Army Installation Design Guide

Fort Wainwright

U.S. Army Garrison, Alaska
Fort Wainwright

NOVEMBER 2006

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Fort Wainwright

Alaska

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PREPARED BY

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Executive Summary

Authority. The *Commander's Guide Army Installation Standards* published 1 October 2002 gave initial senior Army leadership direction. The *Army Installation Design Standards* establishes the Army standards for installation design as directed by the Secretary of the Army and the Chief of Staff, Army. The *Model Army Installation Design Guide* used in the development of the *Fort Wainwright Installation Design Guide* was published 3 May 2004.

ES.1 INTRODUCTION

An efficient, harmonious, and visually compatible environment is conducive to attracting and retaining skilled and motivated personnel. See Figure ES-1a. The Fort Wainwright Installation Design Guide (IDG) provides direction for improving the visual quality on Fort Wainwright and also serves as a tool for implementing the goal and vision of "creating an installation of excellence that fosters pride and commitment to the Army professional military way of life. See Figure ES-1b.

▲ **Figure ES-1a**
Architectural Element of Visual Quality

▲ **Figure ES-1b**
Quality Housing Areas Help Foster Pride and Commitment to the Military Way-of-Life

ES.2 AUDIENCE

The IDG is written for personnel responsible for the review, adoption, and/or implementation of the standards. Responsible persons include the commander, master planners, architects, engineers, buildings and grounds maintenance personnel, contractors, and others. The IDG is used during design, construction, and maintenance activities.

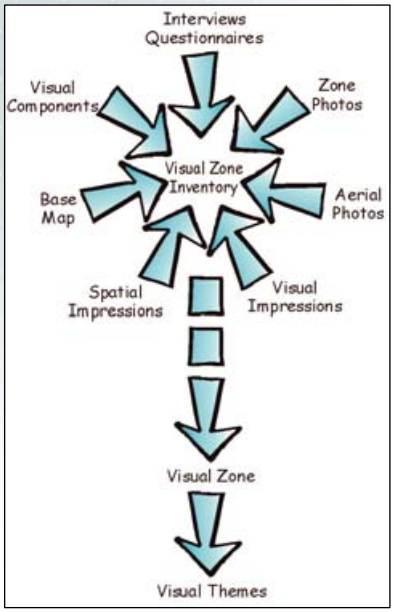
ES.3 THE INSTALLATION DESIGN GUIDE (IDG)

Visual quality is dependent upon the visual appearance of the layout and physical components of Fort Wainwright. See Figure ES-3a. The IDG serves as a comprehensive planning tool for articulating the depot's short-range and long-range master planning vision. Once a design standard is prepared and adopted, it is used for design decisions for all new construction, renovation, maintenance, and repair projects.

The IDS was developed utilizing a process of analysis, planning, design, and implementation. This process includes the following steps, Figure ES-3b:

- Set Goals and Objectives
- Collect Base Data
- Conduct Visual and Spatial Surveys
- Define Visual Themes and Zones
- Prepare Functional Analysis
- Define Visual and Spatial Assets and Liabilities
- Prepare Recommendations for Projects to Improve Visual and Spatial Impacts

▲ **Figure ES-3a**
Visual Quality Depends on Design Components



▲ **Figure ES-3b**
Visual Inventory

ES.4 IDG METHODOLOGY

The IDG provides standards and guidelines to installation decision makers, contracted and in-house planning and design professionals, installation maintenance personnel, and others. The IDG sets interior and exterior standards and planning criteria to be integrated into all proposals, design and construction contracts, renovation, maintenance, or repair projects performed on the installation or its properties.

The following paragraphs present an overview of the steps involved in developing the Fort Wainwright IDG. The IDG promotes a sense of arrival, functional compatibility, and visual order; enhances site assets; relates the natural and man-made environment; and achieves consistent architectural themes throughout the installation. See Figure ES-4a.

▲ **Figure ES-4a**
The Chena River is an Important Natural Asset

▲ **Figure ES-4b**
Fort Wainwright's Natural Setting Impacts Missions

Step 1 – Installation Profile

Initially an installation profile was created in which the installation setting, existing land use, proposed land use, and circulation system was investigated. See Figure ES-4b. General narrative about Fort Wainwright's location, history, mission, and natural and cultural resources was prepared to set the stage for the following steps.

Step 2 – Visual Surveys

A windshield survey was performed to determine the number and types of different visual themes and zones that exist within the installation. The survey was conducted utilizing existing installation base maps, visual and physical on-site inspections, and photographs to record impressions of the visual and spatial impacts. Additional surveys and data helped to document the liabilities and assets within each zone. See Figures ES-4c and ES-4d.

▲ **Figure ES-4d**
The Physical Fitness Center is a Visual Asset

Step 3 – Visual Themes and Zones

Information gathered was recorded and used to delineate visual themes. Visual themes are developed based on their land use, function, visual characteristic, and/or significance. See Figure ES-4e. These visual themes are used to achieve a perception of visual unification within the installation. They are used to create design consistency and provide orientation and a "sense of place." Fort Wainwright's Visual Theme areas are:

- Family Housing
- Historic Airfield
- River Corridor
- Town Center
- Industrial
- Recreation/Open Space
- Company Campus

▲ **Figure ES-4c**
Unscreened Trash Dumpsters are Visual Liabilities

▲ **Figure ES-4e**
Typical Family Housing Visual Theme

▲ **Figure ES-4f**
Historic Landmark Visual Zone

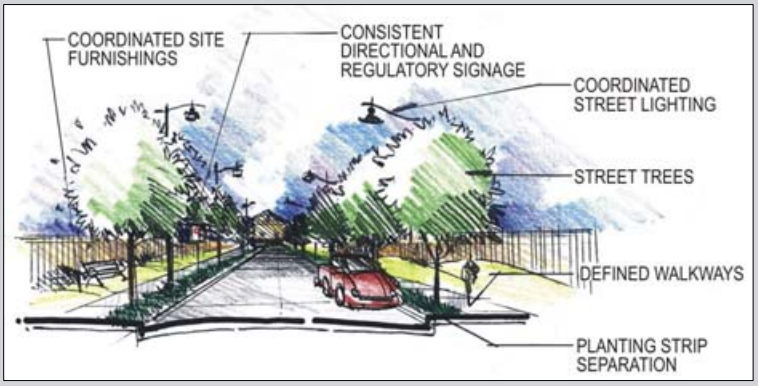
Following the development of visual themes, further work was done to find areas with visual character that had potential and/or need for improvement or change. Typical visual characteristics included unique buildings, historical facilities, vehicular and pedestrian corridors, functional use, natural features, and spatial relationships. See Figure ES-4f. The Visual Zones developed for Fort Wainwright are:

- Family Neighborhoods
- Historic Landmark
- Administration Quad
- Chena River Trail
- Exchange/Commissary
- Open Space
- Power Plant
- DPW Shops
- Motor Pools
- Badger Lake
- Meridian Road
- Neely Road
- Alder Avenue
- Ball Field Complex
- Badger Gate
- Barracks
- Monterey Lake

Step 4 – Assets and Liabilities

The survey and assessment of the visual zones included the preparation of a functional analysis map. This analysis organizes visual impressions and assesses their functional relationships to determine the visual character and unifying motif of each zone. The visual zone assets and liabilities assessment, together with the functional analysis of each zone, were used to prepare visual impressions.

A visual inventory was conducted to determine visual and spatial assets and liabilities, Figure ES-4g. This was accomplished through on-site review and analysis of the visual impacts within each zone. The visual impacts within each visual zone were recorded utilizing six design components of the installation. The use of the design components simplifies and directs the assessment of visual assets and liabilities by providing categories for review and analysis. Visual impressions of each zone are categorized according to six physical components.



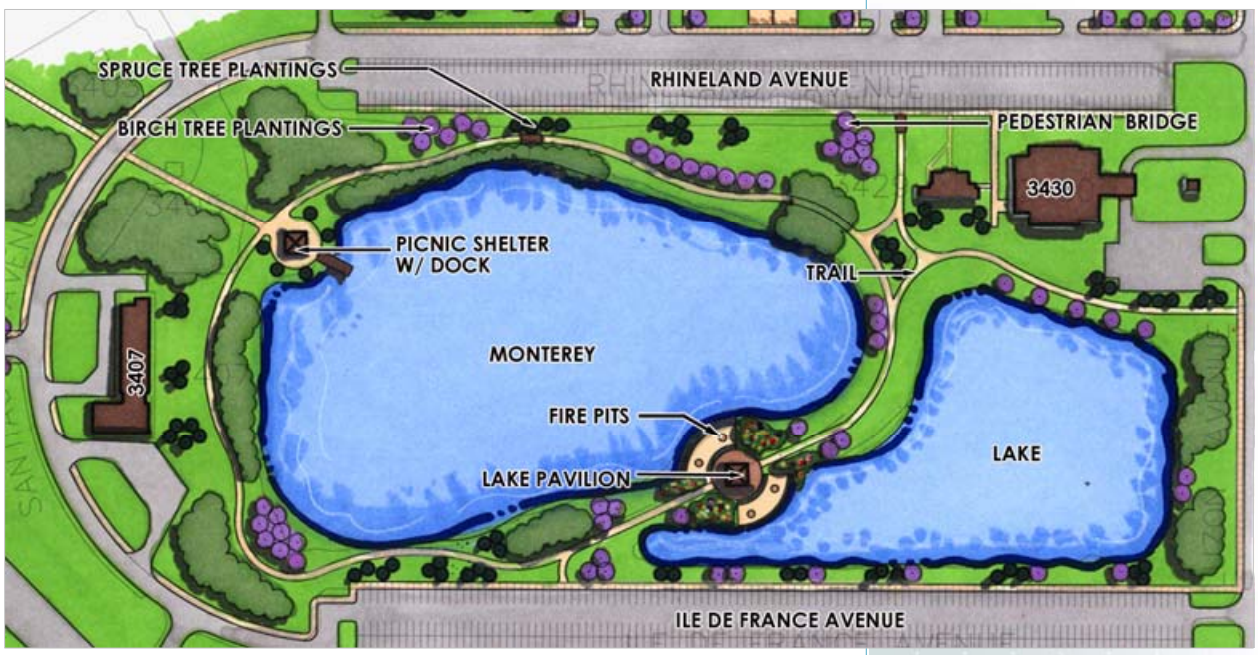
Objective

Existing

▲ **Figure ES-4g**
Visual Goals and Objectives

These design components are:

- Site Planning – The spatial layout and functional relationships of the natural and manmade elements on Fort Wainwright are determined by the site plan. It organizes the functional relationships of the other five components of visual impact. See Figure ES-4h.



▲ **Figure ES-4h**
Site Planning Organizes Visual Relationships

- Structures – Fort Wainwright's image is primarily determined by the design character and siting of its buildings. See Figure ES-4i.
- Circulation – The location and design of roads, parking lots, and pedestrian circulation greatly improves the visual impact. See Figure ES-4j.

▲ **Figure ES-4i**
Visual Image is a Result of Site Character and Building Siting

▲ **Figure ES-4j**
Parking Impacts Visual Setting

▲ **Figure ES-4k**
Native Plant Material is Undisturbed Near the Gravel Pit

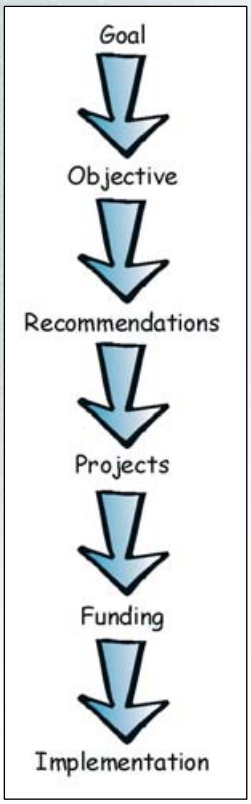
▲ **Figure ES-4l**
Gates Provide Installation Security

- Plant Material – Fort Wainwright's image is impacted by plant material. Native and naturalized plant material should be preserved, planted, and maintained. See Figure ES-4k.
- Site Elements – The image of the installation is also impacted by the design and location of site furnishings, signs, lighting, and utilities.
- Security – Concerns for security force protection impact the location and design of buildings and their surroundings. See Figure ES-4l.

The visual zone assets and liabilities provide information about the visual quality of Fort Wainwright and from this information a list of recommendations for improvements to the installation visual quality was developed.

Step 5 – Recommendations

Recommendations were developed to address the liabilities identified and to enhance the assets noted in accordance with Army standards and the IDG goals and objectives. Recommendations were made in the form of specific projects that were utilized to prepare a prioritized projects list for approval by the installation Real Property Planning Board. See Figure ES-4m.



▲ **Figure ES-4m**
Design Guide Process

Section 1.0
Introduction

1

1.1 PURPOSE

Army installations should provide efficient, harmonious, and visually compatible physical environments conducive to attracting and retaining skilled and motivated personnel. Fort Wainwright conveys a visual image established by its architectural and historical character, arrangement of facilities, circulation patterns, and features in the landscape. See Figure 1.1a. This image can be clear, orderly, logical, and attractive; or cluttered, confused, and unattractive.

The visual quality of the installation is achieved through a process of analysis, planning, design and implementation. See Figure 1.1b. This process includes planning compatible land use arrangements, performing site analyses that achieve appropriate site selection, and designing site layouts, architectural character, and landscape features that complement adjacent facilities.

▲ **Figure 1.1a**
Historical Preservation Illustrates the Collective History and Identity of the Installation

▲ **Figure 1.1b**
Visual Quality Can Be Achieved Through Architectural Design

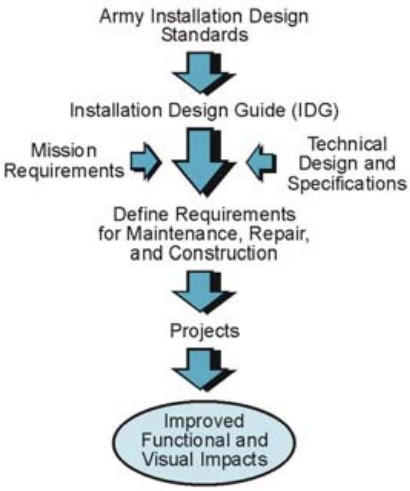
▲ **Figure 1.1c**
Architectural Material Selection and Color Scheme Establishes Visual Order

The Installation Design Guide establishes the visual order, architectural character, common regional design elements, and landscape features that will result in improved visual quality of the installation. See Figure 1.1c. This guide is applied to all new construction, renovation, maintenance and repair, and military family housing projects.

The purpose of the Army Installation Design Guide (IDG) is to provide design guidance for standardizing and improving the quality of the total environment of the installation. This includes not only the visual impact of features on the installation, but also the impact of projects on the total built and natural environment. The improvement of the quality of visual design and development and use of sustainable design and development practices have a direct and future impact on the quality of life for those who live, work, or visit the installation.

The IDG includes standards and general guidelines for the design issues of site planning; architectural character; colors and materials; vehicular and pedestrian circulation; and landscape elements, including plant material, seating, signage, lighting, and utilities. The design guidelines incorporate sustainable design, quality of design, anti-terrorism, low maintenance, historical and cultural considerations, durability, safety, and compatibility.

The IDG is a tool to improve the appearance and functioning of Fort Wainwright through the implementation of Army standards; Figure 1.1d.



▲ **Figure 1.1d**
IDG is a Tool to Implement Army Standards

1.2 GOAL

The goal of the IDG is to provide a clear, comprehensive approach to establish and maintain a positive visual imagery throughout the installation and implement appropriate standards. This is accomplished by providing a systematic development process that is defined through description, analysis, synthesis, and implementation.

▲ **Figure 1.3a**
The IDG Defines Site Element Design Standards

1.3 OBJECTIVES

The objectives of the IDG are:

- To provide a set of general design standards and guidelines that define color, materials, style, signage, and other aspects of design for all visual elements surveyed. See Figure 1.3a.
- To provide standards and guidelines for the selection of materials for new construction, renovation, maintenance, and repair projects.
- To provide guidance for accomplishing sustainable development.
- To provide a structured methodology for establishing projects to improve the visual imagery of the installation.
- To provide guidance to integrate antiterrorism/force protection (AT/FP) standards. See Figure 1.3b.

▲ **Figure 1.3b**
IDG Guidance Helps Implement AT/FP Standards

1.4 AUDIENCE

The IDG is to be used by all individuals involved in decision-making, design, construction, and maintenance of facilities; Figure 1.4a. The primary users include the following:

- Senior Mission Commander
- Garrison Commanders and Staff
- Installation planning and design personnel
- Installation maintenance personnel
- Installation Management Agency and Region
- U.S. Army Corps of Engineers project managers, design, and construction staff
- Consulting Planners, Architects, Engineers, Interior Designers, and Landscape Architects
- Supporting agencies such as AAFES, DeCA, DoDDS, MEDCOM, tenants, etc.
- U.S. National Guard

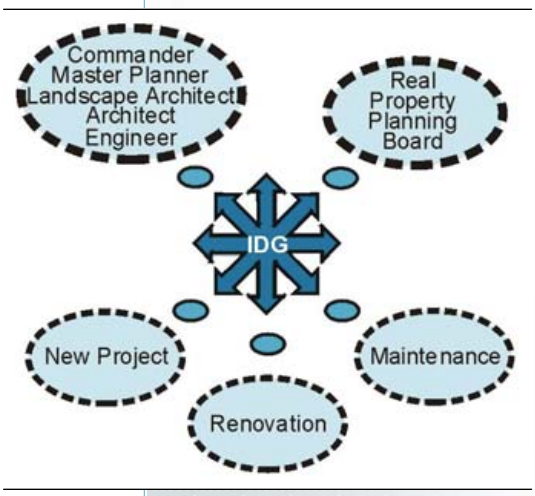


Figure 1.4a
IDG Guidance

The ultimate success of the IDG is dependent upon the commitment of the above individuals and organizations working as a team to apply the Army standards.

1.5 ORGANIZATION

This Army IDG is organized to facilitate the preparation and execution of projects to improve the visual image of the installation and to ensure design conforms to Army standards to include sustainability. See Figure 1.5a.

Sections 2 and 3 discuss the process, use, and implementation of the IDG.

Section 4 establishes the installation profile. The installation setting, existing land use, and future land use are discussed.

Section 5 addresses the development of installation visual themes and zones. It lists visual themes and zones, and offers recommendations.

Section 6 contains prioritized improvement projects developed for the visual themes and zones. All projects are addressed in terms of existing conditions, design concept, cost estimate, funding, and maintenance impact.

Figure 1.5a
Utilizing Design Standards Improves the Visual Image of the Installation

Sections 7 through 12 discuss the six design components used in the preparation of plans for new construction, renovation, maintenance, and repair projects. These design components are also used for review and analysis during the visual inventory of the installation.

1.6 WHEN TO USE THE ARMY INSTALLATION DESIGN GUIDE

This IDG provides installation-specific design data. The general design concepts, recommendations, and standards addressed herein are applicable to all Army installations. This document will be used as a reference to acquire recommendations and Army standards on the design of all facilities including: roadways, roadway widening, parking, walkways, troop running trails and movement paths, bikeways, entrance gates, site furnishing selection and placement, signage selection and placement, lighting selection and placement, and utilities. Design, selection, and installation of new plant materials is based upon the guidance herein.

1.7 MAINTAINING THE ARMY INSTALLATION DESIGN GUIDE

Since the IDG is a "living document", keeping it up-to-date and accurate will ensure its continued usefulness. Therefore, it will become necessary to revise it as mission, budget, standards, and other conditions generate new planning and design requirements and in response to facility user feedback.

In accordance with AR 210-20, Master Planning for Army Installations, the installation RPPB is the adjudicating body for the Army IDG at the installation level. Violations and variances from standards will be reviewed and adjudicated by the RPPB. The Senior Mission Commander will chair an Installation Planning Board (IPB) to review and approve the RPPB's actions, Figure 1.7a.

1.8 RESPONSIBILITIES

As directed by the Secretary of the Army and the Chief of Staff, Army and approved by the Army Installation Management, Figure 1.8a, Board of Directors the following responsibilities are established:

Figure 1.7a
U.S. Army Garrison, Alaska

Figure 1.8a
Assistant Chief of Staff for Installation Management Agency

1.8.1 Assistant Chief of Staff for Installation Management (ACSIM)

- Establish Army facility standards and approve deviations from the standards.
- Approve Army Installation Design Standards Implementation Plan.
- Approve Army Installation Design Standards Investment Strategy.

1.8.2 Director of Installation Management Agency (IMA)

- Develop and implement the Army Installation Design Standards Implementation Plan.
- Develop and implement the Army Installation Design Standards Investment Strategy.
- Ensure compliance with the Army Installation Design Standards.
- Maintain electronic newsletter for communicating changes in standards.

1.8.3 Garrison Commander

- Develop the installation's IDG, Figure 1.8b.
- Chair Real Property Planning Board (RPPB) to review and approve projects established on the Prioritized Improvement Projects List (Appendix G) to meet Army standards.
- Submit Prioritized Improvements Projects List for approval and funding to IMA Region Director after review and approval by Senior Mission Commander.
- Enforce IDG standards.

1.8.4 Senior Mission Commander

- Review and approve IDG.
- Review and approve RPPB prioritized improvement projects list recommendations to meet Army standards prior to submission to IMA Region Director.

1.8.5 Major Army Command/Tenant

- Participate in installation Real Property Planning Board.
- Participate in design and planning charrettes.
- Determine project functional requirements.
- Participate in design reviews.
- Participate in development of Prioritization Projects List.

Figure 1.8b
U. S. Army Installation Management Agency

1.9 SUSTAINABLE DESIGN AND DEVELOPMENT

Practicing the principles of sustainable design in the planning, design, construction, and operation of infrastructure and facilities is a smart business practice; Figure 1.9a. Protecting our natural resources and reducing our impact on the natural environment is achievable when we create high-performance, healthy, energy efficient, and safe buildings; Figure 1.9b.

Figure 1.9a
Sustainable Design is Smart Business

1.9.1 Integrated Design Process

Critical to the success of sustainable design and development is the organization and commitment of the team to engage in the Integrated Design Process. To effect change in building design and operation, the project delivery process itself must become a collaborative effort to integrate design strategies among all disciplines and all players in the project delivery process. Integrated design demands a more inclusive team, working closer together than is traditionally the case. Future building users and facility managers must be invited to join architects, engineers, and planners in developing the vision and goals for new facilities.

1.9.2 Sustainable Design

Appendix D, Sustainable Design, discusses the sustainable design concept and its application to Army projects. Paragraph D.4 discusses the Sustainable Project Rating Tool (SPiRiT) developed by the U.S. Army Corps of Engineers (USACE). Per

Figure 1.9b
High Performance Buildings Reduce our Impact on Natural Resources

the Assistant Secretary of the Army (Installation and Environment) Sustainable Design and Development Memorandum and the Assistant Chief of Staff for Installation Management (ACSIM) endorsement of Sustainable Design and Development initiative, the LEED rating system will be used by design professionals in all new construction, additions, or renovation of Army facilities for rating sustainability effective with the FY 08 Military Construction program.

Projects prior to the FY 08 program will continue to use SPIRIT and achieve the GOLD level. Such projects may be scored using LEED NV (New Construction) if the LEED Silver rating level can be achieved within the program amount. Projects using the design/build procurement method will include the SPIRIT or LEE assessment n the RFP requirements and achieve the appropriate sustainable rating level in the project. See Assistant Secretary of the Army memorandum Subject: Sustainable Design and Development Policy Update, dated 05 January 2006.

Further information on sustainable design can be obtained at the following websites:

- Assistant Chief of Staff for Installation Management, Sustainable Design and Development Website. This site provides information on the following topics: documentation and references; sustainable process, tools, products, and materials; Sustainable Design and Development Training; and links to various sustainable design and development informational website.
- U.S Army Corps of Engineers, Engineering Research and Development Center, Construction Engineering Research Laboratory (CERL), Sustainable Design and Development Website.
- Whole Building Design Guide (WBDG) This site provides comprehensive and current information on sustainable design strategies and technologies.

1.10 ARMY STANDARDS

Army Standards and References are included in the last two paragraphs of the following sections and appendices: Section 7, Site Planning Design Standards; Section 8, Buildings Design Standards; Section 9, Circulation Design Standards; Section 10, Landscape Design Standards; Section 11, Site Elements Design Standards; Section 12, Force Protection Design Standards; Appendix D, Sustainable Design; and Appendix M, Historic Preservation Guidelines.

Section 2.0
The Installation Design Guide Process and Implementation

2.1 INTRODUCTION

Army installations are hometowns for many of our military families, resources for many veterans and retirees, and an integral part of the surrounding communities. The Army Installation Design Guide (IDG), Figure 2.1a, provides direction for achieving a sense of community, order, tradition, and pride on our installations. This section provides a brief overview of the IDG developmental process and methodology detailed in Unified Facilities Criteria (UFC) 2-600-01, Installation Design.

2.2 THE DESIGN GUIDE PROCESS

The IDG includes a process for analysis, planning, design, and implementation. This process includes the following steps.

2.2.1 Setting Goals and Objectives

The installation develops a set of goals and objectives that address the visual requirements of the installation. The goals and objectives provide a pre-determined image that helps create a visually pleasing and optimally functional environment.

2.2.2 Conduct Visual and Spatial Surveys

Visual surveys are performed in the preparation of the IDG. These establish the visual themes and zones of the installation and document the assets and liabilities within each visual zone. Chapter 5 of UFC 2-600-01 details the method for conducting the installation visual survey.

2.2.2.1 Establish Visual Themes and Zones. The information gathered during the initial surveys is used to establish the visual themes of the installation and to establish visual zones. Visual themes are broad areas that have the same general use and visual characteristics. Visual zones are areas within the visual themes that have some dominant feature or characteristic that can be enhanced to improve the image of the installation. These features or characteristics

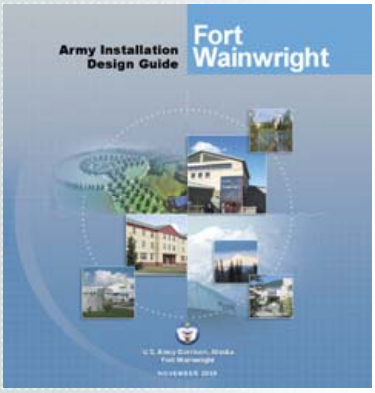


Figure 2.1a
Fort Wainwright Installation Design Guide

typically include unique buildings, vehicular and pedestrian corridors, vehicular entrances, functional use, historical importance, natural features, and spatial relationships.

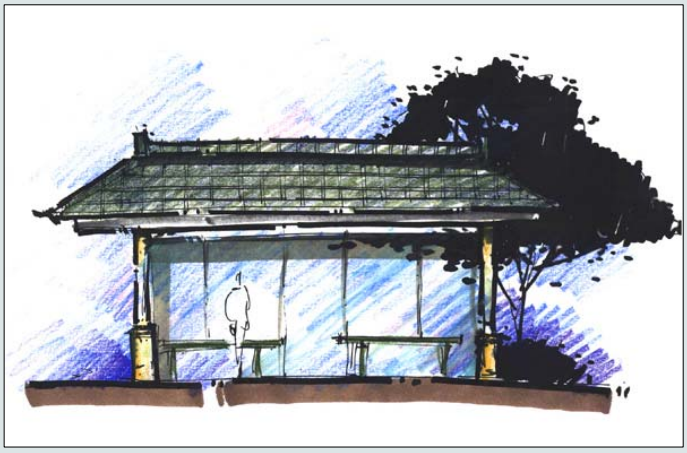
2.2.2.2 Determine Assets and Liabilities. During subsequent surveys each visual zone is analyzed for specific visual impacts. The objective of the inventory is to define the visual assets and liabilities within the visual zone.

Assets. Assets are positive visual elements, design elements, or features that enhance the surroundings, either visually or functionally.

Liabilities. Liabilities are negative visual elements, design elements, or features that detract from the visual image or functionality of the surroundings. Liabilities should be corrected through appropriate design measures and are the basis for recommendations for improvement.

2.2.3 Recommendations and Implementation Plan

The assessment of each visual zone includes recommendations to correct liabilities and where desired to enhance assets. The recommendations are in the form of specific projects and are described in detail in Section 6, Improvement Projects. See Figure 2.2a.



Objective

Existing

▲ **Figure 2.2a**
Positive Recommendations

2.2.4 Design Components

The following six design components, described in Sections 7 through 12, provide guidelines and standards from which to conduct the visual zone review and analysis.

- Section 7, Site Planning
- Section 8, Buildings
- Section 9, Circulation
- Section 10, Landscape
- Section 11, Site Elements
- Section 12, Force Protection

2.2.5 Design Principles

The visual inventory and analysis requires an understanding of basic design principles. These design principles are discussed in Section 3, paragraph 3.3.

2.2.6 Visual Elements

The basic design principles are used to define the visual elements described in Section 3, paragraph 3.4. The assessment and classification of visual elements follows basic design principles describing "good" (positive visual elements) and "not so good" (negative visual elements) design.

2.3 USING THE DESIGN GUIDE

Use this IDG in determining the general design and construction considerations inherent in the preparation of project plans. The IDG provides design guidelines and Army-wide design standards intended to be used in all maintenance, repair, renovation, and new construction projects. The IDG applies to all projects, regardless of the funding source.

The following steps illustrate how the design guide is used for the preparation of plans for new construction, renovation, maintenance, and repair projects on the installation; Figure 2.3a.

Step 1 – Review the Installation Profile information included in this IDG (Section 4).

Step 2 – Review the IDG analysis criteria information (Section 3) including design goals and objectives, visual elements, and design principles.

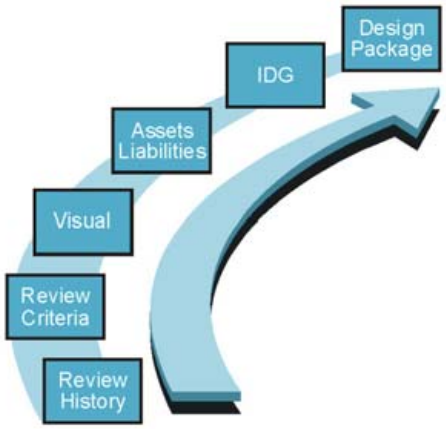


Figure 2.3a
Using the IDG

Step 3 – Review the applicable references, guidelines, and standards of the design components. These include site planning, buildings, circulation, landscaping, site elements, and force protection and are discussed in Sections 7 through 12.

Step 4 – Review the information and description of the installation themes in Section 5.

Step 5 – Review the visual zones to assess if project is located within designated visual zone or should meet a visual zone's standard. For example, siting of new main entrance gate should review recommendations of Main Entrance Gate Visual Zone, Section 5.

Step 6 – Select the appropriate guidelines or standards from the design components addressed in Sections 7 through 12.

Step 7 – Assemble all materials gathered in steps 1 through 6.

2.4 IMPLEMENTATION

2.4.1 IDG Review and Approval

- Master Planner will review the IDG prior to submission to the senior mission commander. See Figure 2.4a.
- Senior Mission Commanders will review the IDG prior to submission to the Garrison Commander.
- Garrison Commander will review the IDG prior to submission to Installation Management Agency (IMA) Regional Director.
- IMA Regional Director will approve the IDG and Prioritization Projects Lists, as designated by Headquarters (HQ), IMA. They will also review requests for IDS waivers or changes submitted by garrison commander and forward to HQ IMA with recommendations.

Figure 2.4a
Installation Design Guide Review

2.4.2 Compliance

For the IDG to work optimally as a management tool, it is essential that the Master Planner or designated representative establish an understanding of the IDG among the parties concerned with its use. This can best be established at the RPPB level where all installation principles are represented. The Directorate of Public Works (DPW) staff Master Planner or designated representative shall insure that the guidelines and requirements of the IDG are readily available to, and understood by, all parties involved in the design of new facilities, design of additions or alterations to existing facilities, or maintenance.

The Master Planner or designee, acting in support of the RPPB, is the first level reviewer of projects (SRM, MCA, and NAF to include Design Build) and other requests for actions that involve compliance with IDG guidelines and standards.

The Garrison Commander, supported and advised by the RPPB, is the final authority in enforcement of the IDG guidelines and standards.

The Installation Planning Board, chaired by the Senior Mission Commander, will monitor development of the installation planning process and provide guidance to other installation boards and the Garrison Command for areas such as:

- Strategic Planning,
- Real Property Planning,
- Range Planning, and
- Communications Planning.

2.4.3 Project Approval

Project requests to include a 4283 shall be submitted to the DPW or equivalent and will include the required Design Team IDG Checklist discussed below. See Figure 2.4b.

The Design Team IDG Checklist is to be completed by the design team to assure the guidelines and standards have been considered in the design process. The Design Team IDG Checklist is provided in Appendix A.

The Designer of Record or Design Agent shall provide a copy of the completed checklist to the Master Planner, together with a signed certification statement with each design submittal. The checklist, along with concept site plans and elevations for each design submittal, shall be provided to the Master Planner for review. If the Master Planner or designated representative concurs, the plan and the signed checklist are forwarded to the RPPB for final approval.

The accepted checklist shall become a part of the project record files.

This approval process is in addition to other mandated procedures, such as those set forth in Section 106 of the National Historic Protection Act for historic structures.

Figure 2.4b
Directorate of Public Works Design Team Required to Review IDG Checklist

2.4.4 Self-Help Projects and Occupant Purchased and Installed Site Furnishings and Features Procedures

The Standard Operating Procedure providing information and guidelines for the effective implementation of the Troop Self-Help (TSH) program is found in Appendix H.

2.4.5 Request for Waiver

A request of waiver from the Design Team IDG Checklist (Appendix A) will be submitted to the Master Planning office for approval by the RPPB.

A request for waiver from the Army standards shall be submitted to the Assistant Chief of Staff for Installation Management for approval.

2.4.6 Checklists

2.4.6.1 Projects Requirements IDG Checklist. It is recommended that this checklist be used as a pre-design planning tool for initiating projects and to present a functional description of the project at MILCON Planning Charrettes and Design Charrettes. The checklist can assist participants of the charrettes in project formulation and documentation. By the nature of the planning process all the data on the forms will not be completed, however, the form should be completed to the greatest extent possible prior to the charrettes. The checklist can also be used to document the results of the planning or design charrettes. The Projects Requirements IDG Checklist is provided in Appendix B.

2.4.6.2 Interior Design Review Checklist. It is recommended that the Interior Design Review Checklist be used during review of a Request for Proposal (RFP) submission or an AE or in-house design prior to solicitations. See Figure 2.4c. The Interior Design Review Checklist is provided in Appendix C.

Figure 2.4c
Typical Systems Furniture Work Station

2.4.7 Include IDG in Solicitations

The IDG shall be used as a design tool in all facility planning, design, and construction and should be included in the Request for Proposals on new projects, Scopes of Work for new projects, and maintenance agreements.

Section 3.0
Design Guide Analysis Criteria

3.1 INTRODUCTION

The Fort Wainwright Installation Design Guide (IDG) process depends upon the development of visual goals and objectives and the identification of visual elements. See Figures 3.1a and 3.1b. Goals and objectives provide the desired visual context of the installation.

Basic design principles are used to assess, define, and classify visual elements. This assessment of visual elements becomes the design criteria used to determine the visual character of the installation. These design criteria are used for design decisions in the review of existing visual context and determination of project recommendations.

Figure 3.1a
Manmade Visual Element

Figure 3.1b
Natural Visual Element

3.2 GOALS, OBJECTIVES, AND RECOMMENDATIONS

The primary goal for Fort Wainwright is to provide the best quality of life for its soldiers and their families. Its objectives are to provide a safe, well-planned, and visually pleasing environment in which soldiers, families, and personnel can train, work, live, and play. The following recommendations will help to achieve this goal and objectives.

3.2.1 Master Planning

Support the Future Land Use Plan in its efforts to consolidate similar land use and locate land use areas in a logical progression from living to working to training areas.

- Identify comprehensive plan proposals that will change existing land uses.
- Identify specific intrinsic "themes" within the post that provide a sense of identity to spaces or areas.

3.2.2 Site Planning

Provide for the effective, orderly direction of the long-range development of the installation in support of existing and future missions.

- Follow the land use scheme that encourages optimum use of resources and is sensitive to existing natural and cultural resources. See Figure 3.2a.
- Collocate or consolidate activities that are functionally related.
- Promote an efficient traffic flow pattern between functionally related land uses.
- Locate inhabitable facilities outside of flood plains, wetlands, and incompatible noise zones.

▲ **Figure 3.2a**

Adaptive Reuse of Historic Facilities can be Accomplished With no Impact to Historic Significance

Enhance and improve Fort Wainwright's visual and aesthetic quality to produce a sense of pride, commitment, and the highest possible quality of life for the community.

- Demolish old, obsolete non-historical facilities that have served their useful purpose.
- Coordinate site components such as lighting, signage, street furnishing, and head bolt outlet bollards to reduce the appearance of clutter. See Figure 3.2b.
- Eliminate visual clutter throughout the installation by screening undesirable views and burying utilities within the underground utilidor system.
- Use concrete curbs and gutters to define paved areas, prevent erosion, and present a neat appearance.
- Purge the installation of unnecessary free-standing facility identification signs by using wall mounted identification signs when possible.
- Develop a standard for screening trash dumpsters. See Figure 3.2c.
- Provide attractive outdoor storage units in the residential areas.

Protect, use, and manage resources from the natural, built, and socio-cultural environment:

- Maintain control of point and non-point sources of pollution.
- Continue to participate in recycling and explore the implementation of new environmental programs.
- Preserve existing natural site features. See Figure 3.2d.
- Maintain quality training lands through damage minimization, mitigation, and restoration.
- Provide natural resources-based opportunities for outdoor recreation such as hiking, snowmobiling, boating, fishing, golf, hunting and camping.

Figure 3.2d
Preserve Visual Quality to Produce Pride and Commitment to the Army Community

Figure 3.2b
Standard Site Components Produce Visual Unity

Figure 3.2c
Screen Trash Dumpsters to Enhance Installation Aesthetic Quality

3.2.3 Transportation/Circulation

Provide a safe and efficient installation transportation system.

- Develop a circulation system that establishes primary and secondary roadways.
- Implement the design elements of primary and secondary roadways.
- Promote the separation of vehicular and pedestrian traffic.
- Provide properly designed off-street parking lots.
- Vacate unnecessary roadways to create super blocks.
- Improve the order and usefulness of activity areas, circulation paths, and open space.
- Construct a troop running trail/movement path system providing soldiers a designated, well-designed, safe system for physical training activities.
- Construct walkway and bikeway systems to facilitate residents to traverse the installation safely.
- Provide proper signage and pavement makings in accordance with IDG standards. See Figure 3.2e.

▲ **Figure 3.2e**

Sign Does Not Conform to IDG Recommended Standard

Provide a transportation system that includes on-base and off-base components interfacing without congestion, accidents, and delays.

- Provide stacking lanes on major arterials for entrance into the installation.
- Provide adequate queuing distances at gates.
- Identify specific land uses that generate pedestrian and vehicular traffic, and that are part of identifiable and repetitive traffic patterns.

3.2.4 Landscaping

Ensure a quality environment for the installation through preservation and enhancement of the existing landscape. See Figure 3.2f.

- Inventory existing vegetation to determine condition and specimen quality plant materials.
- Install new plantings and maintain existing landscapes through an established program that adheres to the practices commonly accepted in the Alaska landscape industry.
- Eliminate the need for extensive pruning by selecting plant materials that have an appropriate mature size for the individual application.
- Choose plant materials which are hardy to the climatic conditions and resistant to pests and diseases of the specific region.
- Utilize a limited selection of plant materials, consisting of those which are relatively low-maintenance and contained within the approved plant palette.
- Determine appropriate prototypical planting configuration for specific distinguishable areas, respecting, maintenance needs, snow removal/blowing, and the effect of climate on plant survival.

Provide a hierarchical system of street tree plantings to visually reinforce the system of roadways and provide a sense of direction for visitors.

- Provide tree plantings, spaced appropriately apart, along major transportation corridors respecting climate, snow removal, and building setbacks.
- Provide adequate planting areas separating roadways and pedestrian walks to accommodate appropriately scaled street tree plantings.
- Introduce additional trees to enhance major intersections, while maintaining clear site lines for vehicular and pedestrian traffic and respect snow removal equipment.
- Utilize a variety of tree species with similar form and habit to add visual variety and interest to the planting scheme and to help reduce the potential loss of established plantings should species-specific disease problems occur. See Figure 3.2g.
- Introduce shrubs and small trees to form landscape buffers between recreation areas and visually define and physically separate conflicting land uses.

Figure 3.2f
Ensure a Quality Environment Though the Preservation of Existing Landscape

Figure 3.2g
Use Street Trees and Berms to Define Roadway Hierarchy

Figure 3.2h
Use Trees and Shrubs to Screen Negative Views

Develop a comprehensive planting program to improve the visual quality of the installation.

- Use plant material to frame positive views and screen objectionable views along pedestrian and vehicular circulation corridors.
- Utilize trees and shrubs in combination with selected plant material and fencing to screen service areas, utilities, and other objectionable views. See Figure 3.2h.
- Provide shade and flowering tree plantings of appropriate scale along pedestrian routes to add visual interest and path definition.
- Utilize ornamental trees and shrubs to accent and provide seasonal interest to all monuments and historic areas (coordinate plantings with Cultural Resources Office).
- Utilize ornamental trees and shrubs to enhance entrances to administration buildings and community facilities.
- Utilize massed planting near sources of excessive noise to filter adverse sound.
- Use ground cover foundation planting to soften rigid architectural foundation element. Ensure that vegetation will not penetrate the 10-meter (33 feet) width, 150-mm (6 inches) height unobstructed space force protection design criteria.
- Use large canopy and ornamental trees to enhance courtyards and outdoor gathering spaces. See Figure 3.2i
- Provide street tree and shrub plantings in parking islands to break up the visual expanse of parking areas.

Figure 3.2i
Use Landscaping to Enhance Courtyards and Outdoor Gathering Spaces

▲ **Figure 3.2j**
Preserve Army Architectural Heritage

3.2.5 Architecture

Preserve and maintain a respect for architectural tradition inherent in the Army heritage. See Figure 3.2j.

- Reinforce and preserve the desired image of the Historic District.
- Create and enhance architectural continuity with all proposed architectural and site development projects.
- Historic facilities with incompatible additions, alterations, or color schemes should be corrected to meet IDG standards (coordinate with Cultural Resources Office).
- Respect the established rhythm and density of the National Historic Landmark and the Historic District when designing new facilities in or adjacent to the district.
- Provide appropriate building and site maintenance that will ensure that the vital National Historic Landmark and Historic District will survive into the next century.
- Evaluate the importance of the National Historic Landmark and Historic District when establishing the architectural style for the North Post/ Ladd Field distinguishable area.

Identify climatic, topographic, and regional dictates of architectural design elements.

- Determine appropriate criteria for entries, roofs and building materials, respecting snowfall and cold region considerations.
- Determine appropriate conceptual building configurations that respect human needs for solar exposure in this area of short daylight during the winter.
- Determine appropriate building design response to needs for passive solar gain. Determine appropriate building design response to local terrain.
- Determine appropriate building design response to historical regional building styles.

Achieve "Army Community of Excellence" in the installation development so that soldiers, civilians, and Army families are proud to live, work, and train in Fort Wainwright.

- Provide functional, attractive, and inviting installation entry gates that make a clear statement about the installation's pride and professionalism. See Figure 3.2k.
- Provide facilities that create a sense of community and improve overall readiness.
- Provide simplicity in architectural design, form, and materials to express mission and function, and to fit well within the environment.
- Control the use of standard colors, materials, and architectural details to add coherency and character to the installation.
- Provide high-quality, durable materials, and finishes on all facility projects to reduce life-cycle cost and allow scarce resources to be directed to other requirements.

The architectural style of existing and future buildings should reflect and reinforce the sustainability of the installation.

- Adapt building designs to natural site conditions. The use of natural ventilation and day lighting is encouraged.
- Design buildings in clusters to preserve land and reduce construction and maintenance costs.
- Develop a coherent architectural style that results in the blending of new and old structures. However, when considering historical buildings, the differentiation between the historic fabric and the new material should be subtle. See Figure 3.2l.

▲ **Figure 3.2l**
Develop a Coherent Architectural Style, Color, and Material

▲ **Figure 3.2k**
Trainer Gate Does Not Provide an Attractive First Impression

- Design multi-story buildings rather than one-story buildings to provide a smaller building footprint and more efficiently utilize limited installation land area.
- Combine multiple activities in one building to reduce the number of buildings required and more efficiently utilize limited installation land area.
- Design multiple use facilities with the capacity to quickly change interior layouts to accommodate changing requirements.
- Use indigenous construction materials and practices that require less energy to produce and transport, and may be recycled at the end of their usefulness.
- Locate windows to maximize natural light, ventilation, and outward views.
- Consider adaptive reuse of buildings once their initial use is no longer required.

Provide a cohesive and consistent architectural character through the installation. See Figure 3.2m.

- Choose materials for their longevity and maintenance characteristics.
- Use low maintenance materials with colors that reflect the IDG color palette.
- Use installation standard colors for exterior walls. Add accent colors sparingly. Accent colors can be used in recesses and to accent certain portions of a buildings façade.
- Use pre-finished material where possible; gutters, window frames, doorframes, etc.

▲ **Figure 3.2m**

Use Cohesive, Low Maintenance Materials Which Reflect IDG Color Palette

3.2.6 Force Protection

Chapter 4 of the UFC 2-600-01 discusses the goals, objectives, and recommendations process and gives examples.

3.2.7 Utilities

Determine how utilities can best be configured to reduce clutter and other negative visual impacts.

- Determine existing utility layouts and detailing that detract from visual quality.
- Determine specific climatic considerations or construction techniques that dictate utility configurations or detailing, such as venting and valve box requirements for steam lines.
- Develop prototypical approaches for consolidating utility systems, see Figure 3.2n.
- Develop prototypical details for necessary utility appurtenances such as vents, valve boxes, and vehicle heater bollards.
- Develop a uniform lighting specification including light color, fixture height, and style of poles and luminaries.

Existing

Objective

▲ **Figure 3.2n**
Positive Visual Elements

3.3 IDENTIFICATION AND CLASSIFICATION OF VISUAL ELEMENTS

Basic design principles define visual elements and assess their character. The assessment and classification of visual elements follows basic design principles describing "good" and "not so good" design. Their assessment becomes the design criteria used to determine the visual character of the installation.

3.4 DESIGN PRINCIPLES

The visual inventory and analysis requires an understanding of basic design principles. The primary principles are:

Scale – The proportional relationship of humans to their spatial environment. The scale should result in a comfortable relationship for the user and will vary as space, size, and activities vary. See Figure 3.4a.

Form – The size and shape of mass. Individual forms should be designed to complement one another and the environment. See Figure 3.4b.

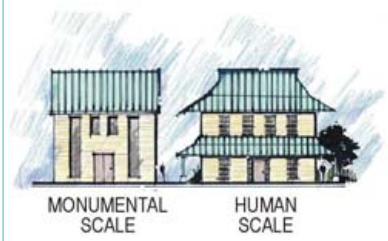
▲ **Figure 3.4b**
Shape and Color Complements the Environmental Setting

Function – The use of a space or an area. Function is gauged by the degree to which the space works for its intended purpose.

Color – All elements of the visual environment have color. The use and arrangement of colors greatly determine the visual impact of all elements.

Texture – All elements of the visual environment have texture. The use and blending of textures greatly impact the visual environment.

Unity – All elements of the visual environment should blend to complement one another. Repetition of scale, form, color, and texture results in a unified visual impression. See Figure 3.4c.



▲ **Figure 3.4a**
Monumental and Human Scale

▲ **Figure 3.4c**
Unity of Design Results In Unified Visual Impression

Figure 3.4d
Framing of View

Framing – All views include a ground plane, side planes, and overhead plane. The relationship of planes changes as the individual moves through the environment. See Figure 3.4d.

Axis – An axis is a linear progression of space connecting two or more dominant features.

Terminus – A terminus is the end of an axis and is typically defined by a dominant feature such as a building.

Balance – Visual elements are composed to be symmetrical or asymmetrical. In either case, visual elements should be sized and located to provide visual balance. See Figure 3.4e.

Sustainability – Practicing the principles of sustainable design in the planning, design, construction, and operation of infrastructure and facilities is a smart business practice. See Appendix D.

Figure 3.4e
Balanced Symmetrical Landscape Elements

3.5 VISUAL ELEMENTS

The visual elements described below include manmade and natural features and their inter-relationship. This Army Installation Design Guide provides guidance on how to recognize the visual impacts of the installation and how to improve upon them if warranted.

Natural Characteristics – Regional and site characteristics preserved and enhanced as a part of the installation. See Figure 3.5a.

Figure 3.5a
Natural Characteristics Have Been Preserved

Edges and Boundaries – Linear elements such as walls, fences, or trees create separation of use and activities.

Buildings and Structures – Typically the most dominant features of an installation. Their location and design characteristics determine the primary visual image.

Activity Nodes – Centers of activity that attract people on a daily basis.

Landmarks – Visually or historically prominent features such as towers, statues, static displays, or buildings provide identity and orientation of place; Figure 3.5b.

Figure 3.5b
Preserve Prominent Historical Elements

Entrances and Gates – Provide the first and last impression of the installation.

Circulation System – Includes streets, railroad tracks, trails, sidewalks, parking lots, driveways, delivery areas, and bikeways and walkways. The circulation system utilizes a large amount of space and creates significant visual impact. See Figure 3.5c.

Trees and Other Vegetation – Trees and other vegetation frame views, provide visual screens, shade, color, and interest in the installation.

Street Trees – Street trees soften, complement, and define the road hierarchy, and improve the overall visual quality of the installation.

Figure 3.5c
Parking Creates Significant Visual Impact

▲ **Figure 3.5d**
View and Vistas Should be Enhanced

▲ **Figure 3.5e**
Open Space Used to Separate Land Use

Views and Vistas – Scenic and attractive views and vistas should be enhanced. Unattractive views should be screened. See Figure 3.5d.

Open Spaces – Open space areas create visual impact and can be designed to either separate or integrate adjacent uses. See Figure 3.5e.

Signage – A coordinated installation signage plan, addressing both exterior and interior signage, should be developed to facilitate circulation and provide useful information.

Utility Corridors – Utilities should be in corridors and unsightly aboveground utilities minimized.

Other Elements – Visual elements other than those above may occur within an installation and should be noted.

Section 4.0
Installation Profile

4

Fort Wainwright (FWA) consists of the following Sites:

- Fort Wainwright Post (USARC)
- Black Rapids Rock Climb
- Black Rapids Training Site
- Dike Range
- Fairbanks Permafrost Station
- Gerstle RVR Arctic Test
- Nike Alaska – Bravo Battery (Mike) and Charlie Battery (Peter)
- Yukon Training Area (YTA)
- Tanana Flats Training Area (TFTA)
- Donnelly Training Area (DTA)

The Installation Design Guide will focus on the Fort Wainwright areas inside the boundaries of the Main Post located in Fairbanks, Alaska.

▲ **Figure 4.1a**
Aerial View of Fort Wainwright Cantonment Area

4.1 SETTING

4.1.1 Regional Setting

Fort Wainwright is located north of the Alaska Range in the Alaskan Interior and consists of a 20,553 acre cantonment and three training areas, the Tanana Flats Training Area (TFTA) 642,215 acres, the Yukon Training Area (YTA) 259,353 acres, and the Donnelly Training Area (DTA) 654,641 acres totaling approximately 1,577,096 acres. See Figures 4.1a and 4.1b.

▲ **Figure 4.1b**
Fort Wainwright Location Map

▲ **Figure 4.1c**
Downtown Fairbanks from the Chena River

The cantonment, TFTA, and YTA are located in the Fairbanks North Star Borough, and the DTA is located near the town of Delta Junction, 100 miles southeast of Fairbanks. See Figure 4.1c. The Fort was established in 1938 as a cold weather testing laboratory, for the primary purpose of training soldiers and testing equipment in arctic conditions. Industrial operations support mission activities and include maintenance of aircraft and vehicles, landfill activities, and power generation. Fort Wainwright is made up of several areas, including a main post area of 4,473 acres, partly within the city limits, 8,825 acres of ranges, and over 898,000 acres of military maneuver areas. Approximately 15,000 people live and work at Fort Wainwright.

Fairbanks traces its beginnings to 1901, when Captain E. T. Barnette set up a trading post along the banks of the Chena River. Fairbanks was named after Indiana Senator Charles Fairbanks and was incorporated in 1903. See Figures 4.1d and 4.1e. Fairbanks is referred to as the "Golden Heart of the North." It lies in the Tanana River Valley just north of the Alaska Range. Fairbanks is a Home Rule City in Fairbanks North Star Borough, Alaska, United States. At the 2000 census, the population of the city was 30,224. A State of Alaska demographer in 2004 estimates the population of the city at 29,954. Fairbanks is the largest city in the Interior region of Alaska, and third largest in the state. The adjacent community of College is home to the University of Alaska Fairbanks, the oldest college in Alaska.

▲ **Figure 4.1d**

Monument to the First Settlers in Fairbanks, Alaska

▲ **Figure 4.1e**

Monument Commemorating World War II Cooperation Between the Soviet Union and the United States

4.1.1.1 Demographics. As of the census of 2000, there were 30,224 people, 11,075 households, and 7,187 families residing in the city. The population density was 366.3/km^2 (948.7/mi^2). There were 12,357 housing units at an average density of 149.8/km^2 (387.9/mi^2). The racial makeup of the city was 66.67% White, 11.15% Black or African American, 9.91%

Native American, 2.72% Asian, 0.54% Pacific Islander, 2.45% from other races, and 6.57% from two or more races. 6.13% of the population was Hispanic or Latino of any race.

There were 11,075 households out of which 39.9% had children under the age of 18 living with them, 47.2% were married couples living together, 12.6% had a female householder with no husband present, and 35.1% were non-families. 27.4% of all households were made up of individuals and 6.0% had someone living alone who was 65 years of age or older. The average household size was 2.56 and the average family size was 3.15.

In the city the population was spread out with 29.4% under the age of 18, 14.7% from 18 to 24, 32.8% from 25 to 44, 16.4% from 45 to 64, and 6.6% who were 65 years of age or older. The median age was 28 years. For every 100 females there were 105.3 males. For every 100 females age 18 and over, there were 108.2 males.

The median income for a household in the city was $40,577, and the median income for a family was $46,785. Males had a median income of $30,539 versus $26,577 for females. The per capita income for the city was $19,814. About 7.4% of families and 10.5% of the population were below the poverty line, including 11.6% of those under age 18 and 7.0% of that age 65 or over.

▼ Table 4.1a
Regional Demographics

Demographics	
Size of Fort Wainwright	1,577,096 acres *(one of the largest Army installation in the world)*
Troop Population	4,585
Civilian Population	1,578
Population of Fairbanks North Star Borough	75,000
Location	70 miles south of the Arctic Circle
	Most northern U.S. Army installation

4.1.1.2 Transportation. As the regional service and supply center for the Alaska Interior, Fairbanks offers a diverse economy, including city, borough, state, and federal government, services; and transportation, communication, manufacturing, financial, and regional medical services. Tourism and mining also comprise a significant part of the economy. Including Eielson Air Force Base and Fort Wainwright personnel, over one third of the employment is in government services. The University of Alaska Fairbanks is also a major employer. See Figure 4.1f. Approximately 325,000 tourists visit Fairbanks each summer. The Fort Knox hard rock gold mine produces 1,200 ounces daily with 360 permanent year-round employees. 126 city residents hold commercial fishing permits.

International Arctic Research Center

Museum of the North

▲ **Figure 4.1f**
University of Alaska-Fairbanks

Fairbanks is at the confluence of the Richardson Highway, George Parks Highway, Steese Highway, and Elliott Highway, connecting the Interior to Anchorage, Canada, and the lower 48 states. The Dalton Highway to Prudhoe Bay begins about 75 miles (about 120 km) north of town. Goods are transported to Fairbanks by truck, air, and the Alaska Railroad. Regularly scheduled jet flights are available at the state-owned Fairbanks International Airport. An 11,800 foot (3,597 meter) asphalt runway, heliport, and seaplane landing strip are available. A public seaplane base is also located on the Chena River. In addition, there are several privately owned airstrips and heliports in the vicinity.

Fairbanks was a major shipping center via waterway for the rest of the Interior, but in modern times water transportation is largely recreational or used for subsistence hunting and fishing access. Barge Lines conduct commercial water transportation throughout the Tanana and Yukon River systems. They haul tons of cargo, thousands of gallons of fuel, and large outsized equipment all the way from Nenana to the mouth of the mighty Yukon.

4.1.2 History of the Installation

Fort Wainwright is located in Alaska's Interior region adjacent to Fairbanks. The major unit at Fort Wainwright today is the 172nd Stryker Brigade. At Fort Wainwright, arctic soldiers work and train in temperatures ranging from 90 degrees Fahrenheit (F) in the summer to minus 65 degrees F in the winter. See Figure 4.1g.

From a small cold-weather test station to one of the Army's largest training areas, Fort Wainwright has come a long way since its humble start. The post has seen numerous face lifts, a branch change, a new name and thousands of soldiers, family members and civilian workers. Political and military leaders advocated building bases in Alaska for several years prior to World War II. In 1939, Congress granted $4 million to construct an Army Air Corps cold weather experimental station at Fairbanks.

The Air Corps purchased two homesteads near Fairbanks where they would build the base. Construction began in the summer of 1939, but it was not an easy project. Little was known then about building on permafrost, and problems cropped up almost immediately. In addition to the airstrip, housing and office space, workers also had to build a rail spur into Fairbanks to transport equipment and supplies. Richard E. Denver, a local laborer, was hired to help build the new base.

"They decided to build the railroad first," he said. "They used dynamite to blast out huge chunks of permafrost and pushed it up into a big heap to build the road bed on. When spring came, the road bed looked like a big batch of chocolate ice cream because the permafrost had melted, and the rails were twisted in all directions."

Repairs were made and the men learned from the experience. They began using steam to thaw the permafrost before building the airfield, as recommended by old miners in the area. As work on the new base continued, troops in the Lower 48 prepared to deploy to their new station in Alaska. The first Air Corps detachment assigned to Alaska arrived in Fairbanks in April 1940, with their base commander, Maj. Dale Gaffney. Another 118 soldiers joined them in October. They lived in temporary shelters until the permanent barracks were constructed.

The new base was called Ladd Field, in honor of Maj. Arthur K. Ladd, an Air Corps pilot killed in a plane crash in South

Figure 4.1g
Fort Wainwright Arctic Warriors

Carolina in 1935. See Figure 4.1h. It became the Central Alaska Station of the Alaska Wing of the Air Transport Command system. The men stationed here tested clothing and equipment during the bitter cold winters until World War II. With the outbreak of war with Japan in late 1941, Ladd Field took on a bigger role and became a critical link in the Alaska-Siberia (ALSIB) Lend Lease route. See Figure 4.1i. American crews delivered almost 8,000 aircraft to Soviet aircrews from 1942 through 1945. U.S. pilots flew the planes from Great Falls, Montana, through Canada to Fairbanks, following the Northwest Staging Route. The planes were transferred to the Russians at Ladd Field; then flown to Siberia via Galena and Nome, where they were eventually used in the Soviet war effort against Germany.

Figure 4.1h
Major Arthur K. Ladd

Figure 4.1i
Aerial View of the North Post and Runway in 1942

Alaska became home to the first U.S. unified command in 1947, when the Joint Chiefs of Staff established the Alaskan Command. This opened the way for the Army, Navy and Air Force elements in Alaska to work together toward successful completion of their missions. Each branch reported to its respective headquarters in Washington, D.C. Although ALCOM was in overall control, Army elements also fell under a subordinate command, U.S. Army Alaska.

By the 1950s, military personnel in Alaska settled into a peacetime training routine with troops from all over the Lower 48 and Canada participating in large-scale winter exercises,

▲ **Figure 4.1j**
Hangar One Dominated the Scene Next to the Runway at Ladd Field

while at the same time remaining vigilant against the Cold War threat of Soviet aggression. See Figure 4.1j.

The 9th Infantry returned to Alaska in 1956, charged with the mission of defense of the Fairbanks area. With a battalion stationed here until 1995, the “Manchu’s” of the 9th Infantry were deeply embedded in the rich history of the state. It was an element of the 9th Infantry that raised the first American flag over Alaskan soil on the transfer of the territory from Russia to the U.S. in 1867.

The Army assumed control of Ladd Air Force Base in January 1961. The Army renamed the post Fort Jonathan M. Wainwright after the general who, with his men, valiantly defended the Bataan Peninsula during the first few months of World War II. See Figure 4.1k. Since then Fort Wainwright has been home to several units, including the 171st Infantry Brigade (Mechanized); a Nike-Hercules battalion; the 172nd Infantry Brigade and the 6th Infantry Division (Light). The 6th ID (L) was inactivated in July 1994 and replaced by the U. S. Army, Alaska, with headquarters moving to Fort Richardson.

▲ **Figure 4.1k**
General Jonathan M. Wainwright

Soldiers stationed at Fort Wainwright deployed to Vietnam, the Sinai, Saudi Arabia and, more recently, Haiti and Bosnia, on real-world missions. They have also participated in exercises throughout the Lower 48, as well as Guam, Cambodia, Thailand, Korea, Japan, the Philippines, Mongolia and Australia.

In 1967 Fort Wainwright soldiers aided the community with manpower and equipment to help evacuate their civilian neighbors during the Chena River flood. They, with their families, have volunteered their services and skills at churches, schools and civic organizations. They have worked side-by-side with the people of Fairbanks to solve problems and to celebrate good times. In 1996, Fort Wainwright was honored with the Green Star Award for environmental stewardship in the Fairbanks area.

The 50-man detachment of the 1940s has grown into today's nearly 4,600 soldiers and 6,100 family members who call Fort Wainwright home today. The major unit at Fort Wainwright now is the 172nd Infantry Brigade (Separate). Subordinate commands of the 172nd include the 1st Battalion, 17th Infantry; 2nd Battalion, 1st Infantry; 4th Battalion, 11th Field Artillery; and the 172nd Support Battalion.

The Arctic Support Command, headquartered at Fort Wainwright, also has units at Fort Richardson, including elements of Special Troops Battalion; 4th Battalion, 123rd Theater Aviation; 203rd Personnel Service Battalion; 267th Finance Support Battalion; 98th Direct Support Maintenance Company; and Law Enforcement Command.

Fort Wainwright is home to Medical Activity-Alaska and Dental Activity-Alaska and to Bassett Army Community Hospital, named for Capt. John Bassett, a doctor killed while trying to evacuate wounded soldiers during the Battle of Attu during World War II. See Figure 4.1l.

The terrain, climate, and over 870,000 acres of available training land make Fort Wainwright an ideal location for conducting training from the squad through joint task force level.

Historic 206th Station Hospital at Ladd Field

Bassett Army Community Hospital

New Fort Wainwright Hospital

▲ **Figure 4.1l**

4.1.3 Environmental Setting

The existing visual image of Fort Wainwright has been influenced by climate, natural setting, regional context and historical development. These influences will continue to affect the image of Fort Wainwright throughout the 21st century. These specific aspects are unique to the post and, therefore, will play an important key role in developing the visual theme. These aspects directly lend a unique visual character to the fort, and to individual areas within the fort. Each of these influences is discussed along with several closely related subjects in the following paragraphs.

4.1.3.1 Topography. Fort Wainwright lies north of the Alaska Range, within the drainage area of the Tanana River. The Main Post and Tanana Flats Training Area (TFTA) lie within the Tanana-Kuskokwim Lowland. This depression was subsiding as the Alaska Range was rising to the south, and filling with sediments from those mountains. The area is bounded by uplands to the north, the Alaska Range to the south, and consists of alluvial fans extending northward from the mountains. The Tanana River flows along the northern edge of the lowland. The terrain is generally flat lowland, ranging from 128 to 512 feet above sea level. Elevation gradients range from 40 to 50 feet/mile along upper portions of fans, to 6 to 7 feet/mile in the Tanana Flats. See Figure 4.1m.

Yukon Training Area (YTA) lies within the Yukon-Tanana Uplands, which consists of rounded, even-topped ridges with gentle side slopes, broad divides, flat-topped spurs, and gently sloping plains. Ridges occupy nearly 10 percent of the area, oriented in a northeast-southwest direction. Elevations range from 192 to 3,285 feet.

▲ **Figure 4.1m**

Fort Wainwright Main Post is Generally Flat Lowland

4.1.3.2 Geology. Central Alaska has not been glaciated, but during glacial advances, glaciers surrounded the area. Climatic fluctuations during the Quaternary Period caused glacial expansion and recession. Rivers flowing from glaciers deposited several hundred feet of silt, sand, and gravel in the Tanana and Yukon valleys. Most of the area is covered by a layer of loess ranging from several inches to more than 128 feet thick. Gravel deposits along the Tanana River are up to 154 feet thick and are a significant source of groundwater.

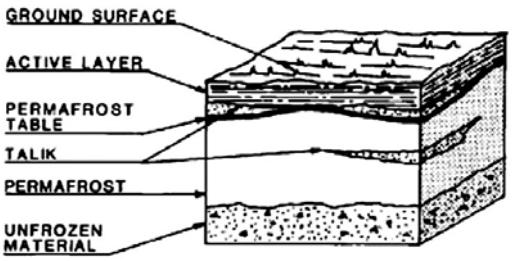
Bedrock of the Yukon-Tanana Uplands, including most of YTA, is characterized by a complex assemblage of Precambrian and Paleozoic-age metamorphic rocks of the Yukon-Tanana crystalline complex (formerly known as Birch Creek schist). These rocks were later intruded by Cretaceous and Tertiary-age igneous rocks, resulting in a few exposed areas of granite and quartz diorite. Silty micaceous loess, derived from outwash plains south of the Tanana River, was deposited over most of the area during the Pleistocene and Holocene. Some areas are covered by Quaternary deposits, with the most recent deposit occurring along stream valleys in the form of well-stratified gravel, sand, and silt.

4.1.3.3 Soils. The cantonment area at Fort Wainwright lies in the Tanana-Kuskokwim lowland. This is a sediment-filled trough between the uplands on the north and the huge alluvial fans extending north from the Alaska Range on the south.

Most of the main cantonment area consists of Chena alluvium. This unconsolidated silt-gravel mixture perennially freezes, although ice content is low. These materials have a high bearing strength when frozen. When thawed, they are subject to sliding and are difficult to compact. Discontinuous permafrost occurs just under the surface with high ice content. The ramifications of designing with permafrost will be discussed in the next section. The northerly most section of the post, encompassing Birch Hill, is comprised of bedrock with areas of muck and loess. Bedrock has a high bearing strength and excellent drainage, with low ice content. Muck inhibits drainage, partially due to an impermeable substratum of permafrost. See Figure 4.1n. When thawed, it has a very low bearing strength. Scattered swale deposits lie along both sides of the Richardson Highway and in certain South Post areas. Swale consists of poorly stratified layers of silt-sand, with some organic material evident. It has a moderate to high ice content, and also freezes perennially.

Figure 4.1n
Spring Thaw of Chena Alluvium Soils Inhibits Drainage due to Impermeable Substratum

Permafrost. Pockets of permafrost lie scattered throughout the cantonment area of Fort Wainwright. Permafrost is defined as any material that remains at or below 32° F (0° C) continuously for more than two years. Figure 4.1o illustrates the typical layers comprising a permafrost area. The active layer near the ground surface freezes and thaws with the changing seasons. Beneath the active layer lies the actual



▲ **Figure 4.1o**
Permafrost Section

permafrost zone. This area has an upper limit called the permafrost table. Occasionally, there occur pockets of unfrozen material within the permafrost, or between the permafrost and the active layer. These pockets are called talik. These talik pockets are noteworthy in that they often times contain water under hydrostatic pressure. This water when disturbed will flow to the surface and form ice sheets. Fort Wainwright is sited in a discontinuous permafrost zone, which means the pockets of permafrost are randomly scattered throughout the post. The permafrost poses few engineering problems if it is not disturbed. If however, the permafrost is disturbed by clearing vegetation, stripping the active layer of soil covering the permafrost, or construction of roads, utilities or structures above it, the permafrost will thaw. When thawing occurs the ground becomes very unstable and is susceptible to soil creep, landslides, subsidence, icing, and severe frost heaving.

Seismic Activity. Fort Wainwright is within the Fairbanks and Salcha seismic zones, which both have a northeast-trending band of epicenters. In the Fairbanks seismic zone, an average of 5 to 6 earthquakes are felt each year. In 1967, a series of three magnitude 6 earthquakes had epicenters west of Fort Wainwright's Yukon Training Area. In the Salcha seismic zone, a magnitude 7.3 earthquake occurred in 1937. Despite the notion that epicenters have a noticeable pattern, consistent fault movement has not been identified in the Salcha seismic zone. The largest seismic event experienced by Fort Wainwright was the Good Friday earthquake that occurred near Anchorage in the spring (27 March) of 1964. The earthquake had a magnitude of 9.2 on the Richter Scale and was the largest ever recorded in North America.

4.1.3.4 Climate. Located in Alaska's Interior, Fort Wainwright experiences some of the most extreme weather in the world with rapid temperature swings, thunderstorms with hail and lightning and snow in the summer. Winters are very long, lasting from late September to mid-April. They are very cold and dry, with temperatures sometimes dipping down to minus 65 degrees F (-51.1 °C). See Figures 4.1p and 4.1q. Winter temperatures can be below zero for entire months. The coldest temperature ever recorded at Fort Wainwright was minus 66 degrees F (-54.4 °C) on January 14, 1934. The average January low is minus 19 degrees F (-28.3 °C) and the average January high is minus 2 degrees F (-18.8 °C). Winter snowfall averages 67.40 inches per year. During the winter months, when temperatures drop below minus 20 degrees F (-28.9 °C), ice fog can occur. The summers are usually very warm, with temperatures often reaching into the 80's and sometimes reaching into the 90's. The average July low is 53 degrees F (11.6 °C) and the average July high is 72 degrees F (22.2 °C). The highest temperature ever recorded in the area was 99 degrees F (37.2 °C) on July 28, 1919. See Table 4.1b. Thunderstorms with hail and lightning can occur in summer. August and September can be rainy, and snow often starts falling in September. The average precipitation is 10.34 inches per year. The Fairbanks area is known for its lingering summer days. The sun is up for 21 hours and 49 minutes on the 21st of June with 24 hours of usable daylight. Conversely, the sun is up for 3 hours and 42 minutes on the 21st of December with 6 hours and 33 minutes of usable daylight.

▲ **Figure 4.1p**
Fort Wainwright Winters are Very Cold and Dry with Rapid Temperature Swings

▲ **Figure 4.1q**
Vehicles Require Utility Plug-ins to Combat the Extreme Weather Conditions

▼ **Table 4.1b**
Fort Wainwright Average Temperature

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Average High Temperature in Degrees Fahrenheit	-2	7	24	41	59	70	72	66	55	32	11	2	**36**
Average Low Temperature in Degrees Fahrenheit	-19	-14	-2	20	38	50	53	47	36	18	-6	-15	**17**
Rainfall in Inches	0.47	0.40	0.37	0.32	0.61	1.37	1.87	1.96	0.95	0.90	0.80	0.85	**10.87**
Snowfall in Inches	10.6	7.1	5.2	2.4	0.6	0.0	0.0	0.0	2.2	12.0	13.8	13.5	**67.4**

4.1.3.5 Hydrology. Fort Wainwright's surface water resources are diverse and include numerous rivers, streams, ponds, and lakes. The Tanana and Chena rivers drain Main Post. TFTA is drained by several streams; Wood River, Crooked Creek, Willow Creek, Clear Creek, McDonald Creek, and Bear Creek among them, which all drain into the Tanana River directly, or by the way of Salchaket Slough. Northern and northeastern portions of YTA are drained by the Chena River and its tributaries: the South Fork Chena River, Hunts Creek, and Horner Creek. See Figure 4.1r. The southern portion of YTA is drained by Ninety-Eight Creek, a tributary of the Salcha River and the Little Salcha River. Streams draining the western portion of YTA flow directly, or by way of Piledriver Slough, into the Tanana River. All streams originating on YTA have their headwaters in the Yukon-Tanana Uplands, in rolling glacier-free terrain.

▲ **Figure 4.1r**
The Main Post is Drained by the Chena River

The volume of flow fluctuates dramatically by season. During the long period of freeze, usually from October to May, flow is limited to seepage of groundwater from aquifers into streams. Many small streams freeze solid during winter. Snowmelt typically begins in March or April and reaches its peak in June. Flow is greatest during June and July. By the end of July, most snow has melted, and a steady flow during August and September is sustained by rainfall. The Chena River is nonglacier-fed and reaches peak flow before the Tanana River, which is fed by meltwater from glaciers and snowfields in the Alaska Range.

The Chena River system crosses the post on its northern edge and joins the Tanana River approximately eight miles west-southwest of Fort Wainwright. The Chena is a relatively clear, meandering river that drains an area of approximately 2,000 square miles.

The Tanana River is located 3 miles south of the main post area and flows generally west. The Tanana is a silt-laden, highly braided stream, fed by glacial meltwaters from the Alaska Mountain Range. The majority of the cantonment (built up) area is located in the 100 year flood plain; some outlying portions are located in the 500 year flood plain.

Surface water quality on YTA is generally good. The Chena River, from the Chena Slough to the confluence with the Tanana River, has been classified by the state of Alaska as Class A (suitable for agriculture, aquaculture, and industrial), Class B (suitable for water recreation), and Class C (suitable for growth and propagation of fish, shellfish, other aquatic life, and wildlife) See Figure 4.1s. The pH of the Chena River is slightly above neutral during winter and slightly below neutral in summer. Nitrogen concentration is high in relation to phosphate, which may be the limiting inorganic nutrient for phytoplankton production. Only naturally occurring iron concentrations were higher than the secondary state standards. The high iron concentration in the lower portion of the Chena River may be the result of surface water and groundwater discharge from swampy, muskeg areas in those region. Sediment loads are generally low. Nonglacier-fed streams generally carry less than 300 mg/l during high flow and as little as 10 mg/l during low flow periods.

Figure 4.1s
The Chena River, When Frozen, is Suitable for Winter Recreation

Lakes and ponds are numerous on Fort Wainwright, and many freeze solid during the winter. Only a few are stocked. Blair lakes are the largest lakes on TFTA.

The quality of the surface water has remained good since withdrawal of the land for military use. The only place where there is reason to suspect any adverse effects on water quality is Stuart Creek, and a monitoring program of the watershed is planned. There is no reason to suspect either degradation or improvement to most Fort Wainwright surface water.

Erosion has not been identified as a significant threat to surface water quality. The area with the highest potential for erosion is Stuart Creek in YTA.

Groundwater. Groundwater is one of Fort Wainwright's most valuable natural resources. With the exception of naturally occurring metals, groundwater quality is good in the Fort Wainwright area.

The main aquifer in the Fort Wainwright area is the Tanana Basin alluvial aquifer, which is in a pre-historic glacial buried river valley. This aquifer ranges from a few feet near the hills and at least 300 feet thick under the main cantonment area. The depth to Groundwater is very shallow, ranging from 3 to 15 feet in different areas of the post. Groundwater is the only source of potable water used at Fort Wainwright and the Fairbanks area. Groundwater in the aquifer is recharged by the Tanana River, while the Chena River and direct infiltration of precipitation contribute small amounts.

Groundwater potential is best along the alluvium of the Tanana River, where wells are capable of yielding 3,000 gallons per minute (gpm) at less than 200 feet in depth. The lowest potential is in the rolling hills of YTA, where wells produce around 50 gpm at the same depth. Groundwater in the Fort Wainwright are tends to have relatively high, naturally occurring levels of metals, especially iron and arsenic. Elevated arsenic levels are prevalent in the upland areas. These are not related to human-caused pollution.

Groundwater is influenced by seasonal water level changes in the area's two major rivers, the Tanana and Chena Rivers. See Figure 4.1t. Groundwater levels usually drop during fall and winter months and rise during the spring snow melt off and summer months, and flow direction can vary up to 180 degrees.

Army-related industrial activity in the Main Post may have caused groundwater pollution, generally associated with underground storage tanks, facilities where chemicals were stored, and places where chemicals were dumped during the early history of the post. These areas are being intensively monitored. Pollution is generally localized, and there is no indication of deep groundwater pollution. The recent trend has been toward improvement as Army restoration projects mitigate damage to groundwater quality. Practices that have led to this contamination have been discontinued; for example, underground storage tanks (UST's) have been removed. Many of the petroleum, oils, and lubricants are now stored in compliant above ground storage tanks (AST's) surrounded by containment berms. Numerous underground storage tanks are still in service. These tanks are in compliance with ATI – STI P# standards (secondary containment and monitoring systems).

Figure 4.1t
Changes in the Chena River Seasonal Water Level Influence Fort Wainwright Groundwater

Due to past contamination of localized areas, primarily within the Main Post area, Fort Wainwright is classified as a Comprehensive Environmental Response, Compensation, and Liability (CERCLA) “Superfund” site. Remediation is ongoing. Groundwater management consists of restoration projects associated with individual sources of pollution, generally associated with the CERCLA “Superfund” designation.

4.1.3.6 Vegetation. Fort Wainwright encompasses a large amount of land with a wide array of physiographic features. Vegetation patterns are influenced by climate, soil, topography (slope, aspect, and elevation), depth to water table, permafrost, and fire. Native vegetation was removed from much of the Main Post during original construction of Ladd Field in the 1940’s. Due to landscaping and other human activities, vegetation of the Main Post does not reflect natural vegetation patterns of the area. Spruce, birch, and aspen trees dominate the large plant community, while alder and willow create extensive ground cover. See Figure 4.1u.

Fort Wainwright has four vegetation types: moist tundra; treeless bogs; open, low-growing spruce forests; and closed spruce-hardwood forests. The white spruce-paper birch forests. The white spruce-paper birch forest of interior Alaska is often called the boreal forest of taiga. Vegetation types of interior Alaska form a mosaic and reflect fire history, slope and aspect, and presence or absence of permafrost. There are no threatened or endangered plant species found on Fort Wainwright.

▲ **Figure 4.1u**

Spruce, Birch, and Aspen Trees Dominate the Large Plant Community

4.1.3.7 Wetlands. On Fort Wainwright, wetlands can be divided into marshes and shrub wetlands. Much of TFTA is covered by treeless, herbaceous marsh. These marshes are unique in that they are largely dependent upon groundwater discharge and usually develop as floating vegetation mats over deeper water. See Figure 4.1v. The floating mat consists of a dense network of roots and organic material of variable thickness. Standing water may or may not be present on top of the undisturbed mat and may or may not be moving. Dominant mat-forming plants are graminoid sedge, grass and horsetail species, and herbaceous broadleaf forbs, such as buckbean and marsh marigold. In addition, submerged aquatics, such as bladderwort, and floating aquatics, such as duckweed are found in these areas. Trees and shrubs are absent, except for occasional willows. These wetlands attract large numbers of trumpeter swans and other waterfowl.

Figure 4.1v
Typical Wetlands

4.1.3.8 Wildlife. Wildlife abounds in Alaska and Fort Wainwright. Most obvious are the moose that occasionally wander into the cantonment area and browse on the many landscaping trees and shrubs. The Chena River is an attractive sports-fishing area for king salmon, arctic grayling, and burbot. The cantonment area is primarily developed and the presence of wildlife is minimal on post. Moose, red fox, snowshoe hare, marten, weasels, beaver, porcupine, marmoths, voles, shrews, mice, migratory waterfowl, various types of

Red Fox

Marten

Ptarmigan

Moose

Snowshoe Hare

Grouse

Salmon

Figure 4.1w
Migratory Wildlife Found on Post

shorebirds, predatory birds, gulls, swans, ruffed grouse, spruce grouse, game birds such as grouse, ducks and ptarmigan, and perching birds are present in, or may migrate through, the installation. See Figure 4.1w. There is a possibility of black bear, coyote, woodchuck, and lemmings, and there is a low possibility of river otter, lynx, grizzly bear, caribou, wolverine, and wolf. There are no known federally endangered or threatened species on Fort Wainwright, but there are a number of rare, uncommon, or priority species.

The Chena River bisects the installation along its east west axis, is listed on the Alaska Department of Fish and Game (ADF&G) Anadromous Waters Catalog for Chinook and chum salmon. The Chena River also supports populations of arctic grayling, whitefish, least cisco, northern pike, burbot, longnose suckers, sculpins, chubs, lamprey, and sheefish. The wood frog is the only amphibian species present. See Figure 4.1x.

Figure 4.1x
Wood Frog

Mew Gull

Mew Gulls (Larus canus) return to the Fort Wainwright area to nest each spring. The gulls prefer isolated or stationary platforms upon which to build and protect their nests. Islands, long term storage containers and stationary vehicles are consistently used on post. See Figure 4.1y. A large segment of military motor pool areas are found on the east side of Badger Pond, an active gravel pit. Although a percentage of birds nest on the two small islands within the pond, some tend to move into the motor pool areas and attempt to build nests on the roofs or hoods of Humvees, SUSVs, Strykers, and other military vehicles, Once eggs have been laid, vehicles must remain inactive, by law (Migratory Bird Treaty Act), until the chicks are fledged.

Figure 4.1y
Mew Gull

The Natural Resource Office advises all military personnel to monitor their motor pools daily during spring migration; and to remove nests while they are being built. Once eggs are found in the nest, the affected vehicle must remain inactive until the birds have left the nest. Inactive vehicles results in loss of training opportunity for soldiers.

4.1.4 Man-Made Environment

The man-made environment includes (but are not limited to) archaeological sites, historic buildings or structures, and properties of traditional religious and cultural importance, contaminated sites, solid waste management, noise, and air quality.

4.1.4.1 Archaeology. The basic cultural context for Fort Wainwright's archaeological resources is included in, and limited to, the installation's Integrated Cultural Resources Management Plan (ICRMP). The archaeology of the training areas has been primarily surveyed on an "as needed" basis due to the remote setting and difficult terrain. Therefore many areas have not been surveyed and most sites need to be reassessed.

Main Post. Eight archaeological surveys have been conducted on Fort Wainwright Main Post. These surveys have either focused on high potential areas of Fort Wainwright, or related to construction projects. Survey sites include the southern slopes of Birch Hill, various barrow sources just south of the cantonment area, and small arms ranges between Richardson Highway and Tanana River.

Tanana Flats Training Area. Three archaeological surveys have been conducted in the Tanana Flats Training Area, beginning in 1973. Fifty sites have been found and two archaeological districts have been designated. A third potential district exists in the vicinity of Wood River Buttes. Of these sites, 13 have been determined eligible for inclusion in the NRHP, 28 are not eligible, and 8 are pending or remain to be evaluated for eligibility.

Fort Wainwright Yukon Training Area. Nine archaeological surveys have been conducted on Yukon Training Area. Fourteen archaeological sites have been found. Twelve of the sites are not eligible for listing in the NRHP. The Moose Creek Drainage area has not been evaluated due to its location in a heavily used portion of the Stuart Creek Impact Area.

Donnelly Training Area. Twenty-one archaeological surveys have been conducted in the Donnelly Training Area (DTA), beginning in 1963. Two Hundred and twenty-five sites have been found on the DTA, with thirteen of these comprising two archaeological districts. Sixty-six sites have been evaluated and 25 of these are eligible for listing on the NRHP.

4.1.4.2 Historical Buildings and Structures. It has been nearly 22 years since the National Park Service conducted the first building survey of Fort Wainwright in 1984. See table 4.1c. This survey was conducted as part of the process to identify extant buildings associated with the World War II era Ladd Field. This survey resulted in the designation of Ladd Field as a National Historic Landmark. See Figure 4.1z (page 23).

The entire Fort Wainwright Main Post has been inventoried and evaluated for eligibility for inclusion in the NRHP under the WWII and Cold War historic contexts. Under the WWII context, Ladd Field has been designated a National Historic Landmark. See Figure 4.1aa. The Ladd Field National Historic Landmark includes 37 buildings and structures centered on the runways. See Figure 4.1ab.

▲ **Figure 4.1aa**
Ladd Field National Historic Landmark Marker

▲ **Figure 4.1ab**
Historic North Post Chapel Building 1043 was Completed in 1944

Under the Cold War context, the Main Post has been inventoried and evaluated with 70 buildings and structures centered on the runways contributing to the Ladd Air Force Base Historic District. This historic district was determined eligible and was nominated for inclusion in the National Register of Historic Places but has not been formally listed.

▼ **Table 4.1c**
Historic Building Surveys of Fort Wainwright

Year	Researcher	Survey Location	Results
1984	National Park Service	Centered on Airfield	Designation of Ladd Field National Historic Landmark w/34 buildings and structures contributing.
1995	SHPO/COE/NPS	Review of WWII extant buildings on Fort Wainwright	Identified 48 extant WWII buildings that may have eligibility for inclusion in the NRHP as a historic district and 11 extant buildings not eligible.
1998	SHPO	Boundary review of Ladd Field NHL	Review of 1984 NHL resulted in SHPO suggesting that the NHL incorporate 51 contributing buildings and structures and 48 noncontributing buildings and structures.
2000	USARAK	Boundary review of Ladd Field NHL	Final boundary review accepted by the National Park Service.
2001	USARAK	Centered on Cold War Era missions and identification of buildings directly related to missions	Identification of Ladd Air Force Base Historic District with 68 buildings/structures contributing to the historic district.

4.1.4.3 Contaminated Areas. Fort Wainwright consists of a cantonment area (4,473 acres) on the eastern border of Fairbanks, a range complex (8,825 acres), and two maneuver areas (898,306 acres). Since World War II, Fort Wainwright has housed light infantry brigades. Studies at the installation identified a chemical agent dump, drum burial sites, underground storage tanks, a railroad car off-loading facility, an open burning and open detonation area, a former ordnance disposal site, solvent groundwater plumes, petroleum/oil/lubricant (POL) plumes, and pesticide-contaminated soil. Among contaminated areas on the cantonment area is a 50-acre sanitary landfill that has received waste oil, waste fuel, spent solvents, paint residues, and fuel tank sludge since the mid-1950s. The landfill is an unlined, unbermed area that is built up higher than the surrounding terrain. A second contaminated area is the proposed North Family Housing Area, which is 3,500 feet from the landfill. The Army used the area for storage of petroleum products, solvents, and other chemicals and for disposal of power plant ash and slag, which contain heavy metals such as chromium and mercury.

The installation is participating in the Installation Restoration Program (IRP), established in 1978. Under this program, the Department of Defense seeks to identify, investigate, and clean up contamination from hazardous materials. In 1985 and 1986, as part of IRP studies, lead and chromium were detected in monitoring wells at the landfill; in 1987, chromium and tetra-hydrofuran were detected in monitoring wells at the proposed housing area, and chromium was detected in soil. See Figure 4.1ac. An estimated 11,000 people, including the entire population at Fort Wainwright (10,900 people), obtain drinking water from wells within 3 miles of hazardous substances on the fort.

▲ **Figure 4.1ac**
Typical Groundwater Monitoring Well

The U.S. Environmental Protection Agency (EPA) has designated Fort Wainwright as a Superfund site. Some Superfund sites are on the National Priority Site Lists. See Restoration Sites Map Figure 4.1ad and Table 4.1d. The National Priorities List ("NPL") is the list of hazardous waste sites in the United States eligible for long-term remedial action financed under the federal Superfund program. Environmental Protection Agency regulations outline a formal process for assessing hazardous waste sites and placing them on the NPL. The NPL is intended primarily to guide the EPA in determining which sites warrant further investigation. EPA Region 10, the ADEC, and the Army signed a Federal Facilities Agreement in March 1992. This agreement established deadlines, objectives, responsibilities, and a procedural framework for implementing an Installation Restoration Program (IRP) at Fort Wainwright to perform all necessary environmental cleanup. Contamination assessment performed under the IRP resulted in the identification of the five OUs. Hazardous substances identified at these OUs include solvents, fuel products and pesticides. These resulted primarily from utility generation, aircraft and vehicle maintenance and repair activities, and landfill operations. Air sparging and soil vapor extraction systems for fuel contamination in groundwater, natural attenuation and institutional controls are the primary treatment systems used. Fort Wainwright has consistently demonstrated success in environmental restoration, receiving the Department of the Army Environmental Cleanup Award in both 1996 and 1998.

The installation is a model for developing and using the new and innovative cleanup technologies. Because of the cold weather, long winters, and the short summer construction season at Fort Wainwright, standard cleanup technologies must be adapted to the sub-arctic environment. Due to the unique geologic setting of Fort Wainwright, and the uncertainty of discontinuous permafrost, it is extremely difficult to determine groundwater parameters. Some of its most cost- and technically-effective successes are listed below:

- Groundwater Flow Probes
- Ground Penetrating Radar
- Driven Wells in Sub-Arctic Environment
- Oxygen Releasing Compounds
- Natural Attenuation

4.1.4.4 Solid Waste Management. The Solid Waste Landfill site is comprised of 40 acres of which 21 are still in use located in the northern portion of the cantonment area.

Solid waste is non-hazardous and non-infectious waste generated at the installation level, including recyclable materials, garbage, refuse, sludge, and other discarded materials, in September 2001 the Department of Environmental Conservation completed its evaluation of the Class I Solid Waste Disposal Permit application for Fort Wainwright landfill. The Solid Waste Disposal Permit was approved for the continued used of the land fill for disposal of municipal solid waste until September 2006. The land fill no longer take solid waste. See Figure 4.1ae. Currently, solid waste is taken to the Fairbanks North Star Barrow.

Figure 4.1ae
Typical Solid Waste Dumpster

4.1.4.5 Noise. A primary function of the Installation Compatible Use Zone (ICUZ) is to publish the assessment of noise that is generated at the airfield and its affects on the surrounding military and civilian communities. See Figure 4.1af. The current ICUZ Study is in need of update due to the number and types of aircraft in the current inventory. Noise level simulation modeling can then be illustrated on the installation land-use maps and incorporated into the installation's master plan. USAEHA used the NOISEMAP 6.3 computer program for its modeling.

Unlike topographic contours, noise contours are not intended to represent precise noise level zones. Because of geographic features, meteorological conditions, the receiver's perception of the source and other extraneous effects, noise contours do not clearly divide noise zones between compatible on one side and incompatible on the other side.

Figure 4.1af
Aircraft Noise has a Negative Impact on Surrounding Communities

Noise from large caliber weapons extends off the post and into surrounding communities. Other areas of Fort Wainwright produce no noise impact on the surrounding communities.

4.1.4.6 Air Quality. Potential sources of air pollutants from Fort Wainwright operations include particulate matter from the coal-fired power plant and Volatile Organic Compound (VOC) emissions from the Soil Vapor Extraction/Air Sparging Systems (SVE/AS remediation systems). Other contaminants from site operations include VOCs from aircraft maintenance activities, dust from construction sites, and landfill operations. Emissions from the coal-fired plant and from the SVE/AS systems area are discussed below.

Coal-Fired Power Plant. The Fort Wainwright coal-fired power plant supplies heat and electricity for the post. The power plant burns approximately 300 tons of coal per day during the summer and up to 1,200 tons per day in the winter. The coal-fired power plant is a little less than 2 miles east of the western boundary of the post. See Figure 4.1ag. The closest on-post housing is about 0.5 miles west of the power plant. Another on-post housing area is located a little more than 1 mile north of the power plant. There is an off-post housing area a little more than 1 mile northwest of the power plant.

▲ **Figure 4.1ag**
Coal-Fired Power Plant

Alaska Department of Environmental Conservation (ADEC) has twice issued notices to Fort Wainwright (one in 1994 and another in 1996) for air pollution violations. EPA issued a Notice of Clean Air Act Violation to the coal-fired power plant on March 10, 1999, because the plant was operating without adequate emission controls and functioning monitors. Also, from the 1960s to 1993, the coal pile used for fuel at the plant

was sprayed with waste petroleum fuel products (e.g., diesel, fuel oil, solvents, and lubricants) from tanks, railroad cars, and drums while they were stored at the Coal Storage Yard. The oil was used to increase the British thermal unit content of the coal and ultimately improve the output of the coal fired-power plant.

No on-post or off-post air monitoring data are available to evaluate the potential public health impact of air emissions from the coal-fired power plant during normal operations or while it was burning coal that had been coated with waste oil. Two ambient air monitors were installed near the power plant and began operating in February 2003. Results indicate Fort Wainwright currently meets National Ambient Air Quality (NAAQ) Standards for sulfur dioxide (SO_2), nitrogen oxides (NOx), carbon monoxide (CO) and PM10.

Soil Vapor Extraction/Air Sparging Systems (SVE/AS). Beginning in 1994, SVE/AS systems have been operating on post as part of the soil and groundwater remediation efforts. Most of the contaminants removed by these systems are in gas form. When the systems were originally installed, they were not equipped to capture all the volatilized chemicals. Many of the systems were brought on line in 1997. An emissions inventory shows that Fort Wainwright emitted 54 tons of Volatile Organic Compounds (VOC) in 1997. Under the currently applicable permits, Fort Wainwright is limited to 40 tons of emissions post wide; 30 tons per year from restoration activities.

Emission controls were installed on the SVE/AS systems in 1997 and 1998, bringing VOC emissions back into compliance. Monitoring in 1999 and 2003 indicates that emissions from SVE/AS systems have dropped, and are within the permitted levels. As long as the SVE/AS systems are operating and the control measures are in place, no public health hazards from these sites are expected. No air monitoring data is available for the period when the emissions were above current permit levels. While the potential exposures to these emissions can not be determined, it is expected that the potential exposures would have been below levels that would cause health effects. Because relatively low levels of contaminants were released into the air for only a short time, ATSDR categorized this potential exposure as no apparent public health hazard.

4.2 LAND USE

4.2.1 Existing Land Use

Fort Wainwright is located in Fairbanks, North Star Borough of Alaska immediately adjacent to the western edge of Fairbanks, Alaska. The installation is comprised of approximately 915,000 acres of land divided into the main post cantonment area (4,500 acres), 8,825 acres of ranges, and 898,306 acres for military maneuvers. See Fort Wainwright Location Map Figure 4.1a. The existing land use pattern is divided into twelve land use categories: administration, airfield, open space, family housing, industrial, medical, maintenance, outdoor recreation, unaccompanied housing, community facilities, training and ranges, supply and storage. See Existing Land Use Map Figure 4.2a.

The existing land use pattern is a result of the various mission changes, associated growth, and development the installation has experienced during its more than sixty-eight year history. Adaptation to mission change seems to have had little or no adverse impact on maintaining compatible land use relations. However, natural and man-made site constraints and DOD Antiterrorist and Force Protection standards have limited land resources available for future development.

4.2.2 Future Land Use

The primary long-term plan for Fort Wainwright is the same as the Army land use plan to eliminate or minimize land use incompatibilities. Many of the interests and schedules of families and unaccompanied personnel differ greatly. Therefore, unaccompanied personnel and family housing should be widely separated from each other. Troop housing is incompatible with training areas, airfield, maintenance, and industrial land uses. Housing requires absence of environmental hazards or aggravations. Family housing has its strongest functional relationship with the community facilities land use. Community facilities areas are similar to the retail, community, family support and recreational areas found in suburban civilian communities upon which families depend. Proximity to schools, child care facilities, the community center, open space, outdoor recreation, health care, and the religious center is essential. See Future Land Use Map Figure 4.2b

Housing requires proximity to the commercial community center. Visitor housing should be in reasonable proximity to the command and control area since this is the area most frequented on official visits. Housing is required for the medical detachment near the hospital. Uses that can be combined with troop housing include administration, recreation, dining, medical, and service facilities.

Unaccompanied Personnel Housing (UPH) should be planned on the basis of organizational and functional relationships. For example, all enlisted housing (UPH-E) for a particular organization should be collocated with the command and control facility and supporting facilities in one area. Officer housing does not need to be in the organization's area. Visitors' housing should be separated from that of permanent party personnel, in locations easily identified by transient personnel.

Open space will be used to separate and define the various sections of the installation and create a natural setting for facilities. Open space may be undeveloped due to environmental or physical constraints such as flood plains conservation area, or protective area for endangered species. Open space may also be required to provide safety or security clearances. Required buffer/clearance zones include the airfield's ICUZ and other buffers, roadsides, railroad rights-of-way, utility easements, security buffers, and safety distance from ranges and weapons and ordnance storage areas, and for separation between family and unaccompanied personnel housing areas.

Greenbelts will be built into the installation landscape providing open spaces through and between land use areas. These areas will preserve existing vegetation and also plan native flora whenever existing flora is not adequate. These greenbelts separate conflicting activities and connect outdoor activity areas, such as parks.

4.3 CIRCULATION

4.3.1 Existing Road Network

Fort Wainwright (FWA) is located adjacent to Fairbanks along the Richardson Highway. This highway provides the primary access to the post and is heavily used. The Richardson Highway slices through FWA just south of the main cantonment area and provides a good separation from the

main training area. This highway provides further access south to Eielson AFB, DTA, and FGA. See Figure 4.3a.

The Richardson Highway ends its southerly course in Valdez where the Glenn Highway can be taken further south for travel to Anchorage. West of FWA is the Parks Highway which travels from Fairbanks to Wasilla and connects with the Glenn Highway just 30 miles north of Anchorage.

Access to the installation is accomplished through three gates at this time; Main Gate, Badger Gate, and Trainer Gate. A fourth gate, the Richardson Gate, was open and available for access until 11 September 2001. After that date the gate was closed due to AT/FP measures. According to the Alaska DOT the main gate saw an average of 10,000 vehicles per day. See Figure 4.3b. The Badger Gate in 2001 saw an average of 2,100 vehicles per day. See Figure 4.3c. The Trainer Gate is estimated to have seen traffic of 4,100 vehicles per day. See Figure 4.3d. Prior to closure of the Richardson Gate that entry point saw an average of 4,000 vehicles per day. See Figures 4.3e and Existing Road Network Map, Figure 4.3f.

Figure 4.3b
Main Gate

Figure 4.3c
Badger Gate

4.3.2 Future Road Network

A series of projects to reconstruct primary and secondary roads throughout the installation will include new pavement, gutters, storm drains, signs, sidewalks, and landscaping. Improvement to the three gates will include new Entry Control Facilities with canopies, fencing, barriers, road alignment, parking, lighting, and landscaping. The future circulation system is based on the existing installation transportation system, with enhancements and visual clues added to assist in way finding. See Future Road Network Map Figure 4.3g.

Figure 4.3a
Intersection of Richardson Highway and Airport Way

Figure 4.3d
Trainer Gate

Figure 4.3e
Richardson Gate

Section 5.0
Visual Themes and Zones

5

5.1 INTRODUCTION

An Installation Design Guide has been developed for Fort Wainwright and is currently in use and updated as required. The current IDG provides recommendations for improvements to enhance the visual and functional quality of the installation through the use of design standards and improved maintenance standards. It calls for a significant range of visual and functional improvements for Fort Wainwright that would enhance the appearance of major activity areas, improve the efficiency and appearance of major circulation routes, enhance existing landscaping to unify the installation, provide architectural and color guidelines for existing and new facilities, and improve maintenance practices for aesthetic purposes.

Many of the recommendations contained in the current Design Guide have been implemented and some have not. Of positive significance is the development of the new medical facility, Company Campus, and Family Housing improvements. The visual zones and projects proposed in this Installation Design Guide build upon some of the recommendations found in the current Installation Design Guide.

Visual themes and zones were determined after conducting visual and spatial surveys as mentioned in paragraph 2.2. These surveys were conducted using existing installation maps, visual inspection, interviews, and photographs to record impressions of visual and spatial impacts. The data captured was used to define the visual themes and zones of the installation.

Figure 5.1a presents a graphical portrayal of the installation's visual themes and zones. Table 5.1a shows the visual theme/visual zone relationship within Fort Wainwright.

Table 5.1a
Theme/Zone Relationship

Theme	Family Housing	Historic Airfield	River Corridor	Town Center	Industrial	Recreation/ Open Space	Company Campus
Zones	• Family Neighborhoods	• Historic Landmark • Administration Quad	• Chena River Trail	• Exchange/ Commissary • Open Space	• Power Plant • DPW Shops • Motor Pools • Badger Lake • Meridian Road • Neely Road	• Alder Avenue • Ball Field Complex • Badger Gate	• Barracks • Monterey Lake
Projects	• Main Entrance Gate • Chilkoot Housing Site Improvements • Northern Lights Housing Site Improvements • Southern Cross Housing Site Improvements	• Gaffney Road Streetscape Improvements	• Chena River Trail Extension	• Exchange/ Commissary Entry Improve-ments • Open Space Plan/Pedestrian Connection Improvements	• Power Plant Street-scape Improvements and Screening Plan • Montgomery Road Streetscape and Area Improvements • Motor Pool Screening Improvements • Badger Lake Recreation Area • Meridian Road Realignment and Streetscape • Neely Road Extension	• Alder Avenue Bike Path Extension • Ball Field Complex Expansion • Badger Gate Improvements	• Barracks 3400 Improvements • Barracks 3700 Improvements • Monterey Lake Improvements

5.2 VISUAL THEMES

Visual themes create a perception of unification within the installation. These themes create design consistency that provides orientation and a “sense of place.”

Visual themes are generalized areas that have the same general use and visual characteristics. Visual themes include broad scale activities that occur on the installation. These activities typically include similar design and layout characteristics.

Fort Wainwright visual themes are:

- Family Housing
- Historic Airfield
- River Corridor
- Town Center
- Industrial
- Recreation/Open Space
- Company Campus

5.3 VISUAL ZONES

Visual zones are areas within the visual themes that include similar visual characteristics. Visual characteristics define a "look and feel" of an area together with the dominant features that define its image. Typical visual characteristics include unique buildings, vehicular and pedestrian corridors, vehicular entrances, natural features, historical importance, and spatial relationships.

The visual zones developed for Fort Wainwright are:

- Family Neighborhoods
- Historic Landmark
- Administration Quad
- Chena River Trail
- Exchange/Commissary
- Open Space
- Power Plant
- DPW Shops at Montgomery Road
- Motor Pools
- Badger Lake
- Meridian Road
- Neely Road
- Alder Avenue
- Ball Field Complex
- Badger Gate
- Barracks
- Montgomery Lake

The following paragraphs present a functional analysis of each of the visual zones. This analysis includes a description of the visual character, site analysis, assets, liabilities and recommendations for each zone.

The visual zones for Fort Wainwright were defined based on their impact on the installation and the ability for projects within these zones to improve functionality, safety, and visual impact.

The Site Analysis Map, Figure 5.3a, graphically illustrates existing features and characteristics of Fort Wainwright. This analysis illustrates points of opportunity and points of constraint.

Assets and liabilities are determined according to the following criteria: installation visual goals and objectives (Section 3.2), design principles (Section 3.4), and visual elements (Section 3.5) in relationship to the six design components described in Sections 7 through 12 of this Army Installation Design Guide.

Recommendations are made to correct the liabilities or enhance the assets. These recommendations are used to generate projects that are listed in Section 6, Improvement Projects.

5.4 FAMILY NEIGHBORHOODS VISUAL ZONE

The Family Neighborhoods Visual Zone is made up of various neighborhood blocks immediately inside and south of the installation main gate area. The architectural style of the housing units vary greatly based on the year the neighborhood units were constructed. Density of the neighborhoods varies as well as the arrangement of the units on the site. See Figure 5.4a. Due to the cold climate, most if not all, neighborhoods have large parking areas immediately adjacent to the housing entry. This has limited green space on the older units but the newer units are being constructed with attached garages which have allowed more open space. See Figures 5.4b and 5.4c. Within the family neighborhood visual zone is the main gate area. Its proximity to housing has a direct bearing on how force protection measures are provided.

▲ **Figure 5.4c**
Typical Housing Streetscape

The housing units do not present an organized space or unifying element which can create an identity within a neighborhood group. The lack of landscape plantings adjacent to the building structure or street trees to define right of way limits creates a disorganized feeling within the neighborhoods. See Figure 5.4d. Defined social spaces are not provided within a neighborhood setting and a lack of a consistent pedestrian walkway system presents a safety concern. This visual zone will look at three neighborhood improvement projects which will address spatial organization, site amenities and landscape treatments to create identities within a neighborhood unit.

▲ **Figure 5.4a**
Fort Wainwright Housing

▲ **Figure 5.4b**
Typical Housing Entry

▲ **Figure 5.4d**
Typical Housing Streetscape

The main gate area is set back from the intersection with Richardson Highway and serves as the main entrance into the installation from the west. See Figure 5.4e. The bike path which connects to the family neighborhoods from Richardson Highway creates a security concern due to the lack of physical control on the bike path. Proposed improvements to the main gate will impact the adjoining housing area and should be considered during the design implementation process.

▲ **Figure 5.4e**
The Main Gate Adjoins Housing Areas

5.4.1 Visual Character

The visual character within family housing presents a feeling of disorganization due to the lack of landscape elements or architectural features to provide a sense of place within a neighborhood unit. The architectural style of the housing units varies from one side of the street to another due to the timing of the construction of the particular units. The density of the units is high due to the lack of suitable land for construction. The undefined open space between the housing structures is accentuated due to the lack of trees or landscape elements to soften, frame or screen views. Placement of dumpsters within a housing area is random and uncontrolled as shown in Figure 5.4f. Playground equipment has been placed within housing areas at locations isolated from most housing units and paved access routes have not been provided, see Figure 5.4g. Landscape treatment within the housing area is random and minimal. The flat open terrain and overhead utility lines adds to the spatial disorganization within the housing units and a lack of definition between neighborhoods, see Figure 5.4h.

▲ **Figure 5.4f**
Placement of Dumpsters Lacks Organization

▲ **Figure 5.4g**
New Playground Lacks Paved Access Routes

▲ **Figure 5.4h**
Existing Open Space at Neighborhood Entrance

5.4.2 Site Analysis

The family housing area is an open flat plain which has been created by the removal of native tree cover. The development of the housing units has taken place over a period of time where architectural style and construction methods and standards have changed with each development cycle. This has lead to a disorganized appearance within the housing community. The lack of site amenities, landscape treatment or architectural features within the various housing groups has lead to a lack of spatial organization and neighborhood identify. See Figure 5.4i.

▲ **Figure 5.4i**
Housing Units Lack Space Organization

A bike path begins on the south end of the housing area and continues along Alder Avenue, ending at the intersection of Meridian Road. Walkways are installed in the newer housing areas, but a complete pedestrian walkway system is lacking in the older areas. Pedestrians within these areas must walk in the roadway or on unpaved paths. Figure 5.4j.

The lack of landscape elements and the presence of overhead utility lines create a very stark visual impact to the area. This image is reinforced by the lack of site amenities, trash enclosures, and screening of parking lots.

▲ **Figure 5.4j**
Pedestrian Walkways are Required

The main gate is situated on the western boundary of the installation and serves as the primary entrance into the installation from Fairbanks. Gaffney Road leads from the main gate into the installation and Ladd Field. The majority of all traffic entering and leaving the installation uses the main gate. The current location of the visitor's center abuts housing and lacks appropriate security to protect residents as shown in Figure 5.4k. The housing which adjoins the main gate is separated from the gate by a narrow tree line and a metal fence. The main gate does not meet current force protection measures and is scheduled to undergo a reconfiguration to improve security.

Figure 5.4k
Fort Wainwright Visitor Center

5.4.3 Assets

Following are Family Neighborhoods area assets:

- Ample open space to allow for landscape upgrades.
- Bike path system adjacent to housing.
- Arctic Light School.
- Day care facilities.
- Narrow tree stand separating the main gate and housing units.

5.4.4 Liabilities

Following are Family Neighborhood area liabilities:

- Overhead utility lines.
- Lack of Landscaping for screening and accent.
- Trash Dumpsters.
- Play areas without proper access for strollers or handicapped access.
- Minimal site amenities.
- Lack of neighborhood social gathering spaces.
- Non-conforming security measures between the main gate area and housing units.

5.4.5 Recommendations

The Family Neighborhoods need neighborhood identifiers to designate various housing groups. Social spaces for small scale social interaction should also be provided within the housing groups. Creation of defined open space is needed to promote a feeling of intimacy and provide an attractive space of passive recreational activities. Pedestrian access to these areas is needed to help create useable spaces and provide safe alternative routes for residents to reach key facilities within the housing areas.

Figures 5.4l and 5.4m provide plan views of the proposed improvements and illustrate the proposed site relationships which can be created within distinct neighborhoods. The walkway system and the street tree locations are recommended to initiate a sense of place within the housing area.

Figures 5.4n and 5.4o provide a plan view and sketch of the front entry gate design concept planned for the Main Entrance Gate and the reconfiguration of the gate security check point. This project provides a new entrance control point with signage and landscape improvements. These improvements meet current force protection criteria.

▲ **Figure 5.4l**
Chilkoot Housing Improvement Plan

▲ **Figure 5.4m**
Northern Lights Housing Improvement Plan

The IDG recommendations for the Family Neighborhood Visual Zone will:

- Enhance the visual impact of the installation.
- Provide appropriate landscaping that enhances the gate, meets force protection requirements, and can be easily maintained.
- Provide landscape and site amenity improvements to better define a neighborhood unit.
- Create pedestrian access routes to various facilities within the housing area.
- Create social spaces to reinforce neighborhood values.
- Meet IDG requirements.

▲ **Figure 5.4n**

Main Gate Improvement Plan

▲ **Figure 5.4o**

Main Gate Entry Feature

5.5 HISTORIC LANDMARK VISUAL ZONE

The Historic Landmark Visual Zone lies within the Historic Airfield Theme area and encompasses Ladd Field and the majority of the support facilities associated with airfield operations at Fort Wainwright. The primary facilities include the Hangers 1, 2, and 3, as well as fire and rescue facilities, the administration quadrangle, and various airfield operation support services. This visual zone houses installation air operations and the Bureau of Land Management. The visual impact of the area is the open space encompassing the airfield and support facilities. Constructed on the alluvial plain created by the Chena River, the runway and airfield provides the installation with a visually unimpressive open space of historical significance. Figures 5.5a, 5.5b and 5.5c capture the scope of the space and the typical street scenes adjacent to the airfield.

▲ **Figure 5.5a**
Ladd Field View Shed from Ketcham Road

▲ **Figure 5.5b**
Ladd Field View Shed at Gaffney Road

▲ **Figure 5.5c**
Ladd Field View Shed at the Intersection of Montgomery and Ketcham Road

5.5.1 Visual Character

The visual character of the area is a vast open space devoid of trees or landscape plant material. There is a lack of security fencing around the airfield, especially where the runway abuts Gaffney Road and Ketchum Road. The 8,000 foot plus runway creates a vast open space with little context other than the support facilities along the perimeter of the field. Within the boundary of the airfield there are areas under remediation which present an appearance of having not been maintained for some time. Most spaces along the boundary of the airfield appear to be under utilized and poorly maintained.

A key impact to the visual quality of the area is the starkness of the open space shown in Figures 5.5d, 5.5e, and 5.5f. Overhead utilities along Gaffney Road and Ketchum Road add to the starkness of the open space. Many of the support structures within the limits of the airfield are in disrepair and not in use which adds to the negative visual impact of the space. As a historical landmark the ability to recommend specific improvements to the airfield is not possible in this IDG. However, the visual character of the administrative quad, which is part of the historic airfield, is can be improved within the limits of a cultural resources review and the laws of National Historic Registration to enhance the quality of the area.

▲ **Figure 5.5d**

Ladd Field View Shed Looking West at Montgomery Road

▲ **Figure 5.5e**

Airfield Historic District Looking North from the Intersection of Montgomery and Ketcham Roads

▲ **Figure 5.5f**

View of Airfield Historic District

5.5.2 Site Analysis

The Historic Landmark Visual Zone consists of all facilities located within the boundaries of the landmark district including view sheds from the field. The vistas from both ends of the runway are attractive and add context to the overall site. The alluvial plain on which the airfield was constructed has little to no topographic relief. The architecture of the facilities within the landmark district is utilitarian, consisting of large hangers and smaller support facilities for airfield operation. Hangars 2 and 3 are Birchwood Hangars and are two of the three remaining in the world; the third is located at Fort Greely, Alaska. Gaffney Road and Ketchum Road both cross the end of the runway within the glide path of aircraft using the field. Little security protection is present in this area with Ketchum Road in close proximity to the aircraft fueling point. Overhead utilities distract from the open space, however they do provide a definition of the perimeter of the area. See Figures 5.5g and 5.5h.

▲ **Figure 5.5g**
Overhead Utility Lines Define Area

▲ **Figure 5.5h**
Runway Clear Zone

▲ **Figure 5.5i**
View of Airfield From Birch Mountain

The Chena River corridor lies adjacent to the airfield and provides natural character to the area. Vegetation associated with the river corridor does add some visual relief to the open space of the airfield. The distant mountain range and forest lands provide an impressive backdrop to the airfield and provide the only context to the site. Figure 5.5i is an overview of the airfield from Birch Mountain showing the airfield in relation to the rest of the installation.

5.5.3 Assets

Following are Historic Landmark area assets:

- Adequate open space.
- Existing facilities have a unifying color palette.
- Historic importance.

5.5.4 Liabilities

Following are Historic Landmark area liabilities:

- Lack of a unified landscape theme or palette.
- No architectural theme to installation buildings.
- Poorly defined open space.
- Lack of a unified signage.
- Environmental remediation sites.

5.5.5 Recommendations

The Historic Airfield area comprises a large portion of the installation and is historically significant to the installation and to the State of Alaska. Due to its landmark status no specific projects are envisioned for the visual zone.

5.6 ADMINISTRATION QUAD VISUAL ZONE

The Administrative Quad Visual Zone is part of the Historic Airfield theme area and houses the original areas of the installation. The area consists of the original parade grounds fronting the administration building, Hanger #1, and the Law Center. Immediately north of the parade ground, at the apex of the circle, is Building 1, the Commanding General's Home, Figure 5.6a; the Chapel, Figure 5.6b; and Murphy Hall, Figure 5.6c. The significance of the area is the original design of the complex. The "Beaux Arts" concept of the wheel is a common aspect of military installation design from early the 1900's. This design has remained intact during the years of growth embraced by Fort Wainwright.

▲ **Figure 5.6a**
Commanding General's Home

This visual zone is identified to create a defined streetscape and entry feature announcing the entry into the area. This area also possesses some of the original architecture of the installation and historical information documenting events held on the installation during World War II and the Cold War Era. Also in this area are the underground "utilidors", which connect the buildings on the quad and provided essential utilities to the structures. This concept is still used today to provide utilities to new facilities. The original vent structures, which were constructed with some architectural detail, provide interest in this area. See Figure 5.6d.

▲ **Figure 5.6b**
Historic Chapel

▲ **Figure 5.6c**
Murphy Hall

▲ **Figure 5.6d**
Utilidor Vents

The existing plant material in this area is mature spruce trees and some birch at various locations adjacent to some of the structures. There is a lack of uniformity to the plantings; some buildings have no plantings, trees have overtaken the Commanding General's home site and limit the view of the home to a small portion of the house. See Figure 5.6e.

5.6.1 Visual Character

The visual zone is defined by the Marks Road intersection with Gaffney Road on the east and west and Hanger #1 on the south. The architectural character of the buildings provides design context to the area and provides structural character to the site. Noticeably absent from the area are overhead utility lines. The streets are visibly narrower in this part of the installation with older barracks set very close to the street as seen in Figure 5.6f. Building entrances off of Gaffney abut the 4-foot sidewalk making enforcement of force protection measures impractical.

This is an intimate space within the confines of the installation and should be preserved. See Figure 5.6g. The color palette of the structures is attractive and adds interest to the area. There is a lack of trees to provide screening of the parking spaces adjacent to the buildings and some adjoining areas show a lack of maintenance.

Figure 5.6h provides a typical street scene found on Gaffney Road.

▲ **Figure 5.6g**
Historic Administration Building

▲ **Figure 5.6e**
Overgrown Trees

▲ **Figure 5.6f**
Gaffney Road Streetscape Looking East

▲ **Figure 5.6h**
Gaffney Road Streetscape Looking West

5.6.2 Site Analysis

The administrative quad area is on the National Register of Historic Places and has played a key role in the growth of the United States Military and in the development of Alaska. The National Register designation limits the type of improvements which can be undertaken in this area to improve the overall appearance. Presently the site consists of a central parade ground flanked on three sides by administrative buildings and Hanger #1. The buildings are contributing factors to the historic designation and must maintain their architectural character. Parking lots, sidewalks, and landscaping have not been given the attention necessary to keep them in good condition. Parking lot curbing has been damaged due to snow plowing operations and seasonal freeze and thaw. Parking areas lack landscape buffers or accent planting to better define the space. Signage in the area is not to current standard and needs to be upgraded.

Landscape planting along Gaffney is mature but limited to a few small areas. Where there are street trees the size and placement can restrict views of nearby intersections due to their size or location as depicted in Figures 5.6i and 5.6j. Drive entries are poorly accented by landscape plant material to denote a point where cars would enter the roadway. The large rock boulders placed along Gaffney adjacent to the administration building are not in keeping with the historical architectural theme of the area and should be replaced with a more appropriate security barrier in keeping with the historical context of the area.

The site of the historical information signs is not accessible by a walkway and does not present the importance of the events it depicts. Roadway signage along this section of Gaffney is cluttered, poorly maintained, and lacks order. See Figure 5.6k. The most mature and appropriate street tree planting exists in front of the Bureau of Land Management offices.

5.6.3 Assets

The following are the Administrative Quad assets:

- Historical significance of the area and buildings.
- Commanding General's home.
- The "Beaux Arts" design of the site.
- Established street trees fronting Bureau of Land Management office.
- Mature trees add scale to the structures.

Figure 5.6i
Existing Landscape Along Gaffney Road

Figure 5.6j
Existing Streetscape

Figure 5.6k
Existing Roadway Signage

5.6.4 Liabilities

The following are the Administrative Quad liabilities:

- Gaffney Road is a narrow two lane.
- Poor circulation patterns throughout area.
- Mature landscape material has not been maintained.
- Close proximity of buildings to roadway.
- Inadequate street lights.
- Pedestrian/vehicular traffic conflicts.

5.6.5 Recommendations

Proposed improvements to the administrative quad area involve improvements to the streetscape, creation of an entry feature announcing the importance of the area, improvements to the historical information signage area, street tree plantings, improved pedestrian walkways with designated crosswalks, and restricted cross traffic movements.

The proposed streetscape for the administrative quad area provides a landscape theme to unify the roadway and allow for more efficient circulation. A simplified landscape palette along the avenue, with roadway light fixtures and accent planting at key entry points, provides a visual tie to the entrance and creates a primary corridor through the area. Figure 5.6l is the site plan of the proposed streetscape concept. Coordination with the cultural resources office is required for all work in this visual zone.

Figure 5.6l
Proposed Streetscape Improvements

The IDG recommendations for the Administrative Quad Visual Zone will:

- Create a sense of unity between all facilities along the roadway.
- Improve pedestrian and vehicular traffic patterns.
- Provide landscape design that highlights the existing facilities and historical elements adjacent to the roadway
- Provide landscape improvements to meet force protection requirements.

5.7 CHENA RIVER TRAIL VISUAL ZONE

The Chena River Visual Zone is selected to provide recommendations for the extension of the river trail along the Chena River corridor. The visual zone encompasses the area between Ketchum Road and the Chena River, beginning at Engineer Park and continuing up-stream through the golf course, ending at Badger Gate.

5.7.1 Visual Character

The visual character of the Chena River is a natural riparian corridor native to this region of Alaska. It is a wildlife habitat and a recreational source for both the military personnel stationed on Fort Wainwright and local citizens. It is one of the highest valued visual assets on the installation. See Figure 5.7a.

5.7.2 Site Analysis

The river flows from the east to the west through the installation and on into Fairbanks. Both sides of the river bank have a well established riparian area consisting of native trees, grasses, and many types of bird and animal habitat. As a recreational source it is heavily used by local and installation personnel. A section of the river corridor is selected for this visual zone to address the extension of the Chena River Trail, see Figure 5.7b. The terrain along the bank is relatively flat with several drainage swales leading from the installation to the river. The majority of this visual zone lies within the area of the golf course and is well groomed along the bank. Figure 5.7c shows the present site conditions within the area.

There is one bridge crossing leading from the golf course to the opposite side of the river which possesses some unique architectural character. It is at this point where a wide vista of the river and the land beyond is framed by the river corridor. See Figure 5.7d.

5.7.3 Assets

The following are the Chena River Visual Zone assets:

- Well preserved riparian corridor.
- Heavily used recreational asset.
- Visually appealing.

Figure 5.7a
Chena River

Figure 5.7b
Existing River Trail

Figure 5.7c
Proposed Trail Corridor

Figure 5.7d
River Vista

5.7.4 Liabilities

The following are the Chena River Visual Zone liabilities:

- Limited access.
- Limited seating areas.
- Chena River trail does not exist in this visual zone.
- Stormwater swales from the installation empty into the river.

5.7.5 Recommendations

The Chena River is one of the most heavily used recreational facilities on the installation. The existing trail system along the river further down stream is heavily used and an extension of the existing trail in this area is needed to complete the trail system. The project shown in Figure 5.7e provides a recommended routing for the trail extension. Locations are identified for rest areas and river overlooks, which provide areas for picnic opportunities and to observation of river activities. This trail extension includes routing the trail to Badger Gate, providing pedestrian access through the installation.

The IDG recommendations for the Chena River Visual Zone area will:

- Complete the pedestrian trail system through the installation along the river.
- Increase recreational opportunities for installation personnel.
- Provide rest areas along the river to observe and enjoy the natural environment.

▲ **Figure 5.7e**
Trail Routing Plan

5.8 EXCHANGE/COMMISSARY VISUAL ZONE

The existing exchange and commissary facility is located within the Town Center Theme area was and is selected as a visual zone due to the importance of the site and the high traffic flow in the area. The exchange and commissary facility is a very large combined building with a large parking area fronting the facility as shown in Figure 5.8a. Access to the facility is from Meridian Road on the west and Santiago Avenue on the east. The parking lot is without islands or landscape screening to soften the impact of the large paved area. Large concrete bollards shown in Figure 5.8b line the front entrance walk serving as force protection barriers and parking lot light foundations. Designated pedestrian access to the facility from the parking lot or adjoining roadways does not exist. The overall appearance of the facility is uninviting and difficult to access.

▲ **Figure 5.8a**
Existing Exchange/Commissary Facility

▲ **Figure 5.8b**
Concrete Bollards Front the Entrance

This area is selected to provide an improvement plan for the entrance to the facility and to develop a link to bachelor enlisted barracks as part of a larger plan to create a town center area on Fort Wainwright.

5.8.1 Visual Character

The visual impact of this area is very negative due to the lack of landscape plantings, poorly designed parking light fixtures, and the lack of site detail to create an inviting area for customers of the facilities. Adjacent to the exchange and commissary facility is the new Northern Lights Inn, bowling center, class six store, furniture store, library, credit union, and the new physical fitness facility. South of the facility is a large open space and the new ball field complex.

▲ **Figure 5.8c**
Exchange/Commissary Facility Entrance

▲ **Figure 5.8d**
Lack of Designated Pedestrian Walkways

5.8.2 Site Analysis

The exchange and commissary facility is situated between two major north-south roadways in the center of the installation. It is a fairly new facility with a large paved parking lot immediately in front of the facility. There are no parking lot islands due to snow removal operations, and no separation between the parking lot and the roadway serving the parking lot to the south. There is not a primary roadway serving the site which creates traffic congestion during peak periods of the day. Pedestrian access to the site is restricted to walking in the roadway with passing vehicles, or on worn pathways across open ground. It is a heavily used area which lacks the infrastructure to support the traffic generated by the facility. Figure 5.8c shows the present site conditions leading into the area.

Signage leading to the facility is minimal and the area lacks any order of traffic flow. The area lacks a walkway system for pedestrian safety and traffic control. See Figure 5.8d.

5.8.3 Assets

The following are the Exchange/Commissary Visual Zone assets:

- Ample open space.
- Centrally located on the installation.

5.8.4 Liabilities

The following are the Exchange/Commissary Visual Zone liabilities:

- Limited roadway and parking lot lighting.
- Poor traffic control signage.
- Pedestrian walkways or crosswalks do not exist.
- Minimal landscape plantings.
- Pedestrian scale spaces do not exist.

5.8.5 Recommendations

The exchange/commissary facility is one of the most heavily used facilities on the installation. The project shown in Figure 5.8e provides a more defined pedestrian friendly site organization which enhances the appearance of the main entrance. A perspective sketch, Figure 5.8f, of the entrance area depicts envisioned improvements to the area which creates a more pedestrian friendly and organized space. Force protection measures are provided in the placement of large planters separating the parking lot from the pedestrian walkway, which also creates a barrier between the parking lot and the store entries. A separation of vehicle and pedestrian traffic flow combined with large landscape planters and built in bench seating areas provides a more secure facility. The proposed site amenities are also compatible with the building architecture.

▲ **Figure 5.8e**
Exchange/Commissary Entry Plan

Improvements include defining parking spaces in the existing lot and developing a central axis for pedestrian traffic through the lot, safe from motor vehicle conflicts. Pedestrian scale lighting is provided to highlight the walkway system and provide architectural features to the site. This axis also serves as the focal point to the Town Center area south of the exchange/commissary facility terminating at a memorial flag plaza south of the exchange door entry.

The IDG recommendations for the Exchange/Commissary Visual Zone area will:

- Improve traffic movement.
- Improve the visual quality of the facility.
- Provide needed landscape improvements.
- Create a pedestrian corridor for the soldiers and family members.
- Improve safety for users of the facility.
- Provide roadway and pedestrian lighting.
- Create a sense of place on the installation.

▲ **Figure 5.8f**
Perspective of Proposed Improvements

5.9 OPEN SPACE VISUAL ZONE

The Open Space Visual Zone is located in the Town Center Theme area and encompasses the undeveloped open space south of the Exchange/Commissary facility and east of the existing ball field complex. This area is a large open plain with grass cover. This space is seen as a key element in the creation of a central focal point for large events and passive recreational activities. There is an opportunity to create a sense of place on the installation, centrally located between family housing and enlisted barracks, and preserve the area for future creation of a memorial space for military personnel. See Figure 5.9a.

▲ **Figure 5.9a**
Existing Open Space

5.9.1 Visual Character

The present physical character of the area is one of an open undeveloped space. The quality of the area is hampered by existing environmental conditions and the lack of tree cover to better define the space. Existing building structures include a wide range of architecture style and age, providing a disorganized appearance. Figure 5.9b shows a view of the new Northern Lights Inn and Figure 5.9c shows the Class Six store within this visual zone.

▲ **Figure 5.9b**
Northern Lights Inn

5.9.2 Site Analysis

The site is a flat grass plain situated between the Northern Lights Inn on the east and the ball field complex on the west with the exchange/commissary facility to the north. Alder Road borders the area on the south with the temporary modularity site south of Alder Road. The area has remained undeveloped due to contamination of the area with a petroleum tar product. Remediation of the area is not expected due to the amount of material underground.

The site is covered with native grasses. Little tree cover is present except for the small tree buffer adjacent to the ball field complex parking lot.

▲ **Figure 5.9c**
Class Six Store

5.9.3 Assets

The following are the Open Space Visual Zone assets:

- Centrally located on the installation.
- Direct access to the exchange/commissary facility.
- Excellent field of vision for security personnel.
- Opportunity to establish a central focal point on the installation for large community events and passive recreational activities.
- Opportunity to create a strong pedestrian corridor linking the enlisted barracks area to the community services facilities.

5.9.4 Liabilities

The following are Open Space Visual Zone liabilities:

- Contaminated soil.

5.9.5 Recommendations

This open space provides an opportunity to address the creation of a town center on the installation centrally located to all military personnel and existing community facilities and provide for a pedestrian corridor linking the enlisted barracks area to community services. The central element of the plan is

▲ **Figure 5.9d**
Proposed Improvements

a flag plaza and memorial area, see Figure 5.9d. Figure 5.9e depicts a perspective of the proposed plan in context with the design elements envisioned in the area. This concept also provides an organized element to the site and unifies key elements of the installation into a logical solution of the undefined space.

The IDG recommendations for the Open Space Visual Zone will:

- Create a sense of place for the installation and help define its identity.
- Improve pedestrian circulation.
- Create a memorial space within the town center theme area.
- Provide landscape improvements to enhance existing community facilities.

▲ **Figure 5.9e**
Perspective of Town Center

5.10 POWER PLANT VISUAL ZONE

The Power Plant Visual Zone is selected due to the visual impact the facility has on the overall appearance of the installation. See Figure 5.10a. The power plant commands a prominent place on the installation due to the size of the structure and its central location. It is located in the Industrial Theme area and is situated between the Family Neighborhoods and Town Center theme areas. North of the plant site is a complex of workshops and smaller buildings. South of the plant are the cooling ponds and coal storage area, and a native stand of trees screening the plant from Alder Avenue. The visual image presented by this facility is industrial. The power plant is a contributing element to the Cold War Historic District; plans for this building, including plantings, should be coordinated with the cultural resources office.

Figure 5.10a
Fort Wainwright Power Plant

5.10.1 Visual Character

The visual character of the space is defined by the size of the facility, the adjacent rail lines, and the adjacent support facilities. The area surrounding the power plant is open and without landscape planting or screening of any type. The appearance of the area is very industrial and unattractive. See Figure 5.10b. The stark character is most apparent when housing is located in close proximity to the power plant.

Figure 5.10b
Power Plant Site

5.10.2 Site Analysis

The power plant is the largest vertical structure on Fort Wainwright and commands a central position on the installation. The structure itself is a large structural steel framework with gray or light beige metal siding. The ground plain leading up to the structure is flat and devoid of any significant vertical screen. Overhead utility lines are prevalent around the site. The parking areas associated with the power plant limit the ability to create green space within this area. See Figure 5.10c.

Figure 5.10c
Power Plant

5.10.3 Assets

The following are Power Plant Visual Zone assets:

- Large area of trees to the south of the plant site.
- Provides power needs to the installation.

5.10.4 Liabilities

The following are Power Plant Visual Zone liabilities:

- Largest vertical structure on Fort Wainwright.
- Overhead utility lines throughout the site.
- Poor definition of space surrounding structure.

5.10.5 Recommendations

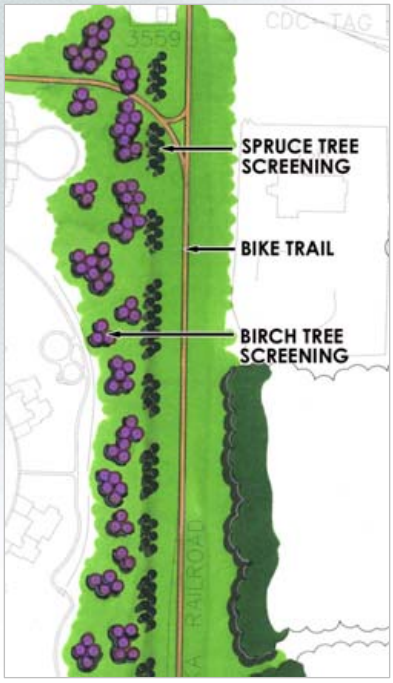
The Power Plant visual zone recommendations improve the visual quality of the area between the surrounding roadways and the buildings associated with the plant, and provide screening for the family housing units adjacent to the site. A street tree program provides scale to the area and add green space. The plantings along the railroad track, adjacent to family housing, provide a vegetative screen to buffer the view and add visual texture to the area. See Figures 5.10d and 5.10e for plans of the proposed improvements.

The IDG recommendations for the Power Plant Visual Zone will:

- Improve the visual quality of the installation.
- Screen unsightly views.

▲ **Figure 5.10d**

Proposed Power Plant Streetscape



▲ **Figure 5.10e**

Proposed Screening Adjacent to Housing

5.11 DPW SHOPS AT MONTGOMERY ROAD VISUAL ZONE

The DPW Shops area is selected as a visual zone to develop site improvements which address many common site issues at Fort Wainwright. The shops visual zone provides guidance for the development of facilities within the industrial theme area and addresses recommendations for streetscape treatments. See Figures 5.11a and 5.11b.

▲ **Figure 5.11a**
DPW Shops

▲ **Figure 5.11b**
Parking is Not Well Defined at DPW Shops

The DPW shops building is both an administrative office building and a maintenance and construction equipment shop with a large fenced storage area behind the building. The front of the building has three entrances leading from the gravel parking lot which is adjacent to Montgomery Road. The visual impact of the facility is typical of most buildings in the industrial area. The landscape plant material adjacent to the front of the building is minimally maintained and the building entrances are not well defined. See Figures 5.11c, 5.11d, and 5.11e.

▲ **Figure 5.11c**
Existing Building Landscape Treatment

▲ **Figure 5.11d**
Existing DPW Shops Entry

▲ **Figure 5.11e**
Existing Building Entry

Section 6.0

Improvement Projects

6.1 INTRODUCTION

Section 6 consists of projects generated from the recommendations presented in the visual analysis section, Section 5. The projects consist of enhancement of a single visual element or improvement of an area that includes a variety of visual elements. Projects may be completed as a whole, or portions of projects may be constructed. Implementation of projects may also be accomplished as part of other projects such as maintenance and repair, renovation, and minor construction.

Depending on the project scope and cost, the projects could include: Military Construction, Army (MCA); Global War on Terrorism (GWOT); Operations and Maintenance Account (OMA); Facilities Reduction Plan (FRP); Sustainment, Restoration, and Modernization (SRM); Nonappropriated-Funded (NAF); Other Procurement, Army (OPA); and maintenance and repair, local minor construction, and self-help. Each improvement project is described and cost-estimated in enough detail to place each project within the appropriate project list or annual work plan, within the statutorily correct funding program, and in an appropriate Fiscal Year.

The paragraphs below discuss each project. This discussion includes existing conditions, project description, design concept, cost estimate, recommended funding sources, photographs, sketches, and maintenance impact as applicable. The projects are listed under their Visual Zones.

Appendix G, Prioritized Improvement Projects List, records information on each project and prioritizes them in accordance with the installation goals and objectives stated in paragraph 3.2, Goals, Objectives, and Recommendations. The appendix is an interactive form and designed to be altered as circumstances effecting the prioritization scheme change.

6.2 FAMILY NEIGHBORHOODS VISUAL ZONE

The Family Neighborhoods Visual Zone is located within the Fort Wainwright Family Housing theme area near the main entrance of the installation. This area provides the majority of community neighborhood related services including family housing, day care facility, indoor/outdoor recreation, nearby hospital, and retail needs for service members and their family members.

Four (4) projects are developed within the Family Neighborhoods Visual Zone to improve the functionality and appearance of the Family Housing theme area. The four (4) projects are: the Main Entrance Gate, Chilkoot Housing Site Improvements, Northern Lights Housing Site Improvements, and Southern Cross Housing Site Improvements.

The main gate area is scheduled to undergo a renovation project to implement current force protection measures. The project proposed in this IDG addresses signage and traffic flow patterns as part of the proposed improvement project.

The three (3) housing improvement projects mentioned above have been selected to address the lack of landscape development, recreation, and open space associated with the multi-family housing units that currently exist on Fort Wainwright. The existing multi-family housing units have a very stark appearance due to the lack of landscape development associated with the buildings, walkways, and signage. These projects are intended to be models to be replicated in other housing areas as appropriate.

6.2.1 Main Gate Improvements

6.2.1.1 Existing Conditions. The Main Gate is one of three (3) active entrance gates into Fort Wainwright and provides access to the installation from the west off of Richardson Highway. This entrance to the installation is currently being used as the primary gate and large truck entrance as there is ample space available for truck inspection. The existing condition of the entrance is in need of upgrade to meet force protection requirements and future development, and to improve its visual impact.

6.2.1.2 Project Description. The Main Gate is redesigned to provide an entrance to Fort Wainwright that portrays the pride of the fighting soldiers found within its perimeter. This project includes the construction of a stone veneer entrance gate wall, improvements to the median divided entry roadway and roundabout, renovations to the visitor center area, construction of a covered search area, signage upgrades, accent lighting, and landscape planting. Demolition of a portion of the existing chain link fence in the vicinity of the gate is included in this scope of work. The new gate wall detail complies with force protection requirements and provides local design detail typical to the local Fairbanks community. Total height of the gate wall is 8 feet. Landscaping is limited to accent planting at the entry and evergreen trees behind the fence with turf grass within the clear zone limits of the fence. The gate should receive special consideration to create a sense of arrival by establishing ample open space through the selective clear cutting of forested areas, managing the understory succession of forested areas adjacent to the entry road to frame and accent the entrance, and provide shrubs and ground cover that accent the point of arrival.

signage upgrades, accent lighting, and landscape planting. Demolition of a portion of the existing chain link fence in the vicinity of the gate is included in this scope of work. The new gate wall detail complies with force protection requirements and provides local design detail typical to the local Fairbanks community. Total height of the gate wall is 8 feet. Landscaping is limited to accent planting at the entry and evergreen trees behind the fence with turf grass within the clear zone limits of the fence. The gate should receive special consideration to create a sense of arrival by establishing ample open space through the selective clear cutting of forested areas, managing the understory succession of forested areas adjacent to the entry road to frame and accent the entrance, and provide shrubs and ground cover that accent the point of arrival.

Figure 6.2a illustrates the overall concept of the proposed entry with landscaping and improvements between the entry gate wall and the security checkpoint area. Figure 6.2b provides an aerial view of the proposed entry improvements.

This project does not include any improvements beyond the entrance gate area. A preliminary plan prepared by the Fort Wainwright DPW Engineering Office was adapted to address additional needs and concerns since its initial conception.

6.2.1.3 Design Concept. The proposed design presents a dynamic entry feature for Fort Wainwright that addresses the importance of the installation to the public. It provides a security wall that meets force protection requirements while establishing a visual identity for Fort Wainwright. Installation identification signage as part of the entry gate wall, shaping existing forested areas, landscape plantings, accent lighting, and indigenous material are incorporated into the design of the gate wall and entry area.

6.2.1.4 Site Plan. Figure 6.2a illustrates the site plan of the Main Gate Improvements.

6.2.1.5 Maintenance Impact. Development of the new entry gate and related perimeter gate wall and fencing provides a permanent architectural feature with defined edges allowing for an effective maintenance program. Landscape development is localized to the entry gate area and within defined beds incorporating low maintenance plant material, accent lighting, and improved entry signage.

6.2.1.6 Recommended Funding Sources. The recommended funding source is Global War on Terrorism (GWOT) and the alternative funding source is Military Construction, Army (MCA).

6.2.1.7 Cost Estimate. Table 6.2a provides a rough order of magnitude cost estimate for the Main Gate Improvements. This estimate does not include repair or relocation of underground utilities or utilidors which may be within the clear zone area of the existing fence, nor the cost for relocation of replacement of existing City of Fairbanks utilities. Force protection measures associated with the main gate construction are not included. The cost estimate includes construction of a veneered 8-foot masonry wall, and construction of an entry gate feature with signage and landscaping as depicted in Figure 6.2b.

The estimated construction cost of Main Gate Improvements is $2,290,761.

Table 6.2a Main Gate Improvements Cost Estimate

Description	Quan	Unit	US $ Unit Cost	Line Total	Sub-Cat Total	Category Total
Site Improvements						**$2,290,761**
1 DEMOLITION						**$6,500**
Demolish Existing Entry Sign	1	ls	$1,500	$1,500		
Clear and Grub Existing Landscape Areas	2.5	ac	$2,000	$5,000		
Total Demolition				$6,500	**$6,500**	
2 GRADING						**$300,000**
General Site Finished Grading	1	ls	$300,000	$300,000		
Total Grading				$300,000	**$300,000**	
3 HARDSCAPE						**$1,517,440**
ROADWAYS AND PARKING						
Asphalt Resurfacing (1 1/2" - 2" depth)	147,160	sf	$6	$882,960		
Brick Pavers - Median	14,740	sf	$24	$353,760		
Curb - Median/Island	2,500	lf	$24	$60,000		
Parking Area Painting	1	ls	$15,000	$15,000		
Roadway Painting	1	ls	$10,000	$10,000		
Total Roadways				$1,321,720	**$1,321,720**	
SIDEWALKS						
Concrete Walks (10 ft. width)	260	lf	$8	$2,080		
Total Sidewalks				$2,080	**$2,080**	
WALLS AND FENCING						
Stone Veneer Entry Wall (8 ft. height)	240	lf	$300	$72,000		
Stone Veneer Entry Columns/Posts (20' spacing)	4	ea	$5,000	$20,000		
Cast Stone Capping	240	lf	$12	$2,880		
Total Walls & Fencing				$94,880	**$94,880**	
SPECIALIZED PAVING						
Brick Pavers at Roundabout Area	3,300	sf	$24	$79,200		
Concrete Edger (1' width)	205	lf	$8	$1,640		
Concrete Paver Bed	2,240	sf	$8	$17,920		
Total Specialized Paving				$98,760	**$98,760**	
4 STRUCTURES						**$335,000**
Guard House	1	ls	$200,000	$200,000		
Visitor Center	1	ls	$125,000	$125,000		
Covered Search Area	1	ls	$10,000	$10,000		
Total Structural Features				$335,000	**$335,000**	
5 LANDSCAPING						**$131,821**
PLANTING AND IRRIGATION						
Deciduous Tree Plantings	69	ea	$400	$27,600		
Evergreen Tree Plantings	41	ea	$400	$16,400		
Shrub Plantings	20	ea	$75	$1,500		
Groundcover/Perrenial Plantings	10,936	sf	$2	$21,871		
Seeding of Turf Areas	108,900	sf	$0.50	$54,450		
Landscape Accent Lighting	1	ls	$10,000	$10,000		
Total Planting and Irrigation				$131,821	**$131,821**	
6 LIGHTING AND AMENITIES						**$0**
LIGHTING						
Street/Parking Lighting		ea	$5,000	$0		
Pedestrian Lighting		ea	$4,000	$0		
Total Lighting				$0	**$0**	
SITE FURNITURE AND SIGNAGE						
Pedestrian Crossing Signs		ea	$200	$0		
Traffic/Warning/Information Signs		ea	$300	$0		
Benches		ea	$1,000	$0		
Trash Receptacles		ea	$500	$0		
Total Site Furniture and Signage				$0	**$0**	

6.2.2 Chilkoot Housing Site Improvements

6.2.2.1 Existing Conditions. The Chilkoot multi-family housing neighborhood consists of two-story townhouse type development within the Family Housing Theme area. As standard practice the townhome units are graded flat, and the structures are typically built with a slab on grade. Sidewalks connect the individual units to the parking and trash dumpster areas. The area is sodded with grass as the only landscape improvements to the site. There are little or no sidewalks connecting the units to playground recreation areas. Lack of walkways and the presence of utility manholes create very dangerous site conditions for children playing in the area.

6.2.2.2 Project Description. The Chilkoot Housing Site Improvements provide guidance for improved site design solutions which address landscape design and site grading standards for each housing unit. The scope of the work includes proposed walkways, landscape plantings, a central park with a play structure, site lighting, and neighborhood wayfinding markers.

6.2.2.3 Design Concept. The Chilkoot Housing Site Improvements are designed to provide a better visual image to the housing development. The design mitigates dangerous utility manholes within the play areas of children and creates a more pedestrian friendly, residential appearance to the housing area. Figure 6.2c illustrates the overall concept of the neighborhood improvements with proposed landscaping, recreational amenities, and streetscape improvements within the Chilkoot Housing Area.

6.2.2.4 Site Plan. Figure 6.2c illustrates the site plan of the Chilkoot Housing Site Improvements.

6.2.2.5 Maintenance Impact. The proposed plan provides a more defined landscape design and reduces the amount of detailed maintenance within the housing area. The natural storm drainage/wetland area allows for more stormwater runoff storage capacity.

6.2.2.6 Recommended Funding Sources. The recommended funding source is Military Construction, Army (MCA).

6.2.2.7 Cost Estimate. Table 6.2b provides a rough order of magnitude cost estimate for the Family Housing Site Improvements. This estimate is based on landscape, walkway, street light, and signage improvements only. Any work associated with utilities or utilidors is not included.

Figure 6.2c

Chilkoot Housing Site Improvements Plan

WAI6003.DGN

0 300' 600' 1200' 1800'
Graphic Scale in Feet

The estimated construction cost of Chilkoot Housing Site Improvements is $2,421,664.

Table 6.2b Chilkoot Housing Site Improvements Cost Estimate

Description	Quan	Unit	US $ Unit Cost	Line Total	Sub-Cat Total	Category Total
Site Improvements						**$2,421,664**
1 DEMOLITION						**$139,400**
Demolish Existing Roadway/Parking/Drive	7,500	sf	$15	$112,500		
Demolish Existing Curb	1,500	lf	$5	$7,500		
Clear and Grub Existing Landscape Areas	9.7	ac	$2,000	$19,400		
Total Demolition				$139,400	**$139,400**	
2 GRADING						**$300,000**
General Site Finished Grading	1	ls	$300,000	$300,000		
Total Grading				$300,000	**$300,000**	
3 HARDSCAPE						**$599,604**
SIDEWALKS						
Concrete Walks (10 ft. width)	17,037	sf	$8	$136,296		
Total Sidewalks				$136,296	**$136,296**	
SPECIALIZED PAVING						
Accent Paver Areas - Neighborhood Entry Corners	1,592	sf	$24	$38,208		
Accent Pavers - Neighborhood Park Areas	3,916	sf	$24	$93,995		
Concrete Edger for Accent Paver Areas (1 ft. width)	800	lf	$8	$6,396		
Concrete Pad for Play Equipment Area	10,147	sf	$8	$81,177		
Rubber Play Surface in Play Equipment Area	10,147	sf	$24	$243,531		
Total Specialized Paving				$463,308	**$463,308**	
4 STRUCTURES						**$24,000**
COLUMNS						
Neighborhood Entry Columns (5 ft. tall, stone veneer, precast cap)	3	ea	$8,000	$24,000		
Total Structures				$24,000	**$24,000**	
5 LANDSCAPING						**$373,660**
PLANT MATERIAL						
Deciduous Tree Plantings	40	ea	$400	$16,000		
Evergreen Tree Plantings	107	ea	$400	$42,800		
Street Tree Plantings	252	ea	$350	$88,200		
Shrub Plantings	16	ea	$75	$1,200		
Seeding of Turf Areas	420,920	sf	$0.50	$210,460		
Landscape Accent Lighting	1	ls	$15,000	$15,000		
Drainage Pond (in neighborhood park)	1	ls	$35,000	$35,000		
Total Plant Material				$373,660	**$373,660**	
6 RECREATION FEATURES						**$50,000**
New Play Equipment Structure	1	ea	$50,000	$50,000		
Total Recreation Features				$50,000	**$50,000**	
7 LIGHTING AND AMENITIES						**$935,000**
LIGHTING						
Street/Parking Lighting	90	ea	$8,000	$720,000		
Pedestrian Lighting	45	ea	$4,000	$180,000		
Total Lighting				$900,000	**$900,000**	
SITE FURNITURE AND SIGNAGE						
Pedestrian Crossing Signs	10	ea	$200	$2,000		
Traffic/Warning/Information Signs	10	ea	$300	$3,000		
Benches	20	ea	$1,000	$20,000		
Trash Receptacles	20	ea	$500	$10,000		
Total Site Furniture and Signage				$35,000	**$35,000**	

6.2.3 Northern Lights Housing Site Improvements

6.2.3.1 Existing Conditions. The Northern Lights multi-family housing neighborhood consists of two-story townhouse type development within the Family Housing Theme area. As standard practice the townhome units are graded flat, and the structures are typically built with a slab on grade. Sidewalks connect the individual units to the parking and trash dumpster areas. The area is sodded with grass as the only landscape improvements to the site. There are few or no sidewalks connecting the units to playground recreation areas. Lack of walkways and the presence of utility manholes create very dangerous site conditions for children playing in the area.

6.2.3.2 Project Description. The Northern Lights Housing Site Improvements provide guidance for improved site design solutions which address landscape design and site grading standards for each housing unit. The scope of the work includes proposed walkways, landscape plantings, a central park with a play structure site lighting, a natural storm drainage/wetland area, and neighborhood wayfinding markers.

6.2.3.3 Design Concept. The Northern Lights Housing Site Improvements provide an improved visual image for the housing development. The design mitigates dangerous utility manholes within the play areas of children and creates a more pedestrian friendly, residential appearance to the housing area. Figure 6.2d illustrates the overall concept of the neighborhood improvements with proposed landscaping, recreational amenities, and streetscape improvements within the Northern Lights Housing Area.

6.2.3.4 Site Plan. Figure 6.2d illustrates the site plan of the Northern Lights Housing Site Improvements.

6.2.3.5 Maintenance Impact. The proposed plan provides a more defined landscape design and reduces the amount of detailed maintenance within the housing area. The natural storm drainage/wetland area allows for more stormwater runoff storage capacity.

6.2.3.6 Recommended Funding Sources The recommended funding source is Military Construction, Army (MCA).

6.2.3.7 Cost Estimate. Table 6.2c provides a rough order of magnitude cost estimate for the Northern Lights Housing Site Improvements. This estimate is based on landscape, walkway, street light, and signage improvements only. Any work associated with utilities or utilidors is not included.

Figure 6.2d

Northern Lights Housing Site Improvements Plan

The estimated construction cost of Northern Lights Housing Site Improvements is $1,874,105.

Table 6.2c Northern Lights Housing Site Improvements Cost Estimate

Description	Quan	Unit	US $ Unit Cost	Line Total	Sub-Cat Total	Category Total
Site Improvements						**$1,874,105**
1 **DEMOLITION**						**$390,680**
Demolish Existing Roadway/Parking/Drive	23,272	sf	$15	$349,080		
Demolish Existing Curb	1,600	lf	$5	$8,000		
Clear and Grub Existing Landscape Areas	16.8	ac	$2,000	$33,600		
Total Demolition				$390,680	**$390,680**	
2 **GRADING**						**$325,000**
General Site Finished Grading	1	ls	$325,000	$325,000		
Total Grading				$325,000	**$325,000**	
3 **HARDSCAPE**						**$643,597**
SIDEWALKS						
Concrete Walks (10 ft. width)	9,010	sf	$8	$72,077		
Total Sidewalks				$72,077	**$72,077**	
SPECIALIZED PAVING						
Accent Paver Areas - Neighborhood Entry Corners	364	sf	$24	$8,736		
Concrete Edger for Accent Paver Areas (1 ft. width)	120	lf	$8	$960		
Concrete Pad for Play Equipment Areas	17,557	sf	$8	$140,456		
Rubber Play Surface in Play Equipment Areas	17,557	sf	$24	$421,368		
Total Specialized Paving				$571,520	**$571,520**	
4 **STRUCTURES**						**$16,000**
COLUMNS						
Neighborhood Entry Columns (5 ft. tall, stone veneer, precast cap)	2	ea	$8,000	$16,000		
Total Columns				$16,000	**$16,000**	
SHELTERS						
Picnic Shelter (30 ft. x 30 ft.)	1	ea	$25,000	$25,000		
Total Shelters				$25,000	**$25,000**	
5 **LANDSCAPING**						**$498,828**
PLANT MATERIAL						
Deciduous Tree Plantings	109	ea	$400	$43,600		
Evergreen Tree Plantings	41	ea	$400	$16,400		
Street Tree Plantings	135	ea	$350	$47,250		
Shrub Plantings	12	ea	$75	$900		
Seeding of Turf Areas	731,356	sf	$0.50	$365,678		
Landscape Accent Lighting	1	ls	$25,000	$25,000		
Total Plant Material				$498,828	**$498,828**	
6 **RECREATION FEATURES**						**$85,000**
New Play Equipment Structure (large)	1	ea	$50,000	$50,000		
New Play Equipment Structure (small)	1	ea	$35,000	$35,000		
Total Recreation Features				$85,000	**$85,000**	
7 **LIGHTING AND AMENITIES**						**$687,800**
LIGHTING						
Street/Parking Lighting	60	ea	$8,000	$480,000		
Pedestrian Lighting	40	ea	$4,000	$160,000		
Total Lighting				$640,000	**$640,000**	
SITE FURNITURE AND SIGNAGE						
Pedestrian Crossing Signs	14	ea	$200	$2,800		
Traffic/Warning/Information Signs	20	ea	$300	$6,000		
Benches	24	ea	$1,000	$24,000		
Trash Receptacles	30	ea	$500	$15,000		
Total Site Furniture and Signage				$47,800	**$47,800**	

6.2.4 Southern Cross Housing Site Improvements

6.2.4.1 Existing Conditions. The Southern Cross multi-family housing neighborhood consists of two-story townhouse type development within the Family Housing Theme area. As standard practice the townhome units are graded flat, and the structures are typically built with a slab on grade. Sidewalks connect the individual units to the parking and trash dumpster areas. The area has grass as the only landscape improvement to the site. There are few or no sidewalks connecting the units to playground recreation areas. Lack of walkways and the presence of utility manholes create very dangerous site conditions for children playing in the area.

6.2.4.2 Project Description. The Southern Cross Housing Site Improvements provide guidance for improved site design solutions which address landscape design and site grading standards for each housing unit. The scope of the work includes proposed walkways, landscape plantings, a central park with a play structure site lighting, a natural storm drainage/wetland area, and neighborhood wayfinding markers.

6.2.4.3 Design Concept. The Southern Cross Housing Site Improvements provide an improved visual image to the housing development. The design mitigates dangerous utility manholes within the play areas of children and creates a more pedestrian friendly, residential appearance to the housing area. Figure 6.2e illustrates the overall concept of the neighborhood improvements with proposed landscaping, recreational amenities, and streetscape improvements within the Southern Cross Housing Area.

6.2.4.4 Site Plan. Figure 6.2.e illustrates the site plan of the Southern Cross Housing Site Improvements.

6.2.4.5 Maintenance Impact. The proposed plan provides a more defined landscape design and reduces the amount of detailed maintenance within the housing area. The natural storm drainage/wetland area allows for more stormwater runoff storage capacity.

6.2.4.6 Recommended Funding Sources. The recommended funding source is Military Construction, Army (MCA).

6.2.4.7 Cost Estimate. Table 6.2d provides a rough order of magnitude cost estimate for the Southern Cross Housing Site Improvements. This estimate is based on landscape, walkway, street light, and signage improvements only. Any work associated with utilities or utilidors is not included.

Figure 6.2e

Southern Cross Housing Site Improvements Plan

The estimated construction cost of Southern Cross Housing Site Improvements is $2,780,318.

Table 6.2d Southern Cross Housing Site Improvements Cost Estimate

Description	Quan	Unit	US $ Unit Cost	Line Total	Sub-Cat Total	Category Total
Site Improvements						**$2,780,318**
1 DEMOLITION						$465,115
Demolish Existing Roadway/Parking/Drive	26,181	sf	$15	$392,715		
Demolish Existing Curb	1,800	lf	$5	$9,000		
Clear and Grub Existing Landscape Areas	31.7	ac	$2,000	$63,400		
Total Demolition				$465,115	**$465,115**	
2 GRADING						$585,000
General Site Finished Grading	1	ls	$585,000	$585,000		
Total Grading				$585,000	**$585,000**	
3 **HARDSCAPE**						**$738,865**
SIDEWALKS						
Concrete Walks (10 ft. width)	19,108	sf	$8	$152,866		
Total Sidewalks				$152,866	**$152,866**	
SPECIALIZED PAVING						
Accent Paver Areas	2,925	sf	$24	$70,210		
Concrete Edger for Accent Paver Areas (1 ft. width)	428	lf	$8	$3,423		
Concrete Pad for Play Equipment Areas	16,034	sf	$8	$128,271		
Rubber Play Surface in Play Equipment Areas	16,004	sf	$24	$384,094		
Total Specialized Paving				$585,998	**$585,998**	
4 **STRUCTURES**						**$112,000**
COLUMNS						
Neighborhood Entry Columns (5 ft. tall, stone veneer, precast cap)	4	ea	$8,000	$32,000		
Total Columns				$32,000	**$32,000**	
SHELTERS						
Pavilion Shelter (40 ft. x 30 ft.)	1	ea	$30,000	$30,000		
Gazebo Shelter (40 ft. diameter)	1	ea	$50,000	$50,000		
Total Shelters				$80,000	**$80,000**	
5 **LANDSCAPING**						**$879,338**
PLANT MATERIAL						
Deciduous Tree Plantings	40	ea	$400	$16,000		
Evergreen Tree Plantings	47	ea	$400	$18,800		
Street Tree Plantings	300	ea	$350	$105,000		
Seeding of Turf Areas	1,379,076	sf	$0.50	$689,538		
Landscape Accent Lighting	1	ls	$50,000	$50,000		
Total Plant Material				$879,338	**$879,338**	
6 **RECREATION FEATURES**						**$255,000**
New Play Equipment Structure (large)	2	ea	$50,000	$100,000		
New Play Equipment Structure (medium)	2	ea	$42,500	$85,000		
New Play Equipment Structure (small)	2	ea	$35,000	$70,000		
Total Recreation Features				$255,000	**$255,000**	
7 **LIGHTING AND AMENITIES**						**$1,960,800**
LIGHTING						
Street/Parking Lighting	185	ea	$8,000	$1,480,000		
Pedestrian Lighting	105	ea	$4,000	$420,000		
Total Lighting				$1,900,000	**$1,900,000**	
SITE FURNITURE AND SIGNAGE						
Pedestrian Crossing Signs	32	ea	$200	$6,400		
Traffic/Warning/Information Signs	38	ea	$300	$11,400		
Benches	26	ea	$1,000	$26,000		
Trash Receptacles	34	ea	$500	$17,000		
Total Site Furniture and Signage				$60,800	**$60,800**	

6.3 ADMINISTRATION QUAD VISUAL ZONE

The Administration Quad Visual Zone is located within the Fort Wainwright Historic Airfield theme area. This area provides the installation with a sense of arrival in terms of its historical significance, functions as ceremonial gathering space, and provides administrative office space for active airfield operations The quad area is a focal point of this historic area of the installation, and provides an anchor in terms of way finding. The quad is framed by administrative buildings which flank the open turf parade ground. Historical interpretation is enhanced by information markers located at the northern end of the quad.

One (1) project is developed within the Administrative Quad Visual Zone to improve the functionality and appearance of the Historic Airfield theme area. The project is the Gaffney Road Streetscape Improvements.

6.3.1 Gaffney Road Streetscape Improvements

6.3.1.1 Existing Conditions. The Gaffney Road Streetscape is located along Gaffney Road between Building 1060 to the west and 102nd Street to the east. The site currently has very few sidewalks. The existing stone sign on the south side of Gaffney Road is inaccessible to pedestrian traffic, as is the existing interpretive signage on the north side of Gaffney Road. The landscape treatment within the area is minimal and has been poorly maintained. Definition of the space is poor, and the original design intent is obscure.

6.3.1.2 Project Description. The Gaffney Road Streetscape Improvements provide an improved streetscape to the Historic Landmark area of Fort Wainwright. The improvements create an enhanced visual image of the installation while honoring the history of the site. It provides a sense of place and a feeling of arrival.

This project includes the construction of reconfigured parking lots south of Gaffney Road and west of Freeman Road, concrete walkways, street trees, street lighting, pedestrian lighting, signage, and pedestrian amenities such as benches and trash receptacles. Accent lighting and landscape planting are added to enhance the area and improve maintenance.

This project does not include any improvements beyond Building 1060 to the west and 102nd Street to the east.

6.3.1.3 Design Concept. The proposed design creates a strong sense of entry while providing pedestrian connectivity into and within the Fort Wainwright Administration Quad. The design also enhances the historical importance of the site to the public.

6.3.1.4 Site Plan. Figure 6.3a illustrates the site plan of the Gaffney Road Streetscape Improvements.

6.3.1.5 Maintenance Impact. A reorganization of the sidewalk and parking space, and the incorporation of a focused landscape entry to the Administration Quad, organizes the landscape and reduces maintenance needs.

6.3.1.6 Recommended Funding Sources. The recommended funding source is Military Construction, Army (MCA).

6.3.1.7 Cost Estimate. Table 6.3a provides a rough order of magnitude cost estimate for the Gaffney Road Streetscape Improvements. This estimate does not include repair or relocation of underground utilities or utilidors which may be uncovered during construction and restoration work. The cost estimate includes construction of concrete parking areas, concrete walkway, street trees, street lighting, pedestrian lighting, signage, benches, and trash receptacles.

The estimated construction cost of Gaffney Road Streetscape Improvements is $805,312.

Table 6.3a Gaffney Road Streetscape Improvements Cost Estimate

Description	Quan	Unit	US $ Unit Cost	Line Total	Sub-Cat Total	Category Total
Site Improvements						**$805,312**
1 **DEMOLITION**						**$5,800**
Clear and Grub Existing Landscape Areas	2.9	ac	$2,000	$5,800		
Total Demolition				$5,800	**$5,800**	
2 **GRADING**						**$250,000**
General Site Finished Grading	1	ls	$250,000	$250,000		
Total Grading				$250,000	**$250,000**	
3 **HARDSCAPE**						**$237,312**
ROADWAYS						
Painted Roadway Designations	1	ls	$10,000	$10,000		
Total Roadways				$10,000	**$10,000**	
PARKING AREA						
Painted Parking Area Designations	1	ls	$10,000	$10,000		
Total Parking				$10,000	**$10,000**	
SIDEWALKS						
Concrete Walks (10 ft. width)	3,960	lf	$8	$31,680		
Total Sidewalks				$31,680	**$31,680**	
CROSSWALKS						
Brick Pavers	2,400	sf	$24	$57,592		
Concrete Edger (1' width)	360	lf	$8	$2,880		
Concrete Paver Bed	360	sf	$8	$2,880		
Total Crosswalks				$63,352	**$63,352**	
SPECIALIZED PAVING						
Brick Pavers at Plaza Areas	4,900	sf	$24	$117,600		
Concrete Edger at Play Equipment Area (1 ft. width)	585	lf	$8	$4,680		
Total Specialized Paving				$122,280	**$122,280**	
4 **STRUCTURES**						**$32,000**
COLUMNS						
Neighborhood Entry Columns (5 ft. tall, stone veneer, precast cap)	4	ea	$8,000	$32,000		
Total Structures				$32,000	**$32,000**	
5 **LANDSCAPING**						**$99,300**
PLANTING AND IRRIGATION						
Evergreen Tree Plantings	29	ea	$400	$11,600		
Street Tree Plantings	49	ea	$350	$17,150		
Shrub Plantings	2	ea	$75	$150		
Seeding of Turf Areas	120,800	sf	$0.50	$60,400		
Landscape Accent Lighting	1	ls	$10,000	$10,000		
Total Planting and Irrigation				$99,300	**$99,300**	
6 **LIGHTING AND AMENITIES**						**$180,900**
LIGHTING						
Street/Parking Lighting	24	ea	$5,000	$120,000		
Pedestrian Lighting	10	ea	$4,000	$40,000		
Total Lighting				$160,000	**$160,000**	
SITE FURNITURE AND SIGNAGE						
Pedestrian Crossing Signs	10	ea	$200	$2,000		
Traffic/Warning/Information Signs	8	ea	$300	$2,400		
Benches	13	ea	$1,000	$13,000		
Trash Receptacles	7	ea	$500	$3,500		
Total Site Furniture and Signage				$20,900	**$20,900**	

6.4 CHENA RIVER TRAIL VISUAL ZONE

The Chena River Trail Visual Zone is located within the Fort Wainwright River Corridor theme area, see Figure 6.4a. This corridor provides recreational opportunities for walking, jogging, biking, skating, etc. The existing trail corridor also incorporates features such as exercise kiosks, training stations, informational kiosks, and small resting/gathering shelters. The existing trail surface is a 10-foot wide asphalt surface.

Figure 6.4a
The Chena River Runs East to West Through Fort Wainwright

One (1) project is developed within the Chena River Trail Visual Zone to provide improved connectivity, functionality, and appearance of the River Corridor theme area. The project is the Chena River Trail Extension.

6.4.1 Chena River Trail Extension

6.4.1.1 Existing Conditions. Much of the area along the Chena River is currently inaccessible to pedestrians. The proposed starting/ending point of the Chena River Trail Extension is located where the existing river trail terminates on the east end of Gaffney Road and extends south along the north edge of the Chena Bend Golf Course. The proposed trail then follows the drainage diversion ditch south to an area just north of Badger Gate on Ketcham Road. Existing vegetation along the corridor is a narrow riparian buffer which varies in width.

The existing interpretive signage on the north side of Gaffney Road has no pedestrian access. The landscape treatment within the area is minimal and has been poorly maintained; a better definition of the space, and the original design intent, will enhance the area.

6.4.1.2 Project Description. The Chena River Trail Extension provides improved connectivity to the south side of the installation. The trail extension also provides areas to rest, exercise, and enjoy the river.

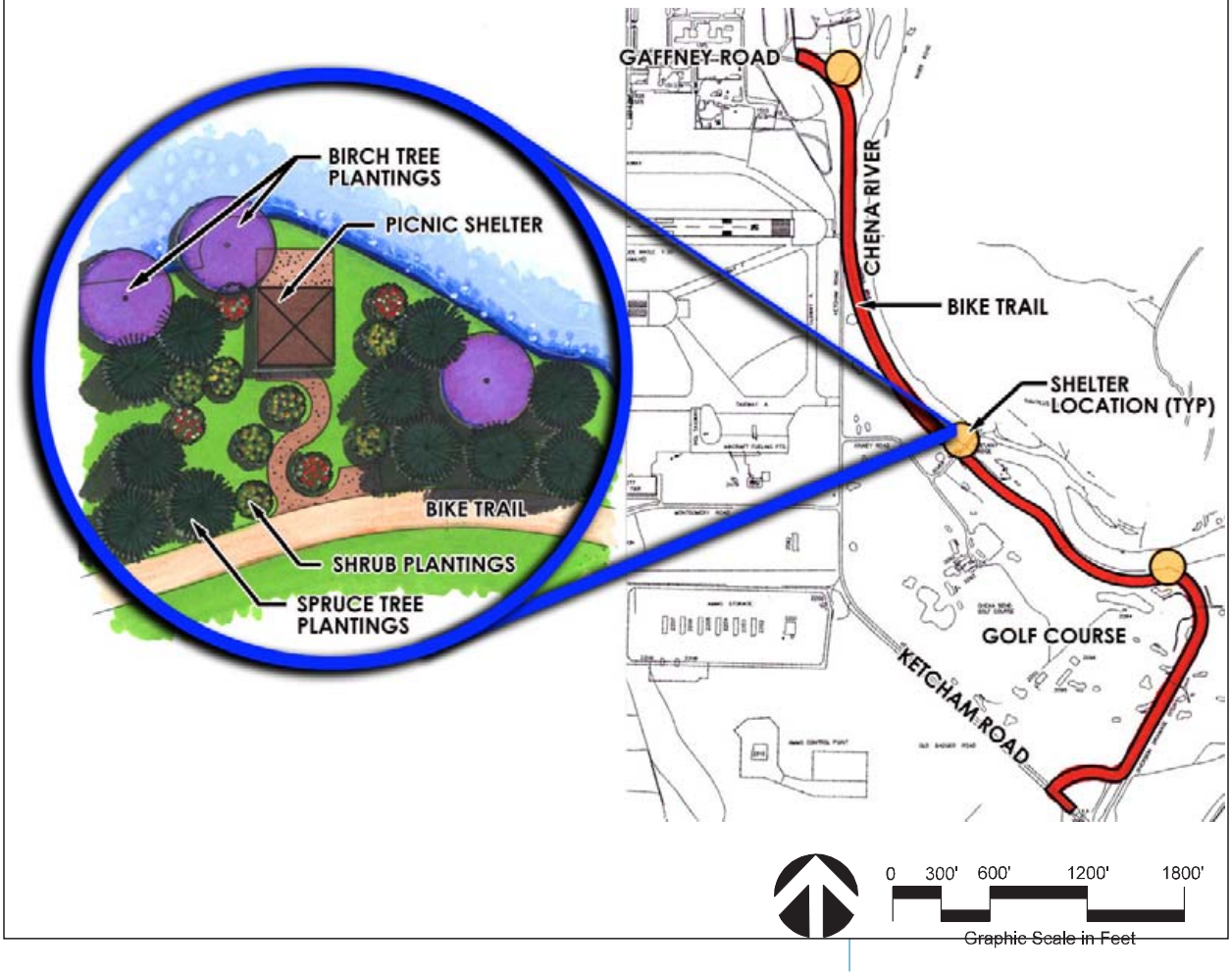
This project includes the construction of a 10-foot wide asphalt trail system. The proposed trail route includes three (3) river overlook nodes. The overlook nodes include amenities such as a shelter, an overlook area, landscape plantings, signage, accent lighting, picnic tables, benches, and trash receptacles. Landscape plant material is added to enhance the area and improve maintenance.

6.4.1.3 Design Concept. The proposed design provides a north-south connection from the Chena River Trail to the south side of the installation. This is part of the overall concept to implement a looped trail system within the installation, allowing pedestrians to travel anywhere on the installation without using an automobile.

6.4.1.4 Site Plan. Figure 6.4b illustrates the site plan of the Chena River Trail Extension.

Figure 6.4b

Chena River Trail Extension Plan



6.4.1.5 Maintenance Impact. A naturalized meadow adjacent to the proposed trail extension, with narrow manicured turf buffers along the trail shoulders, provides an organized landscape with reduced maintenance needs. More dense and ornamental plant species are appropriate adjacent to overlook nodes.

6.4.1.6 Recommended Funding Sources. The recommended funding source is Military Construction, Army (MCA).

6.4.1.7 Cost Estimate. Table 6.4a provides a rough order of magnitude cost estimate for the Chena River Trail Extension. This estimate does not include repair or relocation of underground utilities or utilidors which may be uncovered during construction and restoration work. The cost estimate includes construction of new trail surfacing, small shelters, concrete overlook areas, landscape plantings, signage, accent lighting, picnic tables, benches, and trash receptacles.

The estimated construction cost of Chena River Trail Extension is $1,024,099.

Table 6.4a Chena River Trail Extension Cost Estimate

Description	Quan	Unit	US $ Unit Cost	Line Total	Sub-Cat Total	Category Total
Site Improvements						**$1,024,099**
1 **DEMOLITION**						**$10,400**
Clear and Grub Existing Landscape Areas	5.2	ac	$2,000	$10,400		
Total Demolition				$10,400	**$10,400**	
2 **GRADING**						**$225,000**
General Site Finished Grading	1	ls	$225,000	$225,000		
Total Grading				$225,000	**$225,000**	
3 **HARDSCAPE**						**$63,924**
SIDEWALKS						
Asphalt Trail Walk (6 ft. width)	2,283	lf	$4	$9,132		
Asphalt Trail Walk (10 ft. width)	6,849	lf	$8	$54,792		
Total Sidewalks				$63,924	**$63,924**	
4 **LANDSCAPING**						**$960,175**
PLANT MATERIAL						
Deciduous Tree Plantings	9	ea	$400	$3,600		
Evergreen Tree Plantings	33	ea	$400	$13,200		
Shrub Plantings	33	ea	$75	$2,475		
Pedestrian Lighting	228	ea	$4,000	$912,000		
Total Lighting				$931,275	**$931,275**	
SITE FURNITURE AND SIGNAGE						
Pedestrian Crossing Signs	5	ea	$200	$1,000		
Traffic/Warning/Information Signs	3	ea	$300	$900		
Benches	18	ea	$1,000	$18,000		
Trash Receptacles	18	ea	$500	$9,000		
Total Site Furniture and Signage				$28,900	**$28,900**	

6.5 EXCHANGE/COMMISSARY VISUAL ZONE

The Exchange/Commissary Visual Zone is located within the Fort Wainwright Town Center theme area. This area provides the majority of community related retail needs for service members and their family members.

One (1) project is developed within the Exchange/Commissary Visual Zone to improve the functionality and appearance of the Town Center theme area. The project is the Exchange/Commissary Entry Improvements.

6.5.1 Exchange/Commissary Entry Improvements

6.5.1.1 Existing Conditions. The Exchange/Commissary entry is located on the south side of the Exchange/Commissary (Building-3703). The entry walkway is lined with concrete bollards to meet force protection requirements, and there is minimal landscape. The visual appeal of the area is extremely limited.

6.5.1.2 Project Description. The Exchange/Commissary Entry Improvements address a need to provide a more community oriented facility and a positive visual image. The Exchange/Commissary Entry provides community open space, and develops a landscape theme that unifies the Town Center theme area, see Figure 6.5a. A simple but visually stimulating landscape palette, pedestrian scale light fixtures, accent planters, and ornamental bollards are part of the proposed entry. Reconfiguration of the parking area with a central pedestrian walkway spine ties the Exchange/Commissary building to the Town Center open space. Figure 6.5b illustrates the proposed improvements to the Exchange/Commissary entrance.

6.5.1.3 Design Concept. The Exchange/Commissary Entry Improvements provide pedestrian connectivity to the retail facility, addressing many social and aesthetic needs at Fort Wainwright's Town Center. Development of a unified landscape palette accentuates the architectural design and public open space. The scope of work includes installation of landscape plantings, raised planters, pedestrian scale light fixtures, and incorporation of a central pedestrian walkway to provide access and a visual link to the Town Center open space.

6.5.1.4 Site Plan. Figure 6.5a illustrates the site plan of the Exchange/Commissary Entry Improvements.

6.5.1.5 Maintenance Impact. The existing maintenance program is improved by the reduction of individual ground plane planting beds and thus reducing maintenance of the area. Landscape planters proposed in front of the building complement force protection measures and reduce the amount of intense maintenance.

6.5.1.6 Recommended Funding Sources. The recommended funding source is Military Construction, Army (MCA).

6.5.1.7 Cost Estimate. Table 6.5a provides a rough order of magnitude cost estimate for the proposed Exchange/ Commissary Entry Improvements. This cost estimate does not include any utility (utilidor) relocation or replacement.

The estimated construction cost of the Exchange/Commissary Entry Improvements is $561,736.

Table 6.5a Exchange/Commissary Entry Improvements Cost Estimate

Description	Quan	Unit	US $ Unit Cost	Line Total	Sub-Cat Total	Category Total
Site Improvements						**$561,736**
1 **DEMOLITION**						**$2,000**
Clear and Grub Existing Landscape Areas	1	ac	$2,000	$2,000		
Total Demolition				$2,000	**$2,000**	
2 **GRADING**						**$100,000**
General Site Finished Grading	1	ls	$100,000	$100,000		
Total Grading				$100,000	**$100,000**	
3 **HARDSCAPE**						**$53,936**
PARKING AREA						
Painted Parking Area Designations	1	ls	$15,000	$15,000		
Total Parking				$15,000	**$15,000**	
SIDEWALKS						
Concrete Walks (6 ft. and 10 ft. widths)	4,867	lf	$8	$38,936		
Total Sidewalks				$38,936	**$38,936**	
4 **LANDSCAPING**						**$94,000**
PLANT MATERIAL						
Deciduous Tree Plantings	35	ea	$400	$14,000		
Evergreen Tree Plantings	71	ea	$400	$28,400		
Entry Planters	8	ea	$5,000	$40,000		
Seeding of Turf Areas	3,200	sf	$0.50	$1,600		
Landscape Accent Lighting	1	ls	$10,000	$10,000		
Total Plant Material				$94,000	**$94,000**	
5 **LIGHTING AND AMENITIES**						**$311,800**
LIGHTING						
Street/Parking Lighting	26	ea	$5,000	$130,000		
Pedestrian Lighting	40	ea	$4,000	$160,000		
Total Lighting				$290,000	**$290,000**	
SITE FURNITURE AND SIGNAGE						
Traffic/Warning/Information Signs	6	ea	$300	$1,800		
Benches	16	ea	$1,000	$16,000		
Trash Receptacles	8	ea	$500	$4,000		
Total Site Furniture and Signage				$21,800	**$21,800**	

6.6 OPEN SPACE VISUAL ZONE

The Open Space Visual Zone is located within the Fort Wainwright Town Center theme area in the center of the installation. This area provides the majority of community related services including clinic services, recreation, social settings, restaurants, and retail needs for service members and their family members.

One (1) project is developed within the Open Space Visual Zone to improve the functionality and appearance of the Town Center theme area. The project is the Open Space Plan/Pedestrian Connection Improvements.

6.6.1 Open Space Plan/Pedestrian Connection Improvements

6.6.1.1 Existing Conditions. The Open Space Plan/Pedestrian Connection Improvements are located on the south side of the Exchange/Commissary, Building-3703, between Meridian Road to the west and Santiago Avenue to the east. The area is currently native grass, with little or no development.

6.6.1.2 Project Description. The Open Space Plan/Pedestrian Connection Improvements project addresses the need to provide a community oriented facility with a positive visual image, and the need to develop a landscape theme that unifies the area. A simplified landscape palette, pedestrian scale light fixtures, buffer plantings, accent plantings, and reorganization of the Exchange/Commissary parking area compliment the design theme.

6.6.1.3 Design Concept. The Open Space Plan/Pedestrian Connection Improvements create a strong pedestrian link with a central flag plaza, birch grove, and central gathering space. The flag plaza, or memorial plaza, includes an arbor walk that terminates in a north-south axis opposite the Exchange/ Commissary main entrance. The open areas adjacent to the memorial flag plaza are designed and sized to accommodate special events and activities, see Figure 6.6a. The open space continues east from the flag plaza with two walkways flanking the corridor. The west-east axis is terminated by a rustic clock tower feature, which provides a visual landmark on the installation. The town center space creates a strong pedestrian friendly corridor from soldier housing to the Exchange/Commissary. This area is also linked to the recreation/ball field complex to the southwest of this area. This space provides the installation some much needed identity through vertical monumentation, spatial features, and site

amenities. Suggested site amenities include a clock tower, campanile, shelter (gazebo), arbor trellis, flag poles, bollards, memorial space, pedestrian plaza, signage, open lawn, and the use of massings, allees and bosques to form space using vegetation. Figure 6.6b illustrates an aerial perspective of the Memorial Flag Plaza and Birch Grove.

6.6.1.4 Site Plan. Figure 6.6a illustrates the site plan of the Open Space Plan/Pedestrian Connection Improvements.

6.6.1.5 Maintenance Impact. The maintenance program is improved by allowing larger areas of native grass to flourish, requiring less maintenance of the area. Larger areas of mass tree plantings along the edges of the open space area provide protection from the harsh winter climate, while creating visual interest year round. Landscape plantings for areas around the buildings comply with force protection measures and reduce the amount of maintenance needed to sustain the plant material.

6.6.1.6 Recommended Funding Sources. The recommended funding source is Military Construction, Army (MCA).

6.6.1.7 Cost Estimate. Table 6.6a provides a rough order of magnitude cost estimate for the proposed Open Space Plan/Pedestrian Connection Improvements. This cost estimate does not include any utility or utilidor relocation or replacement.

The estimated construction cost of the Open Space Plan/Pedestrian Connection Improvements is $1,960,434.

Table 6.6a Open Space/Pedestrian Connection Improvements Cost Estimate

Description	Quan	Unit	US $ Unit Cost	Line Total	Sub-Cat Total	Category Total
Site Improvements						**$1,960,434**
1 **DEMOLITION**						**$9,200**
Clear and Grub Existing Landscape Areas	4.6	ac	$2,000	$9,200		
Total Demolition				$9,200	**$9,200**	
2 **GRADING**						**$532,002**
Site Grading - Inside Circle	1	ls	$236,930	$236,930		
Site Grading - Outside Circle	1	ls	$295,072	$295,072		
Total Grading				$532,002	**$532,002**	
3 **HARDSCAPE**						**$577,332**
SIDEWALKS						
Concrete Walks (10 ft. width)	6,135	lf	$8	$49,080		
Concrete Plaza Space	915	sf	$12	$10,980		
Total Sidewalks				$60,060	**$60,060**	
SPECIALIZED PAVING						
Brick Pavers at Monument Plaza	21,400	sf	$24	$513,600		
Concrete Edger (1' width)	459	lf	$8	$3,672		
Total Specialized Paving				$517,272	**$517,272**	
4 **LANDSCAPING**						**$203,200**
PLANT MATERIAL						
Deciduous Tree Plantings	82	ea	$400	$32,800		
Evergreen Tree Plantings	59	ea	$400	$23,600		
Groundcover/Perrenial Plantings	10,900	sf	$2	$21,800		
Seeding of Turf Areas	200,000	sf	$0.50	$100,000		
Landscape Accent Lighting	1	ls	$25,000	$25,000		
Total Plant Material				$203,200	**$203,200**	
5 **LIGHTING AND AMENITIES**						**$638,700**
LIGHTING						
Pedestrian Lighting	150	ea	$4,000	$600,000		
Total Lighting				$600,000	**$600,000**	
SITE FURNITURE AND SIGNAGE						
Traffic/Warning/Information Signs	4	ea	$300	$1,200		
Benches	30	ea	$1,000	$30,000		
Trash Receptacles	15	ea	$500	$7,500		
Total Site Furniture and Signage				$38,700	**$38,700**	

6.7 POWER PLANT VISUAL ZONE

The Power Plant Visual Zone is located within the central portion of Fort Wainwright's Industrial theme area of the installation. This area consists of the Power Plant, railroad corridor, and various storage buildings.

One (1) project is developed within the Power Plant Visual Zone to improve the functionality and appearance of the central Industrial theme area. The project is the Power Plant Streetscape Improvements and Screening Plan.

6.7.1 Power Plant Streetscape Improvements and Screening Plan

6.7.1.1 Existing Conditions. The Streetscape Improvements are located west of Meridian Road on Oak Avenue and continuing north on 11th Street. The Screening Plan is west of the Power Plant cooling ponds between the Alaska Railroad line and Taku Gardens Housing. This area is currently forested with grassy edge areas that have not been well maintained. See Figure 6.7a. The landscape treatment along Oak Avenue and 11th Street is minimal and has been poorly maintained over time, requiring a better definition of the space.

Figure 6.7a
Existing Conditions at Meridian and Oak Avenues

6.7.1.2 Project Description. The Streetscape Improvements provide an improved visual image of the Power Plant area of Fort Wainwright. The Screening Plan provides a visual buffer to the east for residents living in the Taku Housing development, while allowing filtered views of the Alaska railroad corridor. The future of the railroad corridor is being proposed as a recreational trail or bike path.

The streetscape aspect of the project includes the installation of street trees along the Oak Avenue and 11th Street. The screening aspect of the project includes tree mass plantings, a 10-foot wide trail system, pedestrian lighting, signage, and pedestrian amenities such as benches. Accent lighting and landscape planting can be added in the future to enhance the experience of the trail system.

6.7.1.3 Design Concept. The design concept addresses the lack of street definition and landscape screening around the Power Plant facility. The concept improves pedestrian circulation and safety within this zone.

6.7.1.4 Site Design. Figure 6.7b illustrates the Power Plant Streetscape Improvements and Screening Plan.

6.7.1.5 Maintenance Impact. The proposed plan provides defined edges and spatial organization of adjacent streets, while reducing the amount of maintenance through implementation of mass planting areas, street trees, and low maintenance native grasses.

6.7.1.6 Recommended Funding Sources. The recommended funding source is Military Construction, Army (MCA).

6.7.1.7 Cost Estimate. Table 6.7a provides a rough order of magnitude cost estimate for the Power Plant Streetscape Improvements and Screening Plan. This estimate is based on landscape improvements, street trees, recreational trail addition, pedestrian lighting, and signage improvements only. Any work associated with removal or relocation of utilities or utilidors is not included.

The estimated construction cost of the Power Plant Streetscape Improvements and Screening Plan is $666,525.

Table 6.7a Power Plant Streetscape Improvements and Screening Plan Cost Estimate

Description	Quan	Unit	US $ Unit Cost	Line Total	Sub-Cat Total	Category Total
Site Improvements						**$666,525**
1 **DEMOLITION**						**$63,525**
Demolish Existing Railroad for Trail Bed	1,845	lf	$25	$46,125		
Clear and Grub Existing Landscape Areas	8.7	ac	$2,000	$17,400		
Total Demolition				$63,525	**$63,525**	
2 **GRADING**						**$150,000**
General Site Finished Grading	1	ls	$150,000	$150,000		
Total Grading				$150,000	**$150,000**	
2 **HARDSCAPE**						**$18,600**
TRAIL						
Concrete Walks (10 ft. width)	2,325	lf	$8	$18,600		
Total Sidewalks				$18,600	**$18,600**	
3 **LANDSCAPING**						**$94,400**
PLANT MATERIAL						
Deciduous Tree Plantings	134	ea	$400	$53,600		
Evergreen Tree Plantings	102	ea	$400	$40,800		
Total Plant Material				$94,400	**$94,400**	
4 **LIGHTING AND AMENITIES**						**$340,000**
LIGHTING						
Street/Parking Lighting	20	ea	$5,000	$100,000		
Pedestrian Lighting	60	ea	$4,000	$240,000		
Total Lighting				$340,000	**$340,000**	

6.8 DPW SHOPS AT MONTGOMERY ROAD VISUAL ZONE

The DPW Shops at Montgomery Road Visual Zone is located within the central portion of Fort Wainwright's Industrial theme area of the installation. This area consists mainly of the DPW offices and maintenance facilities, military police station, and other various shipping, maintenance, and storage buildings.

One (1) project is developed within the DPW Shops at Montgomery Road Visual Zone to improve the functionality and appearance of the central Industrial theme area. The project is the Montgomery Road Streetscape and Area Improvements.

6.8.1 Montgomery Road Streetscape and Area Improvements

6.8.1.1 Existing Conditions. The Montgomery Road Streetscape and Area Improvements site is located east of Whidden Road west of Meridian Road. The area is currently made up of many unorganized gravel parking lots and small landscape areas near buildings that have not been well maintained. The existing landscape treatment along Montgomery Road is minimal and has been poorly maintained over time, requiring a better definition of the space.

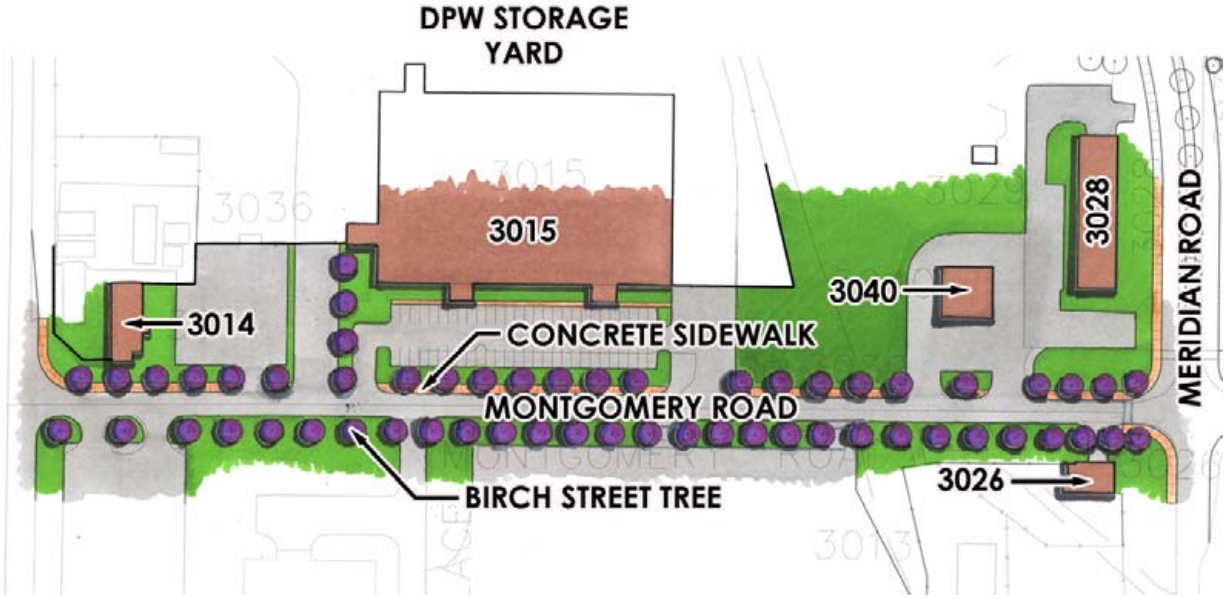
6.8.1.2 Project Description. This project provides guidance for the development of a streetscape and area improvement program for Montgomery Road. The concepts included herein are intended to translate to other areas of the central Industrial theme. This work includes landscape development to accent and improve the appearance of the corridor, improvement of street and pedestrian lighting, defining pedestrian routes to improve safety, and reconfiguration of DPW parking. Also included are improvements to signage, street lights, and landscape plantings to meet IDG guidelines.

6.8.1.3 Design Concept. The design concept addresses the lack of landscape screening, street definition, and entry accent planting along this corridor and improves pedestrian safety and parking efficiencies within this zone.

6.8.1.4 Site Design. Figure 6.8a illustrates the Montgomery Road Streetscape and Area Improvements Plan.

Figure 6.8a

Montgomery Road Streetscape and Area Improvements Plan



WAI6013.DGN

0 300' 600' 1200' 1800'
Graphic Scale in Feet

6.8.1.5 Maintenance Impact. The proposed plan provides a defined landscape design and reduces the amount of maintenance by installation of street trees and incorporation of smaller ground cover beds to reduce mowing.

6.8.1.6 Recommended Funding Sources. The recommended funding source is Military Construction, Army (MCA).

6.8.1.7 Cost Estimate. Table 6.8a provides a rough order of magnitude cost estimate for the Montgomery Road Streetscape and Area Improvements. This estimate is based on landscape improvements, street trees, walkway on the north side of Montgomery Road, street lighting, pedestrian lighting, and signage improvements. Any work associated with removal or relocation of utilities or utilidors is not included.

The estimated construction cost of the Montgomery Road Streetscape and Area Improvements is $220,207.

Table 6.8a Montgomery Road Streetscape and Area Improvements Cost Estimate

Description	Quan	Unit	US $ Unit Cost	Line Total	Sub-Cat Total	Category Total
Site Improvements						**$220,207**
1 DEMOLITION						**$600**
Clear and Grub Existing Landscape Areas	0.3	ac	$2,000	$600		
Total Demolition				$600	**$600**	
2 GRADING						**$25,000**
General Site Finished Grading	1	ls	$25,000	$25,000		
Total Grading				$25,000	**$25,000**	
3 HARDSCAPE						**$9,632**
CROSSWALKS						
Painted Crosswalk Designations	1	ls	$1,000	$1,000		
Total Crosswalks				$1,000	**$1,000**	
SIDEWALKS						
Concrete Walks (10 ft. width)	1,079	lf	$8	$8,632		
Total Sidewalks				$8,632	**$8,632**	
4 LANDSCAPING						**$24,975**
PLANT MATERIAL						
Street Tree Plantings	56	ea	$350	$19,600		
Seeding of Turf Areas	10,750	sf	$0.50	$5,375		
Total Plant Material				$24,975	**$24,975**	
5 LIGHTING AND AMENITIES						**$160,000**
LIGHTING						
Street/Parking Lighting	12	ea	$5,000	$60,000		
Pedestrian Lighting	25	ea	$4,000	$100,000		
Total Lighting				$160,000	**$160,000**	

6.9 MOTOR POOLS VISUAL ZONE

The Motor Pools Visual Zone is located within the eastern portion of Fort Wainwright's Industrial theme area of the installation. This area consists mainly of the motor pool areas, vehicle/equipment maintenance buildings, and fuel/oil storage buildings. See Figure 6.9a.

One (1) project is developed within the Motor Pools Visual Zone to improve the functionality and appearance of the east Industrial theme area. The project is the Motor Pool Screening Improvements.

Figure 6.9a
Motor Pool Facilities Along Eisenhower Road in the Industrial Theme Area

6.9.1 Motor Pool Screening Improvements

6.9.1.1 Existing Conditions. The Motor Pool Screening Improvements area is located primarily on the east side of Eisenhower Road. The area is comprised of several unorganized gravel parking lots creating a large unmaintained open space in front of each building structure. There are no landscape areas in the parking areas or near the existing buildings. There is a lack of landscape treatment along Eisenhower Road, with the exception of a drainage swale along the east side of the road and a line of existing trees which are not maintained. This corridor requires definition and organization of the existing open space.

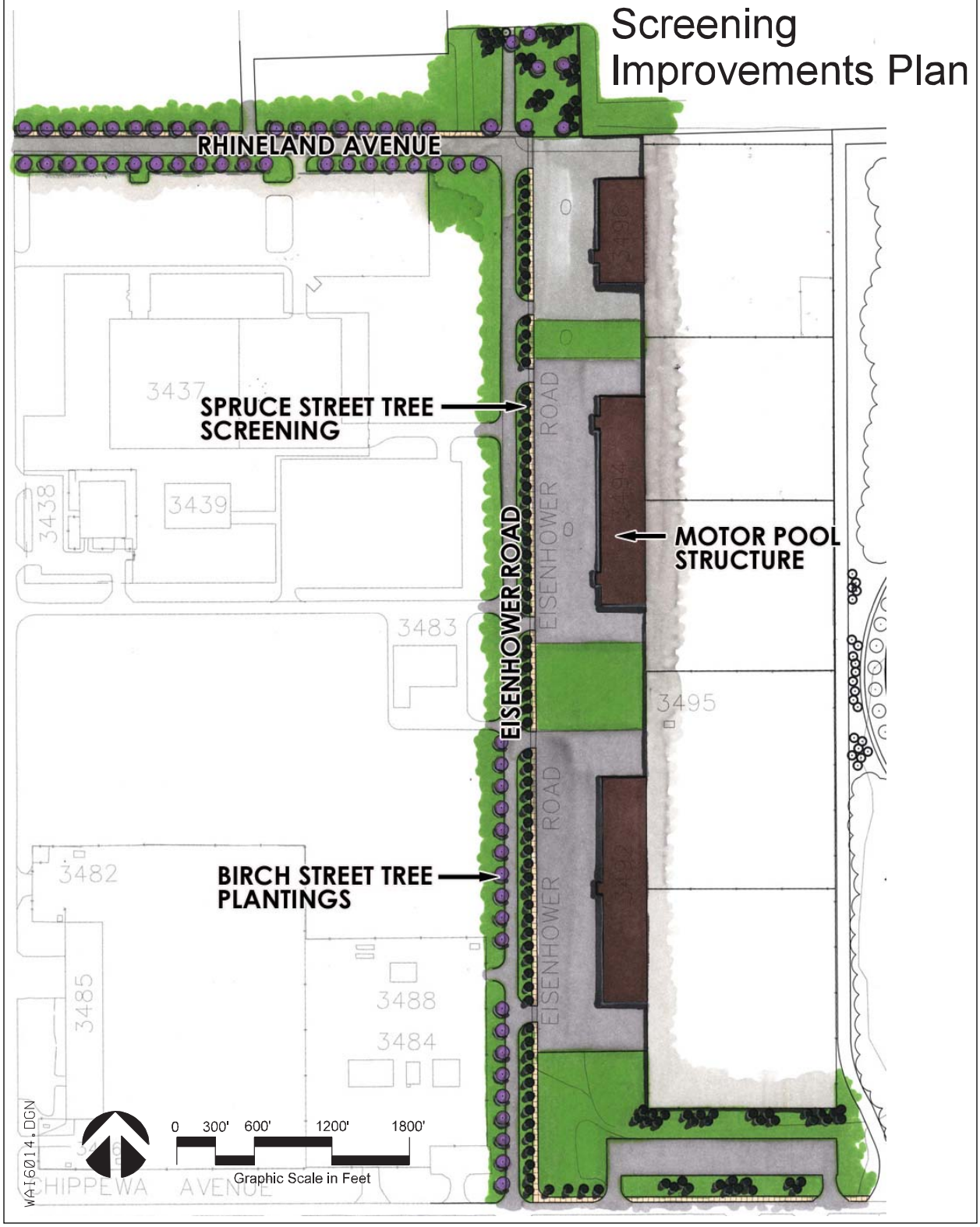
6.9.1.2 Project Description. This project provides guidance for the development of a screening and streetscape improvement program for the Motor Pool area along Eisenhower Road within the east portion of the Industrial theme area. It includes landscape development along Eisenhower Road to accent and improve the appearance of the corridor. The project also provides a defined pedestrian route on the east side of the road, with upgraded street and pedestrian lighting to improve safety, and it provides better definition to the motor pool parking areas. The improvements provide for signage, street lights, and streetscape/screen plantings to meet IDG guidelines.

6.9.1.3 Design Concept. The design concept addresses the need for landscape screening, definition of space along Eisenhower Road, and implementation of a pedestrian walkway on the east side of Eisenhower Road. These recommendations enhance the visual aspects of this area and improve pedestrian safety within this zone.

6.9.1.4 Site Design. Figure 6.9b illustrates the Motor Pool Screening Improvements.

Figure 6.9b

Motor Pool Screening Improvements Plan



6.9.1.5 Maintenance Impact. The proposed plan provides a more defined street corridor and reduces maintenance by creating a defined drainage swale between the street trees and Eisenhower Road. Maintenance and mowing are also reduced in front of the Vehicle Maintenance Shop at the corner of Eisenhower Road and Rhineland Avenue.

6.9.1.6 Recommended Funding Sources. The recommended funding source is Military Construction, Army (MCA).

6.9.1.7 Cost Estimate. Table 6.9a provides a rough order of magnitude cost estimate for the Motor Pool Screening Improvements. This estimate is based on landscape improvements, street trees, pedestrian walkway, street lighting, pedestrian lighting, and signage improvements only. Any work associated with removal or relocation of utilities or utilidors is not included.

The estimated construction cost of the Motor Pool Screening Improvements is $494,520.

Table 6.9a Motor Pool Screening Improvements Cost Estimate

Description	Quan	Unit	US $ Unit Cost	Line Total	Sub-Cat Total	Category Total
Site Improvements						**$494,520**
1 DEMOLITION						**$2,200**
Clear and Grub Existing Landscape Areas	1.1	ac	$2,000	$2,200		
Total Demolition				$2,200	**$2,200**	
2 GRADING						**$50,000**
General Site Finished Grading	1	ls	$50,000	$50,000		
Total Grading				$50,000	**$50,000**	
3 HARDSCAPE						**$33,020**
PARKING						
Painted Parking Area Designations	1	ls	$7,500	$7,500		
Total Parking				$7,500	**$7,500**	
CROSSWALKS						
Painted Crosswalk Designations	1	ls	$1,000	$1,000		
Total Crosswalks				$1,000	**$1,000**	
SIDEWALKS						
Concrete Walks (10 ft. width)	3,065	lf	$8	$24,520		
Total Sidewalks				$24,520	**$24,520**	
4 LANDSCAPING						**$104,200**
PLANT MATERIAL						
Deciduous Street Tree Plantings	63	ea	$400	$25,200		
Evergreen Street Tree Plantings	135	ea	$400	$54,000		
Seeding of Turf Areas	50,000	sf	$0.50	$25,000		
Total Plant Material				$104,200	**$104,200**	
5 LIGHTING AND AMENITIES						**$305,100**
LIGHTING						
Pedestrian Lighting	75	ea	$4,000	$300,000		
Total Lighting				$300,000	**$300,000**	
SITE FURNITURE AND SIGNAGE						
Pedestrian Crossing Signs	12	ea	$200	$2,400		
Traffic/Warning/Information Signs	9	ea	$300	$2,700		
Total Site Furniture and Signage				$5,100	**$5,100**	

6.10 BADGER LAKE VISUAL ZONE

The Badger Lake Visual Zone is located within the eastern portion of Fort Wainwright's Industrial theme area. This area consists of the area east of the motor pools, currently used as a gravel pit.

One (1) project is developed within the Badger Lake Visual Zone to improve the functionality and appearance of the east Industrial theme area. The project is the Badger Lake Recreation Area.

6.10.1 Badger Lake Recreation Area

6.10.1.1 Existing Conditions. The Badger Lake Recreation Area is located east of the motor pool area, and north of Old Badger Road. The area is currently defined by a water filled gravel pit, with random vegetation throughout the site. The shoreline is poorly delineated and should be addressed. See Figure 6.10a. The soils have a high content of gravel and aggregates. There are dirt access roads that run along the back (east) side of the motor pool area and function as maintenance roads. The area is not currently maintained, but has great potential as an installation recreational space. See Figure 6.10b.

Figure 6.10a
The Gravel Pit Shoreline can be Developed for Recreational Use

Figure 6.10b
The Gravel Pit has Tremendous Recreational Potential

6.10.1.2 Project Description. The scope of work provides a park or recreational setting around the perimeter of the Badger Lake area. This includes the development of a looped trail system, a shelter, and two (2) fishing piers. The area around Badger Lake is under-utilized and presents a perfect opportunity for recreational activity. There is an opportunity to re-establish forest in certain areas around the shoreline. Street trees are proposed along Old Badger Road to accent the corridor and provide filtered views into the Badger Lake area. The improvements provide a parking lot, trail surfaces, shelter, fishing piers, lighting, signage, picnic tables, benches, grills, and trash receptacles.

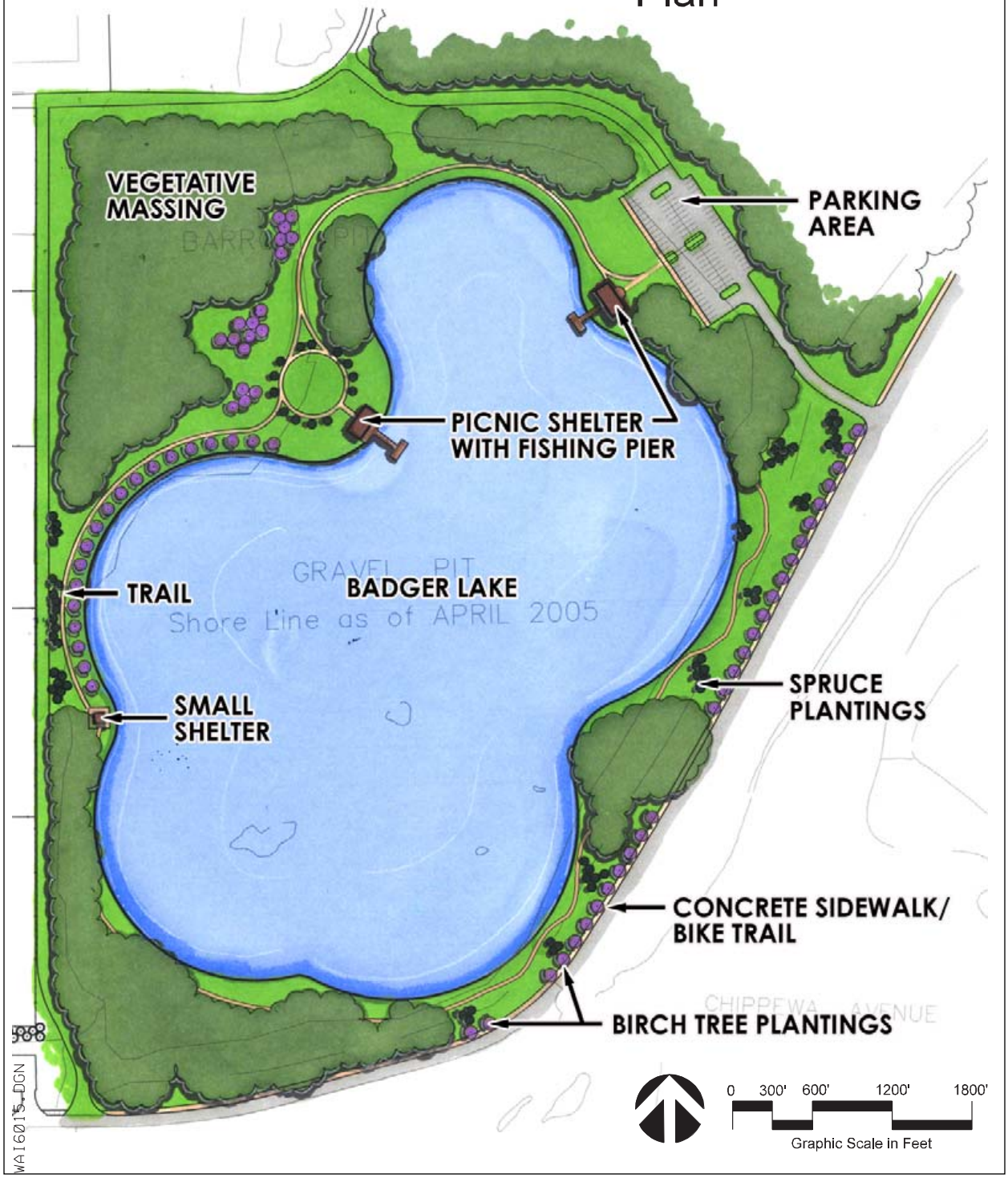
6.10.1.3 Design Concept. The design concept is to address the underutilization of the space, lack of recreational opportunities on the east side of the installation, and restoration of once forested areas. Accent plantings can be implemented along the trail corridor in strategic areas to give the recreational area more visual impact and interest.

6.10.1.4 Site Design. Figure 6.10c illustrates the Badger Lake Recreation Area.

6.10.1.5 Maintenance Impact. The proposed plan provides a restorative mass planting landscape design, thus reducing the amount of maintenance. Accent planting areas incorporate mass flowering perennials and ground cover plants to reduce mowing and maintenance of turf areas.

Figure 6.10c

Badger Lake Recreation Area Plan



6.10.1.6 Recommended Funding Sources. The recommended funding source is Military Construction, Army (MCA).

6.10.1.7 Cost Estimate. Table 6.10a provides a rough order of magnitude cost estimate for the Badger Lake Recreation Area. This estimate is based on new parking lot, shelter, fishing piers, landscape improvements, 10-foot wide asphalt trail, pedestrian lighting, signage, benches, picnic tables, grills, and trash receptacles. Any work associated with removal or relocation of utilities or utilidors is not included.

The estimated construction cost of the Badger Lake Recreation Area is $1,511,988.

Table 6.10a Badger Lake Recreation Area Cost Estimate

Description	Quan	Unit	US $ Unit Cost	Line Total	Sub-Cat Total	Category Total
Site Improvements						**$1,511,988**
1 **DEMOLITION**						**$16,000**
Clear and Grub Existing Landscape Areas	8	ac	$2,000	$16,000		
Total Demolition				$16,000	**$16,000**	
2 **GRADING**						**$250,000**
General Site Finished Grading	1	ls	$250,000	$250,000		
Total Grading				$250,000	**$250,000**	
3 **HARDSCAPE**						**$590,388**
ROADWAYS AND PARKING						
Asphalt Resurfacing (1 1/2" - 2" depth)	72,350	sf	$6	$434,100		
Curb - Roadway	3,532	lf	$24	$84,768		
Curb - Parking	1,095	lf	$24	$26,280		
Painted Parking Area Designations	1	ls	$15,000	$15,000		
Painted Roadway Designations	1	ls	$10,000	$10,000		
Total Roadways				$570,148	**$570,148**	
SIDEWALKS						
Concrete Walks (10 ft. width)	2,530	lf	$8	$20,240		
Total Sidewalks				$20,240	**$20,240**	
4 **RECREATION FEATURES**						**$200,000**
Architectural Pavilion Shelter	1	ea	$ 100,000	$100,000		
Medium Picnic Shelter	1	ea	$ 30,000	$30,000		
Small Picnic Shelter	1	ea	$ 20,000	$20,000		
Large Fishing Pier	1	ea	$50,000	$50,000		
Small Fishing Pier	1	ea	$30,000	$30,000		
Total Recreation Features				$200,000	**$200,000**	
5 **LANDSCAPING**						**$55,800**
PLANT MATERIAL						
Deciduous Tree Plantings	63	ea	$400	$25,200		
Evergreen Tree Plantings	74	ea	$400	$29,600		
Seeding of Turf Areas	2,000	sf	$0.50	$1,000		
Total Plant Material				$55,800	**$55,800**	
6 **LIGHTING AND AMENITIES**						**$399,800**
LIGHTING						
Street/Parking Lighting	20	ea	$5,000	$100,000		
Pedestrian Lighting	62	ea	$4,000	$248,000		
Total Lighting				$348,000	**$348,000**	
SITE FURNITURE AND SIGNAGE						
Traffic/Warning/Information Signs	6	ea	$300	$1,800		
Benches	40	ea	$1,000	$40,000		
Trash Receptacles	20	ea	$500	$10,000		
Total Site Furniture and Signage				$51,800	**$51,800**	

6.11 MERIDIAN ROAD VISUAL ZONE

The Meridian Road Visual Zone is located within the central portion of Fort Wainwright's Industrial theme area of the installation. This area consists of the Meridian Road corridor south of Gaffney Road and north of Montgomery Road.

One (1) project is developed within the Meridian Road Visual Zone to improve the functionality, circulation and appearance of the central Industrial theme area. The project is the Meridian Road Realignment and Streetscape.

6.11.1 Meridian Road Realignment and Streetscape

6.11.1.1 Existing Conditions. The Meridian Road Realignment and Streetscape is located south of Gaffney Road, and north of Montgomery Road. The area currently has native short meadow grasses, which require little maintenance. The existing landscape treatment along Meridian Road is minimal and has been poorly maintained.

6.11.1.2 Project Description. This project provides guidance for the development of a streetscape program for Meridian Road Realignment and Streetscape within the central Industrial theme. The work includes earth berming and landscape development to accent and improve the appearance of the corridor. Improved street and pedestrian lighting, defined pedestrian routes, and improved traffic circulation at the Gaffney Road intersection enhance safety in this area. The improvements also provide for signage and landscape plantings to meet IDG guidelines.

6.11.1.3 Design Concept. The design concept is to address the existing vehicular conflict at the intersection of Gaffney Road and Meridian Road, and the lack of a pedestrian connection at River Road south across Gaffney Road. Bermed landscape planting areas and a street tree median provides a dynamic entry corridor from the north and improves pedestrian safety within this zone.

6.11.1.4 Site Design. Figure 6.11a illustrates the Meridian Road Realignment and Streetscape.

6.11.1.5 Maintenance Impact. The proposed plan provides a organic landscape design and reduces the amount of maintenance by incorporating tree massings and ground cover beds to reduce turf areas.

6.11.1.6 Recommended Funding Sources. The recommended funding source is Military Construction, Army (MCA).

Figure 6.11a

Meridian Road Realignment and Streetscape Plan

6.11.1.7 Cost Estimate. Table 6.11a provides a rough order of magnitude cost estimate for the Meridian Road Realignment and Streetscape. This estimate is based on landscape improvements, street trees, pedestrian walkway, street lighting, pedestrian lighting, and signage improvements. Any work associated with removal or relocation of utilities or utilidors is not included.

The estimated construction cost of the Meridian Road Realignment and Streetscape is $2,687,102.

Table 6.11a Meridian Road Realignment and Streetscape Cost Estimate

Description	Quan	Unit	US $ Unit Cost	Line Total	Sub-Cat Total	Category Total
Site Improvements						**$2,687,102**
1 **DEMOLITION**						**$826,850**
Demolish Existing Roadway	53,750	sf	$15	$806,250		
Clear and Grub Existing Landscape Areas	10.3	ac	$2,000	$20,600		
Total Demolition				$826,850	**$826,850**	
2 **GRADING**						**$800,000**
General Site Finished Grading	1	ls	$800,000	$800,000		
Total Grading				$800,000	**$800,000**	
3 **HARDSCAPE**						**$796,852**
ROADWAYS						
Asphalt Paving	91,460	sf	$6	$548,760		
Curb - Roadway	3,911	sf	$24	$176,880		
Curb - Median/Island	3,520	lf	$24	$30,000		
Painted Roadway Designations	1	ls	$25,000	$25,000		
Total Roadways				$780,640	**$780,640**	
SIDEWALKS						
Concrete Walks (10 ft. width)	1,839	sf	$8	$14,712		
Total Sidewalks				$14,712	**$14,712**	
CROSSWALKS						
Painted Crosswalk Designations	1	ls	$1,500	$1,500		
Total Crosswalks				$1,500	**$1,500**	
4 **LANDSCAPING**						**$66,400**
PLANT MATERIAL						
Deciduous Tree Plantings	124	ea	$400	$49,600		
Evergreen Tree Plantings	42	ea	$400	$16,800		
Total Plant Material				$66,400	**$66,400**	
5 **LIGHTING AND AMENITIES**						**$197,000**
LIGHTING						
Street/Parking Lighting	36	ea	$5,000	$180,000		
Total Lighting				$180,000	**$180,000**	
SITE FURNITURE AND SIGNAGE						
Pedestrian Crossing Signs	4	ea	$200	$800		
Traffic/Warning/Information Signs	4	ea	$300	$1,200		
Benches	12	ea	$1,000	$12,000		
Trash Receptacles	6	ea	$500	$3,000		
Total Site Furniture and Signage				$17,000	**$17,000**	

6.12 NEELY ROAD VISUAL ZONE

The Neely Road Visual Zone is located in the east portion of Fort Wainwright's Industrial theme area of the installation, with a small portion in the Company Campus theme area. This area consists of a forested area located between the eastern termination of Neely Road and the area south of the Ammo Control Point (Building 210) on Old Badger Road.

One (1) project is developed within the Neely Road Visual Zone to improve the functionality and circulation within the east Industrial theme area. The project is the Neely Road Extension.

6.12.1 Neely Road Extension

6.12.1.1 Existing Conditions. The Neely Road Extension corridor is located east of Santiago Avenue and follows a southeast route to Old Badger Road, south of the Ammo Control Point. The area is currently a heavily forested area, which requires minimal maintenance investment.

6.12.1.2 Project Description. This project provides guidance for the development of the Neely Road Extension. The work includes construction of a new road, pedestrian walkways, and selective clear cutting of the forested area along the road extension routing.

6.12.1.3 Design Concept. The design addresses the need for a primary roadway connecting the center of the installation and the east side of the installation. The Neely Road Extension creates visual interest by establishing ample open space through the selective clear cutting of forested areas and managing the understory succession of forested areas adjacent to the entry road to frame and accent the corridor.

6.12.1.4 Site Design. Figure 6.12a illustrates the Neely Road Extension.

6.12.1.5 Maintenance Impact. The proposed road extension requires minimal maintenance. Cleared areas along the corridor shall receive maintained turf; defined spaces that incorporate mass ground cover beds to reduce mowing will be intermittently provided.

6.12.1.6 Recommended Funding Sources. The recommended funding source is Military Construction, Army (MCA).

6.12.1.7 Cost Estimate. Table 6.12a provides a rough order of magnitude cost estimate for the Neely Road Extension. This estimate is based on new roadway construction, 10-foot wide pedestrian walkway, street lighting, pedestrian lighting, signage, and selective clear cutting and management of existing forested areas. Any work associated with removal or relocation of utilities or utilidors is not included.

The estimated construction cost of the Neely Road Extension is $3,400,242.

Table 6.12a Neely Road Extension Cost Estimate

Description	Quan	Unit	US $ Unit Cost	Line Total	Sub-Cat Total	Category Total
Site Improvements						**$3,400,242**
1 **DEMOLITION**						**$39,000**
Clear and Grub Existing Landscape Areas	19.5	ac	$2,000	$39,000		
Total Demolition				$39,000	**$39,000**	
2 **GRADING**						**$850,000**
General Site Finished Grading	1	ls	$850,000	$850,000		
Total Grading				$850,000	**$850,000**	
3 **HARDSCAPE**						**$1,621,242**
ROADWAYS						
Asphalt Paving	208,845	sf	$6	$1,253,070		
Curb - Roadway	12,573	lf	$24	$301,752		
Painted Roadway Designations	1	ls	$20,000	$20,000		
Total Roadways				$1,574,822	**$1,574,822**	
SIDEWALKS						
Concrete Walks (10 ft. width)	5,490	sf	$8	$43,920		
Total Sidewalks				$43,920	**$43,920**	
CROSSWALKS						
Painted Crosswalk Designations	1	ls	$2,500	$2,500		
Total Crosswalks				$2,500	**$2,500**	
4 **LIGHTING AND AMENITIES**						**$890,000**
LIGHTING						
Street/Parking Lighting	78	ea	$5,000	$390,000		
Street/Parking Lighting	125	ea	$4,000	$500,000		
Total Lighting				$890,000	**$890,000**	

6.13 ALDER AVENUE VISUAL ZONE

The Alder Avenue Visual Zone is located in the Fort Wainwright Recreation/Open Space theme area. An existing bike path corridor in this area provides the installation with recreational opportunities for biking, walking, jogging, skating, and seasonal cross-country skiing. The existing corridor along the north side of Alder Avenue and west of Meridian Road also incorporates features such as exercise kiosks, training stations, informational kiosks, and small resting/gathering shelters. The bike path surface is a 10 foot wide asphalt surface.

One (1) project is developed within the Alder Avenue Visual Zone to provide improved connectivity, functionality and appearance of the Recreation/Open Space theme area. The project is the Alder Avenue Bike Path Extension.

6.13.1 Alder Avenue Bike Path Extension

6.13.1.1 Existing Conditions. The area along Alder Avenue is currently forested areas, native grasses, and low lying drainage ditches, see Figure 6.13a. The proposed starting/ending point of the Alder Avenue Bike Path Extension is located on the north side of Alder Avenue, at Meridian Road.

Figure 6.13a
Existing Alder Avenue Streetscape

6.13.1.2 Project Description. The Alder Avenue Bike Path Extension provides improved connectivity to the east side of the installation. Areas to rest or exercise are also provided.

This project includes the construction of a 15-foot wide asphalt bike path system. The proposed trail route includes various pull-off shelters with accent paving. The shelters include amenities such as landscape plantings, benches, signage, and accent lighting. The landscape plant material is added to enhance the area and reduce maintenance.

6.13.1.3 Design Concept. The proposed design provides an east-west connection from Badger Gate to the termination of the existing Alder Avenue bike path. This is part of an overall concept to implement a looped trail system within the installation, allowing pedestrians and troops to travel anywhere on the installation without using an automobile.

6.13.1.4 Site Plan. Figure 6.13b illustrates the site plan of the Alder Avenue Bike Path Extension.

6.13.1.5 Maintenance Impact. The bike path extension allows the landscape around it to become low maintenance native material. At the pull-off shelters, the landscape accents reduce the amount of turf area to be maintained.

6.13.1.6 Recommended Funding Sources. The recommended funding source is Military Construction, Army (MCA).

6.13.1.7 Cost Estimate. Table 6.13a provides a rough order of magnitude cost estimate for the Alder Avenue Bike Path Extension. This estimate does not include repair or relocation of underground utilities or utilidors which may be uncovered during construction. The cost estimate includes construction of an 15-foot wide asphalt bike path, shelters, landscape plantings, pedestrian lighting, signage, and benches.

The estimated construction cost of Alder Avenue Bike Path Extension is $1,503,104.

Table 6.13a Alder Avenue Bike Path Extension Cost Estimate

Description	Quan	Unit	US $ Unit Cost	Line Total	Sub-Cat Total	Category Total
Site Improvements						**$1,503,104**
1 **DEMOLITION**						**$11,400**
Clear and Grub Existing Landscape Areas	5.7	ac	$2,000	$11,400		
Total Demolition				$11,400	**$11,400**	
2 **GRADING**						**$350,000**
General Site Finished Grading	1	ls	$350,000	$350,000		
Total Grading				$350,000	**$350,000**	
3 **HARDSCAPE**						**$134,304**
SPECIALIZED PAVING						
Brick Pavers at Rest Area	1,450	sf	$24	$34,800		
Concrete Edger (1' width)	459	lf	$8	$3,672		
Total Specialized Paving				$38,472	**$38,472**	
SIDEWALKS						
Concrete Walks (10 ft. width)	11,979	lf	$8	$95,832		
Total Sidewalks				$95,832	**$95,832**	
4 **RECREATION FEATURES**						**$40,000**
Rest Area	1	ea	$ 40,000	$40,000		
Total Recreation Features				$40,000	**$40,000**	
5 **LANDSCAPING**						**$3,400**
PLANT MATERIAL						
Shrub Plantings	12	ea	$75	$900		
Landscape Accent Lighting	1	ls	$2,500	$2,500		
Total Plant Material				$3,400	**$3,400**	
6 **LIGHTING AND AMENITIES**						**$964,000**
LIGHTING						
Pedestrian Lighting	240	ea	$4,000	$960,000		
Total Lighting				$960,000	**$960,000**	
SITE FURNITURE AND SIGNAGE						
Pedestrian Crossing Signs	8	ea	$200	$1,600		
Traffic/Warning/Information Signs	8	ea	$300	$2,400		
Total Site Furniture and Signage				$4,000	**$4,000**	

6.14 BALL FIELD COMPLEX VISUAL ZONE

The Ball Field Complex Visual Zone is located in Fort Wainwright's Recreation/Open Space theme area, adjacent to the Town Center theme area. This area comprises two (2) existing ballfields, an open field south of the existing ballfields, and a forested area south of Alder Avenue and west of the modularity site.

One (1) project is developed within the Ball Field Complex Visual Zone to improve the performance of the ball fields, and the functionality and appearance of the Recreation/Open Space theme area. The project is the Ball Field Complex Expansion.

6.14.1 Ball Field Complex Expansion

6.14.1.1 Existing Conditions. The existing ball field complex facility is located north of Alder Avenue and east of Meridian Road. The ball fields and related infrastructure are in excellent shape and have been well maintained, see Figure 6.14a. Parking appears adequate and the spectator areas appear to be scaled well. The area south of these ball fields is a space where native grasses are growing. It is the correct size to develop two (2) additional fields of the same dimension.

Figure 6.14a

The Ballfield Complex Facility is in Excellent Condition

6.14.1.2 Project Description. The Ball Field Complex Expansion is designed to meet increasing program needs by adding 2 new fields to create the first four field complex north of Alder Avenue. Four (4) new ball fields are designed south of Alder Avenue to mirror the existing ball fields, concessions/restroom building, and parking configuration north of Alder Avenue. In addition, four (4) new soccer fields are planned south of Alder Avenue. A separate parking area serves the soccer field area.

East of the soccer fields, a small lake is programmed for camping, hiking, and picnicking. Separate parking serves the lake area. A large lodge shelter is located opposite this parking area to serve as the focal point for large events, and smaller shelters are located along the lake shore to provide shelter and cooking sites for family and smaller events. The extension of Meridian Road south of Alder Avenue through this area, connecting to Santiago Avenue on the eastern edge, provides access to South Gate Road and an alternate access to the new park facilities from the east.

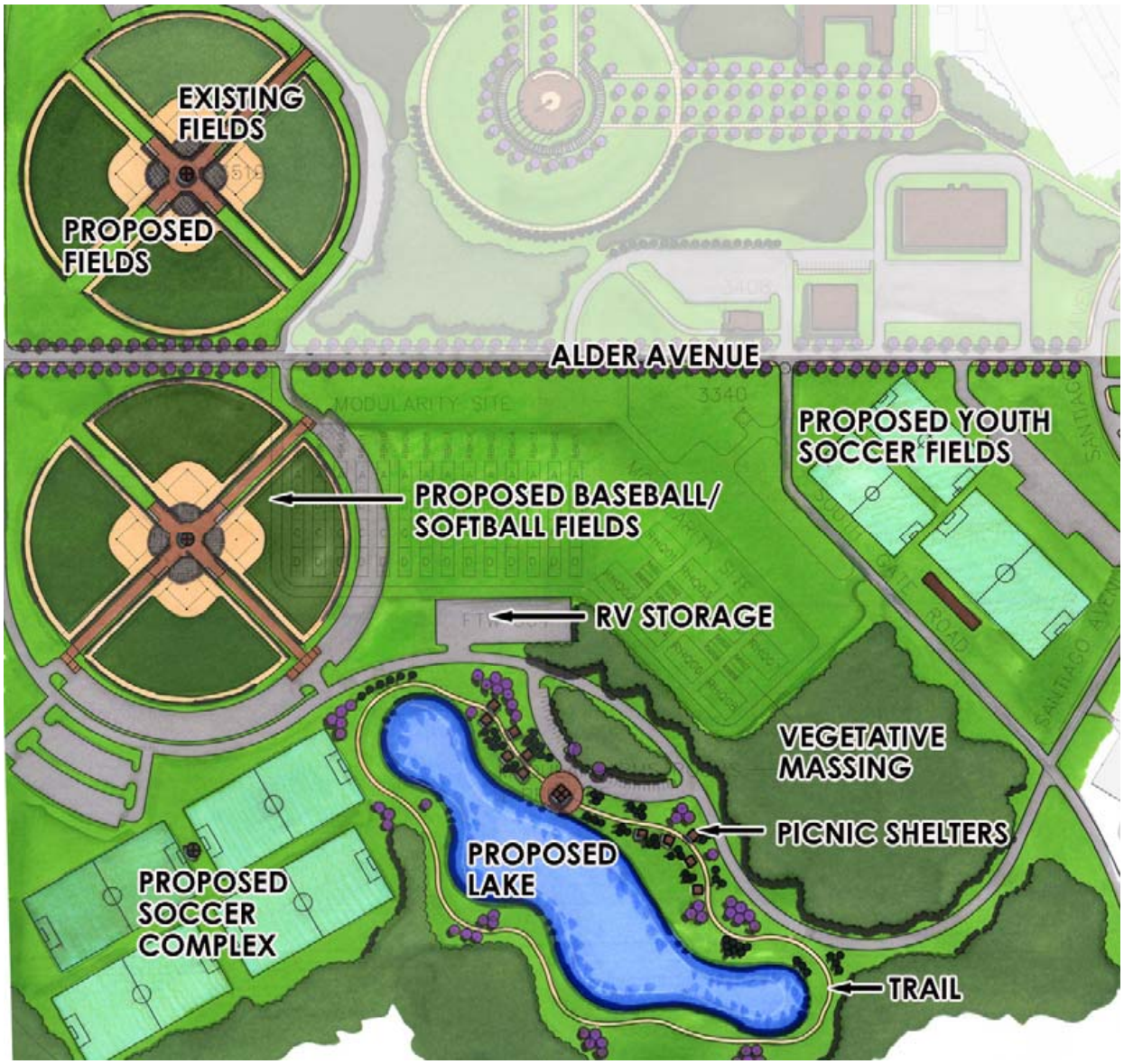
Also included is the construction of a looped 10-foot wide asphalt recreational trail system. The proposed trail route includes various pull-off shelters with accent paving. A site for the relocated Raven RV storage site has also been located within this area. The shelters include amenities such as landscape plantings, picnic tables, benches, grills, signage, pedestrian lighting, and accent lighting. The landscape plant material is added to enhance the area and reduce maintenance.

6.14.1.3 Design Concept. The ball field complex expansion provides for an organized recreational experience and a more pleasurable experience for players and spectators alike. New fencing, sports lighting, concession/restroom facilities and paved spectator surfaces improve the overall user experience and create a positive image for the installation. In addition to the new ball fields, four (4) new competition soccer fields are located in the southern portion of the site.

Additionally, the development of the lake area east of the proposed soccer fields creates a balance of active and passive recreational opportunities.

Figure 6.14b

Ball Field Complex Expansion Plan



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0 300' 600' 1200' 1800'
Graphic Scale in Feet

The Ball Field Complex Expansion provides a strong visual impact to Fort Wainwright and improves player and spectator safety during use. This project envisions improved sports field surfaces, player areas, and defined soccer fields to allow for competitive events. Construction of additional parking spaces allows for improved maintenance and spectator and pedestrian safety. The addition of paved spectator areas and a defined walk system within the complex improves overall safety and maintenance.

6.14.1.4 Site Plan. Figures 6.14b illustrates the proposed improvements to the Ball Field Complex Expansion.

6.14.1.5 Maintenance Impact. Increasing the number of ball fields adds more investment to the current maintenance program; however, growing program needs for additional ball fields more than offsets the maintenance costs. All competitive sports turf surfaces need additional maintenance investment.

6.14.1.6 Recommended Funding Sources. The recommended funding source is Military Construction, Army (MCA).

6.14.1.7 Cost Estimate. Table 6.14a provides a rough order of magnitude cost estimate for the Ball Field Complex Expansion. Utility improvements are needed as part of this project, but this estimate does not include utility improvements, repairs or relocations. The improvement project includes demolition, construction of six (6) new softball fields, construction of four (4) new soccer fields, a large concessions building, roadway, parking lots, construction of a new lake area, a large lodge shelter, multiple smaller shelters, pedestrian trails and walkways, landscaping, street lighting, area lighting, pedestrian lighting, picnic tables, benches, grills, trash receptacles, bicycle racks, and signage for the area designated by this design.

The estimated construction cost of the Ball Field Complex Expansion is $9,143,096.

Table 6.14a Ball Field Complex Expansion Cost Estimate

Description	Quan	Unit	US $ Unit Cost	Line Total	Sub-Cat Total	Category Total
Site Improvements						**$9,143,096**
1 **DEMOLITION**						**$105,600**
Clear and Grub Existing Landscape Areas	52.8	ac	$2,000	$105,600		
Total Demolition				$105,600	**$105,600**	
2 **GRADING**						**$1,500,000**
General Site Finished Grading	1	ls	$1,500,000	$1,500,000		
Total Grading				$1,500,000	**$1,500,000**	
3 **HARDSCAPE**						**$1,951,396**
ROADWAYS AND PARKING						
Asphalt Paving	264,330	sf	$6	$1,585,980		
Curb - Roadway & Parking	11,809	lf	$24	$283,416		
Painted Roadway Designations	1	ls	$20,000	$20,000		
Painted Parking Area Designations	1	ls	$30,000	$30,000		
Total Roadways				$1,919,396	**$1,919,396**	
SIDEWALKS						
Concrete Walks (10 ft. widths)	4,000	lf	$8	$32,000		
Total Sidewalks				$32,000	**$32,000**	
4 **PLAYGROUND/RECREATION FEATURES**						**$3,700,000**
PLAYING FIELDS						
Baseball Field	6	ea	$300,000	$1,800,000		
Adult Soccer Field	5	ea	$300,000	$1,500,000		
Youth Soccer Field	2	ea	$200,000	$400,000		
Total Playing Fields				$3,700,000	**$3,700,000**	
5 **RECREATION FEATURES**						**$760,000**
Architectural Pavilion	4	ea	$ 80,000	$320,000		
Picnic Shelter	11	ea	$ 40,000	$440,000		
Total Recreation Features				$760,000	**$760,000**	
6 **LANDSCAPING**						**$360,900**
PLANT MATERIAL						
Deciduous Tree Plantings	49	ea	$400	$19,600		
Evergreen Tree Plantings	73	ea	$400	$29,200		
Street Tree Plantings	106	ea	$350	$37,100		
Seeding of Turf Areas	550,000	sf	$0.50	$275,000		
Total Plant Material				$360,900	**$360,900**	
7 **LIGHTING AND AMENITIES**						**$765,200**
LIGHTING						
Street/Parking Lighting	55	ea	$5,000	$275,000		
Pedestrian Lighting	100	ea	$4,000	$400,000		
Total Lighting				$675,000	**$675,000**	
SITE FURNITURE AND SIGNAGE						
Pedestrian Crossing Signs	4	ea	$200	$800		
Traffic/Warning/Information Signs	8	ea	$300	$2,400		
Benches	67	ea	$1,000	$67,000		
Trash Receptacles	40	ea	$500	$20,000		
Total Site Furniture and Signage				$90,200	**$90,200**	

6.15 BADGER GATE VISUAL ZONE

The Badger Gate Visual Zone is located within the Fort Wainwright Family Recreation/Open Space theme area at the east entrance of the installation. This gate provides a secondary entry point into the installation.

One (1) project is developed within the Badger Gate Visual Zone to improve the functionality and appearance of the Recreation/Open Space theme area. The one (1) project is: Badger Gate Improvements.

6.15.1 Badger Gate Improvements

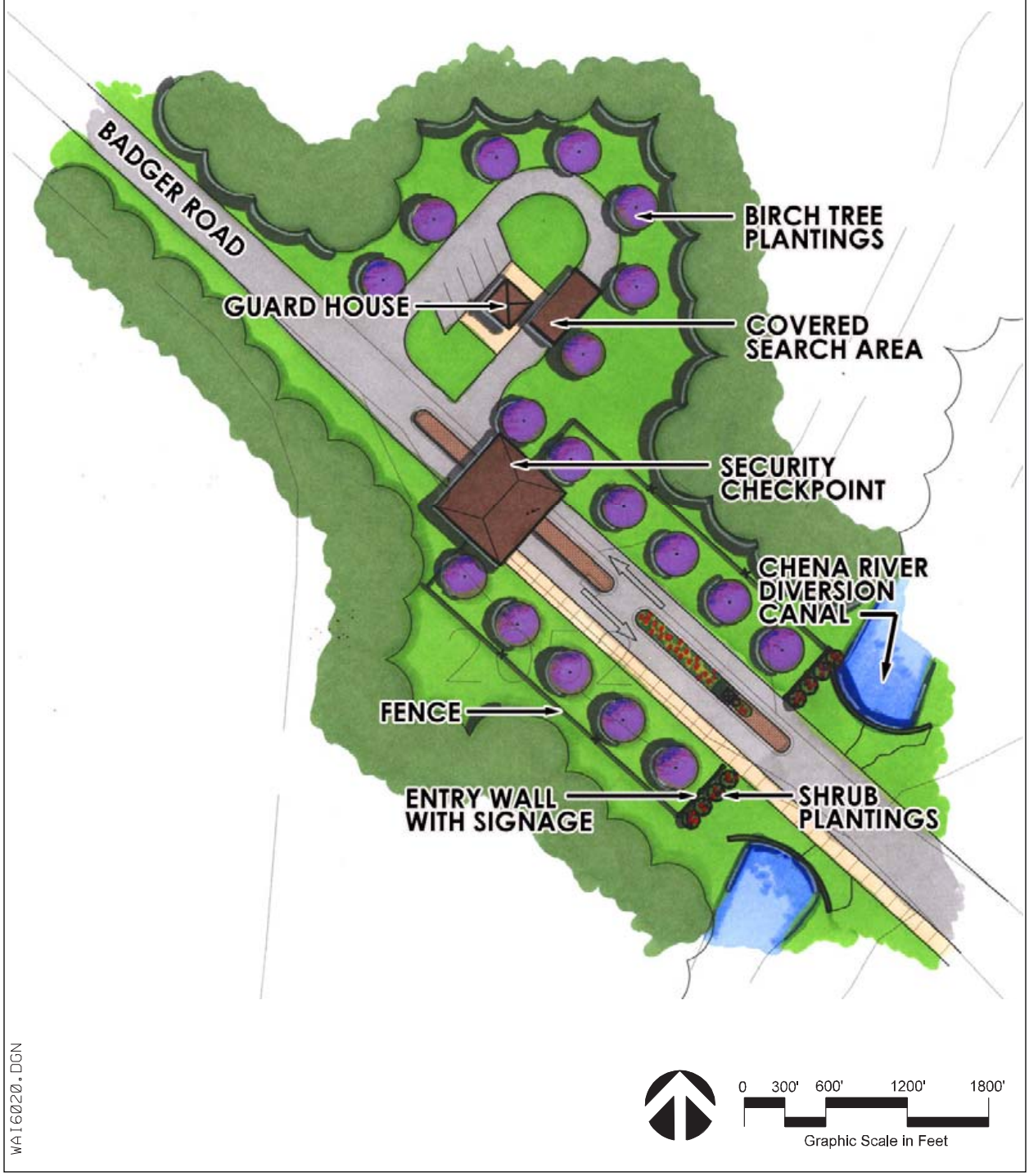
6.15.1.1 Existing Conditions. The Badger Gate is one of three (3) active entrance gates into Fort Wainwright and provides access to the installation from the east via Badger Road and Ketcham Road. This entrance is currently used as a secondary gate and smaller truck entrance as shown in Figure 6.15a. Sufficient space is not available for large truck inspection. The existing entrance is in need of upgrade to meet force protection requirements and future development, as well as improve its visual impact.

Figure 6.15a
Badger Gate has a Negative Visual Impact

6.15.1.2 Project Description. Badger Gate is redesigned to provide a secondary entrance to Fort Wainwright that portrays the pride of the fighting soldiers found within its perimeter. This project includes the construction of a stone veneer entrance gate wall, a new guard house, improved median divided entry roadway, a new inspection pull-off station (with an inspection hut, new parking, and covered search area), signage, area lighting, accent lighting, and landscape planting. Demolition of a portion of the existing chain link fence in the vicinity of the gate is included in this scope of work. The new gate wall detail will complies with force protection requirements and provides local design detail typical to the local Fairbanks community. Total height of the gate wall is 8 feet. Landscaping is limited to accent planting (shrubs and groundcover) at the entry in front of the entry gate wall with turf grass within the clear zone limits of the fence. The entry road median incorporates flowering perennial beds. The gate creates a sense of arrival and establishes a visually appealing entrance.

Figure 6.15b

Badger Gate Improvements Plan



6.15.1.3 Design Concept. The proposed design presents a dynamic entry feature for Fort Wainwright that addresses the importance of the installation to the public. It provides a security wall that meets force protection requirements while addressing a need to establish a visual impact. Installation identification signage as part of the entry gate wall, landscape plantings, area lighting accent lighting, and accent plantings are incorporated into the design of the gate wall and entry area.

6.15.1.4 Site Plan. Figure 6.15b illustrates the site plan of the Badger Gate Improvements. Figure 6.15c depicts the proposed new entry gate feature with signage.

6.15.1.5 Maintenance Impact. Development of the new entry gate and related perimeter gate wall and fencing provides a permanent architectural feature with defined edges allowing for an effective maintenance program. Landscape development is localized to the entry gate area and within defined beds incorporating low maintenance plant material, accent lighting, and improved entry signage.

6.15.1.6 Recommended Funding Sources. The recommended funding source is Global War on Terrorism (GWOT) and the alternative funding source is Military Construction, Army (MCA).

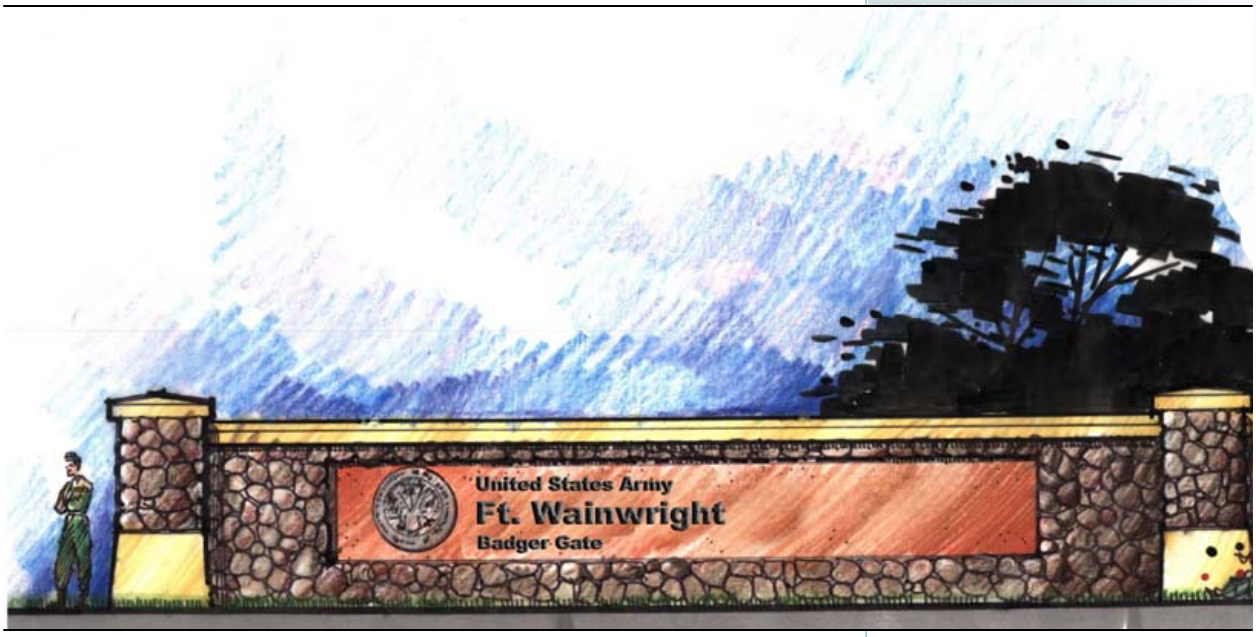


Figure 6.15c
Proposed Entry Gate Feature

6.15.1.7 Cost Estimate. Table 6.15a provides a rough order of magnitude cost estimate for the Badger Gate Improvements. This estimate does not include repair or relocation of underground utilities or utilidors which may be within the clear zone area of the existing fence, nor the cost for relocation of replacement of existing City of Fairbanks utilities. Force protection measures associated with the main gate construction are not included. The cost estimate includes: construction of a stone veneered 8-foot masonry entry gate wall feature, a new guard house, inspection hut, covered search area, pull-off parking areas, accent paving, landscape accent plantings, signage, area lighting, and accent lighting.

The estimated construction cost of Badger Gate Improvements is $446,868.

Table 6.15a Badger Gate Improvements Cost Estimate

Description	Quan	Unit	US $ Unit Cost	Line Total	Sub-Cat Total	Category Total
Site Improvements						**$446,868**
1 **DEMOLITION**						**$4,200**
Clear and Grub Existing Landscape Areas	2.1	ac	$2,000	$4,200		
Total Demolition				$4,200	**$4,200**	
2 **GRADING**						**$100,000**
General Site Finished Grading	1	ls	$100,000	$100,000		
Total Grading				$100,000	**$100,000**	
3 **HARDSCAPE**						**$123,668**
ROADWAYS						
Asphalt Resurfacing (1 1/2" - 2" depth)	10,250	sf	$6	$61,500		
Curb - Roadway	1,616	lf	$24	$38,784		
Curb - Median/Island	446	lf	$24	$10,704		
Painted Roadway Designations	1	ls	$10,000	$10,000		
Total Roadways				$120,988	**$120,988**	
SIDEWALKS						
Concrete Walks (8 ft. width)	335	sf	$8	$2,680		
Total Sidewalks				$2,680	**$2,680**	
4 **STRUCTURES**						**$120,000**
Guard House	1	ls	$30,000	$30,000		
Covered Search Area	1	ls	$90,000	$90,000		
Total Grading				$120,000	**$120,000**	
5 **LANDSCAPING**						**$7,200**
PLANT MATERIAL						
Street Tree Plantings	18	ea	$400	$7,200		
Shrub Plantings	16	ea	$75	$1,200		
Total Plant Material				$7,200	**$7,200**	
6 **LIGHTING AND AMENITIES**						**$91,800**
LIGHTING						
Street/Parking Lighting	18	ea	$5,000	$90,000		
Total Lighting				$90,000	**$90,000**	
SITE FURNITURE AND SIGNAGE						
Traffic/Warning/Information Signs	6	ea	$300	$1,800		
Total Site Furniture and Signage				$1,800	**$1,800**	

6.16 BARRACKS VISUAL ZONE

The Barracks Visual Zone is located within the Fort Wainwright Company Campus theme. This area provides the majority of community related services including transient and troop housing, religious services, social, and recreational needs for service members.

Two (2) projects are developed within the Barracks Visual Zone to improve the functionality and appearance of the Company Campus theme area. The projects are the Barracks 3400 Improvements and the Barracks 3700 Improvements.

6.16.1 Barracks 3400 Improvements

6.16.1.1 Existing Conditions. The 3400 Barracks area has undefined parking areas adjacent to the buildings. The spaces between the barracks do not promote social gathering or recreational activity, see Figure 6.16a. This space is poorly maintained with most areas too small to conduct activities and social gatherings. The 3400 Barracks are located to the north and to the south of the Monterey Lake area. There are no defined connections to the Monterey Lake area.

Figure 6.16a
Spaces Between the 3400 Barracks Need to be Developed to Promote Social Activity

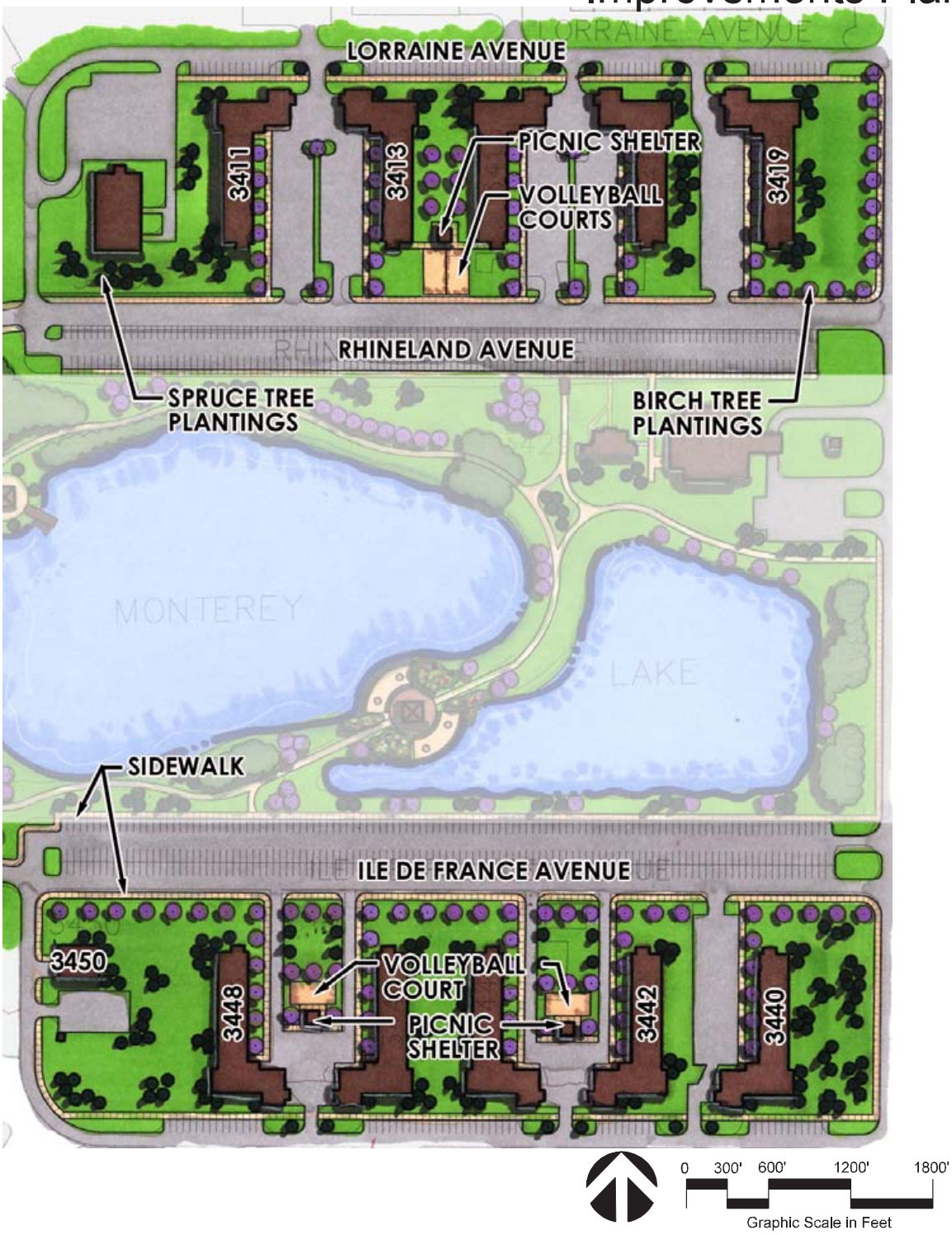
6.16.1.2 Project Description. Restriping and organizing the existing parking lot for 3400 Barracks residents provides designated and defined parking sufficient to accommodate the number of personnel vehicles associated with this type of complex. The parking areas front on Rhineland Avenue and Ile De France Avenue, and are striped for better organization of parking. Pedestrian connections to Monterey Lake are provided to improve safety. Pedestrian connections to the 3400 Barracks are emphasized and provisions for area lighting improve security. Areas between barracks buildings are developed to encourage social, recreational, and community activities.

6.16.1.3 Design Concept. This project addresses undefined parking areas for 3400 Barracks residents and provides pedestrian connections to other areas of the installation. Barracks 3400 Improvements utilize plant material massing and buffering to form social and recreational space between barracks buildings. Plant material also softens the architecture of the barracks buildings. Other improvements include pedestrian lighting, area lighting, improved pedestrian walkways, signage, benches, grills, and open space framed by tree massings.

6.16.1.4 Site Plan. Figure 6.16b illustrates the site plan of the Barracks 3400 Improvements.

Figure 6.16b

Barracks 3400 Improvements Plan



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6.16.1.5 Maintenance Impact. Maintenance operations are reduced due to the reduction of poorly maintained open areas near edges of buildings and parking lots.

6.16.1.6 Recommended Funding Sources. The recommended funding source is Military Construction, Army (MCA).

6.16.1.7 Cost Estimate. Table 6.16a provides a rough order of magnitude cost estimate for the Barracks 3400 Improvements. This estimate is based on a parking lot striping, landscape plant material, construction of new pedestrian walkways, pedestrian lighting, area lighting, benches, and grills.

The estimated construction cost for the Barracks 3400 Improvements is $576,800.

Table 6.16a Barracks 3400 Improvements Cost Estimate

Description	Quan	Unit	US $ Unit Cost	Line Total	Sub-Cat Total	Category Total
Site Improvements						**$576,800**
1 **DEMOLITION**						**$1,400**
Clear and Grub Existing Landscape Areas	0.7	ac	$2,000	$1,400		
Total Demolition				$1,400	**$1,400**	
2 **GRADING**						**$224,000**
General Site Finished Grading	1	ls	$125,000	$125,000		
Total Grading				$125,000	**$125,000**	
SIDEWALKS						
Concrete Walks (10 ft. width)	12,375	sf	$8	$99,000		
Total Sidewalks				$99,000	**$99,000**	
3 **LANDSCAPING**						**$127,400**
PLANT MATERIAL						
Deciduous Tree Plantings	115	ea	$400	$46,000		
Evergreen Tree Plantings	191	ea	$400	$76,400		
Seeding of Turf Areas	10,000	sf	$0.50	$5,000		
Total Plant Material				$127,400	**$127,400**	
4 **PLAYGROUND/RECREATION FEATURES**						**$224,000**
RECREATION FEATURES						
Sand Volleyball	4	ls	$20,000	$80,000		
Picnic Shelter	3	ls	$40,000	$120,000		
Recreation Features				$200,000	**$200,000**	
SITE FURNITURE AND SIGNAGE						
Pedestrian Crossing Signs	8	ea	$200	$1,600		
Traffic/Warning/Information Signs	8	ea	$300	$2,400		
Benches	16	ea	$1,000	$16,000		
Trash Receptacles	8	ea	$500	$4,000		
Total Site Furniture and Signage				$24,000	**$24,000**	

6.16.2 Barracks 3700 Improvements

6.16.2.1 Existing Conditions. The 3700 Barracks within the Company Campus theme area has a large, undefined parking area north of the barracks buildings. The space between the barracks does not promote social gathering or recreational activity, see Figure 16.16c. This space is either poorly maintained turf or areas too small to conduct activities and social gatherings. The 3700 Barracks are located south of Montgomery Road, north of Neely Road, east of Meridian Road, and west of Santiago Avenue.

Figure 6.16c
The 3700 Barracks Lack Social Gathering and Recreational Activity Areas

6.16.2.2 Project Description. Re-striping and organizing the existing parking lot for 3700 Barracks residents provides a designated defined parking area sufficient to accommodate the number of personnel vehicles associated with this type of complex. The area north of Buildings 3711, 3712, and 3713 is developed as a recreational pocket park. The pocket park accommodates a variety of active and passive recreational activities. Amenities within the pocket park include a flag football field, basketball courts, a shelter, picnic tables, and grills. Pedestrian connections to the pocket park are provided to improve safety. The connections to the pocket park include the construction of two (2) new pedestrian bridges. Pedestrian connections to the 3700 Barracks are emphasized and provisions for area lighting improve security. Areas between barracks buildings are developed to encourage social, recreational, and community activities. The area between Buildings 3713 and 3716 includes hard surface tennis courts, a double volleyball court, a smaller shelter building, picnic tables, and grills.

6.16.2.3 Design Concept. The Barracks 3700 Improvements address undefined parking areas, and create two recreational areas encouraging both passive and active recreational activities for 3700 Barracks residents. Barracks 3700 Improvements utilize plant material massing and buffering to form social and recreational space between barracks buildings. Plant material also softens the architecture of the barracks buildings. Other improvements include: pedestrian lighting, area lighting, improved pedestrian walkways, signage, benches, grills, and open space framed by tree massings.

6.16.2.4 Site Plan. Figure 6.16d illustrates the site plan of the Barracks 3700 Improvements.

6.16.2.5 Maintenance Impact. Maintenance operations are reduced due to the reduction of poorly maintained open areas near edges of buildings and parking lots. Proper maintenance of the pocket park is required to preserve its integrity over time.

6.16.2.6 Recommended Funding Sources. The recommended funding source is Military Construction, Army (MCA).

6.16.2.7 Cost Estimate. Table 6.16b provides a rough order of magnitude cost estimate for the Barracks 3700 Improvements. This estimate is based on a parking lot striping, one (1) larger shelter, one (1) smaller shelter, flag football field, two (2) hard surface basketball courts, two (2) hard surface tennis courts, landscape plant material, construction of new pedestrian walkways, pedestrian bridges, pedestrian lighting, area lighting, benches, and grills.

The estimated construction cost for the Barracks 3700 Improvements is $1,493,786.

Table 6.16b Barracks 3700 Improvements Cost Estimate

Description	Quan	Unit	US $ Unit Cost	Line Total	Sub-Cat Total	Category Total
Site Improvements						**$1,493,786**
1 **GRADING**						**$40,000**
General Site Finished Grading	1	ls	$40,000	$40,000		
Total Grading				$40,000	**$40,000**	
2 **HARDSCAPE**						**$502,186**
SIDEWALKS						
Concrete Walks (8 ft. width)	83,281	sf	$6	$499,686		
Total Sidewalks				$499,686	**$499,686**	
CROSSWALKS						
Painted Crosswalk Designations	1	ls	$2,500	$2,500		
Total Crosswalks				$2,500	**$2,500**	
3 **LANDSCAPING**						**$139,800**
PLANT MATERIAL						
Street Tree Plantings	147	ea	$400	$58,800		
Evergreen Tree Plantings	140	ea	$400	$56,000		
Seeding of Turf Areas	50,000	sf	$0.50	$25,000		
Total Plant Material				$139,800	**$139,800**	
4 **PLAYGROUND/RECREATION FEATURES**						**$460,000**
RECREATION FEATURES						
Grill Area	4	ea	$5,000	$20,000		
Picnic Shelter	1	ls	$40,000	$40,000		
Sand Volleyball	2	ea	$10,000	$20,000		
Basketball Courts	4	ea	$20,000	$80,000		
Football Field	1	ea	$300,000	$300,000		
Total Recreation Features				$460,000	**$460,000**	
5 **LIGHTING AND AMENITIES**						**$351,800**
LIGHTING						
Street/Parking Lighting	30	ea	$5,000	$150,000		
Pedestrian Lighting	40	ea	$4,000	$160,000		
Total Lighting				$310,000	**$310,000**	
SITE FURNITURE AND SIGNAGE						
Pedestrian Crossing Signs	6	ea	$200	$1,200		
Traffic/Warning/Information Signs	2	ea	$300	$600		
Benches	30	ea	$1,000	$30,000		
Trash Receptacles	20	ea	$500	$10,000		
Total Site Furniture and Signage				$41,800	**$41,800**	

6.17 MONTEREY LAKE VISUAL ZONE

The Monterey Lake Visual Zone is located within the Fort Wainwright Company Campus theme area on the south side of the installation. This area provides the majority of bachelor enlisted housing, company operations, training, banking, and entertainment needs for service members.

One (1) project is developed within the Monterey Lake Visual Zone to improve the functionality and appearance of the Company Campus theme area. The project is the Monterey Lake Improvements.

6.17.1 Monterey Lake Improvements

6.17.1.1 Existing Conditions. The Monterey Lake area is defined by Rhineland Avenue to the north, Ile De France Avenue on the south, Luzon Avenue to the east, and Santiago Avenue to the west. Lake is a lake divided diagonally by a flat ridge. The remaining area around the perimeter of the lake is vegetated on its banks with a mix of Birch and Spruce trees. See Figures 16.17a and 16.17b. The lake is stocked with fish annually.

Figure 6.17a
Existing Vegetation Frames Views of Monterey Lake

Figure 6.17b
Access to the Lake will Provide Additional Recreation Opportunities

6.17.1.2 Project Description. Site improvements to Monterey Lake provide an improved aesthetic and increase recreational activity around the lake. A recreational trail system is developed around the lake with pedestrian connections to the 3400 Barracks, the Clock Tower plaza, and Chapel, Building 3430. The trail system has a link running diagonally across the flat ridge divide. At the center of the divide is a large rustic shelter in a pedestrian plaza. Within the pedestrian plaza, four (4) circular fire pits are arranged to encourage social interaction. Northwest from the pedestrian plaza, a fishing shelter and pier are on axis with the clock tower, creating a nice design scale progression, see Figure 6.17c. The lake is stocked yearly, making the fishing pier a nice outdoor summer destination. The Monterey Lake Improvements provide recreation and spatial features such as shelters, fishing pier, viewing platform, recreational trails, exercise/physical fitness stations, pedestrian plaza, fire pits, signage, and vegetative massings. Figure 6.17d illustrates an aerial view of the Monterey Lake Pavilion.

6.17.1.3 Design Concept. This project allows pedestrians to experience and use the lake area for recreation and gathering. The Monterey Lake Improvements provide the look and feel of a traditional passive use park. Additional site improvements include accent paving, pedestrian and area lighting along the trails, picnic tables, benches, grills, and trash receptacles.

6.17.1.4 Site Plan. Figures 6.17c illustrates the site plan of the Monterey Lake Improvements.

6.17.1.5 Maintenance Impact. The type of plant material used is low maintenance and has a long life expectancy. Mass plantings of trees and shrubs are used to buffer or screen views or edges and require less man-hours than individually planted materials.

6.17.1.6 Recommended Funding Sources. The recommended funding source is Military Construction, Army (MCA).

6.17.1.7 Cost Estimate. Table 6.17a provides a rough order of magnitude cost estimate for the Monterey Lake Improvements. However, due to the unknown scope of improvements to existing utilities and development of future utilities, such as storm water system, this estimate does not address these improvements. The estimate includes the cost of demolition, walkways, landscaping, lighting, of the park site.

The estimated construction cost of the Monterey Lake Improvements is $1,018,448.

Table 6.17a Monterey Lake Improvements Cost Estimate

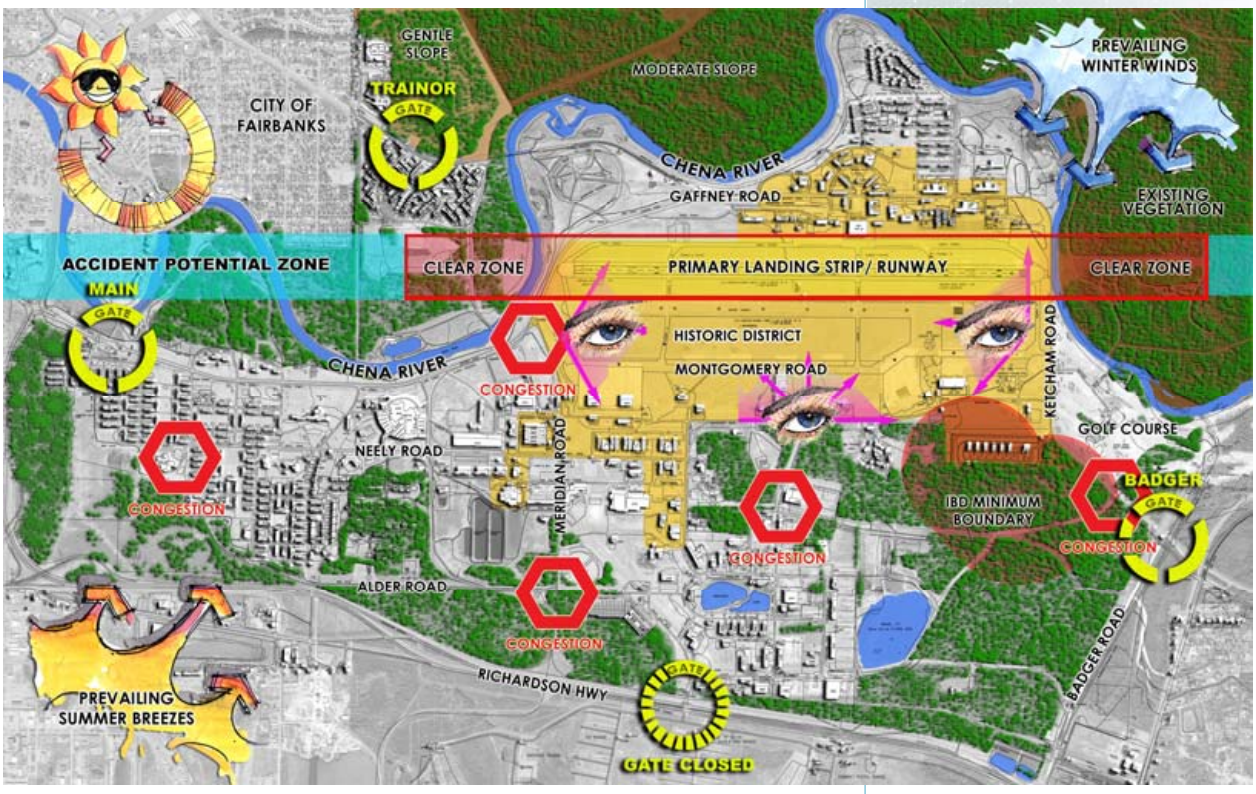
Description	Quan	Unit	US $ Unit Cost	Line Total	Sub-Cat Total	Category Total
Site Improvements						**$1,018,448**
1 **DEMOLITION**						**$1,600**
Clear and Grub Existing Landscape Areas	0.8	sf	$2,000	$1,600		
Total Demolition				$1,600	**$1,600**	
2 **GRADING**						**$200,000**
General Site Finished Grading	1	ls	$200,000	$200,000		
Total Grading				$200,000	**$200,000**	
3 **HARDSCAPE**						**$39,048**
SIDEWALKS						
Concrete Walks (10 ft. width)	4,881	lf	$8	$39,048		
Total Sidewalks				$39,048	**$39,048**	
4 **RECREATION FEATURES**						**$195,000**
RECREATION FEATURES						
Lake Pavilion	1	ea	$125,000	$125,000		
Picnic Shelter	1	ea	$40,000	$40,000		
Docking area	1	ea	$30,000	$30,000		
Pedestrian Bridges (wood)	2	ea	$25,000	$50,000		
Total Recreation Features				$195,000	**$195,000**	
5 **LANDSCAPING**						**$54,200**
PLANT MATERIAL						
Deciduous Street Tree Plantings	55	ea	$400	$22,000		
Evergreen Tree Plantings	74	ea	$300	$22,200		
Seeding of Turf Areas	20,000	sf	$0.50	$10,000		
Total Plant Material				$54,200	**$54,200**	
6 **LIGHTING AND AMENITIES**						**$528,600**
LIGHTING						
Pedestrian Lighting	122	ea	$4,000	$488,000		
Total Lighting				$488,000	**$488,000**	
SITE FURNITURE AND SIGNAGE						
Pedestrian Crossing Signs	5	ea	$200	$1,000		
Traffic/Warning/Information Signs	2	ea	$300	$600		
Benches	24	ea	$1,000	$24,000		
Trash Receptacles	30	ea	$500	$15,000		
Total Site Furniture and Signage				$40,600	**$40,600**	

Section 7.0
Site Planning Design Standards

7

7.1 INTRODUCTION

Site Planning is the process of arranging an external physical environment in complete detail to include the structures, circulation patterns, and other elements that form the built environment. The site planning and design process is used to develop a project that fulfills facility requirements and creates the optimal relationship with the natural site. See TM 5-803-14, *Site Planning and Design* for detailed guidance on site planning to include program analysis, site analysis, site verification, and concept development. See Figure 7.1a. This TM also discusses site design guidelines, describes the steps in the site planning process, and contains examples of various sketches/diagrams developed in support of these steps. Also see TI 800-01, *Design Criteria, Chapter 3, Site Planning and*



▲ **Figure 7.1a**
Fort Wainwright Site Analysis

Design Criteria. Environmental documentation will be prepared prior to site selection to support the construction activity in accordance with AR 200-2, *Environmental Effects of Army Actions*.

The site planning component provides the spatial arrangement of the installation. See Figure 7.1b. The installation Future Land Use Plan provides information that forms the foundation for site planning. The Future Land Use Plan, or master plan, is a mechanism for ensuring that individual projects are sited to meet overall installation requirements. AR 210-20, *Master Planning for Army Installations*, and the Master Planning Instructions (MPI), provide additional information concerning the master plan.

▲ **Figure 7.1b**
Monterey Lake Site Plan

The other five design components are dependent upon site planning for their location and spatial relationships. The five components are identified below and discussed in Sections 8-12.

- Section 8 - Buildings Design Standards
- Section 9 - Circulation Design Standards
- Section 10 - Landscape Design Standards
- Section 11 - Site Elements Design Standards
- Section 12 - Force Protection Design Standards

7.2 SITE PLANNING OBJECTIVES

The goal of site planning for the installation is to produce an attractive, sustainable development. Sustainability requires the built environment to be designed and constructed to preserve and enhance the natural environment. Manmade facilities are designed as a part of the environment to minimize negative environmental impacts. Figure 7.2a. General site planning techniques resulting in sustainable development are cost efficient because they conserve energy and reduce construction and maintenance cost.

Figure 7.2a
Facilities Should be Homogeneous with the Natural Environment

Typical site planning objectives include the following:

- Preserve natural site features such as topography, hydrology, vegetation, and tree cover.
- Locate facilities with consideration of climatic conditions such as wind, solar orientation, and microclimate.
- Preserve the natural site by molding development to fill around existing land forms and features. See Figure 7.2b. This development approach minimizes extensive earthwork, preserves existing drainage patterns, and preserves existing vegetation.
- Plan for facilities to be clustered to preserve land and reduce construction cost. Clustering should occur on the flattest land areas. Room for expansion should be provided. Force protection measures must be considered when clustering facilities.

Figure 7.2b
Preserve the Site Existing Natural Form and Features

7.3 SITE PLANNING CONSIDERATIONS

The primary "fit" of the development to its environment is initially determined by the site analysis and subsequent site planning. The determination of primary issues that provide basic location and organization of spatial relationships are determined during the site planning process. Specific considerations relevant to Fort Wainwright are discussed in Section 4 and Section 5.

Environmental stewardship of existing resources and preservation of these same resources is needed as any future site planning activities are undertaken. Environmental stewardship is also required of forested lands and existing flora and fauna found on the installation. See Figure 7.3a. Adoption of this IDG will serve to improve the overall appearance of the installation and provide a mechanism to improve quality of life issues on Fort Wainwright. See Figure 7.3b.

Installation liabilities and assets are identified and noted in Section 5, Visual Themes and Zones. Site planning considerations should be directed at eliminating liabilities and addressing areas which present a negative impact on the image of Fort Wainwright. The visual themes and zones noted in Section 5 provide guidance to recommended improvements which can be constructed to improve the visual appearance of the installation. Expansion of these guidelines and recommendations throughout the installation will achieve the goal of improving the visual image and provide a higher quality of life for those stationed and working on the installation. See Figure 7.3c.

Figure 7.3c
Negative Visual Image at Main Gate

Figure 7.3a
Overgrown Landscaping at the Historic General's Quarters

Figure 7.3b
Existing Natural Vegetation

Some of the liabilities identified during the site analysis process were found in the physical condition of the existing entrance gates, signage, utility systems, site elements, architectural paint color scheme, and lack of screening at trash receptacles around the installation. The condition of fence materials and temporary traffic control barriers are unsightly. This presents a negative impact of the installation. See Figure 7.3d.

7.3.1 Accessibility

Any building or facility used only by able-bodied personnel need not be accessible to the disabled. See Figure 7.3e. Nevertheless, when feasible and appropriate, seek to incorporate accessibility measures into the design since the facility use may change over time (military exclusion is provided by UFAS 4.1.4 (2)). All other structures or facilities must meet the standards of the Americans with Disabilities Act Accessibility Guidelines (ADAAG) and the Uniform Federal Accessibility Standards (UFAS), with the most stringent standards applied in the event of conflicting guidelines. (See AR 420-70, Chapter 2, Paragraph 2.8.) This includes the avoidance of site barriers through the use of curb cuts, ramps, handrails, and grade-level entrances to avoid site barriers. Provide designated handicapped parking spaces in all major parking lots and drop-off zones for persons with mobility impairments. Modify existing structures for handicapped accessibility whenever possible, especially community facilities that are most likely to be used by families, veterans, or visitors.

Figure 7.3e
Facilities Need to be Accessible to the Disabled

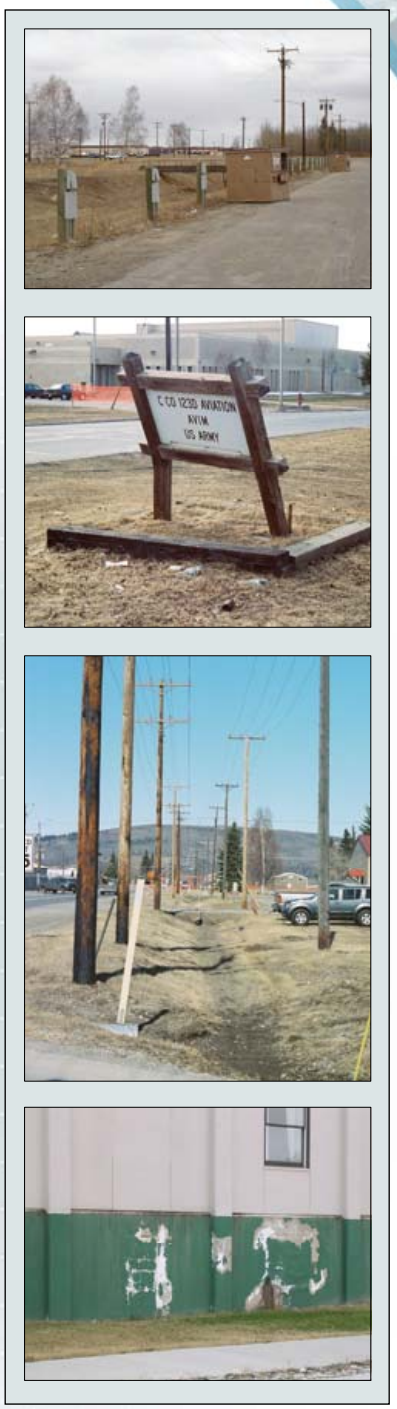


Figure 7.3d
Negative Visual Images

7.3.2 Environmental

Environmental issues to consider in the preparation of a site plan include any action or proposal that has a detrimental affect on a site's land, water, or air quality. The location of facilities on land that results in minimal disturbance to the existing topography, vegetation, and drainage patterns greatly reduces the negative impact on the environment. See Figures 7.3f and 7.3g. It is the Garrison Commander's responsibility to ensure that all National Environmental Policy Act (NEPA) documentation is started before the site selection process, as this process feeds the 1391 process.

Federal law requires that prior to the undertaking of activities which effect the nation's waterways, described as "navigable waters of the United States" and "waters of the United States," to include wetlands, a permit must be acquired. Information regarding statutory, administrative, and judicial matters including general regulatory policy, definitions of "waters of the United States" and "navigable waters", and processing of permits can be obtained at the following Corps of Engineers website.

- Statutory, Administrative, and Judicial Materials

Include procedures for mitigating environmental concerns in the early stages of project development. To the maximum extent possible, avoid siting development or individual buildings in environmentally sensitive areas. The installation master plan environmental overlay should be reviewed prior to the development for areas designated as threatened and endangered species habitat areas.

Figure 7.3f
Development Should Have Minimal Disturbance to Existing Topography

Figure 7.3g
Environmental EIS's are Required for Projects That May Significantly Effect The Environment

7.4 SITE PLANNING DESIGN CRITERIA

The site planning component of installation design comes first in the design process and determines the general location of the other components. Consequently, site planning must consider the criteria for architectural design, circulation, landscape architecture, site elements, and force protection. Site planning criteria is divided into two categories, natural conditions and manmade conditions. Each is discussed separately in the following paragraphs. These criteria are to be utilized for the assessment of the visual and spatial impacts of site planning.

7.5 NATURAL CONDITIONS

7.5.1 Topography

The natural terrain is a major determinant of the layout and form of the installation. Fort Wainwright is relatively flat, situated on the Tanana River Basin of the Alaskan interior, along the Chena River. There are environmental areas of concern that impact potential future development, especially within the already highly developed cantonment area of the installation. The following guidelines should be used to maintain the natural topography of the installation:

- Maintain natural ground slopes and elevations, Figure 7.5a.
- Align roadways and buildings along topographic lines.
- Locate facilities that have expansive ground coverage on relatively flat terrain.
- Use moderately sloping areas for buildings with less ground coverage area.
- Avoid development on steep slopes, Figure 7.5b.
- Avoid development in natural drainage ways and flood plains.
- Provide a reasonable balance of cut and fill.

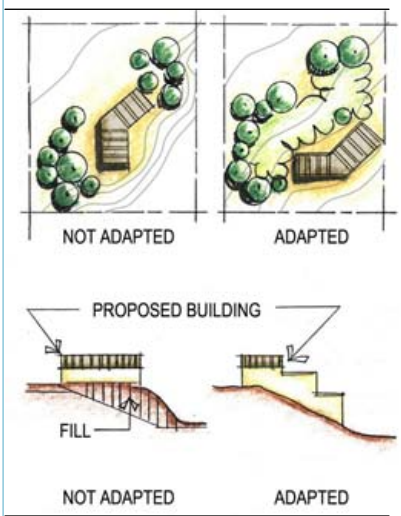


Figure 7.5a
Construct Facilities to Accommodate Natural Conditions

7.5.2 Hydrology

The site planning team will consider the following hydrologic concerns for natural drainage corridors, floodplains, and waterways during the site planning process.

- Preserve and maintain natural drainage areas and floodplains. See Figure 7.5c.
- Limit development in floodplains to open spaces and recreation uses.
- Preserve rivers, streams, and other intermittent waterways, and incorporate them into the design layout.

Figure 7.5b
Develop Around Natural Landforms

7.5.3 Climate

Fort Wainwright is located in the northern continental climate of the Alaskan interior, which is characterized by short moderate summers, long cold winters, and little precipitation or humidity. Weather is influenced by mountain ranges on three sides, which form an effective barrier to the flow of warm, moist, maritime air during most of the year. Surrounding uplands also cause settling of cold, artic air into Tanana Valley lowlands.

Average monthly temperatures range from -11.5ºF in January to 61.5ºF in July, with an average annual temperature of 26.3ºF. The average frost-free period is 95-100 days.

Figure 7.5c
Preserve and Maintain Natural Drainage Areas and Floodplain

Prevailing winds are from the southwest in June and July and from the north and northeast in winter. Average wind velocity is 5.3 miles per hour (mph). The greatest average wind speed is in spring, with a high of 40 mph recorded in Fairbanks. Winds are 5 mph or less 60 percent of the time. Thunderstorms are infrequent, occurring only during late spring and early summer.

Average annual precipitation is 10.4 inches, most of which falls as rain during summer and early fall. Average monthly precipitation ranges from a low of 0.29 inches in April to a high of 1.86 inches in July. Average annual snowfall is 67 inches, with a record high of 168 inches during the winter of 1970-71. Average annual relative humidity is 55 percent, with lowest levels during spring and early summer. Heavy fog is relatively common during December and January, with four or five foggy days each month. Ice fog can be expected any time temperatures drop below -30ºF, but is normally restricted to areas near human settlements where moisture is emitted from burning fuels.

Figure 7.5d
Preserve Attractive Views and Vistas

7.5.4 Views and Vistas

Scenic and other attractive views and vistas will be preserved and enhanced; unattractive views and vistas will be screened. See Figure 7.5d. Visual extensions through open spaces provide a sense of orientation, relief, and enjoyment.

7.5.5 Vegetation

The use of native vegetation should be used in landscape designs to enhance, protected, preserved, and beautify the site and help reduces maintenance, and enhances sustainability. A preferred plant matrix (Appendix O, Plant Palette) is included in this Army Installation Design Guide. (Also, see Section 10 – Landscape Design Component).

7.6 MANMADE SITE CONDITIONS

The site plan provides the locations of the manmade development that will occur on site. It establishes the spatial relationships as well as the relationships between manmade and existing natural features. Manmade site conditions include all development on the installation to include buildings, roadways, parking lots, walkways, walls, fences, signage, utilities, and other facilities. Buildings, roadways, parking lots, and aboveground utilities are the primary manmade visual determinants. See Figure 7.6a.

The following site planning guidelines will be used in the visual and spatial review of the installation:

- Cluster buildings to reduce impact on the natural environment, and reduce roadways and utility corridors needed to serve the development, however, at the same time giving full consideration to antiterrorism and force protection requirements.
- Locate large buildings in relatively flat areas to reduce the cut and fill and preserve the natural vegetation and drainage and orient to topography.
- Minimize solar heat gain for cooling and maximize solar heat gain and retention for heating.
- Site buildings with consideration for the microclimate conditions of the site that result in variances in wind or light because of adjacent land forms, structures, or trees.
- Orient outdoor pedestrian areas for most comfortable exposure.
- Utilize lighter colored building surfaces exposed to the sun and darker colors on recessed surfaces to absorb radiation.
- Orient windows according to impact of climatic conditions.
- Locate development on leeward side of hills.
- Design and locate roads to provide a hierarchy of traffic carrying capacities.
- Locate roads to blend with topography and vegetation.
- Design and locate parking lots to minimize visual impact of broad expanses of pavement and vehicles, Figure 7.6b.
- Design and locate pedestrian walkways and bicycle paths to fit the physical environment, and provide a comfortable pedestrian experience limiting conflicts with vehicular traffic.
- Locate trees and shrubs to buffer harsh natural conditions.
- Design and locate site elements to blend with and enhance the physical environmental.

Figure 7.6a
Head Bolt Outlet Bollards Result in a Cluttered Environment

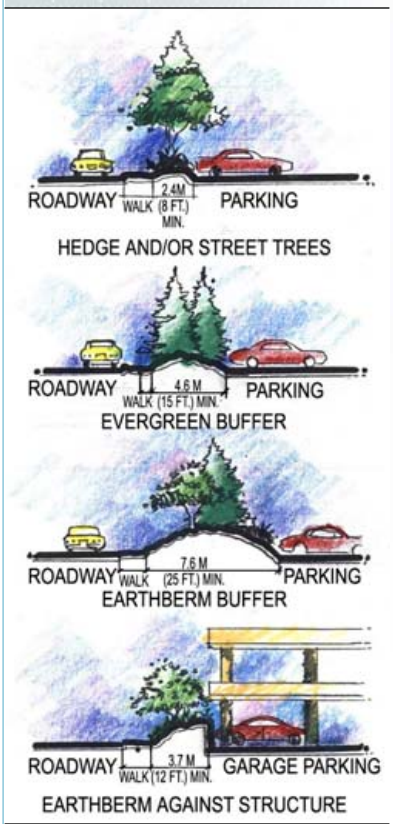


Figure 7.6b
Screen Parking to Minimize Negative Visual Impact

7.7 ARMY STANDARDS

The cited Army Standards shall be met.

- Technical Manual (TM) 5-803-14, *Site Planning and Design*
- Americans with Disabilities Act Accessibility Guidelines (ADAAG)
- Uniform Federal Accessibility Standards (UFAS)
- Army Regulation (AR) 200-2, *Environmental Effects of Army Actions*
- Army Regulation (AR) 210-20, *Master Planning for Army Installations*
- Army Regulation (AR) 415-15, *Army Military Construction Program Development and Execution*
- Army Regulation (AR) 420-70, *Buildings and Structures*

7.8 REFERENCES

The following references are provided for guidance.

- Army Regulation (AR) 200-2, *Environmental Effects of Army Actions*
- Technical Instructions (TI) 800-01, *Design Criteria*
- Unified Facilities Criteria (UFC) 1-300-05A, *Installation Support*
- Unified Facilities Criteria (UFC) 3-210-01A, *Design: Area Planning, Site Planning, and Design*
- Unified Facilities Criteria (UFC) 3-210-06A, *Design: Site Planning and Design*
- Unified Facilities Criteria (UFC) 3-210-10, *Design: Low Impact Developing Manual*
- Unified Facilities Criteria (UFC) 3-230-15FA, *Design: Subsurface Drainage Facilities for Airfields and Heliports*
- Unified Facilities Criteria (UFC) 3-230-16FA, *Design: Drainage and Erosion Control Structures for Airfields and Heliports*
- Unified Facilities Criteria (UFC) 3-230-17FA, *Design: Drainage for Areas Other than Airfields*
- Unified Facilities Criteria (UFC) 3-250-01FA, *Design: Pavement Design for Roads, Streets, Walks and Open Storage Areas*
- Unified Facilities Criteria (UFC) 3-250-18FA, *Design: General Provisions and Geometric Design for Roads, Streets, Walks, and Open Storage Areas*
- Unified Facilities Criteria (UFC) 3-260-02, *Design: Pavement Design for Airfields*
- Unified Facilities Criteria (UFC) 3-400-01, *Design: Energy Conservation*
- Whole Building Design

Section 8.0
Buildings Design Standards

8

8.1 INTRODUCTION

The design character of an installation's buildings affect the installations overall image. Fort Wainwright has a wide range of building styles and types that fragment rather than unify the installation. The historic core of the installation has been preserved within the Historic District, however most other areas of the installation lack an architectural identity. In addition, the unique characteristics of the Alaskan environment have been overlooked in the design of some of the more recent projects. The visual analysis of buildings and related structures helps define visual zones and themes, and is an important part of an installation's assets and liabilities assessment. See Figure 8.1a.

▲ **Figure 8.1a**

The Color Palette at Fort Wainwright Can Unify the Diverse Architectural Styles

The building design component encompasses the character of the buildings as well as the arrangement of buildings to one another and to their environment. In general, architectural style, materials, and colors indigenous to the region should be utilized. Building designs should be expressive of their unique location and should promote energy efficiency by utilizing prevailing tradewinds, moderate temperatures, and abundant sunlight. The preservation of historically and culturally significant structures also adds to an installation's unique location and character and provides a sense of heritage.

The visual analysis of structure also includes concern for accessibility, use of materials, placement of entrances, incorporation of additions and renovations, incorporation of plazas and courtyards, interior design, and appropriateness and quality of building maintenance. See Figure 8.1b.

This section provides the objectives and visual determinants that should be utilized to identify and assess the building design quality of the installation. It establishes parameters that will create distinctive and cohesive areas within an overall framework for Fort Wainwright. This section also provides standards and guidance pertaining to the development and maintenance of the various exteriors and interiors of buildings on the installation.

▲ **Figure 8.1b**
Building 3498 in the Industrial Area

8.2 BUILDING OBJECTIVES

8.2.1 Sustainability

The architectural style of existing and future buildings should reflect and reinforce the sustainability of the installation. Sustainable design reduces construction and maintenance cost and conserves energy through proper construction and materials selection. See Appendix D for a more complete discussion on Sustainable Design.

8.2.2 Building Design Objectives

- Adapt building designs to natural site conditions. The use of natural ventilation and daylighting is encouraged. See Section 7.5 for more information.
- Design buildings in clusters to preserve land and reduce construction and maintenance costs.
- Develop a coherent architectural style that results in the blending of new and old structures. However, when considering historical buildings one should be able to differentiate between the historic fabric and the new material.
- Design buildings to include more floors in a vertical structure that results in a smaller footprint and more efficiently utilizes limited installation land areas. See Figure 8.2a.
- Combine multiple activities in one building to reduce the number of buildings required and more efficiently utilize limited installation land areas.
- Design multiple use facilities with the capability to quickly change interior layouts to accommodate changing requirements.
- Use indigenous construction materials and practices that require less energy to produce and transport, and may be recycled at the end of their usefulness.
- Locate windows to maximize natural light, ventilation and outward views.
- Consider adaptive reuse of buildings once their initial use is no longer required.

Figure 8.2a
Multi-Story Housing in the Company Campus Area

8.3 STRUCTURAL CHARACTER

The character of installation architecture varies according to the use of the structure and when it was built. This use and age variation can result in character incompatibilities. The difference in character may also result when the designer ignores the character and scale of adjacent buildings or uses an imitative technique unsuccessfully.

Character incompatibilities are a reality of the installation architecture at Fort Wainwright. The installation architecture has a rich history that encompasses over 65 years. Many of the early structures have been preserved and are still in use today. As the installation developed, buildings were constructed without regard to an installation theme. See Figure 8.3a.

The coordination of structural character on an installation provides a consistent and coherent "sense of order" and "sense of place". This relationship of design comes from using compatible scales, massing, form, color, texture, materials, and fenestration. These design techniques can be utilized to strengthen the relationships between facilities and, over time, create a cohesive character for the installation. They are further explained below.

Building 3210

New Company Campus Housing

Building 3709

Building 1045

Figure 8.3a

Incompatible Architectural Characteristics

8.3.1 Scale

Scale refers to the size of a building facade in relation to humans. Buildings that include predominant vertical facades, which dwarf the individual, are defined as monumental in scale. Buildings with more horizontal facades designed to relate more to the size of the human figure are defined as human scale. Monumental architectural design is typically utilized for more ceremonial buildings, such as worship centers, headquarters complexes, and hotel facilities. These buildings make use of large, glazed areas at entrances and oversized fenestration elements to create a scale appropriate to the building's use.

Ideally, the scale of most buildings on installations should be more human than monumental. However, in recent years, the use of monumental scale buildings for facilities that have traditionally been human scale is more prevalent. Multi-use and multi-story facilities are replacing smaller, individual use facilities. This is due, in part, to land availability and economic considerations.

All new construction should be compatible in scale with adjacent buildings. Scale and relief should be provided through roof form, fenestration, building articulation and landscape plantings. See Figure 8.3b.

8.3.2 Massing

Massing refers to the overall bulk or volume of a building or buildings. The size and proportion of the individual buildings in a grouping of buildings should be designed to be proportionally compatible with the adjacent structures. See Figure 8.3c.

If new buildings are larger than existing ones, the use of elements such as floor banding or horizontal articulation can be used to successfully affect scale.

If a new building is to be taller than the adjacent buildings, massing of certain elements of the new building in relation to the existing can provide a transition of scale from one building to the next.

Extremely large buildings should be articulated to avoid long, monotonous facades. Tall structures may be articulated either vertically or horizontally to achieve appropriate scale. See Figures 8.3d and 8.3e.

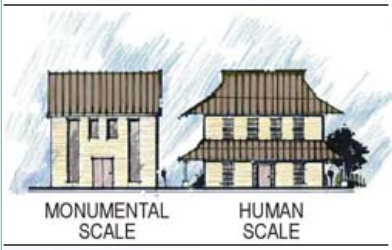


Figure 8.3b
Structure Scale

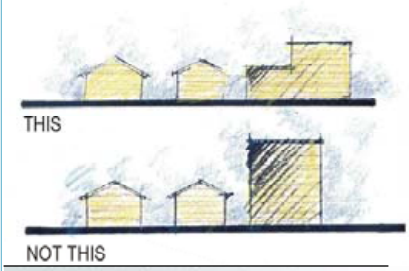


Figure 8.3c
Massing

Figure 8.3d
Articulation of Façade Creates Shadow Patterns and Adds Interest

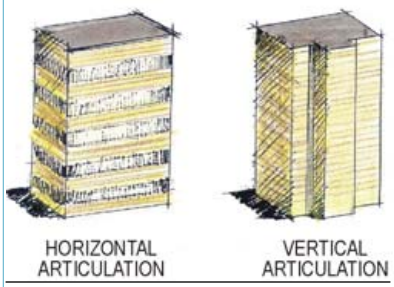


Figure 8.3e
Articulation to Provide Scale

8.3.3 Form

The form of a building is determined by its size, mass, shape, and proportions. The use of similar building forms provides continuity to the installation architectural impact. The result is a more aesthetically pleasing environment. General building forms at Fort Wainwright should be in accordance with the following guidelines.

8.3.3.1 One Story Buildings. One story buildings should have gable or hip roofs with broad overhangs. The use of double-pitched roofs is desirable, but may not be economically feasible. The plan should have a moderate degree of articulation.

8.3.3.2 Two-Story Buildings. Two-story buildings should have articulated plans and appear layered. The walls of the ground floor should have a plastered, masonry-like appearance in order to create a visual base. The material for the second floor walls should be textured. The roof should be a gable or hip, and if possible, double-pitched.

8.3.3.3 Three-Story Buildings or Higher. Buildings three stories or more in height should be articulated to avoid monotonous facades. The roof should be a low slope parapet or hip. See Figure 8.3f.

▲ **Figure 8.3f**
Roof Forms

8.3.4 Color

The use of a color scheme that is consistent throughout the installation, where possible, results in a continuity of buildings and contributes to a sense of place. However, color schemes throughout the installation often vary according to the visual theme and visual zone in which the structure is located. An overall color palette has been developed for Fort Wainwright, which is broken down into sub-palettes for use in different visual themes. See Figure 8.3g. This will create distinct areas within the installation, while allowing these areas to relate to the unity of the entire installation. See Appendix L, Exterior Color Charts.

▲ **Figure 8.3g**
Unique Facilities can be Identified by Varying the Installation Color Palette

8.3.5 Texture

The use of materials of similar texture in buildings helps to provide visual continuity for the installation.

8.3.6 Materials

The use of the same materials in the exterior finish and trim of buildings helps provide visual continuity. The exterior wall material used on each new project will differ depending on many factors including budget, availability, and maintenance. The basic materials selected, however, should be sensitive to the materials used on adjacent buildings. For example, if the predominant surrounding material is concrete, appropriate materials would be concrete or plaster. If the surrounding buildings have a variety of materials, the new building should incorporate the materials that will best serve to unify the complex. Similarly, roof materials should be similar in color and texture to surrounding buildings. See Appendix K, Exterior Materials Charts.

8.3.7 Fenestration

Building fenestration includes features such as doors, windows, and building decoration details. These features should be similar in arrangement, design, size, and proportion for architectural compatibility and visual consistency and continuity. See Figure 8.3h.

8.3.7.1 Entrances. Main entrances into buildings should be recessed into the building or have a simple canopy roof to announce the entrance. See Figure 8.3i. Air locks should be integral to the design of the building entrance. Buildings that have a ceremonial component to their function should have a ceremonial entrance.

8.3.7.2 Exterior Doors. Exterior doors should be treated similar to those of existing adjacent structures. If doors of adjacent structures are treated as separate elements, then doors in the new facility should be treated similarly. If the existing doors are grouped with other elements such as windows, then those similar elements in the new building should also be grouped. See Figure 8.3j.

8.3.7.3 Exterior Windows. Exterior windows should be treated similar to those of existing adjacent structures. If windows of adjacent structures are treated as separate elements, then windows in the new facility should be separate. If windows in the existing structure are grouped, then windows in the new building should also be grouped. See Figure 8.3j.

Figure 8.3h
Articulation of Fenestration Creates Visual Interest

Figure 8.3i
Building Entrances

Figure 8.3j
Door and Window Placement

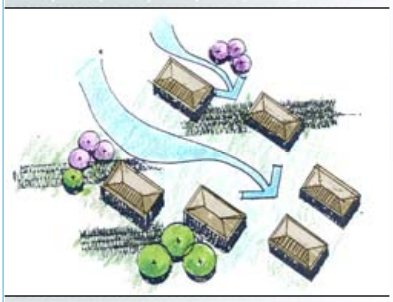
8.4 INDIGENOUS STRUCTURES

Sustainability in the design and construction of buildings includes incorporating time-proven building designs that are indigenous to the region and energy efficient. Indigenous design elements that incorporate energy conservations should be utilized in the design of new buildings. See Figure 8.4a.

▲ **Figure 8.4a**
Exterior Covered Entrances Promote Energy Conservation

8.4.1 Siting

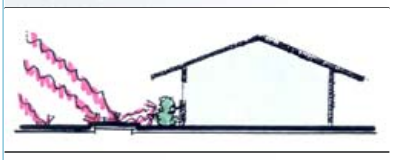
The siting of buildings plays an important role in energy efficiency. Buildings should be sited in a manner that will encourage air flow during the warmer periods while reducing heat loss during the cold periods. Sufficient space should be provided between buildings to channel air flow. Vegetation can also be utilized to channel and enhance air flow during the warm periods and act as a wind break in the cold periods. See Figure 8.4b.



▲ **Figure 8.4b**
Building Siting Can Encourage Natural Ventilation

Buildings should be sited to maximize south and west facing walls. All exterior walls should be insulated to meet or exceed regional standards.

Adequate space should be provided between buildings and paved areas for landscaping to reduce the reflected radiant heat from the paving while allowing for the efficient removal/storage of snow. See Figure 8.4c.



▲ **Figure 8.4c**
Landscaping Reduces Reflected Radiant Heating from Paved Areas

▲ **Figure 8.4d**
Indigenous Roof Form

8.4.2 Roofs

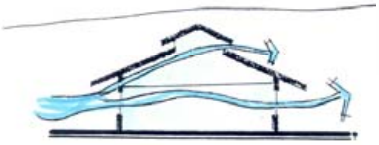
Roof overhangs should be utilized in as much as practicable for protection from solar radiation. Roof overhangs can also be utilized to provide shading for outside walkways. Roof slope should not shed onto building entries or pedestrian areas. See Figure 8.4d.

Building canopies, colonnades, and arcades are also an effective means for controlling solar radiation and providing protection from seasonal elements. See Figure 8.4e.

8.4.3 Windows

Window sizes and locations can be effective in controlling solar radiation. Windows in north facing walls should be minimized as the ability to capture heat gain from solar radiation is not available and the potential for heat loss increases. Louvers or other insulated sun shading devices on south and west facing windows can reduce solar radiation during warm periods while providing insulation during the cold periods. Maximizing window areas to take advantage of the summer prevailing wind and roof ventilation in naturally ventilated buildings can encourage air flow. See Figure 8.4f.

▲ **Figure 8.4e**
Building Eaves Can Provide Solar Radiation Protection



▲ **Figure 8.4f**
Building Form Can Encourage Natural Ventilation

8.4.4 Solar Energy

The collection of energy by active solar technologies is a valuable resource for the production of electricity, hot water and space heating and should be utilized whenever possible. However, solar panels can be unsightly if not properly integrated into the building design. Solar panels should be designed as integral units of the building envelope. Mounting panels parallel to the roof or wall plane, and as close to the structure as possible, is the most effective way to provide an integrated system. If this is not possible, roof mounted panels should be screened by parapets. Piping, valves, and other appurtenances should be hidden from view to the greatest extent possible. See Figure 8.4g.

▲ **Figure 8.4g**
Solar Panels Integrated Into Roof Design

8.4.5 Wildlife

The management of wildlife within the Cantonment Area of Fort Wainwright is an important component of both building and site design. Wildlife may become a nuisance if architectural or landscape features that attract wildlife are included in the building or site design. Some of the various animals which are typical of the region and may become a nuisance to Fort Wainwright include ravens, squirrels, black bears, moose and various seasonal insects. Where existing building features allow for the nesting or roosting of wildlife, the area should be appropriately modified to exclude the use of the feature by the wildlife.. Water should not be allowed to pond on low-slope roofs, sidewalks, plazas or any other feature on or around the building.

8.5 HISTORIC ARCHITECTURE

The visual integrity of historic buildings and areas on Fort Wainwright should be preserved and protected. Existing historical buildings should be restored whenever possible. If restoration is not feasible, buildings should be renovated in a manner that will preserve their historical character to the greatest extent possible. See Figures 8.5a and 8.5b. In the event that buildings are too deteriorated for either restoration or renovation and must be demolished, the replacement structure should be compatible with the demolished building and other adjacent older buildings in scale, form, and the use of materials.

▲ **Figure 8.5a**
Building 1562 - Then

▲ **Figure 8.5b**
Building 1562 - Now

Fort Wainwright has many historic buildings which were constructed immediately prior to and during America's participation in World War II. See Figure 8.5c. Ladd Field was designated a National Historic Landmark in 1985. This designation is in commemoration of the role that Ladd Field played in cold weather testing, World War II and the Lend-Lease program. The Ladd AFB Historic District, which overlaps the National Historic Landmark, is in recognition of the significant role of the Base played during the Cold War.

▲ **Figure 8.5c**
Airfield Operations are an Important Part of Fort Wainwright's History

8.5.1 Management of Historic Properties

The Army's management of historic properties is pursuant to the duties and responsibilities established by Congress under the National Historic Preservation Act (NHPA). The NHPA also created the National Register of Historic Places as the official listing of the nation's historic properties considered worthy of preservation. When working with historic properties the Army uses the following three categories.

8.5.1.1 Historic Buildings or Structures. These are significant buildings or structures, which are listed in or eligible for listing in the National Register of Historic Places.

▲ **Figure 8.5d**
General's Quarters - Then

▲ **Figure 8.5e**
General's Quarters - Now

8.5.1.2 Historic District. This is a distinct group of buildings, structures, or landscapes that possess significance and are listed in or eligible for listing in the National Register. See Figures 8.5d and 8.5e.

8.5.1.3 National Historic Landmarks. Buildings, structures, or landscapes listed in the National Register, but also recognized as nationally significant. National Historic Landmarks can either be listed individually or as a district.

8.5.2 Historic Guidance

For further guidance use Army Regulation 200-4 and Department of the Army Pamphlet 200-4. Specific requirements and recommendations for the treatment of historic properties are available in the National Park Service's Secretary of the Interior's Standards for the Treatment of Historic Properties. A working awareness of historic preservation policies and procedures followed by the Army Corp of Engineers can be found in the Technical Instruction (TI) 800-01, Design Criteria, Chapter 16, Preservation of Historic Structures. Also, see Appendix M, Historic Preservation Guidelines.

8.6 EXTERIOR BUILDING MATERIALS AND COLOR

Building materials make a major contribution to the scale, color, texture and character of a military installation. A limited palette of durable, low maintenance materials should be used that, while encouraging a variety of expression, provides a cohesive and consistent architectural character through the installation and within each visual zone. Materials should reflect the function of a building, and its hierarchy within the installation.

8.6.1. Exterior Building Material Guidelines

Use the following guidelines when selecting exterior building materials:

- Choose materials for their longevity and maintenance characteristics.
- Use materials with integral colors - avoid painting exterior colors.
- Use installation standard colors for exterior walls. Add accent colors sparingly. Accent colors can be used in recesses and to accent certain portions of a buildings façade.
- Use pre-finished material where possible – gutters, window frames, doorframes, etc.
- Use blended colors on pitched roofs.

8.6.2 Building Materials for Visual Themes

The list of building materials applicable to the Fort Wainwright Visual Themes is found in Appendix K, Exterior Materials Charts. The visual theme areas are described and illustrated in the following paragraphs and Section 5 further discusses them.

8.6.2.1 Airfield / Historic. The area of the main installation surrounding and including Ladd Field, specific to the established boundaries of the Ladd Field National Historic Landmark; generally bounded by Gaffney Road on the north and west, Ketcham Road on the east, and Montgomery Road on the south. See Figure 8.6a.

8.6.2.2 Company Campus. The central area of the main installation surrounding and including Monterey Lake generally bounded by the industrial area on the south and east, the airfield on the north, and town center on the west. See Figure 8.6b.

Administration Building

Airfield Facilities

Murphy Hall

Figure 8.6a
Facilities in the Historic / Airfield Area

Existing Barracks

New Barracks Under Construction

Figure 8.6b
Company Campus Facilities are Varied at Fort Wainwright

Northern Lights Inn

Post Exchange

Health Clinic

Bowling Alley

▲ **Figure 8.6c**

Town Center Facilities are Varied at Fort Wainwright

8.6.2.3 Town Center. The area of the main installation generally bounded by the industrial area to the west, the company campus to the north and east, and recreation/open space to the south. See Figure 8.6c.

8.6.2.4 Housing. The three separate areas of the main installation located in the west area on the South Post, north of Ladd Air Field on the North Post, and north of the Chena River. See Figure 8.6d.

Newly Constructed Duplex Structure

Newly Constructed Townhouse Structure

Existing Multifamily Housing

▲ **Figure 8.6d**

Family Housing has Many Forms at Fort Wainwright

8.6.2.5 Recreation / Open Space. The southern portion of the main installation generally bounded by the installation perimeter to the south and west, South Gate Road to the east, and Alder Avenue to the north, including the existing ball fields. See Figure 8.6e.

8.6.2.6 River Corridor. The areas adjacent to Chena River that are utilized for recreational purposes. See Figure 8.6f.

▲ **Figure 8.6a**
Chena River

▲ **Figure 8.6f**
Chena River

8.6.2.7 Industrial. The southeast area of the main installation that is utilized for industrial type uses and for vehicle maintenance and storage facilities. See Figure 8.6g.

8.6.3 Exterior Building Color

Color charts have been developed for specific geographical areas giving consideration to climate, geography, culture, facility function, historical context, architectural character, etc. Color changes will be implemented during normally scheduled paint cycles. See Appendix L, Exterior Color Charts.

Color is closely linked to the appropriate selection of exterior building materials and is a critical design element in relating adjacent buildings and creating a compatible visual environment within an installation.

Repaint historic buildings or structures to match the Historic District existing colors or colors that can be documented to have been used on that building.

Ballfield Structure

Physical Fitness Center

▲ **Figure 8.6e**
Modern Recreational Facilities at Fort Wainwright

Building 3498

Building 3477

Building 3490

▲ **Figure 8.6g**
Diverse Industrial Facilities at Fort Wainwright

▲ **Figure 8.7a**
Entrance to Building 1004 is Well Defined

▲ **Figure 8.7b**
Building Entrance Should be Visually Inviting

8.7 BUILDING ENTRANCES

A building entrance is a primary feature of any building design. The entrance should be defined and recognizable as the point of entry regardless of the size or importance of the building. See Figure 8.7a.

The entrance to a building should be in a prominent location and should be oriented toward the primary adjacent public spaces such as a courtyard, lawn, parking lot, or street. See Figure 8.7b.

The details of an entrance should be designed to provide continuity with other entrances to the building and the entrances of adjacent buildings.

8.8 SERVICE AREAS

Service areas, such as loading docks and trash dumpsters, should be screened from the views of primary use areas such as entrances, courtyards, gathering areas, streets and parking lots. See Figure 8.8a.

Service areas should be screened as an enclosure by using walls and landscaping. Screen walls should be between six and eight feet high and should be in harmony with the adjacent building. In areas where bears, ravens or other wildlife present a nuisance, screen walls or enclosures should incorporate

▲ **Figure 8.8a**
Planting and Berms Can Screen Service Areas

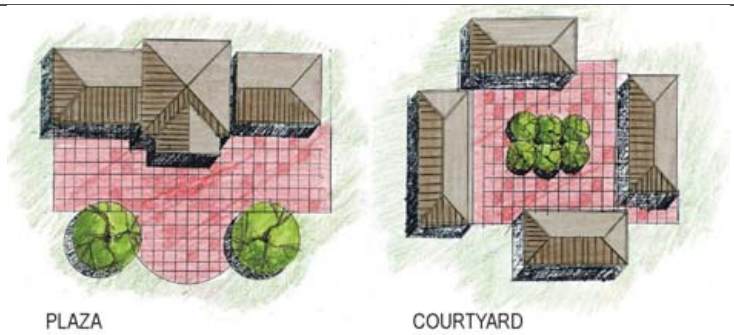
wildlife resistant features. Should operable gates be included in the design of the enclosure, the material should be stable, low maintenance and in harmony with the screen walls. Hardware should be provided to secure the gate and reduce the likelihood of damage by service equipment. In lieu of providing a resistant enclosure, a wildlife resistant container should be provided that will effectively protect the trash and garbage from the wildlife nuisance.

Trash and garbage collection areas must be located a minimum of 25 meters (82 feet) from troop billeting, family housing areas (containing more than 12 units), and stand-alone retail facilities. They will be placed a minimum of 10 meters (33 feet) from all other inhabited structures (UFC 4-010-01, Table B-1).

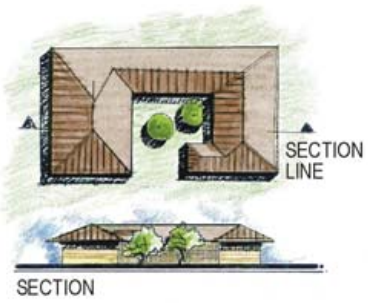
8.9 PLAZAS AND COURTYARDS

Plazas and courtyards can be located as part of the primary entrance to a building, or as an extension of non-primary entrance areas to the outside. See Figure 8.9a. Wide, paved entrance plazas need vehicular barriers.

Courtyards, when functionally appropriate, should be considered in new buildings. Such landscaped courtyards may be challenging to incorporate in the Alaskan environment, however, when integrated successfully can contribute significantly to the aesthetic quality of the building and its surroundings. In addition, courtyards contribute to potential energy conservation by utilizing natural ventilation and daylighting. Courtyards should not be enclosed on all sides as exterior access is required for landscaping maintenance. See figure 8.9b.



▲ **Figure 8.9a**
Plazas and Courtyards



▲ **Figure 8.9b**
Interior Courts Integrate Buildings and Landscape

8.10 BUILDING ACCESSIBILITY

All structures or facilities, other than the exceptions mentioned below, must meet the Americans with Disabilities Act Accessibility Guidelines (ADAAG) and the Uniform Federal Accessibility Standards (UFAS) accessibility standards. This requirement includes buildings listed in or determined eligible for listing in the National Register of Historic Places. See Appendix M, Section M.3.4.8. The more stringent standards apply in the event of conflicting guidelines. See Figure 8.10a.

Any building or facility that is specifically restricted by occupancy classification to be used only by able-bodied personnel during the expected useful life of the building or facility need not be accessible (military exclusion is provided by UFAS 4.1.4 [2]), but accessibility is recommended since the intended use of the facility may change with time. In particular, the following facilities need not be designed to be accessible: unaccompanied personnel housing, closed messes, and vehicle maintenance facilities.

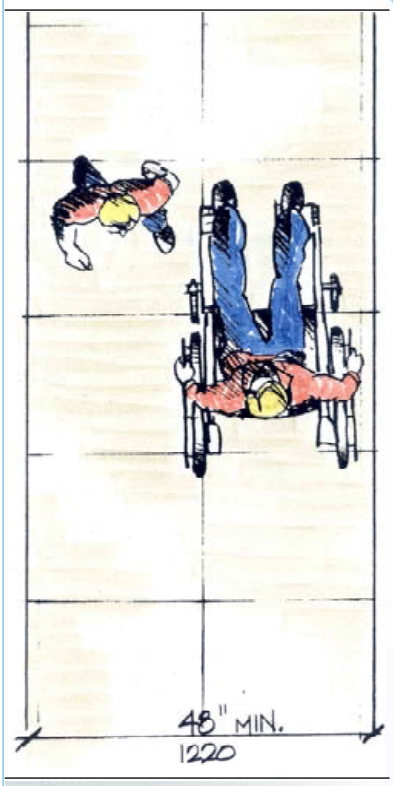


Figure 8.10a
Facilities Must Meet ADAAG and UFAS Standards

8.11 RENOVATIONS AND ADDITIONS

When existing buildings are renovated or additions are constructed, the architectural character of the renovation or addition should be compatible with the architectural character of the existing building and the adjacent buildings See Figure 8.11a. This compatibility includes the use of materials, color, shape, size, scale, and massing in the addition or renovation that blends with the architectural character of the existing structure. However, when renovating or adding to historical buildings one should be able to differentiate between the historic fabric and the new material.

Figure 8.11a
Renovations and Additions Should be Compatible with the Original Building

8.12 BUILDING MAINTENANCE

Buildings designed and constructed to incorporate sustainable design criteria should minimize life cycle, energy and maintenance costs through proper selection of forms, materials and construction details.

8.13 INTERIOR DESIGN

Inhabited spaces, that require the selection of furnishings or equipment, should be designed by professional interior designers. Interior design impacts the functioning and productivity of people. People spend the majority of their time inside, working, eating, sleeping, and relaxing. The productivity, comfort, and safety of the personnel living, working, or relaxing in the facilities they inhabit is directly related to the quality of interior design provided within the facility.

Interior design is required on building construction and renovation projects regardless of the funding source. General interior design guidance and interior design guidance for medical facilities and family housing is provided at the following websites.

- General Guidance. Design Guide (DG) 1110-3-122, Design Guide for Interiors.
- Medical Facilities. Interior design guidance for medical facilities is furnished in Military Handbook 1191, Medical Military Construction Program Facilities Design and Construction Criteria.
- Family Housing. Interior design for family housing will be in accordance with Technical Instruction (TI) 801-02, Family Housing.

Engineering Regulation (ER) 1110-345-122, Engineering and Design, Interior Design, defines projects that require interior design, design requirements and responsibilities of participants, and methods and funding for execution of interior design. For cost estimating see Air Force Interior Design Guides, Chapter 3, Cost Estimating Guide.

8.13.1 Space Planning

Space planning is the basic building block of the facilities program for administration and operational facilities. Army Regulation (AR) 405-70, Utilization of Real Property, Appendix D, provides numerical planning allowances and addresses the quantities for programming space for personnel and equipment.

Space planning takes into consideration the following: who will be using a space, how this space will be used, what activities will take place there, and the interaction of other people in the building. Professionally trained interior designers are best at gathering the required information to formulate a space utilization plan.

8.13.1.1 Bubble Diagrams. Bubble diagrams show the working relationship of one group to another. See Figure 8.13a. They do not represent a space plan or floor plan, but the relationship of organizations to one another. The adjacency requirements for individuals, user groups, and support functions to accomplish the product of service provided are analyzed. Bubble diagrams assist in organizing an existing facility as well as a new facility.

8.13.1.2 Blocking Diagram. An extension of the bubble diagram is the block diagram. The blocking diagram is made more regular and is for fitting inside the proposed floor plan. See Figure 8.13b.

8.13.1.3 Space Plan. The next step in the process is the development of the actual space plan. The layout of the space plan is detailed to the workstation level.

8.13.2 Electrical and Communications

8.13.2.1 Electrical Power. Electrical power supply in the United States is available in a number of configurations, the most common of which are 120/240 volt, single-phase, 3-wire; 120/208 volt, 3-phase, 4-wire; and 277/480 volt, 3-phase, 4-wire.

Design standards for interior electrical systems are found in Unified Facilities Criteria (UFC) 3-520-01, Interior Electrical Systems. Compliance with this UFC is mandatory for the design of interior electrical systems. This UFC establishes:

- Criteria for the design of interior electrical systems.
- System-level design criteria.
- Facility-level criteria for interior electrical systems.
- A starting point for determining the applicable design criteria for a facility.

8.13.2.2 Communications. Communications systems handle the transport of telephone and data networks (e.g. video, multi-media, teleconferencing, data transfer, facsimile transmission, and voice conversation).

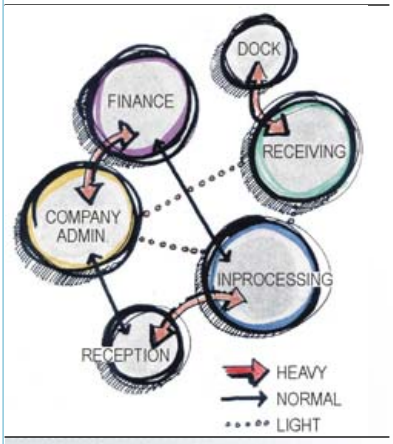


Figure 8.13a
Bubble Diagrams Indicate Functional Relationships

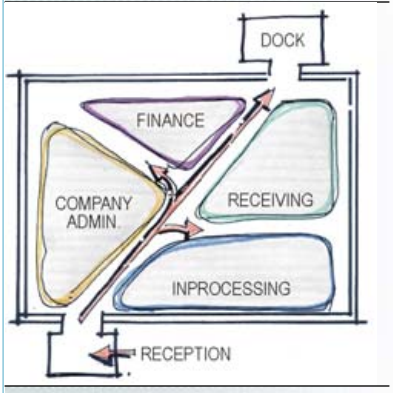


Figure 8.13b
Blocking Diagrams Transform Bubble Diagrams into Building Layouts

The design criteria for interior wiring of communications and information systems are found in the Installation Information Infrastructure Architecture (I3A) Design and Implementation Guide. This guide shall be used as the basis for designing both the premises distribution system (inside plant) and the outside plant cable distribution system for all new construction and renovation projects. The Installation Information Infrastructure Architecture (I3A) Design and Implementation Guide is Appendix A of U.S. Army Corps of Engineers Engineering Technical Letter (ETL) 1110-3-502, Telephone and Network Distribution System Design and Implementation Guide. Additional information can also be found in Building Industry Consulting Services, International (BICSI) publications.

8.13.2.3 Electrical Distribution. Distribution of electrical and electronic systems through a building is generally accomplished through branched distribution. A central chase or trunk will run the length or height of the facility, then horizontal distribution systems run from a central connection closet to the end user. This distribution may be overhead or underfoot, in many instances it is a combination of the two.

8.13.3 Color

Color plays an important role in the design of interior environments. Color has a large impact on how we feel and behave in a space. Its quality affects emotions directly and immediately. Successful interior designs harmonize form, space, light, and color.

Information on color and light, optical effects, basic color theory, color schemes, and applying color in facilities can be found in Corps of Engineers, Design Guide (DG) 1110-3-122, Design Guide for Interiors, Chapter 3, Light and Color, and in the Air Force Interior Design Guides, Chapter 9, Color Principles, Part 1 and Part 2.

8.13.4 Acoustics

Acoustics as an environmental variable significantly impacts the human impression of an interior environment. Productivity, speech intelligibility, privacy, safety, positive user attitude and response, and environmental comfort all depend on proper acoustic design. The interior designer is concerned with reducing unwanted noise and preserving desirable sound in a space. Sound can be controlled in the following three ways: eliminate the source, isolate the source, i.e. provide a barrier between the user and the source or mask the offending sound.

A discussion of the dynamics and control of acoustics can be found in the Design Guide (DG) 1110-3-122, Design Guide for Interiors, Chapter 5.

8.13.5 Interior Lighting

Lighting will be designed with the work activities being performed in mind. Always supplement overhead lighting with task lighting and use architectural lighting in entrances, corridors, waiting rooms, and other spaces to light artwork and provide interest.

For Army installation buildings to achieve a high quality lighting environment, lighting equipment/systems selected must satisfy both performance and aesthetics. See Figure 8.13c. Factors for consideration in this selection are based on the following: lumens per watt, color temperature, color rendering index, life and lumen maintenance, availability, switching, dimming capability, and cost.

Lighting design approaches and lighting applications can be found in the following publications:

- Technical Instructions (TI) 811-16, Lighting Design; Design Guide for Interiors, DG 1110-3-122, Chapter 5.
- Air Force Interior Design Guides, Chapter 10.
- Unified Facilities Criteria (UFC) 3-520-01, Interior Electrical Systems, Appendix F.

Information on lighting maintenance, types, and lamp trouble-shooting is found in TM 5-683, Electrical Interior Facilities, Chapter 9.

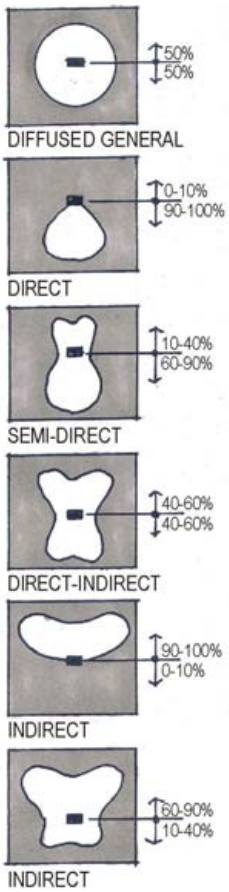


Figure 8.13c
Typical Distribution of Light

8.13.6 Finishes

Interior finish standardization is important for administrative and financial reasons. Standardization presents a unifying element throughout all buildings that is more cost effective, efficient, and easy to maintain.

Installation finishes standards are found in Appendix I, Interior Finishes Standards of this guide.

8.13.7 Furnishings

Furnishings are elements added to a building for utility or ornamentation following construction. These include furniture such as chairs, desks, sofas, and tables and also cabinetry, window treatments, signage, accessories, art, and plants. When selecting furnishings for an interior environment, care should be taken to include their design as an integral part of

the overall concept and to ensure coherency between architecture, materials, furniture, art, and signage. The following paragraphs discuss the various furnishings components and give guidance on the programming, acquisition, functionality, and maintenance of the various components.

8.13.7.1 Furniture. Furniture systems are a wide range of furniture types comprised of components to create a custom designed work environment to meet specific functional needs. Furniture includes seating and case goods. Case goods are furniture elements constructed from box-like components. These include desks credenzas, file cabinets, etc. Case goods fall under two major categories: conventional and modular. Conventional case goods are delivered as pre-assembled, ready-to-use products. Modular case goods are manufactured as separate pieces that may be grouped into a number of different arrangements.

Systems Furniture. Systems furniture is ergonomically designed to meet a variety of conditions and requirements. See Figure 8.13d. Careful planning is critical during the initial stages of designing new systems furniture layouts. Power and communications requirements must be determined and planned so they are available at the locations were they are needed. Provisions for furniture systems electrical and data requirements must be made a part of the construction documents. See paragraph 8.13.2 for interior design standards for electrical and communications information. Surface mounted conduit and power poles are unsightly and should be avoided.

For a detailed discussion on the Army Interior Design Process (planning and programming, procurement, and design services) and Planning for Administrative Work Environments (data collection, analysis, space planning, layout, design coordination, documentation, and implementation) see Appendices A and B of Design Guide for Interiors, DG 110-3-122.

Budgeting for Furniture Systems. Furniture systems represent a significant percentage of a project. Furniture systems are Operations and Maintenance (O&M) funded and should be included in the project scope along with such items as built-in casework. Furniture systems are listed on the DD Form 1391 as a non-add entry in Block 9 for "Equipment Provided for Other Appropriations". In Block 12b, the furniture systems should be as an O&M funded item, the fiscal year the funds are requested and the line item cost. Accessories can

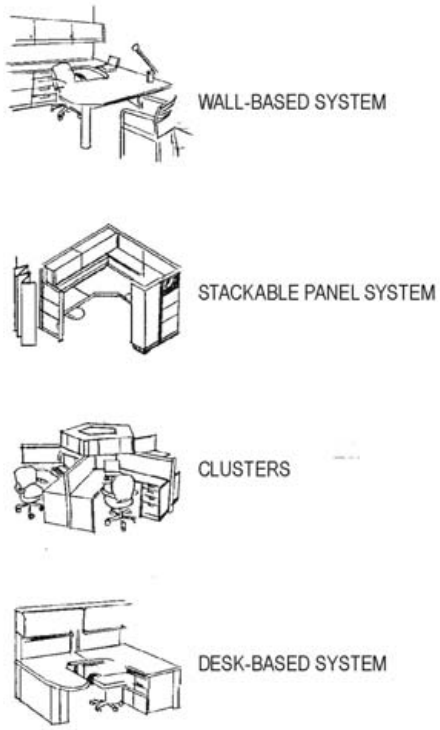


Figure 8.13d
Systems Furniture Types

amount for a significant portion of the furniture systems package and should be budgeted with the basic system components.

Systems Furniture General Design Guidelines.

- During the initial planning of new systems furniture, consider the condition and appearance of existing paint, wall coverings, carpet, and base of the area.
- When planning the location of office equipment and break areas, do not place heat generating devices, such as coffee makers or copiers, near a thermostat.
- Circulation paths should be clear and easy to navigate.
- Topics that should be considered when designing new systems furniture layouts include:
  - Function of the office.
  - Adjacencies of personnel and activities.
  - Meeting and conference room requirements.
  - Individual storage needs.
  - Areas for common use office equipment such as the copier and fax.
  - Reception area with waiting and guest seating space.
  - Special furniture or needs of a particular office, such as computer desks or extra storage space.
  - Communications equipment.
  - Task lighting, daylight, and ambient lighting.
  - Special security requirements.
  - Budget constraints.
  - Flexibility to allow future changes.
  - Schedules of design, delivery, and installation.
  - Air conditioning.
  - Acoustic performance requirements.

Systems Furniture Panel Design Guidelines.

- Full height panels should be used only in areas with a specific need for increased privacy or separation, such as conference rooms, break areas, and certain private offices.
- Provide glass panels in corners and at windows to open up the space and allow natural light to filter into the center of the space.
- Provide access panels in the systems furniture to allow for communications connection.
- Panels should generally not exceed 66 inches in height in an open office area. Taller panels cut off air circulation, block views and natural light, and create a closed-in feeling.

- The location and use of taller panels must be carefully planned and coordinated because they can interfere with the proper functioning of air conditioning diffusers, fire sprinklers and smoke detectors, lighting fixtures, switches, thermostats, and sensors.
- Panels should not block service access to mechanical, electrical, or telephone equipment.
- Do not install panels in front of windows, as they will block natural light for the entire area. Panels installed perpendicular to windows should be installed at a window mullion.

System Furniture Color and Texture Guidelines.

- To maintain a professional atmosphere, the style and types of systems furniture should be consistent throughout the area.
- The materials and colors of the panels and chairs should be durable. They should be heavy-duty and stain resistant.
- The fabric on the systems furniture panels should harmonize with the overall building color scheme.

8.13.7.2 Window Treatments. Window treatments serve many purposes in an interior environment. They provide privacy, light and sun control, reduced energy consumption, and decreased sound transmission. The type of treatment, as well as the type of material used, will determine the effective of the treatment in and give instance. The following should be taken into consideration when selecting fabric type:

- Sheer or semi-sheer fabrics will provide minimum privacy, shade, and energy conservation.
- Heavy, opaque fabric and hard treatments should be used only where total light exclusion is required.
- Full, soft treatments will absorb more sound than hard treatments.
- Insulated treatments should be incorporated where practical to reduce energy consumption.

Window treatments should complement and support the interior design of a space. See Figure 8.13e. Window treatments also conceal architectural defects, or change the apparent size, shape, and character of a room. Consider the following factors when making a window treatment selection:

- Light control requirements.
- Architectural style.
- Historical context.

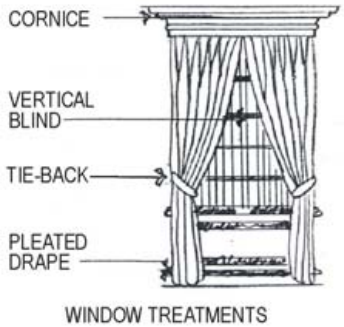


Figure 8.13e
Window Treatment Should Enhance Interior Space and Control Natural Light

8.13.7.3 Signage. Signage may be informational, directional, or regulatory. Informational signage provides the user with information and includes room or area labels, bulletin boards, menus, artwork descriptions, and emergency information. Directional signage directs circulation and provides orientation. It includes entry directories, directional arrows, and maps. The purpose of regulatory signage is control: providing prohibitions, warnings, emergency instructions, and use restrictions. See Figure 8.13f.

Interior signage is covered in detail in Technical Manual (TM) 5-807-10, Signage. The manual includes graphics for the following: directional, identification signs, information, and pictograms.

8.13.7.4 Accessories. Accessories may be either functional or decorative. Whatever the purpose, accessories serve to make a room appear inviting and personal. See Figure 8.13g.

Functional Accessories. These accessories include letter trays, coat racks, lamps, product displays, magazine racks, brochure racks, and message boards. This group of accessories should be selected for utilitarian aspects as well as aesthetic qualities that may contribute to the total design concept. Repetitive elements can act as unifiers and help tie the accessories to the design theme.

Decorative Accessories. Decorative accessories are objects such as artwork and plants.

▲ **Figure 8.13g**
Decorative Accessories Can Add a Sense of Uniqueness

▲ **Figure 8.13f**
Floor Directory Sign

8.13.7.5 Art. The preparation of artwork to be displayed and positioned in an interior space involves many important decisions. The designer must work closely with the user to determine placements that are satisfactory for both functional and visual composition.

Some of the factors to be taken into consideration in the selection of are:

- Quality (posters, prints, original art)
- Subject matter
- Medium (photography, paper, oil, etc.)
- Size
- Placement
- Method of display (permanent collection or rotating program)
- Lighting
- Integration with design scheme

8.13.7.6 Plants. Plants add color, texture, and variety of form and shape to the interior. They bring a natural element to an interior space. They are used for focal points, screen, and for psychological effect. Increasingly, plants are being incorporated into the interior environment for the health and well-being of the user, as well as enrichment of the space.

When selecting plants, their light, water, and temperature needs, continuing care requirements, and ease of replacement must all be considered. Also, the types and amount of light the space has (direct or indirect) daylight, fluorescent, or incandescent must be considered. Plants should not be positioned such that their location presents a problem when watering.

Detailed information on interior planting to include design considerations (light requirements, temperature, atmosphere considerations, and planters), plant maintenance, and a listing of recommended plants can be found at the following web locations (Air Force Interior Design Guides, Chapter 8):

- Design Considerations
- Maintenance
- Recommended Plant List

8.13.8 Unified Facilities Guide Specifications

See the "Division 12 - Furnishings" section on the Construction Criteria Base website for Unified Facilities Guide Specifications for furnishings.

8.13.9 Installation Furnishings Standards

Installation furnishings standards have not been established. Appendix J, Interior Furnishings Standards of this guide is reserved for these standards when they are established.

8.13.10 Interior Operations Policies

To preserve the quality of facilities, operations policy is set between the user and the installation management. The user is responsible for preserving the visual appearance of the facility, and installation management is responsible for providing maintenance needed to preserve facility quality. Interior operations policies address the following issues (See Appendix N, Housekeeping Rules):

- Housekeeping responsibilities.
- Policy to prevent and eliminate visual clutter.
- Carpet cleaning, repair, and replacement policy.
- Height restrictions for partitions and furniture.
- Policy on buildings modifications including: partitions, painting, window treatment, HVAC, lighting, and the installation of communications and electric wiring.
- Maintenance of directories and signage.
- Smoking and eating locations.
- Procurement information on matching or compatible furniture.
- Policy on personalization and plants.

8.13.11 Interior Appearance Policy

The following are Army standards to follow.

- Keep work areas cleared of clutter. Cleanup, throw away.
- Avoid hanging things in the work area. Find another way to refer to organization charts, personnel listings, and calendars, other than having them hung on walls or partitions except framed artwork, diplomas, awards, etc.
- Notes and references hung on partition walls should be kept below the height of the partitions. Some things may be mounted on the partitions by hooking into the metal supports between the partitions, but not by hooking into the fabric.

- Anything not contributing to the overall décor of the work area should be put in a drawer or on a shelf behind a closed door.
- Do not overwhelm the work area décor with an excess of plants or personal artifacts.
- Thin out your files.
- Keep walkways into work areas open and free of clutter. Do not store things on the floor, or on top of shelves or partitions.
- Office chiefs should consider the overall office appearance and visual contrasts between work areas.
- Be sure that anything you do in your work area contributes to color coordination, rather than detracts from it.
- Keep vacant workstations and common areas clean. Do not use them as a dumping area for things you do not know what to do with.

8.14 KEY FACILITY TYPES STANDARDIZATION

The Assistant Chief of Staff for Installation Management (ACSIM) establishes Army facility standards and approves deviations from the standards.

8.14.1 Residential Communities Initiative

The intent of the Residential Communities Initiative (RCI) is to improve the housing for military families by providing quality housing that is built in attractive neighborhoods.

The Military Housing Privatization Initiative (MHPI) legislation allows developers to build housing to local standards. In those areas where local standards do not meet the quality of life requirements of soldiers, the Community Development and Management Plan (CDMP) process allows a negotiated determination of those standards. To ensure a uniform level of quality throughout RCI, Headquarters, Department of the Army has developed a "Quality Standards for New and Replacement Residential Communities Initiative (RCI) Family Housing" to be used as reference points during CDMP preparation.

All RCI projects planned or under design will meet the "Gold" SPiRiT rating (as of 18 March 2003). See Assistant Secretary of the Army Memorandum Subject: Sustainable Design and Development Requirements, dated 18 March 2003.

8.14.2 Department of the Army (DA), Facilities Standardization Program

Under the DA Facilities Standardization program, standard design packages are developed for facility types that are repetitively designed and constructed at Army installations. These design packages are developed to the definitive design level (10 to 15 percent) and once approved are mandatory for Army MILCON.

Currently, there are 31 DA standard design packages. Headquarters, U.S. Army Corps of Engineers has established eight Centers of Standardization to develop and maintain the definitive and design packages. See Appendix Q, DA Facilities Standardization Program Centers of Standardization for a list of the various centers and the facility type assigned to each center. (Centers of Standardization homepage.)

Army Chapel Design Standards are complete and approved. See The Army Standard for Chapel Construction – January 2004 and Memorandum for Record, subject: The Army Standards for Chapels, dated 21 January 2004.

8.14.3 Unaccompanied Personnel Housing (Army Barracks Modernization Program)

The Army's Barracks Modernization Program is based upon a whole community approach providing modernized private living and sleeping areas for soldiers as well as a more functional work environment. This is being realized with the construction and renovation of barracks, and associated Company Operations Facilities (COF), Battalion Headquarters (BN HQ) and Brigade Headquarters (BDE HQ), and Dining Facilities (DEFAC). For a detailed discussion of the Army Barracks Modernization Program see the Army Barracks Master Plan. The Army Barracks Master Plan only includes requirements for activity duty permanent party soldiers' barracks.

8.14.3.1 Army Barracks Standards. The Army Barracks Modernization Program design criteria give commanders and contractors the direction to incorporate best business practices around a modular floor plan. The Army Barracks Master Plan, Appendix I, Army Barracks Standards, promotes barracks with an appropriate balance between private and common areas. The Vice Chief of Staff of the Army (VCSA) specified the “New Army Barracks Construction Criteria” in his Memorandum Subject: New Barracks Construction Criteria, dated 11 July 2002 in which he strongly endorsed the new standards. The criteria are further revised in Memorandum Subject: Revised

Barracks Construction Criteria, dated 1 May 2003 which makes the following four changes to the Army Barracks Standards:

- Establishes the two-bedroom/one bath module as the standard module
- Requires installation of a stove or cook top
- Requires laundries in the barracks
- Eliminates the separate solider community building

8.14.3.2 Furnishings. Acquisition of new furnishings is planned and accomplished in concert with the facility design and construction schedule so that delivery of the new furnishings coincides with the beneficial occupancy date (BOD).

The U.S. Army Interior Design Manual (IDM) for Single Soldiers provides guidance to help furniture managers prepare order packages. The manual uses standard Army furniture specifications (i.e. medium oak wood furnishings or acceptable wood/steel alternatives), construction and fabric specification, and specific information for authorized items of furniture. The manual also contains standard living/sleeping room arrangements, and SCB plans with color schemes. The manual includes information on waiver requirements, the procurement process, order forms, and final inspection checklist.

8.14.3.3 Construction Design Criteria. Construction design criteria for COFs, BBN HQ buildings, BDE buildings, and DEFAC facilities can be viewed on the web at ProjNet.

8.14.4 Army Lodging

The Army Lodging Standards promote economies in serving the Army traveler, but not at the expense of quality or service. The standards define the facilities and the level of service the Army traveler should expect.

The following standards provide the level of service that a guest should expect when they travel to an Army installation. That expected level of service should be consistent from installation to installation. The following documents provide the service, operations, and facilities standards for Army Lodging.

- Army Lodging Standards for Service
- Army Lodging Standards for Operations
- Army Lodging Standards for Facilities

8.14.5 Morale, Welfare, and Recreation (MWR) Branded Theme Operations

The U.S. Army Community and Family Support Center (CFSC) through its Theme Operations, offers comprehensive theme packages pertaining to restaurants and entertainment centers. The packages are customized to the installation.

CFSC will conduct an assessment for market viability, provide architectural designs, and other promotional items. Information on the CFSC Branded Theme Operations to include how to get a theme operation, management support, and food service support is located on the CFSC website at the Army Brand Theme Operations Home Page.

8.14.6 Range Standards

The Army Sustainable Range Program (SRP), proponent is HQDA Office Deputy Chief of Staff Operations, ODCSOPS/G3 (DAMO-TRS), phone number (703) 692-6410. To contact SRP technical support call (256) 895-1535 or e-mail RTPL@HND01.usace.army.mil.

The SRP develops and manages standard designs for Army Ranges in accordance with AR 210-21 and Training Circular 25-8 Army Training Ranges. The Range Standards are available on the following web pages.

- Design Manual for Remoted Target Systems (RETS) Ranges, CEHNC 1110-1-23 Manual.
- Revised Range Design/Construction Interface Standards.
- Unexploded Ordinance Considerations in the Planning, Design, and Construction of Ranges, Supplement to CEHNC 1110-1-23 Manual.

8.15 SEISMIC POLICY

The minimum performance objective for Army facilities is Substantial Life-Safety. To ensure compliance, seismic evaluations and mitigation of unacceptable seismic risks shall be performed. Higher levels of seismic protection for mission essential facilities will be considered in the evaluation.

8.15.1 Seismic Evaluation

Guidance for the seismic evaluation of existing facilities is given in TI 809-05, Seismic Design Evaluation and Rehabilitation for Buildings. Buildings will have a seismic evaluation performed when:

- A change in the building's use causes a change in the occupancy category, as defined in TI 809-04, Seismic Design for Buildings, to a category of greater importance (lower category number).
- A project is planned which causes the capacity of the structural system or components to be reduced to 90 percent or less of original stability and strength.
- A project will significantly extend the facility's useful life or will significantly increase the facility's value and the cost exceeds 50 percent of the current replacement value.
- A facility is damaged or is deemed to be an exceptionally high risk to occupants or to the public.

8.15.2 Exceptions to Seismic Evaluations

Existing facilities are exempt from seismic evaluation if:

- The original design was done according to the provisions of the 1982 or later edition of TM 5-809-10, or the 1988 or later edition of TM 5-809-1.
- Replacement is scheduled within five years.
- The facility is intended only for minimal human occupancy, and occupied by persons for a total of less than two hours a day.
- The facility is a one or two-family dwelling, two stories or less, located in zone 1 or 2, as shown in TM 5-809-10.
- The gross area is less than 3,000 square feet (275 square meters). Mitigation of unacceptable seismic risks. If the seismic evaluation determines that the facility does not meet Substantial Life-Safety or higher performance standards, as appropriate, unacceptable seismic risks will be mitigated. Rehabilitation will be performed in accordance with TI 809-05.

8.15.3 New Facilities or Additions or Extension of Existing Facilities

New facilities and additions or extension of existing facilities will be designed to provide the level of seismic protection required by TI 809-04.

8.16 PHYSICAL SECURITY REQUIREMENTS

To assure the required physical measures are met the installation Provost Marshall or Physical Security Officer will be coordinated with during the planning, design, and construction of all construction projects. (AR 190-13, The Army Physical Security Program, Paragraphs 1-26). See Section 12, Force Protection for a more detailed discussion regarding antiterrorism measures.

8.17 SALE AND OUTLEASE OF ARMY ASSETS

In an effort to offset some of the impacts of constrained resources, the Army has implemented initiatives that improve cost effectiveness and efficiency of installation operations. To the extent permitted by law, funds that become available as a result of these initiatives are retained by, or returned to, garrison commanders.

The Office of the Assistant Secretary of the Army for Financial Management and Comptroller (OASA (FM&C)) has developed the "Sales and Outlease of Army Assets - Installation Guide" to assist garrison commanders in using the sales and outlease program. The guide provides an overview of major policies, procedures, and responsibilities pertaining to the following three major initiatives of the program:

- Sale of Real Property
- Outlease of Real Property
- Outlease of Personal Property

8.18 ARMY STANDARDS

The following cited Army Standards shall be met.

- Army Regulation (AR) 140-483, *Army Reserve Land and Facilities Management*
- Army Regulation (AR) 200-4, *Cultural Resources Management*
- Army Regulation (AR) 350-19, *The Army Sustainable Range Program*
- Army Regulation (AR) 420-70, *Buildings and Structures*
- Unified Facilities Criteria (UFC) 1-300-05A, *Installation Support*

- Unified Facilities Criteria (UFC 3-301-05A, *Design: Seismic Evaluation and Rehabilitation for Buildings*
- Unified Facilities Criteria (UFC) 3-310-03A, *Design: Seismic Design for Buildings*
- Unified Facilities Criteria (UFC) 3-520-01, *Interior Electrical Systems*
- Unified Facilities Criteria (UFC) 4-010-01, *DoD Minimum Antiterrorism Standards for Buildings*
- Unified Facilities Criteria (UFC) 4-022-01, *Security Engineering: Entry Control Facilities / Access Control Points*
- Unified Facilities Criteria (UFC) 4-171-05, *Design: Guide for Army Reserve Facilities*
- NG Pam 415-12, *Army National Guard Facilities Allowances*
- Americans with Disabilities Act Accessibility Guidelines (ADAAG)
- Uniform Federal Accessibility Standards (UFAS)
- Secretary of the Interior's Standards for the Treatment of Historic Properties
- Technical Guide for Installation Information Infrastructure Architecture (I3A). Available through Army Knowledge Online (AKO). Search for “I3A”.
- TM 5-807-10, *Signage*
- TM 5-809-10/Navy NAVFAC P-355/Air Force AFM 88-3, Chap 13, *Seismic Design for Buildings*
- TM 5-809-10-2/Navy NAVFAC P-355.2/Air Force AFM 88-3, Chap 13, Sec B, *Seismic Design Guidelines for Upgrading Existing Buildings*
- Standards of Seismic Safety for Existing Federally Owned and Leased Buildings
- Army Barracks Master Plan, Appendix I, Army Barracks Standards
- Memorandum Subject: Revised Barracks Construction Criteria, dated 1 May 2003
- Quality Standards for New and Replacement Residential Communities Initiative (RCI) Family Housing
- Army Lodging Standards
- Design Manual for Remoted Target Systems (RETS) Ranges, CEHCN 1110-1-23 Manual

- Unexploded Ordinance Considerations in the Planning, Design, and Construction of Ranges, Supplement to CEHNC 1110-1-23 Manual
- Army Chapel Standard Definitive Design
- Army Standard for Chapel Construction – January 2004 and Memorandum for Record, subject: The Army Standards for Chapels, dated 21 January 2004.
- Army Standards for Company Operations Facilities (COFs)
- Army Standards for Child Development Center Construction (for school-age children) October 2004
- Army Standards for General Instruction Building (GIB) and Army Continuing Education System (ACES) Standards
- General Instruction Building (GIB) and Army Continuing Education System (ACES) Standard Design Criteria
- The Army Standard for Army Lodging
- The Army Standard for Access Control Points (ACPs)
- The Army Standards for Electronic Key Card Access for all Facilities

8.19 REFERENCES

The following references are provided for guidance.

- Army Regulation (AR) 190-13, *The Army Physical Security Program*
- Army Regulation (AR) 200-1, *Environmental Protection and Enhancement*
- Army Regulation (AR) 200-2, *Environmental Effects of Army Actions*
- Army Regulation (AR) 200-4, *Cultural Resources Management*
- Army Regulation (AR) 210-20, *Master Planning for Army Installations*
- Army Regulation (AR) 405-45, *Real Property Inventory Management*
- Army Regulation (AR) 405-70, *Utilization of Real Property*
- Unified Facilities Criteria (UFC) 1-200-01, *Design: General Building Requirements*
- Unified Facilities Criteria (UFC) 1-300-05A, *Installation Support*
- Unified Facilities Criteria (UFC) 2-130-07, Arctic and Subarctic Construction - Buildings

- Unified Facilities Criteria (UFC) 3-120-02AN, *Design Guide: Interiors*
- Unified Facilities Criteria (UFC) 3-400-01, *Design: Energy Conservation*
- Unified Facilities Criteria (UFC) 3-510-01-ANF, *Design: Foreign Voltages and Frequencies Guide*
- Unified Facilities Criteria (UFC) 3-600-01, *Design: Fire Protection Engineering for Facilities*
- Unified Facilities Criteria (UFC) 4-510-01, *Design: Medical Military Facilities*
- Unified Facilities Guide Specification (UFGS) 096800, *Carpet*
- Unified Facilities Guide Specification (UFGS) 099000, *Paints and Coatings*
- Engineering Regulation (ER) 1110-345-122, *Engineering and Design, Interior Design*
- Department of the Army Pamphlet (DA PAM) 200-4, *Cultural Resources Management*
- U.S. Army Corps of Engineers, Design Guide (DG) 1110-3-122, *Design Guide for Interiors*
- Department of Defense (DoD) Interior Design Website
- Military Handbook 1191, *Medical Military Construction Program Facilities Design and Construction Criteria*
- Technical Instructions (TI) 800-01, *Design Criteria*
- Technical Instructions (TI) 809-04, *Seismic Design for Buildings*
- Technical Instructions (TI) 809-05, *Seismic Design Evaluation and Rehabilitation for Buildings*
- Technical Instructions (TI) 811-16, *Lighting Design*
- Technical Manual (TM) 5-683, *Electrical Interior Facilities*
- Training Circular (TC) 25-8, *Training Ranges*
- Army Knowledge Online
- Army Brand Theme Operations Home Page
- Army Barracks Master Plan
- Engineering Knowledge On-line (EKO) Sustainable Design and Development
- Air Force Interior Design Guides
- Assistant Chief of Staff for Installation Management, Sustainable Design and Development Website

- U.S Army Corps of Engineers, Engineering Research and Development Center, Construction Engineering Research Laboratory (CERL), Sustainable Design and Development Website
- Military Standard (MIL-STD) 188-124B Grounding, Bonding and Shielding for Long Haul/Tactical Communication Systems Including Ground Base Communications – Electronics Facilities and Equipment
- Whole Building Design Guide
- Unified Facilities Guide Specifications (UFGS), "Division 12 - Furnishings", Construction Criteria Base
- Engineering and Construction Bulletins
- Construction Criteria Base
- Assistant Secretary of the Army memorandum Subject: Sustainable Design and Development Requirements, dated 18 March 2003

Section 9.0
Circulation Design Standards

9

9.1 INTRODUCTION

The image of Fort Wainwright is greatly determined by the design and location of its circulation system hardscape: roadways, parking, pedestrian walkways, and biking trails. The circulation system consumes a considerable amount of land and is a visually dominant element within the man-made and natural setting that must be properly and thoroughly considered in the long-range planning vision. See Figure 9.1a.

The key to a good circulation system lies in the development of good vehicular/pedestrian traffic flow patterns and convenient parking arranged to provide the most efficient and safe environment for Fort Wainwright personnel and visitors. See Figure 9.1b. The circulation component of this guide is used to assess the circulation elements and is used to help identify specific characteristics that provide visual zone and theme identity and improvement projects.

▲ **Figure 9.1a**
Airport Way Provides Access to the Main Gate

▲ **Figure 9.1b**
The Main Gate Design Contributes to its Circulation and Efficiency Problems

Circulation planning, design, and management involves the collection of data, including pedestrian and vehicular traffic volumes; parking demands; traffic speeds; and street and intersection capacities. This information is used in the determination of present and future hardscape needs. The campus circulation system is divided into categories (Primary, Secondary, and Tertiary) based upon traffic volumes and uses. This system of hierarchy ensures that both existing and future pedestrian and roadways systems can accommodate traffic demands and solve circulation problems. See Figure 9.1c.

▲ **Figure 9.1c**
Circulation System Design Should Accommodate Pedestrian and Vehicular Traffic Demands

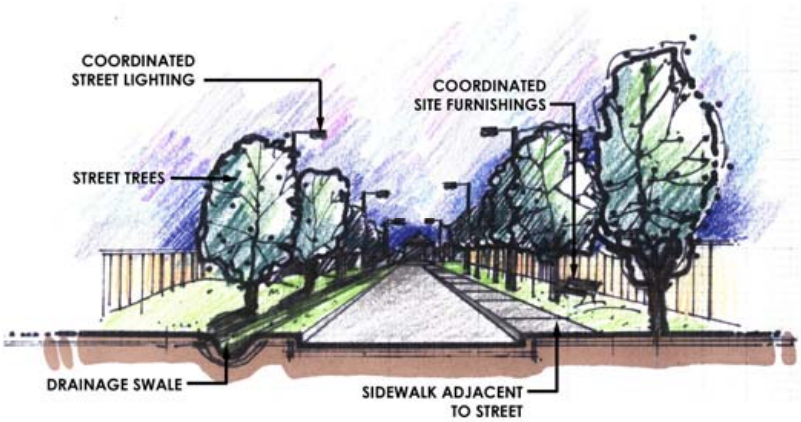
▲ **Figure 9.1d**
Gaffney Road Looking East

This section provides the criteria, guidelines, and standards for determining circulation system functional relationships and design. The section covers roadways, entrance gates, parking, service and drop-off areas, walkways, bikeways, and methods of traffic calming. This section also addresses methods for mitigating the visual impact of parking and other vehicle use areas. See Figure 9.1d.

9.2 CIRCULATION SYSTEM

Besides their significant physical and visual impact on Fort Wainwright's environ, the safe and effective movement of vehicles and pedestrians is dependent upon a well planned and developed circulation system. The goal for the circulation system is to establish a sustainable system that promotes

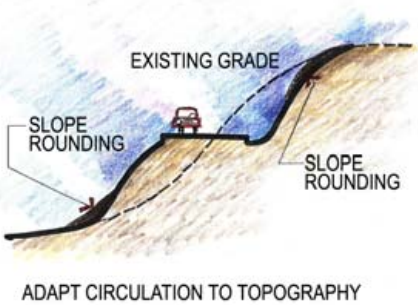
aesthetic appeal, environmental preservation, and energy conservation while providing safe and efficient circulation. See Figure 9.2a.



▲ **Figure 9.2a**
Sustainable Circulation System Promotes Energy Conservation

Circulation system objectives listed below should be followed to achieve a sustainable circulation system:

- Provide circulation that meets force protection requirements and promotes and enhances public health and safety.
- Provide a system of circulation that results in improved vehicular and pedestrian circulation, reduces maintenance costs, and presents a more pleasing appearance.
- Provide a system that includes hierarchies of vehicular and pedestrian traffic flow with minimal conflicts.
- Adapt the circulation system that relates to the natural contours of the land in order to minimize grading and destruction of the natural environment. See Figure 9.2b. Within developed areas, planting, screening, setbacks, and other techniques can be used to visually integrate roads with the use areas that they serve.
- Improve the existing circulation network for expansion, safety, wayfinding, and appearance.
- Close unnecessary streets that are under utilized and provide opportunities to create "super blocks."
- Promote the use of curbs and gutters to enhance the installation's appearance by preventing street and parking lot edges from eroding, keep vehicles off grass and other improved areas, and control drainage. See Figure 9.2c. The installation will include curbs and gutters in future streets and parking lot construction.



▲ **Figure 9.2b**
Adapt Circulation to Natural Contours of the Land

▲ **Figure 9.2c**
Curbs and Gutters Helps Enhance the Installation Appearance and Define Parking Lot Limits

▲ **Figure 9.2d**

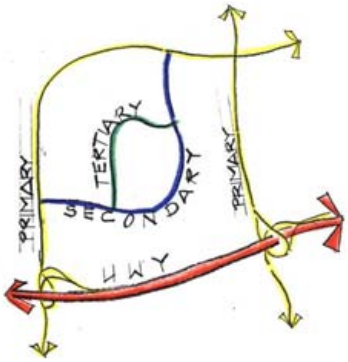
Street Trees Visually Reinforce the Circulation Hierarchy and Promote an Attractive Visual Experience

- Visually reinforce the circulation hierarchy through design, planting, signage, and lighting, promoting a more attractive visual experience and sense of orientation. See Figure 9.2d
- Provide circulation systems that meet existing and future capacity, are efficient, and are designed to current traffic engineering standards.

9.3 ROADWAY HIERARCHY

Roadways, pedestrian walkways, and bicycle trails should be designed to provide a hierarchy of circulation design and carrying capacity. Functionally, a hierarchical network can be created that separates incompatible types of traffic. This separation of traffic promotes sustainability because it results in more efficient energy consumption.

The roadway network of the installation should functionally and visually reflect a logical hierarchy of traffic circulation. See Figure 9.3a. The network should separate types of traffic by function and volume, ranging from through traffic to local traffic. The visual character of each segment of the network should appropriately convey its role and function within the overall network. The basic network is classified as follows in terms of the type, character, and appearance of the road.



▲ **Figure 9.3a**

Roadway Hierarchy

▲ **Figure 9.3b**
Intersection of Airport Way and Richardson Highway Looking North

9.3.1 Highways

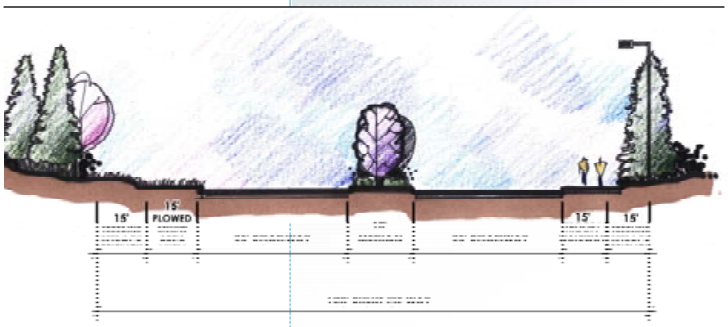
Fort Wainwright's main entrance is located at the intersection of Airport Way and Richardson Highway, see Figure 9.3b.

Highways are continuous, relatively straight or large radii curvilinear alignments that carry high-speed through-traffic movement between major activity centers within a region and have the following characteristics:

- A minimum of two lanes in each direction typically divided by a median or median divider.
- Alignments that border lane use areas rather than bisect them, and green space buffers between the road and adjacent uses.
- Controlled access onto the road.
- Either grade-separated or at-grade channelized intersections with traffic signal controls.
- Shoulders for emergency stopping, but strict prohibition of on-street parking.
- Street signing, lighting, and planting that reflect the high-speed nature of traffic movement.

9.3.2 Primary Roadways

These are arterial routes that connect major activity centers, provide the primary access, and provide the means by which most people view the installation. These roadways often traverse the entire installation, are high visibility corridors, and carry the heaviest volume of traffic. See Figure 9.3c. Direct access to this type of road should be



▲ **Figure 9.3c**
Typical Primary Roadway

restricted to crossing at major intersections. Primary roadways are illustrated in Figures 9.3d Existing Road Network and 9.3e Future Road Network.

Primary roadway design characteristics include:

- Typical right-of-way of 80 to 120 feet. This includes roadway pavement with curb and gutter; median; stormwater piping; underground utility corridors; landscape planting areas, pedestrian walkways, and/or combination walkway-bikeways; roadway and pedestrian light standards; and right-of-way fencing or landscape screen depending on adjacent land use.
- Continuous, through-traffic alignments that are relatively straight or large-radii curvilinear to handle moderate to heavy traffic. See Figure 9.3f.
- Alignments that form the boundary between different land uses are preferable to alignments that transect a land use zone.
- One or more moving lanes in each direction typically divided by a median.
- Controlled access and a minimum of curb cuts limited to entranceways to major facilities or building groups.
- At-grade intersections with signal controls.
- On-street parking is prohibited.
- Medians, street lighting, signing, and planting that enforces the speed and importance of the road.

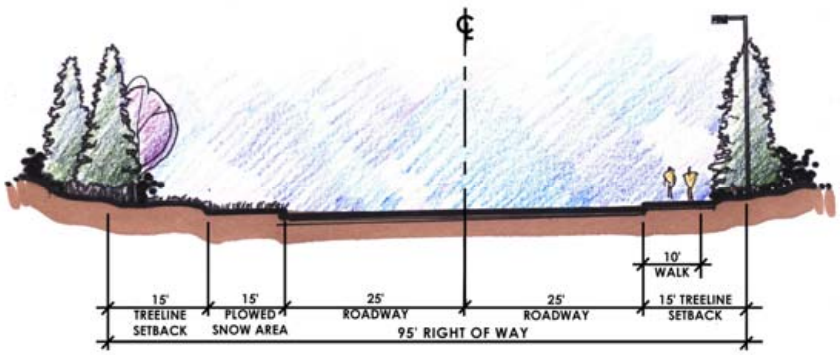
Due to existing site constraints, many primary roadways at Fort Wainwright are undivided, two lane roads with a minimal 80 foot right-of-way.

▲ **Figure 9.3f**

Large Radii Round-About Used to Calm Traffic at Main Gate

9.3.3 Secondary Roadways

Secondary roadways serve as connectors between primary roads and tertiary roads and typically connect primary roads to adjacent land use zones. See Figure 9.3g. Secondary roads accommodate moderate to slow traffic speeds with one moving lane in each direction. On-street parking is prohibited and left-turn lanes are provided at intersections with primary roads. Secondary roadways are illustrated in Figures 9.3d Existing Road Network and 9.3e Future Road Network.



▲ **Figure 9.3g**
Typical Secondary Roadway

Secondary roadway design characteristics include:

- Typical right-of-way of 60 to 80 feet. This includes roadway pavement with curb and gutter; stormwater piping; underground utility corridors; landscape planting areas; troop running trails, pedestrian walkways, and/or combination walkway-bikeways; roadway and pedestrian light standards; and right-of-way fencing or landscape screen depending on adjacent land use. Continuous through-traffic alignment between primary roads, either straight or curvilinear based upon the design speed topography and land pattern.
- Direct access to abutting property.
- A maximum of one moving traffic lane in each direction, either undivided or a boulevard with planted median. See Figure 9.3h.
- On-street parking is prohibited.
- Sidewalk separated from the road by a planting strip.
- Street lighting, signing, and planting that reflect the moderate-to-slow speed nature of traffic and the character of the land use area they are in.

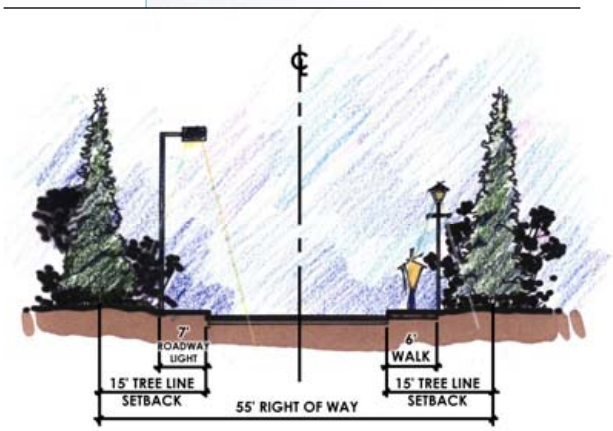
▲ **Figure 9.3h**
Alder Avenue Looking West

9.3.4 Tertiary Roadways

Tertiary roadways provide access to individual facilities, parking, and service areas. See Figure 9.3i. They are designed to handle low speed, low volumes of traffic, with one lane in each direction. Tertiary roadways make use of "T" intersections and cul-de-sacs to reduce through traffic, promote safety, and limit noise impacts from truck traffic. Tertiary roads are illustrated in Figures 9.3d and 9.3e.

Tertiary roadway design characteristics include:

- Typical right-of-way of 40 to 65 feet. This generally includes roadway pavement, stormwater piping, underground utility corridors, landscape planting areas, walkways, and roadway light standards.
- Alignments designed to discourage through-traffic.
- Alignments are relatively short straight or curvilinear keeping with topography, land use, and slow speed nature of traffic.
- Generally a maximum of two moving traffic lanes, one in each direction.
- No on-street parking is allowed on tertiary roadways except in residential areas.
- Pedestrian walkways may be limited to only one side, depending upon need.
- Street lighting, signing, and planting in character with slow speed nature of traffic and the land use area within which the road is located. See Figure 9.3j.



▲ **Figure 9.3i**
Typical Tertiary Roadway with Walkway

▲ **Figure 9.3j**
Gaffney Road Looking West

9.3.5 Cul-de-sacs

Cul-de-sacs are short, dead-end tertiary streets providing sufficient turning radius for emergency and service vehicles while preventing through traffic; Figure 9.3k. They are primarily found in the family housing areas and they have the following design characteristics:

- Short, straight, or curvilinear alignment to serve abutting property.
- Generally a maximum of two traffic lanes, one in each direction.
- Generally a maximum length of 600 feet, or less, except in areas where terrain and low density justify a longer length.
- Cul-de-sacs must include a diameter to accommodate fire and garbage trucks.
- Cul-de-sacs can be either symmetrical or offset.
- Overflow parking can be provided within the center of cul-de-sacs.
- Sidewalks, if any, are generally limited to one side of the road.
- Street lighting, signing, and planting is characteristic with the slow speed nature of traffic and the land use area being served.

Figure 9.3k
Cul-de-sac

9.3.6 Turnarounds

Turnarounds are primarily used as a method of terminating a tertiary roadway within a residential neighborhood or commercial area; Figure 9.3l. Turnarounds must be designed to allow for turning movements for emergency and service vehicles.

Figure 9.3l
Turnaround

9.4 ROADWAY BUILDING SETBACKS

Department of Defense antiterrorism standards state that all inhabited buildings within a controlled perimeter will be setback a minimum of 10 meters (33 feet) from roadways, and that troop billeting and primary gathering spaces shall be setback a minimum of 25 meters (82 feet) from roadways. See Figure 9.4a. The minimum setback distance for inhabited buildings, not within a controlled perimeter, is 25 meters (82 feet) and for primary gathering places and troop facilities the minimum distance is 45 meters (148 feet). See, Unified Facilities Criteria (UFC) 4-010-01, *DoD Minimum Antiterrorism Standards for Buildings*, Table B-1.

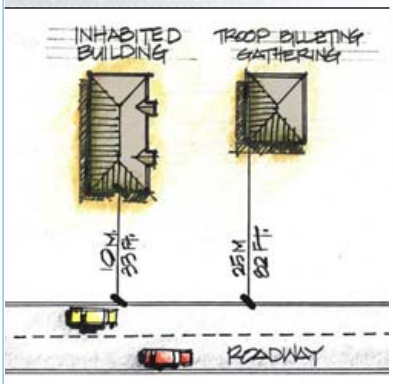


Figure 9.4a
Antiterrorism Roadway Setbacks within a Controlled Perimeter

9.5 ROADWAY DESIGN

The location and design of new circulation system alignments, as well as improvements to the existing system, should be prepared to promote development sustainability. They should be designed to minimize impacts, relieve driver monotony, and provide a positive visual experience for the user without compromising safety. The following design techniques should be applied to circulation system design.

9.5.1 Blend Circulation with Natural Landform

The horizontal and vertical alignment of roads, walkways, and bikeways should minimize landform disturbance and blend with the natural setting.

- Minimize cut and fill by avoiding steep terrain and aligning roadway, walkway, or bicycle system to cross slopes diagonally or parallel to the contours rather than perpendicular to the contours.
- Mold cut and fill slopes, drainage ditches, swales, or channels to blend into the natural landform.
- Use cluster development wherever possible to limit the lengths and required intersections of roadway and other circulation system elements to preserve land. Consideration should be given to meeting antiterrorism requirements when developing cluster type facilities.
- Use natural topographic conditions to create grade separated pedestrian, troop, and bikeway road crossings wherever possible especially on highways and primary roads.
- Design access drives with gradients that conform to the natural topography using commonly accepted minimum and maximum gradients. Grades and slope directions are determined utilizing the drainage requirements established in the surface water management plan prepared for the project site. See TM 5-822-2 for additional information on the grading of entrance and exit drives.

9.5.2 Adapt Circulation to Preserve Vegetation

Design roads, walkways, and bike paths to minimize disturbance to existing vegetation, encourage re-vegetation in disturbed areas, and reduce the visual impact of landscape disturbance. See Figure 9.5a.

- Align roads through open areas rather than forested areas.
- Minimize cut and fill to reduce the limits of clearing.
- Clear only for sight distances rather than uniform right-of-way clearing.

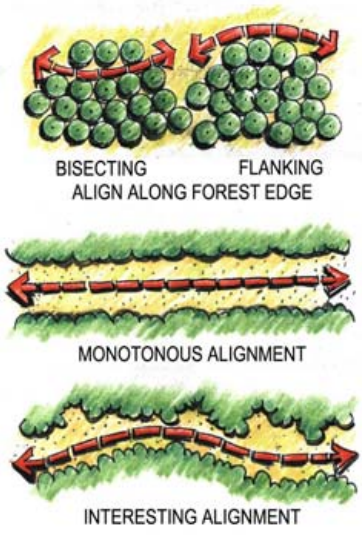


Figure 9.5a
Roadway Alignment

- Utilize tree wells or retaining walls to preserve specimen trees or significant vegetation areas.
- Provide optimum conditions for re-vegetation by following proper planting and maintenance techniques.
- Restore vegetation to disturbed areas using naturalistic plantings of native plant material.

9.5.3 Minimize Adverse Impacts on Adjacent Land Uses

9.5.3.1 Air Pollution. Locate roadway alignments to minimize the impact of traffic-emitted pollutants on adjacent development. This can be accomplished by the following:

- Locate roads adjacent to land uses that are minimally affected by traffic-emitted air pollutants.
- Reduce the impact of traffic-emitted pollutants on more sensitive land use areas by locating the roadway downwind and/or providing planted buffers. Tactical vehicle trails should be hard surfaced to reduce dust pollution.

9.5.3.2 Noise Pollution. Design and locate roadways to reduce the impact of traffic noise on adjacent development. See Figure 9.5b. This can be accomplished by the following:

- Roads should be physically separated from sensitive land uses including residential, medical, education, recreation, administration, religious, library, community, or child care facilities.
- Utilize noise abatement techniques such as berms, sound barrier walls, and plant material to reduce noise levels.
- Reroute truck and tank traffic to roadways adjacent to less noise sensitive land uses. Tracked vehicle traffic should, ideally, be routed to a system of tank trails that are totally separate from corridors used by wheeled traffic vehicles.

▲ **Figure 9.5b**
Landscaping and Berms Buffer Air and Noise Pollution

9.6 INTERSECTIONS

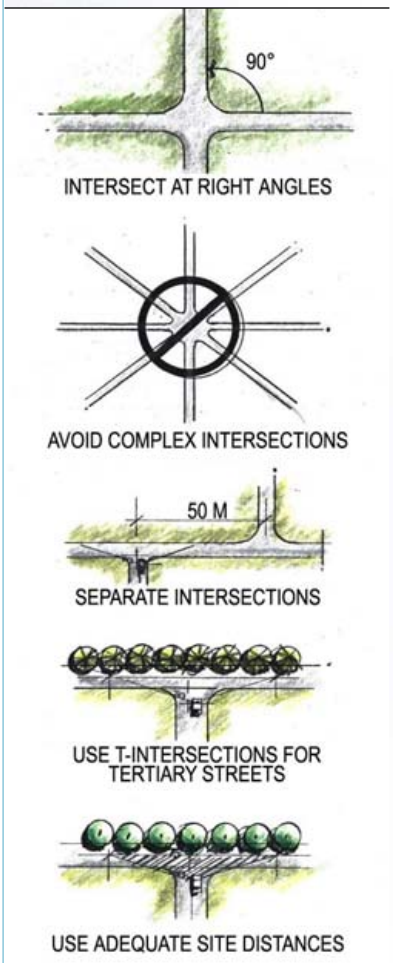
9.6.1 Intersection Design

Intersections are the most dangerous areas of the campus circulation system. They should be planned or improved to provide safe and efficient traffic flow for both pedestrian and vehicular traffic. See Figure 9.6a. The following design techniques should be used to plan or improve intersections; see Figure 9.6b.

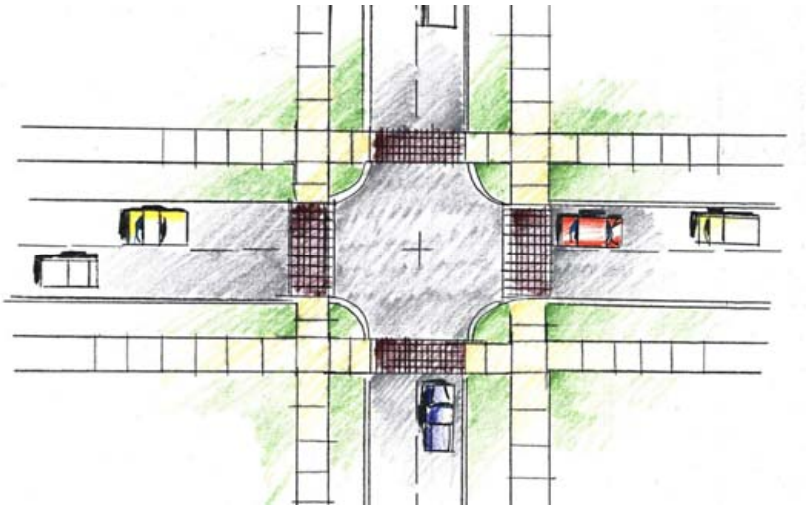
- All roadways should intersect at right angles (90 degrees), although 85 to 95 degrees is acceptable.
- Avoid dangerous, complex intersections of more than two streets intersecting at one point or offset intersections.

▲ **Figure 9.6a**
Intersection at River Road and Gaffney Road Looking West

- Eliminate intersections that are in close proximity to one another. They should be no closer than a minimum distance of 50 meters (164 feet).
- Use T-intersections for tertiary road intersections with secondary or primary roads to reduce conflict and promote safety.
- Provide turning lanes at all intersections along primary roads to eliminate interference with through traffic flow.
- Minimize intersections along primary roads to reduce points of conflict and increase safety. Existing intersections with secondary and tertiary streets can be eliminated by the use of cul-de-sacs with traffic routed along parallel streets to primary and secondary streets.



▲ **Figure 9.6b**
Intersection Design



▲ **Figure 9.6c**
Increase Crosswalk Safety by Using Different Paving Surfaces

- Include adequate sight distances to meet minimum standard requirements at all intersections. The location from where the driver is waiting to cross or enter a traffic lane to a point 23 meters (75 feet) down the centerline to the right and the left forms the sight triangle.
- Minimize pedestrian and bikeway crossings of primary and secondary roads.
- Provide crosswalks at all intersections where necessary, mark with paint or vinyl strips or identify with a different paving surface. See Figure 9.6c.
- Provide pedestrian access to persons with disabilities in accordance with the Americans with Disabilities Act Accessibility Guidelines (ADAAG) and the Uniform Federal Accessibility Standards (UFAS). In the event of a conflict the most stringent standards will be applied, see Figure 9.6d.
- Create local service drives or access roads to parallel highways and primary roads to provide access to properties fronting the primary road avoiding a direct curb cut from the primary road to each individual property.

9.6.2 Intersection Design Criteria

A comprehensive intersection design criteria which includes types, design controls, and elements design improvements is located at the following website: Better Military Traffic Engineering, MTMCTEA Pamphlet 55-17, Chapter 2.

▲ **Figure 9.6d**
Accessible Parking Space

9.7 ENTRANCE GATES

The location and design of the installation entrance gates is a primary component of the installation circulation system and presents a first impression when entering the installation. Entrance gates must be designed to be functional, while providing security protection not only for the installation itself, but also for personnel and others waiting to be admitted to the installation. Gates should also be designed as a visual amenity to provide an aesthetically pleasing entrance to and exit from the installation. Fort Wainwright Main Gate Entry Facility is an example of a poor first impression, see Figure 9.7a.

With well-designed entry control facilities, an image can be created that conveys a commitment to facilities excellence, the importance of the mission that lies within, and a determination to see it through. This section provides guidance on the appropriate configuration and design of perimeter entry control facilities. See Section 12, Force Protection, paragraph 12.8 for information on the design standards for installation gates.

9.7.1 Gate Categories

Entry Control Facilities (ECFs) are classified based on the intended function and anticipated usage of the ECF, see Figure 9.7b. The five use classifications are outlined in Table 9.7a. The use classification is determined based on the traffic volume, hours of operations, and FPCON considerations.

▲ **Figure 9.7a**
The Main Gate does not Present a Positive First Impression

▲ **Figure 9.7b**
Badger Gate Entry Control Facility

Table 9.7a
Entry Control Facility Classifications and Functions

Use Classification	Traffic Volume	Operational Hours	FPCON Considerations	Preferred Operation
Primary	Heavy/ Moderate	24/7 Open continuously	Open thru FPCON Delta	Vehicle registration/Visitor pass capacity. Closed to trucks and deliveries. Regular operations, visitors with authorization. Could also be designated as truck and delivery gate.
Secondary	Moderate to Heavy	Regular hours, closed at times	Potentially closed at or above FPCON Charlie	Regular operations, visitors with authorization. Could also be designated as truck and delivery gate.
Limited Use	Low	Only opened for special purposes	Closed at most times	Tactical vehicles, HAZMAT, special events, etc.
Pedestrian Access	Low	14/7 Open continuously	Potentially closed at or above FPCON Charlie	Personnel only. Could be located near installation housing areas, near schools, or as part of a Main or Primary gate.

9.7.2 Gate Design

The first line of defense at Fort Wainwright is its perimeter. Providing necessary security at the perimeter, including entry control facilities, will allow “life as normal” within the installation to the maximum extent possible.

The entry gate must be designed to impart an immediate impression of professionalism and commitment to facilities excellence and to convey the Army’s commitment to protection and safety of its personnel.

A poorly designed gate contributes to congestion, accidents, wasted energy, inaccessibility, and off-installation impacts. Factors to consider in designing gates includes security level, traffic volumes and classification, roadway class, speed, and the distance from other intersections and major roadways.

Entrance gates often become bottlenecks and cause traffic delays during peak travel periods. The following steps can be used to remedy the problem:

- Ensure that share-ride and staggered duty-hour programs have been implemented to maximum extent possible so that gate entrance design requirements will be reduced to a minimum.
- Ensure sufficient lanes exist to handle peak traffic flow.

▲ **Figure 9.7c**
Trainor Gate Entry Control Facility Lacks Safety and Comfort for Security Personnel

- Locate the checkpoints a minimum 300 feet from an intersection to reduce vehicle conflicts and sight distance problems.
- Provide turnouts to get visitor or other stopping traffic out of the way.
- Have a map or directory station available for visitors.
- Canopies should be provided to protect the entry controllers from the elements (minimum 4.41 meters clear height) and to provide a platform for area and task lighting. See Figure 9.7c.
- Provide visitor center for visitors requiring passes or consider provision of a separate gate for truck inspections and passes.

9.7.3 Entry Control Facility Function

ECFs serve as the entry point for all personnel, visitors, and deliveries to Army installations see Figure 9.7d. The objective of ECF is to prevent unauthorized access and maximize vehicular traffic flow. Priorities in the design of an ECF are:

- Security – The first priority of an ECF is to maintain perimeter security, which is the first physical line of a "defense in depth" strategy and a legal line of demarcation.
- Safety – ECFs must have a working environment that is both safe and comfortable for security forces personnel. Security forces safety includes provisions for personal protection against attacks, snipers, and errant drivers. Special consideration must be given to climate, location, and orientation.
- Capacity – The ECF must maximize vehicular traffic flow to eliminate undue delays that would affect Fort Wainwright operations while maintaining vigilance against acts of terrorism.

▲ **Figure 9.7d**
Main Gate Visitors Center

- Image –The ECF must be designed to impart an immediate impression of professionalism and commitment to facilities excellence and to convey the Army's commitment to the protection and safety of Army personnel.

9.7.4 Entry Control Facility Plan Review

Future development plans for new ECFs should be coordinated with the Security Forces, DPW, surrounding Community Planning Offices, and State and local highway agencies to ensure development plans will accommodate future highway approach queuing modifications necessitated by increased demand or revised security measures. The Headquarters Department of the Army, Office of the Provost Marshal General, Operations Branch (DAPM-OPS) in coordination with the Protective Design and Electronic Security Centers of Expertise developed standards for Army Access Control Points (ACP). Standard Definitive Design for Access Control Points, Dec. 2004.

9.7.5 Antiterrorism Setback Requirements

Comply with the requirements of Unified Facilities Criteria UFC 4-010-01, DoD Minimum Antiterrorism Standards for Buildings, for all new ECF construction and renovation projects.

Installations have attempted to slow both inbound and outbound gate traffic using numerous devices. The most commonly used device is temporary concrete barriers, which is used to accomplish the speed reduction as well as reduce the threat of unauthorized entry. However, use of these barriers often results in geometric constraints and unsafe conditions for the innocent motorist. They are also unsightly.

9.7.6 Traffic Calming

Traffic calming is needed on inbound and outbound roadways to control vehicle speed and slow incoming vehicles before they reach the gate so that Security Forces personnel have adequate time to respond to unauthorized activities. This includes provisions for restricting traffic flow approaching the ID check area during increased threat-cons.

Traffic calming is the use of physical measures to address speeding and high-volume, cut-through traffic. Generally, traffic calming measures are not appropriate on higher speed and higher volume streets such as arterial roadways. Traffic calming measures may be appropriate on: local residential streets, collector streets with predominantly residential land uses, and arterial roads within a commercial area (40 mph posted speed limit or less). Appropriate traffic calming

measures include: roundabouts, drop-in or retractable bollards and road spikes (to cause serpentine traffic flow), swing gates, speed humps, and raised crosswalks. The MTMCTEA safety bulletin establishes criteria regarding traffic calming; Traffic Engineering & Highway Safety Bulletin, Traffic Calming.

9.7.7 Capacity

Design capacity is the maximum volume of traffic that a gate would be able to serve without an unreasonable level of congestion occurring. Capacity is used at the design level in assessing the adequacy of gates to serve current and future traffic demands. Vehicles arriving at a gate faster than they can be processed cause congestion. MTMCTEA have collected significant data, which has established new criteria regarding capacity and processing rates at gates. The MTMCTEA bulletin supplement has established criteria regarding capacity, design, and processing rates at gates; Traffic Engineering & Highway Safety Bulletin, Gates Revisited.

9.7.8 Signage

Signing is a common deficiency noted at many installations; conflicting sign messages, too many signs, or non-standard signing. All regulatory signs should conform to Federal Highway Administration's (FHWA) Manual on Uniform Traffic Control Devices (MUTCD). All informational type signing that is not necessary outside the installation should be moved inside the installation boundary. A consistent signing plan should be in place on all gate approaches, refer to Section 11.4.

Variable message signs, which give information on local events or distinguished visitors, are not recommended at ECF locations. However, if used, the signs should be located inside the installation and at least 200 feet beyond the ID check area.

9.7.9 Lighting

Lighting is extremely important for safety and processing activities in gate areas. The following are some guidelines to consider:

- Multiple fixtures per pole are more economical and efficient for area coverage.
- Use low-level, directed (from behind guard) lighting for ID processing (5 to 10-foot candles).
- Use 400-watt High-Pressure Sodium (HPS) lamps on gate approaches and at processing points.
- Use Metal Halide or Deluxe HPS lamps at inspection areas.
- Require a color rendition index of 65 (measure of color distinction). This criterion is critical at inspection areas.

9.8 PARKING REQUIREMENTS

Lack of adequate parking is a problem at Fort Wainwright. Many signs point to the problem: overflow parking in aisles, on streets, in open green areas, and along parking lot entrances and exits. The problem is exacerbated by the lack of designated safe walkways. See Figure 9.8a.

▲ **Figure 9.8a**

Parking Lots Shall Provide Asphalt Paving With Concrete Curbs and Gutters

9.8.1 Parking Considerations

The total quantity of parking in any one location will vary with the needs of the facility. The following are general considerations considering parking requirements.

- All public parking lots will be accessible to persons with disabilities in accordance with the requirements of the UFAS, paragraph 4.1.1(5a), Table 9.8a. For initial planning and programming, allocate 400 square feet of parking lot area per car. This provides adequate minimum space for the parking spaces, access drives, and planting islands that make up a parking lot. This allocation is not withstanding tactical military vehicles.
- Minimize parking space requirements of a facility by selecting a site that will allow the sharing of parking with related activities.
- Parking layout must address maintenance issues including snow removal, safety, and landscaping.
- Small parking lots are usually preferable to large lots because they enhance the visual environment by increasing the percent of landscaped area to paved area and allow conformance to natural topography.

▼ **Table 9.8a**

Required Minimum Number of Accessible Parking Spaces

TOTAL SPACES IN PARKING AREA	REQUIRED MINIMUM NUMBER OF ACCESSIBLE SPACES
1 to 25	1
26 to 50	2
51 to 75	3
76 to 100	4
101 to 150	5
151 to 200	6
201 to 300	7
301 to 400	8
401 to 500	9
501 to 1,000	2 percent of total
1,001 and up	20 plus 1 for each 100 over 1000

- A minimum of 10 percent of the total parking lot area shall be landscaped with a combination of trees shrubs and ground cover, see Figure 9.8b. Turfgrass should be avoided in parking lot islands as a ground cover. One 2-inch caliper tree shall be provided for every 10 (max) parking spaces within the parking lot. Provide a landscape buffer planting at the perimeter of the parking lot to establish a screen between adjacent roadways and pedestrian walkways.
- The monotony of large parking areas can be altered by the use of designs such as curvilinear parking or the introduction of large planting islands and medians. Medians and islands must be sized for snow storage or configured for snow removal. See Figure 9.8c and 9.8d.

▲ **Figure 9.8c**
Landscaping Mitigates Visual Impact of Parking

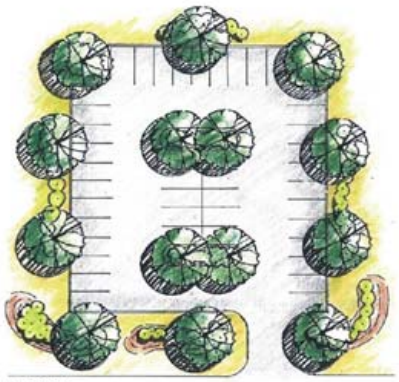
- Promote means of access other than vehicular by providing alternative means of access such as walkways and bikeways.
- Provide asphalt paving as the standard. Use concrete where required for heavy vehicles, motorcycle parking, and where fuel spills may occur.

9.8.2 Parking Area Types

Privately-owned vehicle (POV) parking includes on-street parking, off-street parking lots, and parking structures.

9.8.2.1 On-Street Parking. On-street parking is not allowed on Fort Wainwright except within family housing areas. Within the family housing areas on-street parking can include parallel parking on one or both sides of the street.

9.8.2.2 Off-Street Surface Parking. Adequate off-street parking eliminates the need for on-street parking. Off-street parking should be the predominant method of automobile parking on post.



NOTES:
1. Provide landscaped area equal to or greater than 10% of the total paved area.
2. 10% or greater area to be landscaped should be located in islands within the paved area and within 10' of the perimeter of the paved area.
3. Example: Paved Area 16,200SF; Landscaping (10%) 1,620SF

▲ **Figure 9.8b**
Provide Islands with Trees to Soften Visual Expanse

▲ **Figure 9.8d**
Landscaping Needed to Reduce Monotony of Large Parking Lots

9.8.2.3 Parking Structures. Parking structures, both below and above grade, have limited application at certain installations, particularly in densely developed areas where available land is scarce. Parking structures are very expensive but can provide a number of benefits including efficient land use, reduced visual impact, and protection of vehicles from inclement weather. However, it is difficult to promote interest in parking structures and they generally do not compete well against other DoD facilities for Military Construction (MILCON) funding. See Figure 9.8e.

Figure 9.8e
Parking Structures are Desirable but Expensive, Consider AT/FP Standards in Planning

9.8.3 Parking Lot Location and Design

Parking areas can be designed and enhanced to provide a more pleasing impact and a more comfortable physical experience for the user. The following design techniques should be used to create more aesthetically pleasing, physically comfortable parking lots:

- Locate parking lots between and behind buildings to reduce the visual impact from the circulation system.
- Head bolt outlets shall be a galvanized two (2) outlet VHB box mounted at 48 inches above surface pavement on 8” x 6” x 10’ treated posts and shall not be mounted on exterior walls of facilities. See Figure 9.8f.
- Use curb and gutters for parking areas. Asphalt curbs, wood timbers, and pre-cast wheel stops are not allowed. Do not paint concrete curbs.
- Locate parking lots on relatively level areas to avoid excessive cut and fill.

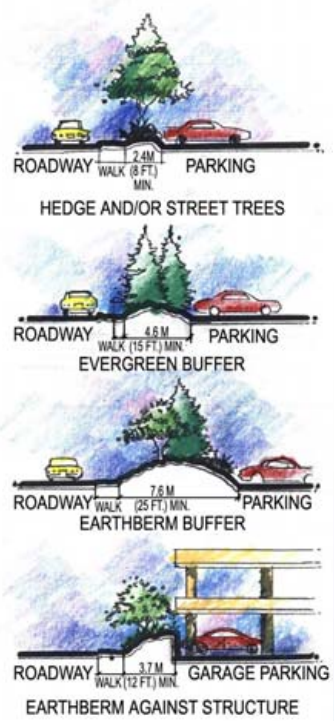
Figure 9.8f
Provide Galvanized Head Bolt Outlets Mounted on Wood Posts at all Parking Spaces

- Design parking lots to be efficient in the design and placement of access drives and parking spaces. All drives providing direct access to parking spaces should provide spaces on both sides of the drive.
- Reduce oversized parking areas with landscaping island and planting strips to allow for snow removal.

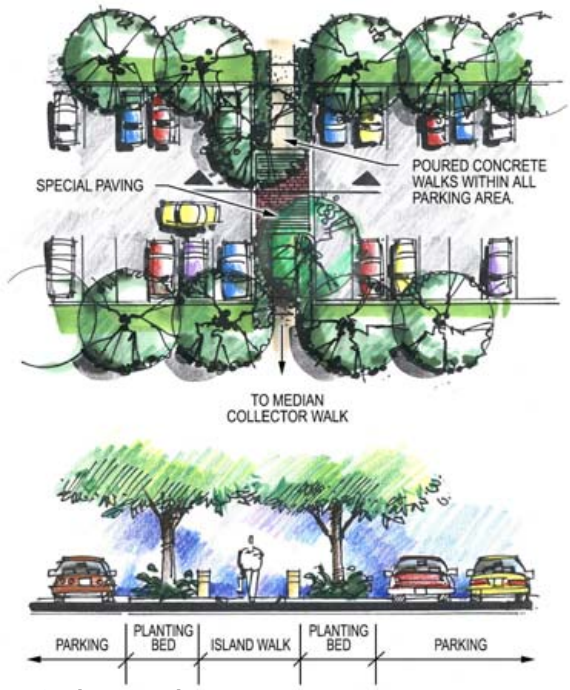
- Use natural topography and existing trees to visually screen parking areas from adjacent facilities and other parking bays; Figure 9.8g.
- On-street parking on primary and secondary streets is not allowed.
- Parking lots should be designed to minimize paved surfaces where possible by incorporating provisions for pervious paving materials to reduce stormwater runoff. Where practical, provide surface drainage to parking lot islands to water trees and island plant material. Recommended paving materials for driving lanes should be concrete, asphalt, or other paving material.
- Parking stalls should be designed at 90 degrees to the drive aisle. This is the most efficient parking lot layout.
- Parking lot lighting should be identified in Chapter 11, Table 11.5a, Lighting, Design Matrix.

9.8.4 Parking Area Design Guide

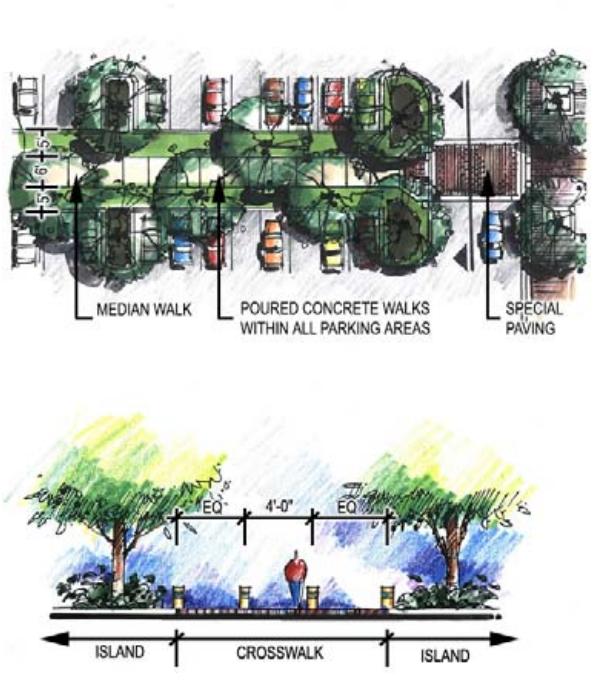
A comprehensive parking area design guide including siting, pedestrian circulation parking, area types, geometry (parallel, perpendicular, angled), access, landscaping, and maintenance consideration is located at the following website: U. S. Air Force Landscape Design Guide, Section 14, Parking Areas. See Figures 9.8h and 9.8i.



▲ **Figure 9.8g**
Trees/Berms/Walls Screen Parking Lot



▲ **Figure 9.8h**
Island Connector Walk



▲ **Figure 9.8i**
Median Collector Walk

Parking lots within a controlled perimeter shall be located a minimum of 10 meters (33 feet) from inhabited structures and 25 meters (82 feet) from troop billeting and primary gathering structures. Parking lots without a controlled perimeter shall be located a minimum of 25 meters (82 feet) from inhabited structures and 45 meters (148 feet) from troop billeting and primary gathering areas (UFC 4-010-01, Table B-1). Designated parking for family housing located within secured perimeters with access control is excluded from the 25-meter (82 feet) setback requirement.

9.8.5 Planning Future Parking Facilities

Future parking needs can be determined by developing parking generation rates. These parking rates can be developed by simply relating the parking demand to an existing similar facility. When establishing parking rates, existing facility characteristics such as employment, population, or floor space should be evaluated. The following guidelines can be used for planning purposes to help in determining the number of parking spaces for non-organizational vehicles authorized for select facilities. However, these are general criteria and should be used in conjunction with Army facility design criteria and project specific criteria. See Table 9.8b.

Table 9.8b
Parking Generation Rates

RULE-OF-THUMB GENERATION RATES FOR SELECTED LAND USES[1]	
Land Use	**Parking Requirement**
Administration Building	75 percent of assigned personnel
Bank	2.0 – 2.5 per 1,000 sq.ft. GFA[2]
Barracks: Officers Enlisted	 1.1 per person 0.9 per person
Commissary	13 per 1,000 sq.ft. of sales area
Community Center	7 per 1,000 sq.ft. GFA
Hospital	(.62 x P + .21 x O) spaces, where: P = all personnel working within the facility on a continual basis. O = Average daily outpatient load for the peak month.

[1] = Data provided by Institute of Transportation Engineers and research conducted by MTMC.
[2] = Gross Floor Area (GFA)

9.8.6 Pavement Marking Standards

9.8.6.1 Concrete Curbs and Gutters. Concrete curbs and gutters shall not be painted. Markings shall be restricted to the pavement surface and marking paint shall not be applied to concrete curb, gutter, or any portion thereof including curb cuts for vehicle or wheelchair access.

9.8.6.2 Markings. Markings intended to prohibit parking shall be applied to the pavement surface parallel to the curb and gutter in a continuous band for the entirety of the restricted length of pavement.

9.8.6.3 No Parking Zones. Where appropriate a boxed area shall be created with diagonal lines to establish a no parking zone in street conditions such as curb side parking, etc.

9.9 SERVICE AREAS

Facilities that require pickup and deliveries should have a service area that allows for easy access to a loading dock exclusively for service vehicles. See Figure 9.9a. They should be screened from public view to reduce negative visual impacts. Service areas shall meet all antiterrorism requirements.

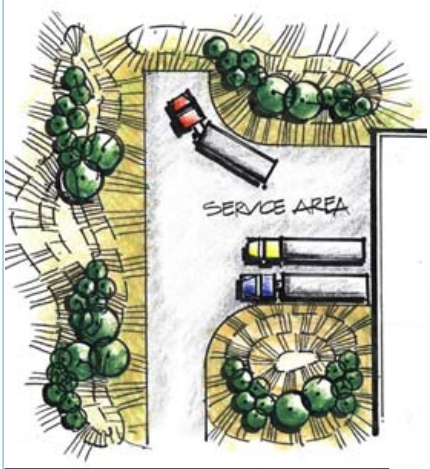


Figure 9.9a
Typical Loading Area

9.10 DROP-OFF AREAS

Facilities that include a high percentage of persons arriving by vehicle should include a vehicle drop-off area for users. Included are buildings such as headquarters, child development centers, schools, dining facilities, hospitals, and clubs. See Figure 9.10a. Antiterrorism standards state that the access drive must be clearly defined and marked and that their intended use is clear to prevent parking of vehicles in those areas. Drop-off lanes will not be located under any inhabited portion of a building (UCF 4-010-01, paragraph B-1.4). It is recommended that physical barriers be used to define the area. These barriers may include curbing, planters, or other barriers together with signage to identify and restrict access. The driveway shall be configured so that vehicles can be restricted during times of high alert. Access to the driveway shall be located outside the standoff area with the initial approach parallel to the building, or a barrier must be directed to prevent direct vehicular movement toward the building.

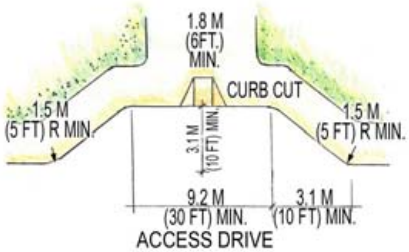


Figure 9.10a
Typical Drop-Off Area

9.11 WALKWAYS AND PEDESTRIAN CIRCULATION

Walkways provide connections for pedestrians between buildings and ancillary facilities such as parking lots and other areas. Well designed and located pedestrian walkways also provide a desirable alternative to total dependence on motor driven vehicles.

The goal is to encourage the use of walkways as an alternative means of circulation. Pedestrian walkways should be designed and located to provide a comfortable, enjoyable experience for the user. The use of walkways within the campus promotes development sustainability by conserving energy, reducing air pollution, and decreasing the land requirement for parking. These walkways also provide a means to increase physical fitness.

In order to achieve this goal the following objectives must be met:

- Provide walkways that are designed at a pedestrian scale to be comfortable and pleasant.
- Provide safe and secure pedestrian facilities that are separate from vehicular.
- Provide amenities for pedestrians along walkways to promote use and interest.
- Provide signage at key locations to identify routes.
- Provide accessibility to all users, including physically impaired or challenged persons, see Figure 9.11a. All street and driveway crossings shall be ramped, marked, and accessible to persons with disabilities in accordance with requirements of the UFAS. See the following UFAS paragraphs for the respective standards: Curb Ramps, paragraph 4.7; Ramps, paragraph 4.8; Stairs, paragraph 4.9.
- Provide links to major attractions and generators of pedestrian traffic.
- Provide design consistency throughout the walkway and be well drained.

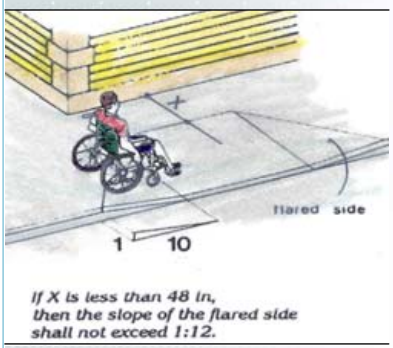


Figure 9.11a
Ramps Must Be Provided per UFAS Standards

9.11.1 Walkway Network Hierarchy

Sidewalks are classified to conform to the hierarchy roadway system: primary, secondary, and tertiary walkways. Non-roadway oriented sidewalks should be sized and placed where people will use them rather than creating worn “shortcut” paths.

9.11.1.1 Primary Walkways. Primary walkways, Figure 9.11b, should be placed along both sides of primary roadways wherever possible. These walkways are used for high volume pedestrian routes to facilities and should be designed along axis lines relating to adjacent building entries, plazas, or streets. They should be paved with concrete, brick, or other pavers. In some cases primary walkways could also be used as troop running trails and bikeways.

▲ **Figure 9.11b**
Typical Primary Walkways

Primary walkways should be sized to accommodate anticipated use. They should typically have a minimum width of 1.8 meters (6 feet), and a maximum width of 3 to 4 meters (10 to15 feet) in high use areas. Primary walks should be installed along primary roadways as shown in Figure 9.3c. All primary roads will provide one 15-foot walkway to serve as a designated troop running trail on one side of the roadway with an optional 10 to 12-foot combined pedestrian walkway-bikeway on the opposite side.

9.11.1.2 Secondary Walkways. Secondary walkways, Figure 9.11c, should typically be provided along one or both sides of secondary streets as needed to provide a pedestrian walkway network within the installation. Figure 9.3c provides guidelines for the location of walks along secondary roadways. They are designed to carry moderate volumes of pedestrians between activity centers and housing areas and provide access to building entrances and plaza areas. Secondary walkways should be paved with concrete, brick, or other pavers.

These walkways should be sized to accommodate anticipated pedestrian use, but typically not less than 1.2 meters (4 feet) and a maximum of 3 to 3.5 meters (10 to 12 feet) in high use areas.

▲ **Figure 9.11c**
Typical Secondary Walkways

9.11.1.3 Tertiary Walkways. Tertiary walkways, Figure 9.11d, provide pedestrian walkways in recreational and scenic areas for casual walking and hiking. They can be paved with concrete or bituminous asphalt, or constructed with woodchips. The layout of the walkway should typically have a meandering and curvilinear alignment. Paved walkways should typically have a minimum width of 1.2 meters (4 feet). Wood chip trails should have a minimum width of 1 meter (3 feet).

9.11.1.4 Combination Walkway-Bikeway. Where walkways are designated for use by bicyclists and pedestrians, these widths should be increased an additional 3 feet for each bike lane.

Figure 9.11d
Typical Tertiary Walkways

9.11.2 Troopwalks and Running Trails

Running trails should be provided for family housing residents and as troop running trails within the boundaries of the installation. Troop running trails should be separated from family housing areas and should be routed to reduce the impact of vehicle/troop conflicts. Routes should begin within troop housing areas with routes which provide a series of looped courses with varying distances.

Troop running trails should be provided for soldiers both in and out of formation. The troop running trail is provided along primary and secondary roadways to facilitate troop movement in formation. Figure 9.3e identifies the proposed route. The width should be 4.5 to 5 meters (approximately 15 feet) to provide the width necessary for four soldiers abreast with a cadence caller. In some cases, primary and secondary walkways can be used for troop running trails. Also, it may be necessary to site adapt troop running trails depending on the amount of right-of-way or land available.

9.11.3 Site Amenities at Walkways

Utilize site furnishings to reinforce the walkway system hierarchy. Provide directional and informational signage, where appropriate. Locate site furnishings, such as benches, tables, waste receptacles, drinking fountains, and signage in response to travel distance and traffic volume, and ADA requirements; see Figure 9.11e.

Site furnishings should be placed at regular intervals along walkways, parallel to the walk and facing the flow of pedestrian traffic.

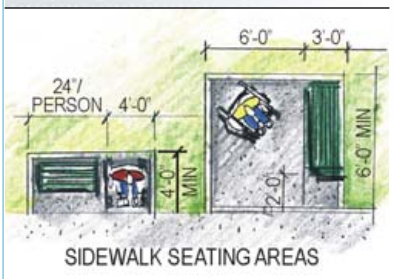


Figure 9.11e
Incorporate Adequate Provisions for the Handicapped Into Site Amenities

9.11.4 Landscaping at Walkways

Use a combination of canopy and ornamental trees along sidewalks to provide shade, define the path, provide visual interest, and discourage the creation of "shortcuts." Utilize landscape buffer plantings to screen service and industrial areas and undesirable views. Discourage the use of flowering and fruit bearing trees and shrubs along walkways because of the threat of insects or other problems.

9.12 BIKEWAYS

9.12.1 Use of Bikeways

The use of bicycles as alternatives to the automobile has become more acceptable to Fort Wainwright personnel. This trend is encouraged as a method of reducing the number of trips within the installation, road carrying capacity, and need for parking lots. Cycling is also a popular recreation activity that is enhanced by the availability of a safe and a well planned bikeway system.

A bikeway system should provide direct routes between primary traffic corridors and key destinations within the installation. A bikeway network should be continuous and minimize conflicts between bikes, pedestrians, and vehicles.

Bikeways should be planned and designed according to the classifications that define the level of separation they maintain from roadways and walkways. The ideal solutions for the development of bikeways is to physically separate them from both roadways and walkways. Bikeway design guidelines are provided in the *Guide for the Development of Bicycle Facilities* published by the American Association of State Highway and Transportation Officials (AASHTO), 1999.

9.12.2 Bikeway Classification

There are three classifications of bikeways and the following information provides general guidelines for their use.

9.12.2.1 Class I Bikeway. A Class I Bikeway is intended for the exclusive use of bicycles within a defined right-of-way for bicycles. While it may parallel a roadway, it is physically separated by distance or a vertical barrier; Figure 9.12a. Class I Bikeway considerations include:

Figure 9.12a
Typical Class I Bikeway

- A class I Bikeway provides the safest and most efficient means of bicycle travel and is the preferred option for bikeway development.
- Crossing of a Class I Bikeway by pedestrians or automobile should be minimized.
- If a Class I Bikeway does not closely parallel a roadway, it should be designed to provide appropriate bikeway gradient and curvature.
- Class I Bikeways require the greatest amount of space and advance planning to reserve land and assure appropriate routing.

9.12.2.2 Class II Bikeways. A Class II Bikeway shares the right-of-way with a roadway or walkway. It is indicated by a bikeway pictograph on the pavement and a continuous strip on the pavement or separated by a continuous painted line, intermittent curb, or other low barrier. See Figure 9.12b. Class II Bikeway considerations include:

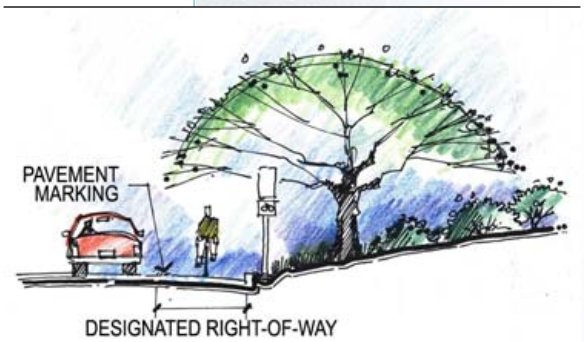


Figure 9.12b
Typical Class II Bikeway

- Class II Bikeways provide some level of safety for the bicyclist and pedestrian because some separation is provided for bicycle travel.
- While crossing by pedestrians or automobiles are discouraged, they are not as controllable as they are on a Class I Bikeway because the Class II Bikeway is adjacent to the walkway or roadway.
- Because Class II Bikeways are tied to the adjacent roadway or walkway, route selection is important to maintain appropriate bikeway gradient and curvature.
- Class II Bikeways generally require less space than Class I Bikeways because they follow the alignment of and share the right-of-way with a roadway or walkway.

9.12.2.3 Class III Bikeways. A Class III Bikeway shares the right-of-way with a roadway or pedestrian walkway. It is indicated by a continuous strip on the pavement or separated by a painted line or any type of barrier. It is identified with signage associated with roadway signage; Figure 9.12c. Class III Bikeway considerations include:

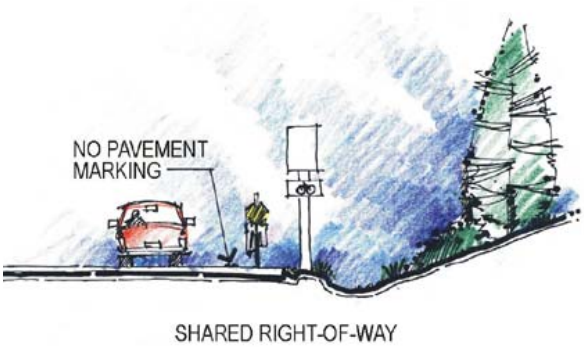


Figure 9.12c
Typical Class III Bikeway

- There is a higher potential for safety conflicts between automobiles and bicycles and between bicycles and pedestrians because no separation is provided.

- Class III Bikeways provide continuity within the bikeway network and designate preferred shared routes to minimize potential conflicts. To maintain safety for bicyclist and pedestrians, Class III Bikeways should be developed, if possible, only where automobile and pedestrian traffic is moderate to light.
- Because Class III Bikeways share the roadway or walkway, route selection is important to maintain appropriate bikeway gradients and curvature.
- Class III Bikeways require the least space because they share the pavement with a roadway or walkway.

9.12.3 Bikeway General Guidelines

- Wherever possible, provide a designated right-of-way for bike traffic, separate from vehicular and pedestrian routes.
- Follow AASHTO Organization guidelines in the design and location of bike lanes and shared bikeway pedestrian walkways.
- Maintain appropriate sight/stopping distance and design bike lanes or bikeways to the appropriate design speeds for the specified use.

9.12.4 Bikeway Furnishings

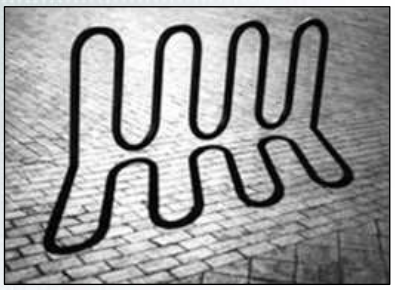
Encourage use of the bicycle system by making trails visually attractive and providing pedestrian amenities in appropriate locations. Provide site furnishings such as benches, tables, waste receptacles, drinking fountains, and signage along paths. Location of these amenities should be in response to travel distance and traffic volume.

9.12.5 Bicycle Storage

Provide bicycle storage racks in areas that can be visually supervised and in close proximity to building entrances, high activity areas, major workplaces, and recreational facilities, while avoiding conflicts with pedestrian circulation. See Figure 9.12d. Bicycle storage areas should be covered, especially at barracks, and easily accessible to building entrances.

9.12.6 Landscaping

Use a combination of canopy and ornamental trees along bicycle paths for shade, route definition, and visual interest. Provide landscape buffers to screen undesirable views.



▲ **Figure 9.12d**
Bike Furnishings

9.12.7 Intersection Crossings

AASHTO Organization guidelines provide specific guidance for crossing primary and secondary roadway intersections as well as signage design and placement at intersections. Shared pedestrian and bike crosswalks should be avoided whenever possible.

9.12.8 Walkway and Bikeway Lighting Design

Roadway lights and building exterior lights can serve also as walkway and bikeway lights. Maximum use should be made of multi-purpose lighting systems. Paragraph 10.4 of Technical Manual (TM) 5-811-1, Electric Power Supply and Distribution directs the following walkway and bikeway lighting standards.

9.12.8.1 Intensities. Values are dependent upon whether walkways and bikeways are adjacent to roadways or are isolated from vehicular traffic.

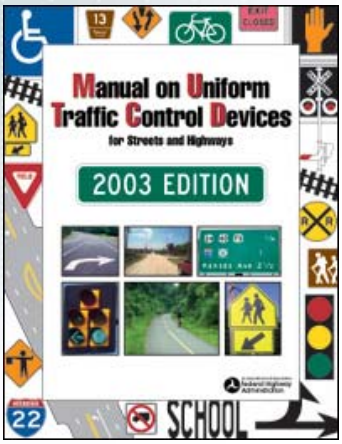
Adjacent to Roadways. Walkways and bikeways will be illuminated to not less than one-half the maintained illumination required for adjacent roadways. Areas having grade, such as stairs and ramps, will require special treatment. Crosswalks in the middle of the block will be illuminated to 1.5 to 2 times the normal roadway lighting level.

Remote from Roadways. Walkways and bikeways remote from roadways will have a minimum of 5 lux (.5 foot-candle) average illumination measured in lo-foot levels. Pedestrian tunnels will have 40 lux (4.0 foot-candles), stairways will have 6 lux (0.6 foot-candles), and overpasses will have 3 lux (0.3 foot-candles) illumination.

9.12.8.2 Pole Design. Where pole mounted lights illuminate only walkways or bikeways, shorter poles are most suitable, but luminaire height will not be less than 10 feet. Construction will be such as to minimize vandalism by use of break-resistant lenses, tamperproof screws, and sturdy poles.

9.12.9 Signs

The federal Manual of Uniform Traffic Control Devices (MUTCD) provides standards signs and markings for bicycle lanes and related bicycle facilities. See the MUTCD, Chapter 9 and any applicable amendments for traffic controls for bicycle facilities standards. See Figure 9.12e.



▲ **Figure 9.12e**

Manual on Uniform Traffic Control Devices

9.13 ARMY STANDARDS

The cited Army Standards shall be met.

- Army Regulation (AR) 420-72, *Transportation Infrastructure and Dams*
- Manual For Railway Engineering
- Unified Facilities Criteria (UFC) 3-210-02, *Design: POV Site Circulation and Parking*
- Unified Facilities Criteria (UFC) 3-230-18FA, *Design: General Provisions and Geometric Design for Roads, Streets, Walks, and Open Storage Areas*
- Unified Facilities Criteria (UFC) 3-250-01FA, *Design: Pavement Design for Roads, Streets, Walks and Open Storage Areas*
- Unified Facilities Criteria (UFC) 3-260-02, *Design: Pavement Design for Airfields*
- Unified Facilities Criteria (UFC) 3-550-03FA, *Design: Electric Power Supply and Distribution*
- Unified Facilities Criteria (UFC) 4-010-01, *Design: DoD Minimum Antiterrorism Standards for Buildings*
- Unified Facilities Criteria (UFC) 4-860-01FA, *Design: Railroad Design and Rehabilitation*
- Americans with Disabilities Act Accessibility Guidelines (ADAAG)
- Uniform Federal Accessibility Standards (UFAS)
- Manual of Uniform Traffic Control Devices (MUTCD)
- Chicago's Bike Lane Design Manual (Provides a comprehensive series of technical drawings and design specifications for bike lanes)

9.14 REFERENCES

The following references are provided for guidance.

- U.S. Air Force, Landscape Design Guide, Parking Area
- U.S. Air Force, Landscape Design Guide, Walkways and Bikeways (Provides a comprehensive walkways and bikeways planning guide including sections on paving materials and gradients and curvature data.)
- Illumination Engineering Society of North America (IESNA)
- Federal Highway Administration reference document "Accessible Sidewalks and Street Crossings – an informational guide".
- Manual of Uniform Traffic Control Devices (MUTCD)
- AASHTO Guideline for the Development of Bicycle Facilities; 1999
- *Guide for the Development of Bicycle Facilities* published by the American Association of State Highway and Transportation Officials (AASHTO), 1999

10

Section 10.0
Landscape Design Standards

10.1 INTRODUCTION

The Landscape Design Standards provide an overview of the necessary components of a successful landscape design. Included is the selection of plant material, plant material installation guidelines, and maintenance procedures to be implemented on Fort Wainwright. A successful landscape design can provide a simple and cost effective enhancement to the general appearance of the installation. See Figure 10.1a.

The visual image of Fort Wainwright is defined not just by architectural character and site organization, but also by an attractive, organized landscape design. Identification of visual zones within the installation can benefit from development of landscape designs that address the objectives in this section. Preservation and creation of open space, and traditional space, and the visual enhancement of dominant features on Fort Wainwright can be achieved through successful implementation of landscape principles.

▲ **Figure 10.1a**
Installation Appearance

The presence of selected, quality plant material on Fort Wainwright can greatly enhance the visual character and environmental quality of the installation. Preservation of existing high-quality trees within the installation, the creation and use of the landscape palette, (Appendix O), and improved maintenance programs will add visual appeal to the environment and establish a higher value to the installation. Fort Wainwright is constrained by its arctic climate which supports a limited variety of plant species to choose from, Figure 10.1b.

▲ **Figure 10.1b**
Successful Planting

Plantings add an element of human scale to open spaces and can be used functionally to screen undesirable views, buffer undesirable noise levels, reinforce the hierarchy of circulation system, or provide a visual transition between dissimilar land uses. See Figure 10.1c.

▲ **Figure 10.1c**
Human Scale

An irrigation system is not recommended in the Alaskan climate.

10.2 LANDSCAPE OBJECTIVES

The overall objective of the use of plant material within Fort Wainwright is to improve the physical and psychological well being of the people who live and work on the installation.

This is achieved through the following objectives:

- Preserve and enhance civic open space, focal points, and architectural features through proper placement of selected native trees, forest lands, and detailed planting features such as shrubs and groundcovers. Shape open space to accent an architectural feature and to create interest. See Figure 10.2a.
- Improve the overall visual quality of Fort Wainwright through the use of selected native and other adapted plant material to create a sense of place within the installation, frame views and vistas, accent key facilities and entrances, and provide pleasing visual and sensory experiences. See Figure 10.2b.

▲ **Figure 10.2a**
Accent Open Space

▲ **Figure 10.2b**
Native Landscape

- Improve the circulation system of pedestrian walkways, roadways and bikeways by reinforcing and defining the system with plant material.
- Define a standard by which landscape plant material is used to screen undesirable views or structures, buffer non-compatible land uses, and establish scale to open spaces and built structures. See Figure 10.2c.
- Minimize maintenance operations through the use of mass plantings, better organized landscape developments, and a greater use of native material.
- Minimize the appearance of landscape clutter created by the heavy pruning of individual shrubs making more “broad brush” landscape gestures.
- Establish a standard plant palette to enhance force protection measures, as well as incorporate force protection requirements into the landscape design.

▲ **Figure 10.2c**
Attractive Approaches

10.3 PRINCIPLES OF LANDSCAPE DEVELOPMENT

Creation of a quality landscape design is based on the following artistic principles which should be applied in the development of all landscape designs:

Proportion and Scale. A visually pleasing and functional relationship should exist between the three dimensions of length, width, and height. See Figure 10.3a.

▲ **Figure 10.3a**
Proportions and Scale

Balance. Accents should be carefully distributed in the design to provide an aesthetically pleasing integration of elements. Both formal and informal planting and site amenities can achieve balance in the design solution.

Unity. Fitting together the component parts to form a pleasing whole results in unity.

Harmony. The aesthetic integration of diverse elements results in harmony. Within a design, harmony can be accomplished through the use of site amenities of a similar style and character, as well as a community of indigenous and compatible plant material.

Line. As part of the landscape design, the creation of lines should be pleasing and proportionate. Lines are expressed through paths, walls, fences, and planting masses. In a landscape composition, lines will direct the movement or sight to a particular area of interest. The use of a strong axis line in a design should be used sparingly as it invokes the need for a strong focal point at the termination of the axis. See Figure 10.3b. Most successful designs using this approach can be seen in large formal settings where the axis is reinforced with proportional planting designs. Figure 10.3c shows the use of a bent axis in the same context as the strong axis. The bent axis is more successful when used in proportion to smaller scale buildings.

Emphasis. Emphasis is directing attention to one object or portion of a composition. Vertical elements in open areas, such as White Spruce and Paper Birch lining a primary circulation corridor, can be dramatic and create interesting focal points.

Contrast. Contrast is the diversity of adjacent elements in terms of color, texture, or tone. The designer integrates plant material with distinctly different foliage color, bark color, texture, or form to highlight and draw attention.

Variety. Variety is created by introducing different forms or types of elements. Too little variety leads to monotony. Introducing too many elements can create a chaotic, unmanageable environment. A fine balance between extremes produces a pleasant sense of unity in the landscape design.

Repetition. Repetition is achieved by massing or grouping individual plants or site amenities. Repetitive elements in the landscape reflect or amplify architectural geometry and can improve the connection between indoor and outdoor space.

Figure 10.3b
Strong Axis

Figure 10.3c
Bent Axis

Form. The trunk, branches, and leaves together create the form of a tree and give definition to its shape. The different plant forms are: columnar, round, vase, pyramidal, oval, and irregular. Structures, landforms, and plant materials all contribute to the composite form of a landscape design.

Texture. Seen close up, texture is defined by the size, surface, and spacing of small detailed components that create diverse and varied patterns of light and shade when seen from afar.

Color. A harmonious design in terms of color is most easily obtained by providing dominance in one color. Color is introduced through the selection of plant materials and site amenities.

10.4 SUSTAINABLE LANDSCAPE DESIGN

The use of plant material on Fort Wainwright promotes the sustainability of the installation and its development. Trees, shrubs, groundcovers, and some species of vine provide aesthetic appeal as well as preservation of fauna and flora, conservation, climate modification, erosion control, air purification, and noise abatement. See Figures 10.4a and 10.4b.

The climate of Fort Wainwright provides both opportunity and challenge to the landscape designer. Selection of plant material must address climate conditions and the limited growth cycle of the region. Knowledge of annual precipitation rates specific to the installation, soil conditions, and maintenance practices is needed to develop a sustainable landscape design.

Reuse of materials such as wood chips, recycled paper, and discarded construction materials can be an effective way to enhance the design and preserve the environment.

Proper use and documentation of herbicide and pesticide during maintenance operations promotes environmental quality. The proper use and placement of plant material can reduce the need for herbicides and pesticides in the landscape as well.

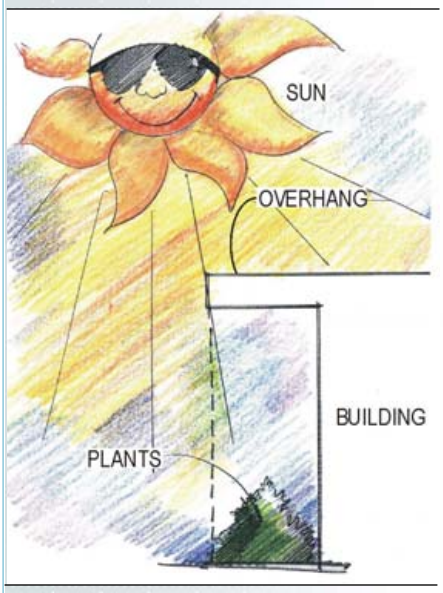


Figure 10.4a
Avoid Plantings Under Building Overhangs

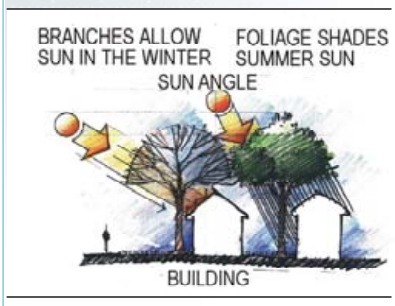


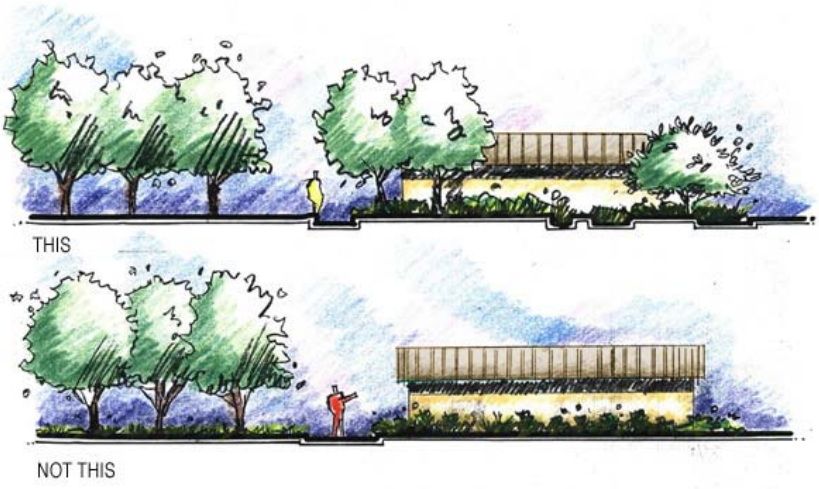
Figure 10.4b
Energy Conservation

10.5 LANDSCAPE DESIGN GUIDELINES

Design guidelines are provided to define appropriate uses for plant material within the design solution of a site development. Proposed landscape designs must be reviewed by a qualified person knowledgeable of soils, topography, climate, horticulture, land use, force protection, and landscape architecture. The design solution should be compatible with Fort Wainwright's current master plan and should consider the use and function of the facility.

10.5.1 Foundation Planting

Foundation planting provides a green background for additional plantings, adds scale and character to the building, helps to integrate the building with its surroundings, screens HVAC and other utilities, and helps create a sense of arrival. When developing foundation plantings plans consideration should be given to force protection measures. A thorough knowledge of plant material characteristics and force protection requirements is needed. Figure 10.5a illustrates the importance of foundation plantings in relation to building structures.



▲ **Figure 10.5a**
Foundation Planting

Accent should be given to entry points for pedestrian interest and as part of a wayfinding system to identify key points on Fort Wainwright.

Use the architecture and function of the building to evaluate the planting design and selection of plant material. Identify key pedestrian corridors and linkages to adjacent buildings and land uses.

Incorporation of mass plantings and accent shrubs at key points simplify the design and improve maintenance procedures. The proper design and installation of planting beds to eliminate weeds and other invasive plants is key to successful foundation plantings. See Figures 10.5b and 10.5c.

Use trees along walkways to frame the corridor and to accent design elements of the landscape and building. Allow space for mature growth and development of root systems. Careful consideration should be given to the use of large trees specifically for this reason. Consider using tree groupings to frame or accent walkways and streetscapes as shown in Figure10.5d.

Consideration should also be given to tree selections that do not promote insect infestation. Trees that bear fruits and flowers attracting nesting birds should be carefully located.

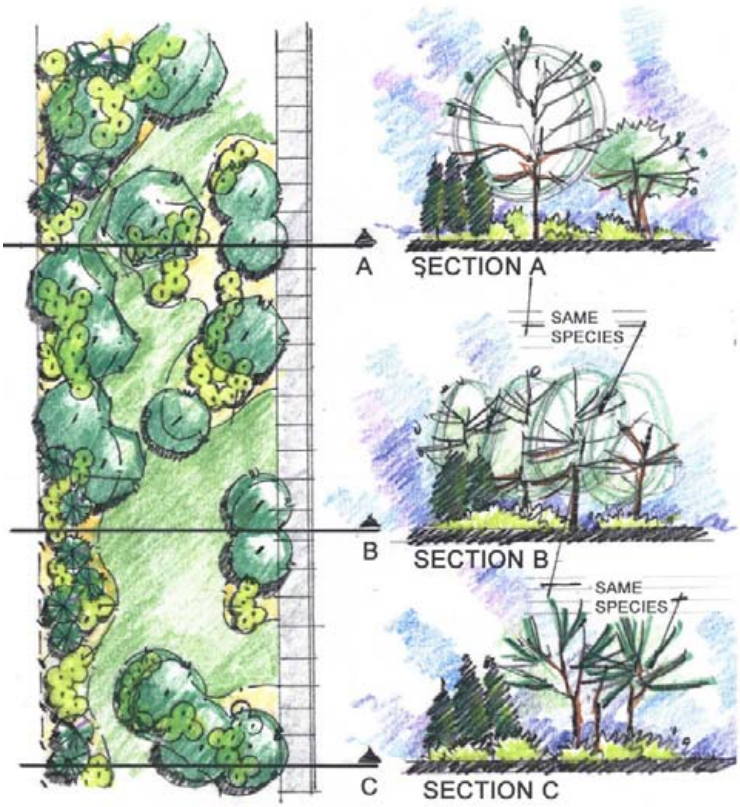


Figure 10.5d
Tree Grouping Sections

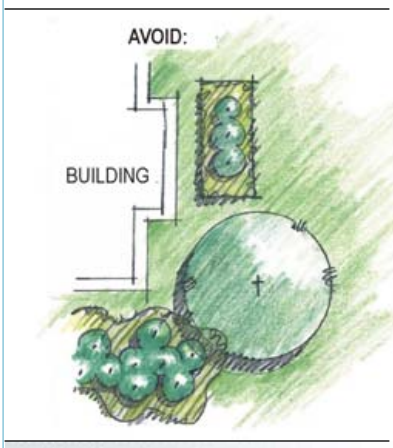


Figure 10.5b
Avoid Small Planting Areas

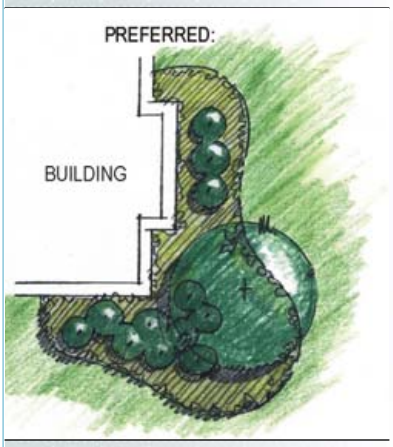


Figure 10.5c
Prefer Mass Planting Areas

10.5.2 Screening

Plant material is often used to screen undesired winds. Fort Wainwright has a climate that has winds which vary in direction throughout the year. Screening of northern winter winds is recommended. Channeling of summer winds can be useful to produce a cooling effect in the landscape. Screening unwanted views or structures is commonly done with plant material. Figure 10.5e identifies different types of screening methods. Selection of the proper type is important to ensure the maturity of the plant still provides the desired screen. In many cases, trimming or hedging is required to keep the screen effective, keeping in mind that the screen should be a singular overall look not one of many individual pruned shrubs.

Screening can also be accomplished with wooden or masonry walls. Parking lots should be screened from view using plant material whenever possible. Figure 10.5f shows the desired effect proper screening can have on parking lot design. Proper placement of trees along parking lot edges can provide shade and develop a pleasing landscape element as shown in Figure 10.5g. Utility transformers and dumpsters should have a fence or masonry enclosure provided. The trash enclosure should match the building materials used on the adjoining structure and utility transformers should, as a minimum, have a wooden enclosure with plant material compatible with the landscape design of the facility.

10.5.3 Buffer Planting

Use buffer planting to visually separate land uses and to frame visual zones established on Fort Wainwright. Buffer planting is recommended along primary roadways to screen the roadway corridor from adjacent housing or other non-compatible land uses. Plant buffers help reduce noise pollution, filter air, and provide security. Buffer plantings should consist of shrubs or other plant material with a dense branching growth habit to prevent trespass through the area. See Figure 10.5h.

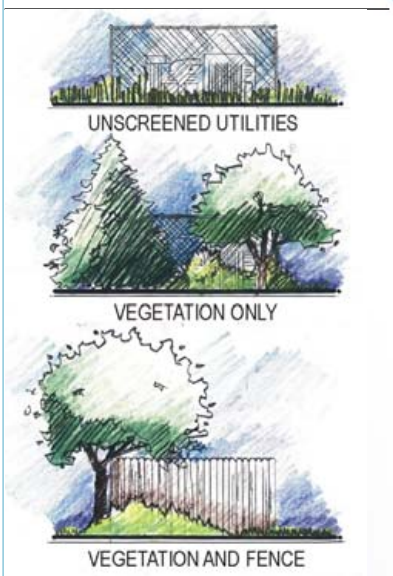


Figure 10.5e
Screening Types

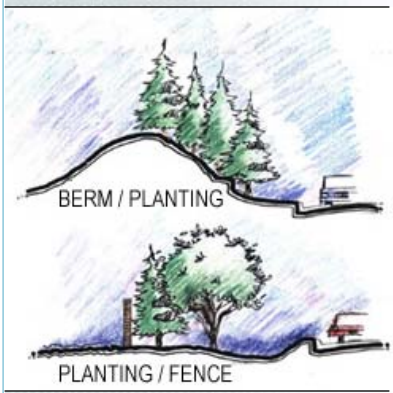


Figure 10.5f
Parking Lot Screening

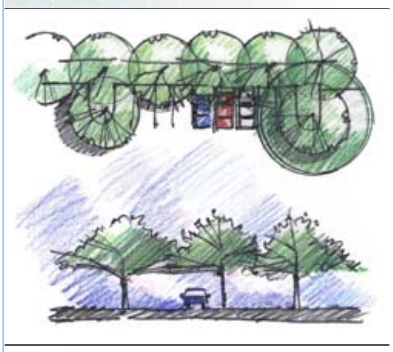


Figure 10.5g
Parking Lot Trees

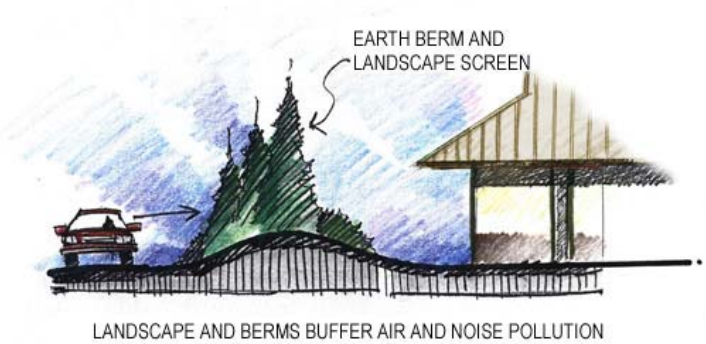


Figure 10.5h
Buffering

10.5.4 Open Space Planting

Enhance open space areas with planting. Consistently placed plant materials can provide the sense of enclosed space by separating land uses. Select trees, shrubs and ground cover that accent views, points of interest or attractions. See Figure 10.5i.

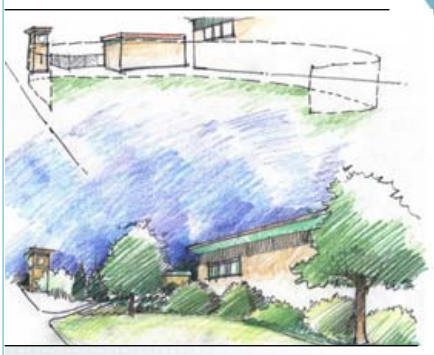


Figure 10.5i
Shaping Open Space

10.5.5 Street Trees

Street tree plantings should be used to reinforce vehicular hierarchy, orient and direct traffic, frame views and vistas, and visually de-emphasize parking areas. In the design of street tree plantings, separate plant species may be used to identify distinctive details or circulation corridors on Fort Wainwright. Large specimen tree species can be used in landscape developments within the right of way to continue the landscape theme of the area. Selection of street trees can define a particular land use or particular entity. Site furnishings and other related design elements should be considered in the placement of street trees.

Use single-stem Birch trees as formal street trees in single rows to visually reinforce primary and secondary roads. Use regularly spaced and uniformly sized street trees to provide a regimented appearance. The following is the standard design element for roadways on Fort Wainwright:

Primary Roadway. Roadway shall be a two-lane road flanked on at least one side by a 10 foot (3.05 m) wide walkway. On the side opposite the walkway, a 10 foot (3.05 m) shoulder/drainage ditch shall be constructed. Use street trees or manage understory succession of adjacent forested areas a minimum of 5 feet (1.52 m) beyond the back of walkway or drainage ditch. The minimum 5-foot (1.52 m) area between the walkway and the forested area (or street tree) shall be a manicured turf area. Paper Birch is a recommended street tree because of its ornamental, year-round interest. Street trees (if used) shall be located a minimum of 5 feet (1.52 m) beyond the back of walkway and spaced 40 feet (12.19 m) on center along each side of a primary roadway. See Figure 10.5j.

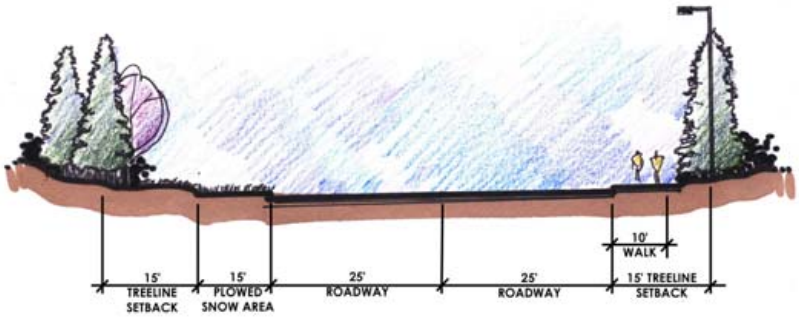
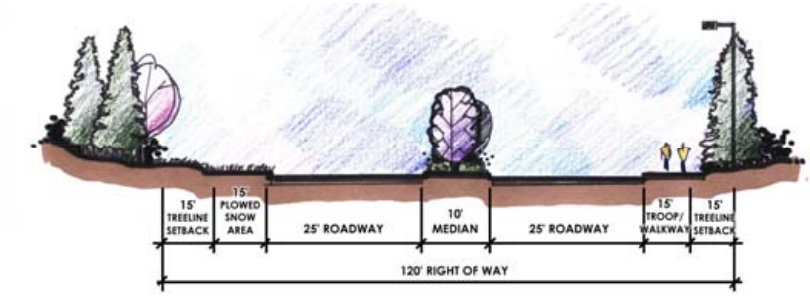


Figure 10.5j
Primary Roadway Plantings

Divided Primary Roadway (with median). Roadway shall be a four-lane road, divided by a 10 foot wide median, planted with street trees spaced 40 feet (12.19 m) on center. The roadway shall be flanked on at least one side by a 10 foot (3.05 m) wide walkway. On the side opposite the walkway, a 10 foot (3.05 m) shoulder/drainage ditch shall be constructed. Earthen berms landscaped with a complimentary evergreen/deciduous palette of plant material shall be located a minimum of 5 feet (1.52 m) beyond the back of walkway or drainage ditch. The minimum 5-foot (1.52 m) area between the walkway and the bermed landscape area shall be a manicured turf area. See Figure 10.5k.



▲ **Figure 10.5k**
Divided Primary Roadway Plantings

Secondary Roadway. Roadway shall be a two-lane road flanked on at least one side by a 10 foot (3.05 m) wide walkway. On the side opposite the walkway, a 10 foot (3.05 m) shoulder/drainage ditch shall be constructed. Use street trees on each side of secondary roadways to identify and establish scale within the right-of-way. Street (canopy) trees shall be located a minimum of 5 feet (1.52 m) beyond the back of walkway or drainage ditch, and spaced 40 feet (12.19 m) on center. Paper Birch is a recommended street tree because of its ornamental, year-round interest. The minimum 5-foot (1.52 m) area between the walkway and street tree plantings shall be a manicured turf area. Accent and screen areas outside, but adjacent to street trees with shrub plantings to address land uses where necessary. See Figure 10.5l.

▲ **Figure 10.5l**
Secondary Roadway Plantings

Tertiary Roadway. Roadway shall be a two-lane road flanked on both sides by a 5 foot (1.52 m) wide walkway. Use street trees on each side of tertiary roadways to identify and establish scale within the right-of-way. Street (canopy) trees shall be located a minimum of 10 feet (3.05 m) beyond the back of walkway, and spaced 40 feet (12.19 m) on center. Paper Birch is a recommended street tree because of its ornamental, year-round interest. The minimum 5-foot (1.52 m) area between the walkway and street tree plantings shall be a manicured turf area. Utilize smaller flowering trees to screen adjoining land uses and establish scale, define entries, and accent points of arrival or interest. See Figure 10.5m.

Figure 10.5m
Tertiary Roadway Plantings

Provisions will need to be made to allow for limited right of way widths. A street tree plan should provide for a clear unobtrusive view of the roadway and adjoining facilities. Preservation of lines of sight is important to include in the design and layout. Street light locations should also be coordinated with the street tree plan. See Figure 10.5n.

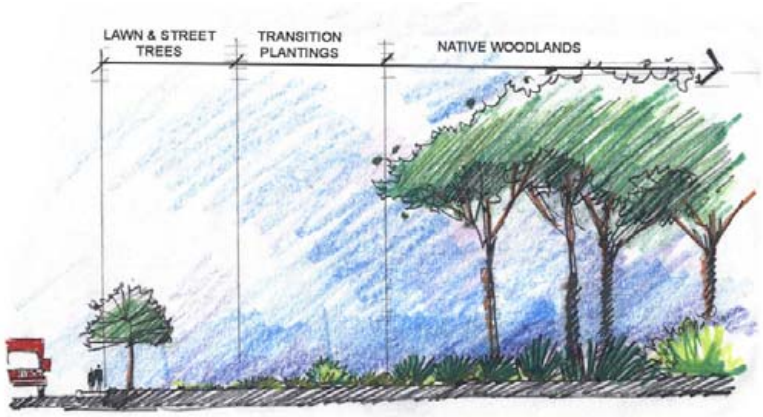


Figure 10.5n
Transition Zone

10.5.6 Parking Lot Planting

Parking lots are one of the least attractive elements at Fort Wainwright. The use of landscape hedge plant material and earthen berms can greatly improve the appearance of these areas as well as help define circulation and improve aesthetics. See Figure 10.5o.

Section 9.8 provides guidance in the location, design, and sizing of parking areas. Compliance with the planting area requirements will ensure sufficient landscape material to screen and improve the visual appearance of the area. As a minimum, 10 percent of the total parking area shall be dedicated to landscape planting within and around the parking lot. This should include one 2” (5 cm) caliper tree planted for each 12 parking spaces. The use of parking lot islands as illustrated in Figure 10.5p is encouraged to breakup the paving pattern and add interest to the space. Islands also assist in defining parking spaces and assist with traffic movement. Where islands are used in the parking lot, a combination of trees, shrubs, and ground cover is recommended to reduce maintenance and provide a visually appealing planting design. The use of turf grass in islands is discouraged due to high maintenance requirements.

Use selected shade tree plantings at parking lots to reduce glare and moderate heat gain. Provide landscape screening, berming, or fencing around the perimeter of a parking lot to screen from adjacent land use. Select plant material at entries to accent parking lots. These plantings should not block sight distances or create distractions.

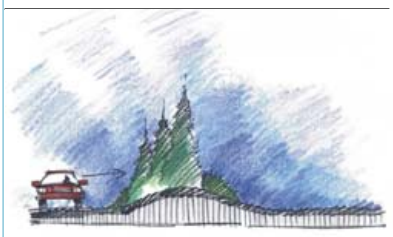


Figure 10.5o
Earth Berms Provide Screen

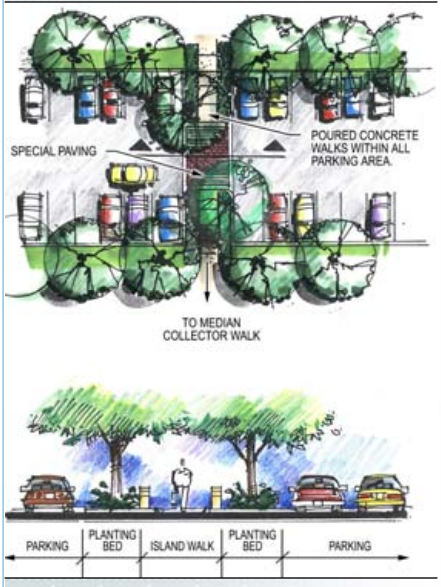


Figure 10.5p
Parking Lot Island Planting

10.5.7 Environmental Control Planting

When properly placed, plants can provide environmental benefits as well as address visual concerns. The use of selected plant material can provide shade, moderate temperatures, or provide visual pleasure such as the thoughtful placement of showy, flowering plants. Use mixes of plant material to provide contrast and visual impact at points of interest or to highlight important areas. The careful selection of plant material to fulfill more than one function, such as weed control, can improve environmental quality by reducing maintenance practices and improve the appearance of mass plantings.

10.5.8 Image Planting

The image of Fort Wainwright is formed by the visual impressions that exist upon arrival and within the installation. The primary locations of highly visible images are the main

gate, along primary circulation systems, and at areas of high concentrations of people. Features such as signs, statues, monuments and static displays, as well as other primary visual images can be improved by the use of trees, shrubs, and ground cover plants. See Figure 10.5q. To maintain a successful image, planting must be properly maintained through a regiment of care and knowledge of horticultural practices. The differences in maintenance practices between the lower forty-eight states and Alaska create a difficult design dilemma. There is an opportunity to highlight and display local culture and flavor by showing Alaskan influenced landscapes in key locations on the installation. Places like entrance drives and formal gathering areas are excellent locations for more formalized landscape elements. The rest of the installation should have a traditional landscape theme. See Figure 10.5r.

Figure 10.5q
Successful Image Planting at the New Hospital

Figure 10.5r
Landscape Elements Highlight the Physical Fitness Center Entrance

10.5.9 Entrances to the Installation

The entrances and streetscapes into the installation are areas to place landscaping that will develop a strong visual image and provide visual interest during the year. The entrance to the installation creates the first visual impression for the visitor. The visual zone associated with the entrance should be defined and preserved to keep the image of Fort Wainwright intact. Open space adjacent to the entrance should be preserved to create an image of grandeur and to serve as an announcement of arrival. See Figure 10.5s.

Landscape plant materials and planting areas should be proportional in scale to the hierarchy of the street on which they are located. Each gate should receive special consideration to create a sense of arrival by establishing ample open space, managing the understory succession of forested areas adjacent to the entry road to frame and accent each entrance, and providing shrubs and ground cover that accent the point of arrival.

Figure 10.5s
Open Space at the Main Entrance Should be Preserved

Force protection requirements discussed in Section 12 must be incorporated into the landscape design of the entrance. The design must maintain open lines of sight to observe pedestrian and vehicular traffic entering the installation.

10.5.10 Xeriscape

Xeriscape is the conservation of water and energy through creative and adaptive solutions that save money, water, and maintenance. The following website provides guidance on specific design principles on the xeriscape design process and xeriscape design application: USAF Landscape Design Guide, Xeriscape.

10.6 PLANTING PLAN

The planting plan is the essential element of the landscape construction package. The planting plan depicted in Figure 10.6a shows typical delineation of the location and types of proposed plant material in the project as noted in the plant material schedule. The plant schedule contains the following information:

- Common and botanical names of all plant material to be used.
- Plant size, height, width, and caliper.
- Container grown (specify size).
- Balled and burlapped (field grown).
- Bare root.
- Quantities.
- Notes and special requirements.

A grassing or turf plan should be part of the planting plan depending on the scope of the project. Specification documents typically included in a landscape design include planting procedures and methods, seeding or sod installation procedures with specified information on the type of grass to be installed.

Fort Wainwright is constrained by a climate which allows a limited palette of plant material from which to choose. The limited structure, color, and growth habits of the plant material available to use on Fort Wainwright provides the designer with fewer options to solving design issues. In addition, the flat terrain on the installation creates microclimates which require special attention to accommodate site specific soils and climatic variations. Basic plant selection criteria should consider creating a unified composition utilizing native and approved materials for low maintenance and sustainability; avoiding incompatible colors, textures, and forms; and matching the appropriate plant to the land use, situation, and environmental condition.

The ability of plant material to provide lasting benefit is dependent upon the plant's ability to adapt to new surrounding and site conditions. Major factors affecting plant survivability are permafrost conditions, water table, and other factors such as: soil hardiness and organic content, temperature, moisture, and light. These climatic and environmental conditions can be modified to some extent by specific site conditions such as soil remediation, wind protection, solar orientation, and planting design to create microclimates. Plants requiring shade and moist conditions would not be suited to plantings in a parking lot or in a full sun exposure location.

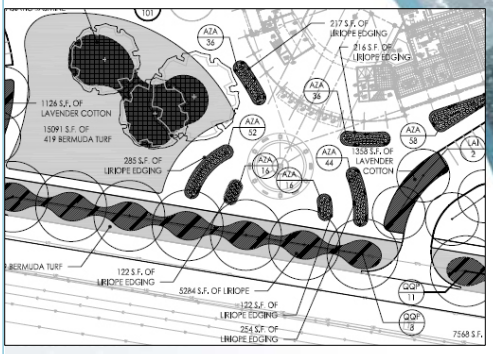


Figure 10.6a
Planting Plans Delineate Location and Type of Tree

Selecting appropriate plant material for a given condition is only one aspect of planting design. Compositional arrangement to provide texture variety and to accent site and building features is another. The selection and composition of a planting design requires an understanding of each plant's characteristics, form, and environmental needs as well as how each plant can relate to and complement other plants in the design. Plants are used in four basic design categories: canopy, barrier, screen, and ground cover.

10.7 PLANT PALETTE AND PLANT CATEGORIES

The plant palette and categories are designed to help the designer choose the best plant for each particular set of design requirements. The plants that appear on the palette and in the categories were selected for their ability to survive on Fort Wainwright. To use them effectively, the design requirements must be well defined for the specific site. See Figure 10.7a.

Figure 10.7a
Accent Plant Material

10.7.1 Plant Palette

Refer to Appendix O for a complete list of plant material and turf grasses compatible to the Fort Wainwright environment. The plant palette lists the plants in alphabetical order by their botanical name, followed by their common name, design characteristics, cultural information, recommended use, and miscellaneous information.

10.7.2 Plant Categories

Plants from the plant palette with similar characteristics are catalogued into plant categories. These characteristics could be cultural, environmental, ornamental, or functional. Each category describes a list of plants that share a similar quality.

10.8 LANDSCAPE INSTALLATION

How a landscape plan is established is important with respect to long-term results. Whether the project is constructed with in-house personnel or by contract, establishment procedures are the designer's quality guarantee.

Establishment specifications ensure proper installation of plant material, watering requirements, turf areas, and other project elements by requiring specific and constant attention to the project landscape elements immediately after installation. Since a large percentage of plant loss and inadequate watering occurs in the first year, establishment specifications greatly increase long-term project success.

A key step in assuring successful planting is to select plants of the highest quality, as shown in Figure 10.8a. Plant material should be of the size, genus, species, and variety to comply with the recommendations and requirements of the "American Standard for Nursery Stock" ANSI Z60.1.

As part of the design process and prior to plant installation, review the installation's Master Plans, Basic Information Maps, or As Built drawings for utility locations and verify with the Directorate of Public Works or equivalent.

The planting and establishment of trees, shrubs, ground cover plants, and vines in detailed in TM 5-803-13, Chapter 3.

Figure 10.8a
Tagging High-Quality Plant Material

10.8.1 General Guidelines for Plant Installation

Install plant material during periods recommended for transplantation. Specific times during the Spring or Fall of every year are recommended.

Planting specifications should provide for recommended planting soil mixes for plant specific applications. Fertilization and applications of pre emergence herbicide is required based on soil reports and plant material tolerance.

Applications of an antidesiccant to plant material are recommended as required, within the first 24 hours after installation. Planting specifications should provide direction as to the type of plant material to be treated.

Installation of plant material should follow the approval of the planting layout. Locations of plant material shall be staked out and approved prior to excavation in planting areas. As a general rule, shrub and ground cover beds should have a weed barrier with pre-emergence herbicide placed prior to installation of the plant material. Once completed, the planter bed should be mulched as specified with approved wood mulch.

Mulch should be specified for all trees, shrubs, and ground cover planter beds identified on the planting plan. All trees should receive a minimum of 4" (10 cm) of approved wood mulch in a 5'-0" (1.5 m) diameter ring around each tree. Mass planting of shrubs should also receive 4" (10 cm) of mulch within the boundaries of each planter bed. Ground cover and vine plantings require 3" (7.5 cm) of approved wood mulch placed within the boundaries of the planter bed. Individual plantings of shrubs should receive 4" (10 cm) of mulch in a 3'-0" (0.9 m) ring around each plant unless specified differently

on the planting plan. Approved wood mulch shall be a fibrous, shaven hardwood material uniformly sized and shaped and free of weeds, leaves, and bark.

10.8.2 Installation of Lawn Areas

Installation techniques for turf are detailed in TM 5-803-13, Chapter 4. The details include site evaluation, site preparation, and selection of turf and maintenance requirements. Appendix O provides a listing of locally acceptable turf grasses for the installation. All turfgrass selected to be installed on the installation shall be required to show proof of species purity by presenting a certification document with delivery of the selected plant material.

10.9 MAINTENANCE OF PLANT MATERIAL

The ease of maintenance should be one of the primary goals when considering the success of any planting design. Each landscape design should include a recommended maintenance plan discussing recommended maintenance procedures for the care of all plant material, recommendations for fertilization, pesticide applications, and herbicide treatments, and timetables for each activity. Points of contact should be included with the maintenance plan for each specific area of care. New landscape developments should to include fertilization, water management, herbicide, and pesticide programs as well as lawn care, using equipment similar to the ones shown in Figures 10.9a, 10.9b, and 10.9c.

10.10 TREE PROTECTION AND PRESERVATION

During the clearing and construction process, trees should be protected from damage. Construction barricades should be erected to protect the existing trees to be preserved. The barricades should be placed around each tree to be preserved, or around a group of trees designated to remain, at the drip line. As a standard guide, no construction material, equipment, chemicals, or vehicles shall be allowed within the drip line of any tree designated to remain. Any damage to the barricade shall be repaired immediately. Existing trees that cannot be preserved should be considered for transplanting to a different location on site or to a different site.

Changes in the grade of the soil around trees can cause extensive root damage and eventually death of the tree. Care should be taken to protect roots and existing grade around all trees

Figure 10.9a
Maintenance Equipment – Tri-Plex Mower

Figure 10.9b
Maintenance Equipment – Overseeder-Dethatcher

Figure 10.9c
Maintenance Equipment – Aerator

designated to remain. Avoid all trenching and utilidor construction under tree drip lines, as shown in Figure 10.10a. To prevent damage to the tree, it is important to maintain the existing grade for least the size of the canopy (the drip line), Figure 10.10b.

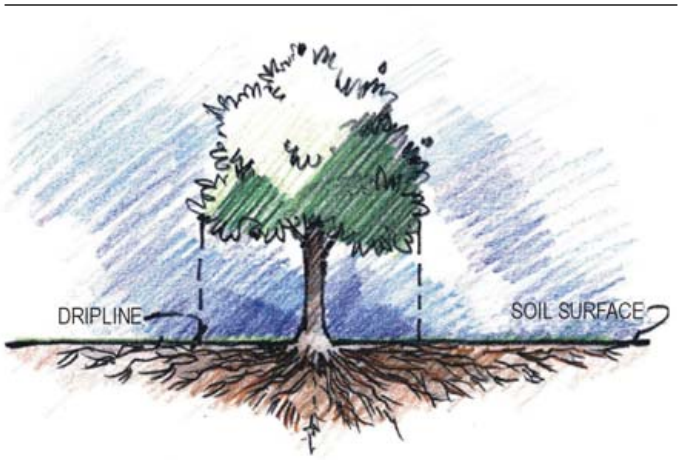


Figure 10.10a
Tree Protection – Avoid Trenching Under Dripline of Trees

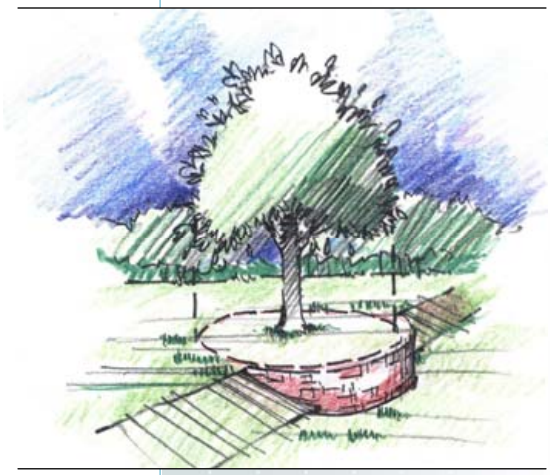


Figure 10.10b
Tree Protection – Maintain Existing Grade Around Trees

10.11 ANTITERRORISM/FORCE PROTECTION CONSIDERATIONS

The presence of vegetation on an installation can have both beneficial and detrimental impacts on security. The selection and placement of landscape plant material on Army installations is an integral element in the provision of protective measures to reduce the threat of terrorism.

Proper selection and placement of trees and shrubs can be utilized to provide visual screening without creating concealment for covert activity. The landscape architect responsible for preparation of landscape planting plans to meet force protection requirements shall comply with current publications and the provisions addressed in Section 12 of this Installation Design Guide and should work closely with installation force protection experts to design a landscape plan that provides visual screening without compromising antiterrorism measures.

The plant material must allow building occupants to see out, but must not allow outside forces to monitor interior activity. The landscape architect should incorporate the following aspects into the design:

- Avoid conditions within 10 meters (33 feet) of inhabited structures that permit concealment of aggressors or obscure the view of objects or packages 6 inches (15 cm) in height from the view of all personnel. Planting designs should provide for a clear zone within the 10 meters (33 feet) area that provides ground cover plantings which do not exceed 6" (15 cm) in height or placement of trees with mature trunk diameters of no more than 6" (15 cm). Multi-trunk plant species and plant material with large foliage which can obscure vision within the 10 meters (33 feet) area is not to be used.
- Planting designs beyond the 10 meters (33 feet) limit should provide groupings of larger plant material including shrubs and trees to provide accent to the building and site as well as provide reduction of blast effect.
- Plant material selection and placement shall minimize potential hiding places for bombs and aggressors.
- Provide vegetation screens for play areas and outdoor recreation areas to obscure from off-installation view.
- Use trees to obscure sight lines of on-installation buildings from off-installation buildings.
- Planting designs within the clear zone of security fencing shall not exceed a mature height of 4" (10 cm).
- Section 12.4 Landscape Considerations further define guidelines to consider during the design process.

10.12 ARMY STANDARDS

The cited Army Standards shall be met:

- Army Regulation (AR) 420-70, *Buildings and Structures*
- UFC 3-210-05FA, *Design: Landscape Design and Planting Criteria*
- UFC 4-022-01, *Security Engineering: Entry Control Facilities / Access Control Points*
- Technical Manual (TM) 5-630, *Natural Resources Land Management*
- Technical Manual (TM) 5-630, *Natural Resources Land Management*
- American Standard for Nursery Stock, ANSI Z60.1
- Overseas (Host Nation Standards)

10.13 REFERENCES

The following references are provided for guidance:

- USAF Landscape Design Guide
- Brickell and D. Joyce. *Pruning and Training,* 1996.
- N. Matheny and J. Clark. Technical Guide to Preservation of Trees During Land Development, 1998.

Section 11.0
Site Elements Design Standards

11

11.1 INTRODUCTION

Site elements include all visual elements of the installation that are considered utilitarian in use, Figure 11.1a. These elements include the following four categories of utilitarian amenities:

- Site Furnishings
- Signs
- Lighting
- Utilities

The four sub-components provide dominant visual impacts within the installation. The specific site element features and equipment should, to the extent possible, reflect the local or regional design standards. This allows for ease of maintenance and blending into the local community. The four sub-components and their visual impacts are discussed in detail in this chapter.

11.2 SITE ELEMENT OBJECTIVES

The site element plans for existing and future installation use should be prepared and the site elements selected to enhance the sustainability of the installation. To this end, the following objectives should be met:

- Provide site elements that are appropriate to their intended function.
- Establish a coordinated system of site elements that provide consistency and continuity throughout the installation to convey a sense of organization.
- Express an image, character, and scale appropriate to the design and location of the installation.
- Design and locate all site elements to meet AT/FP requirements.
- Use recycled/salvaged materials wherever possible.

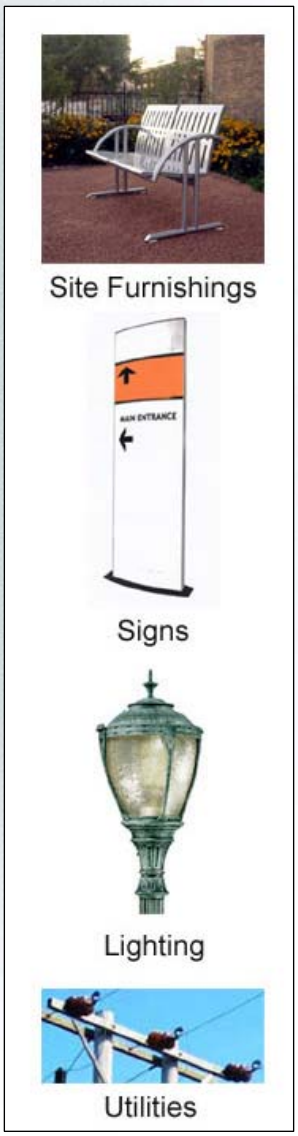


Figure 11.1a
Section Elements

- Minimize maintenance and repair through the use of efficient products that are vandal-proof.
- Minimize negative visual impacts of all utility systems, Figures 11.2a and 11.2b.
- Minimize environmental impacts of all utility systems.

Figure 11.2a
Unscreened Utility

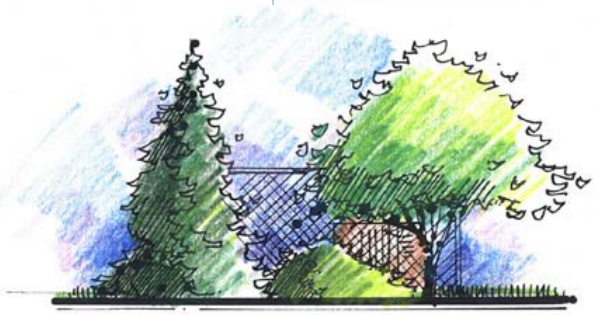


Figure 11.2b
Screened Utility

11.3 SITE FURNISHINGS

Site furnishings recommended within this section are products which are adapted for the Alaskan climate. Site furnishings include all of the utilitarian outdoor amenities found on an installation. These outdoor furnishings should be located in coordinated clusters to provide areas of multi-furnishing amenities, and avoid the haphazard proliferation of furniture elements around the installation. All furnishings shall be accessible to, and usable by, persons with disabilities, in accordance with the requirements of the Americans with Disabilities Act Accessibility Guidelines (ADAAG) and the Uniform Federal Accessibility Standards (UFAS), with the most stringent standards to apply in the event of conflicts.

Site furnishings include the following:

- Seating
- Tables
- Shelters
- Kiosks
- Walls and Fences
- Trash Receptacles
- Dumpsters
- Flagpoles
- Bicycle Racks
- Bollards
- Play Equipment
- Mailboxes
- Monuments, Memorials, and Military Equipment Static Displays

11.3.1 Seating

Seating includes benches and walls, as well as tables and movable chairs.

11.3.1.1 Benches.

Bench Location. Benches should be located in areas of high pedestrian use, and arranged to encourage socialization within a pleasant outdoor setting. This includes pedestrian nodes along primary walkways, at major building entryways, courtyards, and at bus stops.

Bench Placement. Benches should be sited on concrete pads adjacent to walkways. Provide proper clearance around benches, a minimum 2'-0" (0.6 m) setback from adjacent sidewalks and a minimum of 5'-0" (1.5 m) between front of bench and any stationary obstacle. Provide appropriate planting treatment for visual definition and seasonal shade.

Bench Design.

Modern Benches. Metal benches with backs are appropriate for the informal gathering, resting, eating, and waiting uses characteristic of the *modern* community facility areas; Figure 11.3a. Benches should be a contoured style, as *Landscape Forms, Inc.* "Petoskey" series constructed of black colored aluminum powder coated material or approved equal. Standard bench size should be 6'-0" long. Bench dimensions should meet specifications presented in the Technical Manual (TM) 5-803-5, *Installation Design Manual*. Wall mounted benches should be similar in style and color to free standing benches.

Rustic Benches. Wood benches without backs are appropriate for the informal gathering, resting, eating, and waiting uses characteristic of the *more rustic* community areas; Figure 11.3b. Wood benches should be a simple style as *Landscape Forms, Inc.* "Palisade" or "Shadowline" series with powder coated black aluminum supports and or constructed of 2 1/2" by 2 1/2"Jarrah wood or Redwood , or approved equal. Standard bench size should be 6'-0" long. Bench dimensions should meet specifications presented in the Technical Manual (TM) 5-803-5, *Installation Design Manual*. Wall mounted benches should be similar in style and color to free standing benches.

Figure 11.3a
Belson Perforated Steel Bench

Figure 11.3b
Belson Pedestal Bench

11.3.1.2 Seating Walls. Wherever possible, seating should be incorporated into planter boxes or retaining walls, particularly at building entrance areas. Seating walls should be integrated into the overall area design and the pedestrian circulation system.

Seating wall design should generally be between 18" and 22" (45-56 cm) high, and 12" to 18" (30-45 cm) wide. Seating surfaces should be pre-cast concrete with wall portions constructed of textured concrete faced with brick or stone in a manner to complement or match the materials of the adjacent buildings, Figure 11.3c.

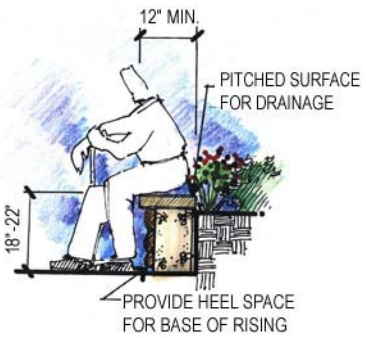


Figure 11.3c
Seat Wall

11.3.2 Tables

Locate tables together with seating that is oriented to the user needs of socializing, relaxing, or eating. This can be accomplished in less formal spaces with a pleasant setting and attractive view.

11.3.2.1 Table Location. Small groupings of tables in high visibility areas should be placed within proximity of recreation or food service facilities. These groupings should be located on hard pavement areas adjacent to walkways. Pavement should be constructed of broom finish concrete or a paver system compatible with the local climate. Incorporate tree plantings and overhead trellis structures within these areas to provide shade and spatial definition.

11.3.2.2 Table Materials.

Table Design.

Metal Tables. Metal tables and attached chairs with backs are appropriate for the informal gathering, resting, eating, and waiting uses characteristic of the modern *as* well as historic community areas; Figure 11.3d. Tables should be style *Landscape Forms, Inc.* "Gretchens" series tables constructed of aluminum and powder coated with black, or a color option compatible with the associated structure or facility or approved equal. Standard table size should be 42" wide. Table dimensions should meet specifications presented in the Technical Manual (TM) 5-803-5, *Installation Design Manual*.

Metal Seats. Use attached matching colored *Landscape Forms, Inc.* seats or approved equal.

Figure 11.3d
Table, Landscape Forms, Inc.

11.3.2.3 Chairs. Use *Landscape Forms, Inc*. "Traverse" chairs made of aluminum with black or an optional color powder coating where movable tables and chairs are appropriate or approved equal; Figure 11.3e. Use *Landscape Forms, Inc*. series tables made of aluminum and powder coated to match chairs, or approved equal.

Figure 11.3e
Table and Chairs, Landscape Forms, Inc.

11.3.3 Telephone Booths

Telephone booths when deemed necessary on the installation, should be incorporated into building architecture utilizing building recesses and overhangs, or integrated into bus or other shelters. Provide a minimum 3'-0" (0.9 m) clearance between booths and the edge of walkways. All service line wiring should be underground or concealed. Booths should be equipped with lighting for nighttime use. In sheltered areas, use standard wall-mounted phone enclosures.

11.3.4 Shelters

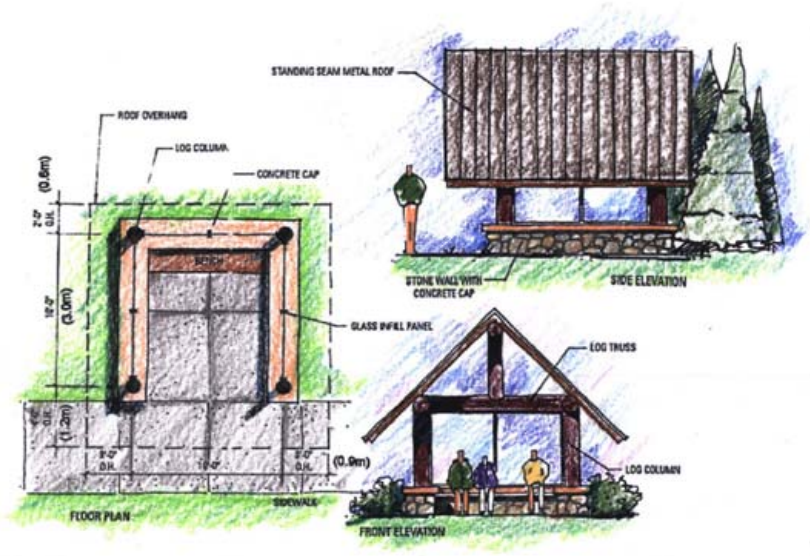
There are many different types of shelters on military installations. Shelters are provided for those waiting for buses and in areas where people congregate to socialize or eat, such as in courtyards or picnic areas.

11.3.4.1 Bus Shelters.

Bus Shelter Location. Bus shelters should be located at major facilities along the bus route such as Commissary/Post Exchange areas, barracks areas, clinic, and library. Bus stops should relate to major pedestrian walkways, and be placed on concrete pads. Provide a minimum 3'-0" (0.9 m) clearance between shelters and the edge of walks.

Bus Shelter Design. Bus shelters should provide protection from wind, snow, and rain with an overhead standing seam metal roof with log construction techniques found in Alaskan vernacular architecture. Bus shelter design typically should be simple and consistent throughout the post, matching the existing units in terms of materials, scale, and detail. Shelter design should be similar in character to kiosks and mail shelters. Bus shelters should have a minimum size of 10'-0" by 10'-0" (3.0 m by 3.0 m) with a minimum height of 6'-6″ (2.0 m) from floor to underside of log support. The shelters should include an integral bench, trash receptacle, and ashtray.

Suggested design should blend well with nearby architectural features as shown in Figure 11.3f. Bus shelter design requires DPW approval.



▲ **Figure 11.3f**
Bus Stop Shelter

11.3.4.2 Picnic Shelters.

Picnic Shelter Location. Picnic shelters should be strategically located and sized for shared use to discourage the proliferation of small shelters scattered throughout the installation.

Picnic Shelter Design. Picnic shelters can be open on all sides. The minimum size should be 20 feet (6 m) square with a minimum 8-foot (2.4m) vertical clearance. Picnic Shelter design requires DPW approval. As a typical condition large shelters should allow for a fire pit or fireplace to extend the time a shelter can be used.

11.3.5 Kiosks

11.3.5.1 Kiosk Location. Kiosks can be used as information centers at pedestrian nodes within the Town Center Visual Theme area and along trails at key points along a route. Provide kiosks only where they are needed and on a concrete base adjacent to walkways. Allow a minimum of 3'-0" (0.9 m) clearance on all sides.

11.3.5.2 Kiosk Design. Kiosk design should blend compatibly with other site furnishings and with the architectural character of the zone in terms of form, scale, and materials. A similar design treatment should be established for both kiosks and shelters. Kiosk design requires DPW approval.

11.3.6 Walls and Fences

11.3.6.1 Location and Use. Walls and fencing should be used to provide visual screening, define pedestrian plaza areas, wind and snow screening, pedestrian and vehicular control, security, and to retain soil. The design of walls and fences should fulfill their function in harmony with the character and appearance of their setting.

11.3.6.2 Walls. Low walls should be used to define pedestrian court areas and provide informal seating. Screening walls can be used where appropriate to screen building service areas. Walls adjacent to walkways should be free of any projections, such as signs that would pose a hazard to passing pedestrians. Construction of walls should complement adjacent buildings. Use stone, concrete cap, or concrete with a textured finish or brick, and a stone or concrete cap. Retaining walls may be constructed of brick, native stone, or concrete block with a light tan stucco finish, or other appropriate material. Walls used to screen service areas or trash enclosures should incorporate landscape plantings to help reduce the negative visual impact of these areas.

11.3.6.3 Fences. Fences should be utilized for screening of service areas and site utilities, particularly dumpsters. Screen fencing should consist of square tubular metal posts and rails with vertical tan or brown vinyl fence boards. All fence posts should be securely anchored with concrete footings. All metal posts and framework should be painted standard dark brown and wood fencing should be western cedar. Hardware shall be stainless steel to prevent rust. Chain link fences should be screened with trees and shrubs. The use of chain link fence should be held to a minimum in the cantonment area.

In locations such as entry points to the installation, the design of the security fence should be considered as part of the visual image of the installation and a higher quality product may be considered such as Figure 11.3g. There are several approved designs which meet force protection requirements and still provide an architecturally pleasing appearance to high profile areas of Fort Wainwright. The use of this type of mounting on walls will add security and visual appeal.

Figure 11.3g
Perimeter Steel Security Fence

11.3.7 Trash Receptacles

11.3.7.1 Trash Receptacle Location. Trash containers should be highly visible and accessible for effective litter control. Containers should be located conveniently along walkways, near major pedestrian intersections, near seating, and eating areas, and as far away from facilities as possible. Antiterrorism/force protection requirements restrict the location of trash containers to a minimum of 10 meters (33 feet) from inhabited buildings and 25 meters (82 feet) from billeting and primary gathering areas (*Unified Facilities Criteria (UFC) 4-010-01, DoD Minimum Antiterrorism Standards for Buildings*, Table B-1).

11.3.7.2 Trash Receptacle Design. Container should be of a design that is compatible and in harmony with other site furnishings.

Trash Receptacle Location. Trash receptacles should be located in areas of high pedestrian use, and arranged to support socialization within a pleasant outdoor setting. This includes pedestrian nodes along primary walkways, at major building entryways, courtyards, and at bus stops.

Trash Receptacle Placement. Trash receptacles should be sited on concrete pads adjacent to walkways. Provide proper clearance around receptacles, a minimum 2'-0" (0.6 m) setback from adjacent sidewalks and a minimum of 5'-0" (1.5 m) between front of receptacle and any stationary obstacle. Provide appropriate planting treatment for visual definition and seasonal shade.

Trash Receptacle Design. Trash receptacles are necessary to support the informal gathering, resting, eating, and waiting uses characteristic in community areas. Trash receptacles in the historic and modern community areas should be styled as *Landscape Forms, Inc.* "Scarborough" series top-opening litter receptacle constructed of aluminum and powder coated black, or approved equal; Figure 11.3h.

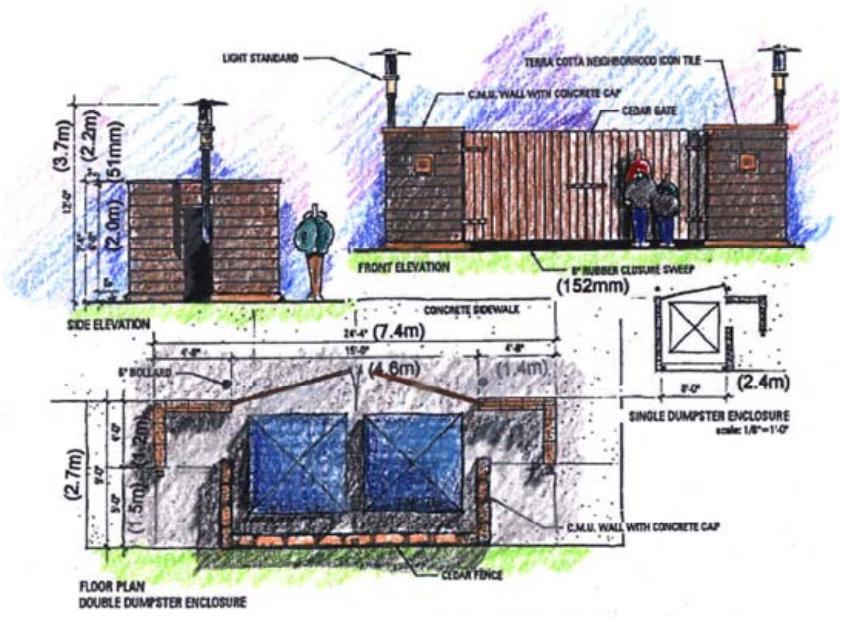
Figure 11.3h
Trash Receptacle, Landscape Forms, Inc

11.3.8 Dumpsters

11.3.8.1 Dumpster Location. The location of dumpsters can have a significant visual impact and should be addressed as part of an overall building design and incorporated in site planning. To the greatest extent possible, incorporate dumpster placement into areas screened with walls, fencing, or plant material. Avoid locating dumpsters along major circulation or use areas. Dumpsters should be directly accessible by way of a paved service drive or parking lot with adequate overhead clearance for collection vehicles.

Antiterrorism/force protection requirements restrict the location of dumpsters to a minimum of 10 meters (33 feet) from inhabited buildings and 25 meters (82 feet) from billeting and primary gathering areas (*Unified Facilities Criteria (UFC) 4-010-01, DoD Minimum Antiterrorism Standards for Buildings*, Table B-1).

11.3.8.2 Dumpster Site Design. Incorporate plantings to buffer the visual impact of screen walls. Walls or fencing should be a maximum 6'-0" (1.8 m) in height or 1' above the highest point of the dumpster, which ever is greater. Provide a minimum 3'-0" (0.9 m) clearance on each side between screen walls and dumpsters to allow adequate pedestrian and truck access. All dumpsters should be placed on concrete pads with aprons large enough to encompass the bearing points of the service vehicle. Dumpster enclosures on Fort Wainwright shall be constructed to generally model the adjacent building architecture. Material and color shall match the adjacent structure. If the dumpster serves more than one building, it shall be designed to match the building most closely adjacent to. All dumpster enclosures shall be constructed of split-face CMU block with a cast stone cap which most closely matches the building architecture of the adjacent structure. See Figure 11.3i.



▲ **Figure 11.3i**
Dumpster Enclosure

11.3.9 Flagpoles

The standard flagpole for Fort Wainwright will be tapered mill finish aluminum fitted with a gold anodized finish “ball” finial, Figure 11.3j. The mounting detail should be simple with a concrete base flush at grade. A concrete pad should be used when poles are located in lawn areas. In plaza areas, flagpole locations and mounting detail should be integrated into the paving pattern. Flagpoles should include lighting and may be accented with planting beds around the base of the flagpole.

Figure 11.3j
Flagpole

11.3.10 Movable Planters

Movable pre-cast concrete planters may be used outside building entrances to provide seasonal color and interest and function as security threat barriers. Planters should be located so they block uninterrupted vehicular access to a building, but not so they excessively impede pedestrian movement. Several planters of various sizes should be grouped together to produce an aesthetically pleasing display.

Movable pre-cast concrete planters should be Petersen Precast and Metal Site Furnishings “RP” series or approved equal and may be used outside building entrances to provide seasonal color and interest and function as security threat barriers, Figure 11.3k.

Figure 11.3k
Movable Planter

11.3.11 Bicycle Racks

Bicycle racks should be provided at key destination locations. They should be located on a concrete surface where they will not impede pedestrian movement or block building entrances.

A ribbon type tubular aluminum bike rack with an anodized dark bronze finish *Ribbon Rack, Inc.*, or approved equal Figure 11.3l. Bicycle storage areas near barracks should be covered.

Figure 11.3l
Bike Rack

11.3.12 Tree Grates

Tree grates should be used when installing trees in large paved areas such as pedestrian plazas, walks, and ceremonial entrance courts. Tree grates and planting pits should be a minimum of 5'-0" by 5'-0" (1.5 m by 1.5 m).

11.3.13 Bollards

Bollards are utilized to separate vehicular and pedestrian traffic, to direct access, or as decorative elements in pedestrian areas.

Cast Cast concrete bollards should be incorporated in areas where pedestrian traffic is desired but vehicular traffic is prohibited. Fort Wainwright has developed standard design for two types of Bollards on the installation.

Level 1 bollards shall be a more formal design and shall be used in areas where there are concentrations of vehicular and pedestrian traffic. These bollards shall be concrete with a beveled top, a reveal and a sack finish. The reveal is to be ceramic tile colored to match the site furnishings and building color. See Figure 11.3m.

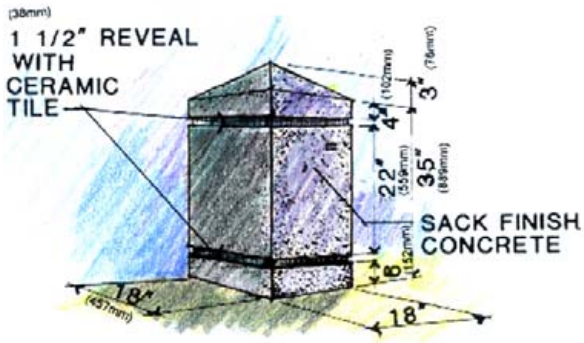


Figure 11.3m
Level 1 Bollard

Level 2 head bolt outlet bollards shall be provided with each parking space on Fort Wainwright. The design of the bollard may vary and should complement the architecture of the building associated with the parking area. A basic design has been adopted by Fort Wainwright and is constructed of 8”x8" pressure treated wood as depicted in Figure 11.3n. The bollard shall be equipped with a weatherproof duplex outlet attached to the top part of the bollard with a junction box/circuit breaker mounted below. Bollards shall be set back for the curb two feet (2'). Locate bollards such that the extension cord runs from the vehicle do not cross walkways or driveways. Where two (2) cars are parked head to head, provide 2 outlets per bollard.

Ground fault interrupter (GFI) outlets should not be used due to freeze potential. Provide thermostat to close circuit at 20 degrees above zero to prevent shock hazard with melted snow at base of bollard.

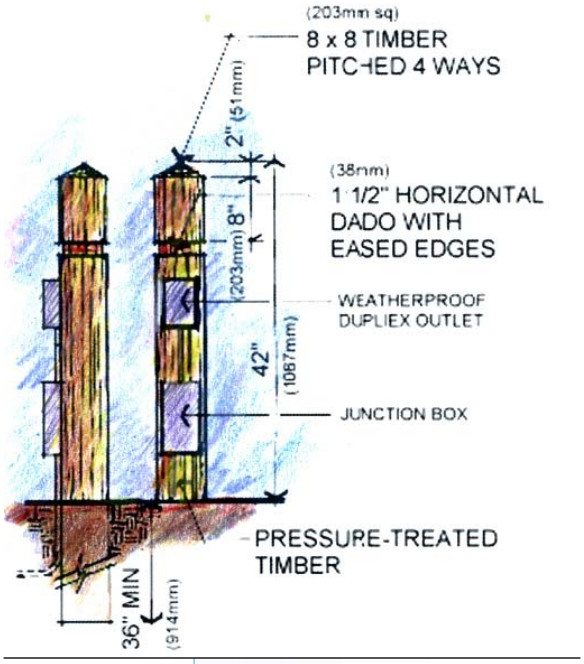


Figure 11.3n
Level 2 Bollard

11.3.14 Play Equipment

11.3.14.1 Playgrounds/Tot Lots. The playgrounds and tot lots within the installation should use equipment that is consistent throughout the installation or that meets specific criteria of materials, color, and design preferably *Landscape Structures, Inc.* or approved equal; Figure 11.3o.

▲ **Figure 11.3o**
Play Equipment

11.3.14.2 Playground Planning and Design. Guidance for planning and designing unsupervised outdoor play areas that meet child safety and child development requirements is found in Technical Manual (TM) 5-803-11, *Children's Outdoor Play Areas*. The guidance given in this publication meets the needs of children with and without disabilities. In addition any equipment must meet the standards outlined in the following:

- Consumer Product Safety Commission Publication #325, Public Playground Safety
- ASTM F1487-EO1 Federal Guideline (Manufacturing)
- ADA requirement for playground equipment and access to playgrounds

11.3.14.3 Playground Inspection and Maintenance. A play area inspection and maintenance program for Child Development Centers can be found in Technical Manual (TM) 5-663, *Child Development Center, Play Area Inspection and Maintenance Program*.

11.3.14.4 Recalled and Banned Playground Equipment. For updates on banned or recalled playground equipment consult the Consumer Product Safety Commission Press Releases and Recalls web site.

11.3.15 Mailboxes

All mailboxes should be located in close proximity to the facility they serve. However, when locating mailboxes consider the potential for the site element being used as a container for the concealment of explosives, etc. Consider AT/FP requirements for locating similar container types i.e. trash receptacles which are located a minimum of 10 meters (33 feet) from inhabited buildings and 25 meters (82 feet) form billeting and primary gathering areas (*Unified Facilities Criteria (UFC) 4-010-01, DoD Minimum Antiterrorism Standards for Buildings*, Table B-1).

The location should be coordinated with the Postal Services.

If group mailboxes are required, provide central locations for them adjacent to hard-surface walkways, but do not impede pedestrian movement. Figure 11.3p.

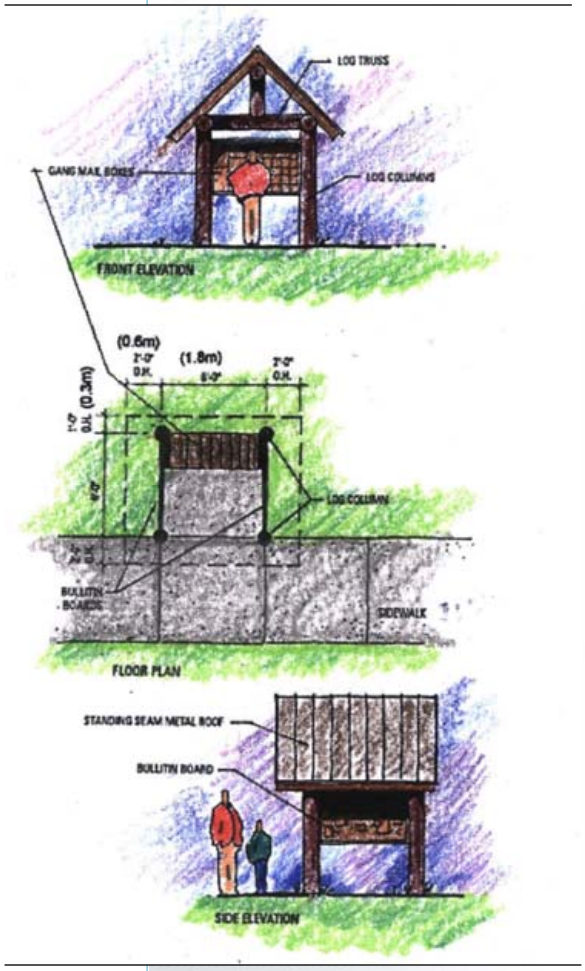


Figure 11.3p
Mail Shelter

11.3.16 Monuments, Memorials, and Military Equipment Static Displays

Monuments and static displays should be carefully designed and placed in prominent locations to serve as visual focal points within the installation. Static displays of equipment should be consolidated in one location to create a central museum or exhibition facility within the installation.

Memorials will conform to the guidance set forth in Army Regulation (AR) 1-33, *Memorial Programs*.

11.3.17 Drinking Fountains

Outdoor drinking fountains should not be provided, except to support larger playgrounds, outdoor recreation facility complexes, and outlying recreation areas if convenient to a potable water supply line. Steps should be provided for children, and the Americans with Disabilities Act Accessibility Guidelines (ADAAG) and Uniform Federal Accessibility Standards (UFAS) standards should be met.

11.4 EXTERIOR SIGNS

Signs have a major effect on the appearance of Fort Wainwright and the professionalism of its units. Only signs that professionally communicate directions and location to those functions and activities that truly warrant identification shall be used. See Figure 11.4a. The number of signs on the installation shall be held to the absolute minimum required for directions, identification, and customer service. This section establishes guidelines for standardizing sign material, color, style, types, and placement throughout the installation.

Signs are used to visually communicate information. They are highly visible features that should be attractive and compatible with their surroundings. Careful consideration must be given to what a sign says, how it is said, its visual appearance and organization, its location, structural support system, and relation to other signs within the installation. Standardized signage systems facilitate movement, provide a sense of orientation, and reinforce Fort Wainwright's standards of excellence. See Figure 11.4b.

Signage creates a unifying element throughout the installation that visually ties the installation themes together and builds a reference and continuity that translates into confidence and reassurance when traveling throughout the installation. See Figure 11.4c. The standards to apply for signage color, type, and sizing is found in Technical Manual (TM) 5-807-10, *Signage*.

11.4.1 Sign System Characteristics

There are several basic design characteristics that, by serving to convey necessary information clearly and attractively, are an integral part of any successful signage system.

- **Simplicity.** An effective strategy provides only needed information, avoids redundancy, and eliminates over-signing with resultant clutter and visual confusion. Sign messages must be clear, simple, and easy for motorists to process quickly without overburdening them. See Figure 11.4d. Confused drivers are a hazard to themselves and others. Irrelevant and ineffective signs are costly to maintain and add more fixed-object hazards along the roadway.

Figure 11.4d
Signage Should Not Provide More Information Than Can Be Processed

Figure 11.4a
Identification Sign Exemplifies Pride and Professionalism

Figure 11.4b
The Signing System Should be Consistent in Design to Present a Positive Installation Image and Identity

Figure 11.4c
Gate Installation Identification Sign Does Not Create Attractive, Inviting, or Unified First Impression

- **Continuity**. It is essential that the orientation system be applied uniformly and consistently throughout the entire installation. The importance of consistent implementation extends from the larger issues of sign type and size down to accurate color continuity and matching typestyles. It is also important to keep names of destinations consistent throughout the orientation system, including the names on maps and the names used by security forces when directing visitors to a point of destination on the installation. A direction sign pointing the way to the Headquarters Building should lead to a building that is called the Headquarters Building and not something else.
- **Visibility**. Visibility, both day and night, through good clearances, contrasts, and lighting should be the first consideration before sign placement is undertaken. Sign location is a very important ingredient within the orientation system. Signs must be located at significant decision points and oriented to provide clear sight lines for the intended user and should permit ample time for the viewer to respond to the message. Close coordination of locations with respect to landscaping, utilities, adjacent signage, and various other street design elements is important to ensure long-term maximum visibility and safety. See Figure 11.4e.

▲ **Figure 11.4e**
Sign Location is Important to Ensure Maximum Visibility

▲ **Figure 11.4f**
Sign Legibility Impacted by Too Much Information

- **Legibility**. Sign typestyle, line spacing, color, and size all combine to create the crucial design characteristics of legibility. See Figure 11.4f. This aspect of sign design should take into consideration users such as motorist, pedestrians, or bicyclists and the relative travel speed at which each type of user will be traveling when viewing the signs.
- **Aesthetic**. Signs are an important part of the impression made by installation. Use signs of high quality, design, construction, and maintainability in order to present a professional image of Fort Wainwright.

11.4.2 Vocabulary-Communications

A common language has been created for establishing a signing system. The different components that create the sign package have been named and referred to within the total signing system.

The creation of a "signing language" helps generate a unified bond within sign types that make up a signing family. See Figure 11.4g. This includes:

- Information/Message
- Typography
- Presentation
- Architectural Influence
- Graphic Architecture

Figure 11.4g
Signs Should Create a Unified Graphic Architecture Governed by Installation Standards

11.4.3 Visual Hierarchy

The entire signing system must communicate, through a range of sign and typestyle sizes, the relative importance of the individual activity that the sign identifies. The system should follow a logical progression from a point of origin to the desired destination.

A stated ranking method supports the visual standard of hierarchy within the signing system. Signs can be organized within assigned classes with emphasis on the function and image of the installation.

Within each class, the level of architectural influence evokes the importance of the sign to the installation. This is also critical to the idea of progression. The importance of a sign must be presented in its size and level of detail.

As individuals move closer to their destination on the installation, the scale of the sign becomes progressively smaller and the level of the message more detailed.

11.4.4 Types of Exterior Signs

There are six basic categories of exterior signs: Identification, Motivation, Guide, Mandatory/Prohibitory, Information, and Regulatory Signs.

11.4.4.1 Identification Signs. There are four basic types of identification signs: Installation, Military Headquarters, Military Facility, and Community Facility Identification Signs. These are signs that identify entrances to the installation, areas within the installation, major tenants, buildings, and organizational or

▲ **Figure 11.4h**
Wall Mounted Identification Signs Minimize Visual Clutter and Maintenance

functional components. They identify a location and greet the visitor to that location. They should be compatible in scale and character with the architecture and also blend with the natural surroundings.

Wall mounted identification signs may be used instead of freestanding exterior signs. Wall mounted signs eliminate visual clutter and minimize maintenance. See Figure 11.4h.

These signs are designed to include the following:

Typeface: Lettering is self-adhesive backing material.

- Building Title: Helvetica Medium, upper and lower case
- Building Numbers: Helvetica Regular
- Building Addresses: Helvetica Medium, upper and lower case

Color:

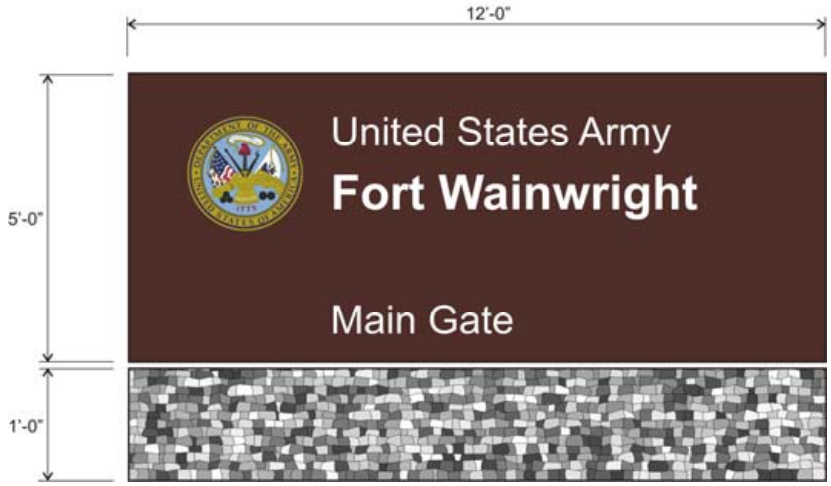
- Panel: Dark Brown (High Intensity), 3M Color Code- Brown #2279/36" Heat Activated Engineering Grade or approved equivalent
- Lettering: Beige (Engineering Grade), GSB-Vinyl-VEI-501-220/15" or approved equivalent
- Post: Black
- Exposed panel backs and edges: Dark Brown
- All paint: Semi gloss

Materials: Black steel signposts are encouraged. Black vinyl sleeves for signpost and dark brown adhesive vinyl sheeting for the backs of signs provide a low-maintenance option.

- Panel: Double-face 1/8" thick aluminum
- Post: Steel pipe
- Foundation: Concrete pier or direct burial

See Technical Manual (TM) 5-807-10, Signage, for further sign specifications and for sign placement guidelines.

Installation Identification Signs. Installation identification signs name the installation and display the official US Army plaque. The designation "United States Army" must appear at the top of the sign in accordance with AR 420-70, paragraph 2-7h. Every installation entrance shall have an installation identification sign displaying only the U.S. Army plaque, with the words "United States Army, Fort (Name of Fort)", and gate name as indicated in Figure 11.4i, Installation Identification Sign. The placement of Senior Mission Commander logo, unit crest, and other installation identification signs, monuments, or displays shall be located inside the installation beyond the cleared area of the Access Control Point of entry. When used service-wide, these signs convey a uniform image of strength and stability to the public. Emblems, branch colors, unit mottos, names, and titles of individuals are not to be displayed.



▲ **Figure 11.4i**
Standard Installation Identification Sign

Installation identification signs consist of three types:

Sign Type A1 – Main Entrance Sign identifies the principal visitor entrance.

Sign Type A2 – Secondary Entrance Sign identifies entry points with relatively high volumes of visitor traffic.

Sign Type A3 – Limited Access Entry Gate Sign identifies entry points with limited public access.

Military Headquarters Identification Signs. Military headquarter identification signs identify military activities and facilities and carry unit name information and street addresses; Figure 11.4j.

Military headquarters identification signs consist of four types:

Sign Type B1 – Installation Headquarters Sign identifies the central administration of the installation.

Sign Type B2 – Command, Division, and Brigade Headquarters Sign.

Sign Type B3 – Battalion Headquarters Sign.

Sign Type B4 – Headquarters Building Entrance Sign identifies the building entrance for all levels of authority. In addition, Type B4 is used to identify a unit headquarters that has a special entry point other than the main entrance of a building.

Name plate attachments are prohibited. Insignias, emblems, branch colors, unit mottos, names, or titles of individuals will not be used on these signs unless approved by DPW.

Identify buildings with either a free-standing or building-mounted sign, but not both. Building mounted signs are preferred. Free-standing building identification signs should be kept to a minimum. A primary objective of the installation orientation system is to reduce the number of signs and to eliminate the visual clutter that results from the over use of signage. See Figure 11.4k. Locate signs only where they are needed to provide orientation. As a general rule, provide one sign for each building. An option to the standard building identification sign is the use of facility-mounted, individual letter-type signs affixed to the buildings. The size and location of these signs should be standardized throughout the installation, normally over the building main entrance.

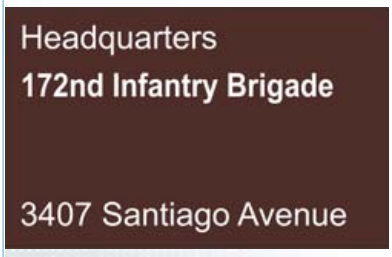


Figure 11.4j
Standard Military Headquarters Identification Sign

Figure 11.4k
Attractive Wall Mounted Building Identification Signs Reduce Visual Clutter

These signs are designed to include the following:

Typeface: The letter shall be mounted to the wall according to the manufacturers' specifications.

- Building Lettering Size: 2mm to 25mm (1/2" to 1") deep, Helvetica medium typeface.
- The depth separates them from the plane of the wall and gives them a crisp appearance, while the Helvetica medium typeface relates to other Army signs.

Color:

- The color or finish of the letters should compliment the predominant color of the building while providing enough contrast with the background for visibility.
- Use a light-color or bright metallic finish for the lettering on dark buildings and a standard brown or dark bronze finish for the lettering on light colored buildings.

Materials:

- Several letter materials are available through sign manufacturers; however, rigid foam with aluminum facing is the preferred letter material.
- Letter materials should be selected based on durability, architectural compatibility, and cost effectiveness.

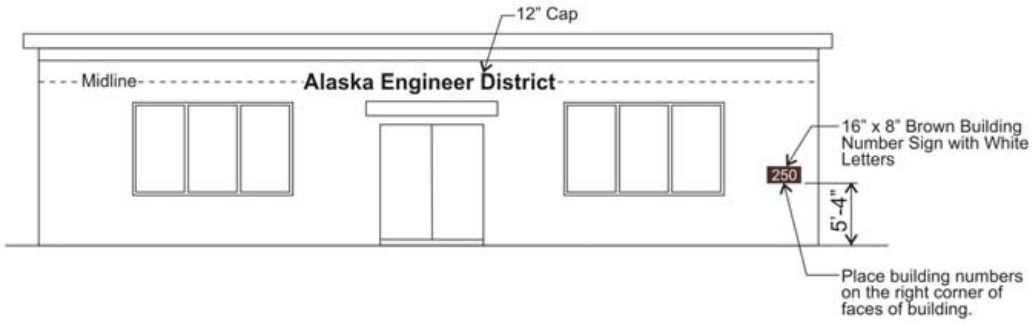


Figure 11.4l
Wall Mounted Building Identification Sign Location

Building Number Signs. Building identification numbers should be designed as part of the overall signage system. Building number signs should be consistent in color with installation identification signs (brown) and fabricated on standard sheet metal stock. Signs shall be attached to the right corner of perpendicular faces of buildings to provide easy emergency service identification. See Figure 11.4l. Signs shall have 4 to 6-inch white letters. A record of building painting will be retained in the Civil Engineer Real Property records for maintenance tracking purposes. See Figure 11.4m.

Figure 11.4m
Building Number Signs Color and Design Shall Be Compatible With Installation Sign Architecture

Military Facility Identification Signs. Military facility identification signs are used to identify company level organizations and other military facilities not included in the installation identification or military headquarters sign types. Insignias, emblems, branch colors, unit mottos, names, or titles of individuals will not be used on these signs unless approved by DPW.

Military facility identification signs consist of seven types:

Sign Type C1 – Centralized Primary Facilities Sign, identifies multiple service units in one or a complex of buildings. In addition, one service unit comprised of sub-services which are used by a large volume of military and civilian personnel may be identified by Type Cl.

Sign Type C2 – Centralized Secondary Facility Sign, may be used where the volume of civilian traffic does not warrant the use of sign Type C1, such as military unit storage facilities.

Sign Type C3 – Primary Facility Sign, identifies a large scale facility serving a large volume of military and civilian personnel, but does not list individual services units or sub-services.

Sign Type C4 – Secondary Facility Sign identifies company level organizations and individual service units.

Sign Type C5 – Primary Entrance Sign identifies the main entry points of a service facility.

Sign Type C6 – Secondary Entrance Sign, identifies the same information as Type C5, but is smaller in size.

Sign Type C7 – Restricted Facility Sign identifies the facility name or area which is restricted.

Community Facility Identification Signs. These identify activities and facilities used for non-military purposes. The standards for community signs also apply to signs for private firms operating on base. AAFES facilities and nationally recognized food chain franchises operated by AAFES may utilize their individual registered trademark signage in general compliance with these standards. These signs should be kept at a low profile and design and color should match the installation-wide system. See Figure 11.4n.

Figure 11.4n
Keep Community Trademark Signs Low Profile and in Conformance With the Installation Sign Standards

Community identification signs consist of seven types:

Sign Type D1 – Centralized Primary Facility Sign identifies several activities or organizations in one or a complex of buildings.

Sign Type D2 – Primary Facility with Changeable Message Board identifies an individual organization or facility and provides a changeable message board for information on activities.

Sign Type D3 – Primary Facility Sign identifies an organization.

Sign Type D4 – Secondary Facility Sign, identifies the same information as Type D3, but is smaller in size.

Sign Type D5 – Building Entrance Sign identifies the facility entrance and hours of operation.

Sign Type D6 – Recreation Facility Sign identifies an outdoor recreation or park facility and hours of operation.

Sign Type D7 – Bus Stop Sign identifies bus routes, stops, and schedules.

When using wheeled electrical signs they will have an attractive presentation. Temporary landscape elements should be used whenever possible. The siting of this type of sign will be approved by the RPPB or DPW. No sign of this type will be left in place for longer than six months. After which time, the sign will be removed or turned into a permanent sign. See Figure 11.4o.

Figure 11.4o
Temporary Signs Should Not Be Left In Place Longer Than Six Months

11.4.4.2 Motivation Signs. These signs are used to boost morale, improve safety, aid in recruiting, and accomplish other special objectives. Motivation signs are unique in appearance and do not have specified graphic layouts.

Motivation signs include three types:

Sign Type E1 – Installation Motivation Sign identifies the principal commands or divisions stationed at the installation.

Sign Type E2 – Standard Motivation Sign is used to support campaigns and special events.

Sign Type E3 – Unit Motivation Sign is used to express unit pride and display organizational insignias, emblems, and mottos.

11.4.4.3 Guide Signs. These signs are the essential means for locating destinations and routing travel to those destinations within a military installation. This includes site directory map signs at all entrance gates and other key points with the installation, large street name signs at all intersections, and large-lettered destination signs of not more than three lines. These signs provide the most efficient means of guiding traffic to destinations within the installation.

Destination and Street Name Signs. Street name identification signs should be designed with the same lettering, color, and materials as other information signs and will display the U.S. Army Garrison, Alaska shield to the left of the street name. See Figure 11.4p.

The procedures for street addresses prescribed in DoD 4525.8-M, DoD Official Mail Manual are mandatory for use by all DoD components. DoD 4525.8-M, Chapter 3 prescribes the following:

- All DoD address shall be assigned so they are compatible with the United States Postal Services automated delivery point sequencing (C3.3).
- The DoD installation is responsible for assigning city-style, street address on the installation (C3.3.2.2).
- Street addresses shall be assigned and used even though a DoD activity may deliver the mail to the addressee (C3.3.2.2.1).
- Only geographically locatable civilian-style street address (such as 4102 Gaffney Road, Figure 11.4q) shall be used (C3.3.2.2.4).
- Installations shall not use one street address for the entire installation and then use secondary unit designators such as “Building 4123” to designate the delivery addresses on the installation (C3.3.2.2.5).
- Addresses such as “Building 4123 Neely Road” are not a valid address format and shall not be used (C3.3.2.2.6).

The placement of addresses should follow the following guidelines:

- Place addresses by the front entrance of the building so they can be seen (C3.3.2.3.1).
- Place both the street name and address number on the building if both the building number and street address are visible from the street.
- Building identification signs will use street addresses.
- Buildings without identification signs shall have the address number and street name centered above the main entrance or located to the right side.

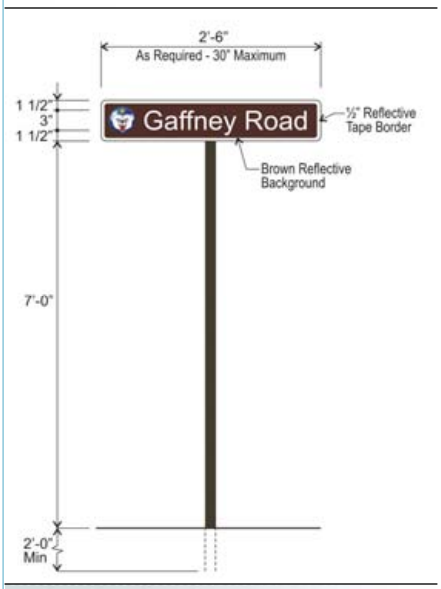


Figure 11.4p
Street Identification Sign Detail

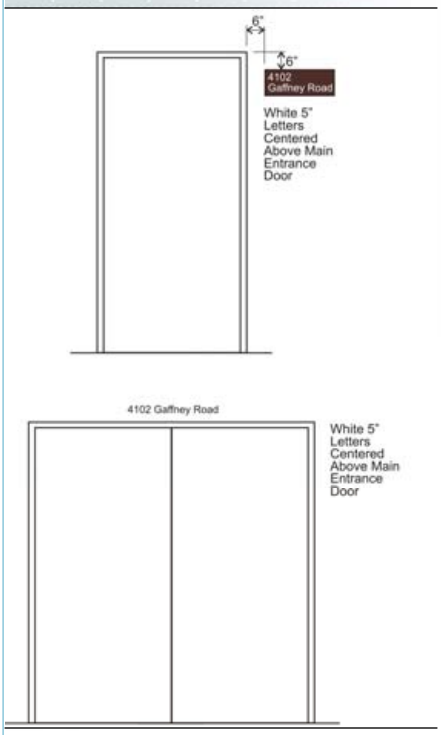


Figure 11.4q
Street Address Placement Detail

Street and address identification signs within family housing areas should be complimentary to the architectural setting of the housing area and approved by the installation Real Property Planning Board. Housing numbers should be placed on the letter box of the respective house, if the box is freestanding, and on the house where lighting will effectively light the numbering.

Site Directory Map. Type F1 site directory map signs provide visitors with a simplified site map of the installation for orientation and directional guidance. Site maps identify all street names and indicate the location of the person using the directory. Major streets and destinations, which frequently receive non-repeat visitors, should be graphically emphasized and include an address directory next to the map face.

11.4.4.4 Mandatory/Prohibitory Signs. This category of signage is intended to maintain security and safety on the installation perimeter and at other specific secure areas. These signs notify visitors of restrictions, as well as other security procedures. The guidelines for design, fabrication, and placement of warning signs are found in Technical Manual (TM) 5-807-10, Signage, paragraph 3-9.

There are several types of installation warning signs as follows:

Sign Type G1 – Warning Sign is intended as a search and authorized personnel warning sign.

Sign Type G2 – Warning Sign is intended as a restricted area warning sign.

Sign Type G3 – Warning Sign, identifies general hazards, regulations and security information as Type G2, but is smaller in size.

Sign Type G4 – Safety Sign identifies specific dangers and warns personnel and visitors of physical hazards and unsafe practices.

Sign Types G5 and G6 – Parking Sign, Figure 11.4r. Handicapped parking signs should show the international handicapped symbol in white on the required blue background. Strictly limit reserved parking signs to visitors, customers, handicapped, key officials, and incentive award winners (NCO of the quarter). Use metal signs approximately 4" high and mechanically fastened to the vertical curb face. Design and color should match the installation-wide system.

Figure 11.4r
Standard Parking Sign Face Plates

Sign Type G7 – Special Traffic Conditions Sign, such as tactical equipment limits and trail crossings, follow guidelines established in MTMC Pamphlet 55-14, Traffic Engineering for Better Signs and Markings and standards in the Manual of Uniform Traffic Control Devices (MUTCD).

11.4.4.5 Information Signs. These are used to provide educational information and directional guidance for visitors. These signs is used to give priority to the destinations of facilities that are likely to have a great deal of first time traffic include the Commissary, Base Exchange, Clinic, Community Center, clubs, billeting, and major army activities.

These signs are designed to include the following:

Typeface: Lettering is self-adhesive backing material.

- Helvetica Medium, upper and lower case

Arrow:

- Place at end indicating direction.
- Stoke width: Helvetica Medium cap

Color:

- Panel: Dark Brown (High Intensity), 3M Color Code-Brown #2279/36" Heat Activated Engineering Grade or approved equivalent
- Lettering: Beige (Engineering Grade), GSB-vinyl-VEI-501-220/15" or approved equivalent
- Post: Black
- Exposed panel backs and edges: Dark Brown
- All paint: Semi gloss

Materials:

- Panel: Double-face, 1/8" thick aluminum
- Post: Black steel signposts are encouraged. Black vinyl sleeves for signpost and dark brown adhesive vinyl sheeting for the backs of signs provide a low-maintenance option.
- Foundation: Concrete pier or direct burial

There are two types of information signs:

Sign Type H1 – Exhibit Information Sign.

Sign Type H2 – Guidance Sign provides direction guidance motorist or pedestrian in, around, and out of the installation. The legibility and placement of this sign, as well as the order of information, is critical to their effectiveness. These signs should be placed in central locations and at major decision points along circulation routes. See Figure 11.4s.

11.4.4.6 Regulatory Signs. These signs provide the rules for travel and parking on the installation. They include highway signs, warning signs, parking control signs, etc. Related to these signs are pavement markings and traffic signals. Manual of Uniform Traffic Control Devices (MUTCD) standardizes regulatory devices throughout the country to ensure that they mean the same to, and require the same action by, all motorists. See Figure 11.4t. Therefore, compliance with the MUTCD will contribute to the safe, orderly, and efficient movement of traffic.

These signs are designed to include the following:

Typeface: Lettering is self-adhesive backing material.

- Helvetica Medium, upper and lower case

Color:

- Panel: Sign color, size and shape prescribed by the Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD)
- Post: Black
- Exposed panel backs and edges: Dark Brown

Materials:

- Panel: Double-face, 1/8" thick aluminum
- Post: Steel breakaway pipe
- Foundation: Concrete pier or direct burial

11.4.5 Sign Placement

Placement of signs differs according to the type of sign and the specific site constraints. The following guidelines apply to placement of the majority of signs.

- Do not place more than one sign at any location. Traffic rules are the exception to this rule.
- Place signs in areas free of visual clutter and landscape materials.
- Place signs in locations that allow enough time for the user to read and react to the message.

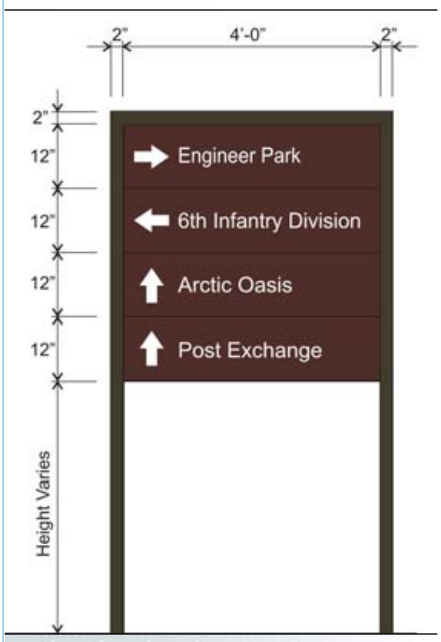


Figure 11.4s
Standard Direction Sign Detail

Figure 11.4t
Typical Regulatory Sign

- Signs should not be placed to block sight lines at intersections.
- Place signs approximately 1.2 meters (4 feet) above ground level to be within 10 degrees the driver's line of vision. Provide proper placement to avoid a hazard to children.

11.4.6 Sign System Typography

The term typography describes the style, size, and spacing of letters. Different styles of letters are referred to as fonts or typefaces. Two typefaces are used in the Army signage system: Helvetica Medium and Helvetica Regular.

11.4.6.1 Military Emblems. The Army has a rich tradition of military heraldry. Military emblems are an important part of the soldiers' identity and the emblems have been carefully crafted over the years to express unit pride and unique history and function of the unit. The care and use of organizational emblems in a signage system can add visual interest as well as build pride and a sense of history. However, the overuse of miscellaneous emblems can lead to clutter and a dilution of their importance. Colors for military emblems must be in accordance with the Institute of Heraldry. The use of emblems must be approved by DPW.

11.4.6.2 Department of the Army Plaque. The plaque should be displayed on installation identification signage to emphasize the heritage and professionalism of the United States Army. The design of the plaque must be in accordance with Army Regulation (AR) 840-1, Department of the Army Seal, and Department of the Army Emblem and Branch of Service Plaques, and must be reproduced in full color.

11.4.6.3 Insignias. The use of branch insignia, shoulder sleeve insignia, coat of arms, and/or distinctive insignia on headquarters signs is not permitted unless approved by DPW. All military emblems must appear in full color. Motivational symbols or motifs will not be used.

11.4.7 Reduce Visual Clutter

Over-signing and a lack of sign maintenance detract from a uniform sign system and if left uncontrolled will eventually destroy the integrity of the system. See Figure 11.4u.

Clutter creates confusion and ineffectiveness. Often motorist and pedestrians are confused by the bombardment of messages that have no relationship to each other, or the communication is on such a minimal level that the sign serves no purpose. See Figure 11.4v.

Figure 11.4u
Non-Standard Signs Present Visual Clutter Affecting Both Quality of Life and Professional Image

Figure 11.4v
Routine Maintenance of Signs is Necessary to Reduce Visual Clutter

11.4.8 Location Maps

The location map is an integral element of an installation entrance. The location map display provides information and sense of place to the viewer. The design and construction should be of compatible architectural materials found throughout the installation.

The location map should contain the following characteristics within the design.

- Plexiglas covered map for protection
- Architectural compatible materials used for the base
- Paved walk-up area
- Litter receptacle
- Provide parking adjacent
- Provide current takeaway maps

11.5 LIGHTING

Lighting is a functional requirement of installations that also impacts the visual environment. The installation lighting system conveys a sense of order and organization.

There are five primary types of lighting on military installations and they are:

- Roadway Lighting
- Pedestrian Lighting
- Parking Lot Lighting
- Outdoor Architectural Lighting
- Security Lighting

The primary visual problem that exists with exterior lighting on most military installations has been the lack of overall coordination of a lighting system.

A lighting system provides the proper type of lighting for different lighting requirements and locations. A system is composed of six primary components – fixtures, light height, type of pole, light spacing, type of lamp, and level of intensity of lamp.

The proper type of lighting for various locations is shown in the following Table 11.5a, Lighting Design Matrix.

All lighting should be located or designed to prevent undesirable spillover of light into other areas. Spotlights in particular should be aimed or screened to prevent glare that could blind motorists or pedestrians or light sleeping areas.

Table 11.5a Light Design Matrix

LIGHT DESIGN MATRIX		TYPICAL AREAS OF USE																		
		Entry Gates	Primary Roadways	Secondary Roadways	Tertiary Roadways	Primary Walkways/Bikeways	Secondary Walkways/Bikeways	Tertiary Walkways/Bikeways	Courtyards	Playgrounds	Ball fields*	Basketball Courts	Tennis Courts	Buildings	Landscaping	Fencing	Signs & Monuments	Large Parking Lots	Small Parking Lots	Industrial Area
LAMP	Incandescent													●						
	Halogen	●	●																	
	Mercury Vapor																			
	Florescent																			
	Metal Halide	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●			
	High Pressure Sodium		●	●														●	●	
LEVEL	Lux (lx)		20	15	10	10	2		50		200	200	50							
	Foot-candles (fc)		2	1.4	0.9	0.9	0.2		5		10	20	5.6			0.2		1	1	1
HEIGHT	40' Max	●							●					●	●	●		●		
	25' Max	●				●	●	●						●	●				●	
	15' Max			●	●															
	Varies		●							●	●	●	●				●			●
FIXTURE	Cutoff	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Utility	●														●				●
	Bollard								●	●	●	●	●	●	●	●	●	●	●	●
	Spot								●	●	●	●	●	●			●			
	Wall Mount								●	●	●	●	●							
POLE	Metal	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Concrete	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
SPACED	120' Max		●	●	●											●		●		
	90' Max																		●	
	Varies	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

* = Foot-candle levels for ball field infield and outfield areas vary and should be determined based on manufacturers' recommendations and league standards.

11.5.1 Light Fixtures

A lighting fixture is the frame or housing for holding the lamp in position and for protecting it from damage. Light fixtures should be selected and located to maintain the minimum foot-candle requirements for safety and security purposes. Beyond that, aesthetic considerations should take precedence.

Lighting fixtures are grouped into six general categories as defined below.

- **Cutoff Lighting.** Refers to the fixtures designed to cut off light traveling to the top and sides of the fixtures, concentrating it down onto the parking lot. The fixtures reduce the spillover of light where it is not wanted.
- **Utility Lighting.** Refers to simple, inexpensive fixtures that are used in industrial areas of low visibility.
- **Bollard Lighting.** Refers to fixtures that are mounted on or in a short post to illuminate pedestrian areas. They can also be used as physical barriers between pedestrian and vehicular traffic.
- **Spotlighting.** Refers to high intensity fixtures that concentrate light into a narrow beam and are used to highlight signs and other important objects. Spotlights should be screened by landscaping or other methods so they are inconspicuous during the day.
- **Wall-Mounted Lighting.** Refers to fixtures attached to the wall of a building or a wall bordering a walkway or stairway.
- **Solar Lighting.** Refers to lights generated by solar energy.

11.5.2 Light Poles

The light fixture size should be proportional to the intended pole height.

11.5.3 Light Fixtures and Poles

Light poles should be consistent and provide uniformity throughout the installation. The pole height shall be determined by their intended function. Traditional areas of the installation shall have pole-mounted period style lamps such as King Luminaire K 80 Series, or approved equal. See Figures 11.5a. Modern areas or areas in need of taller mounting heights such as primary roadways and parking lots shall have pole mounted fixtures such as *Kim EKG Type 5* Series Lamps, or approved equal. See Figure 11.5b.

Figure 11.5a
Traditional Light Standard, King Luminaire

Figure 11.5b
Kim EKG Type 5, Kim Lighting, Inc

11.5.4 Lamp Characteristics

Selection of a lamp involves evaluating its optical control, efficiency, lamp color rendition, lamp life, cost, and maintenance. The following is a summary of the characteristics of typical lamp types.

11.5.4.1 Incandescent.

- Superior color rendition
- Inexpensive
- Good optical control
- Short life span
- Lowest efficiency

11.5.4.2 High Pressure Sodium.

- Poor color rendition
- Broad application
- Low maintenance
- Superior optical control
- Superior life span
- Excellent efficiency
- Expensive

11.5.4.3 Low Pressure Sodium.

- Poor color rendition
- Good efficiency
- Superior life span
- Expensive

11.5.4.4 Fluorescent.

- Good color rendition
- Poor optical control
- Good life span
- Good efficiency in mild climates
- Produces glare

11.5.4.5 Metal Halide.

- Superior color rendition
- Superior optical control
- Efficiency better than mercury vapor but poorer than pressure sodium
- Expensive

11.5.4.6 Mercury Vapor.

- Good color rendition
- Good foliage lighting
- Good life span
- Good efficiency
- Inexpensive

11.6 UTILITIES

Utility systems provide the basic infrastructure of power, communication, water, and sewer services necessary for the operation of the installation. Utilities play a key role in the visual quality on an installation. Their primary impact on the visual quality is the result of the clutter of overhead utility lines and poorly designed storm drainage systems.

The visual and environmental impact of utilities should be minimized on the installation, Figure 11.6a. Also, the systems should be designed to minimize maintenance and repair. The result is a more sustainable utility system that will promote the overall sustainability of the installation. The primary components of the utility system and recommendations for their location and design are included below.

11.6.1 Overhead Transmission Lines

Unsightly overhead utilities should be relocated underground wherever possible to reduce negative visual impacts, and reduce maintenance and repair requirements. See Figure 11.6b. Underground utilities are also desirable for protection from terrorist or other enemy attack. When underground locations are not possible, the negative visual impacts should be minimized by using the following design techniques:

11.6.1.1 Overhead Transmission Lines Location. Overhead transmission lines should be aligned along edges of land use areas to avoid dividing an area and creating gaps or unusable areas. They should conform to natural landforms that can be utilized to screen them from public view. Hills should be crossed obliquely rather than at right angles. Alignments along hillcrests or steep grades should be avoided.

11.6.1.2 View Screening. Minimize long views or silhouette views of overhead transmission lines from along roads and other public viewing areas. Avoid the “tunnel effect” of long, straight, uninterrupted views along the alignment by clearing vegetation only within the right-of-way that threatens the overhead lines. Jog the alignment at road crossings and periodically undulate and feature plant materials along the edges of the right-of-way.

11.6.2 Distribution Lines

Power distribution lines should also be located underground to minimize negative visual impact, reduce maintenance, and protect from terrorist or other enemy attack. If overhead, they should be located out of view from main public visibility areas

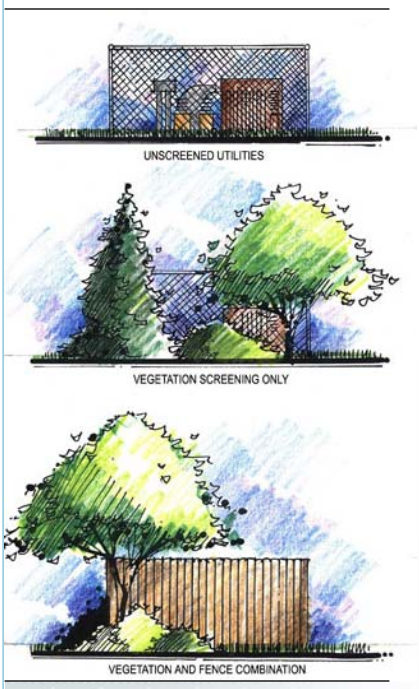


Figure 11.6a
Methods of Screening to Reduce the Environmental Impact of Utilities

Figure 11.6b
Overhead Utilities Should be Relocated Underground Whenever Possible

or screened to be as unobtrusive as possible. Avoid alignments of overhead lines along major circulation corridors. Use minor streets, alleyways, rear lot lines, and vegetation or topography that provide screening and minimize visual impact. Minimize the number of poles and pole height, and use poles that blend into their surroundings to reduce visual impact. Poles should also be multi-functional to reduce visual clutter.

11.6.3 Substations, Transformers, and Telephone Switches

Substations, transformers, and telephone switches should be designed and located to minimize their visual impact and be compatible with the character of their setting. See Figure 11.6c. Substations are best located in industrial use areas rather than in major public circulation areas. They should be screened from public view by using plant material, berms, fencing, or walls. See Figure 11.6d.

Figure 11.6c
Transformers and Telephone Switches Should be Located to Minimize Visual Impact on Their Setting

Figure 11.6d
Screen Substations and Transformers

11.6.4 Communications/Information Technology (IT)

All communications infrastructure should be located underground to minimize negative visual impact, reduce maintenance, and protect from terrorist or other enemy attack. Coordinate quantities, design criteria, and parameters of all new and renovation projects with the Directorate of Information Management (DOIM), 59th Signal Battalion, Office of Plans and Integration. Appendix P provides a requirements checklist for information systems project planning and the following references provide information on communications and IT.

- Army Automation Communications Engineering Support of Military Construction Projects, 25th ID(L) and USARHAW Regulation 25-70, 29 April 2004
- AR 210-20, Master Planning for Army Installations, 30 July 1993
- Army Regulation (AR) 25-1, Army Information Management, 31 May 2002
- AR 415-15, Army Military Construction Program Development and Execution, 25 October 1999
- AR 420-10, Management of Installation Directorates of Public Works, 15 April 1997
- U.S. Army Installation Information Infrastructure Architecture (I3A) Implementation Guide, August 2003
- USAISEC-FDED DOIM Handbook for MILCON, August 2004

11.6.5 Sewer and Water

All sewer and water lines should be underground.

Sewage treatment facilities should be located 1,250 feet (0.38 km) distance and in a downwind direction from all inhabited facilities. Treatment facilities should be screened from view of major roads and other installation facilities by plant material, berms, walls, and fences.

A water storage tank that has visual strength in its form can be used as a focal point or identifying landmark that can provide a sense of orientation within the installation.

Fire hydrants will be nutmeg brown in color with a reflective finish (see Appendix L for color). They will be visible and free of screening. This is the color adopted as the Army Standard on all installations. Following guidance from the National Fire Protection Association (NFPA) 291, Recommended Practice for Fire Flow Testing and Marking of Hydrants, a painted accent band on the bonnet shall indicate tested water pressure (Class AA = Light Blue; Class A = Green; Class B = Orange; Class C = Red) as scheduled in the NFPA 291. See Figure 11.6e.

Figure 11.6e
Fire Hydrants shall be Nutmeg Brown. Bands around the Bonnets Shall Indicate Tested Water Pressure

11.6.6 Storm Drainage

Installation storm drainage systems should be appropriate to the character of development they serve. Storm drainage systems in densely developed areas require curbs, gutters, and underground lines. Storm drainage systems in low-density areas can utilize drainage swales and ditches that are contoured to be compatible with the natural landform. Where retention ponds are required, they should be designed to appear as a natural amenity that is part of the natural contour of the land, rather than a square or rectangular hole in the ground. Retention ponds that are designed to be dry most of the time can be utilized for recreational purposes or as open space. In either case, the areas should be designed to conform to the natural contours of the land.

Large hard surfaced parking lots should have covered drainage at the entry to prevent water draining into adjacent streets.

▲ **Figure 11.6f**

Screen Refuse Containers from Public View

▲ **Figure 11.6g**

Refuge Screens Should be Compatible with the Installation Architectural Scheme

11.6.7 Refuse

Large refuse containers should be located in a way to screen them from view of major roads, buildings entries and adjacent residential, office or commercial areas. See Figure 11.6f. Refuse containers should be screened by an attractive enclosure, landscape plantings, and or earth berms. See Figure 11.6g.

Refuse containers should be located on hard-surface paved pads or loading docks that are directly accessible by collection trucks; provide adequate turning radius, parking length and overhead clearance for the refuse collection truck and its container loading operation.

11.7 ARMY STANDARDS

The cited Army Standards shall be met.

- DoD 4525.8-M, *DoD Official Mail Manual*
- Army Regulation (AR) 420-49, *Utility Services*
- Army Regulation (AR) 420-70, *Buildings and Structures*
- Army Regulation (AR) 420-72, *Transportation Infrastructure and Dams*
- Americans with Disabilities Act Accessibility Guidelines (ADAAG)
- Uniform Federal Accessibility Standards (UFAS)
- Technical Manual (TM) 5-807-10, *Signage*
- Manual of Uniform Traffic Control Devices (MUTCD)
- MTMC Pamphlet 55-14, *Traffic Engineering for Better Signs and Markings*
- *Unified Facilities Criteria (UFC) 4-010-01, DoD Minimum Antiterrorism Standards for Buildings*
- Army Regulation (AR) 210-20, Master Planning for Army Installations, 30 July 1993
- Army Regulation (AR) 25-1, Army Information Management, 31 May 2002
- Army Regulation (AR) 415-15, Army Military Construction Program Development and Execution, 25 October 1999
- Army Regulation 420-10, Management of Installation Directorates of Public Works, 15 April 1997
- U.S. Army Installation Information Infrastructure Architecture (13A) Implementation Guide, April 2001
- Unified Facilities Criteria (UFC) 3-550-03FA, Electrical Supply and Distribution

11.8 REFERENCES

The following references are provided for guidance.

- Army Regulation (AR) 1-33, *Memorial Programs*
- Army Regulation (AR) 840-1, Department of the Army Seal, and Department of the Army Emblem and Branch of Service Plaques
- Technical Manual (TM) 5-663, *Child Development Center, Play Area Inspection and Maintenance Program*
- Technical Manual (TM) 5-803-5, *Installation Design Manual*
- Unified Facilities Criteria (UFC) 3-210-04, *Children's Outdoor Play Areas*
- USAISEC-FDED DOIM Handbook for MILCON, May 2002
- Technical Instructions (TI) 811-16, *Lighting Design*
- National Fire Protection Association (NFPA) 291, Recommended Practice for Fire Flow Testing and Marking of Hydrants
- Advisory Circular AC 70/7460-1K, *Obstruction Marking and Lighting.*
- Unified Facilities Guide Specification, Division 12 – FURNISHINGS, UFGS 129300, Site Furnishings
- Illuminating Engineering Society of North America (IESNA) Recommended Practice Manual: Lighting for Exterior Environments (RP 33-99)
- Consumer Product Safety Commission Publication #325, Public Playground Safety
- ASTM F1487-EO1 Federal Guideline (Manufacturing)
- ADA requirement for playground equipment and access to playgrounds
- Unified Facilities Criteria (UFC) 3-600-01, *Design: fire Protection Engineering for Facilities, with Change 1*
- Unified Facilities Criteria (UFC) 4-021-01, *Design and O&M: Mass Notification Systems*
- Technical Letter (ETL) 1110-3-485, *Fire Protection for Helicopter Hangars*
- Unified Facilities Criteria (UFC) 3-230-14A, *Evaluation Criteria Guide for Water Pollution Prevention Control and Abatement Programs*

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Section 12.0
Force Protection Design Criteria

12.1 INTRODUCTION

Accommodating the need for security and antiterrorism is a significant concern for Fort Wainwright facilities design. The security and antiterrorism requirements must be integrated into the total project. Design of protective elements should seek to visually enhance and complement the design of a facility. Site elements such as fences, courtyards, screen walls, swales, berms, planters, and retaining walls can be used effectively for facility protection. These design elements should be designed to provide visual harmony with the main facility, producing architectural compatibility through consistent use and application of materials, forms, and colors.

The purpose of this document is to provide general guidance on force protection issues for the planning, design, and construction of Fort Wainwright's facilities and to reduce the vulnerability of its personnel to terrorist attacks. See Figure 12.1a. It is intended to raise the level of awareness among commanders, planners, designers, engineers, security personnel, and facility users to the issues of force protection that must be considered to minimize loss of personnel and property by planning for force protection and implementing physical security measures as the threat increases. See Figure 12.1b. Force protection refers to measures designed to protect personnel, facilities, and equipment that support national defense missions. This document contains guidelines intended to be applied when and if the U.S. Army Garrison, Alaska determines the need exists. These measures are aimed at minimizing loss of life and other critical assets. Implementing of force protection should be based on the assessment of the threat, resources available, and command decision.

The designers must work to balance force protection requirements with all other requirements that impact design and development. These include the Americans with Disabilities Act Accessibility Guidelines (ADAAG), the Uniform Federal Accessibility Standards (UFAS), National Fire Protection Codes (NFPA), and all applicable local building

Figure 12.1a
Entry Control Facility Design Does Not Provide Visual Harmony and Architectural Compatibility at the Main Gate

Figure 12.1b
Security Forces Perimeter Defense Duties Have Greatly Intensified Since 9-11 Terrorist Attack

codes and ordinances. The design team will also consult security personnel to determine whether portions of the design documents are subject to access limitations.

12.2 BUILDING SITING AND DESIGN STANDARDS

12.2.1 Antiterrorism Standards

A primary concern for Army installations throughout the world is the threat of terrorist attack. To minimize the likelihood of mass casualties from terrorist attacks against DoD personnel in the buildings in which they work and live DoD has developed the Unified Facilities Criteria (UFC) 4-010-01, DoD Minimum Antiterrorism Standards for Buildings. See Figure 12.2a.

Figure 12.2a
Elements of Minimum Protection for Site Design

UFC 4-010-01 establishes the minimum building antiterrorism standards for all DoD components.

- Mandatory DoD minimum antiterrorism standards for new and existing inhabited buildings are contained in Appendix B.
- Mandatory DoD minimum antiterrorism standards for expeditionary and temporary structures are contained in Appendix D.
- Additional recommended measures for new and existing, inhabited buildings are contained in Appendix C.

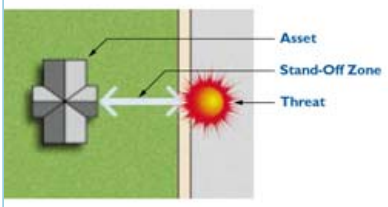
Implementation of the mandatory standards is obligatory for all new construction regardless of the funding source. See Figure12.2b. These standards apply to FY 2004, and all subsequent fiscal years, for projects involving new construction and major renovations for inhabited structures. This includes renovations where these cost exceed 50 percent of the replacement cost of buildings. Where the 50 percent

Figure 12.2b
Antiterrorism Standards Required for all New Construction

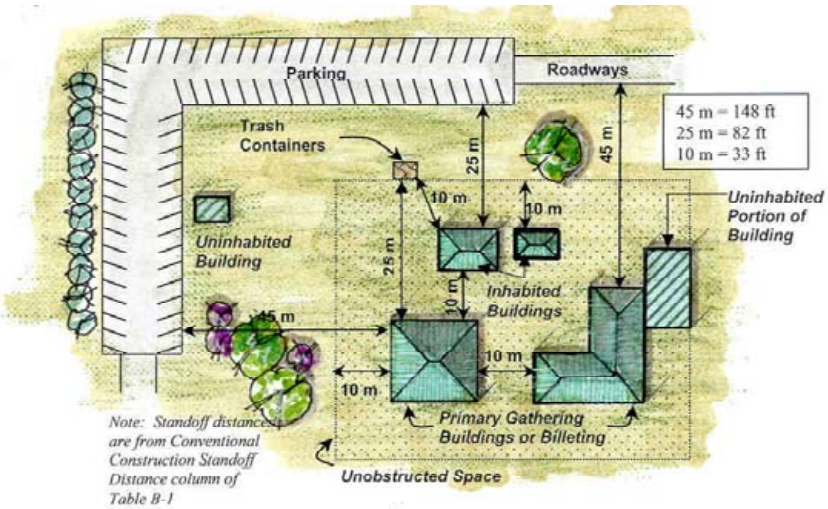
threshold is not met, compliance with these standards is only recommended and not required. The standards will be reviewed before any site planning or design is initiated.

The minimum standoff distances and separation for buildings is the distance between an asset and a threat. See Figure 12.2c. There is no ideal stand-off; it is determined by the type and level of threat, the type of construction, and desired level of protection:

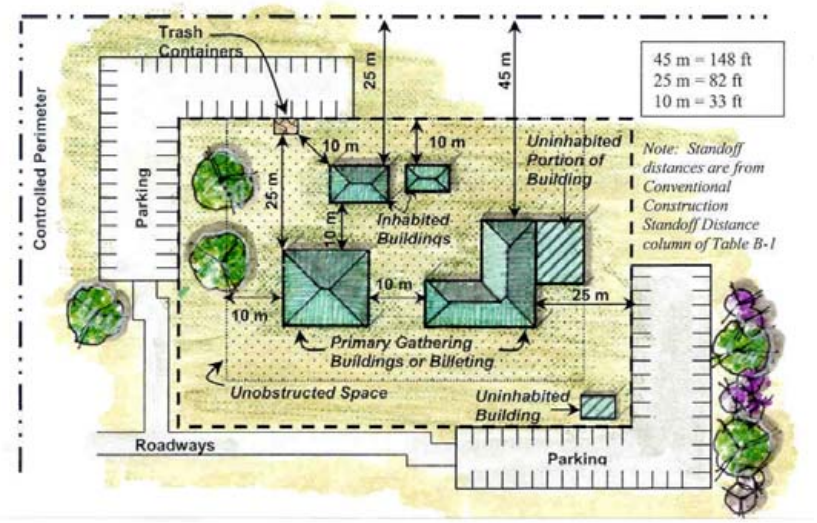
- The minimum standoff distances and separation for new and existing buildings are found in Table B-1 of UFC 4-010-01. See Figures 12.2d and 12.2e.



▲ **Figure 12.2c**
Concept of Stand-Off Distance

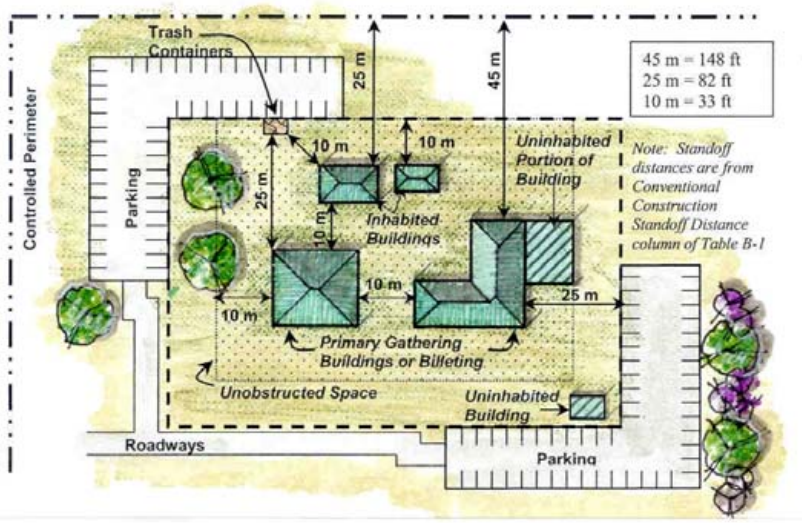


▲ **Figure 12.2d**
Criteria for Stand-Off Distances and Building Separation – No Controlled Perimeter



▲ **Figure 12.2e**
Criteria for Stand-Off Distances and Building Separation – Controlled Perimeter

- The minimum standoff distances and separation for expeditionary and temporary structures are found in Table D-1 of UFC 4-010-01. See Figure 12.2f.



▲ **Figure 12.2f**

Stand-Off Distances and Separation for Expeditionary and Temporary Structures

The DoD minimum standards, when applicable, may be supplemented by more stringent force protection building standards to meet specific threats inherent in the geographical area where the facility is to be constructed. Those additional requirements may be established by either standards for specific Combatant Commanders or based on Risk and/or Threat Analysis.

When the minimum standoff distances can not be achieved because land is unavailable, the standards allow for building hardening to mitigate blast effects. Costs and requirements for building hardening are addressed in the DoD Security Engineering Manual. For information regarding the DoD Security Engineering Manual see following section.

12.2.2 Implementing Design Guidance

Additional guidance on applying the antiterrorism standards is found in *UFC 4-010-02, DoD Minimum Antiterrorism Standards for Buildings*.

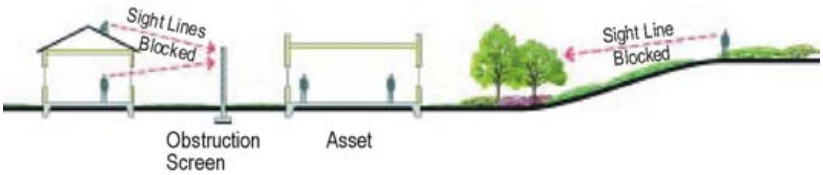
12.2.2.1 Website Access for Military and Government Users. This is a password protected website. To enter the site you must be accessing the site from either a ".mil" or ".gov" address. Upon initial entry, you will be prompted with instructions on how to acquire your password.

12.2.2.2 Website Access for Non Military and Government Users. Currently, the Protective Design Center is developing a procedure for emailing the network administrator to receive procedures to enter the site. If upon initial entry into the site there are no instructions on this procedures, contact the Protective Design Center (CENWO-ED-S) at (402) 221-3151 for instructions.

12.2.3 Orientation of Buildings on a Site

The following will be given consideration when determining the orientation of a building:

- Deny aggressors a clear "line of sight" to the facility from on or off the depot where possible. Protect the facility against surveillance by locating the protected facility outside of the range or out of the view of vantage points. See Figure 12.2g.



▲ **Figure 12.2g**

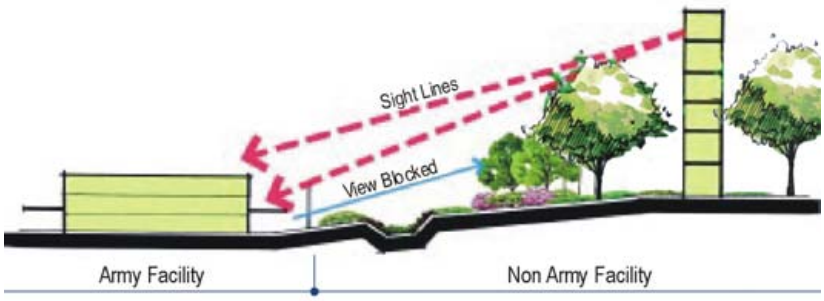
Deny Aggressors a Clear "Line of Sight" to Installation Assets from On or Off Post

- Protect against attack by selecting perimeter barriers to block sightlines such as obstruction screens, trees, or shrubs. Non-critical structures or other natural or man-made features can be used to block sightlines. See Figure 12.2h.

▲ **Figure 12.2h**

Use A Combination of Passive Barriers and Landscaping to Create a Protective Barrier

- Provide passive vehicle barriers to keep Stationary Vehicle Bombs (SVBs) at distance from the asses (high curbs, low berms, shallow ditches, and landscape materials).
- Create “defensible space” by positioning facilities to permit building occupants and police to clearly monitor adjacent areas.
- If roads are nearby, orient buildings so no sides are parallel to vehicle approach routes.
- Design vehicular flow to minimize vehicle bomb threats, avoid high-speed approach into any critical or vulnerable area.
- Avoid siting the facility adjacent to high surrounding terrain, which provides easy viewing of the facility from nearby non-military facilities. See Figure 12.2i.



▲ **Figure 12.2i**
Avoid Siting Facilities Adjacent to High Surrounding Terrain

12.3 FENCING

Fences are used as protective measures against project-specific threats. They are most appropriately used to define boundaries and to deter penetration of a secure area. A fence will assist in controlling and screening authorized access to a secured area.

Fences also serve the following purposes:

- As a platform for the Intrusion Detection System.
- As a screen against explosive projectiles.
- To stop moving vehicles if they are reinforced to do so.

Plants with tall growth habits and/or large mature growth will be located well away from security fences.

12.4 LANDSCAPE CONSIDERATIONS

Landscaping guidelines for buildings should not be ignored because of standoff distances. The landscape design should enhance the overall attractiveness of the facility while still providing or enhancing the objective level of security level of security.

Guidelines to consider are:

- Establish clear zones along both sides of security fencing. Vegetation in the clear zone should not exceed four inches in height. Refer to Section 10.12 for further information concerning landscape design requirements within a force protection buffer area. (DoD 0-2000.12-H, *Protection of DoD Personnel and Activities Against Acts of Terrorism and Political Turbulence,* Appendix EE, Table EE-4). For additional information consult FM 19-30. This document gives guidance on physical security and barriers.
- Strategically locate trees and planters to prevent penetration of an attack vehicle into the secure area perimeter.
- Vegetative groupings, low barrier walls, and earth sheltering berms provide inherent blast effect reduction from external blast forces. See Figure 12.4a.

▲ **Figure 12.4a**

Landscaping with Barrier Walls Provides Inherent Blast Effect Reduction From External Blast Forces

- Plant material that can provide concealment will not be used adjacent to high security structures or fence lines.
- Use dense, thorn-bearing plant material to create natural barriers to deter aggressors.

- Screen play and outdoor recreation areas from public (off-installation) view.
- Designers need to balance the need for signs that identify, locate, and direct residents and supported personnel to installation assets, versus the need to discourage and frustrate hostile intelligence gathering and access. One method of achieving this balance could be to direct people to a community support or information center to obtain directions to high security activities. Another could be a sign "All incoming personnel and visitors report to building address 1557 Pass Street."
- Antiterrorism/force protection requirements restrict the location of dumpsters and trash containers to a minimum of 10 meters (33 feet) from inhabited buildings and 25 meters (82 feet) from billeting and primary gathering areas (*Unified Facilities Criteria [UFC] 4-010-01, DoD Minimum Antiterrorism Standards for Buildings*, Table B-1). See Figures 12.4b and 12.4c.

Figure 12.4b
Locate Trash Dumpsters 25 Meters From Billeting and Primary Gathering Areas

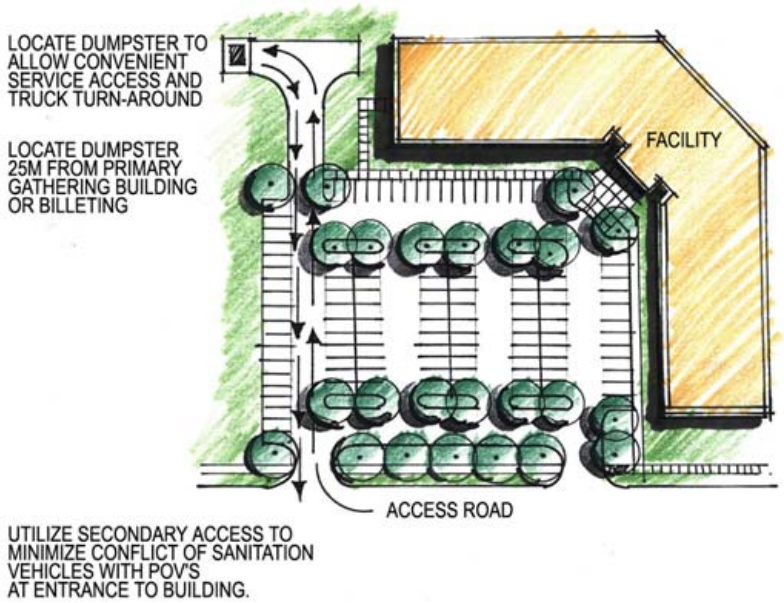


Figure 12.4c
Locate Trash Dumpsters 10 Meters From Inhabited Buildings

- Be watchful of the unobstructed space. Ensure that vegetation and site features within 10 meters (33 feet) of inhabited buildings do not conceal from observation objects of 150mm (6 inches) in height. (UFC 4-010-01, Appendix B, Para B-1.3). This does not preclude landscaping within the unobstructed space, but it will affect the design and may effect plant selection. See Figure 12.4d.

Figure 12.4d
Landscaping Within the 10 Meter Unobstructed Space Should Enhance the Overall Attractiveness of the Facility While Providing the Objective Level of Security

12.5 PARKING CONSIDERATIONS

Limitations on parking near buildings apply to all vehicles, including official and tactical vehicles, except for emergency vehicles and for operations support vehicles that are never driven out of restricted access areas. Government vehicles, other than those support and emergency vehicles, are included in the parking limitations because it is assumed that when they are out of restricted access areas they may be out of the immediate control of their operators, which could make them susceptible to having explosives placed on or inside of them. Government vehicles undergoing maintenance do not have to meet limitations and may be parked inside maintenance buildings while they are undergoing repairs.

Parking considerations are listed below:

- If possible, do not allow parking beneath the facility.
- If parking beneath a facility is unavoidable, access to the parking should be limited, secure, well lighted, and free of places of concealment.
- Do not authorize vehicles that have not been inspected to park under a building or within the exclusive zone, including at loading docks.
- If possible, locate visitor or general public parking near, but not on the site itself.
- Parking within the secured perimeter of an asset should be restricted to employees.
- Parking should be located in areas that provide the fewest security risks to DoD personnel.
- One way circulation within a parking lot can facilitate monitoring for potential aggressors.
- Locate parking within view of occupied facilities.
- Restrict parking from the interior of a group of buildings.
- Locate parking and service areas away from high-risk resources. See Figure 12.5a.
- Restrict parking within the stand-off zone. Controlled parking associated with existing inhabited buildings may be allowed to be as close as 10 meters (33 feet) without hardening or analysis if access control to the parking area is established at the applicable conventional standoff distance for parking. Active access control device must be used to control entry within the standoff distance. Barriers will also be installed at these entry and exit ways. These access control devices and barriers will meet the K-4 rating of the Department of State certified anti-ram vehicle barrier list. See Figure 12.5b.

Figure 12.5a
Locate Parking away from Inhabited Facilities

Figure 12.5b
Parking is not Allowed Closer than 10 Meters of and Inhabited Building Without Hardening

- When establishing parking areas, provide emergency communication systems at readily identified, well lighted, CCTV monitored locations to permit direct contact with security personnel.
- Provide parking lots with CCTV cameras and adequate lighting capable of displaying and videotaping lot activity.

12.6 BUILDING CONSIDERATION

After all appropriate force protection measures have been considered at the site planning and design level, measures must be considered to protect the ultimate terrorist target: the personnel with the facility. Designers must determine which measures are appropriate and cost effective to incorporate into the design. The design must balance force protection measures with the requirements of the Americans with Disabilities Act Accessibility Guidelines (ADAAG), Uniform Federal Accessibility Standards (UFAS), National Fire Protection Codes (NFPA), and all applicable local building codes.

From a force protection standpoint, the primary goals of building systems design are two: 1) design a safe building that will not fail when attacked, and 2) permit rescue teams to evacuate victims during rescue operations. The following building systems protective measures should be given consideration when determining the building designing:

Building Form

- Consider earth-sheltered design to reduce the asset's vulnerability to attack.
- Orient buildings horizontally rather than vertically to reduce the building's profile and exposure.
- Place the ground floor elevation of a building at four feet above grade to prevent vehicles from being driven to and into the facility.
- Avoid eaves and overhangs, since these can be points of high local pressure and suction during blasts. When these elements are used, they must be designed to withstand blast effects.
- Orient glazing perpendicular to the primary façade to reduce exposure to blast and projectiles
- Avoid having exposed structural elements such as columns on the exterior of the facility.
- Provide pitched roofs to allow launched explosives to roll off of the facility.
- Avoid re-entrant corners on the building exterior where blast pressures may build up.

- Substitute strengthened building elements and systems (hardening) when stand-off distances cannot be accommodated.
- Use ductile materials that are capable of very large plastic deformations without complete failure.
- Make roof access hatches securable from the interior.
- Provide blast-resistant walls when a high threat is present.
- Design facilities with a sacrificial sloping roof that is above a protected ceiling.
- Consider use of sacrificial exterior wall panels to absorb blast.
- Use earth tone-colored materials and finishes on exterior surfaces to diminish the prominence of a building.
- Consider reinforced concrete wall systems in lieu of masonry or curtain walls to minimize flying debris in a blast.
- Reinforced wall panels can protect columns and assist in preventing progressive collapse, as the wall will assist in carrying the load of a damaged column.

The seventeen recommended antiterrorism measures for enhanced site security should be considered for all new and existing inhabited buildings (UFC 4-010-01, Appendix C, Para C-1.1 through C-2.7).

Windows

- Eliminate windows adjacent to doors because the windows can be broken, allowing the door to be unlocked.
- Minimize the number and size of windows in a façade. If possible, limit the amount of glazed area in building facades to 15 percent. The amount of blast entering a space is directly proportional to the amount of opening on the façade.
- Consider using burglary- and ballistic-resistant glazing in high-threat areas.
- Consider using laminated glass in place of conventional glass.
- Consider window safety laminate (such as mylar) or another fragment-retention film over glazing to reduce fragmentation.
- Consider curtains, blinds and shades to limit entry of incendiary devices.
- Narrow recessed windows with sloping sills are less vulnerable than conventional windows. See Figure 12.6a.

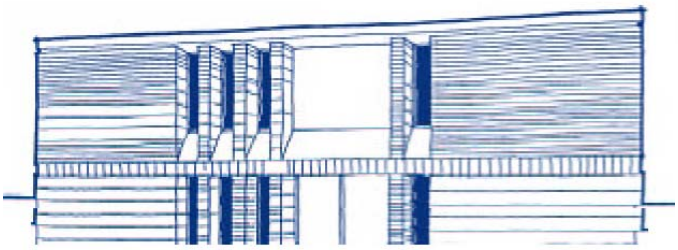


Figure 12.6a
Narrow Recessed Windows With Sloping Sills Are Less Vulnerable Than Conventional Windows

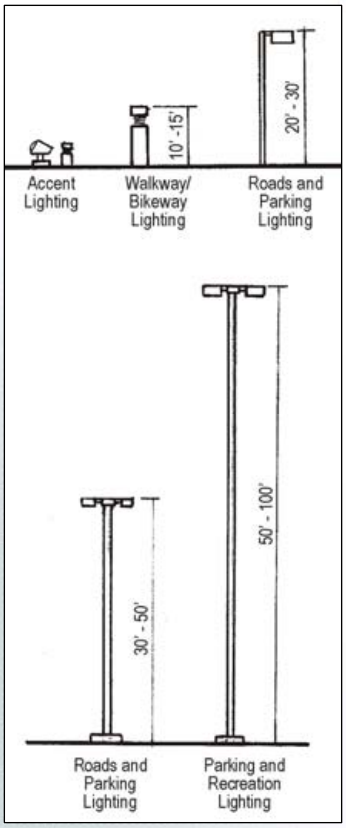
- The operable section of a sliding window should be on the inside of the fixed section and secured with a metal rod or similar device placed at the bottom.
- Provide horizontal window six feet above the finished floor to limit entry.
- Windows can be hardened by steel window frames securely fastened or cement grouted to the surrounding structure.
- To minimize hazards from flying glass fragments, use 6-mm (1/4") nominal laminated glass for all exterior windows and glazed doors for new and existing inhabited buildings even if the minimum standoff distances are met. (UFC 4-010-01, Appendix B, Para B-3.1).

Doors

- Provide hollow steel doors or steel-clad doors with steel frames.
- Provide blast-resistant doors for high threats and high levels of protection.
- Permit normal entry/egress through only one door, if possible.
- Limit exterior doors to a minimum while accommodating emergency egress. Doors are less attack-resistant than adjacent walls because of functional requirements, construction, and method of attachment.
- The weakest part of a door system is the latching component. Replace externally mounted locks and hasps with internally locking devices
- Where practical, doors should present blank, flush surfaces to the outside to reduce their vulnerability to attack.
- Locate hinges on interior or provide concealed hinges to reduce their vulnerability to attack.
- Emergency exit doors should only facilitate exiting movement.
- Equip any outward-opening double door with protective hinges and key-operated mortise-type locks.
- Provide solid doors or walls as a back-up for glass doors in foyers.
- Strengthen and harden the upright surfaces of a door jamb into which the door fits.
- Make roof access ladders removable, retractable or lockable.
- Protect utility openings to a facility from covert entry by installing screens or grates or attaching intrusion detection systems (IDS) sensors.

12.7 LIGHTING

Lighting systems for security operations provide illumination for visual and closed-circuit television (CCTV) surveillance of boundaries, sensitive inner areas, and entry points. When CCTV is used as part of security operations, the lighting system will be coordinated with the CCTV system. The specific installation environment and the intended use determine lighting system requirements. Often two or more types of lighting systems are used within a single area, Figure 12.7a. Guidance on the use of security lighting may be obtained from TM 5-811-1, Electrical Power Supply and Distribution.



▲ **Figure 12.7a**
Lighting Creates a Deterrent

12.8 BERMS AND EARTH TERRACING

The use of berms and terracing can fulfill one of more of the following functions.

- Define boundaries of property or boundary limits.
- Provide a barrier to moving vehicles.
- Hinder pedestrian movement.
- Intercept projectiles.
- Obstruct lines of sight.

Berms used to block lines of sight or projectiles must be high enough to achieve those objectives or may be combined with landscaping or other construction elements. Berms should maintain side slopes no greater than 4:1 to allow for mowing operations and should not, as a general rule, be higher than 6 feet from the lowest pavement elevation. Creation of an undulating pattern in the berm design helps to set a more natural presence to the area. Placement of plant material on slopes will need to allow for proper watering to ensure a healthy growth medium. Detailed design guidance is contained in Army Technical Manual (TM) 5-853-3/AFMAN 32-1071, Vol. 3, *Security Engineering Final Design.* This Army Technical Manual is a "For Official Use Only" document and is not accessible on the Army Corps of Engineers publications website. A copy of the manual can be acquired by ordering it through your standard publications account.

12.9 GATE AND ENTRANCES (ACCESS CONTROL POINTS)

Installation entry points are key components in the force protection security program. The most effective entrances accommodate the functions of observation, detection, inspection, access control, and disablement of hostile personnel and vehicles, while containing the vehicles and pedestrians until access is granted. These areas are one of the most important installation features in the creation of a sense of arrival for both installation personnel and visitors. It is important that these areas present a positive public image. See Figure 12.9a.

The Headquarters Department of the Army, Office of the Provost Marshal General, Operations Branch (DAPM-OPS) in coordination with the Protective Design and Electronic Security Centers of Expertise developed standards for Army Access Control Points (ACP). Standard Definitive Design for Access Control Points, Dec. 2004. See Figure 12.9b.

▲ **Figure 12.9a**

Entrance Gates Should Create A Sense of Arrival and First Impression for Personnel and Visitors

▲ **Figure 12.9b**

The Access Control Point is Part of The Installation Perimeter and the First Line of Defense Strategy and A Legal Line of Demarcation

12.9.1 Canopies for ACPs

ACPs will have a canopy, which will cover the full width of incoming lanes at the Guard Booth. The canopy shall have a minimum clearance of 14.5 feet and shall have a minimum length of 50 feet. Supporting structure of roof will consist of columns sized and located to create peripheral vision for the

guards with minimal obstructions. Lighting will provide a minimum of 10-foot-candles with a Color Rendition Index of 65. Measures will be taken to protect the canopy from the threat of an over-height vehicle. The Interim Army Standard for Canopies at Army Installation Access Points, Feb. 2004.

12.9.2 Physical Security Equipment

The Product Manager, Force Protection Systems (PM-FPS) under DoD Directive 3324.3 is assigned the mission of developing, fielding, and supporting Physical Security Equipment (PSE) throughout its life cycle for the Army, Joint Services, and other Government agencies.

The DoD Directive assigns specific areas of responsibility which include: interior PSE, Command and Control Systems, security lighting, force protection systems, barrier and systems, and interior and exterior robotics. Physical security may dictate that CCTV cameras with recording capabilities may be required at entrance gates. Physical security may dictate that CCTV cameras with recording capabilities may be required at entrance gates. The PM-FPS homepage and the DA-approved equipment Blank Purchase Agreements (BPAs) are listed below.

- Product Manager – Force Protection Systems Homepage
- DA-approved PSE Equipment Blanket Purchase Agreements (BPAs)

12.10 ARMY STANDARDS

The cited Army Standards shall be met.

- Unified Facilities Criteria (UFC) 4-010-01, *DoD Minimum Antiterrorism Standards for Buildings*
- UFC 4-010-02, *Design (FOUO): DoD Minimum Standoff Distances*. (This document is a “For Official Use Only [FOUO]” publication. User may contact the Point of Contact posted at the noted website for inquiries regarding this document).
- Uniform Federal Accessibility Standards (UFAS)
- Americans with Disabilities Act Accessibility Guideline (ADAAG)
- DoD Instruction 2000.16, DoD Antiterrorism Standards
- Field Manual 3-19.30, Chapter 4, FM 19-30
- Engineering and Construction Bulletin (ECB) 2005-3, *Army Standard Design for Access Control Points*

12.11 REFERENCES

The following references are provided for guidance.

- DoD Handbook 2000.12H, *Protection of DoD Personnel and Activities Against Acts of Terrorism and Political Turbulence*, February 1993 (This Handbook is a "For Official Use Only (FOUO)" publication. Users may contact the Point of Contact posted at the following website to obtain a copy of the Handbook.) http://www.dtic.mil/whs/directives/corres/html/o200012h.htm
- Army Regulation (AR) 525-13, The Army Force Protection Program (Available only through the Army Knowledge Online web portal.)
- UFC Security Engineering series are, UFC 4-020-01FA, UFC 4-020-02FA, UFC 4-020-03FA, and UFC 4-020-04FA. The four volumes cover; Project Development, Concept Design, Final Design, and Electronic Security Systems respectively. UFC 4-020-04FA is available via the internet. Access to the other UFC's can be gained through the U. S. Army Corps of Engineers' Protective Design Center (PDC) web-based library. A user name and password are required. Site entry is restricted to U.S. Government agencies and their U.S. contractors. Also, a copy of the manuals can be acquired via a standard publications account.

A

Appendix A
Design Team IDG Checklist

A completed Design Team Installation Design Guide (IDG) Checklist should be completed for all projects that impact the appearance of an Army Installation. The Master Planner shall provide the checklist to all teams designing new facilities, additions, or renovations to existing facilities, or maintenance on the installation. The Design Team IDG Design Checklist is to be completed by the design team to assure the guidelines and standards have been considered and complied with in the design process, and by the Master Planner in project review.

The Designer of Record or Design Agent will provide a copy of the completed checklist, together with a signed certification statement with each design submittal (10% [pre-concept], 35%, 60%, and 90% for each MILCON projects). The Designer of Record will complete the checklist and verify compliance in the space provided. In the case of Design Build, all agents i.e. the Corps of Engineers, NAF, AFFES, tenants, etc. shall have the perspective design build contractors submit a completed IDG Checklist as part of their proposal. The completed checklist will be provided to the Master Planner for review with concurrence or denial. Upon a determination of concurrence by the Master Planner, the plan and checklist with signatures will then be provided to the Real Property Planning Board for final acceptance or denial. The accepted checklist will become a part of the project record files.

If plans are denied for non-compliance at the installation or command level (where applicable) of review, an explanation of the denial will be provided to the Designer of Record. The plan and checklist can be resubmitted with revisions as indicated in the explanation of denial.

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ARMY INSTALLATION DESIGN GUIDE (IDG) COMPLIANCE CHECKLIST

1. PROJECT TITLE AND DESCRIPTION.

Title:_____

Description:_____

_____

2. PROJECT JUSTIFICATION:_____

_____

_____

3. SUSTAINABLE DESIGN:

a. Has SPiRiT Checklist been attached? (If not, obtain completed checklist)

b. Does SPiRiT meet or exceed Silver level? ("Silver" is the standard for all FY06 MILCON vertical construction projects currently under design (as of March 18, 2003). For all other FY06 and future-year MILCON projects the minimum SPiRiT rating requirement is "Gold".)

Yes _____ - Review project as submitted.

No _____ - Return submittal to design team for revisions to meet SPiRiT.

4. SITE PLANNING

a. Was a site plan prepared for the proposed project utilizing the IDG Design Process included in Sections 2, 3, and 5 of the IDG?

Yes _____ No _____

b. Does the site plan include Site Planning Design Component guidelines of the IDG?

Yes _____ No _____

c. Does the site plan meet AT/FP requirements identified in Section 12 of the IDG?

Yes _____ No _____

d. Designer Comments on Site Planning:

_____

_____

e. Does Site Planning comply with the IDG? If not, provide justification.

_____

_____

f. Does Site Planning meet approved installation master plan siting compliance?

Yes _____ No _____ If not, provide justification.

_____

_____

g. Has NEPA been initiated for the construction effort in accordance with AR 200-2?

Yes _____ No _____

h. Has airspace criteria been considered relative to airfield accident potential zones?

Yes _____ No _____

5. BUILDINGS

a. Does the building exterior design meet the Building Design objectives defined in the IDG?

Yes _____ No _____

b. Is the exterior building designed to meet the Structural Characteristics defined in the IDG?

Yes _____ No _____

c. If the project is a renovation or addition, does the proposed renovation or addition meet IDG building design and structural characteristics?

Yes _____ No _____ NA_____

d. If the project is a renovation or addition to a historic building, does the renovation or addition maintain the design integrity of the original building or meet Historical Approval Agencies' requirements for any deviations?

Yes _____ No _____ NA_____

e. Does the building exterior design meet AT/FP requirements (if applicable)?

Yes _____ No _____

f. Designer Comments on exterior Building Design:

_____

_____

g. Does Building design comply with the IDG? If not, provide justification.

_____

_____

6. CIRCULATION

a. If the project includes roadway construction, does the proposed plan meet Federal Highway and/or local guidelines defined in the IDG?

Yes _____ No _____ NA_____

b. If the project includes roadway construction, does the proposed plan meet AT/FP roadway setback requirements defined in the IDG?

Yes _____ No _____ NA_____

c. If the project includes roadway construction, does the proposed plan include applicable roadway alignment and intersection guidelines defined in the IDG?

Yes _____ No _____ NA_____

d. If the project is an entrance gate, does the proposed plan include entrance gate guidelines and standards defined in the IDG?

Yes _____ No _____ NA_____

e. If the project includes parking, does the proposed plan meet the Parking Lot Location/Design guidelines defined in the IDG?

Yes _____ No _____ NA_____

f. If the project includes pedestrian circulation, does the proposed plan meet the Walkways and Pedestrian Circulation Guidelines in the IDG?

Yes _____ No _____ NA_____

g. If the project includes bicycle circulation, does the proposed plan meet the Bikeway Guidelines in the IDG?

Yes _____ No _____ NA_____

h. Designer Comments on Circulation Design:

_____

_____

i. Does Circulation Design comply with the IDG? If not, provide justification.

_____

_____

7. PLANT MATERIAL

a. All projects for new construction should include the planting of trees shrubs and/or groundcover. Does the proposed planting plan include a project plan?

Yes _____ No _____

b. Does the proposed planting plan meet AT/FP requirements defined in the IDG?

Yes _____ No _____

c. Does the proposed planting plan include plant material recommended in the selected Plant Palette Matrix included in the IDG?

Yes _____ No _____

d. Does the proposed planting plan impact any Exceptional Trees?

Yes _____ No _____

e. Designer Comments on Landscape Design:

_____

_____

_____

f. Does Landscape Design comply with the IDG? If not, provide justification.

_____

_____

8. SITE ELEMENTS

a. If the project includes Site Furnishings, does the proposed plan follow the guidelines in the IDG?

Yes _____ No _____

b. If the project includes Signs, does the proposed plan meet the Signs standards in the IDG?

Yes _____ No _____

c. If the project includes exterior Lighting, does the proposed plan meet the exterior Lighting guidelines defined in the IDG?

Yes _____ No _____

d. Will all power and other distribution lines be located underground?

Yes _____ No _____

e. Will all substations and transformers be designed as to be screened from view?

Yes _____ No _____

f. Will all communications infrastructure be located underground?

Yes _____ No _____

g. Has the nearest communication infrastructure been identified?

Yes _____ No _____

h. Is there a requirement to overbuild existing communication infrastructure?

Yes _____ No _____

i. Will all sewer and water lines be located underground?

Yes _____ No _____

j. Are all storm drain systems designed to meet the guidelines defined in the IDG?

Yes _____ No _____

k. Are all storm drain systems designed to meet the guidelines defined in the IDG?

Yes _____ No _____

l. Designer Comments on Site Elements Design:

_____

_____

m. Does Site Elements Design comply with IDG? If not, provide justification.

_____

_____

9. ANTITERRORISM (SECURITY)

a. Have installation boundary setbacks been included?

Yes _____ No _____

b. Have building setbacks from roads, parking, other buildings been included?

Yes _____ No _____

c. Do site plans and landscape plans include the criteria outlined for AT/FP?

Yes _____ No _____

d. Designer Comments on AT/FP Compliance:

_____

_____

e. Does AT/FP Design comply with the IDG? If not, provide justification.

_____

_____

I hereby certify that the information provided is in compliance with the guidelines of the installation or applicable IDG, except as justified as non-compliance.

_____ _____

Designer of Record **Date**

Concur _____ **Deny _____, Explanation of denial is attached.**

_____ _____

IDG Coordinator **Date**

Accept _____ **Deny _____, Explanation of denial is attached.**

_____ _____

Command Review (Where Applicable) **Date**

PROJECT REQUIREMENTS IDG CHECKLIST

(The following checklist is optional and is designed for use on major projects.)

To be completed by Installation Personnel and used in the preparation of the Request for Proposals (RFP).

PROJECT _____ **LOCATION** _____

DPW/DIS POC _____ **PH#** _____

ADDRESS: _____

_____

E-MAIL _____

DATE CHECKLIST COMPLETED _____ **BY** _____

When completing this form it is important to remember that it is the responsibility of the installation to resolve any conflicts between the different "users" (i.e. DPCA, DPW, DOIM, etc.) about wants, needs, etc. The A/E that prepares the RFP must have the specific guidance contained herein to get you what you want. If there is information you wish to provide that is not specifically requested or you are unable to make your desires clear within the confines of this checklist, then add those comments at the end.

1.0 GENERAL INFORMATION

A. Maps and plans available: (Provide copies with completed checklist)

1. Basic Information Maps (BIMs): (List Drawing Numbers)

   (Maps should be provided in Spatial Data Standards (SDS) compatible GIS format whenever possible.)

   Site Topography
   Site Sanitary Sewer
   Site Storm Sewer
   Site Electrical
   Site Communications
   Site Water
   Site Plan Extract - from RPMP (Future Development Site Plan)
   Other
   Project Location Plans
   Area Map
   Site Map

2. Aerial Photograph (Preferred to Topographic)

3. USGS Map

4. Project Siting Plan (Proposed)

5. Environmental

   a) Jurisdictional wetlands designation
   b) Other historical concerns:

B. Project Building Plans: (If renovation/addition or prior design, provide available information and plans.)

1. Foundation
2. Basement
3. Floor
4. Structural
5. Roof
6. Elevations
7. Electrical
8. Telecommunications
9. Mechanical
10. Plumbing
11. Site Utilities
12. Specifications
13. Other

C. Applicable Codes and Standards:

List all known applicable codes and regulations. Generally, NAF construction will not follow Federal or Military Specifications.

Department of Defense (DoD) Governing criteria is UFC 1-200-01, *Design: General Building Requirements*, 31 July 2002

Local Building Codes:

State and County Codes:

Environmental Regulations:

Installation Regulations:

Cultural Regulations:

Other:

National Fire Protection Codes (NFPA), Military Handbook 1008C

1.1 TEMPORARY FACILITIES AVAILABLE TO THE CONTRACTOR

A. Facilities available to contractor during construction:

1. General Site Plan has been annotated to show limits of construction site: _____Yes, _____No. If the contractor requires the use of additional area, he must obtain written approval from the Contracting Officer.

2. Construction Office available: _____Yes, _____No.

3. Covered materials storage available: _____Yes, _____No.

4. Uncovered materials storage available: _____Yes, _____No.

NOTE: Security of construction site and materials is the Contractor's responsibility.

5. Select fill borrow areas, spoil areas, sanitary fill, and haul routes are shown on attached Installation map: _____Yes,_____No.

   List any restrictions or notes on the use of those areas:

NOTE: Disposition of scrap and salvageable materials resulting from construction is the responsibility of the contractor unless otherwise noted and agreed.

B. Utilities available to contractor during construction:

1. Potable Water: _____Yes, ____No; Metering required: _____Yes, ____No;

   Cost $_____per_____.

2. Non-Potable Water (Irrigation, Machine Washing, etc.): _____Yes, ___No;

   Metering required: _____Yes, _____No; Cost $_____ per _____.

3. Electricity: _____Yes, _____No; Metering required: _____Yes, _____No;

   Cost $_____ per _____.

4. Communication: _____Yes, _____No

5. Natural gas: _____Yes, _____No; Metering required: _____Yes, _____No;

   Cost $_____ per _____.

6. Sanitary sewer: _____Yes, _____No

NOTE: Utilities used at the construction may be metered and/or charged to the contractor. The rate schedule for utilities will be provided as part of this completed checklist and shall be the basis by which the installation will bill the utility usage. Installation of temporary meters, where required, and temporary tie-ins to the utility systems shall be the responsibility and at the cost of the contractor.

1.2 DEMOLITION REQUIREMENTS

Facilities for demolition, relocation, or retention.

Provide description, size, type construction, and location of any existing facilities on the site that must be demolished, relocated, or retained. Consider all structures, foundations, pavements, communications, and utilities (whether active or abandoned). Consider demolition hazards (i.e. lead, asbestos, etc.). Every effort shall be made by the installation to ensure compliance with the clean site policy. Provide the date when the clean site will be available. Recycle building demolition and debris material whenever possible.

1.3 PAVING REQUIRMENTS

A. Parking area(s) required: _____Yes, _____No.

1. Location and brief description:
2. Number of parking spaces for passenger vehicles: _____

   (including _____ spaces for the handicapped).
3. Type of pavement: _____
4. Perimeter of parking area(s) to have concrete curb:_____Yes, _No.
5. Striping of parking spaces required: _____Yes, _____No.
   a) Width of stripes: _____
   b) Type of paint to be used: _____
6. Special signage required: _____
7. Concrete wheel stops required: _____Yes, _____No.
8. Handicapped ramps/depressed curbs required: _____Yes, _____No.

B. Service road(s) required: _____Yes, _____No.

1. Location: _____
2. Type pavement: _____
3. Concrete curbing required on both sides of road: _____Yes, _____No.
4. Minimum roadway width: _____Feet _____

   List any other special paving considerations or needs: _____

   _____

   _____

C. Sidewalks required: _____Yes, _____No.

1. Type of paving material: _____
2. Location: _____
3. Minimum width: _____
4. Minimum thickness shall be 4” with welded wire fabric.

D. Concrete dumpster pads required: _____Yes, _____No.

1. Number of pad(s): _____each. See note below.
2. Size of each pad: _____ feet by _____ feet.
3. Provide bumper stops at rear of pads: _____Yes, _____No.
4. Provide architectural screening of pads: _____Yes, _____No.

   Type: _____

NOTE: Building orientation or design may eliminate need for screening. Screening shall be in accordance with the Army Installation Design Guide (IDG).

1.4 UTILITIES SERVICE REQUIREMENTS

A. Electrical Service: Meter required: _____Yes, _____No,

Type: _____

1. Type system to be installed: _____underground, _____aerial.
2. Type transformer(s) to be installed: _____Pole mtd., _____Pad mtd.,

NOTE: Screen in accordance with Army Installation Design Guide (IDG).

3. Available Voltage: _____
4. Location of tie-in point: _____

B Telecommunications/Information Technology: _Yes, _____No,

Type: _____

1. Type system to be installed: _____underground, _____aerial.
2. Location of tie-in point: _____

C. Water Service: Meter required: _____Yes, _____No.

1. Size and location of tie-in point: _____

2. Additional fire hydrant(s) required: _____

D. Sanitary Sewer Service: Size and location of tie-in point: _____

_____

E. Storm Drainage:

1. Design for _____year occurrence.

2. Type System: _____Surface, _____Underground

3. Location of tie-in point for existing underground storm drainage system if incorporated in contractor design: See Site Plan.

F. Gas Service: _____Natural, _____Propane;

Meter required: _____Yes, _____No.

1. For Heating: _____Yes, _____No.

2. For domestic hot water: _____Yes,_____No.

3. For laundry dryers: _____Yes,_____No.

4. For kitchen equipment: _____Yes,_____No.

5. Size and location of tie-in point: _____

NOTE: Contractor (Offeror) shall be responsible to determine that all of the existing service utilities are of sufficient capacity to accommodate all of the design loads for this total facility. Should a Contractor (Offeror) determine that one or more of the existing service utilities are not adequate to accommodate the Contractor's (Offeror's) design loads for this total facility, then the Contractor (Offeror) shall submit with his initial and any subsequent proposal (Best & Final Offer), the requirements, design data and the price for increasing the capacity of each existing service utility system or for providing a new service utility system. Design loads for this facility shall be calculated in accordance with the criteria specified in this Request for Proposals (RFP), with the most stringent criteria governing. The responsibility for verification and field location of any and all information provided in the RFP and on any attached or enclosed drawings, or other documents shall be and is the responsibility of the Contractor (Offeror).

G. Coordination and Notification Required for Utilities Tie-in:

1. Point of contact for coordination: _____

   Tel. _____ Email _____

2. Road Closing:

   a) Can both lanes be closed to traffic: _____Yes, _____No.

   b) Maximum time road can be closed:

   c) Can road be closed over a holiday or weekend: _____Yes, _____No.

3. Minimum notification time required for utilities outages and road closing:

   a) Electric Power: _____working days.

   b) Communication: _____working days.

   c) Water: _____working days.

   d) Gas: _____working days.

   e) Steam: _____working days.

   f) Central AC lines: _____working days.

   g) Roads: _____working days.

NOTE: Enclose underground primary electrical service in concrete from the new utility tie-in points to the pad mounted transformer and/or mechanical room panel boxes. Provide one spare conduit for each service sealed at both ends. The conduit may be PVC provided it conforms to NFPA 70, current edition.

NOTE: If existing sidewalk, curbs, gutters, or paving are disturbed or removed during construction, the paving or concrete must be replaced by the Contractor.

1.5 ARCHITECTURAL AND STRUCTURAL BUILDING DESIGN REQUIRMENTS

A. **Seismic Design Zone:** _____. Structural design shall be in accordance with codes specified in the RFP.

B. **Basic wind speed:** _____ mph.

C. **Ground Snow Load:** _____ PSF (Plus code live load).

D. **Maximum Frost Penetration:** _____inches.

E. **Heat Transmission:** “U” Factors:

1. Walls: _____.
2. Floor (slab-on-grade) at perimeter foundation wall: _____.
3. Floor over ventilated crawl spaces: _____.
4. Ceiling and/or roofs: _____.

F. Roof:

1. Minimum pitch: _____
2. Type: _____
3. Scuppers and drains are required: _____ Yes, (If a parapet type roof is proposed); _____ No.
4. Gutters and downspouts: _____ Yes, _____ No, Type: _____
5. Drainage carry off: _____ Splash Blocks; or _____ Underground drainage system (internal roof drains not permitted.)
6. Access to roof: _____

NOTES: Catwalks to and around rooftop HVAC units and other equipment are required (Cary tread or equal). Where possible, architectural screening of visible rooftop equipment is required.

G. Site Conditions:

1. Environmental Assessment required: _____ Yes, _____ No.

   Completion Date: _____

   EIS Required: _____ Yes, _____ No.

   Completion Date: _____

   (Provide copies of actions to date.)

2. Cultural Resources Compliance Completed: _____ Yes, ____ No.
3. Site Conditions:

   Topographical feature description: _____

   _____

   _____

   _____

   Confirm or identify subterranean hazards:

   Fill area
   Old foundations
   Unexploded ordnance
   Existing/abandoned utility line
   Tunnels/mines
   Other

4. Soil investigation data available: _____ Yes, ____ No.

   At project location: _____ Yes, ____ No.

   Other:

5. Soil bearing capacity: _____ PFS. Actual test _____, Assumed _____.

NOTE: The successful Offeror shall be responsible for accomplishing additional necessary testing to verify soil characteristics at the site and design of the foundation system to meet these requirements.

H. Building Exterior: Brick: _____Yes, _____No.

Other: _____

NOTE: Where brick is required, the exterior walls shall be finished with face brick with through body integral color and shall match the brick currently in place in Building No's.

NOTE: The final floor plan as designed by Offeror shall include all functional areas outlined subsequently in this section. Gross building areas shall not exceed that specified in the RFP, including the mechanical room.

I. Barrier Free Requirements: (Where applicable) as minimum, ____ guest units shall be barrier free.

NOTE: Where required, "Barrier Free Requirements" shall be designed and constructed to provide for the Physically Handicapped (interior and exterior), in accordance with Uniform Federal Accessibility Standards (UFAS) and the Americans with Disabilities Act Accessibility Guidelines (ADAAG).

J. Kickplates required on interior wood doors: _____Yes, _____No.

K. Approximate total maximum occupancy:

1. Female: Adults _____ Children _____

2. Male: Adults _____ Children _____

3. TOTAL: _____

   Comments: _____

   _____

   _____

   _____

L. Landscape Requirements:

List any special requirements:

NOTE: Offerors will provide a Landscaping Plan for the project area as required in the RFP and in keeping with the criteria established in the IDG. Surface area disturbance and tree removal will be minimized. Trees determined to be retained will be incorporated in the Landscaping Plan. Landscaping shall refer to the planting of trees, shrubs, plants, etc. and shall not be associated with establishment of turf as defined below. Trees, shrubs, plants, etc. shall be guaranteed for a period of one (1) year from time of planting.

M. Establishment of Turf:

N. Soil Poisoning: For termite protection is _____, is not _____ required.

NOTE: It will be the Contractor's responsibility to protect all existing turf and landscaping affected by the construction and to replace any turf or landscaping that has been damaged, for the term of the contract.

O. Paint Color:

List standard paint colors:

NOTE: Paint colors shall be in accordance with the IDG paint palette.

P. Finishes:

List standard finishes:

1.6 ELECTRICAL DESIGN REQUIREMENTS

A. Exterior lighting:

1. Parking area(s) lighting required: _____Yes, _____No.

   a) Type of lighting: _____ High Pressure Sodium

   _____ Low Pressure Sodium

   _____ Mercury

   _____ Halogen

   _____ Other

   b) Average Intensity: _____ foot candles per sq. yd. with a uniformity ratio of 4:1_____, Other _____. (Avg. to min.)

   c) Type pole: _____

   d) Special mounting requirements:

e) Switching:

Type: _____ Manual

_____ Clock _____7 day _____7 day

_____ Astronomical

_____ Photo Electric

_____ Combination of above as indicated.

_____ Other

2. Exterior building lighting required: _____Yes, _____No.

a) Type of lighting: _____ High Pressure Sodium

_____ Low Pressure Sodium

_____ Mercury

_____ Halogen

_____ Other

b) Average Intensity: _____foot candles per sq. yd.

c) To be mounted on the building structure: _____Yes, _____No.

d) Switching:

Type: _____ Manual

_____ Clock _____7 day ____7 day

_____ Astronomical

_____ Photo Electric

_____ Combination of above as indicated.

_____ Other

Location: _____

Lighting for plumbing and electrical chases required:

_____Yes, _____No.

NOTE: All electrical wiring (exterior and interior) shall be copper.

B. Outside weather proof receptacles: shall be installed every ____ feet along the building exterior. Outside weather proof receptacles should be RCD (GFCI) protected.

NOTE: The building shall have emergency light fixtures and exit lights in accordance with NFPA requirements. Both shall have battery powered back-up, charge level meters and test buttons.

C. Electromagnetic Shielding:

List any electromagnetic shielding requirements.

D. Standby/Backup Power Requirements:

List and standby/backup power requirements.

1.7 MECHANICAL/PLUMBING DESIGN REQUIREMENTS

A. Heating design data:

1. Below is the outside dry bulb temperature that is equaled or exceeded 97 ½ percent of the time, on the average, during the coldest 3 consecutive months (Dec., Jan., and Feb.). Heating design shall be based on the dry bulb temperature equaled or exceeded 97 ½ percent of the time.

   a) Dry bulb temperature: _____.

   b) Wind velocity: _____.

   c) Degree days: _____.

2. Interior design temperatures: 68 degrees.

B. Air conditioning design data:

1. Outside dry bulb and wet bulb temperatures that are equaled or exceeded 2 ½ percent of the time, on the average, during the warmest four consecutive months (Jun. thru Sep.) are given below. Air conditioning design shall be based on the 2 ½ percent dry bulb, wet bulb temperature.

   a) Dry bulb temperature: _____.

   b) Wet bulb temperature: _____.

2. Interior design temperatures: _____.

   a) Dry bulb temperature: _____.

   b) Wet bulb temperature: _____.

C. Heating and air conditioning system: shall be designed to provide a relative humidity of 50% + 10% or -10%.

D. **Mechanical Systems:** Economy cycle. The air conditioning system except where room fan coil units are located, if located where the winter design dry bulb temperature is 35 degrees F (97 ½ % basis) or less, shall be designed so that 100% outside air may be used in the system during those cool weather periods when the outside air temperature is sufficiently low to provide all the cooling needed, or reduce the load on the air conditioning refrigeration equipment. Use of the economy cycle in areas above 358 F shall be provided when it can be clearly shown that use of the economy cycle is cost effective.

E. **Install humidity control override:** _____Yes, _____No.

F. **Automatic timer controls required for:**

1. Heating System: _____Yes, _____No.
2. Air Conditioning System: _____Yes, _____No.

G. **Heating and Air Conditioning Source:**

1. Self contained plant: _____Heat, _____AC.
2. Supply lines from central plant: _____Heat, _____AC.
3. Purchased heat: _____

H. **Low profile roof mounted HVAC units are permissible:**

_____Yes, _____No.

I. **Automatic timer controls required for:**

1. Heating System: _____Yes, _____No.
2. Air Conditioning System: _____Yes, _____No.

J. **Heating fuel to be used:**

Fuel: _____Natural gas, _____#2 Fuel oil, _____Propane.

K. **Dual fuel heating plant required:** _____Yes, _____No.

Primary Fuel _____, Secondary Fuel_____.

L. **Outside air supply intake:** to close when building is unoccupied:

_____Yes, _____No.

M. **Outside air supply intake:** located at least 10 feet above grade:

_____Yes, _____No.

N. **Type heating and air conditioning filters required:**

( ) Permanent ( ) Throw away

O. **Covers and locks:** required on interior utilities controls: _____Yes, ____No.

P. **Central HVAC System:** Emergency shutoff switch provided: ____Yes, ____No.

Q. **Plumbing Design Data:**

1. Exterior hose bibs: Minimum of _____ each with ¾" hose connection on building exterior.

   a) Frost protection required: _____Yes, _____No.

   b) Removable cutoff handles required: _____Yes, _____No.

2. Interior hose bibs: See Functional Requirements

3. Grease trap(s) required: _____Yes, _____No.

   Location(s):

4. Commodes shall be floor mounted flush valve type for administrative and industrial occupants, and tank type for barracks.

5. Lift station required: _____Yes, _____No.

6. Hot water heater(s) required: _____Yes, _____No.

   a) Energy source: _____ Natural gas, _____ #2 Fuel oil.

   b) Required minimum temperature: _____

   c) System: _____

NOTE: All domestic water piping below grade shall be type K copper. All domestic water piping above grade shall be either type L copper in accordance with appropriate codes. All joints shall be soldered with 95/5 Tin/Antimony solder. The entire potable water system shall be lead free. Vent piping shall be schedule 40 galvanized steel or DWV weight copper.

7. Provide a minimum of _____ floor drain(s) in the laundry and mechanical room.

8. Insulate all water pipes (hot & cold) above slab: _____Yes, _____No.

NOTE: The domestic hot and cold water piping below grade shall be kept to a minimum.

9. All domestic water pipes (hot & cold) shall be stenciled HW or CW. If pipes have been insulated then the pipe insulation shall also be stenciled.

10. Provide grease interceptor: _____Yes, _____No.

    Location: _____

11. Provide a water filtration system: _____Yes, _____No.

    Location: _____
    Type: _____

12. Provide hose bib in or adjacent to all mechanical rooms.

13. Other plumbing considerations or requirements:

2.0 MINIMUM REQUIREMENTS FOR RESTROOMS

The following criteria are for minimal requirements only and may be superseded in quantities and/or finishes, providing that changes are an upgrading of the minimal requirements.

A. General: MALE and FEMALE

ITEM	QUANTITY	SPECIAL REQUIREMENTS
Lavatory	_____	
Commode	_____	
Faucets	_____	chrome finish.
Expose pipes/valves	_____	chrome finish.
Pipe penetrations	_____	chrome finish escutcheons.
Clean outs	_____	chrome covers.
Mirrors	_____	mech. wall fasteners.
Lighting	_____	
Floor drain	_____	each restroom.
Hose bib	_____	under lavatory in each restroom.
Wall finish	_____	ceramic tile to 5' height
Ceiling	_____	moisture resistant DW.
Floors	_____	ceramic tile w/ceramic tile base, or quarry tile w/quarry tile base. Tile shall be MUD-SET.
Toilet Partitions	_____	at all commodes and urinals. overhead braced w/door bumpers baked enamel w/skirts.
Skirts	_____	18" stainless steel. watertight top edge.
Duplex receptacle	_____	GFCI type over vanity.
Paper towel dispenser with trash receptacle	_____	recessed in wall.
Hand dryer	_____	over each lavatory.
Soap dispenser	_____	liquid pump.
Toilet paper dispenser	_____	each commode stall.
Ash receptacle	_____	recessed, each restroom.

B. Specific: WOMENS

Sanitary napkin disposal	_____	each commode stall.
Sanitary napkin disposal	_____	each restroom, coin operated.

C. Specific: MENS

Urinal	_____	porcelain wall mounted
	_____	w/stainless steel part.

NOTE: Each restroom shall be designed and constructed with provisions for the handicapped and shall conform to the latest edition of the International Plumbing Code Unified Facilities Criteria UFC 3-420-01, Plumbing and the Uniform Federal Accessibility Standards published in the Federal Register, August 7, 1984 (Current Edition).

3.0 FIRE PROTECTION REQUIREMENTS

A. Sprinkler system required: __ Yes, _____ No.

1. Type system to be installed: _____ Wet, _____ Dry.
2. Complete coverage throughout the structure: _____Yes, ____No.
   If no, describe proposed system, layout, etc.:
3. Exterior siamese connections are required.

B. Detection System:

1. Smoke detectors required: _____Yes, ____No.

NOTE: Radium type shall not be used.

2. Heat detectors required: _____Yes, _____No.
   (Rate of Rise Heat Detectors shall not be permitted.)

NOTE: When smoke and heat detectors are specific, full coverage of the building is required. In addition, heat detectors are also to be installed in conjunction with potential fire producing equipment such as furnaces, electric motors, etc. All detection devices shall be spaced and installed in accordance with manufacturer's specifications and the latest edition of the NFPA in effect at the time of installation. Heat detectors shall be set to trigger at 135° F. The heat and smoke detectors shall be the combination type. The smoke detection unit shall alarm locally and the heat detection unit shall alarm the facility and transmit the alarm to the fire department via a dedicated telephone line or appropriate transmission media, i.e. radio transmission equipment. Automatic cutoff of air handling equipment is required when smoke or heat detectors, sprinkler systems, or any other automatic/manual fire alarm suppression system are activated.

C. Manually Activated Fire Alarm System: Installed in accordance with the latest edition of the NFPA in effect at the time of installation, is required. Also provide manual pull stations at the ends of the building. The pull stations shall be tied into a central panel box that will signal the fire department via a dedicated telephone line or appropriate transmission media, i.e. radio transmission equipment.

D. Special fire suppression system(s) required: _____ Yes, _____ No.

Describe type, location, and justification:

E. Fire extinguishers (manually operated) are required.

1. Government furnished: _____Yes, _____No.
2. Quantity and locations shall be based upon building design, NFPA, requirements, and coordinated with Installation's fire department.
3. Recessed cabinet mounted: _____Yes, _____No.

NOTE: The Contractor (Offeror) shall furnish and install the recessed fire extinguisher cabinets. The cabinets shall be at a minimum 24 ½" tall, 7" deep, and 8 ½" wide w/glass doors.

F. All interior finish materials shall be per NFPA standards and UFC 3-600-01.

G. Water Supply Lines: for the sprinkler system shall be black steel pipe.

H. The installation's standard fire alarm panels shall be specified for ease of maintenance and sustainability.

I. Emergency Lighting Requirements:

4.0 SECURITY REQUIREMENTS

A. Building physical security:

1. Intrusion detection system required: _____Yes, _____No.
   a) Type system to be installed.
   b) Desired location of detectors:
   c) Exterior door alarm requirements:
   d) Exterior window alarm requirements:
2. Duress alarm system(s) required: _____Yes, _____No.
   a) Type system to be installed.
   b) Location(s):

B. Safe(s) or Vault(s) required: _____ Yes, _____ No.

1. Type and Number:
2. Size:
3. Location(s):
4. Secure to building: _____ Yes, _____ No, if yes, how:
5. Connect to main intrusion alarm system: _____ Yes, _____ No.

C. Remote transmission of the intrusion alarm system: to the installations master system required: _____ Yes, _____ No. If yes, provide and install the transmitter, all conduit, wiring, hookups from the intrusion alarm devices to the transmitter, as well as all exterior underground conduit, required wiring, panel boxes and all other ancillary equipment to bring the system to the existing communication transmission lines. The final connection at the communication line will be made by the government. All systems proposed shall be compatible with the existing system(s) installed at the installation. Point of coordination is Provost Marshall's Physical Security Officer. Specify the installation's standard intrusion alarm system if required.

D. Keying requirements:

1. Rooms requiring card readers:
2. Rooms requiring cipher locks:
3. Rooms requiring individual keys:
4. Rooms requiring master keys:
5. Vaults requiring XO type locks:
6. Exterior keying requirements:
7. At least six (6) keys shall be provided for each lock. An additional twelve (12) sub master and six (6) master keys shall be provided.
8. The Offeror shall provide fifty (50) key blanks in addition to the above keying requirements.

E. All exterior doors shall have unremovable hinge pins.

F. Panic hardware shall be in accordance with NFPA requirements.

G. Hardened secure area(s) required: _____ Yes, _____ No

Location(s):

H. Fencing Requirements:

1. Location:
2. Type and height:
3. Gate requirements:

I. Antiterrorism Requirements:

1. Blast resistant windows:
2. Setbacks:
3. Barriers:
4. Others:

J. Risk/Threat Analysis Requirements:

Fort Wainwright: Fill in unclassified pieces of risk/threat analysis.

5.0 COMMUNICATIONS REQUIREMENTS

A. Intercom system required: _____ Yes, _____ No.

Give a brief description of the requirements for the system:

B. Music/Paging system required: _____ Yes, _____ No.

Give a brief description of the requirements for the system:

C. Telephone system required: _____ Yes, _____ No.

Location:

Type:

Pay telephone required: _____ Yes, ____ No. If required, unit(s) will be wall hung. Contractor shall run wire and conduit from pay phone outlets to the main panel. Phones to be provided by Contractor.

NOTE: Contractor shall provide all conduit, wire, junction boxes and pull wires for the telephone system as required. Hookup of the telephone system will be performed by the Contractor. The Contractor shall coordinate all the telephone requirements with the installation's Directorate of Public Works (DPW) office to determine requirements and provide space for communication equipment, panels, etc., in the mechanical room or where otherwise designed.

The basic telephone system shall be the “Centrax System” as provided by: _____

_____

They system functions shall include the following:

1. Direct in dialing, with restrictions on receiving collect calls.
2. Direct out dialing to local exchange number only.
3. Restrictions on placing chargeable calls outside the local exchange, except for calls charged to credit card or calls made with the charges reversed.

D. Television system required: _____ Yes, _____ No.

1. The technical and installation requirements of the television system shall be coordinated with DPW/DOIM.
2. Locations/number of internal outlets:
3. Wiring and grounding shall be in accordance with the National Electric Code.

E. Information Technology (IT) system required: _____ Yes, _____ No.

Location:

Type:

IT required: _____ Yes, _____ No. If required, unit(s) will be rack mounted. Contractor shall run copper, fiber, and conduit from outlets to the telecommunications room/closet.

NOTE: Contractor shall provide all conduit, wire, junction boxes, and pull wires for the IT system as required. Hookup of the IT system will be performed by the Contractor. The Contractor shall coordinate all the IT requirements with the installation's DPW/DOIM office to determine requirements and provide space for IT equipment, panels, etc., in the mechanical room or where otherwise designed.

F. Mass Notification System (Required per UFC 4-010-01, Standard 23: for New Inhabited Buildings and for Existing Buildings (Primary Gathering and Billeting), also for Existing Buildings, Recommended for all Inhabited Buildings).

Type of Mass Notification System Required:

6.0 SIGNAGE REQUIREMENTS

(Excluding those required by NFPA and OSHA)

A. Interior signage:

B. Exterior Signage:

All exterior signage shall conform to the Army Installation Design Guide (IDG) criteria for signage.

7.0 OTHER COMMENTS

C

Appendix C
Interior Design Review Checklist

The following checklist is optional and is designed for use on major projects.

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INTERIOR DESIGN REVIEW CHECKLIST

1. Installation	**Project**	**Date**
Job Description		
Building No.	**Building Cost$**	
Evaluator	**Furnishing Cost$**	
Using Agency Coordinator	**Phone#**	
Designer	**Phone#**	

ITEM	YES	NO	N/A
2. Is the interior design integral to the facility design?			
- Interior design is specified by the using agency.			
- Scope of work includes building related interior design.			
- Scope of work includes furniture related interior design.			
- Design incorporates Army Installation Design Guide and Standards criteria.			
- DPW representative was a member of Pre-selection and/or Selection Boards.			
Preselection member:			
Selection member:			
3. Was the designer provided interior design criteria?			
- Designed Guide for Interiors DG 1110-3-122.			
- Design Guide for facility type designed.			
- Army Installation Design Guide and Standards.			
4. The design has been reviewed and the following are acceptable?			
<u>For building related interior design?</u>			
- Statement of Design Objective			
- Sketches			
- Color Board			
- Furniture Plan			

ITEM	YES	NO	N/A
- Exterior Materials and Finishes			
- Graphic Design			
Hand Drawn Sketches			
Digital image files (JPG, BMP, etc.)			
3D Model			
Animation (AVI, etc.)			
- Interior Design Finish Schedule			
- Government Furnished Material List			
Items for Installation of Furniture and Accessories			
-Predesign Evaluation:			
Maintenance Data			
Floor Systems			
Electrical Equipment and Task/Supplemental Lighting			
- Interior Element Specification			
Cost Estimates:			
Maintenance and Repair			
New Work			
Equipment-in-place and Furnishings			
For furniture related interior design:			
- Typical furniture layout			
- Furnishing, fabrics and finishes board			
- Furnishings plan			
- Sketch perspectives			
- Colored rendering			
- Photographs			
- Catalog Cuts			
- Furnishing illustration sheets			
- Furnishing placement lists			
- Furnishing order forms			
- Furnishing contract specifications			

ITEM	YES	NO	N/A
5. Does the interior design address the following functions?			
- Communications			
- Information Technology			
- Storage/filing			
- Display surfaces			
- Work surfaces			
- Conference Space(s)			
- Privacy			
- Lighting			
- Planting			
- Spatial considerations			
- Historic Integrity			
- Color/texture characteristics			
- Reflectance values			
- Acoustical considerations			
- Mechanical fixture placement			
- Electronic support			
- Furnishings/accessories			
- Work, training or paper flow			
- Hardware selection			
- Graphics/signage			
- Force Protection			
- Physical Security			
- Secured Communications			
- Secured Data			
- Fire Safety			
6. Construction and installation phase			
- Positive first impression is created			
- Coordinated color scheme, interior reflecting exterior			

ITEM	YES	NO	N/A
- Area and shape of spaces match function and support mission			
- Furnishings support function of space			
- Creative use of interior design spaces			
- Retained designer to review and approve contractor submittals			
- Retained designer to oversee the installation of furnishings			
- Color boards were required and reviewed			
- Interior appearance policy is implemented			
Describe actions taken to ensure quality interior design to all negative responses on an attached sheet. Maintain a copy of this interior design review checklist and all negative responses in the DPW project file.			
I hereby certify that the information provided is in compliance with the guidelines of the installation or applicable IDG, except as justified as non-compliance.			
Designer of Record	**Date**		
Concur			
Deny (Explanation of denial is attached.)			
Master Planner	**Date**		
Accept			
Deny (Explanation of denial is attached.)			
Command Review (Where Applicable)	**Date**		

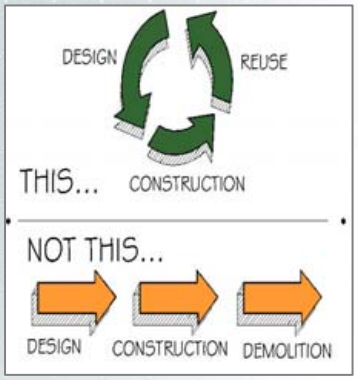
Appendix D

Sustainable Design

D.1 WHAT IS SUSTAINABLE DESIGN?

Sustainable design and development is an integrated approach to planning, designing, building, operating, and maintaining facilities in a collaborative and holistic manner among all stakeholders; Figure D.1a. It is a systematic process and engineering practice with how to do it guidance, checklist, tools, and scoring systems. Sustainable design integrates the decision-making across the installation, basing every decision on the greatest long-term benefits and recognizing the interrelationship of installation actions with the natural environment. In the content of Army installations Sustainable Design is the design, construction, operation, and reuse/removal of the built environment in an environmentally and energy efficient manner; Figure D.1b.

σ **Figure D.1a**
Sustainable Design Produces an Integrated Environment



▲ **Figure D.1b**
Sustainable Design Process

Figure D.1c
Sustainable Design Reduces Energy Consumption

Figure D.1d
Sustainable Design Minimizes Waste

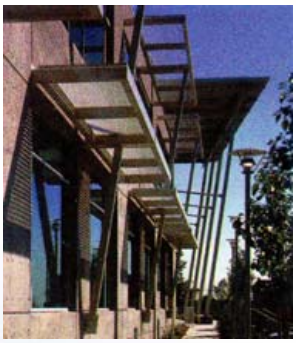


Figure D.1e
Sustainable Design Creates a Positive Manmade Environment for Existing and Future Generations

The basic objectives of sustainability are:

- Reduce the consumption of energy, land, materials, water, and other non-renewable resources; Figure D.1c.
- Minimize the waste of energy, land, materials, water, and other limited resources; Figure D.1d.
- Protect the natural environment that is the source of all resources.
- Create livable, healthy, and fiscally productive manmade environments for existing and future generations; Figure D.1e.

Designing for sustainability ultimately increases quality of life through better resource protection and use. The design process must incorporate a change in mind-set that embraces less consumptive lifestyles. This mind-set change must include global interdependence, stewardship of the environment, social responsibility, and economic viability. The new design mind-set must change from the traditional approach to recognize the impacts of every design choice on natural and cultural resources and on local, regional, and global environments.

D.2 SUSTAINABLE DESIGN AND DEVELOPMENT

Practicing the principles of sustainable design in the planning, design, construction, and operation of infrastructure and facilities is a smart business practice. Protecting our natural resources and reducing our impact on the natural environment is achievable when we create energy efficient, healthy, high-performance, and safe buildings; Figure D.2a.

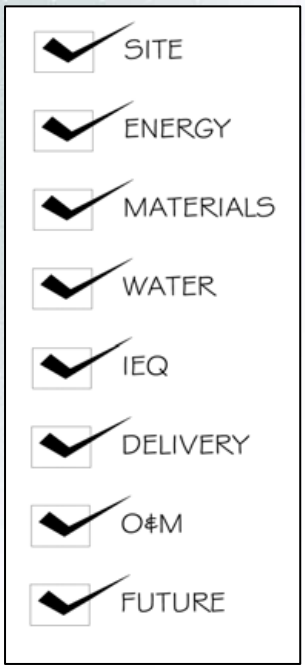


Figure D.2a
Sustainable Design Principles

Critical to the success of sustainable design and development is the organization and commitment of the team to engage in the Integrated Design Process. To effect change in building design and operation, the project delivery process itself must become a collaborative effort to integrate design strategies among all disciplines and all players in the project delivery process. Integrated design demands a more inclusive team, working closer together than is traditionally the case. Future building users and facility managers must be invited to join architects, engineers, and planners in developing the vision and goals for new facilities. (Adapted from the HOK Guidebook to Sustainable Design)

The sustainable design concept is applicable to Army projects. The Sustainable Project Rating Tool (SPiRiT) was developed by the U.S. Army Corps of Engineers (USACE). Per the Assistant Secretary of the Army (Installation & Environment) Sustainable Design and Development Memorandum and the Assistant Chief of Staff for Installation Management (ACSIM) endorsement of Sustainable Design and Development initiative, the SPiRiT rating system will be used by design professionals in all new construction, additions, or renovation of Army facilities for rating sustainability.

The SPiRiT document (Appendix E) was derived from the U.S. Green Building Council LEED 2.0 (Leadership in Energy and Environmental Design) Green Building Rating System. See Website "SPiRiT Wizard" which outlines using SPiRiT, records and tracks rationale, generates SPiRiT rating and permits reuse of previous strategies for subsequent projects.

The SPiRiT rating of "Silver" is the standard for all FY06 MILCON vertical construction projects currently under design (as of March 18, 2003). For all other FY06 and future-year MILCON projects, the minimum SPiRiT rating requirement is "Gold". See Assistant Secretary of the Army Memorandum Subject: Sustainable Design and Development Requirements, dated 18 March 2003.

Further information on sustainable design can be obtained at the following websites:

- Assistant Chief of Staff for Installation Management, Sustainable Design and Development Website This site provides information on the following topics: documentation and references; sustainable process, tools, products and materials; Sustainable Design and Development Training; and links to various sustainable design and development informational website.

- U.S Army Corps of Engineers, Engineering Research and Development Center, Construction Engineering Research Laboratory (CERL), Sustainable Design and Development Website.
- Whole Building Design Guide (WBDG) This site provides comprehensive and current information on sustainable design strategies and technologies.

D.3 SUSTAINABILITY AND THE FEDERAL GOVERNMENT

The Federal Government has led the nation in the energy efficient, resource-conserving building design, construction, and operation. Executive Order (EO) 13123, "Greening the Government through Efficient Energy Management", was issued June 3, 1999. This Order establishes that sustainable design principles shall be applied to all Federal projects in order to reduce pollution and other environmental costs associated with facility construction, operation, and eventual decommissioning.

The principles of sustainable design for Federal Agencies established by EO 13123 include siting, design, and construction, as follows:

- Site – Optimize site potential.
- Energy – Minimize nonrenewable energy consumption; Figure D.3a.
- Materials – Use environmentally preferable products.
- Water – Protect and conserve water; Figure D.3b.
- Indoor Environmental Quality – Enhance indoor environmental quality; Figure D.3c.
- Facility Delivery – Holistic delivery of facility.
- O&M – Optimize operational and maintenance practices.
- Future Missions – Functional life of facility and support systems.

Figure D.3a
Sustainable Design Minimizes Energy Consumption

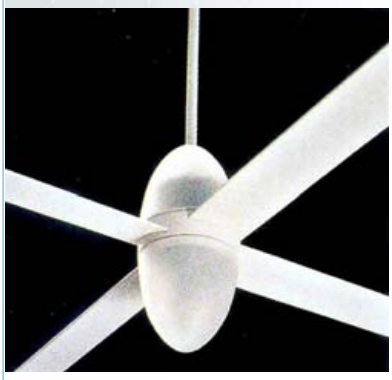


Figure D.3c
Sustainable Design Enhances Indoor Air Quality

D.4 SPiRiT

The U.S. Army Corps of Engineers (USACE) has developed a checklist for sustainability to be used by design professionals in all new construction, additions, or renovation of Army facilities. This checklist is the “Sustainable Project Rating Tool (SPiRiT)”. The SPiRiT document was derived from the U.S. Green Building Council LEED 2.0 (Leadership in Energy and Environmental Design) Green Building Rating System.

SPiRiT is a rating tool that offers a checklist, strategies, and scores to provide sustainable facilities to the Army. SPiRiT allows environmentally responsible practices to be integrated into the process of facility delivery form the very beginning of the project. By using a "whole building" perspective, the SPiRiT rating tool (See Appendix E, SPiRiT Checklist) helps in preserving the environment and improving facility life-cycle management. SPiRiT is based on accepted energy and environmental principles.

The SPiRiT document includes eight categories of design concerns; Figure D.4a. A facility point summary is included at the end of the document. Points are achieved based upon the sustainable design issues addressed in the building, site, and infrastructure design. The design is certified by the designer and design review personnel based upon the following certification levels.

SPiRiT Bronze	25 to 34 Points
SPiRiT Silver	35 to 49 Points
SPiRiT Gold	50 to 74 Points
SPiRiT Platinum	75 to 100 Points

Sustainable Sites	20 pts max
Water Efficiency	5 pts max
Energy/Atmosphere	28 pts max
Materials/Resources	13 pts max
Indoor Enrichment	17 pts max
Facility Del Prices	7 pts max
O & M	6 pts max
Future Mission	4 pts max
Total	**100 pts max**

Figure D.4a
SPiRiT Checklist Points Summary

D.5 ARMY STANDARDS

The cited Army Standards shall be met.

- The SPiRiT rating of "Silver" is the standard for all FY06 MILCON vertical construction projects currently under design (as of March 18 2003). For all other FY06 and future-year MILCON projects the minimum SPiRiT rating requirement is "Gold". See Assistant Secretary of the Army memorandum Subject: Sustainable Design and Development Requirements, dated 18 March 2003.
- All military vertical building construction projects starting with the FY08 MILCON will achieve the SILVER level of LEED NC (New Construction). Projects prior to FY08 program will continue to use SPiRiT rating of “Gold”. See Assistant Secretary of the Army memorandum Subject: Sustainable Design and Development Policy Update – SpiRiT to LEED Transition, dated 5 January 2006.

D.6 REFERENCES

The following references are provided for guidance.

- Assistant Chief of Staff for Installation Management memorandum Subject: Sustainable Project Rating Tool, dated 21 December 2002
- Assistant Chief of Staff for Installation Management, Sustainable Design and Development Website
- U.S Army Corps of Engineers, Engineering Research and Development Center, Construction Engineering Research Laboratory (CERL), Sustainable Design and Development Website
- Air Force Sustainable Facilities Guide
- Whole Building Design Guide

SPiRiT Checklist

Fort Wainwright IDG								
SUSTAINABILITY PROJECT RATING TOOL (SPiRiT)								
Facility Points Summary								**Maximum Points**
1.0		**Sustainable Sites (S)**		**Score**		**0**		**Max 20**
1.R1 *		Erosion/Sedimentation/Water Quality Control						[Required]
1.C1 *		Site Selection						2
1.C2 *		Installation/Base Redevelopment						2
1.C3 *		Brownfield Redevelopment						1
1.C4 *		Alternative Transportation						4
1.C5 *		Reduced Site Disturbance						2
1.C6 *		Storm water Management						2
1.C7		Landscape and Exterior Design to Reduce Heat Islands						2
1.C8 *		Light Pollution Reduction						1
*1.C9 **		*Optimize Site Features*						1
*1.C10 **		*Facility Impact*						2
*1.C11 **		*Site Ecology*						1
2.0		**Water Efficiency (W)**		**Score**		**0**		**Max 5**
2.C1		Water Efficient Landscaping						2
2.C2		Innovative Wastewater Technologies						1
2.C3 *		Water Use Reduction						2
3.0		**Energy and Atmosphere (E)**		**Score**		**0**		**Max 28**
3.R1 *		Fundamental Building Systems Commissioning						[Required]
3.R2 *		Minimum Energy Performance						[Required]
3.R3		CFC Reduction in HVAC&R Equipment						[Required]
3.C1 *		Optimize Energy Performance						20
3.C2 *		Renewable Energy						4
3.C3		Additional Commissioning						1
3.C5 *		Measurement and Verification						1
3.C6 *		Green Power						1
*3.C7 **		*Distributed Generation*						1
4.0		**Materials and Resources (M)**		**Score**		**0**		**Max 13**
4.R1 *		Storage & Collection of Recyclables						[Required]
4.C1 *		Building Reuse						3
4.C2 *		Construction Waste Management						2
4.C3		Resource Reuse						2
4.C4 *		Recycled Content						2
4.C5		Local/Regional Materials						2
4.C6		Rapidly Renewable Materials						1
4.C7		Certified Wood						1

Fort Wainwright IDG

SUSTAINABILITY PROJECT RATING TOOL (SPiRiT)

5.0		**Indoor Environmental Quality (IEQ)**		**Score**		**0**		**Max 17**
5.R1 *		Minimum IAQ Performance						[Required]
5.R2		Environmental Tobacco Smoke (ETS) Control						[Required]
5.C1 *		IAQ Carbon Dioxide (CO2) Monitoring						1
5.C2		Increase Ventilation Effectiveness						1
5.C3		Construction IAQ Management Plan						2
5.C4		Low-Emitting Materials						4
5.C5 *		Indoor Chemical and Pollutant Source Control						1
5.C6		Controllability of Systems						2
5.C7		Thermal Comfort						2
5.C8		Daylight and Views						2
*5.C9 ** *		*Acoustic Environment /Noise Control*						1
*5.C10 ** *		*Facility In-Use IAQ Management Plan*						1
6.0		**Facility Delivery Process (P)**		**Score**		**0**		**Max 7**
*6.C1 ** *		*Holistic Delivery of Facility*						7
7.0		**Current Mission**		**Score**		**0**		**Max 6**
*7.C1 ** *		*Operation and Maintenance*						3
*7.C2 ** *		*Soldier and Workforce Productivity and Retention*						3
8.0		**Future Missions**		**Score**		**0**		**Max 4**
*8.C1 ** *		*Functional Life of Facility and Supporting Systems*						2
*8.C2 ** *		*Adaptation, Renewal and Future Uses*						2
				Total Score		0		Max 100
SPiRiT Sustainable Project Certification Levels								
		Army Standard - SPiRiT Bronze				**25 to 34 Points**		
		Army Goal - SPiRiT Silver				**35 to 49 Points**		
		SPiRiT Gold				**50 to 74 Points**		
		SPiRiT Platinum				**75 to 100 Points**		

1.C7 = Text adopted from LEED without modification
1.C8 * = Text adopted from LEED with modification
*1.C9 ** * = New Credit for SPiRiT

Appendix F
Landscape Maintenance Schedule

Three tables will help in the maintenance of landscape plant and turf material:

Table F.1 **Seasonal Lawn Maintenance Calendar**

Table F.2 **Landscape Plant Material Maintenance Tasks**

Table F.3 **Turf Maintenance Tasks**

Table F.1 Seasonal Lawn Maintenance Calendar

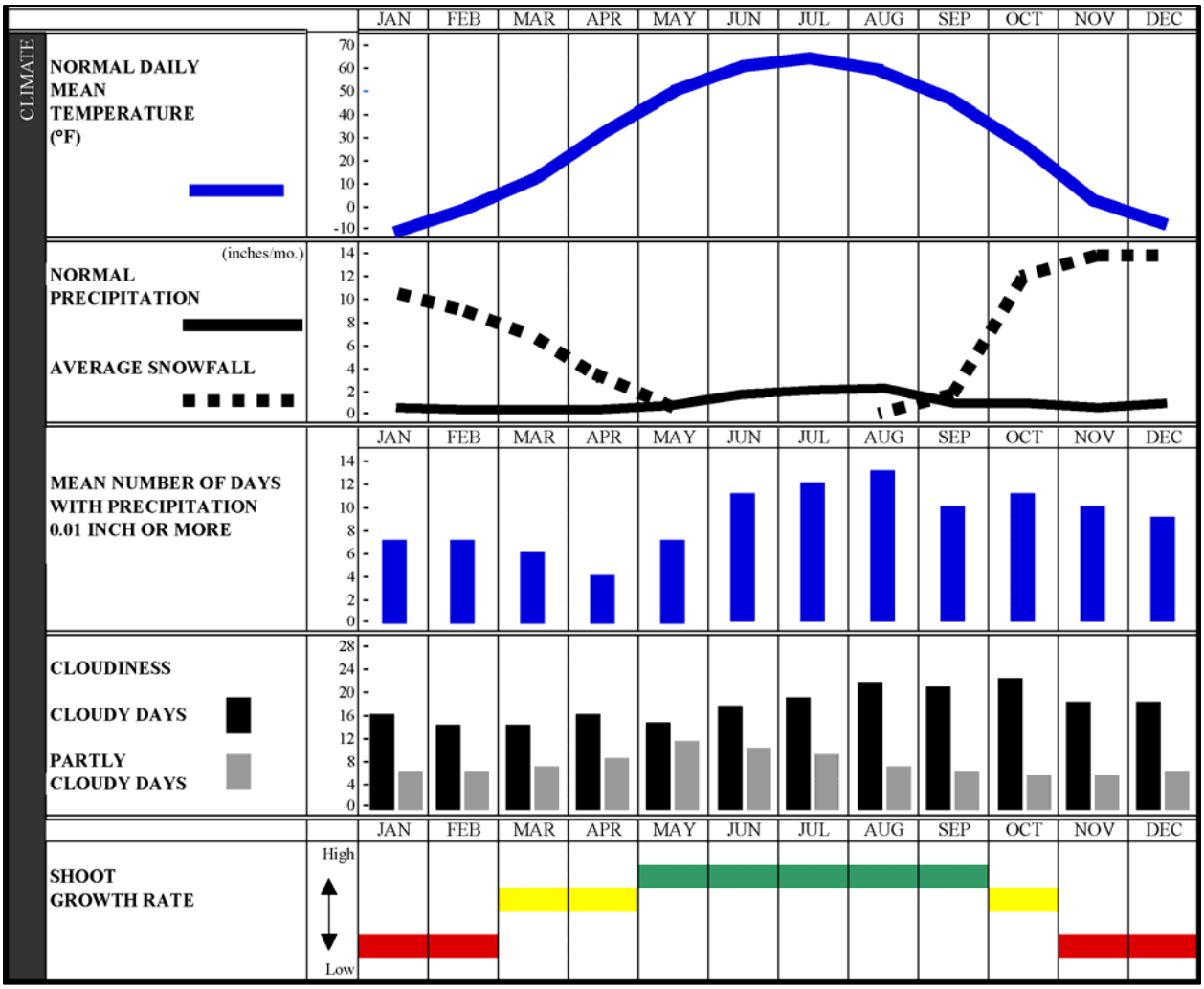


Table F.2 Landscape Plant Material Maintenance Tasks

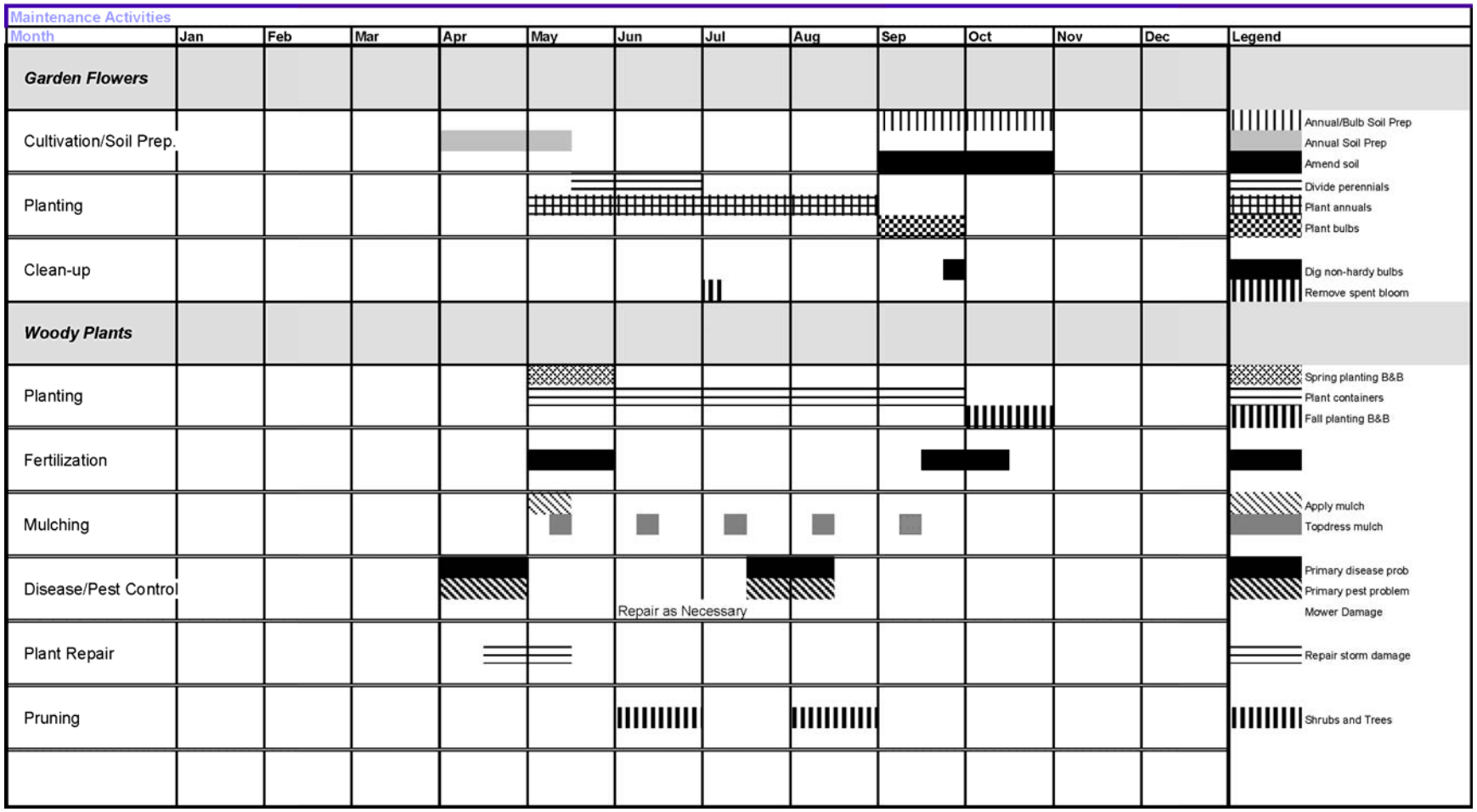
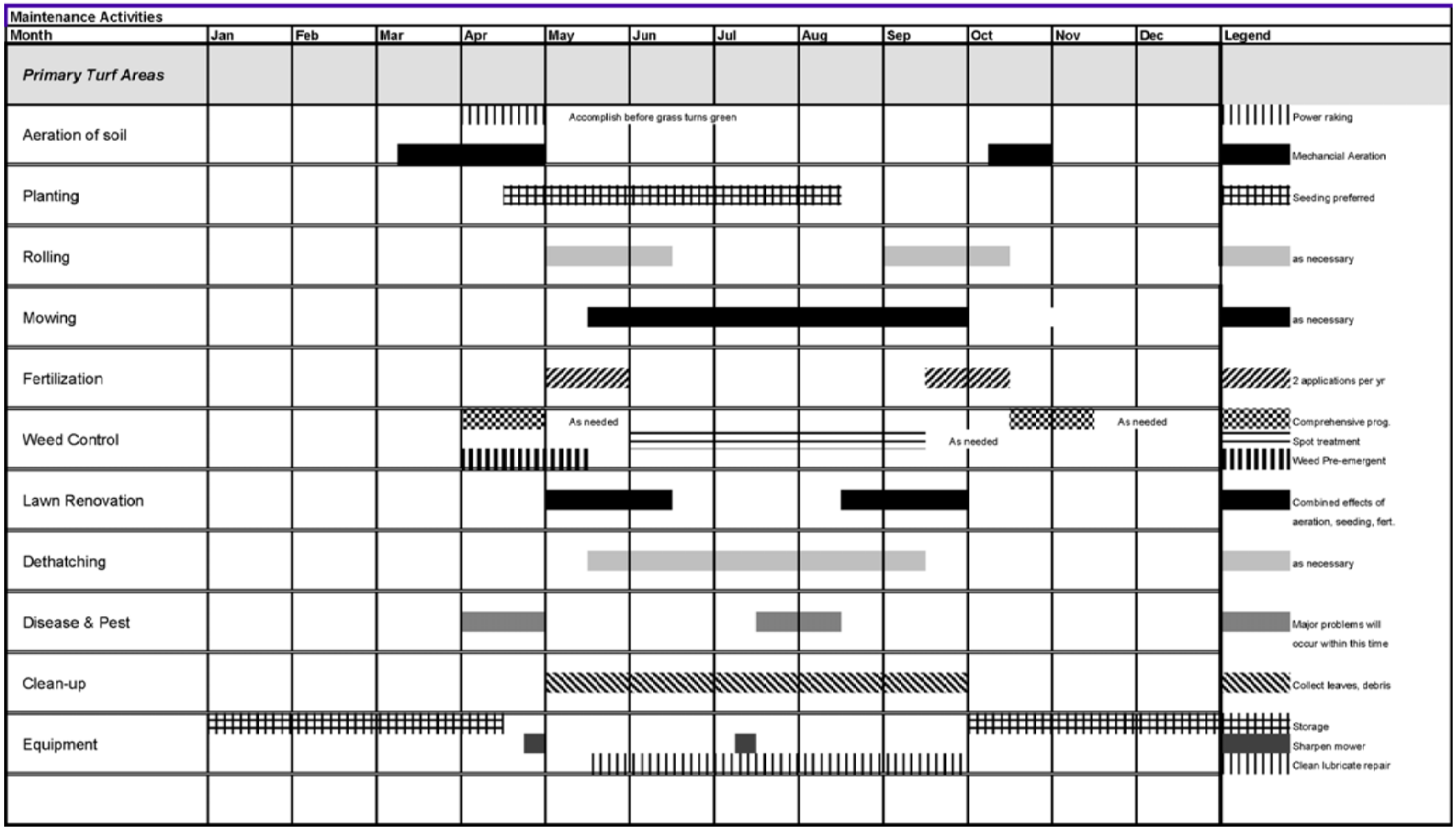


Table F.3 Turf Maintenance Tasks



Prioritized Improvements Projects List

INSTALLATION:
Fort Wainwright

- PRESS "ENTER" TO INSERT A NEW LINE.
- PRESS "TAB" AT END OF LAST ITEM TO INSERT NEXT ITEM #.

DPW or EQUIVALENT – MASTER PLANNER

NAME:	PHONE: EMAIL:	ADDRESS:

PRIORITY NO.	PROJECT TITLE	RECOMMENDED FUNDING SOURCE	ALTERNATIVE FUNDING SOURCE	COST ESTIMATE	IDG PARA NO.	POINT OF CONTACT
2	Family Neighborhoods Visual Zone – Main Gate Improvements	GWOT	MCA	$2,290,761	6.2.1	
9	Family Neighborhoods Visual Zone – Chilkoot Housing Site Improvements	MCA		$2,421,664	6.2.2	
8	Family Neighborhoods Visual Zone – Northern Lights Housing Site Improvements	MCA		$1,874,105	6.2.3	
10	Family Neighborhoods Visual Zone – Southern Cross Housing Site Improvements	MCA		$2,780,318	6.2.4	
11	Administration Quad Visual Zone – Gaffney Road Streetscape Improvements	MCA		$805,312	6.3.1	
12	Chena River Trail Visual Zone – Chena River Trail Extension	MCA		$1,024,099	6.4.1	
4	Exchange/Commissary Visual Zone – Exchange/Commissary Entry Improvements	MCA		$561,736	6.5.1	
16	Town Center/Open Space Visual Zone – Open Space Plan/Pedestrian Connection Improvements	MCA		$1,960,434	6.6.1	
13	Power Plant Visual Zone – Power Plant Streetscape Improvements and Screening Plan	MCA		$666,525	6.7.1	
5	DPW Shops at Montgomery Road Visual Zone – Montgomery Road Streetscape and Area Improvements	MCA		$220,207	6.8.1	
14	Motor Pools Visual Zone – Motor Pool Screening Improvements	MCA		$494,520	6.9.1	
18	Badger Lake Visual Zone – Badger Lake Recreation Area	MCA		$1,511,998	6.10.1	
17	Meridian Road Visual Zone – Meridian Road Realignment and Streetscape	MCA		$2,687,102	6.11.1	
19	Neely Road Visual Zone – Neely Road Extension	MCA		$3,400,242	6.12.1	
15	Alder Avenue Visual Zone – Alder Avenue Bike Path Extension	MCA		$1,503,104	6.13.1	

PRIORITY NO.	PROJECT TITLE	RECOMMENDED FUNDING SOURCE	ALTERNATIVE FUNDING SOURCE	COST ESTIMATE	IDG PARA NO.	POINT OF CONTACT
20	Ball Field Complex Visual Zone – Ball Field Complex Expansion	MCA		$9,143,096	6.14.1	
1	Badger Gate Visual Zone – Badger Gate Improvements		MCA	$446,868	6.15.1	
3	Barracks Visual Zone – Barracks 3400 Improvements	MCA		$576,800	6.16.1	
7	Barracks Visual Zone – Barracks 3700 Improvements	MCA		$1,493,786	6.16.2	
6	Monterey Lake Visual Zone – Monterey Lake Improvements	MCA		$1,018,448	6.17.1	

FRP = Facilities Reduction Plan
GWOT = Global War on Terrorism
NAF = Nonapropriated Funded
MCA = Military Construction, Army
OMA = Operations and Maintenance Account
OPA = Other Procurement, Army

STANDARD OPERATING PROCEDURE
APVG-GWM-M-F/S No. 557

TROOP SELF-HELP

1. Purpose

This SOP defines and provides information and guidelines that are required for the effective implementation of the Troop Self-Help (TSH) program for the Fort Wainwright. This SOP also established the operational procedures and responsibilities of the TSH program in accordance with Reference 2.a.

2. References

a. Army Regulation 420-70, Building and Structures

b. Quality Management System Manual (QMSM), Section II

c. Performance Work Statement (PWS)

d. SOP-404, Requisition of Supplies/Materials from the DPW Prime Vendor

e. SOP-212, Criteria For Transfer And Acceptance Of Military Real Property - Preparation and Uses of The DD Form

f. SOP-400, Procedures for Executing IJO Work

g. SOP-402, Procedures for Executing Service Order Work

3. Scope

This SOP applies to U.S. Army Garrison, Alaska, and Directorate of Public Works (DPW).

4. Responsibilities

a. Maintenance Worker (WG-4749-07); also referred to as the TSH Maintenance Worker.

(1) Provides troops with technical assistance, inspection, tools and supplies needed to maintain, repair, and perform minor construction for real property on OMA facilities.

(2) Determines if project's scope of work qualifies as TSH work in accordance with Reference 2.c, Technical Exhibits 29-1, 29-2, 29-3, 29-4, and 29-7.

(3) Maintains, receives/issues self-help tools and equipment, to include: assorted power tools, garden tools, gas tillers, electric hedge trimmers, power drills, etc.

(4) Retrieves and inputs data into an Automated Data System for all self-help projects.

(5) Provides cost estimates, scope of work, work phases and technical assistance for all self-help projects.

(6) Maintains, updates and files all documents and project folders pertaining to TSH operations.

(7) Attends meetings involving TSH operations and projects within the Directorate and Command.

b. M&R Section Supervisor

(1) Signs BOM for Non-Real Property requests.

c. O&M Structural Engineer

(1) Assists or prepares troop's work plans, as requested, for more complex work, and inspects project upon completion.

5. Procedures

a. Service Order (SO) Request

(1) The TSH maintenance worker validates that the work request meets self-help requirements in which it only involves real property repair work estimated at less than $2000 in material cost, that the work type is not "new work," and is non-electrical.

(2) The TSH maintenance worker verifies that the customer is an authorized user on DA Form 1687, Notice of Delegation of Authority - Receipt for Supplies, also referred to as the Signature Card (Enclosure (2)), kept on file at TSH.

(a) If not, customer shall return to their respective Unit/Activity to obtain authorization to be added as an authorize user.

(b) If a new Commander (CO) has taken command, the Unit/Activity shall provide an Assumption of Command Orders.

(3) The TSH maintenance worker receives work request from the customer either in written or verbal form; and documents request and customer's information on the Service Order Request form (Enclosure (3)).

(4) The TSH maintenance worker contacts and provides Work Management Branch (WMB) the work request as documented on the Service Order Request form to initiate SO.

(5) WMB provides a SO number, and the TSH maintenance worker annotates number on the Service Order Request form. Once the SO is created, the TSH maintenance worker retrieves SO from the "Dispatch" computer system.

(6) Customer initiates a DA Form 2702, Bill of Materials (BOM) (Enclosure (4)) in accordance with SOP-404, Requisition of Supplies/Materials from the DPW Prime Vendor (Reference 2.d), and requests for assistance from the TSH maintenance worker as needed.

(7) The TSH maintenance worker assigns a TSH tracking number once the BOM is completed, and records purchase request on the "Graybar Purchases" log located on the TSH customer counter. A TSH tracking number along with a copy of the BOM is submitted to the DPW Prime Vendor.

(a) If materials are available, DPW Prime Vendor issues the materials to the customer.

(b) If materials are unavailable, DPW Prime Vendor or the TSH maintenance worker contacts when available.

(8) DPW Prime Vendor assigns a "release number" when all materials are received by the customer, and forwards completed BOM to the TSH maintenance worker.

(9) The TSH maintenance worker completes the SO by entering the total cost in Supply 2000.

b. DA Form 4283, Facilities Engineering Work Request (FEWR). Request is submitted for "real property" repair, new work, or new installation type work estimated at over $2000 material and labor (O&M) cost.

(1) Customer submits FEWR, and all supporting documents (material list, work plans, drawings, etc...) to WMB. *Customer shall retain a copy of all supporting documents for submission to the TSH maintenance worker.*

(2) The TSH maintenance worker retrieves the approved FEWR from the "WORKS" computer system, and receives a copy of all supporting documents from the customer.

(3) The TSH maintenance worker reviews and approves the supporting documents (materials, work plan, and drawings). For more complex work, customer obtains assistance in creating the work plan from the O&M Structural Engineer. Work will not be processed unless the TSH maintenance worker, or O&M Structural Engineer grants approval.

(4) The TSH maintenance worker determines the types of approvals needed, and provides the sources to customer. Depending on the type of approval needed, the customer shall seek from any one of the following sources as provided by the TSH maintenance worker through the oversight of the WMB:

(a) Chief, O&M Division

(b) Planning Division

(c) O&M Real Estate Section

(d) Environmental Division

(5) Approving authority provides approval or comment within the 'Comments' section of the FEWR.

(6) The TSH maintenance worker performs a site visit, and an inspection with customer, as needed, to determine whether the customer is capable of accomplishing and completing the project.

(7) If the customer is unable to accomplish the project tasks, the TSH maintenance worker cancels the FEWR; and routes project document number to the 'Cancellation' holding box through "WORKS" computer system. The customer may re-submit the FEWR for DPW "in-house" work.

(8) If customer is capable of accomplishing, the TSH maintenance worker inputs job phases into the Integrated Facilities System (IFS); and creates a TSH project folder for project tracking.

(9) The TSH maintenance worker develops the BOM in accordance with SOP-404, Requisition of Supplies/Materials from the DPW Prime Vendor (Reference 2.d), with the customer; and inputs into IFS to estimate.

(10) The TSH maintenance worker assigns a TSH tracking number on the completed BOM, and forwards to the Planning Division for the final cost approval.

(11) Upon receipt of approval, the TSH maintenance worker submits BOM to the DPW Prime Vendor. *Due to change of mission requirements or other unforeseen situations, customer may cancel the project at any time prior to material pick-up.*

(12) DPW Prime Vendor stages all materials, and notifies the customer directly when the materials are available for pick up. In the event the customer cannot be contacted, the DPW Primer Vendor contacts the TSH maintenance worker who in turn provides all future follow up with customer.

(13) Project work commences after customer receives materials.

(14) The TSH maintenance worker performs "in-progress" inspections to ensure all work is performed properly. O&M Structural Engineer inspects the more complex work, as requested by the TSH maintenance worker. More than one inspection may be required during the various stages of the work process.

(15) Due to unforeseen circumstances, it may be necessary to deviate from the original work plan and/or require additional or other types of materials that are not projected into the original scope of work and estimate. In this case, the TSH maintenance worker processes a BOM for additional materials. If the amount being charged exceeds the original approval amount, the TSH maintenance worker requests for approval from the Planning Division.

(16) Upon completion of project, the TSH maintenance worker or O&M Structural Engineer performs a final inspection, as needed, and obtains the signed FEWR from customer.

(17) After all the materials have been charged to the project and the total cost charged to the FEWR, the TSH maintenance worker returns to WMB through "WORKS" computer system.

(18) For new work, the TSH maintenance worker informs customer to submit plans, and completed work initiatives to the O&M Division Real Estate Section, Planning Division Systems Branch, Engineering Division, Environmental Division, and the Fire and Safety Office to initiate the production of as-built drawings. The TSH maintenance worker shall complete the DD 1354 (Enclosure (5)) as advised by the O&M Division Real Estate Section in accordance with SOP-212, Criteria for Transfer and Acceptance of Military Real Property - Preparation and Uses of the DD Form 1354 (Reference 2.e).

c. Non-Real Property

(1) The TSH maintenance worker cancels work request, and returns to customer.

(2) Customer may choose to continue with project, and may do so by purchasing the required materials utilizing their own Unit/Activity funds. At no time will any DPW-funded materials be issued for non-real property type work.

(3) The TSH maintenance worker may provide assistance in developing a BOM if requested by the customer, but completed BOM shall be reviewed by the M&R Section Supervisor or higher authority, and annotates on the BOM that this is a request for work on non-real property and is funded by the unit and not by DPW.

6. Definitions

See Appendix C of Reference 2.b for the definition of terms used in the QMSM.

7. Records

Data collected per the requirements of this SOP (see specifically paragraph C.5.7.13.9 of the PWS) is maintained in accordance with paragraph 4.b (4) of Reference 2.b.

8. Metrics

The response times and performance of work are monitored and measured for quality and timeliness within the criterion of the PWS and the QMSM; outlined in paragraph 8 of SOPs -400, Procedures for Executing IJO Work (Reference 2.f), and -402, Procedures for Executing Service Order Work (Reference 2.g).

9. Revision History Log

Effective Date	Revision #	Description
		Initial issue for the QMSM

Approval Block

No changes to this *document* shall be made without the concurrence of the Primary Proponent

Signature	Name / job title / telephone number
Alternate Proponent / Process Owner	Maintenance & Repair Branch Supervisor
Primary Proponent / Submitter / Division Chief	Chief, Operations & Maintenance Division
Recommended By	Administrative Officer
Approved By	COL, EN Director of Public Works

10. Enclosures

(1) Protocol Unit/Activity for Accountability and Care of Equipment.
(2) DA Form 1687, Notice of Delegation of Authority - Receipt for Supplies
(3) Service Order Request Form
(4) DA Form 2702, Bill of Materials (BOM)
(5) DD Form 1354, Transfer and Acceptance of Military Real Property

PROTOCOL FOR UNIT/ACTIVITY ACCOUNTABILITY AND CARE OF EQUIPMENT

(1) Accountable for the proper and safe use of all tools and equipment provided by the TSH on a "loan-basis."

(2) Accountable for securing the tools and equipment provided by the TSH while not in use during the work progress.

(3) Responsible for returning all loaned Tools and Equipment in a clean and serviceable condition immediately after the completion of projects. All defects will be reported to TSH at the time of return.

(4) Responsible for the proper use of all Safety Equipment and Personnel Protection Equipment (PPE) during performance of work. Safety classes are offered by TSH personnel.

(5) Responsible for the proper disposal of any debris, Hazardous Materials, Hazardous Waste, Recyclable Items accumulated during the performance of work.

(6) A "Statement of Charges" or "One for One Replacement" will be initiated for any TSH loaned tools and equipment that has been lost, stolen and/or damaged.

(a) Statement of Charges. All Tools and Equipment listed on the DPW Property Book Office. The Unit/Activity shall supply a copy of a Police Report, if any, to TSH.

(b) One for One Replacement. All Tools and Equipment NOT listed on the DPW Property Book, e.g., Specialty Tools such as masonry trowel, tile cutter, and garden tools.

Disregard to any one of the above-mentioned items may be grounds for disapproval of any and future TSH projects.

NOTICE OF DELEGATION OF AUTHORITY - RECEIPT FOR SUPPLIES

For use of this form, see DA PAM 710-2-1. The proponent agency is ODCSLOG.

DATE

AUTHORIZED REPRESENTATIVE(S)

ORGANIZATION RECEIVING SUPPLIES		LOCATION		
LAST NAME-FIRST NAME-MIDDLE INITIAL	SOCIAL SECURITY NUMBER	AUTHORITY		SIGNATURE AND INITIALS
		REQ	REC	

AUTHORIZATION BY RESPONSIBLE SUPPLY OFFICER OR ACCOUNTABLE OFFICER

THE UNDERSIGNED HEREBY ☐ DELEGATES TO ☐ WITHDRAWS FROM THE PERSON(S) LISTED ABOVE,

THE AUTHORITY TO:

REMARKS

I ASSUME FULL RESPONSIBILITY

UNIT IDENTIFICATION CODE			DODAAC/ACCOUNT NUMBER	
LAST NAME-FIRST NAME-MIDDLE INITIAL	GRADE	TELEPHONE NUMBER	EXPIRATION DATE	SIGNATURE

DA FORM 1687, JAN 82 EDITION OF DEC 57 IS OBSOLETE. USAPPC V3.00

SERVICE ORDER REQUEST

TO: DPW, CUSTOMER SERVICE
FAX TELEPHONE NUMBER:

PURPOSE: Use this form to request routine and priority services for minor repairs to facilities, and call the Service Order Desk.

INSTRUCTIONS

1. Print or type all information.
2. Only one service request may be used per form.
3. Description of work requested: Describe the problem that needs repair to include how serious the problem is, the location, best time to make repairs and an alternate phone number.
4. Complete all other boxes and fax the request to the fax telephone number listed at the top of the form without a cover copy.

SHOP 512

DATE:

DESCRIPTION OF WORK REQUESTED
Materials Only. Troop Self Help Unit will provide labor.

POINT OF CONTACT (NAME)	TELEPHONE NUMBER
POST	FACILITY NUMBER
ORGANIZATION AND BRIGADE	LEAVE BLANK

ACCOUNT CODE NO.	**BILL OF MATERIALS** For use of this Form, see DA PAM 420-6; the proponent agency is COE			DATE	
PREPARED BY <REQUESTING UNIT/ACTIVITY>		DESIRED DELIVERY DATE		JOB ORDER NO	
DELIVER MATERIAL TO <REQUESTING UNIT/ACTIVITY INFO>				WORK REQUEST NO.	
Stock or Part No.	Description of Article	Unit	Quality	Unit Price	Total Cost
	(Approving Authority Signature)				

TRANSFER AND ACCEPTANCE OF MILITARY REAL PROPERTY

Form Approved
OMB No. 0704-0188

PAGE OF PAGES

Public reporting burden for this collection of information is estimated to average 30 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, Va 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.

1. FROM (Installation/Activity/Service and Zip code)	2. OPERATING UNIT	3. DISTRICT CODE	4. OPERATING AGENCY	5. DATE	6. JOB NUMBER	7. SERIAL NUMBER	8. CONTRACT NUMBER

9. TO (Installation/Activity/Service and Zip code)	10. OPERATING UNIT	11. DISTRICT CODE	12. OPERATING AGENCY	13. ACCOUNTING NUMBER	14. ACCOUNTABLE OFFICE NUMBER	15. TYPE OF TRANSACTION	16. PROJECT NUMBER
						A. ☐ NEW CONSTR. ☐ EXISTING FAC. ☐ CAPITAL IMP. ☐ OTHER (Specify) B. ☐ SERVICE ☐ PHYSICAL COM. ☐ FINAN. COM. ☐ OTHER (Specify)	

ITEM NO. 17	CATEGORY CODE 18	FACILITY (Category description) 19	NO. OF UNITS 20	TYPE 21	UNIT OF MEAS. 22	TOTAL QUANTITY 23	COST 24	DRAWING NUMBERS 25	REMARKS 26

27. STATEMENT OF COMPLETION: The facilities listed hereon are in accordance with maps, drawings, and specifications and change orders approved by the authorized representative of the using agency except for the deficiencies listed on the reverse side.

TRANSFERRED BY (Signature) — DATE

TITLE (Area Engr./Base Engr./DPWO)

28. ACCEPTED BY (Signature) — DATE

TITLE (Post Engr./Base Civ. Engr./Navy Rep.)

29. PROPERTY VOUCHER NUMBER

DD FORM 1354, FEB 90 — *Previous editions are obsolete.* — USAPPC V3.00

30. CONSTRUCTION DEFICIENCIES
31. REMARKS

INSTRUCTIONS

This form has been designed and issued for use in connection with the transfer of military real property between the military departments and to or from other government agencies. It supersedes ENG Forms 290 and 290B (formerly used by the Army and Air Force) and NAVDOCKS Form 2317 (formerly used by the Navy).

prepar[illegible] the [illegible] responsibility [illegible] military [illegible] [illegible] the

extent that the various items and columns on the superseded forms have been retained. Additional instructions, as appropriate, will be promulgated by the military departments in connection with any new items appearing hereon.

With the issuance of this DD form, it is not intended that the departments shall revise and reprint manuals and directives simply to show the number of this DD form. Such action can be accomplished through the normal course of revision for other reasons.

DD FORM 1354 REVERSE, FEB 90

USAPPC V3.00

Appendix I

Interior Finishes Standards

Interior Finish Standards can be found in UFC 3-120-02AN, Design Guide: Interiors, dated 1 March 2005 and in ER 1110-345-122, Engineering and Design – Interior Design, dated 22 March 1999.

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Appendix J

Interior Furnishings Standards

Interior Finish Standards can be found in UFC 3-120-02AN, Design Guide: Interiors, dated 1 March 2005 and in ER 1110-345-122, Engineering and Design – Interior Design, dated 22 March 1999.

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K

Appendix K

Exterior Materials Charts

The Exterior Material Selection Areas of Fort Wainwright are shown in Figure K.1a.

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Table K.1 Airfield / Historic Material Selections

EXTERIOR MATERIALS CHART *Airfield / Historic*			
Building Design Element		**Permitted Material Type**	**Notes (Hyperlinked)**
Walls	Base (primary) Material	Concrete, Concrete Masonry Unit	Note 1
	Secondary Material	Stucco, Exterior Insulation Finish System, Factory Finished Metal Panel	
Roofs	Sloped Areas	Standing Seam Metal, Composite Shingle	
	"Flat" Areas	EPDM	
Fenestration	Doors	Metal, Wood	
	Storm Doors	Metal, Wood	
	Door and Window Frames	Metal, Wood	
	Storm Windows or Sashes	Metal, Wood	
	Windows	Metal, Wood	
Trim Items	Fascia	Metal, Wood	
	Soffit	Metal, Wood	
	Gutters and D.S.	Metal	
	Awnings and Canopies	Concrete, Metal	
	Stairs or Balcony Railings, Balusters, and Related Trim and Accessories	Metal	
	Handrails	Metal	
Trim Items	Fire Escapes	Metal	
	Grilles and Louvers	Metal	
	Copings	Metal	
	Roof Ventilators	Metal	
Related Site Structures	Courtyard Enclosure Walls, Retaining Walls, Fences, Dumpster Enclosures	Concrete or CMU with Stucco, Stone, Interlocking Block, Wood	
	Porch Crawl Space Enclosures	Concrete, Wood	
NOTES			
Note 1	*See Appendix M for Historic Structures*		
Note 2			

Table K.2 Company Campus Material Selections

EXTERIOR MATERIALS CHART *Company Campus*			
Building Design Element		**Permitted Material Type**	**Notes (Hyperlinked)**
Walls	Base (primary) Material	Concrete, Concrete Masonry Unit	
	Secondary Material	Stucco, Exterior Insulation Finish System, Factory Finished Metal Panel	
Roofs	Sloped Areas	Standing Seam Metal, Composite Shingle	
	"Flat" Areas	EPDM	
Fenestration	Doors	Metal	
	Storm Doors	Metal	
	Door and Window Frames	Metal	
	Storm Windows or Sashes	Metal	
	Windows	Metal	
Trim Items	Fascia	Metal	
	Soffit	Metal	
	Gutters and D.S.	Metal	
	Awnings and Canopies	Metal	
	Stairs or Balcony Railings, Balusters, and Related Trim and Accessories	Metal	
	Handrails	Metal	
Trim Items	Fire Escapes	Metal	
	Grilles and Louvers	Metal	
	Copings	Metal	
	Roof Ventilators	Metal	
Related Site Structures	Courtyard Enclosure Walls, Retaining Walls, Fences, Dumpster Enclosures	Concrete or CMU with Stucco, Stone, Interlocking Block, Wood	
	Porch Crawl Space Enclosures	Concrete	
NOTES			
Note 1			
Note 2			

Table K.3 Town Center Material Selections

EXTERIOR MATERIALS CHART *Town Center*			
Building Design Element		**Permitted Material Type**	**Notes (Hyperlinked)**
Walls	Base (primary) Material	Concrete, Concrete Masonry Unit	
	Secondary Material	Stucco, Exterior Insulation Finish System	
Roofs	Sloped Areas	Standing Seam Metal, Composite Shingle	
	"Flat" Areas	EPDM	
Fenestration	Doors	Metal	
	Storm Doors	Metal	
	Door and Window Frames	Metal	
	Storm Windows or Sashes	Metal	
	Windows	Metal	
Trim Items	Fascia	Metal	
	Soffit	Metal	
	Gutters and D.S.	Metal	
	Awnings and Canopies	Metal	
	Stairs or Balcony Railings, Balusters, and Related Trim and Accessories	Metal	
	Handrails	Metal	
Trim Items	Fire Escapes	Metal	
	Grilles and Louvers	Metal	
	Copings	Metal	
	Roof Ventilators	Metal	
Related Site Structures	Courtyard Enclosure Walls, Retaining Walls, Fences, Dumpster Enclosures	Concrete or CMU with Stucco, Stone, Interlocking Block, Wood	
	Porch Crawl Space Enclosures	Concrete	
NOTES			
Note 1			
Note 2			

Table K.4 Housing Material Selections

EXTERIOR MATERIALS CHART *Housing*			
Building Design Element		**Permitted Material Type**	**Notes (Hyperlinked)**
Walls	Base (primary) Material	Wood, Vinyl, Cementicious Siding Products	
	Secondary Material	Stucco, Exterior Insulation Finish System	
Roofs	Sloped Areas	Standing Seam Metal, Composite Shingle	
	"Flat" Areas	EPDM	
Fenestration	Doors	Metal, Wood	
	Storm Doors	Metal	
	Door and Window Frames	Metal, Vinyl	
	Storm Windows or Sashes	Metal, Vinyl	
	Windows	Metal, Vinyl	
Trim Items	Fascia	Metal, Vinyl	
	Soffit	Metal, Vinyl	
	Gutters and D.S.	Metal	
	Awnings and Canopies	Metal	
	Stairs or Balcony Railings, Balusters, and Related Trim and Accessories	Metal, Wood, Simulated Wood	
	Handrails	Metal, Wood, Simulated Wood	
Trim Items	Fire Escapes	Metal	
	Grilles and Louvers	Metal	
	Copings	Metal	
	Roof Ventilators	Metal	
Related Site Structures	Courtyard Enclosure Walls, Retaining Walls, Fences, Dumpster Enclosures	Concrete or CMU with Stucco, Stone, Interlocking Block, Wood	
	Porch Crawl Space Enclosures	Concrete, Wood	
NOTES			
Note 1			
Note 2			

Table K.5 Recreation / Open Space Material Selections

EXTERIOR MATERIALS CHART *Recreation / Open Space*			
Building Design Element		**Permitted Material Type**	**Notes (Hyperlinked)**
Walls	Base (primary) Material	Concrete, Concrete Masonry Unit, Wood	
	Secondary Material	Stucco, Exterior Insulation Finish System, Wood	
Roofs	Sloped Areas	Standing Seam Metal, Composite Shingle	
	"Flat" Areas	EPDM	
Fenestration	Doors	Metal, Wood	
	Storm Doors	Metal, Wood	
	Door and Window Frames	Metal, Wood	
	Storm Windows or Sashes	Metal, Wood	
	Windows	Metal, Wood	
Trim Items	Fascia	Metal, Wood	
	Soffit	Metal, Wood	
	Gutters and D.S.	Metal	
	Awnings and Canopies	Metal	
	Stairs or Balcony Railings, Balusters, and Related Trim and Accessories	Metal, Wood	
	Handrails	Metal, Wood	
Trim Items	Fire Escapes	Metal	
	Grilles and Louvers	Metal	
	Copings	Metal	
	Roof Ventilators	Metal	
Related Site Structures	Courtyard Enclosure Walls, Retaining Walls, Fences, Dumpster Enclosures	Concrete or CMU with Stucco, Stone, Interlocking Block, Wood	
	Porch Crawl Space Enclosures	Concrete	
NOTES			
Note 1			
Note 2			

Table K.6 River Corridor Material Selections

EXTERIOR MATERIALS CHART *River Corridor*			
Building Design Element		**Permitted Material Type**	**Notes (Hyperlinked)**
Walls	Base (primary) Material	Concrete, Concrete Masonry Unit, Wood	
	Secondary Material	Stucco, Exterior Insulation Finish System, Factory Finish Metal Panel, Wood	
Roofs	Sloped Areas	Standing Seam Metal, Composite Shingle	
	"Flat" Areas	EPDM	
Fenestration	Doors	Metal	
	Storm Doors	Metal	
	Door and Window Frames	Metal	
	Storm Windows or Sashes	Metal	
	Windows	Metal	
Trim Items	Fascia	Wood, Metal	
	Soffit	Wood, Metal	
	Gutters and D.S.	Metal	
	Awnings and Canopies	Metal	
	Stairs or Balcony Railings, Balusters, and Related Trim and Accessories	Metal, Wood	
	Handrails	Metal, Wood	
Trim Items	Fire Escapes	Metal	
	Grilles and Louvers	Metal	
	Copings	Metal	
	Roof Ventilators	Metal	
Related Site Structures	Courtyard Enclosure Walls, Retaining Walls, Fences, Dumpster Enclosures	Concrete or CMU with Stucco, Stone, Interlocking Block, Wood	
	Porch Crawl Space Enclosures	Concrete	
NOTES			
Note 1			
Note 2			

Table K.7 Industrial Material Selections

EXTERIOR MATERIALS CHART *Industrial*			
Building Design Element		**Permitted Material Type**	**Notes (Hyperlinked)**
Walls	Base (primary) Material	Concrete, Concrete Masonry Unit	
	Secondary Material	Stucco, Exterior Insulation Finish System, Factory Finish Metal Panel	
Roofs	Sloped Areas	Standing Seam Metal	
	"Flat" Areas	EDPM	
Fenestration	Doors	Metal	
	Storm Doors	Metal	
	Door and Window Frames	Metal	
	Storm Windows or Sashes	Metal	
	Windows	Metal	
Trim Items	Fascia	Concrete, Metal	
	Soffit	Concrete, Metal	
	Gutters and D.S.	Metal	
	Awnings and Canopies	Metal	
	Stairs or Balcony Railings, Balusters, and Related Trim and Accessories	Metal	
	Handrails	Metal	
Trim Items	Fire Escapes	Metal	
	Grilles and Louvers	Metal	
	Copings	Metal	
	Roof Ventilators	Metal	
Related Site Structures	Courtyard Enclosure Walls, Retaining Walls, Fences, Dumpster Enclosures	Concrete or CMU with Stucco, Stone, Interlocking Block, Wood	
	Porch Crawl Space Enclosures	Concrete	
NOTES			
Note 1			
Note 2			

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Appendix L

Exterior Color Charts

L.1 EXTERIOR COLOR CHARTS FOR INSTALLATION BUILDINGS

Colors schemes and building materials are critical design elements in relating adjacent buildings and creating a compatible visual environment within an installation. This section identifies a standard palette of colors that will unify Fort Wainwright. This palette is divided into Color Selection Areas. See Figure L.1a.

A sufficient color palette range is provided to allow for variety. General direction on the use and application of materials and their colors follows:

- Avoid cluttered, cosmetic application of a number of different colors on a facade. Simplistically, an exterior color scheme should consist of a wall color, trim color, and an accent color, all of which should work together with the choice of roofing to provide a harmonious appearance compatible with adjacent structures and environs.
- Select colors from the following Exterior Color Chart based upon their appropriateness to the building type, desired appearance, material to be painted and prevailing architectural design and landscape character of the installation. Ease of maintenance and sustainability should also be considered.
- Avoid garish colors. Strong or vibrant colors should be used with restraint and should be limited to accents or focal points such as entrance doors where appropriate.

L.2 COLOR SELECTIONS

The color designations found in the Exterior Color Charts are names and numbers taken from the Pantone standard collection. The Pantone system is non-proprietary and these selections are provided to establish the desired palette; in no way do they restrict the use of any manufacturer's products.

Exterior colors are one of the unifying elements in establishing the Visual Themes for Fort Wainwright. The colors selected are those suggested in the IDG Template as well as a limited reflection of colors already in use within the designated Visual Themes.

L.3 COLOR VALIDATION

L.3.1 Due to calibration and other technical problems, the color of paint to be used should be based on manufacturer's correspondence to the six-digit **PANTONE** Number and shall not be predicated on matching a computer-generated sample as seen in the Exterior Color Charts.

L.3.2 "White" when given without a number shall be construed as generic and is intended to cover those manufacturer's paints and finished materials called "white". Some slight variance may be discernible from one manufacturer to another.

L.4 COLOR NAMES

Names given for colors are not those assigned by Pantone, Inc., but are the generic names used by the Army for general color identification only. Always use the six-digit **PANTONE for architecture and interiors color guide** number instead of the generic name when specifying a color.

L.5 FACTORY FINISHED MATERIALS

Colors given for surfaces that will be factory finished during manufacturing are intended for guidance and are not intended to constitute a directive for a custom color or finish. Colors shall be selected from standard manufacturer colors with the exception of those products, which can be finished with a custom color at no additional cost or that would not result in diminishment of the standard material guarantee or serviceability.

L.6 SPECIALTY FINISHES

Site Elements, addressed in Section 7, are painted one of the colors used in the Color Charts and shown on the Color Board. Glass beads shall be Type I per GSA Federal Specifications (FS) TT-B-1325 and shall be incorporated into paint so as to maximize both adhesion and reflectivity.

Table L.2a Airfield / Historic Color Selections

EXTERIOR COLOR CHART Airfield / Historic				
Building Design Element		**Required Color Standard**	**Color Sample**	**Notes** (Hyperlinked)
Walls	Primary Wall Material	Taupe 15-1309 TPX		See Note 1 for Chapel and General's Quarters Criteria
	Secondary Material	Maroon 19-1540 TPX		
Roofs	Sloped Areas	Maroon 19-1540 TPX		
	Flat Areas	Ivory		
Fenestration	Doors	Maroon 19-1540 TPX or White 11-0602 TPX		
	Storm Doors	Maroon 19-1540 TPX or White 11-0602 TPX		
	Door and Window Frames	Maroon 19-1540 TPX or White 11-0602 TPX		
	Storm Windows or Sashes	Maroon 19-1540 TPX or White 11-0602 TPX		
	Windows	Maroon 19-1540 TPX or White 11-0602 TPX		
Trim Items	Fascia	Match Sloping Roof or Wall if Flat Roof		
	Soffit	Match Sloping Roof or Wall if Flat Roof		
	Gutters and Downspouts	Maroon 19-1540 TPX		
	Awnings and Canopies	Maroon 19-1540 TPX		
	Stair or Balcony Railings, Balusters, and Related Trims	Maroon 19-1540 TPX		
	Handrails	Maroon 19-1540 TPX		
Trim Items	Fire Escapes	Maroon 19-1540 TPX		
	Grilles and Louvers	Match Wall		

EXTERIOR COLOR CHART Airfield / Historic				
Building Design Element		**Required Color Standard**	**Color Sample**	**Notes** (Hyperlinked)
	Coping	Maroon 19-1540 TPX		
	Roof Ventilators	Match Roof		
Related Site Structures	Courtyard Enclosure Walls, Fences, and Dumpster Enclosures	Stucco / CMU: Match Wall Wood: Natural		
	Retaining Walls	Natural Concrete CMU: Match Wall Maroon 19-1540 TPX		

NOTES:	
Note 1	Chapel and General's Quarters shall retain historic color scheme for wall color and trim color.
Note 2	

Table L.2b Company Campus Color Selections

EXTERIOR COLOR CHART Company Campus				
Building Design Element		**Required Color Standard**	**Color Sample**	**Notes** (Hyperlinked)
Walls	Primary Wall Material	Taupe 15-1309 TPX		See Note 1 for Company Campus Barracks
	Secondary Material	Mocha 16-1210 TPX		See Note 2 for Company Campus Barracks
		Green 19-0309 TPX		Note 2
Roofs	Sloped Areas	Green 19-0309 TPX		
	Flat Areas	Ivory		
Fenestration	Doors	Mocha 16-1210 TPX or Green 19-0309 TPX		
	Storm Doors	Mocha 16-1210 TPX or Green 19-0309 TPX		
	Door and Window Frames	Mocha 16-1210 TPX or Green 19-0309 TPX		
	Storm Windows or Sashes	Mocha 16-1210 TPX or Green 19-0309 TPX		
	Windows	Mocha 16-1210 TPX or Green 19-0309 TPX		
Trim Items	Fascia	Match Sloping Roof or Wall if Flat Roof		
	Soffit	Match Sloping Roof or Wall if Flat Roof		
	Gutters and Downspouts	Mocha 16-1210 TPX or Green 19-0309 TPX		
	Awnings and Canopies	Mocha 16-1210 TPX or Green 19-0309 TPX		
	Stair or Balcony Railings, Balusters, and Related Trims	Mocha 16-1210 TPX or Green 19-0309 TPX		
	Handrails	Mocha 16-1210 TPX or Green 19-0309 TPX		

EXTERIOR COLOR CHART Company Campus				
Building Design Element		**Required Color Standard**	**Color Sample**	**Notes** (Hyperlinked)
Trim Items	Fire Escapes	Mocha 16-1210 TPX or Green 19-0309 TPX		
	Grilles and Louvers	Match Wall		
	Coping	Mocha 16-1210 TPX or Green 19-0309 TPX		
	Roof Ventilators	Match Roof		
Related Site Structures	Courtyard Enclosure Walls, Fences, and Dumpster Enclosures	Stucco / CMU: Match Wall Wood: Natural		
	Retaining Walls	Natural Concrete CMU: Match Wall Maroon 19-1540 TPX		

NOTES:	
Note 1	Company Campus structures constructed prior to 2000 should utilize Mocha 16-1210 TPX as the secondary material.
Note 2	Secondary material should be applied only to architectural / structural elements or where there is a change in material. The use of supergrahics should not be included in future paint applications.

Table L.2c Town Center Color Selections

EXTERIOR COLOR CHART Town Center				
Building Design Element		**Required Color Standard**	**Color Sample**	**Notes** (Hyperlinked)
Walls	Primary Wall Material	Taupe 15-1309 TPX		
	Secondary Material	Maroon 19-1540 TPX		
Roofs	Sloped Areas	Maroon 19-1540 TPX		
	Flat Areas	Ivory		
Fenestration	Doors	Maroon 19-1540 TPX		
	Storm Doors	Maroon 19-1540 TPX		
	Door and Window Frames	Maroon 19-1540 TPX		
	Storm Windows or Sashes	Maroon 19-1540 TPX		
	Windows	Maroon 19-1540 TPX		
Trim Items	Fascia	Match Sloping Roof or Wall if Flat Roof		
	Soffit	Match Sloping Roof or Wall if Flat Roof		
	Gutters and Downspouts	Maroon 19-1540 TPX		
	Awnings and Canopies	Maroon 19-1540 TPX		
	Stair or Balcony Railings, Balusters, and Related Trims	Maroon 19-1540 TPX		
	Handrails	Maroon 19-1540 TPX		

EXTERIOR COLOR CHART Town Center				
Building Design Element		**Required Color Standard**	**Color Sample**	**Notes** (Hyperlinked)
Trim Items	Fire Escapes	Maroon 19-1540 TPX		
	Grilles and Louvers	Match Wall		
	Coping	Maroon 19-1540 TPX		
	Roof Ventilators	Match Roof		
Related Site Structures	Courtyard Enclosure Walls, Fences, and Dumpster Enclosures	Stucco: Match Wall Wood: Natural		
	Retaining Walls	Natural Concrete or CMU: Match Wall		
NOTES:				
Note 1				
Note 2				

Table L.2d Housing Color Selections

EXTERIOR COLOR CHART Housing				
Building Design Element		**Required Color Standard**	**Color Sample**	**Notes** (Hyperlinked)
Walls	Primary Wall Material	Taupe 15-1309 TPX		See Note 1
	Secondary Material	Maroon 19-1540 TPX Blue 17-4020 TPX Green 16-0421 TPX		
Roofs	Sloped Areas	Carafe 19-1116 TPX		
	Flat Areas	Ivory		
Fenestration	Doors	One of Three Secondary Colors		
	Storm Doors	White		
	Door and Window Frames	White		
	Storm Windows or Sashes	White		
	Windows	White		
Trim Items	Fascia	Match Roof or One of Three Trim Colors if Flat Roof		
	Soffit	Match Roof or One of Three Trim Colors if Flat Roof		
	Gutters and Downspouts	White or One of Three Trim Colors		
	Awnings and Canopies	Match Roof or One of Three Trim Colors		
	Stair or Balcony Railings, Balusters, and Related Trims	One of Three Trim Colors		
	Handrails	One of Three Trim Colors		

EXTERIOR COLOR CHART Housing				
Building Design Element		**Required Color Standard**	**Color Sample**	**Notes** (Hyperlinked)
Trim Items	Fire Escapes	One of Three Trim Colors		
	Grilles and Louvers	Match Wall		
	Coping	White or One of Three Trim Colors		
	Roof Ventilators	Match Roof		
Related Site Structures	Courtyard Enclosure Walls, Fences, and Dumpster Enclosures	Stucco: Natural Wood: Natural		
	Retaining Walls	Natural concrete CMU: Match Wall		
NOTES:				
Note 1	Trim Colors:			
Note 2				

Table L.2e Recreation / Open Space Color Selections

EXTERIOR COLOR CHART Recreation / Open Space				
Building Design Element		**Required Color Standard**	**Color Sample**	**Notes** (Hyperlinked)
Walls	Primary Wall Material	CMU: Natural Concrete: Natural Wood: Natural		See Note 1
	Secondary Material	Dark Brown 18-1027 TPX or Gray 08-0306 TPX		
Roofs	Sloped Areas	Dark Brown 18-1027 TPX or Gray 08-0306 TPX		
	Flat Areas	Dark Brown 18-1027 TPX or Gray 08-0306 TPX		
Fenestration	Doors	Dark Brown 18-1027 TPX or Gray 08-0306 TPX		
	Storm Doors	Dark Brown 18-1027 TPX or Gray 08-0306 TPX		
	Door and Window Frames	Dark Brown 18-1027 TPX or Gray 08-0306 TPX		
	Storm Windows or Sashes	Dark Brown 18-1027 TPX or Gray 08-0306 TPX		
	Windows	Dark Brown 18-1027 TPX or Gray 08-0306 TPX		
Trim Items	Fascia	Match Sloping Roof or Wall if Flat Roof		
	Soffit	Match Sloping Roof or Wall if Flat Roof		
	Gutters and Downspouts	Dark Brown 18-1027 TPX or Gray 08-0306 TPX		
	Awnings and Canopies	Dark Brown 18-1027 TPX or Gray 08-0306 TPX		
	Stair or Balcony Railings, Balusters, and Related Trims	Dark Brown 18-1027 TPX or Gray 08-0306 TPX		
	Handrails	Dark Brown 18-1027 TPX or Gray 08-0306 TPX		

EXTERIOR COLOR CHART Recreation / Open Space				
Building Design Element		**Required Color Standard**	**Color Sample**	**Notes** (Hyperlinked)
Trim Items	Fire Escapes	Dark Brown 18-1027 TPX or Gray 08-0306 TPX		
	Grilles and Louvers	Match Wall		
	Coping	Dark Brown 18-1027 TPX or Gray 08-0306 TPX		
	Roof Ventilators	Match Roof		
Related Site Structures	Courtyard Enclosure Walls, Fences, and Dumpster Enclosures	Stucco: Natural Wood: Natural		
	Retaining Walls	Natural concrete		

NOTES:	
Note 1	
Note 2	

Table L.2f River Corridor Color Selections

EXTERIOR COLOR CHART River Corridor				
Building Design Element		**Required Color Standard**	**Color Sample**	**Notes** (Hyperlinked)
Walls	Primary Wall Material	Natural Concrete or CMU: Natural		
Roofs	Sloped Areas	Dark Brown 18-1027 TPX or Gray 08-0306 TPX		
	Flat Areas	Dark Brown 18-1027 TPX or Gray 08-0306 TPX		
Fenestration	Doors	Dark Brown 18-1027 TPX or Gray 08-0306 TPX		
	Storm Doors	Dark Brown 18-1027 TPX or Gray 08-0306 TPX		
	Door and Window Frames	Dark Brown 18-1027 TPX or Gray 08-0306 TPX		
	Storm Windows or Sashes	Dark Brown 18-1027 TPX or Gray 08-0306 TPX		
	Windows	Dark Brown 18-1027 TPX or Gray 08-0306 TPX		
Trim Items	Fascia	Match Sloping Roof or Wall if Flat Roof		
	Soffit	Match Sloping Roof or Wall if Flat Roof		
	Gutters and Downspouts	Dark Brown 18-1027 TPX or Gray 08-0306 TPX		
	Awnings and Canopies	Dark Brown 18-1027 TPX or Gray 08-0306 TPX		
	Stair or Balcony Railings, Balusters, and Related Trims	Dark Brown 18-1027 TPX or Gray 08-0306 TPX		
	Handrails	Dark Brown 18-1027 TPX or Gray 08-0306 TPX		

EXTERIOR COLOR CHART River Corridor				
Building Design Element		**Required Color Standard**	**Color Sample**	**Notes** (Hyperlinked)
Trim Items	Fire Escapes	Dark Brown 18-1027 TPX or Gray 08-0306 TPX		
	Grilles and Louvers	Match Wall		
	Coping	Dark Brown 18-1027 TPX or Gray 08-0306 TPX		
	Roof Ventilators	Match Roof		
Related Site Structures	Courtyard Enclosure Walls, Fences, and Dumpster Enclosures	Stucco: Natural Wood: Natural		
	Retaining Walls	Natural concrete		

NOTES:	
Note 1	
Note 2	

Table L.2g Industrial Color Selections

EXTERIOR COLOR CHART Industrial				
Building Design Element		**Required Color Standard**	**Color Sample**	**Notes** (Hyperlinked)
Walls	Primary Wall Material	Taupe 15-1309 TPX		
Roofs	Sloped Areas	Salsa 18-1444 TPX		
	Flat Areas	Ivory		
Fenestration	Doors	Salsa 18-1444 TPX		
	Storm Doors	Salsa 18-1444 TPX		
	Door and Window Frames	Salsa 18-1444 TPX		
	Storm Windows or Sashes	Salsa 18-1444 TPX		
	Windows	Salsa 18-1444 TPX		
Trim Items	Fascia	Match Sloping Roof or Wall if Flat Roof		
	Soffit	Match Sloping Roof or Wall if Flat Roof		
	Gutters and Downspouts	Salsa 18-1444 TPX		
	Awnings and Canopies	Salsa 18-1444 TPX		
	Stair or Balcony Railings, Balusters, and Related Trims	Salsa 18-1444 TPX		
	Handrails	Salsa 18-1444 TPX		

EXTERIOR COLOR CHART Industrial				
Building Design Element		**Required Color Standard**	**Color Sample**	**Notes** (Hyperlinked)
Trim Items	Fire Escapes	Salsa 18-1444 TPX		
	Grilles and Louvers	Match Wall		
	Coping	Salsa 18-1444 TPX		
	Roof Ventilators	Match Roof		
Related Site Structures	Courtyard Enclosure Walls, Fences, and Dumpster Enclosures	Stucco: Match Wall CMU: Match Wall Wood: Natural		
	Retaining Walls	Natural concrete CMU: Match Wall		

NOTES:	
Note 1	
Note 2	

Appendix M

Historic Preservation Guidelines

M

M.1 INTRODUCTION

Most of the history and literature about the military does not deal with the topic of Army facility planning and design processes. However, to plan for the future development of an Army installation, it is necessary to go back and attempt to understand what has taken place on the installation in the past; Figure M.1a.

In the development of its policies, the Army had to deal with the question of how buildings relate to one another by both use and layout and by architectural characteristics. At least in its earliest phases, this development was not always a conscious formulation of policy so much as it was the immediate response to a given situation; Figure M.1b. Over the years, there have been different forces affecting the process of military planning in this country, as illustrated by the various districts and zones on Fort Wainwright; Figure M.1c.

Figure M.1a
Aerial Photograph of Ladd Field

Figure M.1b
Ladd Field's Original Function Was for Cold Weather Testing and Training

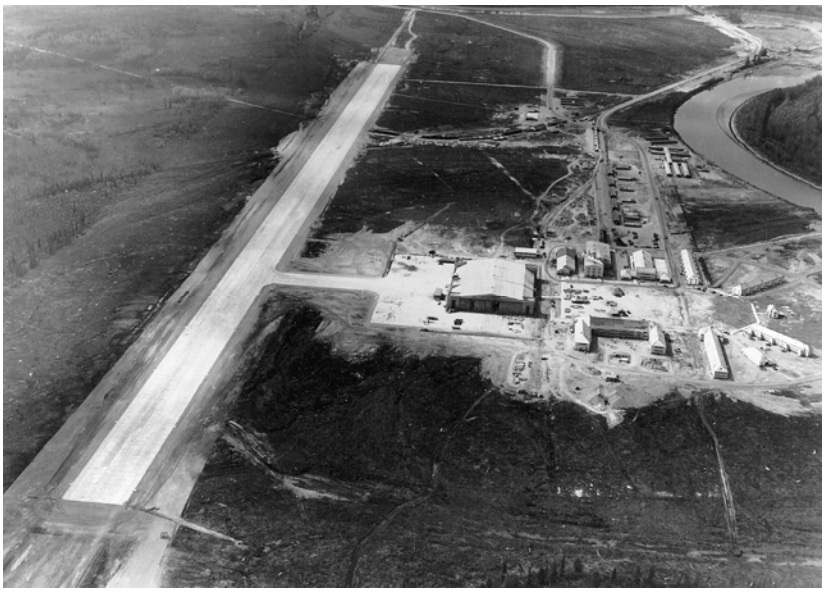
Figure M.1c
Aerial Photograph of Fort Wainwright

M.2 HISTORIC PRESERVATION REGULATIONS

The Army's management of historic properties is pursuant to the duties and responsibilities established by Congress under the National Historic Preservation Act (NHPA) of 1966 and its subsequent amendments. This act committed Federal agencies to a program of identification and protection of historic properties on the land they own. The NHPA established the Advisory Council on Historic Preservation (ACHP) to "advise the President and the Congress on matters relating to historic preservation; (and to) recommend measures to coordinate activities of Federal, State, and local agencies." (16 U.S.C. 470j)

The NHPA also created the National Register of Historic Places to designate publicly or privately owned resources and to encourage identification and planning which promotes the compatible use of these properties. The National Register is the official listing of the nation's historic and cultural resources considered worthy of preservation; Figure M.2a. It includes "districts, sites, buildings, structures, and objects significant in American history, architecture, archaeology, engineering, and culture". (16 U.S.C. 470a)

The NHPA has established a number of procedural steps, which Federal agencies must meet in order to comply with the intent of the law. This is set forth in Section 106 of the NHPA which requires that: "the head of any Federal agency having



▲ **Figure M.2a**

Ladd Field is Listed on the National Register of Historic Places

direct or indirect jurisdiction over a proposed Federal or federally assisted undertaking in any State and the head of any Federal department or independent agency having authority to license any undertaking shall, prior to the approval of the expenditure of any Federal funds on the undertaking or prior to the issuance of any license, as the case may be, take into account the effect of the undertaking on any district, site, buildings, structure, or object that is included in or eligible for inclusion in the National Register. The head of any such Federal agency shall afford the Advisory Council on Historic Preservation established under Title II of this Act a reasonable opportunity to comment with regard to such undertaking." (16 U.S.C. 470f)

Pursuant to its authority in overseeing the nation's historic preservation programs, the Department of the Interior has developed regulations which amount to a set of acceptable standards for work on properties listed in or eligible for listing in the National Register. The Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation act as a guide to the Advisory Council and State Historic Preservation Offices in their procedural review of Federal undertakings. These guidelines should also act as standards for all Federal agencies as they commence planning for any undertaking, which has the potential to trigger Section 106 review, thus assuring that all proposed projects would meet Advisory Council and NHPA requirements.

Federal agencies must comply with the NHPA by following a series of steps detailed in 36 CFR 800. The Army further explains its policies and procedures in Army Regulation (AR) 200-4, *Cultural Resources Management* and Department of the Army Pamphlet (DA PAM) 200-4, *Cultural Resources Management*. This Installation Design Guideline is intended to be used in conjunction with the above regulations as a resource in dealing with historic properties at Fort Wainwright.

While not yet approved for Fort Wainwright, the recently amended Army Alternate Procedures for Historic Structures (AAP) provides a new method for managing historic properties. The AAP, a streamlined approach to Section 106 of the National Historic Preservation Act, allows installations to manage historic properties programmatically rather than on a project-by-project review. These procedures also enable installations to leverage existing Army and DoD program requirements while internally managing historic properties in a more efficient and cost effective manner.

M.3 STANDARDS AND GUIDELINES

M.3.1 Rehabilitation of Historic Properties

Design and renovation guidelines for historic districts and landmarks are, of necessity, much broader than design guidelines for single structures. Such guidelines must not only address the appropriate architectural image (style, material, etc.) for proposed new buildings, they must also address how a proposed action within the historic district or landmark will impact the integrity of a historic area. By this it is meant, how any new work will affect the original design intent of the given historic area; Figure M.3a.

New work should not conflict with the existing architectural character. For example, it should not:

- Be larger in mass or taller than the existing historic structures.
- Be of a color or material that conflicts visually with the predominant historic material used in the area.
- Destroy the historic fabric of any existing structures or landscape features, which are essential character defining elements within the district.
- Destroy the spatial relationship between or among historic buildings designed as a grouping; this includes the regular spacing of buildings within a group, as well as views from one to the other or into the grouping as a whole.

Bldg. 1024 Then

Bldg. 1024 Now

▲ **Figure M.3a**

Buildings in the Historic District are Prime Candidates for Adaptive Reuse

▲ **Figure M.3b**

Building 1555 Successfully Incorporates Modern Materials with a Historic Structure

New work should seek to enhance and protect the historic quality and existing resources; Figure M.3b. For example:

- Conduct a survey examining the level of use existing facilities prior to determining the need for new construction.
- Follow the Standards and Guidelines for Historic Preservation as recommended by the Secretary of the Interior.

New work should provide necessary modern conveniences as unobtrusively as possible. For example, it should:

- Site new construction so that it does not destroy existing building relationships or configurations.
- Scale new buildings down so as to minimize their visual impact.
- Place parking to the rear of historic buildings.
- Landscape parking areas and modern mechanical equipment so as to screen them from view.

New work should phase out (gradually eliminate) existing intrusions. For example, it should:

- Demolish structures designated as intrusions on the National Register Inventory when they are no longer needed.
- Restore buildings, which have been altered by inappropriate color schemes, replacement windows, porch enclosures, etc.

M.3.2 Treatment of Historic Fabric

The most effective way to preserve historic properties is to keep them in use and to consistently maintain them; Figure M.3c. When buildings and grounds are consistently used for their intended purposes and regular maintenance is conducted, there is rarely a need for extensive preservation work. Only when they are misused, underused or left vacant for long periods of time does large-scale rehabilitation become necessary. It follows that if a regular maintenance program is put into effect once a property has been appropriately renovated, another major rehabilitation will rarely be required.

▲ **Figure M.3c**
Building 1001 Continues to be Utilized Per Original Design Intent

M.3.3 Standards for Historic Preservation Projects

M.3.3.1 Compatible Use of Historic Sites and Structures. Every reasonable effort should be made to use a historic structure or site for its originally intended purpose or to provide a compatible use. The use should be compatible in the sense that it involves minimal alteration to the property and/or has no adverse effect upon its historic integrity. Use of the site and structure should be regulated to prevent alterations that are potentially damaging to historic fabric and/or cultural context; Figure M.3d.

M.3.3.2 Retention of Character Defining Features. Distinguishing stylistic or character defining features and examples of skilled craftsmanship should not be destroyed, altered, or removed from a historic site or structure. All such fabric should be treated with sensitivity and preserved in its original context and form.

▲ **Figure M.3d**
Historic Airfield Structures Continue to Serve the Installation's Mission

▲ **Figure M.3e**
The Original Character of Murphy Hall Has Been Retained

M.3.3.3 Treatment of Deteriorated Historic Fabric. Deteriorated historic fabric should be repaired rather than replaced whenever possible. When replacement is unavoidable, new material, whether man-made or natural, should match the existing fabric in composition, design, color, texture, and other visual/structural qualities; Figure M.3e.

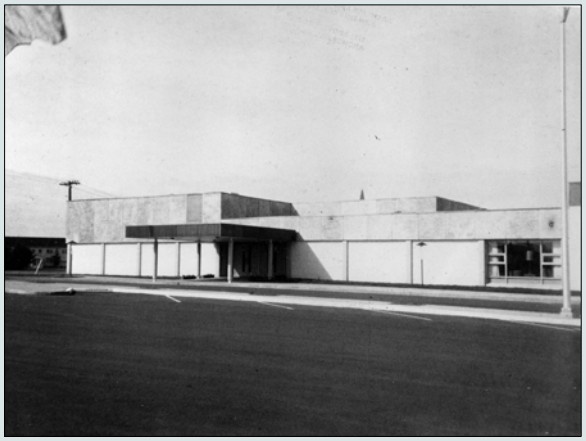
M.3.3.4 Documentation of Missing Historic Elements. Replacement of missing historic elements should be based on the accurate duplication of features known to have existed and substantiated by historic pictorial and/or physical evidence and not on conjecture, nor simply on the example of similar treatment found on other structures or sites of the same period or region.

M.3.3.5 Retention of Historic Alterations. Changes to a historic structure or site, which have occurred over the course of time, may provide evidence of important social or cultural processes. As such they should be respected and their potential significance carefully evaluated.

M.3.3.6 Unacceptable Alterations. Historic sites and structures should be recognized as products of their own time and as part of an important cultural process. Alterations which have no historical basis or which destroy the authenticity of the place are discouraged.

M.3.3.7 Acceptable Alterations and Additions. When possible, alterations and new additions to historic structures or sites should be done in such a manner as to leave the essential form and integrity unimpaired.

M.3.3.8 Contemporary Design in a Historic Context. Contemporary design for additions to existing historic sites or districts should not be discouraged if such design is compatible with the massing, proportions, scale, materials, color, views, and general contextual relationships of the place; Figure M.3f.



Then

1024 Now

▲ **Figure M.3f**

Renovation Retains the Original Character of Building 1044

M.3.3.9 Surface Cleaning Methods. Surface cleaning of structures or buildings should be undertaken with the gentlest possible means, and only when cleaning is essential to the preservation of the buildings. Cleaning methods, such as sand blasting, which could damage historic material or speed their deterioration, are discouraged.

M.3.3.10 Archaeological Resources. All treatment work, which potentially affects surface or sub-surface pre-historic or historic archaeological resources, should be coordinated with an archaeologist.

M.3.3.11 Historic Preservation and Maintenance. The guidelines contained within this IDG are general in nature. The IDG must be utilized in conjunction with the Installation ICRMP.

M.3.4 Guidelines for Historic Preservation Projects

M.3.4.1 Roof Guidelines.

- Preserve existing historic roofing. Repair and patch with matching materials.
- All roofs should receive an annual inspection. Repair and patch all materials as needed and clean out all gutters and drains.
- When full replacement of the roof becomes necessary, replace or restore with historic materials.
- Roof details should be retained. Maintain all existing chimneys, ventilators, vents, louvers and decorative elements such as brackets, dentils, and cornices. When possible, restore missing decorative elements.

M.3.4.2 Wall Guidelines.

Limestone and Brick Masonry.

- Clean only when necessary using the gentlest possible means.
- Repair or replace deteriorated or missing units as needed.

Stucco.

- Repair damaged or deteriorated stucco.
- Repaint only when necessary with appropriate color based on analysis of historic paint.

Wood.

- Retain or repair wood siding; where replacement is necessary, match existing clapboards in width and species.
- Repaint only as need to maintain moisture protection.
- Use color scheme based on analysis of existing paint layers.

M.3.4.3 Porch Guidelines.

- Retain or maintain existing original porches.
- Remove historically inappropriate porches.
- Where possible, restore original porches that have been removed or enclosed.

M.3.4.4 Window Guidelines.

- In most historic districts or buildings, windows constitute a highly visible design element as they make up a large percentage of façades.
- If building an addition or altering the building, maintain height configuration of windows.
- Retain window size and fenestration pattern when replacing windows or altering the building.
- If replacing windows, preserve frame material or use historically accurate reproductions. Avoid replacing original frames with aluminum frames.
- Restore historic windows where non-historic replacement windows have been used.
- The window manufacturing industry can replicate and/or reproduce most all types and sizes of windows to match existing historic windows. In many cases, matching replacement windows are available as stock items.

M.3.4.5 Door Guidelines.

- Although not usually as visually overpowering as windows, main entrance doorways are also important façade details. As a design element, decorative doors have stylistic features that belong to the particular era for which they were designed.
- Retain or maintain existing historic doors.
- If replacing doors, preserve frame material or use historically accurate reproductions.
- If building an addition or altering the building, maintain the size of the door opening.
- Restore all main entranceways by reinstalling appropriate frames.

M.3.4.6 Color Guidelines.

- If historic buildings must be repainted before an accurate color scheme is developed, a very conservative approach should be followed. Repaint to match the existing colors or colors that can be documented to have been used on that building.
- Utilize a qualified historic paint color specialist for an inventory and analysis of the paint layer sequences for all building groupings.
- Establish a rotating schedule for the painting and cleaning of each building.

M.3.4.7 Painting Guidelines.

- Do not undertake a paint job until any problems with leaking water have been solved. All gutters and downspouts should be repaired and be in good operating condition.
- Only repaint when existing coat is no longer performing, as excessive coats of paint create a thick film, which obscures detail.

M.3.4.8 Handicap and Safety Access Guidelines.

- As a general rule, buildings listed in or determined eligible for listing in the National Register may receive special consideration for meeting safety and accessibility requirements. Any modifications required bringing a historic structure in compliance with safety and accessibility codes should be carefully planned and undertaken so that they do not adversely affect the design of main entrances or principal facades.
- Where possible, avoid alterations to the main façade and principal doorways.
- Place or install new ramps, lifts, and any added fire escapes on secondary building facades such as, to the side or rear of the building.
- Locate new doorways at the rear or side of the building.
- Required protective railings on ramps, stairs, steps, and lifts should match existing porch railings.

M.3.4.9 Mechanical Equipment Guidelines.

- In many cases within historic districts, mechanical equipment is located outside of the building. When historic structures are renovated and mechanical systems are upgraded, equipment placement should be planned in order to make the least visual impact.
- Where possible, locate mechanical equipment within the building.
- Screen necessary surface equipment with vegetation.
- When large groups of buildings are upgraded as one project, consider the use of a remote system.

M.3.4.10 Guidelines for Additions.

- In general, additions should follow all of the guidelines for new construction within historic districts; but, because their proximity makes the potential for damage to historic fabric even greater, there are additional principles that should be followed.
- Avoid changes that impact primary facades.

- Note that some highly visible freestanding buildings may not have a secondary facade, and thus additions are not advisable.
- Scale down additions so that it makes the least visual impact.
- Design should establish a clear and obvious difference between the existing historic structure and the new addition.

M.3.4.11Force Protection. These guidelines should be used in conjunction with the *UFC 4-010-01, DoD Minimum Antiterrorism Standards for Buildings* and the Force Protection Design Standards of this Army Installation Design Guide and Standards.

M.4 ARMY STANDARDS

- Army Regulation (AR) 200-4, *Cultural Resources Management*
- Department of the Army Pamphlet (DA PAM) 200-4, *Cultural Resources Management*
- The Secretary of the Interior's Standards for the Treatment of Historic Properties

M.5 REFERENCES

- Advisory Council on Historic Preservation
- United States Army Environmental Center
- United States Army Environmental Center Native Indian Affairs
- United States Army Environmental Center Archeology

Appendix N
Housekeeping Rules

N

N.1 INTRODUCTION

The following set of housekeeping rules consists of a list of general and public rules that are applicable to the administrative office work areas throughout the installation. Organizations should make every effort to assure that all personnel are familiar with the facilities housekeeping rules. An organized, well kept working area that is neat and clean contributes to the visual harmony of the work area and fosters work efficiencies.

N.2 HOUSEKEEPING RULES FOR FORT WAINWRIGHT

General Rules:

1. Alterations: Employees shall not mark, paint, drill, damage, string wires within, or in any way deface any part of the building. Employees will not install or permit the installation of any awnings, shades, Mylar films or sun filters on windows. Employees will not obstruct, alter, or in any way impair the efficient operation of the heating, ventilating, air conditioning, electrical, fire safety, or lighting systems, nor shall the employee tamper with or change the setting of any thermostat or temperature control valve in the building. Employees shall not cover or block air ducts or vents.

2. Cleanliness: Employees shall exercise their best efforts to keep workstations and common areas, i.e., hallways, corridors, team rooms, etc., clean and free from rubbish. No employee shall cause any unnecessary labor on the part of cleaning personnel due to carelessness or indifference in the preservation of good order and cleanliness. It is highly recommended that employees use covered cups when transporting liquids to and from the coffee bars. Employees shall not bring any substance into the building that might add an undue burden to the cleaning or maintenance of the premises, or the building.

3. Carpet: Carpet stains and/or damage should be reported to the appropriate maintenance personnel.

4. Energy Conservation: Turn off systems furniture lighting, conference room lights, private office lights and equipment, etc. when not in use, especially at the end of the day. During non-business hours, employees shall limit the use of lighting and equipment to areas occupied.

5. Lighting: Do not move and /or modify any overhead lighting fixtures above workstations. One task light may be placed in a workstation.

6. Vertical and Venetian Blinds: Blinds are to be left in fully extended position at all times. Blades shall be positioned so as to permit a good level of natural lighting and shall only be closed for the purposes of sun control and at night for privacy. Only the wands will be used for adjustments. Items shall not be placed or stored on windowsills other than small plants as described hereinafter.

7. Signage: No signs, advertisements or notes shall be painted or affixed on or to any window, door, restroom conference/team room or other part of the building unless approved by the appropriate authorities. Bulletin boards for posting of unofficial material are restricted to communal areas such as break rooms and coffee bars.

8. Bicycles: Employees shall not bring bicycles or motorcycles into the office environment, but shall be left secured in an upright position in areas designated for that purpose.

9. Aerosol Sprays: The use of aerosol products such as air fresheners, hair sprays, etc., in the work environment should be avoided.

10. Maintenance: All requests for maintenance on furnishings, or building systems or components should be reported to the appropriate maintenance personnel..

11. Smoking: The use of tobacco products inside any Army facility is strictly prohibited. Smoking of tobacco products may only occur in designated areas where proper ash receptacles, which are kept free of trash and debris, are located.

Public Spaces:

1. Eating in Work Areas: Eating in work areas can contribute to pest infestation and an unsightly appearance. If eating at your desk, please ensure trash is discarded daily. Perishable food items should not be stored in the employees' work area. Perishable foods are to be kept refrigerated.

2. Appliances (e.g., Heaters/Refrigerators/Microwaves/Coffee Pots): Refrigerators and microwaves are not permitted in work areas. One personal fan, not to exceed 8" in diameter may be placed in a workstation. Exceptions to accommodate health problems may be submitted to the appropriate authorities.

3. Centralization: Copiers, faxes, scanners, printers, etc., will be centralized and networked to the maximum extent possible. Personal office equipment will be provided on an exception basis only.

4. Office Accessories: All office equipment and other devices of any electrical or mechanical nature shall be placed on an area of the work surface that best accommodates the prevention/elimination of any vibration, noise or annoyance to others. Employees shall not construct, maintain, use or operate any equipment of machinery that produces music, sound, noise, pictures, or lighting which is audible or visible beyond their workstation.

5. Office Wall Mountings: Only framed items shall be hung on walls. No artwork or other displays may be placed or hung on fixed or temporary walls/partitions, other than in private offices, without approval of the appropriate authorities. The use of tape, pushpins, or other devices to affix items to walls is prohibited.

6. Plants: Plants must be contained in appropriate leak-proof non-corroding containers such as ceramic jardinières or flower pots with saucers and shall be kept within workstations and not affixed in any way to the workstation, partitions, floors, or ceiling as outlined in the guidance detailed elsewhere in this document; this prohibition extends to trailing vines. Small plants that do not interfere with the normal operation of window blinds may be placed on windowsills. Watering of plants shall not subject any government equipment to risk of damage.

7. Speakerphones: The use of speakerphones is discouraged and should be restricted to those occasions when absolutely necessary. Concerted efforts must be made to utilize team rooms when speakerphone conversations are required.

8. Trash: The janitorial contractor will discard only items in wastebaskets or items clearly labeled "TRASH". Do not place trash in the corridors, hallways, stairwells, or other common areas.

9. Workstation Reconfiguration: Workstations will not be reconfigured, modified, or altered in any way by the occupant.

10. Workstation Guidelines: Every employee shall make a concerted effort to keep workstations clean, uncluttered, and professional in appearance. Avoid placing papers and other "hard copy" materials on the wall of the workstation and the accumulation of excessive pictures/cartoons/mementos. The storage of papers, boxes, and files on floors is prohibited. Materials are not to be hung on the outside panels of workstations.

a. **Above the Panels:** Nothing will be placed above the panel height of the workstations or hung from the ceiling. Nothing will be stacked on the tops of flipper doors, map files, filing cabinets, towers, etc.

b. **Cabling:** No temporary cabling for electrical, information technology, or communications is allowed. Requests for alterations must be submitted to the appropriate communications personnel. This prohibition includes extension cords; surge protectors are permitted. Wiring is to be contained in cable trays and off the floors.

11. Care of Furniture and Furniture Systems

a. **Laminate Surfaces –** To clean laminate tops, use a soft cloth or non abrasive sponge dampened in a solution of mild detergent and warm water. Remove residue of cleaning solution with a soft cloth wrung out in clean water. Dry with a soft cloth.

b. **Steel and Painted Metal Surfaces –** Panel trim, panel poles, painted flipper doors, and other parts of flipper doors should be cleaned with a soft damp cloth and thoroughly dried with a soft dry cloth. For soiled areas a mild detergent solution in warm water may be used.

c. **Fabric –** For information on how to remove spots from fabric panels on workstations, contact maintenance personnel.

APPENDIX O - PLANT SELECTION LIST

Plant Material Suitability Matrix

Botanical Name	Common Name	Type		Growth			Flower			Interest			Light			Salt Tolerant			Resistant		Soil Moisture			Function							
		Deciduous	Evergreen	Slow	Medium	Fast	Fall	Summer	Spring	Flower	Bark	Foliage	Shade	Sun/shade	Sun	Low	Medium	High	Drought	Pest	Moist	Average	Dry	Street tree	Shade tree	Screen	Massing	Windbreak	Hedge	Bank cover	Specimen
		Characteristics														Culture								Use							
DECIDUOUS TREES																															
Acer ginnala	Amur Maple				●					⊘		●						●	●	⊘				●							
Alnus crispa	American Green Alder					●				⊘		⊘				●			○	○				●	●	●					●
Alnus tenuifolia	Thinleaf Alder				●					⊘		●					●		⊘	●				●	●	●					●
Betula glandulosa x B. papyrifera	Yukon Birch					●				●		●					●		●	●						●					
Betula papyrifera	Paper Birch									○		●						●	●	●				●	●	●					
Betula papyrifera 'Humilis'	Alaska Paper Birch				●					⊘		●						●	●	○					●	●					
Larix larcina	Tamarack (Larch)				●					⊘		○				●			●	○											●
Larix sibirica	Siberian Larch			●						○		●						●	●	○				●							●
Malus spp.	Crabapples				●					●		●					●		●	⊘				●	●						
Malus baccata	Siberian Crab				●					●		●						●	⊘	⊘				●	●						
Malus baccata 'Pyramidalis'	Columnar Siberian Crab				●					○		●						●	⊘	●				●	●	●					
Populus tremuloides	Aspen				●					○		●					●		○	●				●	●						
Prunus maackii	Amur Chokecherry					●				⊘		○					●		⊘	⊘					●	●					●
Prunus padus	European Bird Cherry (Mayday Tree)			●						⊘		●					●		●	●				●	●						●
Prunus virginiana	Melanocarpa "Shubert"					●				⊘		●						●	●	○					●	●					
Prunus virginiana	Chokecherry				●					○		●						●	●	⊘					●	●					
Sorbus aucuparia	European Mountain Ash				●					⊘		●						●	⊘	○					●	●					●
Sorbus scopulina	Greene's Mountain Ash			●						⊘		●					●		●	⊘				●							
EVERGREEN TREES																															
Picea glauca	White Spruce					●				○		●						●	●	●				●	●	●					
Picea mariana	Black Spruce				●					○		●					●		⊘	●					●	●					●
Pinus contorta var. latifolia	Lodgepole Pine					●				⊘		●						●	⊘	●					●	●					
Pinus sylvestris	Scotch Pine			●						⊘		●						●	⊘	●				●	●	●					

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Botanical Name	Common Name	Type		Growth			Flower			Interest			Light			Salt Tolerant			Resistant		Soil Moisture			Function							
		Deciduous	Evergreen	Slow	Medium	Fast	Fall	Summer	Spring	Flower	Bark	Foliage	Shade	Sun/shade	Sun	Low	Medium	High	Drought	Pest	Moist	Average	Dry	Street tree	Shade tree	Screen	Massing	Windbreak	Hedge	Bank cover	Specimen
		Characteristics														Culture								Use							
SHRUBS																															
Ainum spp.	Alder					●				●		⊘		●			●		○	⊘						●					●
Amelanchier alnifolia	Serviceberry (Saskatoon)					●				○		●		●				●	●	○						●					●
Betula glandulosa	Resin Birch					●				○		●	●				●		○	⊘											●
Betula nana	Dwarf Arctic Birch					●				○		●	●				●		○	●											●
Caragana arborescens	Caragana Siberian Pea Shrub					●				●		●		●		●			○	●						●					●
Caragana pygmaea	Dwarf Caragana					●				●		●		●		●			○	●						●					●
Cornus sericea	Red Osier Dogwood				●					○		●		●			●		⊘	●						●		●			●
Cotoneaster acutifolia	Cotoneaster				●					⊘		⊘			●		●		⊘	●						●					
Elaeagnus commutata	Silverberry				●					●		⊘		●				●	⊘	●						●		●			
Juniperus communis	Common Juniper				●					●		⊘		●				●	⊘	●						●					
Juniperus horizontalis	Creeping Juniper				●					○		●			●			●	●	●						●		●			●
Lonicera caerulea edulis	Sweetberry Honeysuckle				●					○		●		●			●		⊘	⊘											●
Lonicera marrowii	Tatarian Honeysuckle (Bush Honeysuckle)				●					○		●		●			●		⊘	⊘											●
Myrice gale	Sweetgale					●				●		●			●			●	⊘	⊘						●					●
Pinus mugo	Mugo Pine				●					⊘		⊘	●			●			○	⊘											●
Pinus mugo 'Mugo'	Dwarf Mugo Pine				●					○		●	●				●		⊘	●											●
Potentilla fruticosa	Potentilla (Cinquefoil)				●					○		●	●				●		⊘	●											●
Prunus maakii	Amur Chokecherry				●					○		●		●			●		⊘	⊘						●					●
Prunus padus	European Bird Cherry (Mayday Tree)				●					○		⊘			●		●		⊘	●						●					●
Prunus triloba	Rose Tree of China				●					○		●		●			●		⊘	⊘						●					●
Prunus tomentosa	Nanking Cherry				●					●		○			●		●		●	●											●
Ribes spp.	Gooseberry, Currant				●					●		⊘		●		●			○	⊘						●					●
Ribes alpinum	Alpine Currant				●					●		⊘		●			●		⊘	⊘						●					●
Ribes lacustre	Bristly Black Currant					●				⊘		●		●		●			○	⊘						●					
Rosa spp.	Rose					●				⊘		●		●			●		⊘	⊘										●	
Rosa acicularis	Prickly Rose					●				⊘		●		●			●		⊘	⊘						●					
Rubus idaeus	Raspberry				●					●		⊘			●		●		⊘	⊘						●					
Salix spp.	Native Willows				●					●		⊘			●		●		⊘	⊘						●					
Sheperdia canadensis	Buffaloberry				●					●		⊘			●		●		⊘	⊘						●					
Sorbaria sorbifolia	False Spirea				●					●		○			●	●			○	⊘											●

APPENDIX O - PLANT SELECTION LIST

Plant Material Suitability Matrix

Botanical Name	Common Name	Type		Growth			Flower			Interest			Light			Salt Tolerant			Resistant		Soil Moisture			Function							
		Deciduous	Evergreen	Slow	Medium	Fast	Fall	Summer	Spring	Flower	Bark	Foliage	Shade	Sun/shade	Sun	Low	Medium	High	Drought	Pest	Moist	Average	Dry	Street tree	Shade tree	Screen	Massing	Windbreak	Hedge	Bank cover	Specimen
		Characteristics														Culture								Use							
SHRUBS																															
Spiraea beauverdiana	Beauverd Spirea (Alaska Spirea)					●				◐		◐		●			●		◐	●						●		●			
Syringa spp.	Lilacs					●				●		◐			●		●		◐	◐						●					
Syringa prestoniae hybrids	Canadian Hybrid Lilacs			●						◐		○		●			●		◐	●						●		●			
Viburnum edule	Highbush Cranberry			●						○		○		●		●			○	●						●					●
FLOWERS, ANNUALS																															
	Ageratum					●				●		◐		●			●		○	◐						●					●
	Alyssum					●				○		●		●				●	●	○						●					●
Antirrhinum majus	Snapdragon					●				○		●	●				●		○	◐											●
Aster spp.	Aster					●				○		●	●				●		○	●											●
Brachycome iberidifolia	Swan River Daisy					●				●		●		●		●			○	●						●					●
Brassica spp.	Flowering Cabbage					●				●		●		●		●			○	●						●					●
Brassica spp.	Flowering Kale				●					○		●		●			●		◐	●						●		●			●
	Calendula				●					◐		◐			●		●		◐	●						●					
Centaurea cyanus	Bachelor's Button, Cornflower				●					●		◐		●				●	◐	●						●		●			
Chrysanthemum spp.	Chrysanthemum				●					●		◐		●				●	◐	●						●					
Cineraria maritima	Dusty Miller				●					○		●			●			●	●	●						●		●			●
Cosmos bipinnatus	Cosmos				●					○		●		●			●		◐	◐											●
Dianthus spp.	Sweet William Carnation, Pinks				●					○		●		●			●		◐	◐											●
Dimorphotheca aurantiaca	African Daisy					●				●		●			●			●	◐	◐						●					●
Eschscholzia californica	Poppy, California				●					◐		◐	●			●			○	◐											●
Iberis	Candytuft				●					○		●	●				●		◐	●											●
	Impatiens				●					○		●	●				●		◐	●											●
Limonium sinutum	Statice				●					○		●		●			●		◐	◐						●					●
	Linaria				●					○		◐			●		●		◐	●						●					●
Lobelia spp.	Lobelia				●					○		●		●			●		◐	◐						●					●
Myosotis spp.	Forget-me-not				●					●		○			●		●		●	●											●
	Nemesia				●					●		◐		●		●			○	◐						●					●
	Nemophilia, Baby Blue Eyes				●					●		◐		●			●		◐	◐						●					●
	Nicotiana, Flowering Tobacco					●				◐		●		●		●			○	◐						●					

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Botanical Name	Common Name	Type		Growth			Flower			Interest			Light			Salt Tolerant			Resistant		Soil Moisture			Function							
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		Characteristics														Culture								Use							
FLOWERS, ANNUALS																															
Papaver rhoeas	Poppy, Shirley					●				⊘		●		●			●		⊘	⊘										●	
Pelargonium spp.	Geranium, Zonal Geranium					●				⊘		●		●			●		⊘	⊘						●					
Common garden petunia	Petunia				●					●		⊘			●		●		⊘	⊘						●					
Tagetes spp.	Marigold				●					●		⊘			●		●		⊘	⊘						●					
Tropaeolum majus	Nasturtium				●					●		⊘			●		●		⊘	⊘						●					
Schizanthus	Butterfly Flower, Poor Man's Orchid				●					●		○			●	●			○	⊘											●
	Verbena					●				⊘		⊘		●			●		⊘	●						●		●			
Viola spp.	Pansy					●				●		⊘			●		●		⊘	⊘						●					
FLOWERS, PERENNIALS																															
Achillea ptarmica	Yarrow					●				●		⊘		●			●		○	⊘						●					●
Aquilegia	Columbine					●				○		●		●				●	●	○						●					●
Aruncus sylvester	Goatsbeard					●				○		●	●				●		○	⊘											●
Bergenia cordifolia	Bergenia					●				○		●	●				●		○	●											●
Cerastium tomentosum	Snow in Summer					●				●		●		●		●			○	●						●					●
Chrysanthemum leucanthemum	Ox Eye Daisy					●				●		●		●		●			○	●						●					●
	Delphinium				●					○		●		●			●		⊘	●						●		●			●
Doroconicum caucasium	Leopard's Bane				●					⊘		⊘			●		●		⊘	●						●					
Gypsophila paniculata	Baby's Breath				●					●		⊘		●				●	⊘	●						●		●			
Lychnis chalcedonica	Maltese Cross, Lychnis				●					●		⊘		●				●	⊘	●						●					
Lysimachia punctata	Evening Primrose				●					○		●			●			●	●	●						●		●			●
Mertensia paniculata	Bluebells				●					○		●		●			●		⊘	⊘											●
Papaver nudicaule	Iceland Poppy				●					○		●		●			●		⊘	⊘											●
Papaver orientale	Oriental Poppy					●				●		●			●			●	⊘	⊘						●					●
Polemonium spp.	Jacob's Ladder				●					⊘		⊘	●			●			○	⊘											●
Primula auricula	Primrose				●					○		●	●				●		⊘	●											●
Trollius spp.	Globe Flower				●					○		●	●				●		⊘	●											●
					●					○		●		●			●		⊘	⊘						●					●

APPENDIX O - PLANT SELECTION LIST

Plant Material Suitability Matrix

Botanical Name	Common Name	Type		Growth			Flower			Interest			Light			Salt Tolerant			Resistant		Soil Moisture			Function							
		Deciduous	Evergreen	Slow	Medium	Fast	Fall	Summer	Spring	Flower	Bark	Foliage	Shade	Sun/shade	Sun	Low	Medium	High	Drought	Pest	Moist	Average	Dry	Street tree	Shade tree	Screen	Massing	Windbreak	Hedge	Bank cover	Specimen
		Characteristics														Culture								Use							
BULBS																															
Hemerocellis spp.	Daylily					●				●		⊘		●			●		○	⊘						●					●
Iris setosa	Iris					●				○		●		●				●	●	○						●					●
Lilium spp.	Lily					●				○		●	●				●		○	⊘											●
Narcissus spp.	Daffodil					●				○		●	●				●		○	●											●
Scilla sibirica	Siberian Squill					●				●		●		●		●			○	●						●					●
Tulipa spp.	Tulip					●				●		●		●		●			○	●						●					●
					●					○		●		●			●		⊘	⊘						●					●
GROUND COVERS																															
Aegopodium podagraria	Bishop's Weed			●						⊘		●		●			●		○	●							●				●
Fragaria spp.	Strawberry				●					○		●	●				●		⊘	●							●				
Glechoma hederacea	Creeping Charlie				●					○		●	●				●		⊘	●							●				
Ranunculus reptens	Creeping Buttercup					●				○		○			●		●		⊘	○							●				
GRASSES																															
	Nugget Bluegrass					●									●			●	●	⊘											
	Merion Bluegrass					●									●			●	⊘	●											
	Fylking Bluegrass				●									●		●			○	⊘											
	Sydsport Bluegrass					●								●				●	○	⊘											
	Arctared Red Fescue			●										●				●	●	⊘											
	Boreal Red Fescue			●										●				●	○	⊘											
	Perennial Ryegrass			●										●				●	○	⊘											
	Annual Ryegrass																														
				●										●				●	○	⊘											
VINES																															
Celastrus scandens	American Bittersweet				●					●					●		●		⊘	●						●				●	●

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Appendix P

User's Requirements Checklist
Information Systems Project Planning

This checklist is not intended to be all-inclusive. It is provided as a planning guide during the process of identifying MILCON project information systems requirements. Users may develop comprehensive checklists tailored to their needs.

1. PROJECT INFORMATION.

Location:_____MCA Project Number: _____

Fiscal Year:_____USACE District: _____

Project Name:_____DOIM Reference (CAPR) Number: _____

POC's:_____

2. OUTSIDE PLANT_____.

Table 1 - Aerial Cable Plant

REQUIREMENTS	Y/N	REMARKS
Aerial cable plant required?		Yes? Complete this table.
Existing pole(s)?		Yes? Specify below.
Government owned?		Yes? Servicing pole ID number:_____
Leased access?		Yes? Servicing pole ID number:_ _____ _
Government has right-of-way?		Cmt: to install new cable/pedestals.
New pole(s)?		Yes? Specify below.
Government owned?		Yes? Type: _____ Number: __ ___
Leased?		Yes? Type: _____ Number: _____ -
Pedestal(s)?		Cmt: mounted on pole(s), specify below.
Existing?		Cmt: insure sufficient spare capacity.
New?		Yes? Size: _____ Number: _____
Entry point (describe):		

Table 2 - Buried Cable Plant

REQUIREMENTS	Y/N	REMARKS
Buried cable plant required?		Yes? Complete this table.
New duct?		Yes? Specify size/length below.

Size: 1-Way_	2-Way	4-Way	6-Way	9-Way	(Other)
Length: _____	FT_____	FT	FT	FT	FT	FT	FT

New manhole(s)?		Yes? Type: (38Y)_____ Number:_ ____
New handhole(s)?		Yes? Type: 4x4_____ Number:
Ground level pedestal(s) required?		Yes? Size:_____ Number:
Entry point (describe):		

Table 3 - Dial Central Office (DCO) Interface

REQUIREMENTS	FEET	REMARKS
Distance: project to DCO total	_____Ft	Cmt: cable route path in feet.
Nearest existing cable interface point:	_____Ft	Cmt. specify below as appropriate.
Building number: _____		Cmt: supporting building if used).
Manhole number:		Cmt: servicing manhole (existing).
Pole number:		Cmt: servicing pole (existing).
Copper cable number:		Number of spare airs:
Fiber optic cable number:		Number of spare strands:

Table 4 - Copper Cable (Outside Plant)

REQUIREMENTS	FEET	CMT: COMPLETE THIS TABLE.
1. Copper cable: (PE-39)/(PE-89) 2. Copper cable: (PE-39)/(PE-89)		Number of airs: Number of airs:
3. Copper cable: (PE-39)/(PE-89)		Number of airs:
4. Copper cable: (PE-39)/(PE-89)		Number of airs:
5. Copper cable: PE-39)/(PE-89)		Number of airs:
6. Copper cable: (PE-39)/(PE-89)		Number of airs:
7. Copper cable: (PE-39)/(PE-89)		Number of airs:
8. Copper cable: (PE-39)/(PE-89)		Number of airs:
NOTE - Table 4, 1 through 8, identify up to eight outside plant multi-pair cables in support of this project. Specify length (feet) and number of pairs per cable.		

Table 5 - Fiber Optic Cable (Outside Plant)

REQUIREMENTS	FEET	CMT: COMPLETE THIS TABLE.
1. Fiber optic type: SM/MM		Number of strands:
2. Fiber optic type: SM/MM		Number of strands:
3. Fiber optic type: SM/MM		Number of strands:
4. Fiber optic type: SM/MM		Number of strands:
5. Fiber optic type: SM/MM		Number of strands:
6. Fiber optic type: SM/MM		Number of strands:
7. Fiber optic type: SM/MM		Number of strands:
8. Fiber optic type: SM/MM		Number of strands:
NOTE - Table 5 (1 through 8), identify up to eight outside fiber optic cables in support of this project. Specify length (feet) and number of pairs per cable.		

Table 6 - Coaxial Cable (Outside Plant) - RG-6/U, RG-11 /U, RG-59/U or Other

REQUIREMENTS	FEET	CMT: COMPLETE THIS TABLE.
1. Coaxial cable type: (RG-_____)		Number of cables:
2. Coaxial cable type: (RG-_____)		Number of cables:
3. Coaxial cable type: (RG-_____)		Number of cables:
4. Coaxial cable type: (RG-_____)		Number of cables:
NOTE - Table 6, 1 through 4, indicate any coaxial cable required for the outside plant of this project. Specify length feet and number of airs per cable.		

3. INSIDE PLANT.

Table 7 - Telephone/Data Outlet

REQUIREMENTS	QTY	CMT: COMPLETE THIS TABLE.
1. Dual RJ-45 (standard no fiber)		Cmt: enter number required.
2. Dual RJ-45 w/2 ST (standard w/fiber)		Cmt: enter number required.
3. Dual RJ-45 w/TV (barracks)		Cmt: enter number required.
4. Single RJ-45 (barracks)		Cmt: enter number required.
5. Single RJ-45 w/TV (barracks)		Cmt: enter number required.
6. Dual RJ-45 (barracks-TRADOC only)		Cmt: enter number required.
7. Single RJ-45 w/lugs (wall/pay phones)		Cmt: enter number required.
8. Hospital outlet (per HFPA guidelines)		Cmt: enter number required.
9. Dual RJ-45 (modular furniture)		Cmt: enter number required.
10. Dual RJ-45 w/2 ST (modular furniture)		Cmt: enter number required.
NOTE - Table 7: RJ-45 type outlets (8-pin/8-position jacks) can be used for all telephone and data requirements. Use EIA/TIA 568-A category 5e compliant hardware for these outlets. Use EIA/TIA 568-A category 5e (UTP) for all premise wiring. Items 1 through 10: indicate quantity required, and 11 an 12 others required.		

Table 8 - Television Outlet

REQUIREMENTS	QTY	CMT: COMPLETE THIS TABLE.
1. Single TV barracks, 2 per suite		Cmt: enter number required.
2. Single TV CCETV - educational TV		Cmt: enter number required.
3. Single TV (surveillance TV)		Cmt: enter number required.
4.		Cmt: enter number required.
NOTE - Table 8, use F-type TV connectors on all outlets for government installed, operated and maintained cable TV systems. Coordinate with local cable TV supplier on the type of TV connectors, and who should install for commercial TV cable services. Items 1 through 3, indicated quantity required, and 4 and 5 others as required.		

Table 9 - Other Outlet

REQUIREMENTS	QTY	CMT: COMPLETE THIS TABLE.
1.		Cmt: enter number required.
2.		Cmt: enter number required.
3.		Cmt: enter number required.
4.		Cmt: enter number required.
5.		Cmt: enter number required.
6.		Cmt: enter number required.
NOTE - Table 9, 1 through 6, enter and describe any special purpose outlet requirements.		

Table 10 - Unshielded Twisted Pair (UTP) Cable (Inside Plant)

REQUIREMENTS	FEET	CMT: COMPLETE THIS TABLE.
1. UTP: 2 X 4 Pair, Cat. 5e (preferred)		Cmt: enter length required.
2. UTP: 1 X 4 Pair, Cat. 5e (preferred)		Cmt: enter length required.
3. UTP: 2 X 4 Pair, Cat. 3		Cmt: enter length required.
4. UTP: 1 X 4 Pair, Cat. 3		Cmt: enter length required.
5. UTP: 2 X 4 Pair, Cat.___		Cmt: enter length required.
6. UTP: 1 X 4 Pair, Cat.		Cmt: enter length required.
7. UTP:		Cmt: enter length required.
8. UTP:		
9. UTP:		
NOTE - Table 10, 1 or 2 are standard telephone/data cable for majority of projects, 3 and 4 allow specification of a lower performance cable (not recommended/no actual cost savings), 5 an 6 may be used for newer (higher) performance cables, and 7 through 9 are for other requirements, please specify. Use 120 feet per cable run until actual measurements are obtained.		

Table 11- Shielded Twisted Pair (STP) Cable (Inside Plant)

REQUIREMENTS	FEET	CMT: COMPLETE THIS TABLE.
1. STP:		Cmt: enter length required.
2. STP:		Cmt: enter length required.
3. STP:		Cmt: enter length required.
4. STP:		Cmt: enter length required.
5.		Cmt: enter length required.
NOTE - Table 11 Use 100 feet per (if require), specify the shielded twisted pair (category cable run until actual measurements are obtained. 5 equivalent) cable requirements.		

Table 12 - Multimode Fiber Optic Cable (Inside Plant)

REQUIREMENTS	FEET	CMT: COMPLETE THIS TABLE.
1. 2 strand, 62.5/125 µm (outlet cable)		Cmt: enter length required. (Est.)
2. 6 strand, 62.5/125 µm (backbone cable)		Cmt: enter length required.
3. 12 strand, 62.5/125 µm (backbone cable)		Cmt: enter length required.
4. 24 strand, 62.5/125 µm (backbone cable)		Cmt: enter length required.
5.____strand, 62.5/125 µm		Cmt: enter length required.
6.____strand, 62.5/125 µm		Cmt: enter length required.
7.____strand, 62.5/125 µm		Cmt: enter length required.
8.____strand, 62.5/125 µm		Cmt: enter length required.
9.____strand, 62.5/125 µm		Cmt: enter length required.
NOTE - Table 12, 1 is standard for multimode fiber multimode backbone (riser) cables, 5 through 9 are connectivity, use 100 feet per cable run until actual optic cable to the work station, 2 through 4 are typical for other specific requirements. For work station measurements are obtained.		

Table 13 - Single Mode Fiber Cable (Inside Plant)

REQUIREMENTS	FEET	CMT: COMPLETE THIS TABLE.
1. 2 strand, 8.5/125 m outlet cable		Cmt: enter length required.
2. 6 strand, 8.5/125 m outlet cable		Cmt: enter length required.
3. 12 strand, 8.5/125 m outlet cable		Cmt: enter length required.
4. 24 strand, 8.5/125 m outlet cable		Cmt: enter length required.
5. _____strand, 8.5/125 m outlet cable		Cmt: enter length required.
6. _____strand, 8.5/125 m outlet cable		Cmt: enter length required.
7. _____strand, 8.5/125 m outlet cable		Cmt: enter length required.
8. _____strand, 8.5/125 m outlet cable		Cmt: enter length required.
9. _____strand, 8.5/125 m outlet cable		Cmt: enter length required.
NOTE - Table 13, 1 is standard for single mode fiber optic cable to the workstation, 2 through 4 are typical single mode backbone (riser) cables, 5 through 9 are for other specific requirements. For work station connectivity, use 100 feet per cable run until actual measurements is obtained.		

Table 14 - Coaxial TV/Data Cable

REQUIREMENTS	FEET	CMT: COMPLETE THIS TABLE.
1. TV coaxial: RG-6/U		Cmt: enter length required.
2. TV coaxial: RG-11 /U		Cmt: enter length required.
3. TV coaxial: RG-59/U		Cmt: enter length required.
4. TV coaxial:		Cmt: enter length required.
5. TV coaxial:		Cmt: enter length required.
6. TV coaxial:		Cmt: enter length required.
7. Thick net data coaxial:		Cmt: enter length required.
8. Thin net data coaxial:		Cmt: enter length required.
9. Data coaxial: _____ (specify)		Cmt: enter length required.
10. Data coaxial: _____(specify)		Cmt: enter length required.
11. Broadband data coaxial: _____(specify)		Cmt: enter length required.
12. Broadband data coaxial: _____(specify)		Cmt: enter length required.
13. Baseband data coaxial: _____(specify)		Cmt: enter length required.
14. Baseband data coaxial: _____(specify)		Cmt: enter length required.
NOTE - Table 14, 1 through 3 are for standard interior TV cables, 4 through 6 are for other interior TV cable (specify), 7 and 8 are for standard coaxial based Ethernet cable, 9 and 10 are for other coaxial data cable (specify), 11 and 12 for broadband data cable (specify), 13 and 14 are for baseband data cable (specify), and 15 through 18 are for any other coaxial cable (specify).		

Table 15 - Overhead Cable Tray/Duct

REQUIREMENTS	FEET	CMT: COMPLETE THIS TABLE.
1. 6 inch W x 4 inch D tray (155mm x 103mm)		Cmt: enter length required.
2. 9 inch W x 4 inch D tray (230mm x 103mm)		Cmt: enter length required.
3. 12 inch W x 4 inch D tray (310mm x 103mm)		Cmt: enter length required.
4. 18 inch W x 4 inch D tray (465mm x 103mm)		Cmt: enter length required.
5. 24 inch W x 4 inch D tray (620mm x 103mm)		Cmt: enter length required.
6._____inch W x_____inch D tray		Cmt: enter length required.
7._____inch W x _____inch D tray		Cmt: enter length required.
NOTE - Table 15 through 5 are standard overhead tray/dust sizes, 6 through 8 are for other sizes as required (specify). Metric is soft conversation.		

Table 16 - Under Floor Cable Tray/Duct

REQUIREMENTS	FEET	CMT: COMPLETE THIS TABLE.
1. 2.5 inch W x 2.5 inch D tray (63mm x 63mm)		Cmt: enter length required.
2. 4 inch W x 4 inch D tray 103mm x 103mm		Cmt: enter length required.
3. 6 inch W x 6 inch D tray 155mm x 155mm		Cmt: enter length required.
4. 8 inch W x 8 inch D tray 205mm x 205mm		Cmt: enter length required.
5. 12 inch W x 12 inch D tray 310mm x 310mm		Cmt: enter length required.
6. _____inch W x_____inch D tray		Cmt: enter length required.
7. _____inch W x_____inch D tray		Cmt: enter length required.
8. _____inch W x_____inch D tray		Cmt: enter length required.
NOTE - Table 16, 1 through 5 are standard under floor tray/duct sizes, 6 through 8 are for other sizes as required (specify). Metric is soft conversion.		

Table 17 - Conduit Electrical Metallic Tubing (EMT)

REQUIREMENTS	FEET	CMT: COMPLETE THIS TABLE.
1. 1/2 inch EMT (16mm)		Cmt: enter length required.
2. 3/4 inch EMT (21 mm)		Cmt: enter length required.
3. 1 inch EMT (27mm)		Cmt: complete this table. (Est).
4. 1-1/4 inch EMT (35mm)		Cmt: enter length required.
5. 1-1 /2 inch EMT (41 mm)		Cmt: enter length required.
6. 2 inch EMT (53mm)		Cmt: enter length required.
7. 2-1/2 inch EMT (63mm)		Cmt: enter length required.
8. 3 inch EMT 78mm		Cmt: enter length required.
9. 3-1/2 inch EMT (91 mm)		Cmt: enter length required.
10. 4" EMT 103mm		Cmt: enter length required.
11. inch EMT		Cmt: enter length required.
12. inch EMT		Cmt: enter length required.
13. inch EMT		Cmt: enter length required.
NOTE - Table 17, 1 through 10 are standard EMT conduit sizes, 11 through 13 are for other sizes as required. Metric is soft conversion.		

Table 18 - Equipment Rack

REQUIREMENTS	QTY	CMT: COMPLETE THIS TABLE.
1. 19 inch equipment rack and hardware		Cmt: enter number required.
2. 23 inch equipment rack and hardware		Cmt: enter number required.
3. 19 inch equipment cabinet and hardware		Cmt: enter number required.
NOTE – Table 18, 1 and 2 are standard rack size (minimum of 2 per equipment room), 3 is for enclosed cabinet as required.		

Table 19 - Telephone Instrument

REQUIREMENTS	QTY	CMT: COMPLETE THIS TABLE.
1. 500 series desk rotary		Cmt: enter number required.
2. 2500 series desk touchtone		Cmt: enter number required.
3. 2500 series wall touchtone		Cmt: enter number required.
4. 2500 series (weather-roof) touchtone		Cmt: enter number required.
5. 2500 series (explosion-proof) touchtone		Cmt: enter number required.
6. Multiline		Cmt: enter number required.
7. Integrated services digital network set		Cmt: enter number required.
8. Integrated voice/data terminal		Cmt: enter number required.
9.		Cmt: enter number required.
NOTE - Table 19, 1 through 8 are standard telephone instruments (these instruments interface with standard RJ-45 outlets), 9 through 11 are for other instruments (P-phones, AT&T feature phones, etc.) as required (specify).		

Table 20 - Subscriber Carrier Equipment

REQUIREMENTS	QTY	CMT: COMPLETE THIS TABLE.
1. 24 channel - channel bank (complete)		Cmt: enter number required.
2. 48 channel - channel bank (complete)		Cmt: enter number required.
3. 96 channel - channel bank (complete)		Cmt: enter number required.
4. Optical line interface unit (complete)		Cmt: enter number required.
5. MX3C 28 DS1 to DS3 MULDEMs (complete)		Cmt: enter number required.
6. MX3C 56 DS1 to DS3 MULDEMs (complete)		Cmt: enter number required.
7. DSX-1 cross-connect panel 28 DS1		Cmt: enter number required.
8.		Cmt: enter number required.
9.		Cmt: enter number required.
10.		Cmt: enter number required.
NOTE - Table 20, 1 through 7 are typical subscriber equipment (SLC-96, SLC-5, DS4 channel bank, etc.), always count full system (i.e. one that contains devices at both ends of the circuit for a complete path), 4 is for using the carrier equipment over fiber optic cable, and 8 through 11 are for other requirements (specify).		

Table 21 - Upgrade Telephone Switch Sizing

REQUIREMENTS	QTY	CMT: COMPLETE THIS TABLE.
1. Number of voice (analog/digital) lines		Cmt: enter number required.
2. Number of data lines		Cmt: enter number required.
3. Number of integrated voice/data lines		Cmt: enter number required.
4. Number of ISDN lines		Cmt: enter number required.
5. Number of terminal adapters lines		Cmt: enter number required.
6. Number of modem polling lines		Cmt: enter number required.
7. Number of inter-switch trunk lines		Cmt: enter number required.
8.		Cmt: enter number required.
9.		Cmt:
NOTE - Table 21, 1 is standard line card type (i.e. one line card per user), 2 through 6 indicate special line/circuit card requirements, 7 is for inter-switch trunk line card needs (typically 10 percent to 20 percent of the quantity specified at 1), and 8 through 10 are for other requirements (specify).		

Table 22 - The New Telephone Switch Sizing

REQUIREMENTS	QTY	CMT: COMPLETE THIS TABLE.
Sizing the New Switch Chassis		Cmt: complete this table.
a. Number of installed lines		Cmt: enter number required.
b. Number of wired lines		Cmt: enter number required.
c. Number of expansion lines		Cmt: enter number required.
REQUIREMENTS	**QTY**	**CMT: COMPLETE THIS TABLE.**
Populating the New Switch		Cmt: complete this table.
1. Number of voice (analog/digital) lines		Cmt: enter number required.
2. Number of data lines		Cmt: enter number required.
3. Number of integrated voice/data lines		Cmt: enter number required.
4. Number of ISDN lines		Cmt: enter number required.
5. Number of terminal adapters lines		Cmt: enter number required.
6. Number of modem polling lines		Cmt: enter number required.
7. Number of inter-switch trunk lines		Cmt: enter number required.
8.		Cmt: enter number required.
9.		Cmt: enter number required.
10.		Cmt: enter number required.
NOTE - Table 22, a through c are required to size the new switch; a satisfies current line needs, b satisfies near term line growth, and c satisfies long term growth needs. Item one is standard line card type (i.e. one line card per user), 2 through 6 indicate special line/circuit card requirements, 7 is for inter switch trunk line card needs (typically 10 percent to 20 percent of the quantity specified at 1), 8 through 10 are for other requirements (specify).		

Table 23 - LAN Equipment Hub

REQUIREMENTS	QTY	CMT: COMPLETE THIS TABLE.
LAN HUB each hub		Cmt: Complete One Per Hub.
a. Small LAN hubs 0 through 23 users		Yes? Enter number required.
b. Medium LAN hubs 24 through 47 users		Yes? Enter number required.
c. Large LAN hubs 48 or more users		Yes? Enter number required.
1a. User ports: Ethernet/10Base-T (copper)		Cmt: enter number required.
1 b. User ports: Ethernet/10Base-F fiber		Cmt: enter number required.
2a. User ports: Token ring (copper)		Cmt: enter number required.
2b. User ports: Token ring fiber		Cmt: enter number required.
3a. User ports: FDDI (copper)		Cmt: enter number required.
3b. User ports: FDDI fiber		Cmt: enter number required.
4a. User ports: ATM (copper)		Cmt: enter number required.
4b. User ports: ATM fiber		Cmt: Enter number required.
5a. User ports: Fast Ethernet/100Base-T		Cmt: Enter number required.
5b. User ports: Fast Ethernet/100Base-F		Cmt: Enter number required.
6. User ports:		Cmt: Enter number required.
7. User ports:		Cmt: Enter number required.
NOTE - Table 23, complete one of these tables for each LAN hub required. Select one hub size (i.e. a, b, or c). Complete 1a.b. through 5a.b. and enter number of ports of each type required in the hub selected in a through c, 6 and 7 are for other port requirements (specify).		

Table 24 - LAN Interface Equipment

REQUIREMENTS	QTY	CMT: COMPLETE THIS TABLE.
Network Interface Cards		Cmt: Complete One Per Hub.
1a. NIC: Ethernet/10Base-T (copper)		Cmt: enter number required.
1 b. NIC: Ethernet/10Base-F fiber		Cmt: enter number required.
2a. NIC: Token Ring (copper)		Cmt: enter number required.
2b. NIC: Token Ring fiber		Cmt: enter number required.
3a. NIC: FDDI (copper)		Cmt: enter number required.
3b. NIC: FDDI fiber		Cmt: enter number required.
4a. NIC: ATM (copper)		Cmt: enter number required.
4b. NIC: ATM fiber		Cmt: enter number required.
5a. NIC: Ethernet/100Base-T (copper)		Cmt: enter number required.
5b. NIC: Ethernet/100Base-F fiber		Cmt: enter number required.
6. NIC		Cmt: enter number required.
NOTE - Table 24, complete one of these tables for each LAN hub required. Complete 1a.b through 4a.b., enter number of ports of each type required in the hub selected in a through c, 7 is for other port requirements (specify).		

Table 25 - Miscellaneous

REQUIREMENTS	QTY	REMARKS
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
NOTE: In Table 23, enter up to 17 lines of other requirements. Enter quantitative information in the quantity column; provide explanation in the remarks column to facilitate understanding of the requirement.		

Appendix Q

DA Facilities Standardization Program Centers of Standardization

The following U.S. Army Corps of Engineer Centers of Standardization locations are responsible for the standardization of the respective facility types. Addresses and telephone numbers are provided.

DA Facilities Standardization Program Centers of Standardization	
Assigned Center	**Facility Type**
U.S. Army Engineering and Support Center, Huntsville **Attn: CEHNC-ED-CS-A and IS** **P.O. Box 1600** **Huntsville AL 35807** **Telephone: 256-895-1673/1672/1535**	Child Development Center-Infant/Toddlers
	Child Development Center Playground
	Child Development Center – 6 to 10 Year Olds
	Physical Fitness Facilities
	Fire Station
	Hazardous Material Storage Facility
	Outdoor Sports Facility
	Close Combat Tactical Trainer
	Military Operations Urban Terrain (MOUT) Facility
	Training Range
	Youth Activity Center
U.S. Army Engineer District, Louisville **ATTN: CELRL-ED-D-A** **600 Martin Luther King Jr. Place** **Louisville, KY 40202** **Telephone: 502-315-6250**	Army Reserve Center/National Guard Armory
	Bowling Center(RFP)

DA Facilities Standardization Program Centers of Standardization	
Assigned Center	**Facility Type**
U.S. Army Engineer District, Norfolk **ATTN: CENAO-TS-EA** **803 Front Street** **Norfolk, VA 23510** **Telephone: 757-441-7702**	Classroom21
	Criminal Investigation Facility (CIDC)
	Enlisted Personnel Dining Facility
	Family Housing (RFP)
	General Instruction Building
	Information Systems Facility
	Troop Issue Subsistence Activity Facility (TISA)
U.S. Army Engineer District, Omaha **ATTN: CENWO-ED-DG/PM-M** **215 North 17th Street** **Omaha, NE 68102** **Telephone: 402-221-4552/4434**	Army Chapel
	Chapel Family Life Center
	Religious Education Facility
	Small Site Chapel
U.S. Army Engineer District, Sacramento **ATTN: CESPK-ED-M** **1325 J Street** **Sacramento, CA 95814** **Telephone: 916-557-7412**	Brigade/Battalion HQ
	Two Story Battalion HQ
U.S. Army Engineer District Savannah **ATTN: CESAS-EN-E** **P.O. Box 889** **Savannah, GA 31402** **Telephone: 912-652-5212**	Company Operations Facility
	Military Entrance Processing Station (MEPS)
	Tactical Equipment Maintenance Facility (TEMF)
	Unaccompanied Enlisted Personnel Housing (UEPH), New & Modernization
U.S. Army Engineer District, Seattle **4735 E. Marginal Way** **Seattle, WA 98124** **Telephone:**	Central Issue Facility
	General Purpose Warehouse
U.S. Army Engineer District, Tulsa **ATTN: CESWT-EC-D** **1645 S. 101ST East Avenue** **Tulsa, OK 74128** **Telephone: 918-669-7033**	One Station Unit Training (OSUT) Barracks
	Advanced Individual Training (AIT) Barracks
	Basic Combat Trainee (BCT)
	Unaccompanied Officer Quarters
	Unaccompanied Officer Quarters, Transient

Appendix R

Standards and References

R

R.1 SECTION 7, SITE PLANNING

R.1.1 Army Standards

- Technical Manual (TM) 5-803-14, *Site Planning and Design*
- Americans with Disabilities Act Accessibility Guidelines (ADAAG)
- Uniform Federal Accessibility Standards (UFAS)
- Army Regulation (AR) 200-2, *Environmental Effects of Army Actions*
- Army Regulation (AR) 210-20, *Master Planning for Army Installations*
- Army Regulation (AR) 415-15, *Army Military Construction Program Development and Execution*
- Army Regulation (AR) 420-70, *Buildings and Structures*

R.1.2 References

- Army Regulation (AR) 200-2, *Environmental Effects of Army Actions*
- Technical Instructions (TI) 800-01, *Design Criteria*
- Unified Facilities Criteria (UFC) 1-300-05A, *Installation Support*
- Unified Facilities Criteria (UFC) 3-210-01A, *Design: Area Planning, Site Planning, and Design*
- Unified Facilities Criteria (UFC) 3-210-06A, *Design: Site Planning and Design*
- Unified Facilities Criteria (UFC) 3-210-10, *Design: Low Impact Developing Manual*
- Unified Facilities Criteria (UFC) 3-230-15FA, *Design: Subsurface Drainage Facilities for Airfields and Heliports*
- Unified Facilities Criteria (UFC) 3-230-16FA, *Design: Drainage and Erosion Control Structures for Airfields and Heliports*
- Unified Facilities Criteria (UFC) 3-230-17FA, *Design: Drainage for Areas Other than Airfields*

- Unified Facilities Criteria (UFC) 3-250-01FA, *Design: Pavement Design for Roads, Streets, Walks and Open Storage Areas*
- Unified Facilities Criteria (UFC) 3-250-18FA, *Design: General Provisions and Geometric Design for Roads, Streets, Walks, and Open Storage Areas*
- Unified Facilities Criteria (UFC) 3-260-02, *Design: Pavement Design for Airfields*
- Unified Facilities Criteria (UFC) 3-400-01, *Design: Energy Conservation*
- Whole Building Design

R.2 SECTION 8, BUILDINGS

R.2.1 Army Standards

- Army Regulation (AR) 140-483, *Army Reserve Land and Facilities Management*
- Army Regulation (AR) 200-4, *Cultural Resources Management*
- Army Regulation (AR) 350-19, *The Army Sustainable Range Program*
- Army Regulation (AR) 420-70, *Buildings and Structures*
- Unified Facilities Criteria (UFC) 1-300-05A, *Installation Support*
- Unified Facilities Criteria (UFC 3-301-05A, *Design: Seismic Evaluation and Rehabilitation for Buildings*
- Unified Facilities Criteria (UFC) 3-310-03A, *Design: Seismic Design for Buildings*
- Unified Facilities Criteria (UFC) 3-520-01, *Interior Electrical Systems*
- Unified Facilities Criteria (UFC) 4-010-01, *DoD Minimum Antiterrorism Standards for Buildings*
- Unified Facilities Criteria (UFC) 4-022-01, *Security Engineering: Entry Control Facilities / Access Control Points*
- Unified Facilities Criteria (UFC) 4-171-05, *Design: Guide for Army Reserve Facilities*
- NG Pam 415-12, *Army National Guard Facilities Allowances*
- Americans with Disabilities Act Accessibility Guidelines (ADAAG)
- Uniform Federal Accessibility Standards (UFAS)
- Secretary of the Interior's Standards for the Treatment of Historic Properties
- Technical Guide for Installation Information Infrastructure Architecture (I3A). Available through Army Knowledge Online (AKO). Search for “I3A”.
- TM 5-807-10, *Signage*

- TM 5-809-10/Navy NAVFAC P-355/Air Force AFM 88-3, Chap 13, *Seismic Design for Buildings*
- TM 5-809-10-2/Navy NAVFAC P-355.2/Air Force AFM 88-3, Chap 13, Sec B, *Seismic Design Guidelines for Upgrading Existing Buildings*
- Standards of Seismic Safety for Existing Federally Owned and Leased Buildings
- Army Barracks Master Plan, Appendix I, Army Barracks Standards
- Memorandum Subject: Revised Barracks Construction Criteria, dated 1 May 2003
- Quality Standards for New and Replacement Residential Communities Initiative (RCI) Family Housing
- Army Lodging Standards
- Design Manual for Remoted Target Systems (RETS) Ranges, CEHCN 1110-1-23 Manual
- Unexploded Ordinance Considerations in the Planning, Design, and Construction of Ranges, Supplement to CEHNC 1110-1-23 Manual
- Army Chapel Standard Definitive Design
- Army Standard for Chapel Construction – January 2004 and Memorandum for Record, subject: The Army Standards for Chapels, dated 21 January 2004.
- Army Standards for Company Operations Facilities (COFs)
- Army Standards for Child Development Center Construction (for school-age children) October 2004
- Army Standards for General Instruction Building (GIB) and Army Continuing Education System (ACES) Standards
- General Instruction Building (GIB) and Army Continuing Education System (ACES) Standard Design Criteria
- The Army Standard for Army Lodging
- The Army Standard for Access Control Points (ACPs)
- The Army Standards for Electronic Key Card Access for all Facilities

R.2.2 References

- Army Regulation (AR) 190-13, *The Army Physical Security Program*
- Army Regulation (AR) 200-1, *Environmental Protection and Enhancement*
- Army Regulation (AR) 200-2, *Environmental Effects of Army Actions*
- Army Regulation (AR) 200-4, *Cultural Resources Management*
- Army Regulation (AR) 210-20, *Master Planning for Army Installations*
- Army Regulation (AR) 405-45, *Real Property Inventory Management*
- Army Regulation (AR) 405-70, *Utilization of Real Property*

- Unified Facilities Criteria (UFC) 1-200-01, *Design: General Building Requirements*
- Unified Facilities Criteria (UFC) 1-300-05A, *Installation Support*
- Unified Facilities Criteria (UFC) 2-130-07, *Arctic and Subarctic Construction - Buildings*
- Unified Facilities Criteria (UFC) 3-120-02AN, *Design Guide: Interiors*
- Unified Facilities Criteria (UFC) 3-400-01, *Design: Energy Conservation*
- Unified Facilities Criteria (UFC) 3-510-01-ANF, *Design: Foreign Voltages and Frequencies Guide*
- Unified Facilities Criteria (UFC) 3-600-01, *Design: Fire Protection Engineering for Facilities*
- Unified Facilities Criteria (UFC) 4-510-01, *Design: Medical Military Facilities*
- Unified Facilities Guide Specification (UFGS) 096800, *Carpet*
- Unified Facilities Guide Specification (UFGS) 099000, *Paints and Coatings*
- Engineering Regulation (ER) 1110-345-122, *Engineering and Design, Interior Design*
- Department of the Army Pamphlet (DA PAM) 200-4, *Cultural Resources Management*
- U.S. Army Corps of Engineers, Design Guide (DG) 1110-3-122, *Design Guide for Interiors*
- Department of Defense (DoD) Interior Design Website
- Military Handbook 1191, *Medical Military Construction Program Facilities Design and Construction Criteria*
- Technical Instructions (TI) 800-01, *Design Criteria*
- Technical Instructions (TI) 809-04, *Seismic Design for Buildings*
- Technical Instructions (TI) 809-05, *Seismic Design Evaluation and Rehabilitation for Buildings*
- Technical Instructions (TI) 811-16, *Lighting Design*
- Technical Manual (TM) 5-683, *Electrical Interior Facilities*
- Training Circular (TC) 25-8, *Training Ranges*
- Army Knowledge Online
- Army Brand Theme Operations Home Page
- Army Barracks Master Plan
- Engineering Knowledge On-line (EKO) Sustainable Design and Development
- Air Force Interior Design Guides
- Assistant Chief of Staff for Installation Management, Sustainable Design and Development Website

- U.S Army Corps of Engineers, Engineering Research and Development Center, Construction Engineering Research Laboratory (CERL), Sustainable Design and Development Website
- Military Standard (MIL-STD) 188-124B Grounding, Bonding and Shielding for Long Haul/Tactical Communication Systems Including Ground Base Communications – Electronics Facilities and Equipment
- Whole Building Design Guide
- Unified Facilities Guide Specifications (UFGS), "Division 12 - Furnishings", Construction Criteria Base
- Engineering and Construction Bulletins
- Construction Criteria Base
- Assistant Secretary of the Army memorandum Subject: Sustainable Design and Development Requirements, dated 18 March 2003

R.3 SECTION 9, CIRCULATION

R.3.1 Army Standards

- Army Regulation (AR) 420-72, *Transportation Infrastructure and Dams*
- Manual For Railway Engineering
- Unified Facilities Criteria (UFC) 3-210-02, *Design: POV Site Circulation and Parking*
- Unified Facilities Criteria (UFC) 3-230-18FA, *Design: General Provisions and Geometric Design for Roads, Streets, Walks, and Open Storage Areas*
- Unified Facilities Criteria (UFC) 3-250-01FA, *Design: Pavement Design for Roads, Streets, Walks and Open Storage Areas*
- Unified Facilities Criteria (UFC) 3-260-02, *Design: Pavement Design for Airfields*
- Unified Facilities Criteria (UFC) 3-550-03FA, *Design: Electric Power Supply and Distribution*
- Unified Facilities Criteria (UFC) 4-010-01, *Design: DoD Minimum Antiterrorism Standards for Buildings*
- Unified Facilities Criteria (UFC) 4-860-01FA, *Design: Railroad Design and Rehabilitation*
- Americans with Disabilities Act Accessibility Guidelines (ADAAG)
- Uniform Federal Accessibility Standards (UFAS)
- Manual of Uniform Traffic Control Devices (MUTCD)
- Chicago's Bike Lane Design Manual (Provides a comprehensive series of technical drawings and design specifications for bike lanes)

R.3.2 References

- U.S. Air Force, Landscape Design Guide, Parking Area
- U.S. Air Force, Landscape Design Guide, Walkways and Bikeways (Provides a comprehensive walkways and bikeways planning guide including sections on paving materials and gradients and curvature data.)
- Illumination Engineering Society of North America (IESNA)
- Federal Highway Administration reference document "Accessible Sidewalks and Street Crossings – an informational guide".
- Manual of Uniform Traffic Control Devices (MUTCD)
- AASHTO Guideline for the Development of Bicycle Facilities; 1999
- *Guide for the Development of Bicycle Facilities* published by the American Association of State Highway and Transportation Officials (AASHTO), 1999

R.4 SECTION 10, LANDSCAPE

R.4.1 Army Standards

- Army Regulation (AR) 420-70, *Buildings and Structures*
- UFC 3-210-05FA, *Design: Landscape Design and Planting Criteria*
- UFC 4-022-01, *Security Engineering: Entry Control Facilities / Access Control Points*
- Technical Manual (TM) 5-630, *Natural Resources Land Management*
- Technical Manual (TM) 5-630, *Natural Resources Land Management*
- American Standard for Nursery Stock, ANSI Z60.1
- Overseas (Host Nation Standards)

R.4.2 References

- USAF Landscape Design Guide
- Brickell and D. Joyce. *Pruning and Training,* 1996.
- N. Matheny and J. Clark. Technical Guide to Preservation of Trees During Land Development, 1998.

R.5 SECTION 11, SITE ELEMENTS

R.5.1 Army Standards

- DoD 4525.8-M, *DoD Official Mail Manual*
- Army Regulation (AR) 420-49, *Utility Services*
- Army Regulation (AR) 420-70, *Buildings and Structures*
- Army Regulation (AR) 420-72, *Transportation Infrastructure and Dams*
- Americans with Disabilities Act Accessibility Guidelines (ADAAG)
- Uniform Federal Accessibility Standards (UFAS)

- Technical Manual (TM) 5-807-10, *Signage*
- Manual of Uniform Traffic Control Devices (MUTCD)
- MTMC Pamphlet 55-14, *Traffic Engineering for Better Signs and Markings*
- *Unified Facilities Criteria (UFC) 4-010-01, DoD Minimum Antiterrorism Standards for Buildings*
- Army Automation Communications Engineering Support of Military Construction Projects, 25th ID(L) and USARHAW Regulation 25-70, 29 April 2004
- Army Regulation (AR) 210-20, Master Planning for Army Installations, 30 July 1993
- Army Regulation (AR) 25-1, Army Information Management, 31 May 2002
- Army Regulation (AR) 415-15, Army Military Construction Program Development and Execution, 25 October 1999
- Army Regulation 420-10, Management of Installation Directorates of Public Works, 15 April 1997
- U.S. Army Installation Information Infrastructure Architecture (13A) Implementation Guide, April 2001
- Unified Facilities Criteria (UFC) 3-550-03FA, Electrical Supply and Distribution

R.5.2 References

- Army Regulation (AR) 1-33, *Memorial Programs*
- Army Regulation (AR) 840-1, Department of the Army Seal, and Department of the Army Emblem and Branch of Service Plaques
- Technical Manual (TM) 5-663, *Child Development Center, Play Area Inspection and Maintenance Program*
- Technical Manual (TM) 5-803-5, *Installation Design Manual*
- Unified Facilities Criteria (UFC) 3-210-04, *Children's Outdoor Play Areas*
- USAISEC-FDED DOIM Handbook for MILCON, May 2002
- Technical Instructions (TI) 811-16, *Lighting Design*
- National Fire Protection Association (NFPA) 291, Recommended Practice for Fire Flow Testing and Marking of Hydrants
- Advisory Circular AC 70/7460-1K, *Obstruction Marking and Lighting*.
- Unified Facilities Guide Specification, Division 12 – FURNISHINGS, UFGS 129300, Site Furnishings
- Illuminating Engineering Society of North America (IESNA) Recommended Practice Manual: Lighting for Exterior Environments (RP 33-99)
- Consumer Product Safety Commission Publication #325, Public Playground Safety
- ASTM F1487-EO1 Federal Guideline (Manufacturing)

- ADA requirement for playground equipment and access to playgrounds
- Unified Facilities Criteria (UFC) 3-600-01, *Design: fire Protection Engineering for Facilities, with Change 1*
- Unified Facilities Criteria (UFC) 4-021-01, *Design and O&M: Mass Notification Systems*
- Technical Letter (ETL) 1110-3-485, *Fire Protection for Helicopter Hangars*
- Unified Facilities Criteria (UFC) 3-230-14A, *Evaluation Criteria Guide for Water Pollution Prevention Control and Abatement Programs*

R.6 SECTION 12, FORCE PROTECTION

R.6.1 Army Standards

- Unified Facilities Criteria (UFC) 4-010-01, *DoD Minimum Antiterrorism Standards for Buildings*
- UFC 4-010-02, *Design (FOUO): DoD Minimum Standoff Distances*. (This document is a "For Official Use Only [FOUO]" publication. User may contact the Point of Contact posted at the noted website for inquiries regarding this document).
- Uniform Federal Accessibility Standards (UFAS)
- Americans with Disabilities Act Accessibility Guideline (ADAAG)
- DoD Instruction 2000.16, DoD Antiterrorism Standards
- Field Manual 3-19.30, Chapter 4, FM 19-30
- Engineering and Construction Bulletin (ECB) 2005-3, *Army Standard Design for Access Control Points*

R.6.2 References

- DoD Handbook 2000.12-H, *Protection of DoD Personnel and Activities Against Acts of Terrorism and Political Turbulence*, February 1993 (This Handbook is a "For Official Use Only (FOUO)" publication. Users may contact the Point of Contact posted at the following website to obtain a copy of the Handbook.) http://www.dtic.mil/whs/directives/corres/html/o200012h.htm
- Army Regulation (AR) 525-13, The Army Force Protection Program (Available only through the Army Knowledge Online web portal.)
- UFC Security Engineering series are, UFC 4-020-01FA, UFC 4-020-02FA, UFC 4-020-03FA, and UFC 4-020-04FA. The four volumes cover; Project Development, Concept Design, Final Design, and Electronic Security Systems respectively. UFC 4-020-04FA is available via the internet. Access to the other UFC's can be gained through the U. S. Army Corps of Engineers' Protective Design Center (PDC) web-based library. A user name and password are required. Site entry is restricted to U.S. Government agencies and their U.S. contractors. Also, a copy of the manuals can be acquired via a standard publications account.

R.7 APPENDIX D, SUSTAINABLE DESIGN

R.7.1 Army Standard

- The SPiRiT rating of "Silver" is the standard for all FY06 MILCON vertical construction projects currently under design (as of March 18 2003). For all other FY06 and future-year MILCON projects the minimum SPiRiT rating requirement is "Gold". See Assistant Secretary of the Army memorandum Subject: Sustainable Design and Development Requirements, dated 18 March 2003.
- All military vertical building construction projects starting with the FY08 MILCON will achieve the SILVER level of LEED NC (New Construction). Projects prior to FY08 program will continue to use SPiRiT rating of “Gold”. See Assistant Secretary of the Army memorandum Subject: Sustainable Design and Development Policy Update – SpiRiT to LEED Transition, dated 5 January 2006.

R.7.2 References

- Assistant Chief of Staff for Installation Management memorandum Subject: Sustainable Project Rating Tool, dated 21 December 2002
- Assistant Chief of Staff for Installation Management, Sustainable Design and Development Website
- U.S Army Corps of Engineers, Engineering Research and Development Center, Construction Engineering Research Laboratory (CERL), Sustainable Design and Development Website
- Air Force Sustainable Facilities Guide
- Whole Building Design Guide

R.8 APPENDIX M, HISTORIC PRESERVATION

R.8.1 Army Standards

- Army Regulation (AR) 200-4, *Cultural Resources Management*
- Department of the Army Pamphlet (DA PAM) 200-4, *Cultural Resources Management*
- The Secretary of the Interior’s Standards for the Treatment of Historic Properties

R.8.2 References

- Advisory Council on Historic Preservation
- United States Army Environmental Center
- United States Army Environmental Center Native Indian Affairs
- United States Army Environmental Center Archeology

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Appendix S
Acronyms and Abbreviations

S

AAF	Army Airfield
AAFES	Army and Air Force Exchange Service
AASHTO	American Association of State Highway and Transportation Officials
ACISM	Assistant Chief of Staff for Installation Management
ACP	Access Control Point
ADA	Americans with Disabilities Act
ADAAG	Americans with Disabilities Act Accessibility Guidelines
ADEC	Alaska Department of Environmental Conservation
ADF&G	Alaska Department of Fish and Game
ADOT	Alaska Department of Transportation
AE	Architect/Engineer
AFB	Air Force Base
AFM	Air Force Manual
ALSIB	Alaska-Siberia
ANSI	American National Standards Institute
AR	Army Regulation
AST	Aboveground Storage Tank
ASTM	American Society for Testing and Materials
AT/FP	Antiterrorism/Force Protection
BDE	Brigade
BICSI	Building Industry Consulting Services, International
BN	Battalion
BOD	Beneficial Occupancy Date
CCTV	Closed Circuit Television
CDMP	Community Development and Management Plan
CEHNC	Corps of Engineers – Huntsville Center
CERCLA	Comprehensive Environmental Response, Compensation, and Libility
CERL	Construction Engineering Research Laboratory
CFSC	Community and Family Support Center
CO	Carbon Monoxide
COE	Corps Of Engineers (US Army)
COF	Company Operations Facilities

DA PAM	Department of the Army Pamphlet
DAPM-OPS	Department of the Army, Office of the Provost Marshal General, Operations Branch
DeCA	Defense Commissary Agency
DG	Design Guide
DoD	Department of Defense
DoDDS	Department of Defense Dependent Schools
DOIM	Directorate of Information Management
DPW	Directorate of Public Works
DRMO	Division Resource Management Office
DTA	Donnelly Training Area
ECF	Entry Control Facility
EPA	Environmental Protection Agency
ES	Executive Summary
ETL	Engineering Technical Letter
F	Fahrenheit
FHWA	Federal Highway Administration
FIP	Facility Improvement Program
FM&C	Financial Management and Comptroller
FOUO	For Official Use Only
FRP	Facilities Reduction Plan
FWA	Fort Wainwright
FY	Fiscal Year
GFA	Gross Floor Area
GWOT	Global War on Terrorism
HBO	Head Bolt Outlet
HPS	High-Pressure Sodium
HQ	Headquarters
HVAC	Heating, Ventilating, and Air Conditioning
ICRMP	Integrated Cultural Resources Management Plan
ICUZ	Installation Compatible Use Zone
ID	Identification
ID	Infantry Division
IDG	Installation Design Guide
IDM	Interior Design Manual
IEEE	Institute of Electrical & Electronic Engineers
IEQ	Indoor Environmental Quality
IMA	Installation Management Agency
IPB	Installation Planning Board
IRP	Installation Restoration Program
IT	Information Technology
KM	Kilometer

L	Light
LEED	Leadership in Energy and Environmental Design
LLC	Limited Liability Corporation
MCA	Military Construction, Army
MEDCOM	Medical Command
MHPI	Military Housing Privatization Initiative
MI	Miles
MILCON	Military Construction
MIL-STD	Military Standard
MPI	Master Planning Instructions
MTMCTEA	Military Traffic Management Command Transportation Engineering Agency
MUTCD	Manual on Uniform Traffic Control Devices
NAF	Nonappropriated-Funded
NAAQ	National Ambient Air Quality
NAVFAC	Naval Facilities Engineering Command
NCO	Non-Commissioned Officers
NEC	National Electric Code
NEPA	National Environmental Policy Act
NFPA	National Fire Protection Codes
NHL	National Historic Landmark
NPL	National Priorities List
NPS	National Park Service
NRHP	National Register of Historic Places
O&M	Operations and Maintenance
OASA	Office of the Assistant Secretary of the Army
ODCSOPS	Office Deputy Chief of Staff Operations
OMA	Operations and Maintenance Account
OPA	Other Procurement, Army
OU	Operable Unit
PCB	Polychlorinated Biphenyls
POL	Petroleum, Oil, Lubricants
POV	Privately-Owned Vehicle
PT	Physical Training
Quad	Quadrangle
RCI	Residential Communities Initiative
RETS	Remoted Target Systems
RPPB	Real Property Planning Board
SGT	Sergeant
SHPO	State Historic Preservation Office/Officer
SO	Nitrogen Oxides
SPiRiT	Sustainable Project Rating Tool
SQ. FT.	Square Foot

SRM	Sustainment, Restoration, and Modernization
SRP	Sustainable Range Program
SVE/AS	Soil Vapor Extraction/Air Sparging
TFS	Truck Fuel Stand
TFTA	Tanana Flats Training Area
TI	Technical Instruction
TM	Technical Manual
U.S./US	United States
UFAS	Uniform Federal Accessibility Standards
UFC	Unified Facilities Criteria
UPH	Unaccompanied Personnel Housing
USACE	U.S. Army Corps of Engineers
USARAK	United States Army, Alaska
USARC	U S Antarctic Resource Center
UST	Underground Storage Tank
VCSA	Vice Chief of Staff of the Army
VOC	Volatile Organic Compound
WBDG	Whole Building Design Guide
WWII	World War II
YTA	Yukon Training Area

Appendix T
Acknowledgments

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U.S. Army, Fort Wainwright:

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Stokes, David, ASLA, Landscape Architect/Planner

Reiff Advertising & Design
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Fort Wainwright

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