view of the building typically looking at the main entry area
- Color board—having actual material samples of all proposed exterior facing materials

ANTI-TERRORISM / FORCE PROTECTION

Anti-Terrorism design must be incorporated into and coordinated with the Architectural design of buildings as required. Refer to United Facilities Criteria (UFC) 4-010-

01 and UFC 4-010-02. Contact 75 SFS/SFS/S5X for further information @ 801 777 6155 or 801 777 1868.

BUILDINGS

Achieving compatibility among buildings is essential in creating an Architecture of Community.

- Develop facilities with a common design theme and character to enhance architectural compatibility.
- Unity is the goal, not conformity.
- Observe all horizontal and vertical safety restrictions along the flight line.

Style / Form

- Emphasize horizontal proportions on building elements.
- Use clean, simple, contemporary forms and avoid curves or angular elements in plan.
- Develop a strong relationship between buildings and exterior spaces.
- Articulate building fascias to create areas of shade and shadow. Create shadow lines at overhang and window sills.
- Use masonry detailing as accents in walls combined with sloped roofs and modest eaves.

Scale / Massing

- Reduce the monumental appearance of large structures by developing smaller massing components.
- Combine functions whenever possible to avoid a proliferation of small independent structures.
- Break up the mass of large structures to allow for slope roofs to the maximum extent.
- Lower the apparent height of hangars and warehouses by modulating building elevations with sub-masses, clerestories, openings, material changes, and architectural detailing.
- Avoid large, flat fascias.

Existing Buildings

- Match the existing materials for addition / alteration projects unless a significant change to the exterior envelope is included, or prohibited by SHPO.
- Whenever possible bring existing facilities into compliance.

WALL SYSTEMS

Walls provide the principal details and architectural features for buildings. These contribute significantly to the character of the base. Limit the palette of materials that is to be used and integrate landscape berming when it is appropriate. Consistent use of colors and materials will bind the base together and reduce visual clutter caused by too much diversity.

- Use primarily split face CMU with honed CMU or brick for accent. Brick accent shall be used as a soldier, header, rowlock, sailor or similar brickwork pattern to achieve accent.
- On large facilities such as storage or industrial type facilities use a combination of masonry or concrete and metal wall panels. Simple corrugated metal wall panels may be used only with ARB approval.
- Locate visible vents and louvers as planned design elements; avoid random placement.
- Vents and louvers are to match the color of adjacent surfaces or shall otherwise be Dakota Brown.
- See Appendix 1: Materials and Colors for base standard colors for wall materials.
- See section on Sustainability, especially as related to Air Barriers.

Concrete:

- Concrete can be used as an emphasis on foundation & base of a building.
- Concrete may extend to window sills – especially with the use of bermed walls. See Appendix 3 for acceptable examples.
- Where tilt panel concrete is used as full height walls, use reveals or other textural elements to differentiate the wall.

Brick:

Brick is widely used in Utah.

- A standard running bond brick with standard tooled joints is recommended in most cases. However, a stacked bond is acceptable for accent purposes.
- Provide accent features in the brick with slight reveals in the wall plane surface, or by use of a brick profile (soldier, rowlock etc.)
- Header, rowlock and soldier coursing over openings are encouraged.
- Joint sealants in brick shall match mortar color. When adjacent surfaces are the same color use a darker joint sealant in the same color.

- Efflorescence is unacceptable; designers must apply appropriate attention to detail and specification to avoid efflorescence. Designers shall attempt to:
  - Reduce all soluble alkali sulfates.
  - Use good details to prevent water from entering the masonry.
  - Use good construction practices to eliminate migratory paths for moisture.
  - Refer to Appendix 1 for acceptable brick types and dimensions.

Thin Brick:

- Thin brick may be considered for use with Architectural Review Board(ARB) approval only.
- Thin brick shall be detailed according to Appendix 2: Architectural Conceptual Details.

CMU Block:

- Split-faced, honed and regular faced block are acceptable.
- All CMU shall have an integral water repellent admixture mixed into the manufacture of the CMU.
- Regular face block may only be used as an accent – see Appendix 1: Colors and Materials.
- Provide accent features with slight reveals in the wall plane surface, or by use of bands of color or texture to add scale and proportion to the wall.

Metal Panel:

Insulated metal panel and un-insulated metal panels are permitted on base as follows:

- Insulated metal sandwich panels shall be used on major industrial buildings, such as hangars and major repair facilities. Major facilities are defined as buildings which are occupied daily on a regular basis for the purpose of conducting business, either repair, logistical, administrative or similar.
- Metal panel with batt insulation backup with interior liner panel is acceptable on buildings considered less than “major,” typically industrial buildings not occupied most of the time and located in low visibility areas of the Base. Shall be with ARB approval only.
- See section on Sustainability for Air Barrier requirements.
- Uninsulated metal panels are only acceptable where no interior heating or cooling or otherwise interior environmental control is required - typically storage buildings which are not occupied on a regular basis.

- Proportions, scale, direction of metal panels, etc. shall be discussed and approved by the ARB.
- Exposed fasteners (screws) are not acceptable for either roof or wall panels except by ARB approval only.
- All exposed metals shall be factory finished with a fluoropolymer coating baked on enamel finish—Kynar 500® or equal. Silicone applications are not acceptable.
- Do not use metal panels as the sole material for any structure – refer to Building Types.

Exterior Insulation Finish System (EIFS):

EIFS is not typically preferred as a skin system for buildings on Hill AFB, except with ARB approval. If used, the following materials shall be provided:

- Primer/Sealer: to protect substrates from moisture penetration and to improve the bond between substrate and insulation adhesive.
- Insulation Adhesive: Factory-mixed non-cementitious formulation designed for adhesive attachment of insulation to substrates.
- Molded, (Expanded) Rigid Cellular Polystyrene Board Insulation (EPS)
- Reinforcing Mesh
- Base-Coat Materials: Factory-mixed non-cementitious formulation of polymer emulsion adhesive and inert fillers that is ready to use without adding other materials.
- Primer: EIFS manufacturer's standard factory mixed, elastomeric-polymer primer for preparing base-coat surface for application of finish coat.
- Finish-Coat Materials: Factory-mixed formulation of polymer-emulsion binder, colorfast mineral pigments, and fillers used with stone particles for embedding in finish coat to produce an applied-aggregate finish.
- Provide reveals, control joints (for crack control) and other similar delineation features in EIFS to break up large wall expanses.
- Refer to Appendix 2: Architectural Conceptual Details for specific details for EIFS systems. These details are required to be used for all EIFS systems.

Stucco:

This material in and of itself is not acceptable. Stucco must be used in conjunction with a "system" such as EIFS. See Appendix 2: Architectural Conceptual Details. This system is not a Base Standard and is only authorized with ARB approval.

Architectural Precast Concrete/Glass Fiber Reinforced Concrete (GFRC):

- Precast is appropriate for lintels, sills, belt courses, friezes and earth berm structures.
- Other fascia elements made of precast should be used sparingly, to ensure that brick, CMU and/or metal - as the case may be - remains the prominent material.
- Natural is the standard color for precast concrete.
- Detailed designs and patterns shall be cast into the pieces to create an individual character for a single facility or complex.
- Site-cast components require ARB approval.
- GFRC is an acceptable material system, with ARB approval, including color selection, finish and detailing.

- Proportions, scale, direction of panels shall be discussed and approved by HAFB Project Manager.
- GFRC shall be installed in a rain screen type system.
- Consideration shall be given to detail around windows and doors.

Other Materials

- High performance laminates, such as Trespa, used for exterior cladding may be considered by the ARB on a case by case basis.

Accents / Detailing

- Major facilities in high visibility areas shall demonstrate a greater application of detailing. High visibility areas are the Administrative/Community group, Falcon Hill (EUL) and the Eastside Development.
- Architectural accents such as lintels, sills, belt courses, pilasters, and columns or other contextual details are encouraged to break up flat façades and add visual interest.

Wall Components

- Organize and coordinate placement of all mechanical, electrical, lighting, communication and other building components.
- Integrate vertical components such as downspouts and control joints into the overall organization.
- Do not expose conduits, cables, and piping on walls. Provide Architectural details of how to incorporate these elements into the wall architecture.
- Electrical / communication boxes shall match the wall surface color on which the equipment is mounted.

ROOF SYSTEMS

In Utah it is not uncommon to see pitched roofs as a dominant form of the built environment. The pitch is a result of heavy snow loads and a simple solution to shed such loads. Pitched roofs work well at a certain scale. Architectural roof slopes & shapes shall be discussed very early on in the design process (35% design stage or before) with the HAFB Project Manager and the ARB.

Roof form, material, and color are prominent features and play a significant role in architectural compatibility across the Base Architecture.

Roof submittals shall include calculations for wind uplift and associated fastening details. Roof submittals shall be coordinated for gutter, façade and the roof and demonstrate an integral design/assembly, which in the field shall be executed as a holistic integrated effort.

Roof Configuration:

- In most cases, a membrane roof (2 ply system, typically modified bitumen) shall be provided on any roof slope less than 1:12 on Hill AFB. Metal roof is preferred for any roof slope 3:12 and greater. For roof slopes 3:12 or greater, a " batten " seam shall be acceptable – properly designed and detailed in accordance with NRCA standards and the UFGS guidespec for metal roofs. Roof slopes in between 3:12 and 1:12, shall be metal. However, a structural double locked standing seam (meaning mechanically hand seamed) shall be provided. All roofs, whether membrane or metal, shall be designed in accordance with NRCA standard details at minimum (manufacturer's standard details are acceptable as long as they are similar to NRCA) and in accordance with the applicable UFGS guidespecs – which will include the roof type, metal flashing, exterior carpentry and sealant – all separate sections. SMACNA is also required for all roof designs.
- Gable, cross gable, hip, cross hip, saltbox, shed or low slope roofs or a combination thereof are acceptable for all facility types. All roof configurations, low slope or otherwise, are required to have a defining roof façade and soffit trim to better articulate the building and reduce the utilitarian appearance that characterizes many buildings on Base, especially in the case of metal buildings.
- The standard pre-engineered metal gable and eave trim finish shall be acceptable for large warehouse buildings by ARB approval only. See Appendix 3 for what is considered acceptable and what is considered prohibited for roof fascia & soffit trim.

  See Appendix 2 Standard Conceptual Details for acceptable fascia and soffit trim depictions. This level of detail is especially required in the Administrative/ Support, Eastside Development, Falcon Hill and portions of the Industrial Complex. See Appendix 3 for acceptable eave and rake trim details for metal buildings.
- Typical bituminous built up roofs w/ multiple felt layers and gravel topping are not acceptable.
- Membrane roofs shall not have a slope less than ½ in 12.
- Roofing for large industrial buildings shall be membrane roofing where the roof slope is less than 1:12.
- Refer to latest version of UFC 3-110-03 for further guidance.
- Other SPM (single ply membrane) roofs shall be considered on a case by case with ARB approval.
- All roofing details for all roof systems shall comply with National Contractor's Roofing Association (NRCA) standards.
- Provide screening for rooftop mounted equipment (See Appendix 3: Acceptable vs. Prohibited Design for acceptable configurations)
- Provide fall protection on all sloped roofs
- Divert water away from building entrance and pedestrian walkways.
- Protect entrances and exterior exit doors from falling snow, ice and rain by way of canopies.See Appendix 3 for acceptable designs.
- Provide snow guards at entrances and when sidewalks are next to a building. Snow guards shall be mechanical compression type only. Adhered, or tape-applied, guards are not allowed. No roof penetrations are allowed for snow guards.

Materials and Color

- For metal roofs, 16" wide panels with a 1-1/2" high seam is the Base Standard.
- Roofing color shall be Base Standard (See Appendix 1: Materials and Colors).
- Fascias, and soffits shall match the roof color.
- Roof flashing rake and trim shall match the roof material and color.
- Stepped flashing at the intersection of roofs and walls

shall match roof color.

- Metal roofs less than 3:12 shall be standing seam metal - machine seamed with a mechanical seamer.
- Membrane roofing is preferable for low-sloped roofs.. Refer to building types. A typical 20 year manufacturer warranty + a 2 year installation warranty is required.

Façades, Gutters and Downspouts

- It is preferable to design buildings without the need for gutters and downspouts. Where roofs are designed without gutters and downspouts, water shall be directed away from the building by roof overhangs and landscape river rock at the base of the building perimeter.
- Provide properly proportioned, continuous turn-down standing seam metal fascia or fascia panels for all roofs. See Appendix 2 Standard Details and Appendix 3: Acceptable vs. Prohibited Design for acceptable examples.
- Fascia finish shall match the roof material and color.
- Gutters and downspouts on sloped roofs are required for all areas where roof water would otherwise drop on pedestrian walkways, and entrances regardless of building size.
- Provide calculations for gutter and downspout sizing and associated structural support details. Provide calculations with 35% design submittal.
- For design not requiring gutters and downspouts, provide a minimum of 5'-0" wide river rock all around the perimeter of the building. See Appendix 1 - for examples of acceptable river rock.
- All gutters & downspouts shall be designed in accordance with the Sheet Metal and Air Conditioning Contractors National Association (SMACNA) standards – latest edition.
- Provide heat cable, routed in the gutter and downspout for the entire length.
- Heat tape shall be self-regulating heat cable, and Ultraviolet (UV) stabilized, with a weatherproof outer jacket.
    - Heat cable system shall incorporate a control panel with integral contactors accessible inside the building.
    - The control panel can be activated manually, or with a snow / ice sensor.
    - All systems shall conform to the requirements of Underwriters Laboratories (UL).
    - All systems shall be installed in conformance with Article 426 of the National Electrical Code

Roof Vents, Mechanical Equipment Roof Curbs and Elements

- Minimize, consolidate, and organize roof penetrations on the least visible side of the building.
- Ridge vents are preferred. Louver grilles at gabled end walls are acceptable.

- Polyvinyl Chloride (PVC) pipes and other utility elements shall be screened or finished to match the roof color.
- Use rooftop mechanical units only with ARB approval. When required, minimize the negative visual effects with screening to match the roof color. Mechanical roof pits are not allowed.
- Consider the use of dormer vents to conceal and screen exhaust fans.
- Make mechanical vent sizes and shapes consistent with architectural elements.
- Avoid roof-mounted antennas.
- Mechanical equipment curbs (roof mounted) shall be prefabricated, one piece construction. Seamed curbs with exposed joints are not acceptable.
- See Appendix 3 - Acceptable vs. Prohibited for acceptable options

ENTRANCES

Entrances act as a transitional element from exterior to interior and provide opportunities to create a focal point on a fascia. They establish a user's first impression and delineate the importance of the building by the size and architectural detailing of the entrance structure.

General

- Ensure the building entrance is clearly visible and highlighted as a prominent feature.
- Projected entrance features with gabled or hipped roof forms are preferred.
- Create enclosed vestibules and weather protected transition spaces at entrances.
- Integrate handicapped ramps into designs.
- Integrate indirect lighting at building entrances.

Primary Entrances

- Shall be clearly visible and highlighted as a prominent feature of the building. See Appendix 3: Acceptable vs. Prohibited Designs for examples of acceptable primary entrances. Primary entrances shall be highlighted with lighting and landscaping as well as to provide overhead enclosure for weather protection.
- Locate newspaper, vending machines, and similar elements out of view to avoid visual clutter.

Secondary Entrances

- Reflect subtly the character of the primary entrances, but with lesser detail.
- Recessed entries are acceptable to provide areas of

shade and weather protection.

- See Appendix 3 for Acceptable vs. Prohibited examples.

Service Entrances and Emergency Egress

- Minimize visual impact with proper siting and access.
- Provide unobtrusive service entrances that are physically and visually separated from primary and secondary entrances.
- Integrate egress structures such as stair towers into design.
- Use landscaping and screen walls to screen and separate loading docks.
- Provide gabled canopy protection at all emergency egress door locations. See Appendix 3 for acceptable designs.

Arcades

- These may be used as an extension of the building's entrance with ARB approval only.
- Integrate arcades with the building's form, materials, and detailing.

Drop-offs and Porte-cocheres

- Limit to special, high profile facilities and embellish corresponding amenities, design accents, and landscaping.
- Design as an integral part of the building entrance using the same style, form, and materials.

Handrails and Guard Rails

- Finish railings shall be Base Standard (See Appendix 1: Materials and Colors) typically Dakota Brown, but otherwise shall be stainless steel.
- Integrate handrail designs with the facility design.
- Guard rails shall be horizontal parallel to each other. Picket type guardrails are not acceptable. Coordinate guardrail spacing and compliance with NFPA 101.

Plazas and Courtyards

- The use of plazas and courtyards is encouraged at primary and secondary entries.
- Use concrete surfacing with special joint patterns and/or brick.
- Incorporate landscaping and lighting into the design.

WINDOWS AND DOORS

Windows and doors create a complement in the fascia and must be considered as individual details and for overall arrangement, order, and scale.

Openings

- Use window type, size, placement and mullion pattern to emphasize overall architectural design.
- Ensure a pattern for openings. Random fenestration is not acceptable.
- Set windows back at least 3" from the building fascia.
- Operable windows with screens shall be considered on a case by case basis - consult the ARB for approval.
- Transom windows / elements above doors / windows are encouraged.

Doors and Frames

- Use anodized aluminum storefront systems with thermal-break construction. Provide door sidelights (minimum 2'-0 width) both sides of door at all primary entrances.
- Door, frame, and hardware colors shall match and be Base Standard.
- Limit hollow metal frames to security doors, utility rooms, non-main entry doors and outlying sites.
- All emergency egress and service doors and frames shall be dark or medium bronze. See Appendix 1
- Sealants applied adjacent to windows and doors shall match frame color.

Fabric Hanger Doors

- Hoist up fabric doors with intermediate aluminum beams or trusses.
- Fabric shall be gathered above the head of the opening.
- Maximum wind load deflection of steel structural members of the door shall not exceed the door height in inches divided by 3048 and the door width in inches divided by 3048.
- Maximum wind load deflection of extruded aluminum members of the door shall not exceed the door height in inches divided by 762 and the door width in inches divided by 762.
- Doors shall be fully operable during a wind load from a 60 mph storm or below.

Door Fabric:

- One piece heavy-duty vinyl coated polyester fabric weighing not less than 2.1 oz/square foot to 2.4 oz/square foot, capable of carrying 250 lb/in per panel.
- Impervious and resistant to solvents, fuel, lubricants and other similar fluids commonly found in aircraft maintenance hangars.
- UV stabilized, self-extinguishing (0-75 flame spread), and suitable to withstand temperatures between plus 158 to minus 31 degrees F.
- Use a translucent material in approximately the top 12 feet of the door to allow day lighting of the hangar high bay area. The translucent material shall also meet the same requirements and loadings as the standard door fabric.
- Fabric color shall match hanger building 45 (east & west).
- Fabric shall be pulled tight between the intermediate beams when the door is fully closed and the wind locks engaged.
- Fabric shall have been tested to meet the criteria of ASTM E84 -94 (flame spread - Class A interior wall and ceiling finish) and ASTM D1790 (cold cracking, brittleness and temperature).

Glazing

- Use clear or bronze tinted, dual-pan low-e insulated glass.
- Mirrored and plastic glazing shall not be used.
- Translucent fiberglass insulated panels are acceptable in certain applications where daylighting is desired and views are not required. Centria-Kalwall or equal translucent window systems are acceptable for this type of application. Consult ARB for further architectural color or finish.
- Ribbon windows may be used beneath eaves as an architectural feature.
- Use high sound attenuation for windows near flight line.

Clerestories and Skylights

- Ensure that there is no air leakage or break in insulation.
- Clerestory windows are encouraged to increase natural light and to break up the mass of the fascia.
- Integrate clerestories or low-profile skylights with building design.
- Clerestory windows shall be either glass or translucent insulated panels.
- Refer to LEED® requirements for daylighting.

CANOPIES

- Canopies shall be provided at all main entrance doors, secondary entrances and all exterior exit doors. See Appendix 3 for acceptable designs.
- The main entry shall have a formal canopy that easily identifies it as the main entrance.
- Canopies shall be incorporated as much as possible into the design language of the building.
- If a gabled canopy is used, gutters and downspouts must be adequately positioned to direct water away from the entry and pedestrian paths.
- Provide adequate lighting in the soffit of the canopy.
- Materials and construction should match the language and pallet of the building. (See Appendix 3: Acceptable vs. Prohibited Designs)

SCREENS AND ENCLOSURES

Screens and enclosures help to minimize the visual impact of undesirable features and provide separation and security where necessary. Both architectural and landscape screens – separately and in combination – can be applied to achieve visual continuity throughout the Base.

General

- Where possible, use landscaping, and landscape berming instead of walls, for screening.
- Use landscaping to soften walls, fences, and screen dumpsters.
- Locate utility components in the least visible area with adequate access to minimize the need for screening and enclosures.
- Ensure screens are high enough to conceal equipment, vending machines, and utilities.
- Screen walls and fences shall comply with Anti Terrorism Force Protection standards.

Walls

- Use split face CMU with metal or pre-cast cap units when adjacent to, or within 30 feet of, a building.
- Generally, do not attach screen walls to buildings.
- Do not place screen walls immediately adjacent to roadways or sidewalks where possible.

Fences

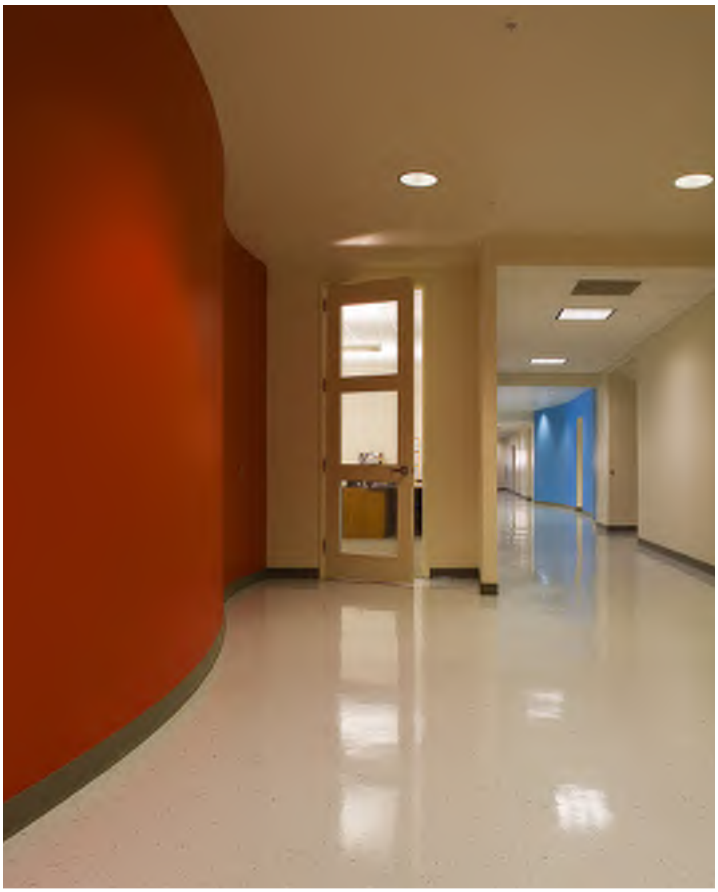
- Fences on Base are a controversial issue because of the need to provide security and at the same time to provide a level of aesthetic in order to achieve good architecture - that of the landscape and or buildings.
- Appendix 3 - Accepted vice Prohibited designs provide the best examples of what to do and what not to do with regard to fences on Base.
- Chain link fence should only be used with ARB approval only. If used, it is required to be vinyl coated - color - black. If barbed wire is required for security purposes, see example detail in Appendix 2 - Architectural Conceptual Details for high visibility areas such as along Wardleigh Drive an similar avenues. For less visibility areas, this requirement may be relaxed, but vinyl coated black is still required nonetheless. In any case, consult ARB for use of chain link fence. anywhere on Base.
- With any kind of fencing on Base, a level of aesthetic should be thoughtfully developed and not as a after thought i.e. - chain link fence.
- In any case, consult ARB early on in the design process with regard to fencing in order to achieve a acceptable solution for the specific project.

Dumpster Enclosures

- Locate dumpsters to minimize visual impact; follow base design standards. (See Appendix 3: Acceptable vs. Prohibited Designs)
- Use splitface CMU with a metal or pre cast concrete cap unit for wall construction.
- In high-visibility locations provide Dakota Brown metal gates to screen dumpsters.
- Provide 6” concrete filled Dakota Brown protective bollards.
- Provide concrete pads and access aprons.
- Include landscaping areas and provisions for pedestrian access.

Force Protection

- Integrate security walls with the building architecture.
- Use a combination of walls, bollards, and tension cables with landscape beds.
- Minimize the visibility of all force protection devices with landscaping and integral designs.



- Use screen walls and defined roadways in selected locations to direct and limit facility access.

INTERIORS

General Performance Requirements

All wall and ceiling finishes must comply with ASTM E84 for Flame Spread Index as follows:

- Class A: Flame spread 0-25; smoke developed 0-450.
- Class B: Flame spread 26-75; smoke developed 0-450.
- Class C: Flame spread 76-200; smoke developed 0-450.

Carpet

Suitable for private offices, open office areas, corridors and conference rooms. Lobby areas will be approved on a case by case basis.

- All carpet tiles shall be composed of Type 6,6 nylon for greater durability.
- Textured loop, multi-level loop or cut and loop pile types are acceptable.
- Multi-directional and linear patterns are acceptable.
- Minimum two colors per tile.
- Solid color carpet tiles are acceptable on a case-by-case basis and in low traffic areas only.

Walk Off Carpet Tile

Suitable for all moderate to heavy traffic entrance vestibules.

- All carpet tiles shall be composed of Type 6,6 or Type 6 nylon for greater durability
- Needle bond is acceptable
- Minimal patterning

Metal Grille Entrance Mat

Suitable for heavy duty use in vestibules that experience the highest traffic loads. For example, frequent deliveries, moving of equipment, etc. to prevent water collection and tracking.

- Recessed grille mat is preferred.
- Surface mounted grille mats are suitable for locations where one or more sides do not abut with wall or need to be easily removed.
- Acceptable insert materials include heavy-duty carpet, corrugated vinyl, abrasive carbide grits and serrated aluminum.

- 400 lb minimum rolling load capacity per wheel.

LVT (Luxury Vinyl Tile)

Suitable for break rooms, kitchens and corridors.

- Tile shall be a Class III, printed film vinyl tile.
- Wearlayer shall have a UV cured urethane, 20 mil minimum wear-layer.
- Glue down installation method only. Loose lay will not be accepted.
- Plank or tile
- Colors and patterns to be approved on a case-by-case basis.

Floor Tiling

Floor tile is standard for restrooms where a sealed concrete floor is not suitable.

- Refer to Tile Council of North America (TCNA) handbook for standards and installation - https://www.tcnatile.com
- Mesh mounted mosaic tile to be used where tile must slope to a drain.
- Stone thresholds are required at all door thresholds where water fixtures are present. Must be ABA-DoD compliant.
- Tile shall be set with a crack isolation membrane and a waterproof membrane to prevent tile damage and cracking.

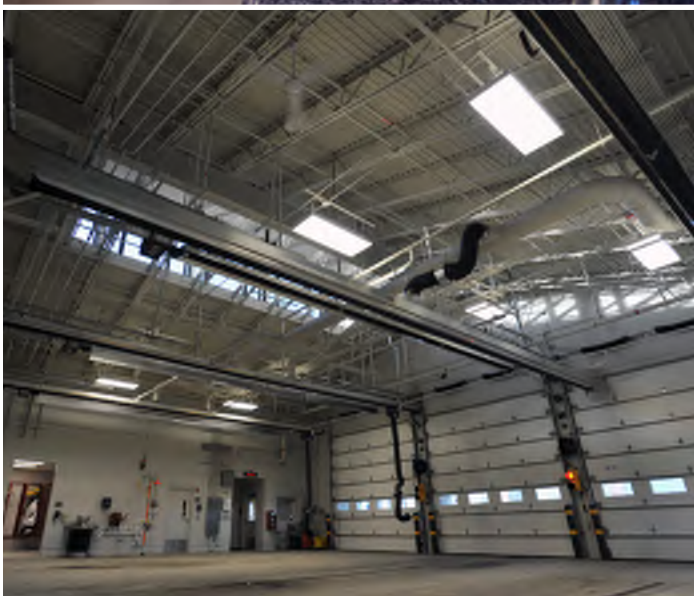
Epoxy Floor Covering

For new construction (i.e. new concrete floors), epoxy is acceptable. In older buildings, where the existing concrete floors are in disrepair, have absorbed numerous oils and stains over the years, where a new finished floor surfacing such as epoxy is called for or required, " Retroplate System " shall be the preferred application - given that most industrial buildings on Base are subject to high traffic forklift, airplane and other heavy industrial wheeled equipment. Provide installer (applicator) certification. Applicator shall have at least 1 year of installation experience.

Wall Tiling

For use in restrooms and as a backsplash in all other areas with a sink.

- Refer to TCNA handbook for standards and installation - https://www.tcnatile.com/
- Ceramic wall tile should be glazed with cushioned edges



- Field tile shall be neutral in color.
- Accent colors and patterns are acceptable and will be approved on a case-by-case basis.
- 5’-0” high minimum wainscot at all restroom walls.
- Sanitary coved base tiles and bullnose tile at the top of a wainscot are the standards.

Wall Coverings

Wall coverings are suitable for use in facilities that require a higher level of finish and will be approved on a case-by-case basis.

- Vinyl wall coverings are the standard.
- Type II – Medium Duty is acceptable in private or open office areas.
- Type III – Heavy Duty is acceptable in corridors and stairways.
- Wall covering to have a stain resistant coating.
- Shall be neutral in color.
- Textures and subtle patterning are preferred.

Interior Paint

- Ceiling: Gloss Level 1 (Flat)
- Gypsum board walls: Gloss level 3 or 4 (Egg-Shell or Satin)
- Paint grade wood trim: Gloss level 5
- VOC content limits—as required by UFGS.

Corner Guards

Suitable for use at all moderate to high traffic areas.

- Stainless steel corner guards are permitted.
- Stainless steel corner guards are required in all industrial facilities.
- Flush mount or snap on at 5’-0” high minimum at all outside corners.
- Shall have a 1- 1/ 2” minimum profile.

Chair Rails

- Suitable for high traffic corridors and will be approved on a case-by-case basis.
- Shall be a surface mounted assembly consisting of a continuous retainer with snap on cover and shock absorbing cushions. End caps shall be fastened with concealed fasteners to match.

Rubber Base

Suitable for all dry areas including, but not limited to, private offices, open office areas, break rooms, conference rooms lobbies and vestibules.

- Acceptable types include Type TS – rubber, vulcanized thermoset, Type TPR – rubber, thermoplastic and Type TV – vinyl, thermoplastic

- Standard profile is a cove base, Group 1
- Base shall be a minimum of 4” high.

Window Treatments

To be used at all exterior windows in administrative and community facilities.

- White vertical vinyl blinds, with 3-1/2” vertical vanes, are the standard for all windows.
- Roller shades may be considered, with ARB approval. If shades are approved and used, the following shall apply:
  - Manual roller shade with chain operator.
  - Motorized window shades are acceptable where height is greater than 8’ and also at skylights.
  - Dual Roller Shades at all skylights and south and west facing windows where extra light and heat control is required. One light filtering fabric (inside) and one light blocking fabric (outside)
  - Single Shades with light filtering fabric at all other exterior windows.
  - Light filtering fabric shall be PVC coated, have between 5% and 7% openness and be a mesh or basket weave construction.
  - Light blocking shade band shall be fiberglass with a vinyl backing.
  - Bottom, or hem bar, to be extruded aluminum. Exposed with endcaps.

Ceiling Tile

Suitable for all administrative areas

- 2’-0” x 2’-0” - square tegular profile with fissured texture (Type XII, Form 2, Pattern E, Fire Class A)
- 2’-0” x 2’-0” tegular is the standard. 2’-0 x 4’-0 scored tegular may be considered for special applications with ARB approval.
- Color to be white.
- Thickness to be 5/8” minimum.

Ceiling Suspension Systems

- 15/16” exposed tee suspension system, color: white is the standard.
- Hot dipped galvanized coating to prevent rusting.
- Baked polyester painted or powder coated; white.

Architectural Cabinets

- Frameless, or Euro Style, with full overlay doors to maximize storage and stainless steel concealed cabinet hinges are the standard.
- Countertops shall have square eased or bullnose edge with a 1” overhang and a 4” backsplash.
- Door and drawer edges shall have PVC edge banding to match drawer / door fronts.
- Conform to AWI standards - http://www.awinet.org/
- Plastic laminate is suitable for use in workrooms, copy rooms and general use.
- Only HPDL (High-Pressure Decorative Laminates) are acceptable.

- Solid surfacing (such as Corian) shall be used at all bathrooms and break room countertops, and window sills.
- Horizontal General purpose Surface (HGS) is produced for both horizontal and vertical interior applications.
- Vertical General Purpose surface (VGP) is intended for vertical applications only.
- No integral solid surface sinks will be permitted.
- Provide continuous lavatory countertops at all bathrooms.
- Quartz agglomerate counters are suitable for use in facilities that require a higher level of finish.

Toilet Partitions

- High density polymer, color-thru phenolic or solid phenolic where color is solid throughout is the standard.
- Stainless steel partitions to be approved on a case-by-case basis for facilities requiring a higher level of durability.
- Painted enamel metal is not allowed.
- Floor and ceiling mount and overhead braced are the preferred installation method in most areas. Ceiling hung is preferred for high traffic restrooms, such as fitness areas and industrial restrooms where cleaning will be more frequent.
- Provide “two ear” continuous stainless steel wall brackets typical.

Urinal Screens

- High density polymer, color-thru phenolic or solid phenolic where color is solid throughout are the standard.
- Stainless steel to be approved on a case-by-case basis for facilities requiring a higher level of finishes.
- Painted metal will not be allowed.
- Provide “two ear” continuous stainless steel wall brackets typical

Toilet Accessories and Fixtures

- All tissue and towel dispensers to be Georgia Pacific.
- Side by side double roll toilet bathroom tissue dispenser shall be Georgia Pacific GP 56783.
- Center pull towel dispenser shall be Georgia Pacific GP 52109.
- All other toilet accessories, soap dispenser, waste receptacles, seat cover dispensers, etc., to be approved on a case-by-case basis.
- Shower controls and shower heads shall be heavy-duty, vandal-proof (prison-like) fixtures. Possible manufacturers are Acom and Willoughby.

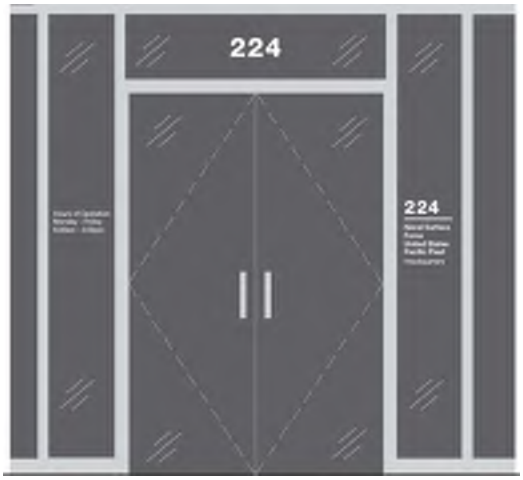
Interior Signage

- Interior Signage shall be as required by UFC 3-120-01.

\2\ Figure 3-13 Building Entrance Sign Layouts. /2/

Figure 3-14 Building-Mounted Entry Sign Placement.

Figure 3-15 Building Identification for Glass Entrances.



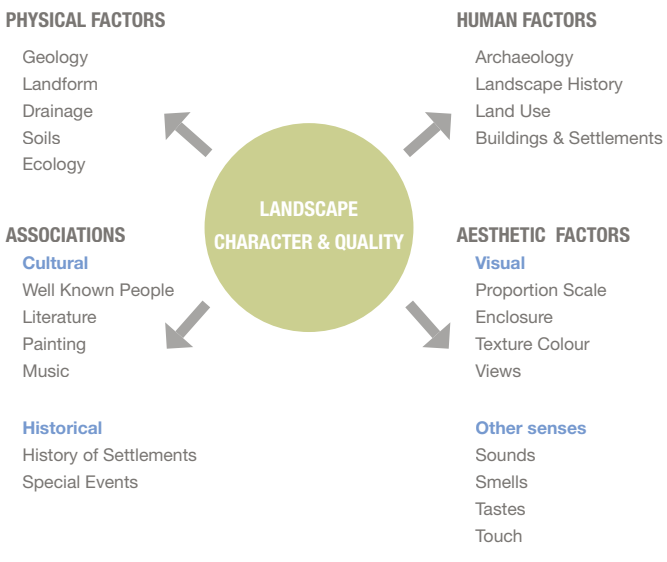
3-3.4 Building-Mounted Identification.

Minimize the use of building identification signs to only high-profile buildings, except where building identification numbers are used. Signs mounted on prominent buildings may include the building name, primary function, and/or building identification number when the facility needs identification from long distances. Building number signs may be used in addition to the primary facility identification sign where required.

3-3.4.1 Materials and Colors.

Individual dimensional letters applied directly to the surface of the wall are discouraged. The preferred fabrication details should include an aluminum sign panel mounted to the building with letterforms applied to the panel. Use the Helvetica Neue 85 Heavy font for typical building identification letters or numbers where required. Provide a dark bronze painted finish for the background of the message panels or other background color that is consistent with the installation standards. The color or finish of the letters should complement the predominant color of the building while providing enough contrast with the background for visibility. Use light-colored letters on dark sign panels and dark-colored letters on light sign panels. Use these standard materials and colors unless there are specific requirements established in the IPS. Minor deviations from these

LANDSCAPING



LANDSCAPING

Use landscaping to enhance facilities and to unify the Base. Organize landscape features to connect individual facilities to walkways, roadways, and open spaces. Landscaping themes include planting treatments, site elements, barriers and screening and open space. These contribute to the environmental and visual quality of Hill AFB. Landscaping shall be used as a buffer between buildings and roads, parking areas and adjacent building. Designs shall strive to maintain uniform building setbacks. Landscape setbacks should be consistent to develop continuity.

- The landscape shall be organized and designed to safely connect individual facilities and distinct Architectural Groups within the Base through the use of sidewalks, roadways, and open space by providing an aesthetic uniformity of design and construction quality. An emphasis shall be given to a desert motif using water resistant plantings.
- Landscaping will emphasize the architectural lines and features of adjacent buildings and areas, and shall be designed to require little or no pruning.
- Landscaping shall be designed with year-around consideration for human comfort.
- All slopes shall be no steeper than 3 to 1. Provide slope protection using recent technology for all slopes.

Shrubs and trees

Use the drought resistant varieties, native or acclimated species. Provide temporary (2-3 years) irrigation system for Xeriscape type plants to facilitate plant establishment. Permanent or semi-permanent irrigation shall incorporate the use of microclimate weather stations, rain and moisture sensors, efficient heads and nozzles, central control, and drip systems.

- Large trees shall be planted with enough space to facilitate growth and trimming, normally 20-feet apart, minimum.
- Tree removal or replacement shall be coordinated with the Natural Resources Manager in 75 CEG CEV. An evaluation of the proposed action shall be analyzed, and a determination made as to the need for removal or replacement and the mitigation requirements for live, dead or dying trees. Consult 75 CEG/CEI in the Environmental Branch to discuss tree removal and replacement @ 801 775 6972.

Lawns

- Where lawn sod is used, it shall be provided with efficient distribution irrigation sprinklers. See Appendix 4 for approved list of acceptable parts. Dry land seeding applications and Hydro seeding may occur in designated locations only with ARB approval.
- Irrigated lawns shall incorporate river-run rock perimeter (minimum 5'-0) to preclude water over spray of sidewalks, pavements and building structures.
- See Appendix 4: Landscape Plants, Materials and Irrigation for grass types.

Restoration of Native Ground Cover

- All native ground cover that is disturbed by construction and not scheduled for landscaping shall be re-landscaped with like plant materials to match the pre-existing.
- Reseed with drought resistant grasses and legumes.
- Mixtures of dry land alfalfa, fairway crested wheat grass and Indian rice grass shall be used in good sandy, loam soils.
- Use sand drop seed with fairway crested wheat grass in gravely soil.
- Hydro seeding should be used only with ARB approval. This native ground cover seeding should take place in spring and fall only. Provide temporary sprinkler system for hydro-seed applications in order to establish the grass.
- For MAMS and airfield areas, use "Airfield" mix to prevent Bird Aircraft Strike Hazard (BASH) conditions. Refer to Base Design Standards - section 4.15 Landscaping.

Maintenance

- Establish a maintenance program.
- Use only approved planting materials as specified in Appendix 4: Landscape: Plants, Materials and Irrigation.
- Allow shrubs to mass naturally and avoid ornamental pruning.
- Use organic or mineral mulch at a minimum depth of 3" over a 5 oz. non-woven drainage filter fabric to increase moisture retention and control weed growth.
- In special applications such as high visibility buildings, the use of rock mulch (see Appendix 1 for typical) may be preferred over bark mulch for planter bed areas where there are no trees, Consult the ARB for use of rock mulch.
- Provide sprinkler systems in planting areas.

Edging

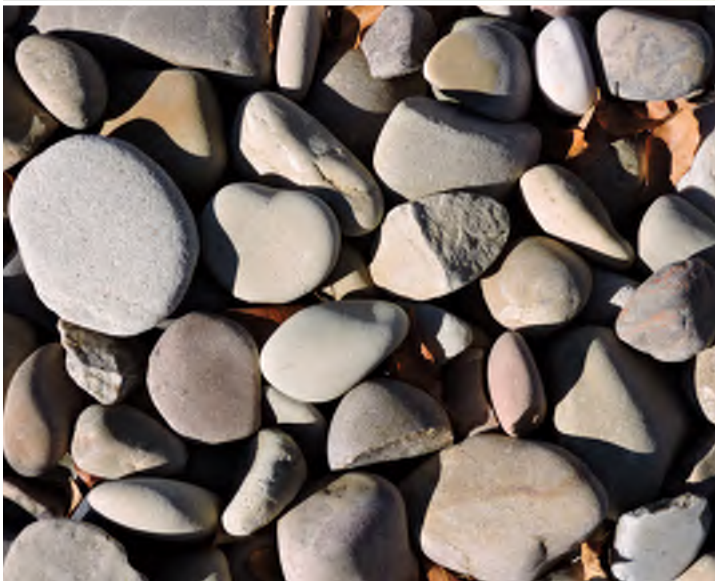
- Provide metal edging at planting beds as the standard.
- Raised planting beds constructed of concrete or splitface CMU/brick may be used in pedestrian areas.

Landscape Screens

- Where possible, use landscaping and berming instead of walls for screening.
- Reduce the negative visual impacts of parking areas and unsightly features with landscape screening – combined with landscape berming.
- Use a three-tier landscaped screen that combines ground covers, shrubs, and small trees. (See Appendix 4)

Roadways

- Primary roadways use same species, deciduous and coniferous street trees equally spaced to coordinate with light standards.
- Secondary and access roadways use a more random spacing of mixed species in clusters and / or groupings at focal points.
  - Plant street trees on the building side of sidewalks.



Parking Areas

- Reduce the visual impact of large parking areas with landscape buffers, berming, and parking islands.
- Use street trees in medians and islands to create shade and interest.
- Fill in between trees with low shrubs, flowers, and ground covers. Allow areas for pedestrian cross circulation.
- Use shrubs in groupings around the perimeter of parking areas to soften views from the street.
- Avoid the use of hedges outlining parking areas.
- Use shrubs and landscaped berms to soften the impact of parking areas.

Facility

- Use landscaping elements that complement building architectural features and proportions.
- Provide a soft transition from the horizontal ground plane to the plane of the building.
- Highlight building entries and architectural features and screen unattractive building features such as utility risers or service areas.
- Mix evergreen and deciduous palette of shrubs for seasonal interest.
- Design randomly spaced plantings and tree massing to fill areas between facilities.

Open Spaces

Open spaces are spaces adjacent around buildings & associated structures as well lawns, recreation areas, parade grounds and vacant spaces. Typically, spaces around buildings shall be attractively xeriscaped - meaning a mix of hardscape (river rock) and xeriscape type plants - see Appendix 4. Grass or turf areas around buildings shall be kept to a absolute minimum or with ARB approval only. Any turf areas around buildings shall typically be sod and provided with an automatic underground sprinkler system. Any areas/spaces which receive hydroseed shall also be provided with an underground irrigation drip or sprinkler system to insure the establishment of the grass. Provide an underground drip system for xeriscape plants to insure the establishment of the xeriscape plants. Consult the ARB for parade ground, recreation type areas for extent and type of turfgrass application requirements. For Airfield, consult the Environmental Branch, 75 CEG/CEI @ 801 775 6972.

- Use turf for all recreation areas, parade grounds and lawn areas adjacent to buildings.
- Create undeveloped natural areas using native grasses.
- Incorporate maintenance-free ground cover materials in areas of steep slope or areas that are difficult to maintain.

Sustainable Landscaping

Xeriscape landscaping shall be the primary comprehensive approach to landscaping for water conservation and pollution prevention for all installation building and landscape projects.

- Xeriscape uses native, naturally occurring plant material in the landscape design to convey a sense of regional context while embracing sustainable landscape design and preservation of native and endangered species.
- Native plants require less irrigation.
- The xeriscape methodology is relevant to planning and design, soil analysis, selection of suitable plants, practical turf areas, efficient irrigation, use of mulches, and appropriate maintenance choices.
- Passive solar cooling methods shall be considered, such as deciduous tree shading on the east, south and west exposures.
- Drought tolerant, acclimated ornamental shrubs, or native shrubs and trees should be used to the maximum extent possible, with appropriate spacing to allow for growth and maintenance, and reduce overcrowding and disease.

See Appendix 4: Landscape Plants, Materials and Irrigation, for suitable xeriscape plants.

River Rock:

See Appendix 1 - for examples of acceptable river rock. River rock shall be 4” +/- diameter - well rounded, smooth and with a gradation of earth tone colors. Fractured stone is not acceptable. The river rock shall be thoroughly washed (free of dirt & debris) before placement. Provide weed fabric under all river rock. Fabric shall be a minimum weight of 5 oz. per square yard with a minimum thickness of 20 mils with a 20 year minimum guarantee.

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WALKWAYS AND PATHS

Develop a consistent pedestrian circulation system of walkways and paths to enhance the community. Connect passenger waiting shelters, outdoor plazas, parks, and other pedestrian gathering sites into the overall circulation network.

Sidewalks

- Provide walkways a minimum of 4'-0" feet wide along all primary, secondary, and access roadways.
- Maintain a minimum 3-foot wide landscaped parkway between curb and sidewalk.
- Provide curvilinear walks for dormitory and housing areas.
- Size sidewalks appropriately for the visual scale of the facility and the amount of pedestrian traffic volume.
- Use natural colored concrete with a broom finish and troweled edges.

Crosswalks and Ramps

- Ensure that all paths lead to the safest crossing point possible, and cross roadways at 90-degree angles.
- Incorporate ABA-DoD accessible curb ramps and crosswalk markings into all crosswalks.
- Crosswalks should be designated with striping.
- Construct all concrete curb ramps with a waffle stamp pattern and flared curb ramps.
- Provide for adequate drainage away from the ramp or by drainage grates.

Recreation Trails

- Provide a minimum 6-foot paved width in a free form configuration that follows the contours or other natural features.
- Separate the trail system from vehicular traffic by a minimum of 10 feet.
- Take advantage of natural environments such as the natural wildlife area.
- Incorporate activity generators, interpretive signs, and recreation opportunities.
- Provide a 5-foot by 10-foot paved rest area approximately every mile. Include a bench and litter receptacle at each location.

- Use asphaltic concrete for the trail system. In highly natural settings use compacted, crushed fines.

Plazas and Courtyard Paving

- Use standard brick pavers or colored concrete as a unifying theme for plazas and courtyard paving.
- Concrete may be stamped to accent the design.
- Use manufacturer standard patterns for concrete pavers.
- Brick pavers shall be earthtone colors

ROADS

Develop the transportation network to provide a consistent experience throughout the Base. An organized system of primary, secondary, and tertiary arteries must provide sequential order with each hierarchy of roadway being designed consistently.

Primary

- Primary roadways are developed as boulevards and contain two lanes of traffic in each direction often with planted medians.
- Minimize stops and turns, and eliminate on-street parking.
- Parking and service access curb cuts are discouraged.
- Keep parking areas and buildings away from the road edge.

Secondary

- Secondary roadways are feeder streets from access roads to primary roads.
- On-street parking is discouraged.
- Keep off-street parking areas away from the road edge.
- Minimize the number of curb cuts from driveways and area entrances.

Tertiary

- Tertiary roadways are the narrowest and slowest public streets and provide access to individual sites or parking areas.
- On-street parking and curb-cuts for driveways, parking lot entrances, and services drive entrances are allowed.
- Maintain capability for large vehicles such as fire trucks and moving vans.

Service Drives

- Service drives provide access for service vehicles to certain parts of a building or site.
- Combine service drives for several facilities where possible.
- Sidewalks can double as service drives; size and design accordingly.
- Maintain a setback between the building and service drive.
- Minimize the visual impact of service drives through correct placement of drives and landscape screening.

Paving

- Use asphalt paving for all primary, secondary, and access roadways.
- Use concrete paving in loading areas, dumpster enclosures, and sites used by heavy vehicles.
- Gravel surfacing may be used on patrol roads and outlying sites only.
- Incorporate a concrete apron where gravel roads meet paved roads.
- All patching shall match adjacent materials.

PARKING

Develop functional lots with clear circulation and a positive appearance that complements the facility. Provide a pleasant transition from the parking area to the facility. Comply with Anti-Terrorism Force Protection Standards for parking.

General

- Reduce large parking areas with landscaped islands and planting strips.
- Combine parking areas for adjacent facilities.
- Parking layout must address accessibility, maintenance, snow removal, and safety issues.
- Avoid parking directly in front of primary building entrances.
- Provide spacing between parking lots and buildings in compliance with force protection standards.
- Avoid parking on roads or within 40 feet of an intersection.
- Use the 90-degree parking configuration when possible.
- Provide 4” wide white striping for all pavement markings.

Medians and Islands

- Provide planting medians for every four rows of vehicles. Coordinate with snow removal operations.

- Coordinate layout for light poles with the islands and minimize their number to provide the required illumination.
- Provide designated areas for pedestrian cross traffic.

Reserved Parking

- Minimize number of reserved spaces.
- Designate spaces by rank or title with curb-mounted signs.

Paving

- Asphalt paving is the standard.
- Use concrete where required for heavy vehicles, motorcycle parking, and where fuel spills may occur.

Curb and Gutter

- Provide 6” concrete curbs and gutters for parking areas. Otherwise comply with ATFP requirements.
- Asphalt curbs, wood timbers, and precast wheel stops are prohibited.
  - Do not paint concrete curbs.

SIGNS

Signs are an important and positive element in the overall Base appearance. Their purpose is to clearly communicate necessary or helpful information for directions, identification, and customer service without adding visual clutter. Comply with UFC 3-120-01 for all signs.

General

- Use concise, clear signing in accordance with UFC 3-120-01.
- Minimize the number of signs used for each facility.
- Signs must be consistent in style, placement, color, and language.
- Avoid mottoes, super graphics, or individual titles on buildings or identification signs.

Color

- Comply with UFC 3-120-01
- Use dark brown square metal posts.
- Finish back of sign and fastening devices dark brown.

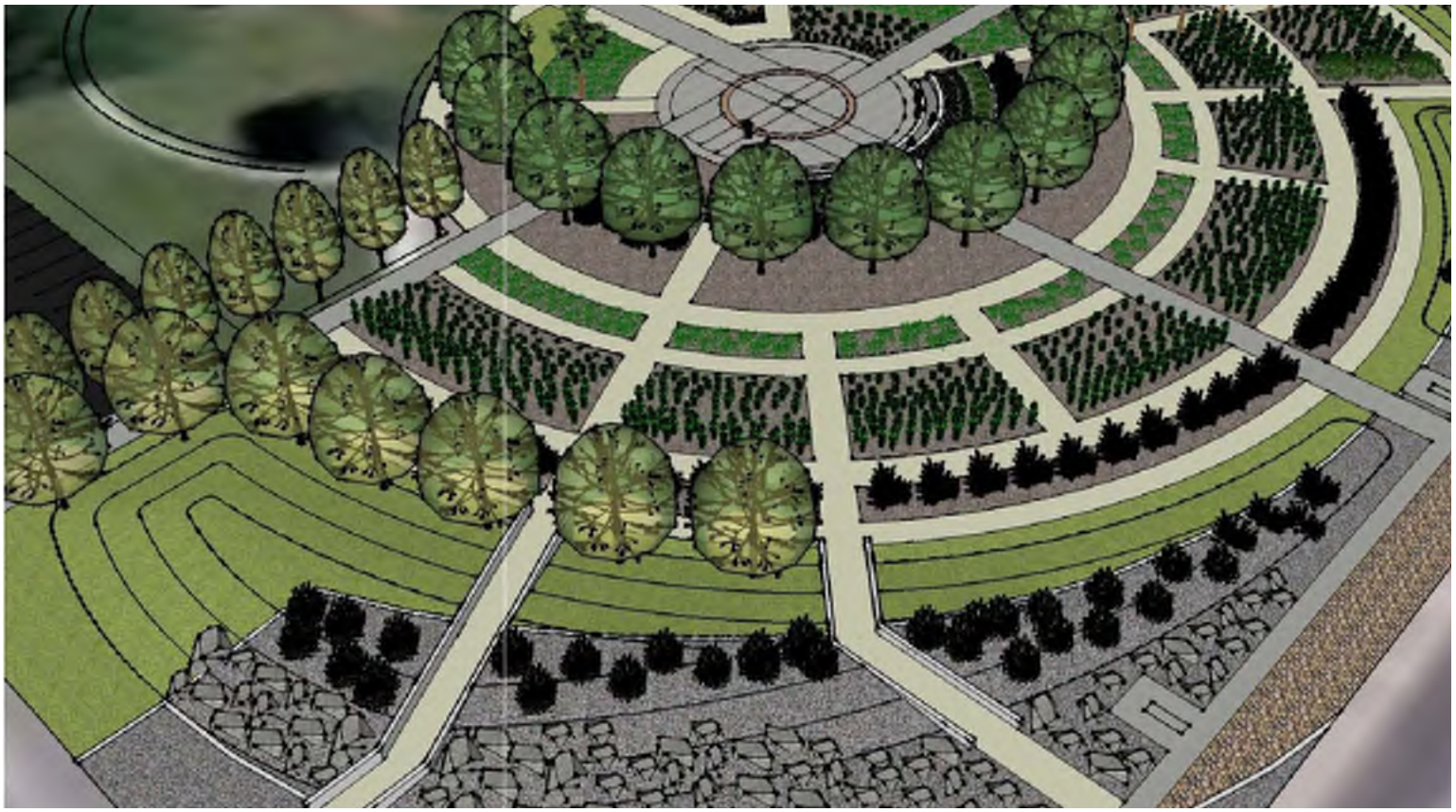

Figure 3-4 Primary Installation and Gate Sign Layout Details.

Figure 3-5 Primary Joint Installation and Gate Identification Signs.

The appropriate sign type required is based upon the importance of the building or tenant identification required. Place primary identification signs as close as possible to the building entrance and perpendicular to the roadway to permit viewing by traffic moving in both directions. If the building is set back from the roadway and is not visible or is only partially visible from the roadway, place the sign next to the entrance driveway and on the side of the driveway closest to the building. Provide one sign for each building unless additional signs are required due to unique site conditions. Consider intersection sight distances provided in AASHTO *A Policy on Geometric Design of Highways and Streets* (Green Book), in addition to the lateral offsets included in the MUTCD.

Figure 3-10 Freestanding Building Identification Signs.

general specifications are permitted where needed to align with installation-specific standards and pre-existing sign programs.

3-3.4.2 Placement.

Building-mounted identification signs should be coordinated and compatible with the buildings design and applied consistently across the installation. They are often most effective near the main building entrance or on a covered drop-off canopy. Signage may be required on the back or side of the building to provide better visibility and wayfinding cues for visitors or customers. The installation engineer should select the most appropriate solutions for the architectural style of the buildings and apply them consistently.

3-3.5 Commercial Signs.

Many commercial entities on military installations have standard image symbols or unique logos that may be used to provide identifiable images and/or wording that is easily recognizable to potential users. Commercial organizations, such as the base exchange, Defense Commissary Agency (DeCA) stores, and restaurants may display their registered trademark logos. The size, placement, and material composition of these signs must be consistent with installation-specific standards. The use of neon signs is prohibited.

3-3.6 Centralized Facilities Freestanding Identification Signs.

Centralized facilities signs may be designed to address multiple buildings or services that use a common roadway entrance or parking area. Set the sign to permit viewing by traffic moving in both directions. The size, placement, and material composition of these signs must be consistent with installation-specific standards. See Figure 3-16.

Figure 3-16 Centralized Facilities Freestanding Identification Signs.

Facility Identification Signs

- Limit the use of monument signs to entry gates, headquarters buildings, housing neighborhoods, and special use areas / facilities with ARB approval.
- Limit the use of mottoes, individual titles, or insignia.
- Incorporate landscaping, accent lighting, and / or paving.
- Facility identification signs with street addresses are generally free standing and not applied to facility fascias.
- Display facility numbers in one location - at the back or side corner of buildings, coordinated with architectural features.
- Building-mounted signs or individual letters with corporate logos are allowed for commercial facility signs only with ARB approval.
- Comply with UFC 3-120-01.
- Size of signs for large buildings (hangars, etc.) will be considered on a case-by-case basis.

Direction Signs

- Use to identify highly frequented or special interest destinations and street names.
- Comply with UFC 3-120-01.

Regulation Signs

- Use for traffic control, parking, and Base warnings.
- Traffic control signs must follow the Manual on Uniform Traffic Control Devices administered by the Federal Highway Administration for color and display requirements.

LANDSCAPE SITE FURNISHINGS

The common use and style of site amenities will further unify the Base, providing a recognizable theme of continuity throughout. Reflect the Base Wide Standard regardless of where site furnishings are placed.

General

Provide landscape site furnishings to blend in with surrounding building materials, adjoining landscape & similar features. Consult with the ARB to establish parameters appropriate to each design.

Seating / Benches

- Provide seating along walkways, near building entries, and in courtyards and plazas.
- Place benches within a paved area.

Litter / Ash Receptacles

- Place surface-mounted or portable litter and ash receptacles at building entrances, pathways, outdoor seating, and picnic areas.
- Locate these to be functional, yet visually unobtrusive.

Planters

- Minimize the use of freestanding planters.
- When used, locate planters in conjunction with other exterior elements and in compliance with Anti-Terrorism Force Protection requirements.

Bike Racks

- Provide bicycle-parking areas for applicable facilities. Combine areas for densely sited buildings.
- Place bike racks on concrete pads in accessible locations near established bike routes and near secondary building entrances.
- Increase the numbers of available bike racks in residential and recreational areas.
- Screen bicycle parking areas with landscaping or screen walls.
- Align bollards at sites having multiple racks.

Barbecue Grills

- Limit built-in grills to recreational areas, dormitories, and fire stations.
- Use materials that complement adjacent facilities.
- Placement and design of built-in grills must be approved by the ARB.

Picnic Tables

- Use factory finished, recycled plastic picnic tables with metal frames.
- Provide mid-morning to late afternoon shade for all picnic tables.
- Limit tables to outdoor picnic or dining areas; and group to allow for large parties or individual family outings.

Bollards

- Use bollards to protect buildings, equipment, and people from vehicle impact and to restrict access.
- Where called for, provide a 6-inch diameter, 42” high concrete-filled, rounded top steel pipe bollard at building corners and overhead door locations, typical.
- For bollards protecting equipment or buildings from vehicle damage, paint dark bronze.
- Use reflective beads in paint on bollards used in auto traffic areas.
- All bollards shall have 3” wide yellow reflective tape, 2” down from the top. Provide two rows of reflective tape spaced 3” apart.
- Provide sealant with backer rod at the base. Slope concrete slab around bollard up to sealant.

Tree Grates

- Use natural cast iron tree grates at all formal plazas and courtyards set into concrete paving. Accent with brick pavers.

Playground Equipment

- Provide consistent-style pre-manufactured play equipment at parks, family housing areas, child development centers, community centers, and recreational areas.
- Place equipment with safe ground surfacing, benches, litter receptacles, and landscaping for shade.
- Provide adequate pedestrian circulation paths to play areas.

Flag Poles

- Shall be used only with ARB approval.
  - Use a brushed aluminum pole, mounted on a concrete base.
  - Create a sense of place at flag pole locations with landscape or plaza design.

LIGHTING

Exterior lighting is a system that directly impacts the visual qualities of the Base. By day, the fixtures and poles add visual character and rhythm to the streetscape. By night these amenities contribute to the perception of safety and comfort. Use common components throughout the base.

General

- Exterior light fixtures shall be standardized on all buildings.

- Building canopies shall be illuminated with recessed, lensed, LED luminaires, or, architecturally compatible ornamental wall sconces mounted to structural columns.
- Metal halide, halogen, with ARB approval.
- Building perimeters shall be illuminated with architecturally compatible, full cut off wall sconces.
- Use underground utility service to all site lighting fixtures.
- All luminaires shall be full cutoff type. Light trespass shall be minimized, especially in residential areas. Up-lighting shall not be used.
- All exterior lighting shall comply with UFC 3-530-0, unless contrary to Hill Air Force Base specific standards listed here.
- LED lighting that qualifies for Rocky Mountain Power incentives are found in the "Design Lighting Consortium (DLC)" list—www.designlights.com.

Streets

- Street lighting shall be 4000 Kelvin, LED. Lights shall have photocell control.
- Light pole, arm, and fixture shall withstand winds up to 100 mph with a 1.3 gust factor.
- Light fixture type shall be die cast aluminum horizontal type or "cobra head".
- Power to lights is typically 480 volts but power source at each location needs to be verified.
- Light poles will be 30-feet tall, tapered aluminum, with 6-foot aluminum arm, bronze anodized.
- Pole will have access hand hole within 2 feet of base.
- Poles shall be mounted to a round, 24" diameter concrete base with 4" above grade for a mow strip.
- Pole located on roadways with a speed limit over 40 mph shall be provided with a breakaway base.

Parking Areas

- Parking lot lights and fixtures shall be 4000 Kelvin, LED mounted on 30-foot poles.
- Lower poles will be acceptable at entry areas and drop off zones near buildings.
- Lights shall have photocell control.
- Light pole, arm, and fixtures shall withstand winds up to 100 mph with a 1.3 gust factor.
- Poles shall be tapered aluminum, bronze anodized.
- Pole height and fixture type will be determined by area and lighting study specific to the project.
- Power source will be determined for each location.
- Pole will have access hand hole within 2-feet of base.
- Poles shall be mounted to a round, 24" diameter concrete base with 30" above grade for protection of the pole from vehicular damage.
- Pole locations shall be coordinated with planter areas, asphalt striping and vegetation.

Walkways and Paths

- Exterior walkway lighting shall have an LED color temperature of 4000 Kelvin.
- Lights shall be bollard type with indirect lighting. The bollard shall be approximately 42-inches tall and about 7-inches square or round. Bollard will be painted Dakota Brown or Bronze anodized aluminum.
- Optical assembly will provide symmetrical distribution.
- The walkway light will have a remotely located photocell control. Bollards shall be mounted to a 4" height minimum, concrete base.
- Equally space light fixtures for sidewalks on same side of walk.

Mounting Heights

- Control spillover light near residential areas by locating, shielding and aiming fixtures adequately on site.
- Keep mounting heights low and consistent. Any lights mounted over 30 feet high require special review by the ARB.

Architectural and Accent

- Historical light fixtures shall be maintained on all historical buildings.
- Incorporate recessed, wall-mounted luminaries to wash light across plaza, paving, and stairs.
- Minimize and integrate into the building design the use of building mounted fixtures for general illumination of service yards and outdoor spaces.
- Provide architectural uplight landscaping, and building entrance features to emphasize importance and hierarchy.

UTILITIES

Use consistent utility components and place electrical services and building feeds underground to reduce overhead visual clutter.

Utility Lines

- Place all utility lines underground, where possible.
- Minimize, or eliminate pavement cuts to install utilities.

Utility Structures

- Avoid free standing utility structures where possible.
- Use underground vaults for equipment where possible.
- Locate pad-mounted equipment in less visible areas and screen with landscaping or screen walls. (See Appendix 3: Acceptable vs. Prohibited Designs)

Fire Hydrants

- Locate fire hydrants at least 5 feet away from other structures. Maintain a 30-inch clear area. Otherwise comply with NFPA 291.
- Hydrant bonnets (meaning tops) shall be painted red for those hydrants on the high pressure loop. The remainder of the hydrant shall be painted Dakota Brown. Otherwise, comply with NFPA 291 for " bonnet" color coordination.

Utility Components

- Carefully place and organize equipment and services.
- Locate mechanical equipment on the least public side of the building.
- Screen mechanical equipment with landscaping materials or screen walls.
- Minimize the use of all externally attached meters and control devices. If used, paint to match the wall color.
- Exterior surface-mounted utility conduits, lines, or equipment are NOT allowed (except meters and control devices). See Appendix 3: Acceptable vs. Prohibited Designs.

Communications

- Collocate coaxial and telephone exterior components and entry points.
- Align all communication components with one another on the horizontal and vertical plane.

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SUSTAINABILITY

SUSTAINABILITY

Sustainability is based on a simple principle: Everything that we need for our survival and well-being depends, either directly or indirectly, on our natural environment. Sustainability creates and maintains the conditions under which humans and nature can exist in productive harmony, that permit fulfilling the social, economic and other requirements of present and future generations. Sustainability is important to making sure that we have and will continue to have, the water, materials, and resources to protect human health and our environment.

Studies have proven that sustainable buildings create a more productive environment. Use of daylight, views, and fresh air demonstrate significantly better work conditions. Sustainable buildings also provide for lower utility bills and lower cost of operations. Orienting a building correctly can help with existing natural site conditions such as view and light. Simple uses of sunshading devices can control the amount of direct sunlight that penetrates the building.

USAF Sustainability Policy: All new projects will register for Guiding Principles Compliance (GPC) certification with either the US Green Building Council (USGBC) or Green Building Initiative (GBI). All USAF projects must meet the requirements of UFC 1-200-2, High Performance and Sustainable Building Requirements.

GPC certification is required for the following:

- All new buildings larger than 5,000 sf with construction budgets greater than $3 million.
- All renovations to an existing building greater than 5000 sf, construction costs greater than $3 million, and greater than 50% ERC.

AIR BARRIERS

Sustainable buildings include a tight, well-insulated skin. Proper location of air barriers, vapor barriers and insulation must be considered. Dew point calculations are required to prove proper locations of vapor barriers.

To prevent the uncontrolled formation of condensation within the wall cavity which can lead to increased energy use and to keep materials dry enough to reduce the risk of microbial growth or sick building syndrome or both, design and install a continuous air barrier that is contiguous over the entire building envelope.

1. Carefully design joints and fenestration interfaces.
2. If there is a potential of condensation on the room side of the air barrier, consider using closed cell foam (2.0 lbs/ft2 or greater) or closed cell rigid insulation for the room side insulation.
3. To reduce cooling loads and provide superior air barrier, consider using concrete (precast or tilt-up) or concrete masonry unit (fully grouted or sealed).
4. In vestibules, use temperature controls only to prevent the freezing of fire sprinkler system (if used).
5. Specify fenestration products that have superior air infiltration ratings.
6. Consider self-adhere air barriers (if used) over other types.

The following proposed design strategies shall be used as energy strategies for the building envelope.

- Improve the building envelope performance according to the table below, the Percent Energy Cost Savings should be from 5% to 10% of baseline design.
- The Baseline Design is based on ASHRAE 90.1-2010 requirements (Utah Energy Codes), except for infiltration which is based on Pacific Northwest National Laboratory, PNNL-18898: Infiltration Modeling Guidelines for Commercial Building Energy \ Analysis.
- The Proposed Design is based on ASHRAE Advanced Energy Design Guides with the following exceptions:
  - Skylight performance values are from Firestone's product data
  - Infiltration rate is reduced by 30%

ITEM	BASELINE DESIGN	PROPOSED DESIGN
Architecture		
Exterior Walls		
U-factor (Btu / h * ft^2 * °F) and/or R-value (h * ft^2 * °F / Btu)	ASHRAE 90.1 Requirements Nonresidential; Walls, Above-Grade, Steel-Framed R-13+R-7.5 c.i.	Advanced Energy Design Guide for Small to Medium Office Building Nonresidential; Walls, Above-Grade, Steel-Framed R-13+R-15.6 c.i.
U-factor (Btu / h * ft^2 * °F) and/or R-value (h * ft^2 * °F / Btu)	ASHRAE 90.1 Requirements Nonresidential; Walls, Above-Grade, Metal Building R-13+R-5.6 c.i.	Advanced Energy Design Guide for Medium and Big Box Retail Nonresidential; Walls, Above-Grade, Metal Building R-19 c.i.
Roof		
U-factor (Btu / h * ft^2 * °F) and/or R-value (h * ft^2 * °F / Btu)	ASHRAE 90.1 Requirements Nonresidential; Roofs, Insulation entirely above deck R-20 c.i.	Advanced Energy Design Guide for Small to Medium Office Building Nonresidential; Roofs, Insulation entirely above deck R-30 c.i.
U-factor (Btu / h * ft^2 * °F) and/or R-value (h * ft^2 * °F / Btu)	ASHRAE 90.1 Requirements Nonresidential; Roofs, Metal Building R-13 + R-13	Advanced Energy Design Guide for Medium and Big Box Retail Nonresidential; Roofs, Metal Building R-19 (between the perlins) + R-11 c.i. (over the top perlins)
Windows		
U-factor (Btu / h * ft^2 * °F) SHGC (all)	ASHRAE 90.1 Requirements Nonresidential; Vertical Glazing (curtainwall/ storefront) U-0.45 + SHGC-0.40	Advanced Energy Design Guide for Small to Medium Office Building Nonresidential; Vertical Glazing (curtainwall/storefront) U-0.39 + SHGC-0.38
Visible transmittance	Non-Rated	Advanced Energy Design Guide for Small to Medium VT/SHGC=1.10 Exterior Shading: PF-0.5 on E, W, S, Fascia
Skylight		
Dimensions	Skylight with curb, plastic 2.1%-5%	Skylight with curb, plastic 2.1%-5%
Glass-Type and Frame U-factor (Btu / h * ft^2 * °F) SHGC (all) Visible transmittance	ASHRAE 90.1 Requirements U-1.1 + SHGC-0.62 VLT (Non-Rated)	U-0.64 + SHGC-0.45 + VLT-0.62
Foundation		
Foundation Type	Slab-on-grade Floors (unheated)	Slab-on-grade Floors (unheated)
Thermal properties for ground level floor U-factor (Btu / h * ft^2 * °F) and/or R-value (h* ft^2 * °F / Btu)	ASHRAE 90.1 Requirements Nonresidential; Slab-on-Grade Floors, unheated Non-Rated	Advanced Energy Design Guide for Small to Medium Office Building Nonresidential; Slab-on-Grade Floors, unheated R-15 for 24 inches
Air Barrier System		
Infiltration	PNNL-18898: Infiltration Modeling Guidelines for Commercial Building Energy Analysis Peak: 0.2016 cfm/sf (when fans turn off) Off Peak: 25% of peak infiltration rate (when fans turn on)	Peak: 0.14 cfm/sf (when fans turn off) Off Peak: 25% of peak infiltration rate (when fans turn on)

HISTORICAL PRESERVATION

Hill AFB and the Air Force Material Command comply with all federal legislation pertaining to the preservation of historic facilities. Careful coordination between the Base and the State Historic Preservation Officer (SHPO) is essential.

All facilities 50 years of age or older must be considered as candidates for the National Register of Historic Places. Hill AFB has approximately 400 facilities being considered. Of these buildings, Area 1100 provides the best collective examples of historic preservation. A current list of these buildings is available through EMC.

There are several buildings on the HAFB campus that are historical. Historical Preservation strategies should be met to maintain the design intent of the original building. Strategies for the type, extent and nature of historical preservation shall be discussed with the team prior to design.

There are four types of approaches to be considered as stated in the Whole Building Design Guide:

- Preservation focuses on the maintenance stabilization, and repair of existing historic materials and retention of a property's form as it has evolved over time.
- Rehabilitation acknowledges the need to alter or add to a historic property to meet continuing or changing uses while retaining the property's historic character.
- Restoration depicts a property at a particular period of time in its history, while removing evidence of other periods.
- Reconstruction re-creates vanished or non-surviving portions of a property for interpretive purposes.

Fascia repairs should be done carefully. Replacement of windows, doors when necessary should maintain the historical nature of the building. Where possible buildings shall be insulated and brought to current energy codes via new MEP systems. New roofs should match the original type and intent of the building. Ornamentation should be restored and repaired as necessary.

Cultural Resource Program Manager (CRPM)

Environmental Management is responsible for assuring an individual who meets the Secretary of the Interior's Standards coordinates all historic preservation issues with the Utah State Historic Preservation Office (SHPO) and all appropriate agencies pursuant to Section 106 of the National Historic Preservation Act and it's guiding regulation 36 CFR 800.

Cultural Resource Program Manager is:

75 CEG/CEIE

586 -2464

7290 Weiner Street

Bldg 383

HILL AFB UT 84056-5003

DSN 586-2646

All potential candidates for the National Register of Historic Preservation at Hill AFB shall be determined by the CRPM and concurred by the SHPO. All projects which may have an adverse effect on an eligible, potentially eligible or unevaluated historic property must be reviewed by the CRPM to determine effect and initiate consultation with the SHPO's office.

State Historic Preservation Officer (SHPO)

- Throughout the state of Utah, the Office of the State Historic Preservation Officer (SHPO) is responsible for validating candidates for the National Register of Historic Places. The SHPO acts in conjunction with the Federal Advisory Council on Historic Preservation and is the sole authority in the approval of candidates for the National Register of Historic Places.

- Once a facility has been identified as "eligible," a potentially eligible, or nominated to the National Register, all potential designs to maintain, repair or alter the facility in any way whatsoever must be concurred on by the SHPO.

- Design documents for potential construction projects must be sent to the SHPO for concurrence. The state of Utah has 30 days to coordinate on proposed construction projects. The National Advisory Council must be informed if Hill AFB Cultural Resources or the SHPO deems any adverse effects and a memorandum of agreement entered into to mitigate these adverse effects.

IMPLEMENTATION

The Architectural Compatibility Plan (ACP) is a multipurpose tool that shall be used throughout the entire planning, programming, and design process, from inception to project completion for any project on Base. The ACP is implemented by the Base Civil Engineer (BCE). While architectural designers are the primary users of the plan, it must also be used by project managers, programmers, planners, engineers, maintenance and operations personnel, self-help personnel, personnel working under Simplified Acquisition of Base Engineer Requirements (SABER) contracts and the Architectural Compatibility Review Board (ARB). Key elements in the implementation process are highlighted below.

Architectural Compatibility Review Board (ARB)

The ARB is the installation approval authority for all designs and visual features on the installation.

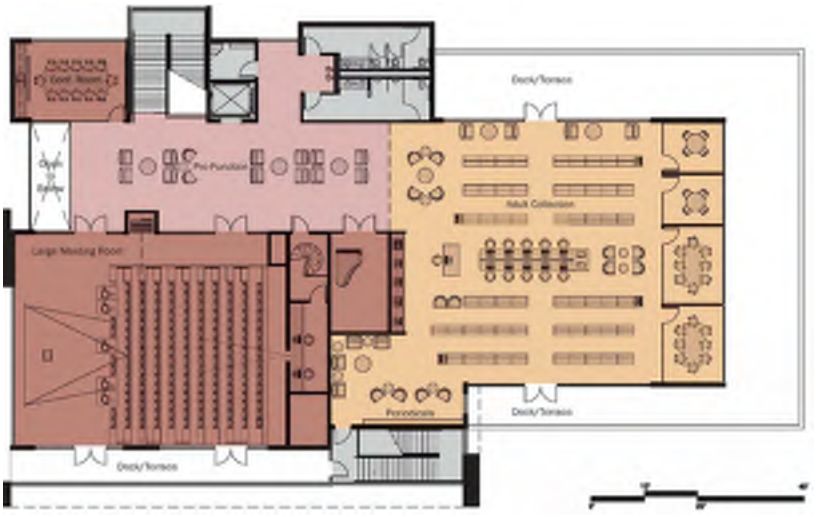
The ARB is organized by the Base Civil Engineer (BCE).

- The chair person as appointed.
- Members include the base architects, community planner, engineering flight chief, operations flight chief, project manager, and others as determined by the chair person.
- Most projects, regardless of size, must be approved by the ARB. (The chairperson makes the final determination on the review evaluation requirements).
- Design projects are submitted to the ARB by the Architect-Designer thru the Hill AFB Project Manager (PM).

SUBMITTAL REQUIREMENTS:

New Construction:

- Site plan: show parking, sidewalks, ABA-DoD compliance, landscape design intent
- Building floor plan
- Rendered (colored) exterior elevations – minimum of two sides (front major entry and secondary)
- Bird's eye perspective showing the best overall view of the building typically looking at the main entry area. Submit 1 perspective view of the proposed new building design.
- Color board – provide actual material samples of all proposed exterior facing materials including glass



Additions:

- Site plan: show parking, sidewalks, landscape design intent –
- Building floor plan
- Rendered (colored) exterior elevations – minimum of two sides (front major entry and secondary)
- Color board – provide actual material samples of all proposed exterior facing materials including glass

Major Renovations: (where exterior elevation changes occur)

- Building floor plan and to extent exterior – where exterior site changes occur
- Rendered (colored) exterior elevations – minimum of two sides (front major entry and secondary)
- Color board – having actual material samples of all proposed exterior facing materials including glass

Buildings of Significance: (see page 26)

Design Process:

Requirements documents, typically MILCON or CCD (customer concept designs), RFP design build written scope(s) of work shall include:

- Project description
- Programming requirements
- Site analysis (traffic, environment, utilities, views, sunlight
- Spatial relationship to site (topo)
- Adjacent facilities, site photos

The designer (A/E) and or the Base PM shall engage the ARB early on in the design process to explore potential solutions to meet the requirements of the Architectural Compatibility Plan objectives for these types of projects.

Charrette Design Phase or Concept Design Phase:

This design phase effort shall include adequate enough information and architectural depiction to describe the project design intention – allowing customers and the ARB to see and comprehend the proposed solution. Typically, this effort shall include a site plan, floor plan and exterior elevation(s) to illustrate the design intent. If the task is for a entire new building, then a three dimensional rendering shall be provided at this phase.

The goal is to achieve Air Force customer understanding and approval early in the design process.

35% Design Phase:

This is where the formal submittal shall be submitted to the ARB for final review and approval. The design at this phase shall clearly indicate the proposed exterior design and look. The design at this stage should also include the design intent for interior design finishes.

This submittal must include adequate information to fully describe the project design, allowing customers / clients to easily comprehend the proposed solution. The goal is to achieve AF customer understanding and approval early in this process.

Multiple submittals may be required for large or complex projects. The initial submittal provides a conceptual approach to the solution, while the final submittal presents a refined and more detailed design. These submittals shall be design presentation documents rather than construction documents.

The ARB will review concept submittals. If the initial submittal is rejected, or if there are significant concerns or comments, a resubmission is required prior to proceeding to the next design stage.

For Each submittal package shall include:

- Concise Verbalized Design Concept (1 page maximum)
- Adjacent Facilities and Site Photos, if in close proximity
- Site Plan(s) and floor plan
- Building Elevations (color rendered)
- Mechanical / Electrical Equipment Locations, Configurations and Screening
- Perspective Sketches (minimum of 1 for new construction)

Small projects (canopies, smoking shacks, exterior signs, small storage buildings, etc.)

These type projects typically do not require a full design such as above. The project author for these

type projects shall submit an AF Form 332 for initial consideration/evaluation by the Work Request Review Board (WRRB), which in turn shall forward the request onto a CE staff Architect for further evaluation and recommendation. The 332 should include site plan for the proposed location and manufacturer cut sheets depicting the look of the proposed building item.

Review Board

The review board will consist of at least four CE staff, two are staff architects; one is the PM for the project. The review board shall be chaired by the division chief. Other individuals may participate at the BCE's discretion.

APPENDIX 1

MATERIALS & COLORS

MATERIALS AND COLORS

Concrete Masonry Units (CMU Block)

The following Block colors are acceptable:

- Photo 1 & 5: Tumbleweed split face (favor a significant percentage of “white fleck”). Block shall have integral water repellent admixture. Surface sealers are not acceptable in and of themselves only.
- Photo 1: Tumbleweed honed CMU – color shall match above. Shall be used for accent only. Provide water repellent admixture.
- Plain-face CMU in a “stacked-bond” configuration is acceptable as accent. See Photo 3 on this page.

The following manufacturers are acceptable (if the manufacturer is not available a custom color must be submitted to match one of the colors as mentioned above):

- Lehi Block
- Amcor Masonry

Metal Siding

All metal building manufacturers have their own particular names and colors for the typical Base Design Standard colors. The following listed manufacturers have been determined to best typify an acceptable color range for the intended Base Design Standard colors for Hill AFB for metal wall panels, metal roofs and accompanying metal accessories, such as, but not limited to, flashing and other sheet metal components. The old “Greystone” is no longer an acceptable color. Consult the ARB for precise color range before bidding a project to insure compatibility. Non-compliance, after the fact, will not be accepted. All metal shall be pre-finished resin-based coating, such as Kynar 500®. Silicone finish is not acceptable.

The following metal colors by Englert are acceptable:

- Sierra Tan
- Sandstone
- Medium Bronze (aka Dakota Brown)
- Dark Bronze (aka Dakota Brown)

(see color palette at end of this section)

The following manufacturers have acceptable color ranges that closely match Englert.

- Englert (preferred)
- Garland Company
- MBCI
- Firestone
- Centria

If a different manufacturer is used, a custom color must be submitted to match one of the colors as mentioned above.

PHOTO 1

PHOTO 2

PHOTO 3

PHOTO 4

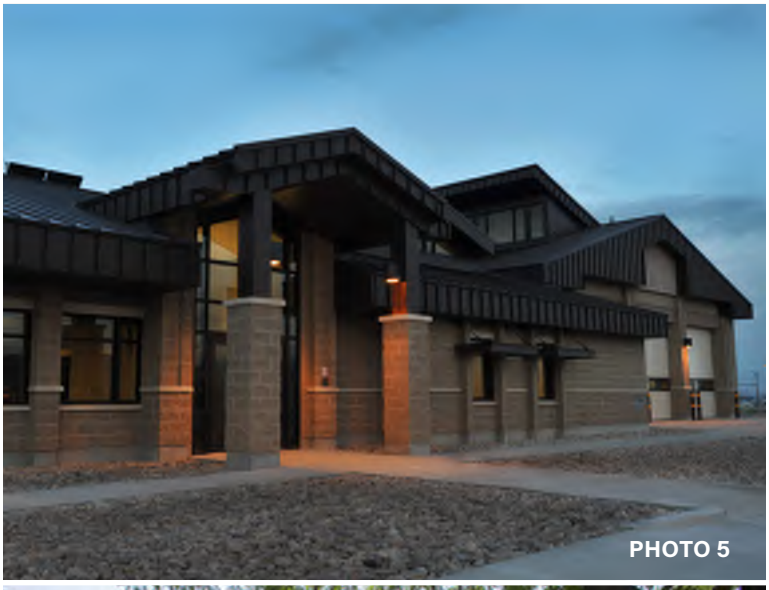


PHOTO 5

PHOTO 6

Brick

The following brick colors are acceptable

- Tumbleweed Atlas Brick (dimensions: 4”x4”x12”) (Photo 2).
- Dark brown modular in most cases or nominal brick – consider for accent purposes. Consider design of adjacent buildings (such as Building 118 depicted in Photo 4, this page)

The following manufacturers are acceptable (if the manufacturer is not available a custom color must be submitted to match one of the colors as mentioned above):

- Interstate Brick
- Beehive Brick and Stone

Glazing

All glazing shall be solarban or equal, 1” insulated with thermal breaks, and shall comply with ATFP (Anti-Terrorism Force Protection) requirements as required. Consult ARB for guidance. The following glass colors are acceptable, used in context.

- Clear – acceptable for Industrial and Administration/ Support settings
- Bronze Tint – acceptable for Industrial and Administration/Support settings
- Green or Blue Tint.- as stated below:
- Use blue (match Falcon Hill) if inFalcon Hill setting.
- Use green if in Eastside Runway setting (match F-22 System Support Facility, Building 688)

Standing Seam Metal Roof

The following metal color is acceptable:

- Medium Bronze and Dark Bronze

The following manufacturers are acceptable (if the manufacturer is not available a custom color must be submitted to match one of the colors as mentioned above):

- Garland Company
- MBCI
- Firestone
- Centria
- Englert

Façade:

Metal roofs shall have accompanying façade and soffit and shall match the color of the roof. See Appendix 3: Acceptable vs. Prohibited Designs.

Incorporate continuous metal façades that are proportional to match the scale of the roof.

Soffits, Gutters and downpouts

Match color of roof

Exterior Handrails/Guradrails:

Exterior Handrails and guardrails to be stainless steel, or powder coated steel. Color to be medium bronze or dark bronze.

Door Frames & Doors

Storefront door frames will be either clear anodized or bronze. Hollow metal frames will be painted medium bronze or dark bronze.

Window Frames

Storefront window frames will be either clear anodized or bronze. Hollow metal frames shall be painted Medium Bronze.

Exposed Structural Elements

Exposed structural elements exterior shall be painted either dark bronze or medium bronze. Exposed structural elements indoors - interior shall be painted white or black depending upon the setting and application. All exposed exterior structural steel shall be shop primed (iron oxide typ.) and then powder coated.

APPLIED COLOR GUIDELINES (FOR METALS)

Each color application will require some interpretation; however, each should generally follow these principles. Specific exceptions are allowed with ARB approval.

- Older facilities are normally the only ones requiring paint.
- All new facilities shall use integrally colored or factory-applied finishes.
- Reduce visual clutter by simplifying the application.
- Painting or applied artificial façades, bases, details, etc. on facilities and painting of masonry or concrete architectural features such as quoins, lintels, bases, or capitals is prohibited, except with ARB approval only.
- Paint equipment on painted buildings to match adjacent surface.
- Painting stripes on buildings is prohibited, except with ARB approval only.
- Support and service buildings should have simplified, subtle paint schemes.
- Variations are subject to ARB approval.
- Doors are to be painted medium to dark bronze.
- Do not arbitrarily change paint colors.

TYPICAL METAL WALL PANEL COLORS, CMU AND RIVER ROCK - COLORS

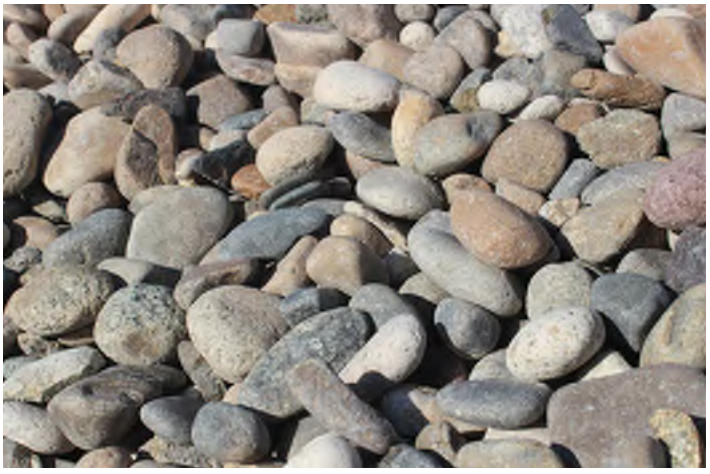
The intent of this design standard is standardize color in order to provide harmony and consistency across the Base for all projects i.e. MILCON, MC, additions, repair and otherwise. The standard Base " core " colors for the new Base Architectural Design Standard have been carefully selected around Englert Metal Building Manufacturer. This is no way is proprorietary to Englert. These colors simply best typify the target color range to meet the aesthetic intent of the new Base Architectural Design Standard. These colors are depicted below. The colors are: Englert " Sierra Tan ", Englert " Sandstone ", Englert " Medium Bronze " and Englert " Dark Bronze ". For design purposes, these colors should be referenced as a baseline for all facility design and construction. The designer should obtain samples of these colors (metal, not paper) from Englert to work with. Sherwin Williams standard paint colors may be referenced, but only on a case by case basis and with ARB approval. A color board depicting " color " shall be submitted to the ARB for approval - typically no later than at the 35% design stage. Consult the ARB for color selection.

TYPICAL RIVER ROCK - 4"-6" DIAMETER

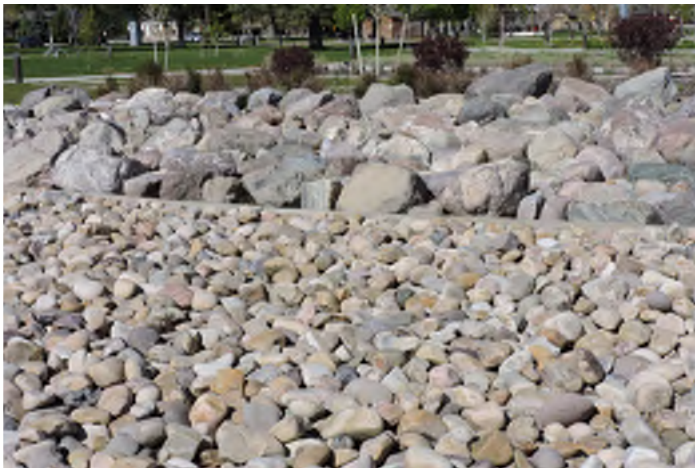
TYPICAL SPLITFACE CMU (TUMBLWEED)
Note percentage of "White Fleck"

TYPICAL RIVER ROCK - 4” +/- DIAMETER

TYPICAL RIVER ROCK - 4” +/- DIAMETER



TYPICAL RIVER ROCK - 4” +/- DIAMETER

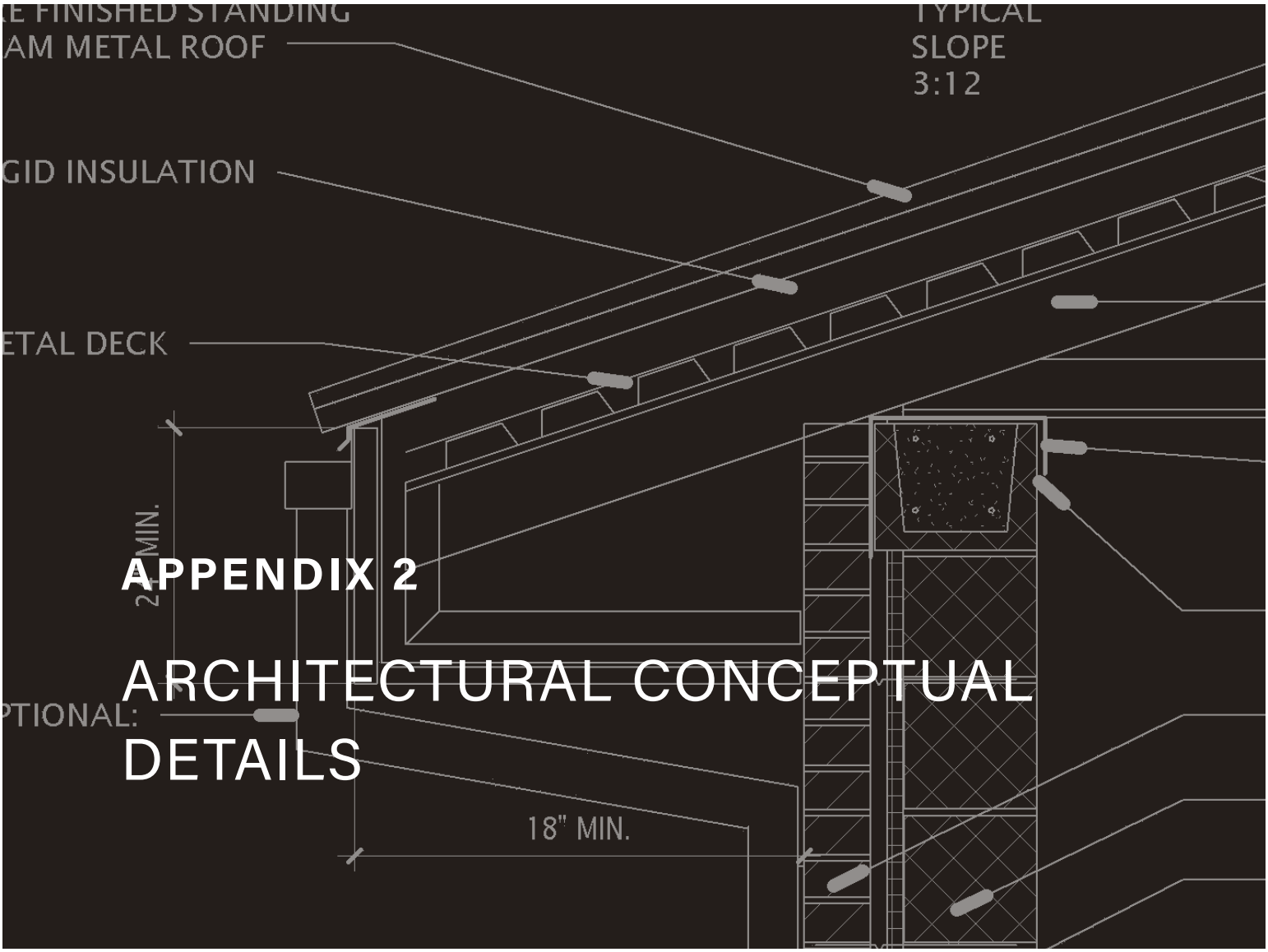


TYPICAL RIVER ROCK - 4” +/- DIAMETER

TYPICAL RIVER ROCK GRAVEL- 2” DIAMETER OR LESS

TYPICAL RIVER ROCK GRAVEL- 2” DIAMETER OR LESS

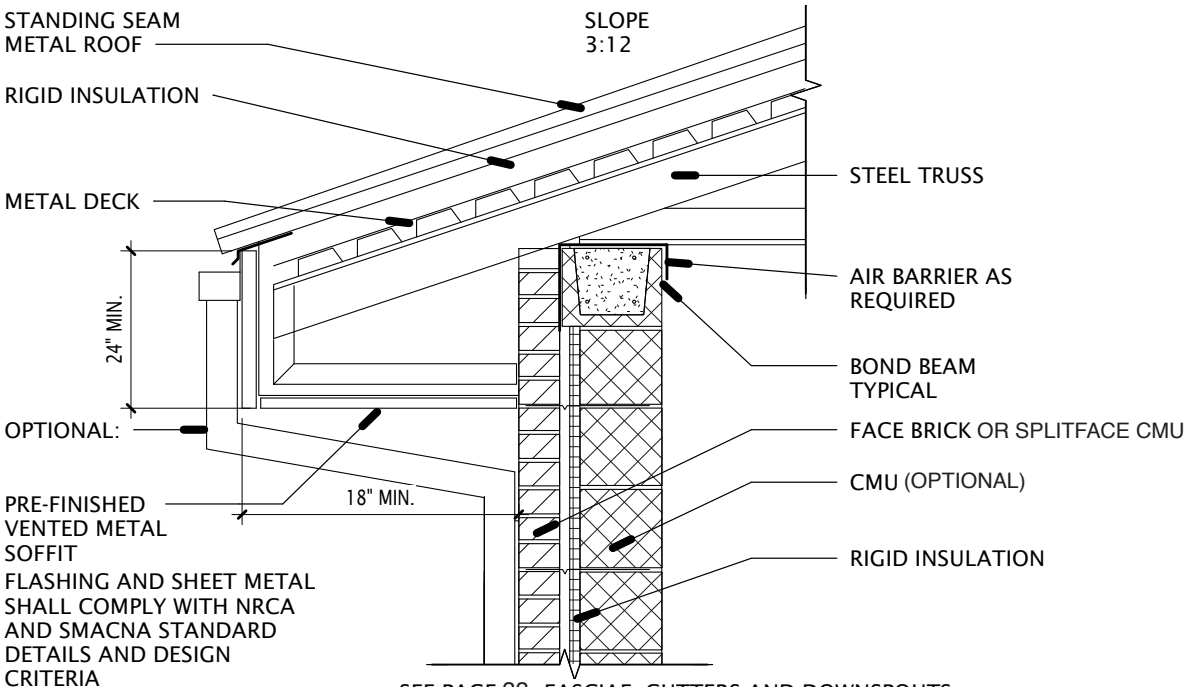
(Small river rock preferred for plan bed mulch in lieu of bark mulch. Consult ARB for specific use)



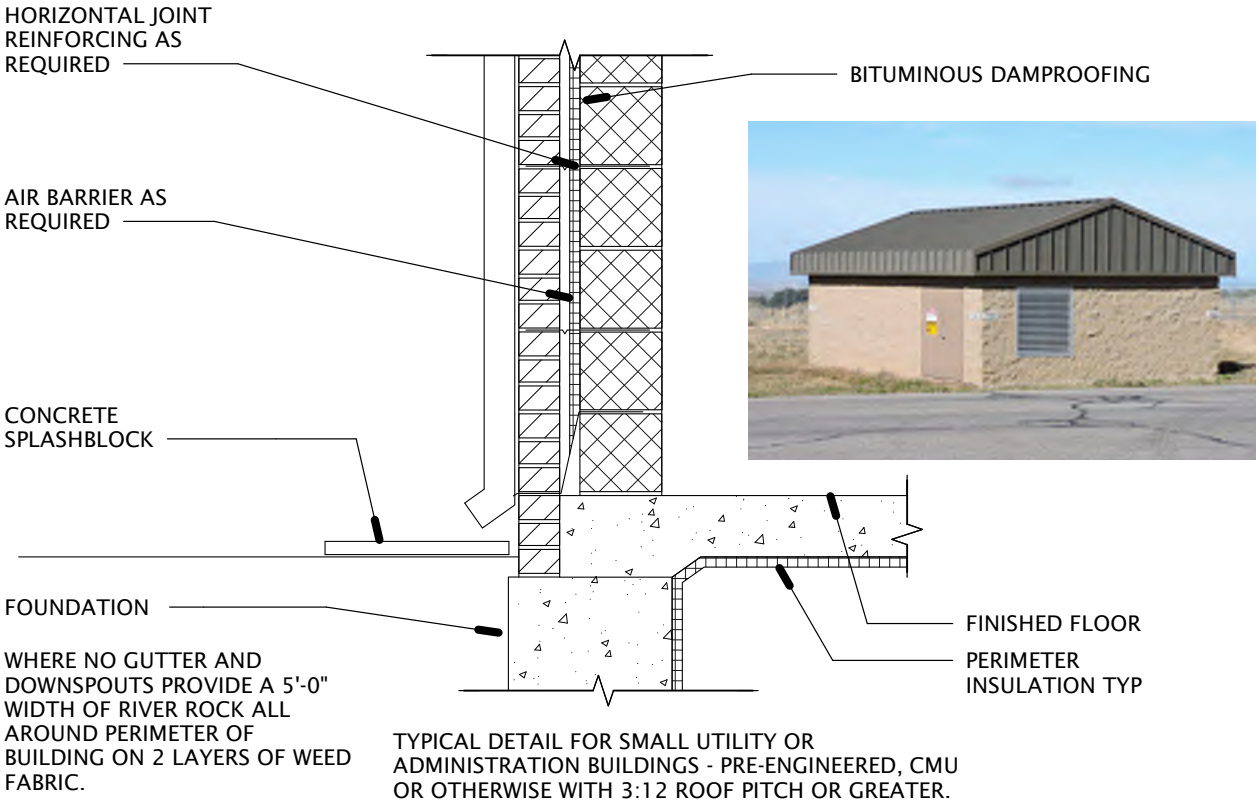
APPENDIX 2

ARCHITECTURAL CONCEPTUAL DETAILS

APPENDIX 2 INDEX
TYPICAL ARCHITECTURAL DETAILS:

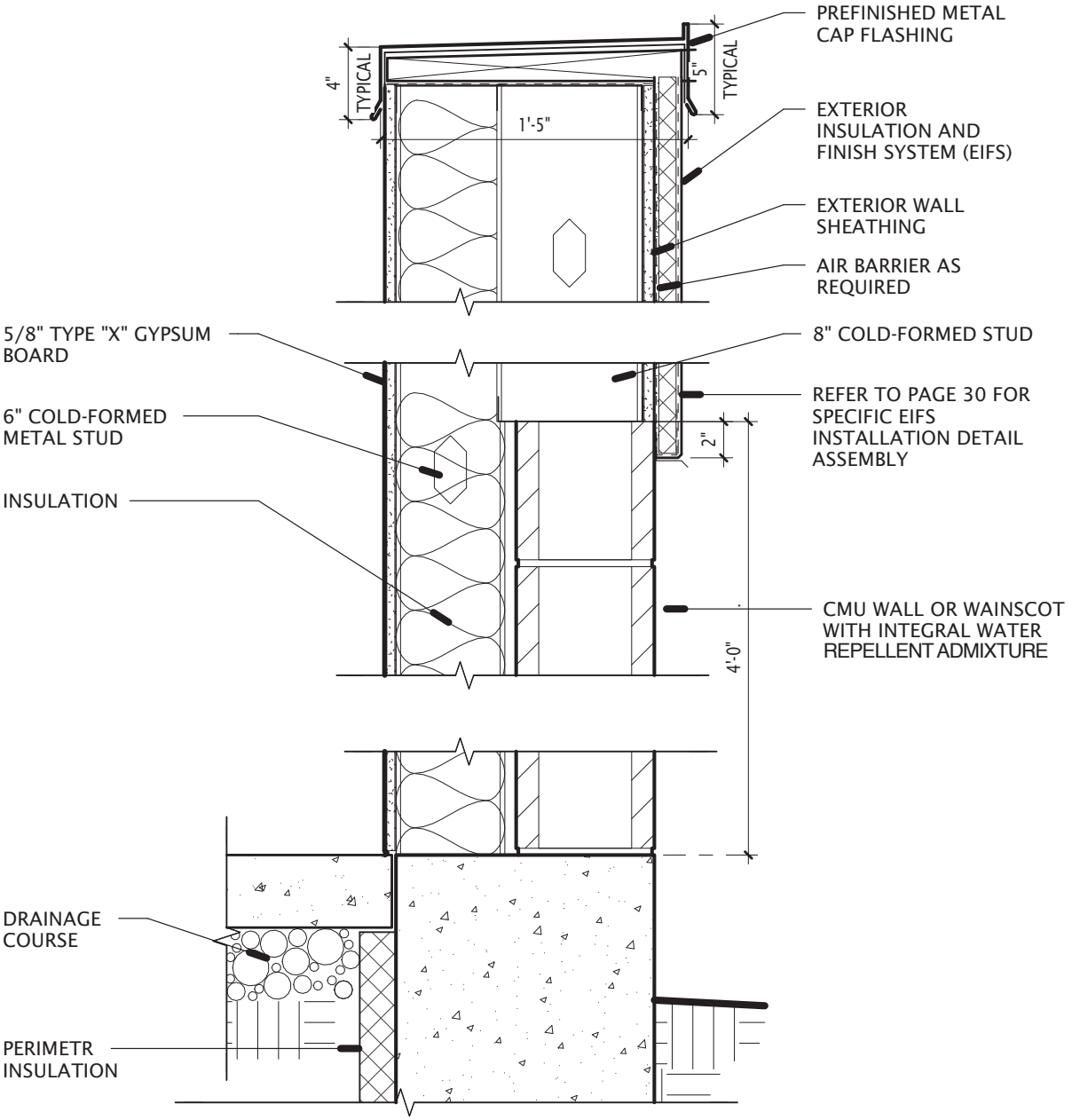


SEE PAGE 33: FASCIAE, GUTTERS AND DOWNSPOUTS FOR GUIDANCE.

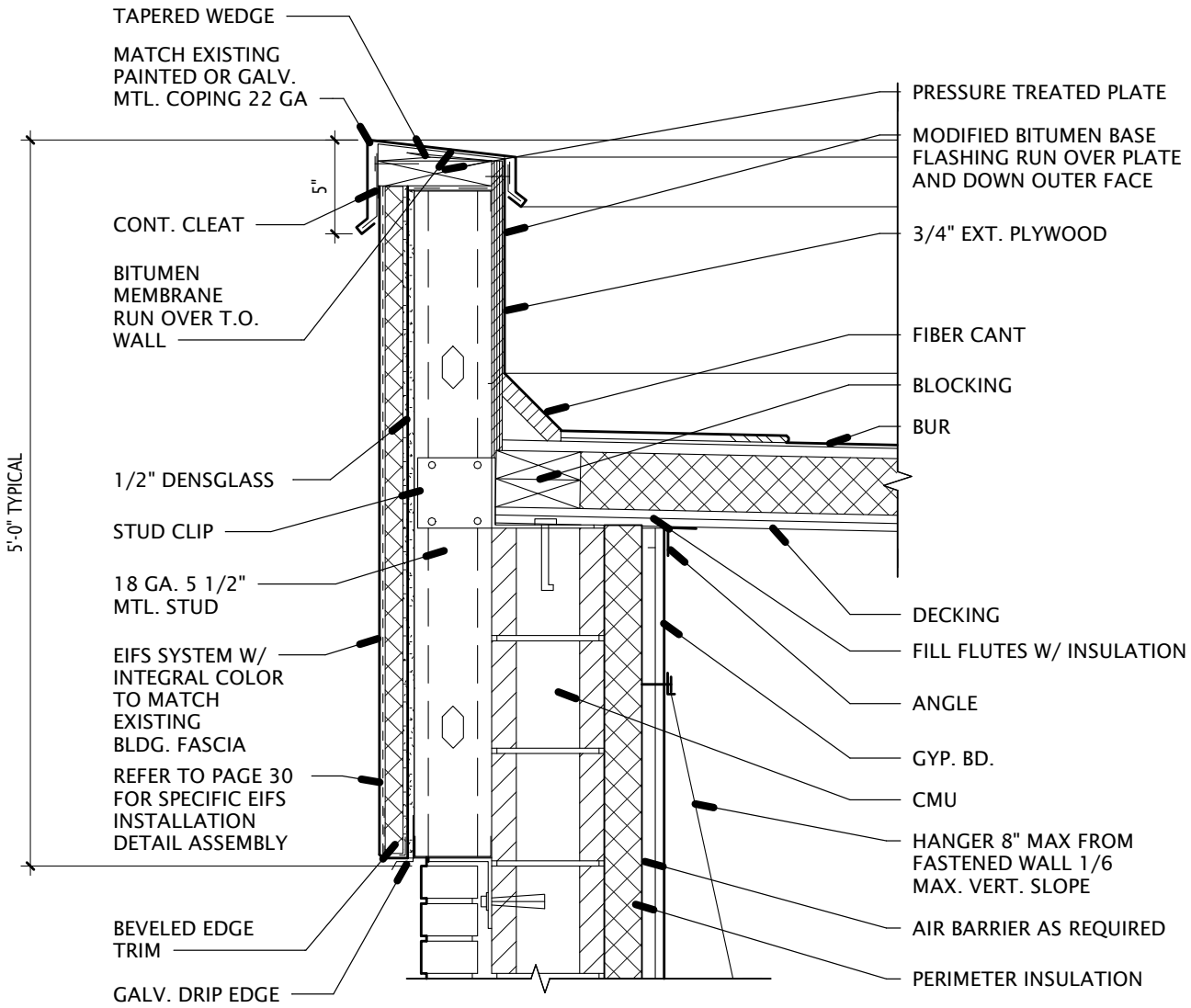


TYPICAL DETAIL FOR SMALL UTILITY OR ADMINISTRATION BUILDINGS - PRE-ENGINEERED, CMU OR OTHERWISE WITH 3:12 ROOF PITCH OR GREATER.

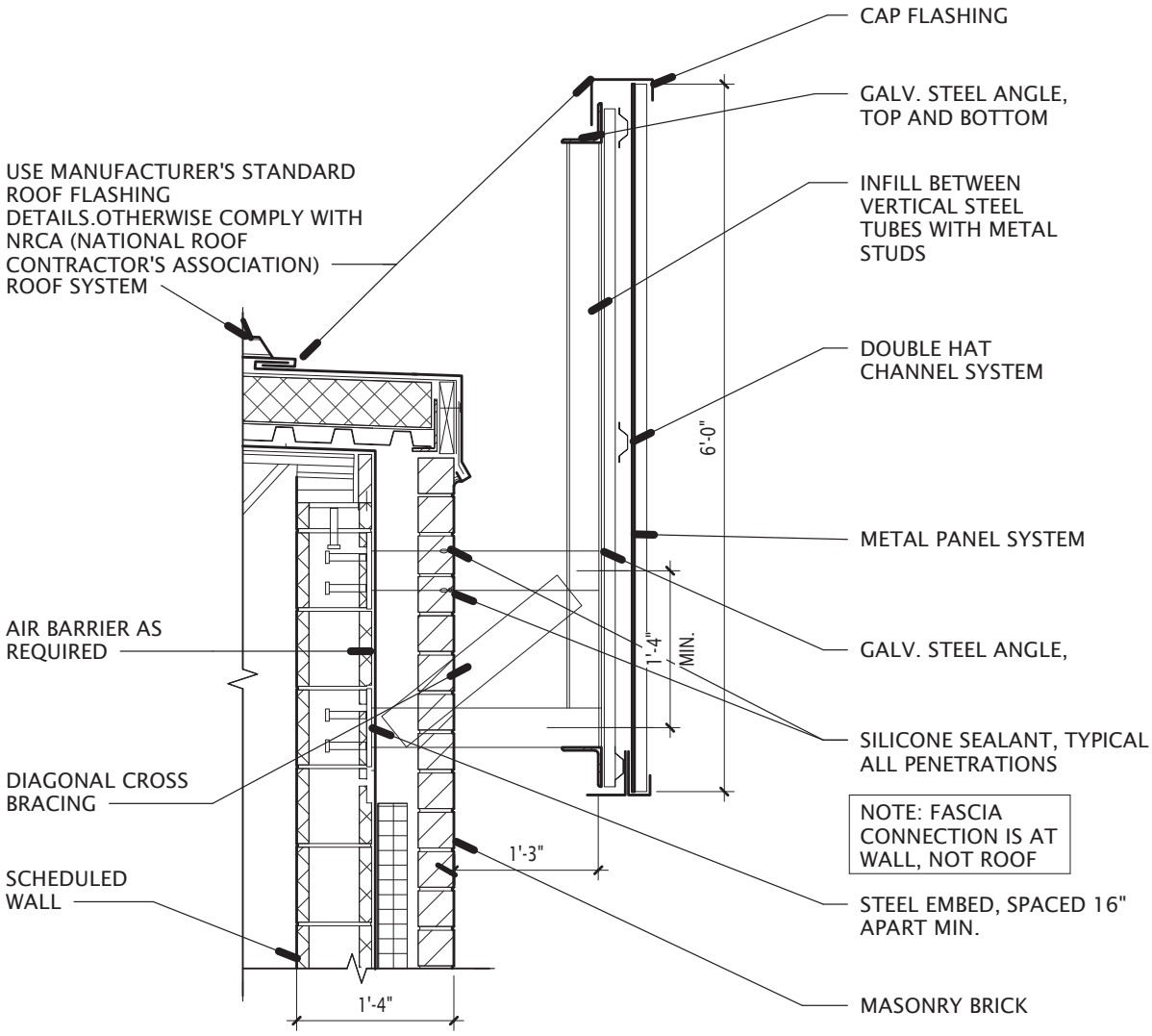
TYPICAL ROOF FAÇADE/SOFFIT FOR SMALL BUILDINGS



TYPICAL EIFS WALL DETAIL
- WAINSCOT CONDITION



TYPICAL EIFS FAÇADE CONDITION

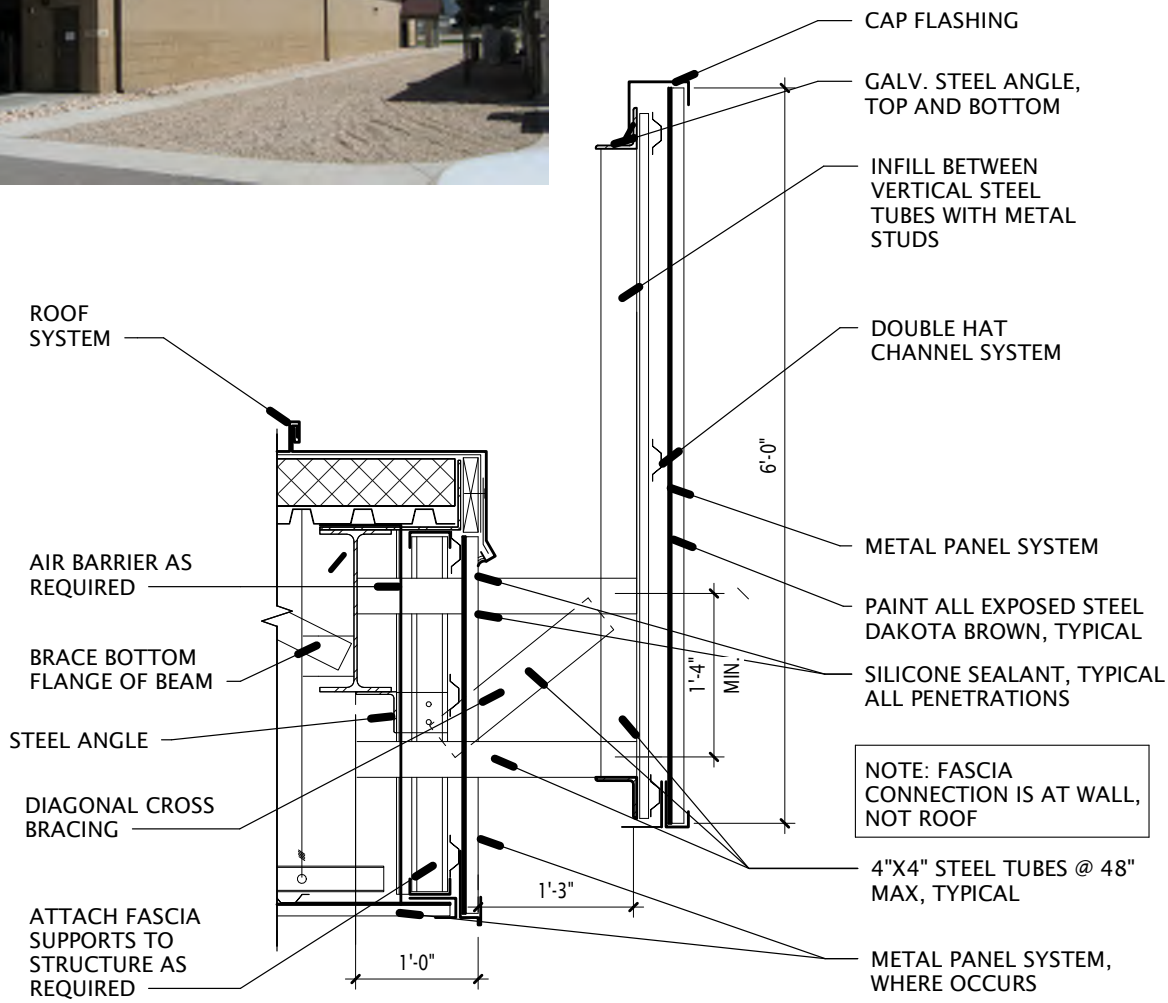


NOTE: USE MANUFACTURER'S STANDARD ROOF FLASHING DETAILS
ALL ATTACHMENTS MUST BE RUST PROOF

FOR CASES OF PRE-ENGINEERED METAL BUILDINGS WHERE A Façade IS REQUIRED

METAL PANEL FAÇADE AT BRICK BUILDING

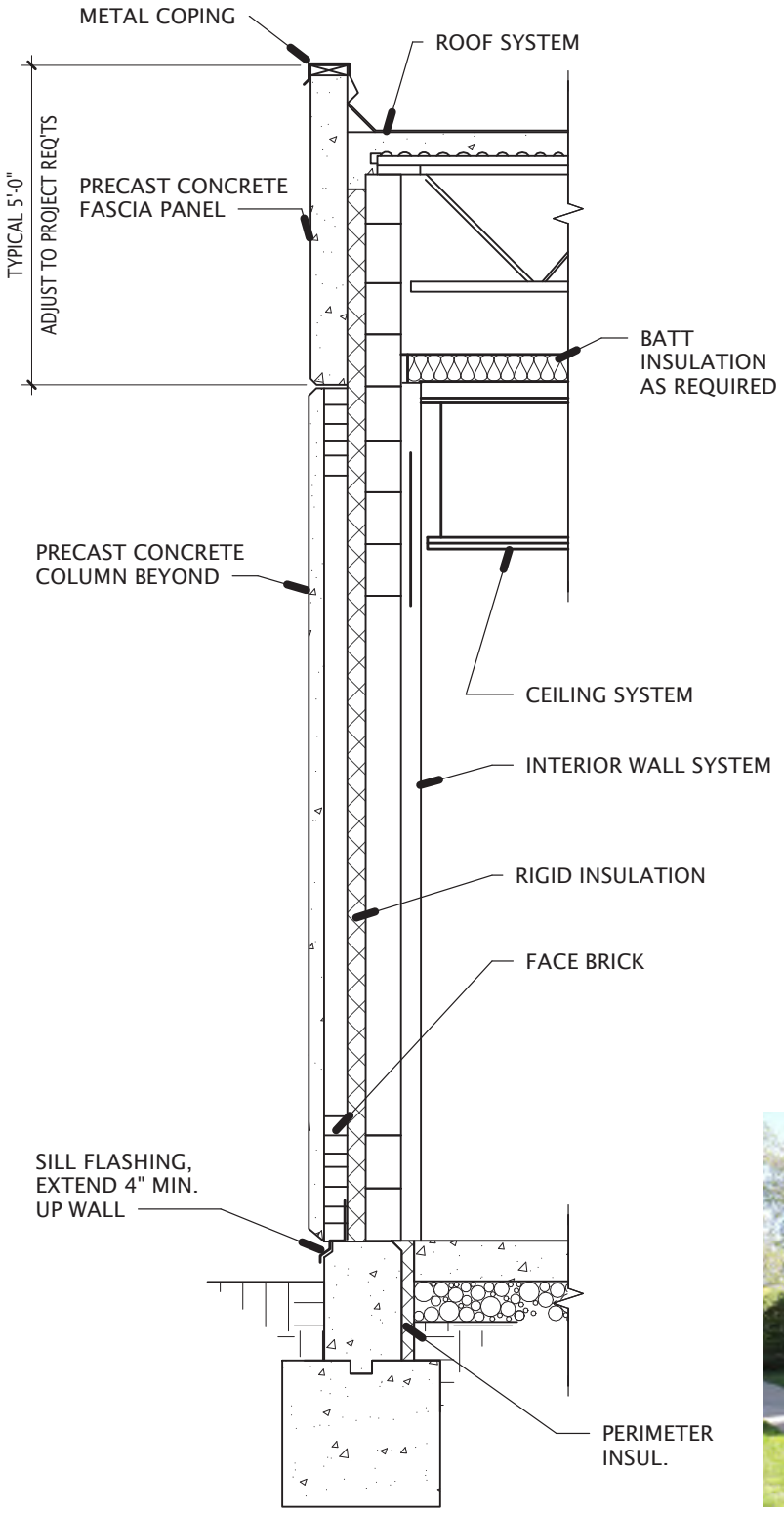
SIMILAR TO FAÇADE ON BUILDING 243.



NOTE: USE MANUFACTURER'S STANDARD ROOF FLASHING DETAILS
ALL ATTACHMENTS MUST BE RUST PROOF

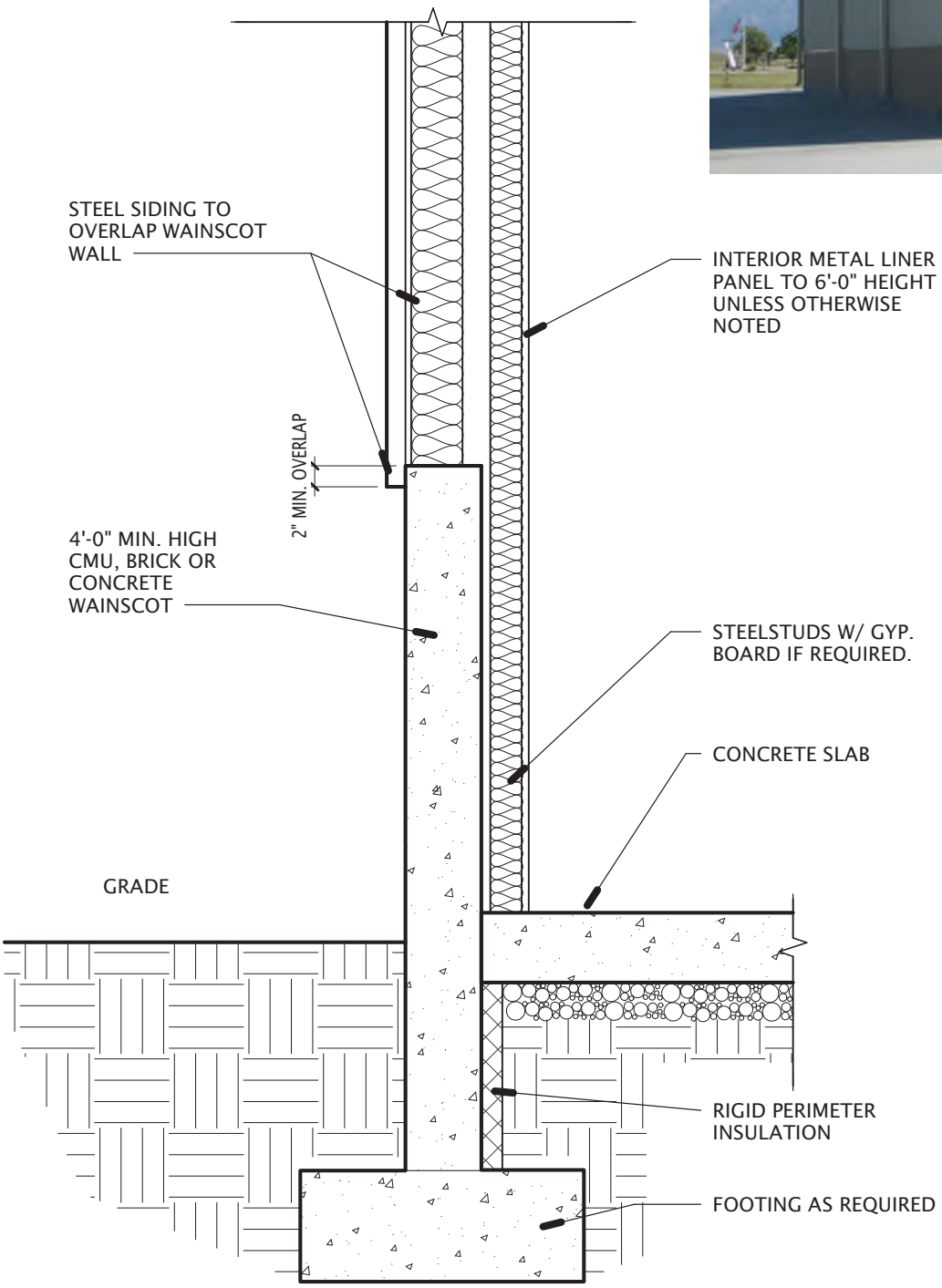
FOR CASES OF PRE-ENGINEERED METAL BUILDINGS WHERE A Façade IS REQUIRED

METAL FAÇADE AT METAL WALL CONDITION

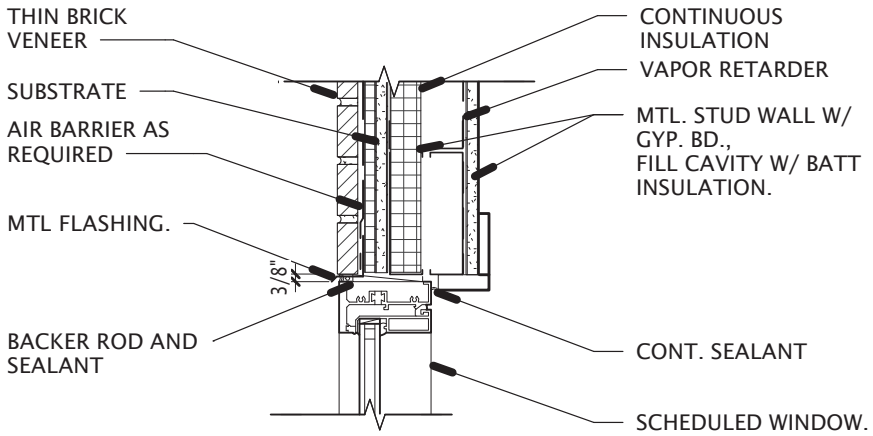


TYPICAL CONCRETE FAÇADE

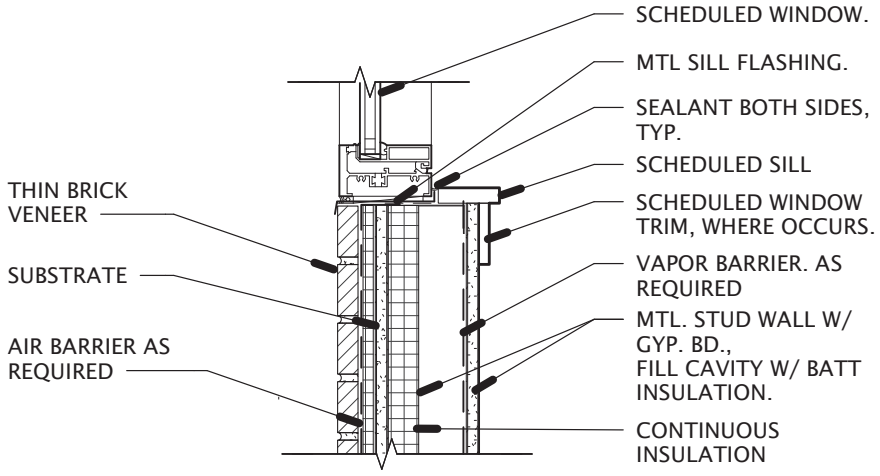
SIMILAR TO BUILDINGS 118 AND 125



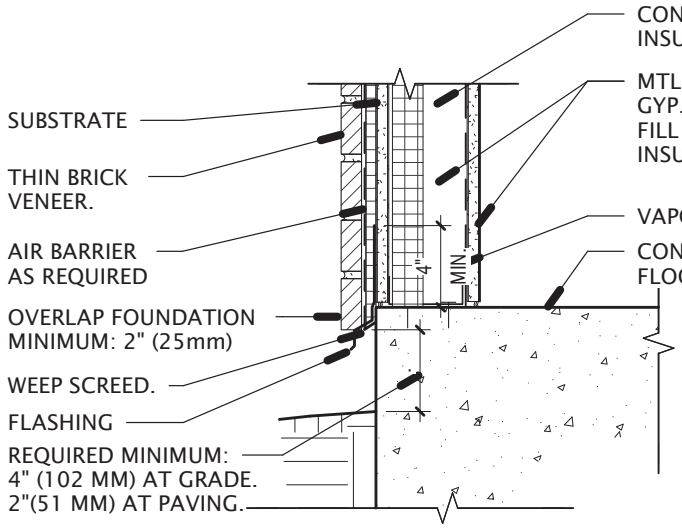
TYPICAL METAL WALL PANEL WAINSCOT CONDITION



WINDOW HEAD

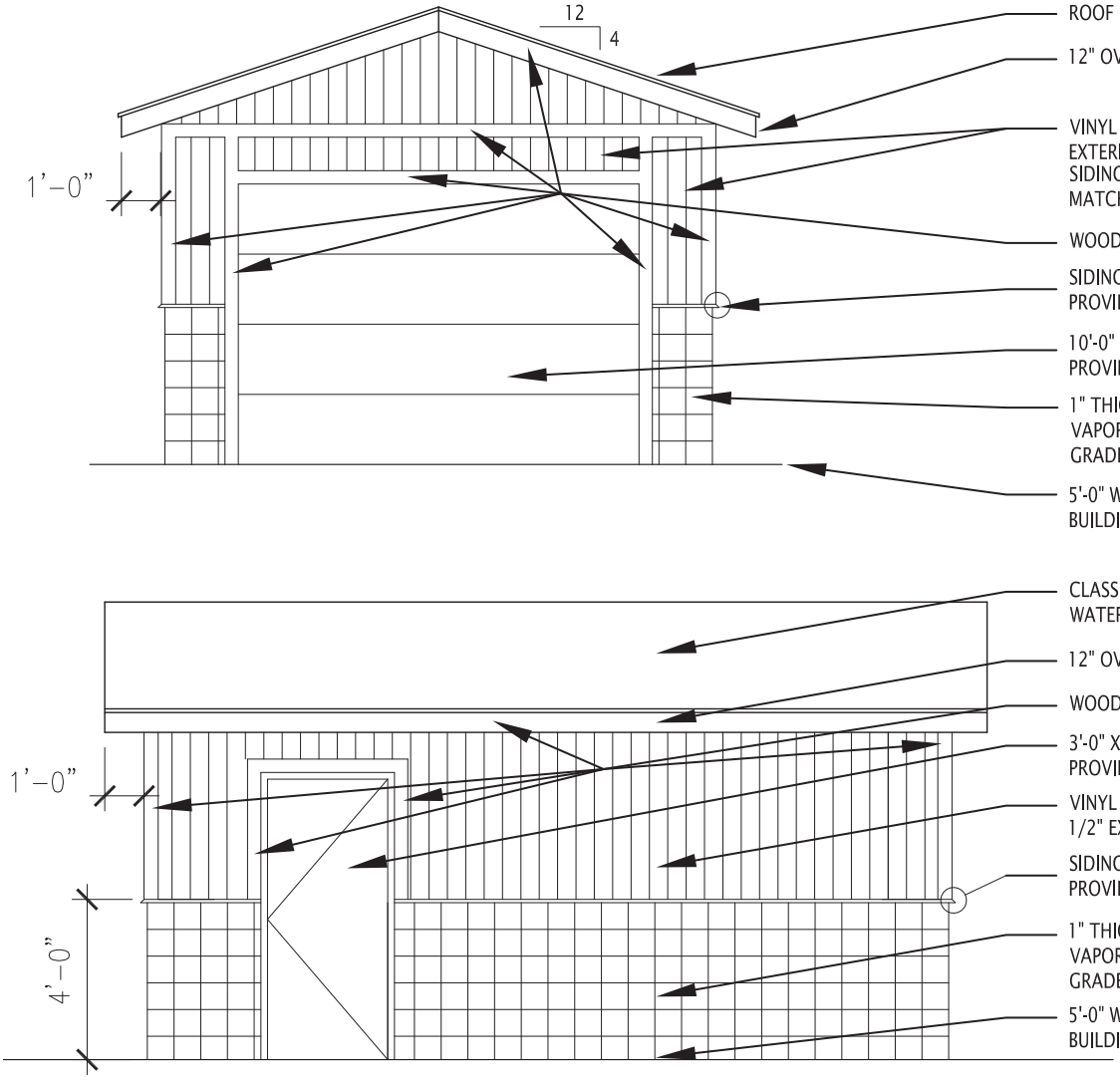


WINDOW SILL



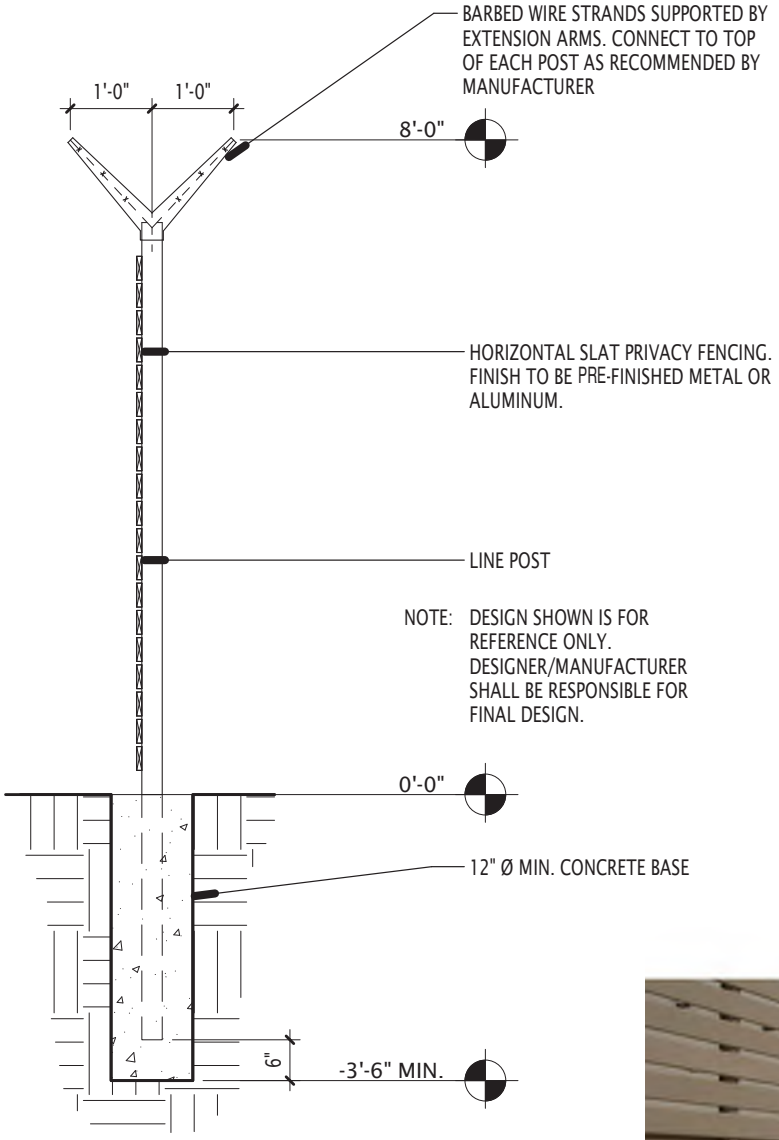
NOTE: AT ROUGH JAMB, PROVIDE SILL PAN PRODUCTS SUCH AS FLEXIBLE MEMBRANES, PRE-FORMED FLEXIBLE OR RIGID PLASTIC OR METAL ELEMENTS. SELF-ADHERING TYPE CAN EASE THE INSTALLATION PROCESS. PROVIDE CONTINUOUS FLEXIBLE MEMBRANE SEAL AROUND WINDOW ROUGH OPENING, OVERLAP JOINTS 4" MINIMUM, EXTEND LAPS 4" MINIMUM DOWN FACE OF WALL FROM ROUGH OPENING ALL AROUND

TYPICAL THIN BRICK VENEER



TYPICAL "TUFF" SHED

WITH ARB APPROVAL ONLY THROUGH THE TYPICAL 332 PROCESS



TYPICAL FENCE DETAIL

INTENTIONALLY BLANK

APPENDIX 3

ACCEPTABLE VS. PROHIBITED DESIGNS

The following depictions are intended to illustrate generally what to do architecturally and what not to do architecturally. In some cases, some of the depictions may lack the precise Base color standard or may lack the typical CMU wainscot. This should not be interpreted to mean these features do not apply, they do apply. These depictions are intended to show a level of building articulation that is considered to be consistent with the new Base Architectural Compatibility Plan and should be used by designers to develop and articulate building fascia features, forms and elements to produce good architecture.

Canopy

Acceptable

Prohibited

Canopy

Acceptable

Prohibited

Canopy

Acceptable

Prohibited

Canopy

Acceptable

Prohibited

Canopy

Acceptable

Prohibited

Canopy

Acceptable

Prohibited

Utility Building

Acceptable

Prohibited

Utility Building

Acceptable

Prohibited

Utility Building

Acceptable

Prohibited

Utility Building

Acceptable

Prohibited

Utility Building

Acceptable

Prohibited

Utility Building

Acceptable

Prohibited

Small Utility Buildings

Acceptable

Prohibited

Utility Building

Acceptable

Prohibited

Utility Building

Acceptable

Prohibited

Utility Buildings

Acceptable

Prohibited

Utility Building

Acceptable

Prohibited

Utility Building

Acceptable

Prohibited

Security Gate

Acceptable

Prohibited

Dumpsters

Acceptable

Prohibited

Dumpster

Acceptable

Prohibited

Fencing

Acceptable

Prohibited

Fencing

Acceptable

Prohibited

Fencing

Acceptable

Prohibited

HVAC Screening

Acceptable

Prohibited

HVAC Screening

Acceptable

Prohibited

HVAC Screening

Acceptable

Prohibited

Storage

Acceptable

Prohibited

Canopy Cantilever Over Single Door

Acceptable

Prohibited

Canopy

Acceptable

Prohibited

Landscaping

Acceptable

Prohibited

Landscape

Acceptable

Prohibited

Landscaping

Acceptable

Prohibited

Landscaping

Acceptable

Prohibited

Landscaping

Acceptable

Prohibited

Landscaping

Acceptable

Prohibited

Sheds

Acceptable

Prohibited

Shed

Acceptable

Prohibited

Sheds

Acceptable

Prohibited

Metal Buildings

Acceptable

Prohibited

Metal Buildings

Acceptable

Prohibited

Metal Buildings

Acceptable

Prohibited

Metal Buildings

Acceptable

Prohibited

Metal Façade

Acceptable

Prohibited

Hanger

Acceptable

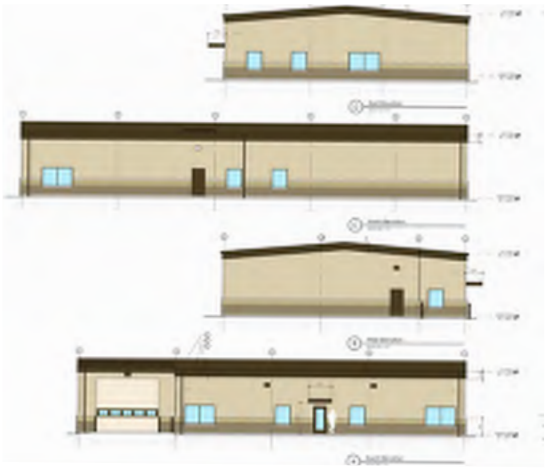
Prohibited

Masonry Façade

Acceptable

Prohibited

Masonry Façade



Acceptable

Prohibited

Bus Stops

Acceptable

Prohibited

Metal Façade

Acceptable

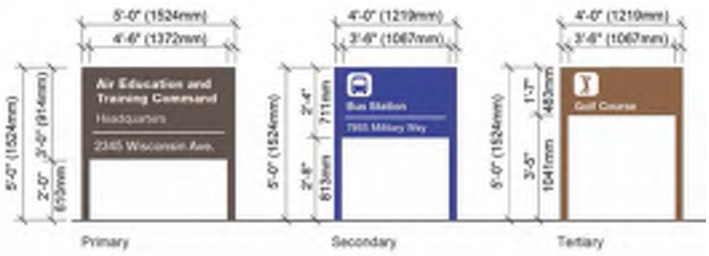
Prohibited

Warehouses

Acceptable

Prohibited

Signage



Acceptable

Prohibited

Utility Building

Acceptable

Prohibited

Utility Building

Acceptable

Prohibited

Earth Berm

Acceptable

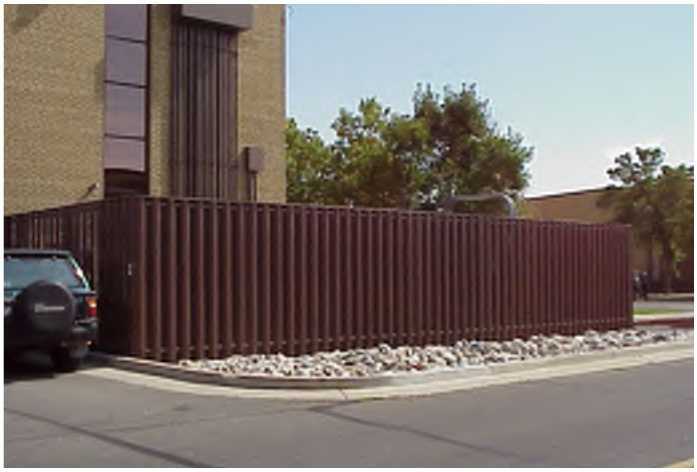
Prohibited

Fencing

Acceptable

Prohibited

Acceptable



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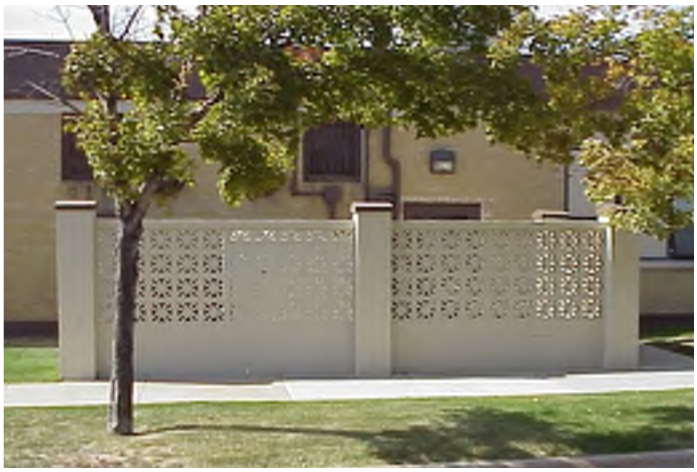

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APPENDIX 4

LANDSCAPE MATERIALS & IRRIGATION AND PLANT LIST

MATERIALS & IRRIGATION

The primary focus on irrigation systems will be the efficient use of potable water and minimizing burdens on storm sewer systems, secondary water providers, micro-climate conditions, maintenance and replacement, and compliance with security standards. Efforts should be made to capture existing sources of secondary water and provide ways for recharging subsurface water or aquifers. Current technology should be utilized in managing water resources. These may include rain shut off devices, two wire control wires, central controller, mini weather stations to monitor wind, solar, rain, humidity, temperature, evapo-transpiration, run time, cycle soak programs, surge protectors, leak detection, soil water sensor, landscape water meters, to name a few monitoring options. Additionally, the use of evaporation reduction methods should be used in all landscape work. These methods include the use of both organic and inorganic mulches.

The efficient design of irrigation systems will improve percolation, plant growth, weed reduction, reduce run-off, reduce slip/fall potential, and freeze/thaw problems. It will enhance the water distribution uniformity thus increasing water efficiency.

Standard Irrigation equipment used for Hill AFB Sprinkler systems may include:

Pipe:

- PVC pipe - Schedule 40 for ¾" to 2 ½". Schedule 80 for 3" - 6"
- Poly Pipe 125 PSI
- Funny Pipe

Valves:

- Irritrol
- Hunter
- Rainbird

Sprinkler Heads:

- Rainbird 2"-4" Popup with Radius 15'-10' (mainly building areas and mow strip smaller than 10')
- Hunter Pro Series 2"-4" with Radius 17'-10'
- Hunter PGP Gear driven (mainly for larger areas)
- Rainbird Falcon gear driven rotors
- Rainbird 700/750 Golf head at Soft ball Fields.

Bubbler Sprinkler Heads

Heads shall be multiple-spray bubbler with adjustable flow and designed for permanent aboveground mounting on risers.

Emitter Hose

Emitter laterals shall be buried 6 inches deep. Connections shall be:

- Solvent welded in accordance with manufacturer's recommendation to standard.
- Weight Schedule 40 PVC fittings and bushings. Hose shall be installed in a serpentine manner. When cutting hose, shearing tool such as a pipe cutter, knife, or shears shall be used. Manufacturer's recommended tool and procedures when punching hose for emitters shall be followed.

Emitter Heads

Emitter heads shall be self-cleaning, pressure compensating diaphragm with one or six self-piercing barbed outlets; each capable of emitting from 1/4 to 2 gallons/hour flow.

Emitter body shall be ultraviolet stabilized, algae, and heat resistant plastic construction.

Emitters shall be installed in a plastic emitter box. Emitter on a rigid PVC nipple shall be connected to PVC drip lateral with a tee or elbow.

Tubing shall be attached to barbed fitting and daylight distribution tubing at root ball secured with stake, with bug cap at end of secured distribution tubing. After installing emitters and before operating system, end of drip lateral shall be opened and flushed clean. The number of emitters on a line shall not exceed manufacturer's recommendations for that hose or distribution tubing size and length.

Controllers:

- Maxi-Com Rainbird ESP-Commercial
- 12 SAT
- 16 SAT
- 24 SAT
- 32 SAT
- 40 SAT

Wire nuts:

- Silicone line

Solenoids:

- 811 (universal 24 volt 60 hz)
- Rainbird EZ bleed for all rainbird valves
- Rainbird AB for 700/750 Golf Head

PLANT LIST

Plants listed in the following sections are low-water use, drought tollerant, are Utah Native plant species, and are suitable for the HAFB environment.

PERENNIALS

ACHILLEA MILLEFOLIUM - COMMON YARROW

Maintains dried golden flowers throughout winter months.

TYPE	Perennial
HARDY RANGE	4B to 8B
HEIGHT	18” to 36” / 45cm to 90cm
SPREAD	4” to 6” / 10cm to 15cm
GROWTH RATE	Fast
FORM	Upright or erect
EXPOSURE	Partial shade or partial sun to full sun

AQUILEGIA CAERULEA - ROCKY MOUNTAIN COLUMBINE

Spring leaf green, summer purple/light blue flower color.

TYPE	Perennial
HARDY RANGE	3A to 8A
HEIGHT	16” to 36” / 60cm to 90cm
SPREAD	4” to 6” / 10cm to 15cm
GROWTH RATE	Average
FORM	Rounded
EXPOSURE	Partial shade or partial sun to full sun

ASTER X ‘PINK BOUQUET’ - ASTER

Long lasting pink flowers into late fall.

TYPE	Perennial
HARDY RANGE	3A to 8A
HEIGHT	8” to 12” / 20cm to 30cm
GROWTH RATE	Average
FORM	Upright or erect
EXPOSURE	Full Sun

ASTER X ‘WHITE OPAL’ - ASTER

Long lasting pink flowers into late fall.

TYPE	Perennial
HARDY RANGE	3A to 8A
HEIGHT	8” to 10” / 20cm to 25cm
GROWTH RATE	Average
FORM	Upright or erect
EXPOSURE	Full sun

ASTER ALPINUS 'ROSEUS' - ALPINE ASTER

Maintains pink/purple flowers into late fall/early winter.

TYPE	Perennial
HARDY RANGE	4A to 8B
GROWTH RATE	Average
FORM	Spreading or horizontal
EXPOSURE	Full sun

COREOPSIS VERTICILLATA 'MOONBEAM' - MOONBEAM TICKSEED

Maintains yellow flowers into late fall/early winter.

TYPE	Perennial
HARDY RANGE	3B to 10A
HEIGHT	18" to 24" / 45cm to 60cm
SPREAD	8" to 24" / 45cm to 60cm
GROWTH RATE	Fast
FORM	Irregular or sprawling
EXPOSURE	Partial shade or partial sun to full sun

ECHINACEA PURPUREA - PURPLE CONEFLOWER

Maintains pink/purple flowers into early fall.

TYPE	Perennial
HARDY RANGE	3A to 10A
HEIGHT	24" to 4' / 60cm to 1.2m
SPREAD	18" to 24" / 45cm to 60cm
GROWTH RATE	Average
FORM	Upright or erect
EXPOSURE	Full sun

GAILLARDIA X GRANDIFLORA - BLANKET FLOWER

Maintains red/orange flowers into early fall.

TYPE	Perennial
HARDY RANGE	4A to 8A
HEIGHT	12" to 36" / 30cm to 90cm
SPREAD	20" to 24" / 50cm to 60cm
GROWTH RATE	Average
FORM	Upright or erect
EXPOSURE	Full sun

PERENNIALS *CONTINUED FROM PREVIOUS PAGE*

GAURA LINDHEIMERI - WHIRLING BUTTERFLIES BEESBLOSSOM

Long lasting white flowers into late fall.

TYPE	Perennial
HARDY RANGE	6A to 9A
HEIGHT	24” to 4’ / 60cm to 1.2m
GROWTH RATE	Average
FORM	Upright or erect
EXPOSURE	Full Sun

GAURA LINDHEIMERI ‘SISKIYOU PINK’ - SISKIYOU PINK BEESBLOSSOM

Long lasting pink flowers into late fall.

TYPE	Perennial
HARDY RANGE	6A to 9A
HEIGHT	12” to 18” / 30cm to 45cm
GROWTH RATE	Average
FORM	Upright or erect
EXPOSURE	Partial shade or partial sun to full sun

GAURA LINDHEIMERI ‘WHIRLING BUTTERFLIES’ - WHIRLING BUTTERFLIES BEESBLOSSOM

Long lasting pink flowers into late fall.

TYPE	Perennial
HARDY RANGE	6A to 9A
HEIGHT	24” to 36” / 60cm to 90cm
SPREAD	12” to 36” / 30cm to 90cm
GROWTH RATE	Average
FORM	Upright or erect
EXPOSURE	Full sun

GERANIUM ‘JOHNSON’S BLUE’ - BLUE GERANIUM

Purple/blue flowers into late summer.

TYPE	Perennial
HARDY RANGE	4A to 8A
HEIGHT	12” to 24” / 30cm to 60cm
SPREAD	20” to 24” / 50cm to 60cm
GROWTH RATE	Average
FORM	Rounded
EXPOSURE	Full sun

HEMEROCALLIS 'PARDON ME' - DAYLILY

Cranberry red flowers into late fall.

TYPE	Perennial
HARDY RANGE	4A to 9A
HEIGHT	12" to 18" / 30cm to 45cm
SPREAD	24" to 4' / 60cm to 1.2m
GROWTH RATE	Average
FORM	Irregular or sprawling
EXPOSURE	Partial shade or partial sun to full sun

HEMEROCALLIS 'STELLAD'ORO' - DAILILY

Yellow/golden flowers into late fall

TYPE	Perennial
HARDY RANGE	4A to 10A
HEIGHT	16" to 20" / 40cm to 50cm
GROWTH RATE	Average
FORM	Irregular or sprawling
EXPOSURE	Partial shade or partial sun to full sun

HEUCHERA MICRANTHA 'PALACE PURPLE' - CORAL BELLS PALACE PURPLE

Reddish purple foliage.

TYPE	Perennial
HARDY RANGE	4A to 9A
HEIGHT	8" to 12" / 20cm to 30cm
GROWTH RATE	Average
FORM	Rounded
EXPOSURE	Partial shade or partial sun
PERSISTENCE	Semi-evergreen

LIATRIS SPICATA - DENSE BLAZING STAR

Maintains red/purple flower throughout summer.

TYPE	Perennial
HARDY RANGE	4A to 9B
HEIGHT	36" to 5' / 90cm to 1.6m
SPREAD	12" to 18" / 30cm to 45cm
GROWTH RATE	Average
FORM	Upright or erect
EXPOSURE	Full sun

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LUPINUS POLYPHYLLUS - BIG LEAF LUPINE

Maintains red to purple flower throughout summer.

TYPE	Perennial
HARDY RANGE	5A to 9A
HEIGHT	24” to 5’ / 60cm to 1.6m
SPREAD	24” to 36” / 60cm to 90cm
GROWTH RATE	Average
FORM	Upright or erect
EXPOSURE	Partial shade or partial sun to full sun

NEPETA X FAASSENII - CATMINT

Maintains red to purple flower into early fall.

TYPE	Perennial
HARDY RANGE	3A to 10A
HEIGHT	12” to 24” / 30cm to 60cm
SPREAD	12” to 24” / 30cm to 60cm
GROWTH RATE	Average
FORM	Irregular or sprawling
EXPOSURE	Full Sun

PENSTEMON DIGITALIS ‘HUSKER RED’ - FOXGLOVE BEARDTOUNGE

Maintains pink to white flower into early fall.

TYPE	Perennial
HARDY RANGE	3A to 9A
HEIGHT	30” to 36” / 75cm to 90cm
GROWTH RATE	Average
FORM	Upright or erect
EXPOSURE	Full sun

PENSTEMON GLOXINOIDES ‘RUBY’ - BORDER PENSTEMON

Maintains pink to red flower into early fall.

TYPE	Perennial
HARDY RANGE	4A to 7A
HEIGHT	24” to 36” / 60cm to 90cm
GROWTH RATE	Average
FORM	Upright or erect
EXPOSURE	Full sun

PEROVSKIA ATRIPLICIFOLIA 'LITTLE SPIRE' - RUSSIAN SAGE

Maintains blue/purple into early fall.

TYPE	Perennial
HARDY RANGE	3A to 9A
HEIGHT	24" to 4' / 60cm to 1m
SPREAD	36" to 4' / 90cm to 1.2m
GROWTH RATE	Average
FORM	Irregular or sprawling and upright or erect
EXPOSURE	Partial shade or partial sun to full sun

RUDBECKIA FULGIDA VAR. SULLIVANTII 'GOLDSTURM' - BLACK-EYED SUSAN

Maintains yellow/golden flower through summer.

TYPE	Perennial
HARDY RANGE	3A to 9A
HEIGHT	24" to 30" / 60cm to 75cm
GROWTH RATE	Average
FORM	Rounded
EXPOSURE	Partial shade or partial sun to full sun

SALVIA NEMOROSA 'MAINACHT (MAYNIGHT)' - MAY NIGHT SAGE

Maintains purple flower through summer.

TYPE	Perennial
HARDY RANGE	4A to 8B
HEIGHT	16" to 18" / 40cm to 45cm
GROWTH RATE	Average
FORM	Upright or erect
EXPOSURE	Full sun
PERSISTENCE	Semi-evergreen

SALVIA X SUPERBA - WOODLAND SAGE

Maintains purple flower through summer.

TYPE	Perennial
HARDY RANGE	4A to 7A
HEIGHT	18" to 30" / 45cm to 75cm
GROWTH RATE	Average
FORM	Upright or erect
EXPOSURE	Full sun
PERSISTENCE	Semi-evergreen

PERENNIALS *CONTINUED FROM PREVIOUS PAGE*

GRASSES

ANDROPOGON GERARDII - BIG BLUESTEM

Maintains golden grass stems and flowers throughout winter

TYPE	Perennial, grass
HARDY RANGE	4A to 7A
HEIGHT	4’ to 6’ / 1.20m to 1.80m
SPREAD	36” to 4’ / 90cm to 1.20m
GROWTH RATE	Fast
FORM	Upright or erect
EXPOSURE	Partial shade or partial sun to full sun
PERSISTENCE	Deciduous

BOUTELOUA GRACILIS - BIG GRAMMA

Maintains gray/green leaves and minor florescence throughout winter

TYPE	Perennial, grass
HARDY RANGE	5A to 9B
HEIGHT	9” to 24” / 23cm to 60cm
SPREAD	18” to 24” / 45cm to 60cm
GROWTH RATE	Average
FORM	Upright or erect
EXPOSURE	Partial shade or partial sun to full sun
PERSISTENCE	Deciduous

FESTUCA AMETHYSTINA - BLUE SHEEP GRASS

Maintains gray green grass stems and minor florescence throughout the winter.

TYPE	Annual, perennial ornamental grass
HARDY RANGE	4A to 9A
HEIGHT	8” to 18” / 20m to 45m
SPREAD	12” to 18” / 30cm to 45cm
GROWTH RATE	Slow
FORM	Clumping
EXPOSURE	Well drained soils, cool climate
PERSISTENCE	Small flowers held above plant on fine, arching stems

HELICTOTRICHON SEMPERVIRENS - BLUE OAT GRASS

Maintains gray green grass stems and minor florescence throughout winter

TYPE	Annual, perennial, grass
HEIGHT	18” to 30” / 45cm to 75cm
SPREAD	12” to 30” / 30cm to 75cm
GROWTH RATE	Slow
FORM	Rounded
EXPOSURE	Partial shade or partial sun to full sun
PERSISTENCE	Deciduous and evergreen

MISCANTHUS SINENSIS - MAIDEN GRASS

Maintains green grass stems and minor florescence throughout winter.

TYPE	Perennial, grass
HARDY RANGE	4A to 9A
HEIGHT	6’ to 8’ / 1.80m to 2.40m
SPREAD	6’ to 10’ / 1.80m to 3.00m
GROWTH RATE	Fast
FORM	Upright or erect
EXPOSURE	Partial shade or partial sun to full sun
PERSISTENCE	Deciduous

MISCANTHUS SINENSIS ‘GRACILLIMUS’ - EULALIA GRASS

Maintains green grass stems and feathery florescence throughout winter.

TYPE	Perennial, grass
HARDY RANGE	6A to 9A
HEIGHT	36” to 4’ / 90cm to 1.20m
SPREAD	6’ to 10’ / 1.80m to 3.00m
GROWTH RATE	Fast
FORM	Irregular or sprawling, upright or erect and vase shaped
EXPOSURE	Partial shade or partial sun to full sun
PERSISTENCE	Deciduous

MISCANTHUS SINENSIS ‘YAKU JIMA’ - DWARF MAIDEN GRASS

Maintains gray green grass stems and feathery florescence throughout winter.

TYPE	Annual, perennial, grass
HARDY RANGE	5A to 9B
HEIGHT	36” to 4’ / 90cm to 1.20m
FORM	Upright or erect
EXPOSURE	Partial shade or partial sun to full sun

PANICUM VIRGATUM ‘HEAVY METAL’ - HEAVY METAL BLUE SWITCH GRASS

Maintains gray green grass stems and feathery florescence throughout winter

TYPE	Perennial, grass
HARDY RANGE	5B to 9A
HEIGHT	4’ to 5’ / 1.20m to 1.60m
SPREAD	24” to 30” / 60cm to 75cm
GROWTH RATE	Average
FORM	Upright or erect
EXPOSURE	Full sun

GRASSES *CONTINUED FROM PREVIOUS PAGE*

PENNISETUM ALOPECUROIDES - FOUNTAIN GRASS

Maintains green grass stems and feathery florescence throughout winter

TYPE	Perennial, grass
HARDY RANGE	5A to 9A
HEIGHT	36” to 4’ / 90cm to 1.20m
SPREAD	36” to 6’ / 90cm to 1.80m
GROWTH RATE	Fast
FORM	Rounded
EXPOSURE	Full sun
PERSISTENCE	Evergreen and semi-evergreen

SORGHASTRUM NUTANS ‘INDIAN STEEL’ - BLUE INDIAN GRASS

Maintains gray/green grass stems and feathery florescence throughout winter

TYPE	Perennial, grass
HARDY RANGE	4A to 9A
HEIGHT	24” to 36” / 60cm to 90cm
GROWTH RATE	Fast
FORM	Upright or erect
EXPOSURE	Full sun

CALAMAGROSTIS X ACUTIFLORA ‘KARL FOERSTER’ - FEATHER REED GRASS

Maintains golden grass stems and flowers throughout winter

TYPE	Perennial, grass
HARDY RANGE	4A to 9A
HEIGHT	4’ to 5’ / 1.20m to 1.60m
SPREAD	16” to 18” / 40cm to 45cm
GROWTH RATE	Average
FORM	Columnar and upright or erect
EXPOSURE	Partial shade or partial sun to full sun
PERSISTENCE	Deciduous

GROUND COVERS

POA PRATENSIS - KENTUCKY BLUEGRASS

Maintains dark green color to late fall.

TYPE	Perennial, grass
HARDY RANGE	3A to 9A
HEIGHT	1” to 35” / 3cm to 90cm
GROWTH RATE	Fast
FORM	Upright or erect
EXPOSURE	Full sun

VINCA MINOR - PERIWINKLE

Maintains dark green color through winter.

TYPE	Perennial
HARDY RANGE	4A to 9A
HEIGHT	6” to 12” / 15cm to 30cm
GROWTH RATE	Fast
FORM	Prostrate, spreading or horizontal and variable spread
EXPOSURE	Full shade to full sun
PERSISTENCE	Evergreen

SHRUBS

BERBERIS THUNBERGII 'CRIMSON PYGMY' - DWARF BARBERRY

Maintains dark red/purple color year round.

TYPE	Shrub, woody plant
HARDY RANGE	4A to 7B
HEIGHT	18" to 24" / 45cm to 60cm
SPREAD	36" to 4' / 90cm to 1.20m
GROWTH RATE	Slow
FORM	Rounded
EXPOSURE	Partial shade or partial sun to full sun
PERSISTENCE	Semi-evergreen

CARYOPTERIS X CLANDONENSIS - BLUEBEARD

Maintains green leaf and blue flower through fall.

TYPE	Shrub, woody plant
HARDY RANGE	6A to 9B
HEIGHT	24" to 36" / 60cm to 90cm
SPREAD	24" to 36" / 60cm to 90cm
GROWTH RATE	Average
FORM	Rounded
EXPOSURE	Partial shade or partial sun to full sun
PERSISTENCE	Deciduous

CARYOPTERIS X CLANDONENSIS 'HEAVENLY BLUE' - BLUE MIST SPIRAEA

Maintains green leaf and blue flower through fall.

TYPE	Shrub, woody plant
HARDY RANGE	6A to 9B
HEIGHT	24" to 36" / 60cm to 90cm
SPREAD	24" to 36" / 60cm to 90cm
GROWTH RATE	Average
FORM	Rounded
EXPOSURE	Full sun
PERSISTENCE	Deciduous

CORNUS STOLONIFERA - RED-TWIG DOGWOOD

Maintains red (or yellow) bark throughout winter.

TYPE	Shrub, woody plant
HARDY RANGE	2B to 7A
HEIGHT	8' to 10' / 2.40m to 3.00m
SPREAD	8' to 10' / 2.40m to 3.00m
GROWTH RATE	Average
FORM	Oval, rounded and upright or erect
EXPOSURE	Partial shade or partial sun to full sun
PERSISTENCE	Deciduous

EPHEDRA VIRIDIS - MORMON TEA

Maintains gray green leaf year round.

TYPE	Shrub, groundcover, woody plant
HARDY RANGE	6B to 11
HEIGHT	36” to 5’ / 90cm to 1.60m
SPREAD	36” to 5’ / 90cm to 1.60m
GROWTH RATE	Average
FORM	Upright or erect
EXPOSURE	Full sun
PERSISTENCE	Evergreen

EUONYMUS ALATUS ‘COMPACTUS’ - DWARF WINGED EUONYMUS

Brilliant red fall color.

TYPE	Shrub, woody plant
HARDY RANGE	4B to 8B
HEIGHT	4’ to 6’ / 1.50m to 2.00m
SPREAD	4’ to 6’ / 1.50m to 2.00m
GROWTH RATE	Average
FORM	Rounded
EXPOSURE	Partial shade or partial sun to full sun
PERSISTENCE	Deciduous

LAVANDULA ANGUSTIFOLIA - ENGLISH LAVENDER

Gray/green leafs and lavender flowers through most of year.

TYPE	Shrub, woody plant
HARDY RANGE	5A to 8A
HEIGHT	24” to 36” / 60cm to 90cm
SPREAD	36” to 4’ / 90cm to 1.20m
GROWTH RATE	Slow
FORM	Rounded
EXPOSURE	Full sun
PERSISTENCE	Deciduous and semi-evergreen

MAHONIA AQUIFOLIUM - OREGON GRAPE

Purple/green leaves throughout year. Fall and winter blue berries.

TYPE	Shrub, woody plant
HARDY RANGE	4B to 8A
HEIGHT	3’ to 4’ / 1.0m to 1.5m
SPREAD	3’ to 4’ / 1.0m to 1.5m
GROWTH RATE	Average
FORM	Rounded
EXPOSURE	Sun to part shade
PERSISTENCE	Evergreen

SHRUBS *CONTINUED FROM PREVIOUS PAGE*

POTENTILLA FRUTICOSA - SHRUBBY CINQUEFOIL

Gray/green leaves throughout year, yellow flowers through fall.

TYPE	Shrub, woody plant
HARDY RANGE	2A to 6B
HEIGHT	12” to 4’ / 30cm to 1.20m
SPREAD	24” to 4’ / 60cm to 1.20m
GROWTH RATE	Slow
FORM	Rounded, spreading or horizontal and vase shaped
EXPOSURE	Partial shade or partial sun to full sun
PERSISTENCE	Evergreen

PRUNUS BESSEYI - WESTERN SAND CHERRY

Purple leaves through fall.

TYPE	Shrub, woody plant
HARDY RANGE	3A to 6B
HEIGHT	36” to 6’ / 90cm to 1.80m
SPREAD	36” to 6’ / 90cm to 1.80m
GROWTH RATE	Average
FORM	Rounded
EXPOSURE	Partial shade or partial sun to full sun
PERSISTENCE	Deciduous

PRUNUS X CISTENA - PURPLELEAF SAND CHERRY

Purple leaves through fall.

TYPE	Shrub, woody plant
HARDY RANGE	3B to 7A
HEIGHT	6’ to 8’ / 1.80m to 2.40m
SPREAD	6’ to 10’ / 1.80m to 3.00m
GROWTH RATE	Average
FORM	Rounded
EXPOSURE	Full sun
PERSISTENCE	Deciduous

RHUS AROMATICA ‘GRO-LOW’ - GROW-LOW SUMAC

Red/orange leaves through fall.

TYPE	Shrub, woody plant
HARDY RANGE	3A to 9A
HEIGHT	24” to 36” / 60cm to 90cm
SPREAD	4’ to 10’ / 1.20m to 3.00m
GROWTH RATE	Slow
FORM	Rounded and spreading or horizontal
EXPOSURE	Partial shade or partial sun to full sun
PERSISTENCE	Deciduous

RHUS GLABRA - SMOOTH SUMAC

Red/orange leaves through fall.

TYPE	Shrub, woody plant
HARDY RANGE	3A to 9B
HEIGHT	10’ to 15’ / 3.00m to 4.60m
SPREAD	10’ to 15’ / 3.00m to 4.60m
GROWTH RATE	Average
FORM	Rounded and upright or erect
EXPOSURE	Partial shade or partial sun to full sun
PERSISTENCE	Deciduous

VIBURNUM TRILOBUM - AMERICAN CRANBERRY BUSH

Red/orange fall leaves.

TYPE	Shrub, woody plant
HARDY RANGE	2A to 7B
HEIGHT	8’ to 12’ / 2.40m to 3.60m
SPREAD	8’ to 15’ / 2.40m to 4.60m
GROWTH RATE	Average
FORM	Rounded and upright or erect
EXPOSURE	Partial shade or partial sun to full sun
PERSISTENCE	Deciduous

VIBURNUM LANTANA - WAYFARING TREE

Orange/red leaves through fall.

TYPE	Shrub, woody plant
HARDY RANGE	4A to 7A
HEIGHT	10’ to 15’ / 3.00m to 4.60m
SPREAD	10’ to 15’ / 3.00m to 4.60m
GROWTH RATE	Average
FORM	Rounded
EXPOSURE	Partial shade or partial sun to full sun
PERSISTENCE	Deciduous

VIBURNUM RHYTIDOPHYLLUM - LEATHER-LEAF VIBURNUM

Dark green leaves and dark purple berries year round.
White flowers and red berries in spring and summer.

TYPE	Shrub, woody plant
HARDY RANGE	5B to 7B
HEIGHT	8’ to 15’ / 2.40m to 4.60m
SPREAD	6’ to 10’ / 1.80m to 3.00m
GROWTH RATE	Average
FORM	Oval and upright or erect
EXPOSURE	Full shade to full sun
PERSISTENCE	Evergreen and semi-evergreen

TREES


TILIA CORDATA – LITTLELEAF LINDEN 'GREENSPIRE'

COLORS	Pale yellow to near white leaf color
TYPE	Tree, woody plant
HARDY RANGE	3A to 7A
HEIGHT	40' to 50' / 12m to 15m
SPREAD	35' to 40' / 10.6m to 12m
FORM	Pyramidal
EXPOSURE	Full sun to full sun
PERSISTENCE	Deciduous


PYRUS CALLERYANA – BRADFORD PEAR 'ARISTOCRAT'

COLORS	Brilliant yellow to red leaf color
TYPE	Tree, woody plant
HARDY RANGE	5 to 9
HEIGHT	25' to 35' / 7.6m to 11m
SPREAD	20' to 25' / 6m to 8m
FORM	Pyramidal
EXPOSURE	Full sun
PERSISTENCE	Deciduous


PYRUS CALLERYANA 'CHANTICLEER FLOWE RING PEAR'

COLORS	Yellow to orange fall leaf color
TYPE	Tree, woody plant
HARDY RANGE	5 to 9
HEIGHT	30' to 60' / 15.20m to 18.30m
SPREAD	15' to 20' / 10.70m to 15.20m
GROWTH RATE	Moderate
FORM	Pyramidal
EXPOSURE	Full sun
PERSISTENCE	Deciduous


ACER X FREEMANII JEFFERSRED 'AUTUMN BLAZE' - AUTUMN BLAZE MAPLE

COLORS	Orange/red leaves through fall
TYPE	Tree, woody plant
HARDY RANGE	3A to 7A
HEIGHT	40' to 55' / 12m to 17m
SPREAD	30' to 40' / 9m to 12m
GROWTH RATE	Average
FORM	Rounded
EXPOSURE	Sun to part shade
PERSISTENCE	Deciduous


ACER GLABRUM - ROCKY MOUNTAIN MAPLE

COLORS	Orange/red leaves through fall
TYPE	Tree, woody plant
HARDY RANGE	3A to 8A
HEIGHT	10’ to 30’ / 3m to 9.2m
SPREAD	8’ to 20’ / 2.4m to 6m
GROWTH RATE	Slow
FORM	Rounded
EXPOSURE	Full shade to full sun
PERSISTENCE	Deciduous


ACER GRISEUM - PAPERBARK MAPLE

COLORS	Orange/red leaves through fall
TYPE	Tree, woody plant
HARDY RANGE	4A to 8B
HEIGHT	15’ to 30’ / 4.6m to 9.2m
SPREAD	15’ to 30’ / 4.6m to 9.2m
GROWTH RATE	Slow
FORM	Oval, ronded and upright or erect
EXPOSURE	Full shade to full sun
PERSISTENCE	Deciduous

ACER PALMATUM DISSECTUM ‘ATROPURPUREUM’ - JAPANESE MAPLE

COLORS	Deep red/purple fall foliage
TYPE	Tree, woody plant
HARDY RANGE	3B to 7A
HEIGHT	8’ to 10’ / 2.4m to 3m
SPREAD	7’ to 10’ / 3m to 3.5m
GROWTH RATE	Average
FORM	Canopy
EXPOSURE	Sun to part shade
PERSISTENCE	Deciduous


ACER PLATANOIDES – NORWAY MAPLE

COLORS	Green to dark green; yellow fall color
TYPE	Tree, woody plant
HARDY RANGE	3 to 7
HEIGHT	40’ to 50’ but can reach 90’
SPREAD	30’ to 45’
GROWTH RATE	Moderate to fast
FORM	Medium to coarse dense; rounded, symmetrical crown; spreading
EXPOSURE	Sun to part shade
PERSISTENCE	Deciduous

TREES *CONTINUED FROM PREVIOUS PAGE*


CELTIS OCCIDENTALIS 'HACKBERRY'

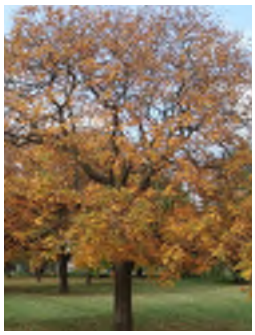
COLORS	Light yellow to yellow fall leaf color
TYPE	Tree, woody plant
HARDY RANGE	3A to 9A
HEIGHT	50' to 75' / 15.2m to 22.8m
SPREAD	35' to 50' / 10.6m to 15.2m
GROWTH RATE	Fast
FORM	Ronded and vase shaped
EXPOSURE	Partial shade or partial sun to full sun
PERSISTENCE	Deciduous


GINKGO BILOBA 'GINKO'

COLORS	Light yellow to yellow fall leaf color
TYPE	Tree, woody plant
HARDY RANGE	4A to 8A
HEIGHT	50' to 75' / 15.2m to 22.8m
SPREAD	40' to 50' / 12.2m to 15.2m
GROWTH RATE	Fast
FORM	Pyramidal and rounded
EXPOSURE	Partial shade or partial sun to full sun
PERSISTENCE	Deciduous


GLEDITSIA TRIACANTHOS F. INERMIS 'SHADEMASTER HONEYLOCUST'

COLORS	Light yellow to yellow fall leaf color
TYPE	Tree, woody plant
HARDY RANGE	5A to 8A
HEIGHT	50' to 75' / 15.2m to 22.8m
SPREAD	45' to 55' / 13.8m to 16.8m
GROWTH RATE	Fast
FORM	Oval and vase shaped
EXPOSURE	Partial shade or partial sun to full sun
PERSISTENCE	Deciduous




KOELREUTERIA PANICULATA 'GOLDEN RAINTERRE'

COLORS	Light yellow to yellow fall leaf and seed pod color
TYPE	Tree, woody plant
HARDY RANGE	5A to 8A
HEIGHT	25' to 40' / 7.6m to 12.20m
SPREAD	35' to 50' / 10.6m to 15.20m
GROWTH RATE	Average
FORM	Rounded and vase shaped
EXPOSURE	Full sun
PERSISTENCE	Deciduous


MALUS X 'SPRING SNOW CRABAPPLE'

COLORS	Light orange leaves and red-orange fruit fall color
TYPE	Tree, woody plant
HARDY RANGE	4A to 8A
HEIGHT	20' to 25' / 6m to 7.6m
SPREAD	12' to 15' / 3.6m to 4.6m
GROWTH RATE	Average
FORM	Oval and upright or erect
EXPOSURE	Full sun
PERSISTENCE	Deciduous

PICEA PUNGENS GLAUCA 'BLUE SPRUCE'

COLORS	Blue-green foliage
TYPE	Tree, woody plant
HARDY RANGE	2B to 7A
HEIGHT	60' to 80' / 18.20m to 24.40m
SPREAD	25' to 35' / 7.60m to 10.60m
GROWTH RATE	Slow
FORM	Pyramidal
EXPOSURE	Full sun
PERSISTENCE	Evergreen

AUSTRIAN PINE 'BLUE SPRUCE'

COLORS	Dark green foliage
TYPE	Tree, woody plant
HARDY RANGE	3B to 7A
HEIGHT	25' to 40' / 7.60m to 12.20m
SPREAD	25' to 35' / 7.60m to 10.60m
GROWTH RATE	Average
FORM	Oval and pyramidal
EXPOSURE	Full sun
PERSISTENCE	Evergreen

PSEUDOTSUGA MENZIESII 'ROCKY MOUNTAIN DOUGLAS FIR'

COLORS	Blue-green foliage
TYPE	Tree, woody plant
HARDY RANGE	3B to 6A
HEIGHT	40' to 80' / 12.20m to 24.40m
SPREAD	25' to 30' / 7.60m to 9.20m
GROWTH RATE	Average
FORM	Pyramidal
EXPOSURE	Full sun
PERSISTENCE	Evergreen

TREES *CONTINUED FROM PREVIOUS PAGE*


PLATANUS ACERIFOLIA BLOODGOOD 'SYCAMORE'

COLORS	Tan/yellow fall foliage
TYPE	Tree, woody plant
HARDY RANGE	5B to 10A
HEIGHT	70' to 86' / 21m to 26m
SPREAD	50' to 70' / 15m to 21m
GROWTH RATE	Average
FORM	Rounded
EXPOSURE	Sun to part shade
PERSISTENCE	Deciduous


QUERCUS MACROCARPA 'BUR OAK'

COLORS	Rusty orange fall color foliage
TYPE	Tree, woody plant
HARDY RANGE	3A to 8A
HEIGHT	50' to 75' / 15.20m to 22.80m
SPREAD	50' to 80' / 15.20m to 24.40m
GROWTH RATE	Average
FORM	Rounded and spreading or horizontal
EXPOSURE	Full sun
PERSISTENCE	Deciduous


QUERCUS ROBUR FASTIGIATA 'UPRIGHT ENLIGSH OAK'

COLORS	Rusty orange fall color persistant foliage throughout winter
TYPE	Tree, woody plant
HARDY RANGE	5A to 8A
HEIGHT	50' to 75' / 15.20m to 22.80m
SPREAD	10' to 15' / 3.00m to 4.60m
GROWTH RATE	Average
FORM	Columnar and upright or erect
EXPOSURE	Full sun
PERSISTENCE	Deciduous


TILIA CORDATA ' LITTLE-LEAF LINDEN'

COLORS	Yellow and orange fall color
TYPE	Tree, woody plant
HARDY RANGE	3B to 7A
HEIGHT	50' to 75' / 15.20m to 22.80m
SPREAD	35' to 50' / 10.60m to 15.20m
GROWTH RATE	Average
FORM	Oval and pyramidal
EXPOSURE	Partial shade or partial sun to full sun
PERSISTENCE	Deciduous

‘ZELKOVA’ SERRATA GREEN VASE

COLORS	Orange-red fall color
TYPE	Tree, woody plant
HARDY RANGE	5B to 8A
HEIGHT	50’ to 75’ / 15.20m to 22.80m
SPREAD	35’ to 50’ / 10.60m to 15.20m
GROWTH RATE	Fast
FORM	Vase shaped
EXPOSURE	Full sun
PERSISTENCE	Deciduous

FAGUS SYLVATICA ‘EUROPEAN BEECH’

COLORS	Burgundy leaf color
TYPE	Tree, woody plant
HARDY RANGE	4 to 7
HEIGHT	50’ to 60’ / 15.20m to 18.30m
SPREAD	35’ to 50’ / 10.70m to 15.20m
GROWTH RATE	Moderate
FORM	Rounded pyramidal
EXPOSURE	Full sun to part shade
PERSISTENCE	Deciduous

TREES *CONTINUED FROM PREVIOUS PAGE*

APPENDIX 5

ARCHITECTURALLY SIGNIFICANT BUILDINGS

The following building depictions are intended to illustrate generally what would be considered to be “Architecturally Significant” buildings (refer to page 26 for further dialogue). Base Facility Designs regardless of execution method, that are designated to be “Architecturally Significant” should use this appendix as a metric baseline in addition to the other applicable parts of this guide to develop these type facility designs.


exercise