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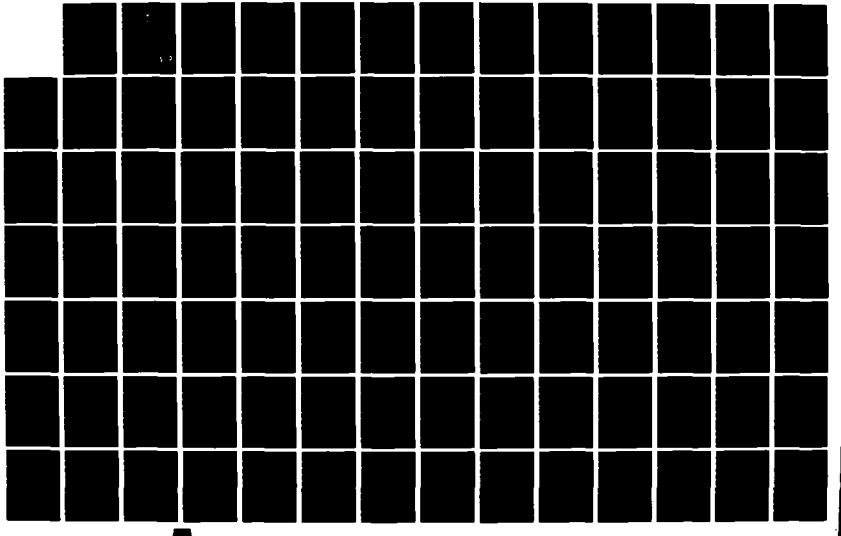

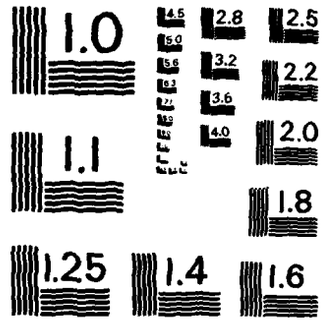

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DEVELOPMENT OF A CIVIL ENGINEERING BASE AND FACILITY APPEARANCE RATING SYSTEM

THESIS

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Captain, USAF

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DEPARTMENT OF THE AIR FORCE
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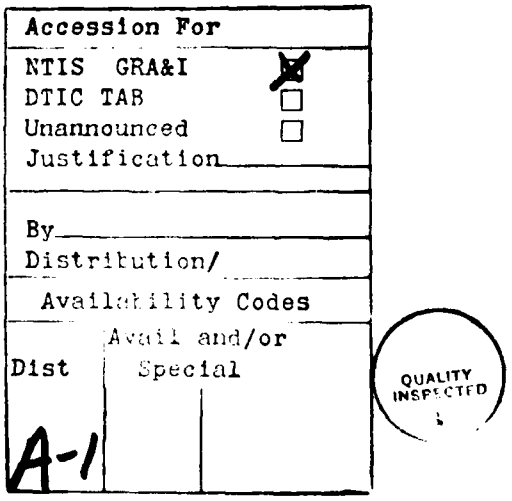

AFIT/GEM/LSM/85S-11

DEVELOPMENT OF A CIVIL ENGINEERING BASE AND FACILITY APPEARANCE RATING SYSTEM

THESIS

Presented to the Faculty of the School of Systems and Logistics
of the Air Force Institute of Technology
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In Partial Fulfillment of the
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Master of Science in Engineering Management

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Kenneth P. Menzie

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Abstract

Presently, Base Civil Engineers (BCEs) have no way of measuring their organization's day-to-day performance in maintaining and improving the appearance of their installations. This thesis develops a base and facility appearance rating system to meet this need and to support the Air Force Engineering and Services Center's Project IMAGE initiatives.

Preliminary data for the rating system was collected through personal interviews, and a review of Major Command appearance inspection programs. This information allowed the researcher to develop a survey to test which elements of appearance are most important to good base appearance. This survey was sent to all CONUS Wing and Base Commanders, and BCEs. An additional survey study was conducted with a sample of the base population at Wright-Patterson AFB, Ohio.

The analysis showed that both groups believe the condition of the base grounds, the exterior maintenance of the facilities, and the base color scheme are the most important Civil Engineering maintenance activities for good base appearance. Both groups also feel that these activities apply most to a base's administrative facilities, Military Family Housing, and community areas.

These findings were used to develop a survey-based rating system BCEs can use to measure the perceptions of the commander and base population concerning their organization's effectiveness in providing base appearance.

DEVELOPMENT OF A CIVIL ENGINEERING BASE AND FACILITY APPEARANCE RATING SYSTEM

I. Introduction

Overview

Chapter I introduces the general topic of measuring facility appearance and states the problem that forms the basis of the thesis. The research objectives, questions, and scope focus the study on determining the key elements of base and facility appearance and developing a draft rating system. The background section provides additional information to justify the study and reviews performance measurement in Air Force Civil Engineering.

General Issue

In May of 1984, the Air Force Engineering and Services Center (AFESC) produced a set of guidelines to act as a framework for developing a comprehensive system of performance measurement indicators (14:3). These guidelines will allow Base Civil Engineers to establish their own performance measurement program to use as a management tool (14:3). The program will incorporate a variety of output oriented indicators to provide BCEs both qualitative and quantitative information on the effectiveness of their organizations in mission accomplishment.

One of the proposed qualitative indicators calls for a "base and facility appearance rating system" to track civil engineering's (CE's) performance in maintaining and improving the appearance of their installation (14:11). According to the guidelines, the BCE will get this management information by using a questionnaire to obtain a "subjective opinion or rating given by the base populace and commanders" (14:11). The Industrial Engineer at each base will be responsible for developing a survey with "meaningful questions" to determine the CE organization's performance in providing facility appearance (14:12).

There are two fundamental problems with the AFESC's proposed rating system. First, the Air Force does not have a clear definition of the term "base and facility appearance." This is important since Industrial Engineers must understand the elements and characteristics of base appearance before they can attempt to measure it. Second, the AFESC guidelines require each base to completely develop its own rating system. This approach will duplicate the efforts of a number of Industrial Engineers. A more effective approach would be to centralize the research and develop a complete package that each base can easily implement. The purpose of this thesis, then, is to define base and facility appearance and to construct an appearance rating system.

Specific Problem Statement

The research problem is to determine the elements and characteristics the Air Force feels are important in defining appearance, and to use this definition to develop a general survey system BCEs can use to track the perception of their organization's effectiveness in maintaining and improving base appearance.

Research Objectives

The research meets these objectives:

A. To develop a comprehensive definition of the abstract term "base and facility appearance."

B. To construct a survey-based rating system to measure the perceived level of appearance of a base.

Research Questions

To support the research objectives, the following questions must be answered:

1) What do current Air Force regulations and policies say about "facility appearance?"

2) What elements and characteristics of base appearance are evaluated during Major Command (MAJCOM) and Inspector General (IG) facility inspections?

3) What do Wing Commanders, Base Commanders, and BCEs feel are the aspects that are most important in defining their installation's appearance?

4) What does a sample of opinions from officer and enlisted Air Force personnel and spouses at Wright-Patterson AFB, Ohio reveal concerning the elements of facility appearance that are most important to a base population?

5) How should a survey rating system be designed to best measure attitudes and perceptions about facility appearance?

Scope of the Problem

The scope of the research will be limited in two respects: 1) the project will define and develop a system to measure the exterior appearance of Air Force installations, and 2) the sample of officer, enlisted, and spouse opinions will be drawn from Wright-Patterson AFB, Ohio (WPAFB).

Exterior Appearance. The appearance of Air Force installations is made up of two important categories: the impression made by the grounds and exterior appearance of base facilities, and the interior appearance of the facilities themselves. The CE squadron is primarily responsible for maintaining the level of the installation's exterior appearance, while the organizations that use the facilities are responsible for the day-to-day upkeep of the interior of the buildings. Since the thesis concerns CE's role in maintaining installation appearance, the definition and rating system will only apply to the exterior appearance of an Air Force base.

Sample. The perception of base appearance is made up of diverse opinions from a wide variety of people who come in contact with the base, including the population of military and civilian personnel, their families, the commanders, and distinguished visitors (1:3-1; 39:13). A complete definition of base appearance and CE's performance rating system should consider inputs from all of these population sectors. However, collecting opinions from each of tnese groups Air Force-wide is beyond the capabilities of the research because of the time and resource constraints.

To limit the scope of the research effort, the thesis will concentrate on defining the elements of appearance based on a synthesis of opinions from two major groupings of the population: 1) the senior base-level officers (Wing and Base Commanders, and BCEs) at all active-duty CONUS bases, and 2) a study of select groups of the population at WPAFB.

Background

Problem Justification. Although the Air Force does not have a strict definition of what constitutes "good" appearance, it is nevertheless important for base-level CE units to be able to define and measure their performance in maintaining and improving base appearance. Not only is this necessary for the BCE to properly manage CE resources, but the appearance of individual Air Force bases can also have several far-reaching affects.

First, base appearance helps project a positive and professional image of the military to its members and the American public (14:2):

> A military installation conveys an image which can either be clear, professional, and attractive or cluttered, confusing, and disoriented. The design, location, and maintenance of buildings, roads, parking lots, signs, utilities, and landscaping substantially affect the quality of the installation's appearance and environment (9:2).

At the same time, the level of appearance also reflects on the Air Force's stewardship and upkeep of government property (10:1; 16:1).

Second, many Air Force leaders feel base appearance has a substantial impact on the quality of life for Air Force people and an effect on productivity. In fact, Air Force Pamphlet 85-14, Commander's Facility Improvement Guide, states that:

> there is a direct correlation between personnel productivity and the standard of living as reflected by facility conditions where people live, work, and spend their leisure time (9:2).

This is why General Wilbur L. Creech, the past Commander in Chief of Tactical Air Command (TAC), feels one of the major functions of leadership is to instill a sense of pride in subordinates through the appearance of Air Force facilities:

> I believe, deeply, that all of our bases in TAC should look good - and they do. They're painted, they're clean, the good housekeeping is obvious, the facilities are kept up well, and so forth. It buys a lot and it doesn't cost much . . . Why do we do it? To engender pride. To convey a pervasive sense of excellence so our people feel good about themselves - and perform accordingly. Quality begets quality (3:8).

Thus, General Creech firmly believes TAC's appearance initiatives are, in part, responsible for a 73 percent increase in sortie production that occurred between mid-1978 and the first quarter of 1983 (3:27).

The CE squadron's efforts in providing base appearance are often directed by MAJCOM policies and the prerogatives of the individual base commanders. In the past, lack of clear communication of what is necessary for "good" base appearance has resulted in some problems. For instance, TAC's move to improve the appearance of its bases generated 37 Congressional Inquiries in four years as many military and civilian personnel felt aesthetics were beyond the bounds of CE's responsibility for property maintenance (22). The majority of these inquiries dealt with TAC's exterior paint and base sign policies, as well as curb and gutter installation (19). However, all of these inquiries were later adequately explained to Congress (19).

Most MAJCOMs consider base appearance to be important enough to be checked during annual facility inspections and IG evaluations. The CE unit receives a "grade" from these formal inspections for their efforts in maintaining and

improving the level of appearance of the installation. As currently used, this rating process does not provide the BCE with enough usable feedback, since the inspections are known about in advance and the actual rating is determined by someone external to the base (21). According to Major Garry Earls of AFIT/DEM, what the BCE really needs is a system that will generate feedback from the base itself on civil engineering's day-to-day performance (21).

Performance Measurement in Air Force Civil Engineering. The proposed base and facility appearance rating system is part of a set of performance measurement indicators that were developed in an on-going AFESC Functional Review to give the BCE current management information. This program, known as Project IMAGE (Innovative Management Achieves Greater Effectiveness), was started in January 1983 in response to the Office of Management and Budget (OMB) Circular A-76 (24:III-5) and a directive from the Air Force Vice Chief of Staff (15:attach5). On November 10, 1982, General O'Malley asked each of the Air Force component mission areas to begin a six year series of "efficiency reviews" aimed at "increasing productivity and reducing [the] operating cost" of day-to-day activities (15:attach5).

The purpose of Project IMAGE is to examine ways to improve the main thrust of the CE squadron's mission: Real Property Maintenance Activity (RPMA). RPMA consists of the effort and resources necessary to acquire, sustain, and

improve base real property. The central theme of the Project IMAGE RPMA improvements is to adopt a "results" oriented strategy, instead of the current "compliance" directed approach, for managing the CE work force (15:79).

In keeping with this results oriented strategy, the review committee first subdivided the broad RPMA mission into eight component "product areas" (15:III)(see Figure 1.1). Each of these product areas is the result of one or more interrelated CE functions. For instance, the product area "Sustain Real Property" actually involves: 1) facility condition - the preventative maintenance and repair work needed to sustain the major systems that make up each facility, such as the roof, sewer, and cooling/heating systems; 2) customer service - the day-to-day minor maintenance, repair, and construction work done at the "customer's" request; and 3) facility appearance - the general, non-functional appearance of the interior and exterior of the base facilities and surrounding grounds (14:7-16; 21).

The guidelines for the indicators were produced at a May 1984 Project IMAGE Charter Workshop. BCEs may use the guidelines to develop their own system for tracking performance in each of the eight RPMA product areas. The base and facility appearance rating system was included in the package to provide an opinion-generated, subjective indicator of CE's performance in the facility appearance

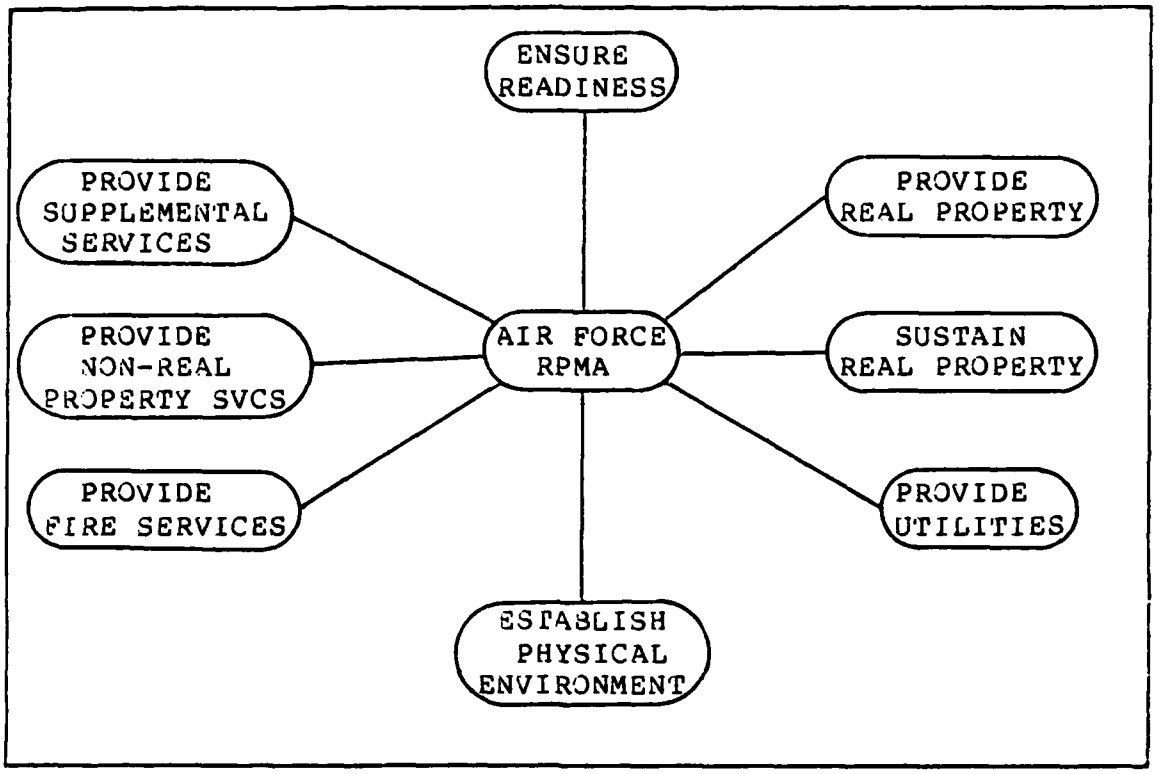

Fig 1.1 RPMA Product Areas

function of the "Sustain Real Property" product area. In addition to indicating performance, the surveys will tell the BCE and commanders "where emphasis needs to be placed and what are the major concerns and high points" of the base's appearance (14:12).

The guidelines for the set of performance indicators were reviewed and approved by the Air Staff in December of 1984. In June of 1985, the AFESC began a one-year test of the guidelines (13:1). AFESC teams were sent to Barksdale, Kirtland, Edwards, and Hickam AFBs "to work with the base [Industrial Engineers] to develop mechanisms for measuring

and gathering data" for the base and facility appearance and other performance indicators (13:1). Once testing is complete, all Air Force CE units will have the option to set up their own performance measurement program using the guidelines and the indicator systems developed during the tests as an example. This thesis lays the groundwork necessary for a CE squadron to establish an effective base and facility appearance rating system.

II. Background Review

Overview

This chapter provides information on the important elements of Air Force base appearance. The first section outlines the base appearance inspection programs presently used by four MAJCOMs. Next, the review examines the CE activities that affect appearance and groups them into ten maintenance areas. The chapter concludes with a review of the specific facilities of a base that have the greatest impact on the perception of "good" appearance.

MAJCOM Programs that Rate Base Appearance

Most Air Force bases receive an annual appearance evaluation from their parent command. As mentioned in the introduction, these inspections provide feedback on overall base appearance. However, they do little to measure the base population's perceptions and concerns with the day-to-day performance of the CE organization (21). Nevertheless, these programs provide a valuable starting point for developing the base and facility appearance performance measurement indicator.

This section of the background review examines the formal inspection programs currently used by four MAJCOMs to rate the exterior appearance of their bases. These programs include: 1) a Commander's Annual Facility Inspection (CAFI) to assess the condition and suitability of base facilities

and grounds, and 2) an IG inspection to judge the impact of appearance on the base's ability to perform its mission. The background review studies both of these programs as used by the Air Training Command (ATC), the Military Airlift Command (MAC), the Strategic Air Command (SAC), and the Tactical Air Command (TAC). Appendix A shows the name and governing directive for each of the inspection programs. The background review will compare and contrast the basic philosophy and objectives behind each program, discuss how the MAJCOMs conduct the inspections, and explain the criteria and standards used to determine the rating for both the CAFI and IG evaluations.

MAJCOM CAFI Inspections. The overall purpose of the MAJCOM CAFI programs is to ensure that base-level commanders keep their bases and facilities "clean and well maintained" (5:1; 16:1). To do this, the programs stress the need for commanders to develop a comprehensive plan of routine maintenance that considers both the current and projected use of each facility (8:1; 10:1). However, beyond this central goal, the individual programs differ in the emphasis they give to base appearance. Part of this difference lies in the basic philosophy of whether or not routine maintenance should extend to appearance aesthetics.

Program Philosophy and Objectives. The ATC and TAC CAFIs tend to encourage the aesthetic aspects of base appearance in their program objectives, in the way they

conduct the inspections and treat the results. Both programs emphasize the goals of improving the "quality of life" within their commands and encouraging "high standards" of general upkeep (5:1; 16:1). The directives governing the inspections also require commanders "to use self-help resources to improve living and working conditions" (5:1; 16:1). In addition, during the actual evaluation, the facilities are rated against the standard of the "best possible condition considering the age and type of construction" (5:attach1; 16:attach1). Both MAJCOMs also have a formal system of awards to recognize individual base achievement throughout their commands. In fact, ATC even motivates its Wing Commanders with an award for "worst overall" in base appearance (5:1).

In contrast, the MAC CAFI program is more function oriented in its approach to base appearance (10:1; 22). Although the objectives of the MAC program mention enhancing the quality of life for MAC personnel, it requires only "acceptable standards" of living and working conditions (10:1). The MAC inspection is also concerned with "soap-and-water cleanliness instead of out-of-cycle painting" (10:1). Unlike the ATC and TAC programs, the MAC facility rating is based on "functional adequacy and care" instead of the best possible condition (10:1). Finally, MAC does not have a formal recognition system for the results of the CAFI above the base level (10:2).

The SAC CAFI program receives even less MAJCOM emphasis than MAC's. Here, the CAFI is run only at the Numbered Air Force level. SAC's Eighth Air Force program stresses the "preservation of government facilities" and "acceptable standards of living and working conditions" (8:1). The directive governing the inspection even states that "appearance or cosmetic painting will not be done for [the] CAFI" (8:1). The Fifteenth Air Force evaluates base facilities as part of its annual Staff Assistance Visit instead of using a formal appearance inspection (11:1). The evaluation is mainly concerned with facility condition and general housekeeping (11:2). Neither program mentions the goals of improving base appearance and quality of life, nor do they use an awards system. In fact, the Fifteenth Air Force inspectors report by exception "only those facilities that are other than satisfactory" to the individual Wing Commander (11:1) and the Eighth Air Force evaluators only report on the facilities receiving "marginal or unsatisfactory grades" (8:2).

Inspection Process. In spite of the differences in appearance philosophy, the CAFI programs conduct a thorough inspection of each base. For example, the MAC inspection team is made up of headquarters staff members who assess the interior and exterior of all MAC facilities, the condition of the grounds, the cleanliness of each type of aircraft, and the appearance of personnel (10:1).

The headquarters staff also controls the ATC facilities evaluation. The inspection looks at general base appearance, the exterior condition of each facility, the Military Family Housing areas, and the quantity and quality of self-help work (5:1). The team also evaluates grounds maintenance, base entrances, and the base-wide sign program (5:1,2).

TAC conducts a two-tiered inspection with a TAC Numbered Air Force team inspecting and then nominating bases for the MAJCOM level evaluation (16:2). These teams rate general base and range appearance, and the exterior of all facilities including Military Family Housing (16:1). The team receives a briefing on the base self-help projects, the TAC LOOK programs (command special interest areas), and even recently completed construction (16:2). The inspection also includes the interior of dining halls, Aircraft Maintenance Units, and dormitories (16:1,2).

The SAC Numbered Air Force evaluations are not as structured as TAC's. The Eighth Air Force allows its Air Divisions to individually manage the CAFI for each of their bases (8:2). The emphasis of these inspections is on the cleanliness of each building and its ability to support the occupant's mission (8:2). As mentioned previously, the Fifteenth Air Force inspection is given during the annual Staff Assistance Visit (11:1). Representatives from each staff agency evaluate facilities in their functional areas

(11:4). The focus of the inspection is on housekeeping and interior appearance (11:3).

Inspection Criteria and Standards. All four MAJCOM CAFI programs base their ratings on the subjective opinion of the evaluators. To provide a consistent rating across the command, ATC and MAC use a single team to rate all bases, and TAC uses only one team at the Numbered Air Force and MAJCOM levels. The teams usually have a prebriefing to discuss the inspection standards and to receive guidance from the MAJCOM commander. In addition to these briefings, the commands have, in varying degrees, published criteria and a rating scale to guide the inspectors.

The MAC inspection directive does not provide the evaluators with a set of standards or criteria. However, the program does use a grading scale. As previously mentioned, the MAC CAFI inspectors score the interior and exterior appearance of facilities based on "functional adequacy and care, not age" (10:1). The raters assess their grade for each facility using a five-level inspection scale ranging from unsatisfactory to outstanding (10:3). A satisfactory rating implies that "the requirements for normal maintenance and housekeeping are fulfilled and [that the facility] clearly meets standards of day-to-day needs; relatively free from discrepancies" (10:3).

The rating systems used in the ATC and TAC programs are similar to MAC's. However, both programs are more elaborate. Here, the inspectors rate the state of repair and care for each building by comparing its actual condition to what they perceive to be the "best possible condition considering age and type of construction" (5:attachl; 16:attachl). The inspection directives include a guide similar to MAC's to help the evaluator assign a numerical rating from Ø to 1Ø for each facility (5:attach3; 16:attach3). For instance, a grade in the range of 6 to 7.9 has the same verbal description as MAC's satisfactory rating (5:attach3; 16:attach3). The points allotted for general base appearance, Military Family Housing, and self-help programs are determined from a percentage of total possible facility points (5:attachl; 16:attachl). Unlike the MAC and TAC programs, the ATC inspection directive provides an actual list of criteria for each portion of the evaluation. For example, under the category of general appearance, the evaluator, in part, checks the traffic signs for rust and peeling, ensures streets and gutters are swept, and ensures that the pavements are not badly cracked or spalling (5:attach6).

The SAC Numbered Air Force programs vary widely in the amount of guidance they give the inspectors. The Eighth Air Force CAFI directive does not provide any set standards or criteria to its Air Division level inspectors. The

evaluator simply rates the overall cleanliness and suitability of each building on a five-level grading scale from unsatisfactory to outstanding (8:2). In addition, the directive does not explain the ratings or distinguish between the grades. On the other hand, Fifteenth Air Force includes a checklist and rating scale in its inspection package. The exterior appearance portion of the checklist requires the evaluator to examine each building's windows and signs, and to ensure the "outside areas are neat and orderly" (11:4). The rating scale helps the inspector assign a grade by linking the standards to the individual's reaction to the facility. For example, the scale describes a satisfactory rating as:

> Normally expected cleanliness under routine day-to-day activity . . . Deficiencies observed are not 'hard on the eye' and the evaluator would not be uncomfortable if he were in charge of the area and was escorting his commander through the facility (11:3).

MAJCOM IG Inspections. In addition to the regular CAFI inspections, base appearance is also evaluated during MAJCOM Inspector General (IG) visits. The two main objectives of these inspections relating to base appearance are to "identify deficiencies" which affect mission performance (6:1) and to evaluate the unit's compliance with higher headquarters policies, programs, and directives (17:25).

Two types of IG inspections that examine base appearance as part of their evaluation are the Management

Effectiveness Inspection (MEI) and the Operational Readiness Inspection (20; 30). The Air Force guidelines for MEI criteria include a requirement for inspectors to check unit compliance with MAJCOM "housekeeping and personal appearance standards" (17:25). Thus, each of the MAJCOMs is free to establish its own guidelines for evaluating appearance during the IG inspections (36).

The ATC and TAC IG inspection programs have a comprehensive set of guidelines to rate base appearance. The guidelines include a MAJCOM supplement to Air Force Regulation 123-1, Inspection System, to outline their particular criteria. They also evaluate special emphasis areas as directed by the Commander in Chief (6:1; 30).

The ATC IG teams rate "general outside" base appearance as a major portion of the MEI evaluation (30). The inspectors look for any aspect of the base that has a positive or negative effect on appearance (30). However, the focus is usually on the condition of the base grounds, landscaping, signs, pavements, exterior paint, and architectural compatability with the surrounding environment (30). The inspectors also grade the interior and exterior housekeeping of the facilities in their functional areas (30).

TAC's IG inspections are quite similar to ATC's. Their guidelines direct the evaluators to look at five categories of base appearance: general appearance, base buildings,

family housing, base grounds, and exterior signs (6:1,2). Each of these categories lists a number of more specific areas and criteria for the rater to examine. In general, the criteria stress proper maintenance, attractive appearance, and professional image (6:1,2).

Unlike ATC and TAC, the MAC and SAC IG inspection teams do not have formal standards or criteria for conducting the facility appearance portion of their inspections (20; 25). In fact, the MAC teams do not specifically assign a rating for base appearance (20). Nevertheless, the impression made by appearance will affect a unit's overall grade in "borderline cases" (20). In the past, the MAC inspectors have formed their opinions based on the general condition of the grounds and pavements, as well as the results of dormitory inspections (20).

In contrast, the SAC team does assign a rating considering both general base appearance and the quality of work life (25). As in the MAC program, the rating for general appearance reflects the team's overall impression with the base (25). The inspectors usually form their opinion by considering grounds maintenance, the quality of the landscaping, the base-wide painting scheme, and the exterior condition of the facilities (25). The quality of work life portion of SAC's evaluation is geared to rating the adequacy of each inspected facility in terms of its interior appearance, maintenance, and housekeeping (25).

Elements of Air Force Base Appearance

The preceding review of the CAFI and IG inspection programs mentioned some of the criteria the MAJCOM's consider important in rating base appearance--for example, "family housing" and "general base appearance." However, the Base Civil Engineer needs more specific information in order to effectively manage the resources that affect "base and facility appearance." In particular, the BCE must know 1) how the maintenance functions performed by the CE organization relate to perceptions appearance, and 2) which specific facilities of an Air Force base most strongly influence base appearance. Because many elements of base appearance are not under the control of the BCE (as when a tenant organization is responsible for maintaining the grounds around its building), the BCE needs to evaluate performance only in relation to the maintenance activities the CE organization is responsible for.

There are a number of CE maintenance activities that affect appearance. To more effectively study these activities, the background review examines them in related groups of maintenance areas. For example, grounds maintenance includes all of the activities needed to maintain the trees and grass areas on base. This portion of the background review introduces ten general CE maintenance areas and the particular facilities of an Air Force base current literature and a sample of senior Civil Engineering

Officers judge important to maintain and improve exterior appearance. The information contained in this section was found in a variety of sources including: 1) interviews with seven senior Civil Engineering Officers, 2) a review of the reports from eleven Air Force Planning Assistance Team visits and two Architectural-Environmental studies, 3) the facility enhancement concepts found in AFP 85-14, Commander's Facility Improvement Guide, and 4) the criteria MAJCOM facility inspectors and IG evaluators use to rate base appearance. Appendix B lists the names and positions of the Civil Engineering Officers interviewed and Appendix C shows the Planning Assistance Team and Architectural-Environmental studies used in the review.

Civil Engineering Appearance Maintenance Areas. The activities a CE squadron performs that affect appearance can be categorized into ten maintnenance areas. These areas include:

Base Signs
Clutter
Exterior Maintenance
Exterior Paint
Fencing
Grounds Maintenance
Landscaping
Lighting
Parking Lots
Pavements

This portion of the Background Review will explain the CE's responsibilities in the ten maintenance areas, and cover why each function has an impact on the perception of base appearance.

Base Signs. Signs are an important element in judging the level of appearance for an Air Force base. In fact, six of the senior Civil Engineering Officers and ten of the Planning Assistance Team studies specifically mentioned base signs as a factor affecting appearance. Some MAJCOM commanders consider base signs important enough to have them evaluated during the TAC and SAC IG inspections (6:2-3; 25), as well as the ATC and the Fifteenth Air Force CAFIs (5:2; 11:1). The basic purpose of signs is to provide directional information for those unfamiliar with the installation (9:24). Thus, the organization, quality, and maintenance of signs "creates a first impression that sets the tone for a visitor's reaction to the entire base" (39:77). In addition, a good sign program contributes to the overall perception of appearance by lending a standardized, attractive, and "functional look" to the base (34:1).

In order to enhance base appearance with signs, the CE squadron must develop and enforce a sign plan along the guidelines of AFP 85-40, Sign Standards (7:2; 9:24; 26; 33). In fact, the 2750th Civil Engineering Squadron at Wright-Patterson AFB, Ohio is presently managing a new sign program to "upgrade the base's exterior image" (34:1; 2).

"Clutter." Clutter is a catch-all term to describe a number of "visual atrocities" that detract from "orderly, professional base appearance" (9:20,23). The perception of clutter is caused by open storage areas and loading docks, and visible mechanical equipment, utility systems, and refuse containers (1:4-9; 9:20,21; 40). A recent Architectural-Environmental analysis of Tinker AFB, Oklahoma noted that clutter was a major appearance issue for the installation (39:152) In fact, cluttered areas can create such a negative impression that Colonel William R. Sims, Director of Engineering and Services for Air Force Systems Command, calls it "the enemy of facility appearance" (40).

Clutter is a maintenance area, since CE units can control the problem by properly locating dumpsters and screening the activities that detract from orderly appearance with fences, and terrain or building features (9:20,21). Consequently, the perception of CE's effectiveness in reducing and concealing clutter should be used to measure CE's performance in base appearance (40).

Exterior Maintenance. Unlike clutter, exterior maintenance deals more with the actual condition of base facilities than with appearance aesthetics. Exterior maintenance refers to the state of repair of roof shingles, gutters and downspouts, doors, and windows (33). In addition, a CE squadron's efforts in exterior maintenance

can also create "significant environmental improvements whenever a building is repainted, reroofed, or the exterior is maintained or altered" (1:4-83). Thus, the level of exterior maintenance is a clear indicator of CE's performance both in base appearance and as a steward of government property (10:1).

Three of the senior Civil Engineering Officers listed exterior maintenance as an important factor in judging base appearance. It is also rated during SAC and TAC IG inspections (6:1; 25), as well as in all but the Eighth Air Force CAFI evaluations.

Exterior Paint. Another frequently mentioned maintenance area is exterior paint which serves both a functional and an aesthetic appearance role. Paint has the basic functional purpose of protecting and maintaining a building's exterior surfaces. At the same time, the paint scheme also plays an important role in projecting the architectural compatibility and theme of a base (9:15). In fact, AFP 85-14 refers to exterior paint as a "key issue" in presenting the "professional image of the Air Force" (9:15). This feeling was echoed by all seven senior Civil Engineering Officers and ten of the Planning Assistance Team studies. In addition, the ATC, SAC, and TAC IG teams specifically grade a base's exterior paint scheme during their inspections (6:1; 25; 30).

In order to have an effective paint scheme, the CE unit must develop a long-range paint master plan (7:2; 33; 36; 40). The plan must not only schedule buildings to be painted as needed to protect their surfaces, but it must also direct the proper mix of colors and tones to unify and coordinate the base with the surrounding natural environment (9:15; 22; 27). AFP 85-14 even recommends the paint plan include "no more than two or three major colors" with "earth tones and whites that complement the exterior surroundings" (9:16).

Fencing. The CE unit is responsible for maintaining their base's perimeter and security fence lines. This responsibility primarily involves the routine repair and painting of the fence slats, posts, and wire (5:attach6). In addition, the CE organization must periodically trim the grass next to the fences and police trash and debris (6:2; 5:attach6).

Poorly maintained fences detract from appearance (33). Thus, the ATC CAFI (5:attach6) and the TAC IG inspectors (6:2) grade the condition of base fences during their evaluations.

Grounds Maintenance. This general maintenance area encompasses a number of CE services that maintain the appearance of base improved grounds and open areas. Grounds maintenance primarily involves the seasonal care of the landscaping by trimming the trees and shrubs, mowing,

edging, and irrigating the grass, and a coordinated program of fertilizing and herbicide control (6:1,2). Other CE efforts in this area include "litter patrols" to police open areas (9:23) and a long-term program to maintain base drainage ditches (6:2; 33).

Inspectors rate the CE organization's performance in grounds maintenance during all four MAJCOM IG evaluations and in all, but the Eighth Air Force, CAFI programs.

Landscaping. Although related to grounds maintenance, landscaping refers more to the aesthetic quality of the base's improved grounds. Well planned landscaping accentuates the "base entrances, headquarters buildings, living and recreational areas" (9:19) and at the same time, improves the appearance of "sterile industrial areas" (9:18). Landscaping also has functional value in reducing energy consumption (9:19), and as an economic and effective visual screen for "cluttered" areas (9:20).

Ten of the Planning Assistance Team studies and four of the senior Civil Engineering Officers identified the landscaping maintenance area as a significant means to improve base appearance. It is also an inspection item for the ATC, SAC, and TAC IG evaluations (6:1,2; 25; 30).

Lighting. The CE organization can also create the perception of good base appearance at night with a well-planned and maintained lighting system. Besides simply illuminating obstructions and meeting security needs, lights

can also "highlight landmarks," and establish a visual character for the base through "a sense of orientation" and continuity (9:22).

The base lighting maintenance area was one of the least mentioned appearance factors found in the review. In fact, none of the MAJCOM inspection programs rate base lighting. Nevertheless, AFP 85-14 lists lighting as a "fundamental concept" for improving base appearance (9:14).

Parking Lots. The layout and condition of parking lots is another component of base appearance. In general, small well-sited lots fit neatly into the base environment. Large parking areas on the other hand, can create the perception of confusion and congestion. In fact, a 1982 Architectural-Environmental study at Wright-Patterson AFB, Ohio found that large parking lots had a "negative visual impact" (1:4-9). The CE squadron can control these affects by properly siting the parking areas while planning new construction (9:27) and can improve existing parking lots by breaking them up with extra curbing (32) and landscape islands (9:19).

Routine maintenance will also improve the level of appearance of base parking areas. To do this, the CE unit must periodically police and sweep the parking lots, as well as maintain the surface and parking stripes.

Some of the MAJCOMs consider the condition of parking areas an important element of base appearance.

Consequently, this maintenance area is graded during the MAC and TAC CAFIs (10:5; 16:9) and by the TAC IG team (6:2).

Pavements. The pavements maintenance area is closely related to parking lots since it involves many of the same CE services, but only on a larger scale. Three of the Planning Assistance Team studies mentioned improvements in the pavements area as a significant means to enhance base appearance. In addition, base roads are evaluated during the MAC and TAC CAFIs (10:5; 16:9), as well as the ATC, SAC, and TAC IG inspections (6:2; 25; 30).

The emphasis of these inspections is on both the functional condition and appearance of base pavements. The condition of the road surfaces, the shoulders, and the traffic markings indicates the level of CE units's preventative maintenance program (5:attach6; 6:2; 33). Thus, poor conditions can generate a negative impression of the overall care of the base facilities (33). Another factor affecting the perception of good appearance is the flow of traffic through the base. As with the parking areas, congested streets detract from an "orderly, professional" image (9:23).

A CE squadron can improve base appearance through the pavements maintenance area. First, a well-executed preventative maintenance program will sustain the road surfaces and shoulders, and keep the painted traffic markings looking bright. In addition, the CE organization

can add to appearance by simply keeping the streets clean and properly cleared of snow (33). Finally, the CE squadron can control traffic congestion by using vehicle surveys to properly schedule the flow of traffic on base roads (9:23). This can be accomplished by using designated truck routes, and staggered work shifts to reduce congestion (9:23). Consequently, the BCE's performance indicator will measure a number of CE activities in the pavements maintenance area.

Specific Facilities that Affect Base Appearance. In addition to defining the general maintenance areas, the background review needs to determine what particular facilities have the largest impact on an individual's perception of base appearance. This information is necessary for the BCE's performance measurement indicator to give proper emphasis to these facilities.

Several of the sources point out that the perception of appearance is a result of the total base-wide effort with each facility contributing equally in creating the image (2; 9:14,15; 22; 33). In fact, the ATC, MAC, and TAC CAFIs rate every building on a base using the same scale (5:2; 10:1; 16:2). However, other sources specifically mention several types of facilities that require "special attention" (6:1; 9:19). These facilities include the base entrances, headquarters buildings, living areas, and community facilities (6:1; 9:19).

The main entrance is most often cited as a critical element of base appearance. Three of the Planning Assistance Team studies and three of the senior Civil Engineering Officers note that it is an important landmark for establishing a positive image of the base in the minds of newcomers and visitors. Lieutenant Colonel David S. O'Brien, a former Air Force IG inspector, feels the level of appearance of an installation's main gate forms a lasting impression of the entire base (36). Along this same line, the Architectural-Environmental studies of both Tinker AFB Oklahoma and Wright-Patterson AFB, Ohio state that the main entrances have a major impact on the base environment and they should be "attractive portals" to the installation (1:4-83; 39:173). This same emphasis is reflected in the directives for the ATC CAFI (5:2) and TAC IG (6:1) inspections, which require base gates to be looked at closely.

Another set of facilities important from the visitor's point of view is the Base Operations and Headquarters buildings. Dignitaries and command personnel generally arrive at the installation by aircraft, so base operations is the first facility they see (22). The headquarters building is also important to visitors since it is the focal point of the base and the place where they conduct the majority of their business. Thus, Colonel Mario B. Ginnetti, the chief of the Civil Engineering and Services

Management Evaluation Team, centers his personal evaluation of base appearance on these buildings (26). In addition, these facilities are also given special attention during the TAC IG inspection (6:1).

The MAC and TAC CAFI programs seem to emphasize the appearance of the facilities that improve the living conditions for their enlisted personnel. MAC evaluates the interior and exterior appearance of dormitories during both the CAFI and IG inspections (10:2; 20); the TAC CAFI rates the dormitories, dining halls, and Aircraft Maintenance Units (16:1).

The facilities that serve families are another grouping mentioned by several of the sources (27; 33; 40). Included in this category are the community centers, such as the commissary, base exchange, and recreation facilities (6:1), and the Military Family Housing areas. These facilities are evaluated during the ATC and TAC CAFIs (5:1,2; 16:1,2) and by the TAC IG inspectors (6:1).

Summary

This chapter has reviewed a number of Air Force sources to determine the elements of base and facility appearance. The chapter began with a review of the CAFI and IG base appearance inspection programs for ATC, MAC, SAC, and TAC. The second section categorized the individual CE activities that affect appearance into ten maintenance areas. The final portion of the chapter outlined the specific

facilities of a base that have the greatest affect on the perception of appearance. These facilities include the main entrances, headquarters building, dormitories, and community centers.

III. Methodology

Overview

This chapter describes the approach and techniques used to answer two of the research questions stated in Chapter I:

1. What do Wing Commanders, Base Commanders, and BCEs feel are the aspects that are most important in defining their installation's appearance?

2. What does a sample of opinions from officer and enlisted Air Force personnel and spouses at Wright-Patterson AFB, Ohio reveal concerning the elements of facility appearance that are most important to a base population?

The first section details the population of commanders and the sample of military personnel and spouses at Wright-Patterson AFB, Ohio (WPAFB) targeted in the study. The chapter then explains how the researcher developed the data collection system used to answer these questions. The third section outlines the validation, approval, and distribution of the survey instrument. The final portion of this chapter explains the two methods used to analyze the survey responses.

Survey Population

To generate information to answer the research questions, the data collection efforts focused on gathering opinions on the elements of appearance from two different populations. The first group was the base-level commanders.

This group is comprised of Wing Commanders, Air Base Wing/Combat Support Group Commanders, and BCEs. These individuals establish the policies and direct the resources that affect appearance at each installation. Consequently, their input is essential to defining base appearance.

The second group covered a wide range of the base population, including officer and enlisted personnel, and spouses. This group is affected most by the day-to-day level of base appearance since they live and work on the installation. The rest of this portion of the methodology explains how the data was collected from each group.

Base-Level Commanders. Most Air Force bases have a senior officer in each of the three command positions. Since the total number of base-level commanders is small, the data collection targeted the entire population. Appendix D outlines the 80 CONUS active-duty Air Force bases targeted in the study. This list represents six major commands and a total of 231 individual commanders.

Base Population. To get a representative sample of a base population, the data collection was conducted at WPAFB. The author selected the organizations listed below to sample of opinions of officers, enlisted personnel, and spouses:

Officer:
Aerospace Systems Division (ASD)
Company Grade Officer Council (CGOC)

Enlisted:
2750th Logistics Squadron (AFLC)

4950th Operational Maintenance Squadron (OMS-AFSC)

Spouses:
WPAFB Officer's Wives Club

The Aerospace Systems Division Company Grade Officer Council represents more than 1,000 junior officer members. The two squadrons were primarily used to obtain enlisted opinions. The researcher selected these squadrons since they represent different major commands and are situated on opposite sides of the base. The WPAFB Officer's Wives Club has 1,650 spouse members.

Data Collection System

A survey questionnaire was developed to aid in answering the research questions. The purpose of this instrument was to reveal what elements and aspects of appearance are most important to installation commanders and the base population. To accomplish this, the instrument determined what elements affect an individual's perception of good Air Force base appearance. It also indicated the ranking of these elements by their level of importance. Since the goal of the research is to develop a management tool for the BCE, the instrument examined the appearance elements in terms of the Civil Engineering maintenance areas developed in the background review. The information collected with this instrument will provide the basis for the BCE appearance rating system.

A survey questionnaire was the appropriate way to collect data, since both populations of opinions needed to

answer the research questions are large. Copies of the cover letter and survey used for both groups are shown in Appendix E. The rest of this section will explain how the four parts of the survey were put together.

Part I: Demographic Data. The survey contained alternate demographic sections--one for commanders and one for WPAFB non-command personnel. All other sections of the survey questionnaire were identical for the two populations. The separate demographic sections were designed to reduce respondent confusion about what information was requested. The survey for commanders asked two questions to identify the individual's duty position and major command. On the other hand, the WPAFB survey required the respondents to indicate their relationship to the Air Force and whether they resided on-base.

Part II: Base Land Use Categories. This section of the survey determined which land use categories or general grouping of facilities on a base the respondents believe contribute most to appearance. Although the preliminary research revealed several specific facilities that Air Force sources consider particularly important in defining base appearance, the researcher decided to focus the study on general categories of grounds and facilities that cover the entire base. This decision was made for two reasons. First, even though the major command inspection programs give emphasis to some specific types of facilities such as

the main entrances to the base, and the base operations and headquarters buildings, they still evaluate general appearance for the entire base. Second, this approach will ensure the survey has content validity. Content validity is an essential characteristic of a sound survey, since it refers to the extent that the research instrument covers the topic under study (23:129). Validity is especially important to this study, since the objective is to define the abstract term "base appearance." To accomplish this, the research instrument included the full spectrum of base facilities and grounds. Consequently, the survey asked the respondents to evaluate eight land use categories instead of specific facilities.

The eight land use categories investigated are:

Administrative Facilities

Airfield and Aircraft Operations and Maintenance Facilities

Community Facilities

Industrial Facilities

Medical Facilities

Military Family Housing

Open/Outdoor Recreation Facilities

Unaccompanied Housing

These represent the standard land use divisions Civil Engineers use in comprehensive base planning (12:B-4-B-13). The survey determined the relative importance of the different base land use categories by having each respondent

rank order them from "1" most important to "8" least important. The categories were presented in alphabetical order to reduce the chance of survey-induced bias. In addition, four of the categories included a description to better explain and distinguish them from similar categories.

Part III: Maintenance Areas That Affect Exterior Appearance. The third portion of the survey examined the relative importance of the ten Civil Engineering maintenance areas to general base appearance. The maintenance areas used in the survey questionnaire were the same ones previously described in Chapter II. As with the land use categories, Part III of the survey listed the maintenance areas in alphabetical order and seven of them included a description. The questionnaire asked the respondents to indicate, by rank order, the relative importance of the ten maintenance areas to overall base appearance. The respondents also had the opportunity to add and then rank other maintenance areas they considered necessary for good appearance.

Part IV: Land Use Categories and Maintenance Areas Together. The final section of the survey examined the relationship of the Civil Engineering maintenance areas to each of the base land use categories. The research considered this relationship since the general ranking of the maintenance areas for overall base appearance in Part III of the survey may or may not reflect what the

respondents believe important in the specific individual land use categories. For example, a respondent may believe that the "Base Signs" maintenance area is important to overall appearance, yet at the same time, he or she may not consider it a necessary element of good appearance in a specific land use category such as "Industrial Facilities." Thus, the survey asked respondents to rate the importance of each maintenance area in relation to the individual land use categories.

The process of rating the maintenance areas in all eight of the land use categories forced Part IV to be the longest section of the survey. To reduce the chance of fatigue and boredom affecting the results, the section required the respondents to rate the maintenance areas using a "Scale of Relative Importance" instead of rank order. The scale ran in increasing degrees from "1" not important as a maintenance area to "5" critically important. Although not as revealing as a rank order preference, scales are still an effective measure of attitudes and perceptions (23:124).

The second method the researcher used to make the survey more manageable for the respondents was to cut back on the number of maintenance areas tested in several of the land use categories. For instance, the community facilities land use category evaluated only eight maintenance areas, excluding fences and lighting. Although these maintenance areas were excluded, each land use category had space for

the respondents to add and rate other maintenance areas they consider important to good appearance. Thus, the respondents could still add and evaluate all of the maintenance areas.

Survey Validation, Approval, and Distribution

To improve the validity of the research instrument, the author tested and edited the survey. The initial testing occurred on April 22, 1985 and involved 20 Graduate Engineering Management students at the Air Force Institute of Technology (AFIT). These Civil Engineering officers recommended improvements in the format of the survey and in the descriptions for some of the maintenance areas and land use categories. In addition, Captain Ben L. Dilla, a member of the AFIT faculty in behavioral studies, reviewed the cover letter and survey.

The survey was approved for distribution on May 22, 1985 by the USAF Military Personnel Center Survey Control Branch and assigned Survey Control Number 85-48. The surveys for base-level commanders were mailed on May 31, 1985. Concurrently, data collection from the WPAFB population began. The surveys for the enlisted personnel were handled over a two week period by each squadron's orderly room, while the investigator administered the survey for the officer and spouse samples during regularly scheduled organizational meetings. The sample of the WPAFB Officer's Wives Club members included two special interest

groups: the Bridge and Needle Craft Clubs. Table 3.1 shows the administration dates for all of the WPAFB surveys.

Survey Data Analysis

The analysis involved transforming the data from the individual surveys into information needed to answer the research questions. To get this information, the analysis centered on ranking the elements of appearance for both the commanders and base population. These elements were the base land use categories and the Civil Engineering maintenance areas evaluated with sections II through IV of the survey questionnaire. By ranking these elements, the analysis will reveal the amount of emphasis the land use

TABLE 3.1

WPAFB Survey Administration Dates

Organization	Date (1985)
Officer:	
ASD CGOC	June 19
Enlisted:	
2750th Logistics Squadron	June 10-26
4950th OMS	June 11-21
Spouse:	
Bridge Club	June 5
Needle Point Club	June 7

categories and maintenance areas receive in the definition of base appearance and in the BCE's rating system.

The rest of this section describes the two statistical methods used for this analysis. The first portion outlines the statistical routine used to generate rank ordered lists of the appearance elements from the individual survey responses. The second section explains the procedure devised to study the distribution of the ranked elements.

Ranking the Land Use Categories and Maintenance Areas. Parts II and III of the survey required each respondent to provide a numerical ranking to indicate his or her preference for the relative importance of the land use categories and maintenance areas. At the same time, Part IV provided a loose ranking of the maintenance areas within eacn land use category by using a five point "scale of relative importance." Thus, each respondent indicated his or her opinion of the important elements of appearance in ten separate lists (one for the land use categories, one for the maintenance areas, and eight for the maintenance areas within each land use category).

To combine the rankings from the individual surveys into a composite set of rankings representing the entire population, the analysis took a statistical approach. The median value of the various rankings of each element from all of the individual survey responses were used to determine the composite ranking of each element for the

population. Here, the median is the numerical value of the middle case of a set of data points when the data points are placed in increasing order from smallest to largest (18:14; 35:183). The median was used as the statistical measure of central tendency for ranking the elements since the survey responses represent ordinal data (23:123)

To determine the median values for 304 survey respondents, the data was entered into the AFIT Harris computer system. The Statistical Package for the Social Studies (SPSS) program was used to manipulate this data. The SPSS subprogram "Frequencies" generated the composite median values for each appearance element. Then, the author ranked the elements from the highest composite median value to the lowest for each of the ten lists.

Method to Categorize the Lists. Once the composite lists of appearance elements had been ranked, the next step was to divide each of the ten lists of commander and base population opinions into categories. Although every element has an impact on base appearance regardless of its ranking, categorizing provided a way of emphasizing groups of elements in the definition of appearance and in the BCE's rating system. The three classifications of appearance elements are 1) Very Important, 2) Moderately Important, and 3) Important.

In order to categorize each of the ten lists of elements, the analysis studied the distribution of the

median values used originally to rank the individual elements. An application of Guilford's normalized-rank method of scaling ordinal values was used to divide the elements in each list into the three classifications of importance to base appearance. This technique involved finding the arithmetic mean or average of the median values for the ranked elements in each of the lists and then using one standard of deviation on either side of this average to set the bounds for the cutoff between categories (29:181,182). Generally, this method places the middle two-thirds of the ranked elements in the "moderately important" category and the other one-third distributed evenly in the top and bottom categories (18:145).

The major assumption behind this approach was that the median values of each of the elements are normally distributed. Devore, in his text Probability and Statistics for Engineering and the Sciences, notes that "even when individual variables themselves are not normally distributed, sums and averages of the variables will under suitable conditions have approximately a normal distribution" (18:139). In addition, Guilford states that attitudes are generally normally distributed (29:181). Since both conditions apply to this study, the normality assumption was supported.

IV. Data Analysis

Overview

Chapter IV presents a description of the data and the definition of base appearance. The analysis section shows the tabulated responses from the major demographic divisions within the survey population. The analysis leads to a composite opinion of the ranking of the various land use categories and maintenance areas by their affect on appearance. These elements are then classified into three level of importance and form the basis of the definition of Air Force base appearance.

Survey Analysis

This section presents the analyzed opinions of 304 respondents. The analysis concentrates on the two main divisions of the survey population: 1) all base-level commanders, and 2) the total WPAFB sample. Appendix F contains a more detailed breakdown of the analyzed data. The analyzed responses are shown in the same sequence as the layout of the survey: 1) Demographic Data, 2) Base Land Use Categories, 3) Maintenance Areas That Affect Exterior Appearance, and 4) Land Use Categories and Maintenance Areas Together. The analysis of the land use categories and maintenance areas are presented in two tables for each section. The first table shows the median value of the ranking given each element by both divisions of the survey

population. This table also includes the mean (x) and the sample standard of deviation (s) for the elements. This information is used later in this chapter to classify the elements of appearance for defining base appearance and in Chapter V to develop the BCE's appearance rating system. The second table in each section displays the relative ranking of the appearance elements.

Demographic Data. Respondent demographic information is shown in Tables 4.1 through 4.3. The survey mailed to base-level commanders had a 75.3 percent return rate for a total of 174 responses. The data collection for the WPAFB sample yielded 130 completed questionnaires.

TABLE 4.1

Return Rate of Commander Survey by Position

Position	Number Distributed	Number Returned	Percent
Wing Commander	76	54	71.1
Base Commander	80	59	73.8
Base Civil Engineer	75	61	81.3
Total	231	174	75.3

TABLE 4.2

Return Rate of Commander Survey by Major Command

Major Command	Number Distributed	Number Returned	Percent
AFLC	17	8	47.1
AFSC	11	8	72.7
ATC	39	31	79.5
MAC	38	31	81.6
SAC	72	53	73.6
TAC	54	43	79.6
Total	231	174	75.3

TABLE 4.3

Respondents from the WPAFB Sample

Position	Number Returned
E-1 to E-3	30
E-4 to E-6	45
E-7 to E-9	8
Officers	22
Spouses	25
Total	130

Base Land Use Categories. This section reports the level of importance and the relative ranking of the base land use categories by their affect on overall appearance. Table 4.4 shows the median value of the rank ordered land use categories for the commanders and the WPAFB sample.

TABLE 4.4

*Median Value of the Ranking of Base Land Use Categories

Land Use Category	All Commanders	WPAFB Sample
Administrative Facilities	1.287	2.885
Airfield and Aircraft Operations and Maintenance	5.500	4.031
Community Facilities	2.450	3.500
Industrial Facilities	6.840	6.983
Medical Facilities	5.608	3.058
Military Family Housing	3.321	2.957
Open/Outdoor Recreation Areas	6.407	5.741
Unaccompanied Housing	4.944	6.219
	$\bar{X}$ = 4.545	$\bar{X}$ = 4.422
	S = 1.980	S = 1.643

*Note: These numbers represent the median ranking of the particular land use category by its importance to overall base appearance (1.000 is the highest ranking and 8.000 is the lowest).

Table 4.5 presents the relative ranking of the land use categories. The commanders and WPAFB sample placed three of the eight land use categories in the same relative positions: administrative facilities first, airfield and aircraft operations and maintenance fifth, and industrial facilities last. There were only two major differences in the sequence of the rankings given by the commanders and the WPAFB sample. The commanders rated unaccompanied housing fourth, three levels higher than the WPAFB sample. They also ranked medical facilities sixth or three levels lower than the base population.

TABLE 4.5

Relative Ranking of the Base Land Use Categories

Land Use Category	Commanders	WPAFB Sample
Administrative Facilities	1	1
Airfield and Aircraft Operations and Maintenance	5	5
Community Facilities	2	4
Industrial Facilities	8	8
Medical Facilities	6	3
Military Family Housing	3	2
Open/Outdoor Recreation Areas	7	6
Unaccompanied Housing	4	7

Maintenance Areas That Affect Exterior Appearance.

Tables 4.6 and 4.7 present the findings of the relationship of the ten maintenance areas to overall base appearance. Table 4.6 lists the median value of the ranking of each area from the commanders and WPAFB sample. Six of the

TABLE 4.6

*Median Value of the Ranking of the Maintenance Areas

Maintenance Area	All Commanders	WPAFB Sample
Base Signs	5.306	6.400
Clutter	5.048	6.684
Exterior Maintenance	3.197	3.200
Exterior Paint	2.326	4.143
Fences	8.000	8.000
Grounds Maintenance	2.000	3.306
Landscaping	4.629	4.000
Lighting	9.476	6.682
Parking Lots	8.163	6.696
Pavements	6.658	5.393
	$\overline{X}$ = 5.480	$\overline{X}$ = 5.450
	S = 2.563	S = 1.682

*Note: These numbers represent the median ranking of the particular maintenance area by its importance to overall base appearance (1.000 is the highest ranking and 10.000 is the lowest).

respondents included and ranked additional maintenance areas in their surveys. However, all of these suggestions were already included in the general description of the ten listed maintenance areas.

Table 4.7 shows the relative ranking of the maintenance areas. The top four areas that affect appearance base-wide for both groups are grounds maintenance, exterior paint, exterior maintenance, and landscaping.

TABLE 4.7

Relative Ranking of the Maintenance Areas

Maintenance Area	Commanders	WPAFB Sample
Base Signs	6	6
Clutter	5	8
Exterior Maintenance	3	1
Exterior Paint	2	4
Fences	8	10
Grounds Maintenance	1	2
Landscaping	4	3
Lighting	10	7
Parking Lots	9	9
Pavements	7	5

Land Use Categories and Maintenance Areas Together. This portion of the data analysis shows the relative importance of the maintenance areas to appearance in each of the land use categories. Tables 4.8 through 4.23 list the median values and the relative ranking of the maintenance areas within the eight land use categories for the commanders and the WPAFB sample.

In general, the analysis revealed that the maintenance areas for each of the eight land use categories are ranked in a similar sequence to the way they were rated for general base appearance. The top areas in most of the eight land use categories were exterior maintenance, grounds maintenance, and exterior paint. On the other end of the scale, base signs and fences were usually rated near the bottom.

Airfield and aircraft operations and maintenance was the only land use category that had a significantly different ordering of the maintenance areas. In this category, the condition of the pavements and lighting were rated as one and three in their affect on appearance.

Lighting was the only maintenance area to receive substantially different rankings from the commanders and the WPAFB sample for most of the land use categories. The commanders generally rated lighting lower than most maintenance areas, while the base population rated it first or third in five of the eight categories.

Sixteen of the respondents included additional maintenance areas for several of the land use categories. Most of these suggestions were already included as part of the general description for one of the given maintenance areas. Those that were new areas are discussed with the particular land use category they affect.

Tables 4.8 and 4.9 present the median values and relative rankings of the maintenance areas based on their importance to appearance for the administrative facilities. For the most part, the commander and WPAFB respondents agreed on the sequence of rankings for the maintenance areas. The highest rated areas were grounds maintenance, exterior paint, and exterior maintenance. One Wing Commander in Air Force Systems Command indicated that the condition of the flag pole and associated equipment was also critically important to appearance for a headquarters building.

TABLE 4.8

*Median Value of the Ranking of the Maintenance Areas to Administrative Facilities

Maintenance Area	All Commanders	WPAFB Sample
Base Signs	3.585	3.082
Clutter	3.773	3.123
Exterior Maintenance	4.557	3.774
Exterior Paint	4.672	3.583
Fences	2.858	2.795
Grounds Maintenance	4.738	4.053
Landscaping	3.953	3.696
Lighting	2.453	3.543
Parking Lots	2.980	3.365
Pavements	3.377	3.560
	$\bar{X}$ = 3.695	$\bar{X}$ = 3.457
	S = 0.798	S = 0.372

*Note: These numbers represent the median ranking of the particular maintenance area by its importance to overall base appearance (1.000 is the highest ranking and 10.000 is the lowest).

TABLE 4.9

Relative Ranking of the Maintenance Areas

to Administrative Facilities

Maintenance Area	Commanders	WPAFB Sample
Base Signs	6	9
Clutter	5	8
Exterior Maintenance	3	2
Exterior Paint	2	4
Fences	9	10
Grounds Maintenance	1	1
Landscaping	4	3
Lighting	10	6
Parking Lots	8	7
Pavements	7	5

Tables 4.10 and 4.11 show that the condition of the airfield surfaces and surrounding streets have the greatest impact on appearance in the airfield operations portion of a base. In addition, grounds maintenance and lighting also play a significant role. The main areas of disagreement were lighting, fences, and parking lots. The WPAFB personnel put much more emphasis on these areas than did the commanders.

TABLE 4.10

*Median Value of the Ranking of the Maintenance Areas to Airfield and Aircraft Operations and Maintenance

Maintenance Area	All Commanders	WPAFB Sample
Base Signs	3.380	3.189
Clutter	3.836	3.269
Exterior Maintenance	4.241	3.344
Exterior Paint	4.169	3.104
Fences	3.017	3.547
Grounds Maintenance	4.468	3.938
Landscaping	3.115	3.070
Lighting	3.780	4.554
Parking Lots	3.104	3.365
Pavements	4.188	4.362
	$\bar{X}$ = 3.730	$\bar{X}$ = 3.574
	S = 0.540	S = 0.530

*Note: These numbers represent the median ranking of the particular maintenance area by its importance to overall base appearance (1.000 is the highest ranking and 10.000 is the lowest).

TABLE 4.11

Relative Ranking of the Maintenance Areas

to Airfield and Aircraft Operations and Maintenance

Maintenance Area	All Commanders	WPAFB Sample
Base Signs	7	8
Clutter	5	7
Exterior Maintenance	2	6
Exterior Paint	4	9
Fences	10	4
Grounds Maintenance	1	3
Landscaping	8	10
Lighting	6	1
Parking Lots	9	5
Pavements	3	2

The most important maintenance areas for the community facilities are grounds maintenance, exterior paint, exterior maintenance, and landscaping. For the most part, Tables 4.12 and 4.13 show that the commanders and the WPAFB sample have similar opinions on the ranking of these maintenance areas. Four of the spouse respondents and one Air Training Command Base Commander also added the lighting maintenance area and rated it critically important to the perception of good appearance.

TABLE 4.12

*Median Value of the Ranking of the Maintenance Areas

To Community Facilities

Maintenance Area	All Commanders	WPAFB Sample
Base Signs	3.844	3.284
Clutter	3.986	3.447
Exterior Maintenance	4.568	3.972
Exterior Paint	4.609	3.848
Grounds Maintenance	4.663	4.050
Landscaping	4.062	3.830
Parking Lots	3.516	3.826
Pavements	3.548	3.786
	$\bar{X}$ = 4.100	$\bar{X}$ = 3.755
	S = 0.466	S = 0.259

*Note: These numbers represent the median ranking of the particular maintenance area by its importance to overall base appearance (1.000 is the highest ranking and 10.000 is the lowest).

TABLE 4.13

Relative Ranking of the Maintenance Areas

to Community Facilities

Maintenance Area	All Commanders	WPAFB Sample
Base Signs	6	8
Clutter	5	7
Exterior Maintenance	3	2
Exterior Paint	2	3
Grounds Maintenance	1	1
Landscaping	4	4
Parking Lots	8	5
Pavements	7	6

Tables 4.14 and 4.15 present the rankings of the maintenance areas for the industrial facilities. The highest rated areas were exterior maintenance, exterior paint, grounds maintenance, and lighting. However, there was a large difference in the order of rankings between the commanders and the base population. In particular, the WPAFB respondents ranked lighting and parking lots in the top two positions, while the commanders rated them seventh and ninth.

TABLE 4.14

*Median Value of the Ranking of the Maintenance Areas to Industrial Facilities

Maintenance Area	All Commanders	WPAFB Sample
Base Signs	3.213	2.917
Clutter	3.673	3.088
Exterior Maintenance	4.375	3.364
Exterior Paint	4.398	3.112
Fences	3.191	3.013
Grounds Maintenance	4.134	3.330
Landscaping	3.368	2.833
Lighting	3.263	3.802
Parking Lots	3.196	3.526
Pavements	3.457	3.405
	$\bar{X}$ = 3.627	$\bar{X}$ = 3.239
	S = 0.493	S = 0.300

*Note: These numbers represent the median ranking of the particular maintenance area by its importance to overall base appearance (1.000 is the highest ranking and 10.000 is the lowest).

TABLE 4.15

Relative Ranking of the Maintenance Areas

to Industrial Facilities

Maintenance Area	All Commanders	WPAFB Sample
Base Signs	8	9
Clutter	4	7
Exterior Maintenance	2	4
Exterior Paint	1	6
Fences	10	8
Grounds Maintenance	3	5
Landscaping	6	10
Lighting	7	1
Parking Lots	9	2
Pavements	5	3

Like the industrial facilities, the maintenance areas for the medical facilities received a different sequence of rankings from the commanders and the WPAFB personnel. Tables 4.16 and 4.17 reveal that the WPAFB sample rated parking lots and pavements first and second. However, the commanders ranked the same areas seventh and eighth. Overall, the maintenance areas that most affected the on appearance for medical facilities were exterior maintenance, grounds maintenance, and exterior paint. In addition, four

spouses and one Strategic Air Command Base Commander indicated that the lighting maintenance area was critically important to good appearance.

TABLE 4.16

*Median Value of the Ranking of the Maintenance Areas to Medical Facilities

Maintenance Area	All Commanders	WPAFB Sample
Base Signs	3.642	4.024
Clutter	3.814	3.538
Exterior Maintenance	4.574	3.934
Exterior Paint	4.530	3.667
Grounds Maintenance	4.493	3.837
Landscaping	3.919	3.591
Parking Lots	3.623	4.667
Pavements	3.538	4.098
	$\bar{X}$ = 4.017	$\bar{X}$ = 3.920
	S = 0.443	S = 0.364

*Note: These numbers represent the median ranking of the particular maintenance area by its importance to overall base appearance (1.000 is the highest ranking and 10.000 is the lowest).

TABLE 4.17

Relative Ranking of the Maintenance Areas

to Medical Facilities

Maintenance Area	All Commanders	WPAFB Sample
Base Signs	6	3
Clutter	5	8
Exterior Maintenance	1	4
Exterior Paint	2	6
Grounds Maintenance	3	5
Landscaping	4	7
Parking Lots	7	1
Pavements	8	2

Tables 4.18 and 4.19 show the relative ranking of the maintenance areas for Military Family Housing. The most important areas were exterior maintenance, exterior paint, grounds maintenance, and landscaping. Unlike the medical and industrial land use categories, the commanders and WPAFB sample rated most of the maintenance areas in approximately the same sequence. However, there was significant disagreement in the relative importance of lighting. The commanders rated it eighth, while the base population felt it was the third most important maintenance area.

TABLE 4.18

*Median Value of the Ranking of the Maintenance Areas to Military Family Housing

Maintenance Area	All Commanders	WPAFB Sample
Base Signs	3.193	3.091
Clutter	4.108	3.852
Exterior Maintenance	4.716	4.456
Exterior Paint	4.651	4.375
Fences	3.500	3.527
Grounds Maintenance	4.668	4.295
Landscaping	4.151	4.065
Lighting	3.262	4.364
Pavements	3.658	4.000
	$\overline{X}$ = 3.990	$\overline{X}$ = 4.003
	S = 0.610	S = 0.453

*Note: These numbers represent the median ranking of the particular maintenance area by its importance to overall base appearance (1.000 is the highest ranking and 10.000 is the lowest).

TABLE 4.19

Relative Ranking of the Maintenance Areas

to Military Family Housing

Maintenance Area	All Commanders	WPAFB Sample
Base Signs	9	9
Clutter	5	7
Exterior Maintenance	1	1
Exterior Paint	3	2
Fences	7	8
Grounds Maintenance	2	4
Landscaping	4	5
Lighting	8	3
Pavements	6	6

In the open/recreational portions of a base the top ranked maintenance areas were grounds maintenance, landscaping, clutter, and lighting. Tables 4.20 and 4.21 reveal that both subsets of the survey population rated all of the areas with a similar sequence.

TABLE 4.20

*Median Value of the Ranking of the Maintenance Areas to Open/Outdoor Recreation Areas

Maintenance Area	All Commanders	WPAFB Sample
Base Signs	3.382	3.078
Clutter	3.930	3.878
Fences	3.345	3.213
Grounds Maintenance	4.724	4.356
Landscaping	4.175	4.054
Lighting	3.618	3.964
Parking Lots	3.398	3.554
Pavements	3.257	3.510
	$\bar{X}$ = 3.729	$\bar{X}$ = 3.701
	S = 0.513	S = 0.437

*Note: These numbers represent the median ranking of the particular maintenance area by its importance to overall base appearance (1.000 is the highest ranking and 10.000 is the lowest).

TABLE 4.21

Relative Ranking of the Maintenance Areas

to Open/Outdoor Recreation Areas

Maintenance Area	All Commanders	WPAFB Sample
Base Signs	7	8
Clutter	3	4
Fences	6	7
Grounds Maintenance	1	1
Landscaping	2	2
Lighting	4	3
Parking Lots	5	5
Pavements	8	6

Tables 4.22 and 4.23 indicate the relative ranking of the maintenance areas for appearance in unaccompanied housing. The highest rated areas were exterior maintenance, exterior paint, grounds maintenance, landscaping. As in Military Family Housing, the only significant difference in the rankings occurred in the lighting maintenance area. The commanders rated lighting eighth, while the WPAFB sample rated it third in relative importance to appearance.

TABLE 4.22

*Median Value of the Ranking of the Maintenance Areas to Unaccompanied Housing

Maintenance Area	All Commanders	WPAFB Sample
Base Signs	3.250	3.098
Clutter	3.795	3.380
Exterior Maintenance	4.600	3.988
Exterior Paint	4.621	3.917
Grounds Maintenance	4.636	3.878
Landscaping	3.952	3.622
Lighting	3.317	3.894
Parking Lots	3.638	3.803
Pavements	3.381	3.488
	$\bar{X}$ = 3.910	$\bar{X}$ = 3.674
	S = 0.577	S = 0.300

*Note: These numbers represent the median ranking of the particular maintenance area by its importance to overall base appearance (1.000 is the highest ranking and 10.000 is the lowest).

TABLE 4.23

Relative Ranking of the Maintenance Areas

to Unaccompanied Housing

Maintenance Area	All Commanders	WPAFB Sample
Base Signs	9	9
Clutter	5	8
Exterior Maintenance	3	1
Exterior Paint	2	2
Grounds Maintenance	1	4
Landscaping	4	6
Lighting	8	3
Parking Lots	6	5
Pavements	7	7

Defining Air Force Base Appearance

The survey analysis section generated rank ordered lists of the land use categories and maintenance areas by their importance to base appearance. This portion of the data analysis further classifies the lists using the technique outlined in the methodology. These elements of appearance will then be in the proper format for defining base appearance and designing the BCE's appearance rating system.

Classifying the Appearance Elements. All of the land use categories and maintenance areas evaluated in the study have an important impact on the perception of appearance. However, to make it easier to understand and define the term "base appearance," the analysis must classify the elements into categories depending on their relative importance. The researcher elected to use three classifications: 1) Very Important, 2) Important, and 3) Moderately Important.

The appearance elements for both the commanders and WPAFB sample were divided into the classifications using the mean (x) and the sample standard of deviation (s) of the median values for each of the ten groups of elements. The appearance elements whose median values fell within one standard of deviation of the mean were included in the "Important" category, while those above and below were placed in the "Very Important" or "Moderately Important" categories. This method enabled the lists to be classified as shown in Tables 4.24 through 4.33. The lists of land use categories (Table 4.24) and maintenance areas (Table 4.25) will be used to define base appearance.

TABLE 4.24

Classification of the Land Use Categories

Classification	Commanders	WPAFB Sample
Very Important	Administrative Facilities Community Facilities	
Important	Military Family Housing Unaccompanied Housing Airfield and Aircraft Ops and Maintenance Medical Facilities Open/Outdoor Recreation Areas	Administrative Facilities Military Family Housing Medical Facilities Community Facilities Airfield and Aircraft Ops and Maintenance Open/Outdoor Recreation Areas
Moderately Important	Industrial Facilities	Unaccompanied Housing Industrial Facilities

TABLE 4.25

Classification of the Maintenance Areas

Classification	Commanders	WPAFB Sample
Very Important	Grounds Maintenance Exterior Paint	Exterior Maintenance Grounds Maintenance
Important	Exterior Maintenance Landscaping Clutter Base Signs Pavements *Fences*	Landscaping Exterior Paint Pavements Base Signs Lighting Clutter Parking Lots
Moderately Important	Parking Lots Lighting	Fences

Defining Base Appearance. From the results of the data analysis, exterior appearance for Air Force installations is defined as: A sense impression stimulated by the perceived aesthetic quality of the base facilities and grounds. This perception is influenced by both the type or category of the facilities in view and the perceived level of upkeep or maintenance of the facilities themselves.

For the commanders, administrative and community facilities have the greatest affect on creating the impression of overall base appearance. The administrative areas include the base entrances, the headquarters building, and the office areas that serve military personnel, while community facilities are the base exchange and Morale Welfare and Recreation complexes that meet dependent and off-duty military needs. Other categories of facilities that have an important affect on the perception of appearance are the portions of a base that serve and house military dependents, the medical facilities, the barracks, and recreational areas. The industrial facilities, such as the base warehouses and plants, have the least affect on a commander's impression of appearance. Generally, a typical base population shares the same views as commanders on the relative importance of the land use categories to base appearance.

The perception of appearance is also created by the level of upkeep for base facilities and grounds. The

foremost maintenance areas that affect appearance for commanders are the condition of the base grounds, the architectural style and compatability of the painting scheme, and the maintenance of the buildings' exterior fixtures. Other maintenance areas that affect overall appearance are the quality of the landscaping, the effectiveness of concealing open storage areas, trash containers, and utility systems, the base sign program, and the condition of the streets and sidewalks. The least important areas are the parking lots, the fences, and base lighting system. Again, the base population tends to agree with commanders on the importance of these maintenance areas to appearance. However, they put much more emphasis on the benefits of a lighting system for good base appearance at night.

Classifying the Lists of Maintenance Areas for Rating Base Appearance. The lists of maintenance areas within each of the eight land use categories will be used in Chapter V to design the BCE's Base and Facility Appearance Rating System. The elements are shown in Tables 4.26 through 4.33.

TABLE 4.26

Classification of the Maintenance Areas

for Administrative Facilities

Classification	Commanders	WPAFB Sample
Very Important	Grounds Maintenance Exterior Paint Exterior Maintenance	Grounds Maintenance
Important	Landscaping Clutter Base Signs Pavements Parking Lots	Exterior Maintenance Landscaping Exterior Paint Pavements Lighting Parking Lots Clutter
Moderately Important	Fences Lighting	Base Signs Fences

TABLE 4.27

Classification of the Maintenance Areas

for Airfield and Aircraft Operations and Maintenance

Classification	Commanders	WPAFB Sample
Very Important	Grounds Maintenance	Lighting Pavements
Important	Exterior Maintenance Pavements Exterior Paint Clutter Lighting Base Signs	Grounds Maintenance Fences Parking Lots Exterior Maintenance Clutter Base Signs Exterior Paint Landscaping
Moderately Important	Landscaping Parking Lots Fences	

TABLE 4.28

Classification of the Maintenance Areas

for Community Facilities

Classification	Commanders	WPAFB Sample
Very Important	Grounds Maintenance Exterior Paint Exterior Maintenance	Grounds Maintenance
Important	Landscaping Clutter Base Signs	Exterior Maintenance Exterior Paint Landscaping Parking Lots Pavements
Moderately Important	Pavements Parking Lots	Base Signs Clutter

TABLE 4.29

Classification of the Maintenance Areas

for Industrial Facilities

Classification	Commanders	WPAFB Sample
Very Important	Exterior Paint Exterior Maintenance Grounds Maintenance	Lighting
Important	Clutter Pavements Landscaping Lighting Base Signs Parking Lots Fences	Parking Lots Pavements Exterior Maintenance Grounds Maintenance Exterior Paint Clutter Fences
Moderately Important		Base Signs Landscaping

TABLE 4.30

Classification of the Maintenance Areas

for Medical Facilities

Classification	Commanders	WPAFB Sample
Very Important	Exterior Maintenance Exterior Paint Grounds Maintenance	Parking Lots
Important	Landscaping Clutter Base Signs Parking Lots	Pavements Base Signs Exterior Maintenance Grounds Maintenance Exterior Paint Landscaping
Moderately Important	Pavements	Clutter

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UNCLASSIFIED SEP 85 AFIT/GEM/LSM/85S-11 F/G 5/3 NL

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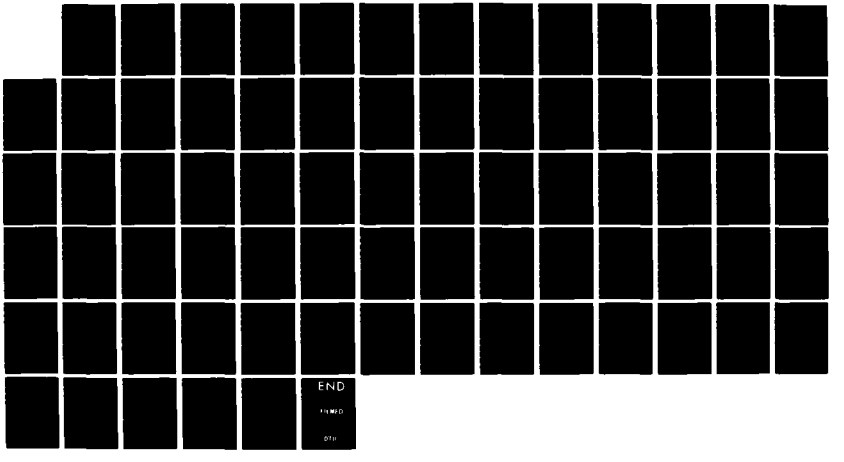

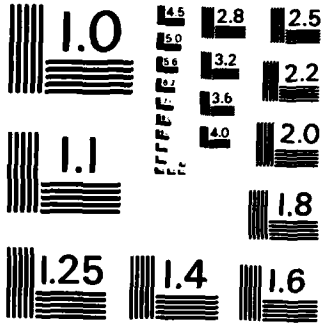

TABLE 4.31

Classification of the Maintenance Areas

for Military Family Housing

Classification	Commanders	WPAFB Sample
Very Important	Exterior Maintenance Grounds Maintenance Exterior Paint	Exterior Maintenance
Important	Landscaping Clutter Pavements Fences	Exterior Paint Lighting Grounds Maintenance Landscaping Pavements Clutter
Moderately Important	Lighting Base Signs	Fences Base Signs

TABLE 4.32

Classification of the Maintenance Areas

for Open/Outdoor Recreation Areas

Classification	Commanders	WPAFB Sample
Very Important	Grounds Maintenance	Grounds Maintenance
Important	Landscaping Clutter Lighting Parking Lots Fences Base Signs Pavements	Landscaping Lighting Clutter Parking Lots Pavements
Moderately Important		Fences Base Signs

TABLE 4.33

Classification of the Maintenance Areas

for Unaccompanied Housing

Classification	Commanders	WPAFB Sample
Very Important	Grounds Maintenance Exterior Paint Exterior Maintenance	Exterior Maintenance
Important	Landscaping Clutter Parking Lots Pavements	Exterior Paint Lighting Grounds Maintenance Parking Lots Landscaping Pavements Clutter
Moderately Important	Lighting Base Signs	Base Signs

V. Rating System Development and Further Research

Overview

This final chapter applies the primary and secondary thesis research to develop the Base and Facility Appearance Rating System. The chapter begins by describing the approach taken to design the system. Next, it details the development of the questions and the rating scale for the survey. A section also explains four steps the BCE should follow to tailor and properly implement the rating system. This section also includes an example of a possible Wing Commander survey. The chapter concludes with several recommendations for further research on Air Force base appearance.

Approach to Developing the Rating System

This section outlines the basic approach the researcher followed to develop the appearance rating system. It explains the objectives behind the system and describes the underlying design concepts.

Objectives. There are two main objectives for the BCE's Base and Facility Appearance Rating System. The first is for the system to periodically determine how the commanders and the base population feel about the level of appearance at their installation. This information will serve as a point-in-time rating for appearance and provide specific feedback on the areas the BCE should improve.

The second objective is for the BCE to be able to use the results of the rating program as a subjective indicator of performance. In order for the system to do this, each installation must be able to use the results to establish an on-going data base. Over time, this data base will form a standard by which the BCE can compare current results to measure performance.

Design Concepts. The objectives dictated the approach the researcher used to develop the rating system. In order to rate appearance, the system must be designed as a survey with questions that measure the level of satisfaction with the important elements of base appearance. This survey approach will make it possible to collect information concerning the opinions and expectations from a large number of respondents (38:125).

For the rating system to indicate civil engineering's performance, it must evaluate these perceptions of appearance with respect to specific CE services and responsibilities. The background review examined the CE activities Air Force sources cited as having the greatest affect on appearance and grouped them into ten maintenance areas. For example, the grounds maintenance area is made up of a number of CE services necessary to keep the base grounds looking good. These services include activities to maintain the lawns and trees, and police trash. The rating system can best evaluate appearance by measuring people's

opinion of how well CE is performing these individual activities. Thus, the basic concept of the rating system is to provide a set of questions that evaluate the specific activities that affect base appearance in each of the ten maintenance areas.

To help better apply these sets of questions, the Data Analysis chapter provided information on which maintenance areas are most important to commanders and a typical base population for good appearance in each land use category. The Guidelines section of this chapter provides more information on using the thesis research to select questions. Thus, the BCE has guidance for determining which sets of maintenance area questions to include on the survey. At the same time, the BCE also has flexibility to tailor the survey to emphasize certain maintenance areas depending on local conditions, concerns of the commanders, or MAJCOM appearance policies.

Appearance Rating System

The format of the Base and Facility Appearance Rating System is designed to make it easy to implement and to enhance the BCE's flexibility with the program. The system is presented as a complete package that can be entered into a word processing system or programmed into CE's new Work Information Management System (WIMS).

The following section describes the rating system package. It includes a suggested method for introducing the

survey, the questions developed from the Background Review for the ten maintenance areas and a rating scale for the respondents to indicate their opinions.

Survey Introduction. Each rating questionnaire should have a cover letter to explain the purpose of the survey and encourage the respondent to fill it out (41:216,217). One possible example of a cover letter is:

> Your Civil Engineering Squadron wants to provide you with a quality living and working environment. How you feel about the outside appearance of our base facilities and grounds is an important part of this environment. Thus, we would like for you to take a few minutes to let us know your opinion of the level of appearance of our base.
>
> The following questionnaire allows you to rate selected aspects of base appearance the Civil Engineering Squadron can control. Although we cannot change everything, we can consider your opinion when planning and performing maintenance work on our grounds and facilities.
>
> Please fill out this short questionnaire. Indicate your opinion using the five-point rating scale and feel free to add any other comments. Your responses will remain anonymous. Thanks for your support!
>
> Sincerely,
>
> Base Civil Engineer

The introduction should also include a set of demographic questions to track the date the survey was administered and the position of the respondent. The format of this section will vary depending on the number of different population groups selected for a particular survey.

Rating System Questions. This portion of the rating system lists the sets of survey questions to measure appearance in each of the ten CE maintenance areas.

Base Signs. The recommended questions for the base signs maintenance area concern two topics: the actual condition of the signs and the professional image they impart to visitors and the base population.

How do you rate:

1) The level of maintenance of base signs?

2) The effectiveness of the directional information the signs provide to the base population and visitors?

3) The ability of the signs to clearly distinguish an organization's facility and indicate building entrances?

4) The quality of the signs for projecting a professional base image?

"Clutter." This maintenance area deals with CE's effectiveness in concealing open storage areas and other activities that detract from orderly appearance. The rating questions determine people's opinions of how well cluttered areas are masked.

How do you feel about Civil Engineering's effectiveness in:

1) Screening outside storage areas and loading docks that might detract from orderly appearance?

2) Using paint to tone-down or landscape and building features to hide large utility systems such as steam lines, air conditioning units, and electrical distribution systems?

3) Locating and concealing refuse containers from prominent view?

Exterior Maintenance. This maintenance area refers to the state of repair of each facility's siding, paint and exterior fixtures. The condition of these items

not only affects appearance, but also reflects on the BCE's stewardship of public property. Thus, the questions rate the perceived level of upkeep for building exteriors.

What is your impression of:

1) The condition of facility roofing, siding and exterior finishes for enhancing good appearance?

2) The level of maintenance of outside doors, screens, gutters, etc. for projecting an image of proper maintenance?

Exterior Paint. The color scheme of each facility can coordinate it with other buildings and allow the base to fit in well with the natural environment. Questions for this maintenance area measure satisfaction with the aesthetic appeal of the base master paint plan.

How do you feel about:

1) The color and tone of paint used on the facilities?

2) The paint scheme's ability to unify and coordinate the facilities and integrate the base with the natural environment?

Fences. Because fences are a prominent part of a base's security system, their condition affects the perception of appearance. The CE organization is responsible for maintaining the base fence lines. This responsibility includes painting and repairing the fence system, as well as controlling the grass and policing trash from the fence boundaries. The rating system's questions evaluate CE's performance of routine fence maintenance.

How do you feel about:

1) The state of repair of the base fences?

2) Civil Engineering's ability to keep grass and trash removed from the fence lines?

Grounds Maintenance. This maintenance area involves a number of CE activities that maintain and improve base grounds and open areas. The questions focus on the seasonal care and condition of the trees and grass.

What is your opinion of:

1) The condition of the trees and shrubs?

2) Civil Engineering's performance in mowing and edging the grass?

3) The effectiveness of the irrigation, fertilizing and herbicide programs to yield attractive grounds?

4) The efforts to remove leaves and police trash from the grounds and open areas?

5) The level of maintenance of the drainage ditches?

Landscaping. The aesthetic quality of the base improved grounds can accentuate appearance and project a professional image. To evaluate this maintenance area, the rating system measures the quality of the landscaping.

How do you rate:

1) The general quality of the landscaping?

2) The use of landscape features to high light parks, memorials and other key areas of the base?

Lighting. The lighting maintenance area contributes to appearance by providing visual character and a sense of orientation for the base at night. The rating

system considers both the routine maintenance and aesthetic appeal of the lighting system.

What is your impression of:

1) The level of upkeep for the lighting system?

2) The ability of the lighting system to enhance the appearance of key areas and facilities of the base at night?

3) The ability of the lighting system to provide a balanced sense of unity for the base?

Parking Lots. There are a number of distinct CE activities that affect the parking lots maintenance area. These activities involve the functions needed to sustain the surfaces of the lots, as well as the aesthetic qualities of the parking areas themselves. Thus, the proposed questions target both of these aspects of appearance.

How do you rate:

1) The state of repair of the parking lot surfaces and curbs?

2) The condition of the painted parking lot stripes?

3) Civil Engineering's efforts to remove trash and debris from the parking areas?

4) The impression made by the of the layout of the base parking systems for orderly appearance?

5) Civil Engineering's performance in making large parking lots compatible with the natural environment?

Pavements. This maintenance area requires many of the same activities as those performed for parking lots, only on a larger scale. The rating system questions concern the condition of the street surfaces and traffic flow.

What is your impression of:

1) The level of upkeep of the road surfaces and shoulders?

2) The condition of the traffic markings?

3) The cleanliness of the streets and gutters?

4) Civil Engineering's performance in laying out the streets to control traffic flow?

Rating Scale. The survey must include a scale below each question for the respondent to indicate his or her opinion of CE's performance. A numerical rating scale will allow an individual respondent to choose among various degrees of opinion and at the same time, quantify the intensity of the attitude for analysis (37:190). The proposed rating system uses a five-point scale:

Dislike Very Much		Satisfied		Like Very Much	If the rating is less than satisfactory please specify where:
1	2	3	4	5	_____

Beside the scale is space for the respondent to specify where on the base CE's performance has been less than satisfactory for the given maintenance activity. This information will pin-point the areas of base appearance the BCE should improve.

Guidelines for Implementation

There are four steps the BCE snould follow to prepare a survey for a particular group of respondents. These steps involve decisions concerning the type of information the BCE

needs to obtain with the rating system. This section outlines the four step procedure and illustrates the design of one possible survey for a Wing Commander.

1) The first step in the decision process is for the BCE to determine whose opinion he or she wants to collect and how often. The choice can range from an individual commander to varying sections of the base population. How often the BCE polls the commanders or a particular group of the base population will depend on a number of local factors. Thus, each CE organization must establish its own policy for selecting the type of respondent and the frequency the survey is administered. The BCE can include this policy in the rating system package as a calendar of survey administration dates. This schedule will ensure the BCE has an on-going appearance rating program.

2) Once the BCE chooses a particular group of respondents, the process shifts to tailoring the survey to focus on the maintenance activities that are most important to this group's perception of base appearance. Thus in the second step, the BCE determines which land use categories of the base the survey will investigate. The Data Analysis chapter determined the relative importance of the eight land use categories to base appearance. The BCE can use Tables 4.24, F.1 and F.11 for guidance in selecting the top land use categories based on a respondents position or major command. From these tables, the BCE may pick the top ranked

land use categories or any mix that will periodically cover the entire base.

3) Next, the BCE decides which maintenance areas are most critical to appearance in the selected land use categories. The Data Analysis chapter also provides information to help the BCE make this decision. Tables 4.26 to 4.33, F.3 to F.10 and F.13 to F.20 display the relative importance of the maintenance areas for appearance in the eight land use categories by position and major command. Again, the BCE can emphasize a mix of maintenance areas in the survey, realizing that appearance for some of the maintenance areas can change quickly over time.

4) The last step involves copying and merging the various sets of maintenance area questions to form the actual survey. Base Reproduction can duplicate the survey and then, the CE organization can distribute it to the desired population.

Example. This section illustrates the decision process a BCE would go through to construct an appearance questionnaire for a Wing Commander.

The BCE has already taken the initial step by deciding to survey the Wing Commander. In the second step, the BCE consults Table F.11 to determine that Administrative Facilities are usually the most important land use category to a Wing Commander. Next, Table F.13 shows that exterior paint and grounds maintenance are the most critical

maintenance areas for good appearance. Putting these factors together, the final survey would look like:

ADMINISTRATIVE FACILITIES (Headquarters building, main gate, and CBPO)

Exterior Paint

How do you feel about:

1) The color and tone of paint used on the facilities?

Dislike Very Much		Satisfied		Like Very Much	If the rating is less than satisfactory please specify where:
1	2	3	4	5	_____

2) The paint scheme's ability to unify and coordinate the facilities and integrate the base with the natural environment?

Dislike Very Much		Satisfied		Like Very Much	If the rating is less than satisfactory please specify where:
1	2	3	4	5	_____

Grounds Maintenance

What is your opinion of:

1) The condition of the trees and shrubs?

Dislike Very Much		Satisfied		Like Very Much	If the rating is less than satisfactory please specify where:
1	2	3	4	5	_____

2) Civil Engineering's performance in mowing and edging the grass?

Dislike Very Much		Satisfied		Like Very Much	If the rating is less than satisfactory please specify where:
1	2	3	4	5	_____

3) The effectiveness of the irrigation, fertilizing and herbicide programs to yield attractive grounds?

Dislike Very Much		Satisfied		Like Very Much	If the rating is less than satisfactory please specify where:
1	2	3	4	5	_____

4) The efforts to remove leaves and police trash from the grounds and open areas?

Dislike Very Much		Satisfied		Like Very Much	If the rating is less than satisfactory specify where:
1	2	3	4	5	_____

5) The level of maintenance of the drainage ditches?

Dislike Very Much		Satisfied		Like Very Much	If the rating is less than satisfactory specify where:
1	2	3	4	5	_____

Recommendations for Further Research

The thesis study uncovered very little previous research on defining and rating Air Force base appearance. Consequently, there are a number of applied and pure

research topics the Air Force should investigate to have a better understanding of base appearance. This section covers three avenues for further research that tie in directly with the thesis study.

Testing and Actual Implementation of the Rating System. The proposed Base and Facility Appearance Rating System requires further research and testing before BCE's can use it effectively. One major step in this process is testing the system at several bases. Testing will establish the reliability and validity of the program, as well as gauge the reactions of all parties to the concept of rating base appearance.

The research should also center on making the system compatible with WIMS. This will require writing programs that will administer the rating system and generate the questionnaires, enter and store the returned data, and use descriptive statistics to analyze the results. The WIMS research should also develop the software to have an on-going Performance Measurement Indicator.

Further Research With Base Populations. The thesis research was limited to studying only small sections of the population at Wright-Patterson AFB, Ohio. Further studies should analyze a broader cross-section of the opinions at other Air Force installations using this thesis as a framework. These other bases should be from different major commands and geographic areas. To include the full range of

opinions, follow-on research should also include Air Force civilians.

Research on the Appearance Elements. The Data Analysis chapter showed that there is a difference of opinion between the commanders and base population concerning the relative importance to appearance of several of the land use categories and maintenance areas. For the land use categories, the commanders rated Unaccompanied Housing much higher than the WPAFB sample, while they rated Medical Facilities much lower. Lighting was the one maintenance area that was rated significantly higher by the WPAFB sample than by the commanders. Follow-on research should determine if these or other elements of appearance are significantly different Air Force wide. This information will allow commanders to take the base population's opinion into account in appearance improvement programs.

Appendix A: Major Command Base Appearance Inspection Programs

Air Training Command:

ATC Annual Base Appearance Awards Program - ATCR 900-13

ATC IG Inspection - ATC/CC Guidance and ATC Supplement to AFR 123-1

Military Airlift Command:

Commander in Chief's Facility Assessment - MACR 123-9

MAC IG Inspection - None

Strategic Air Command:

Eighth Air Force:

Commander's Annual Facilities Inspection - 8 AFR 123-1

Fifteenth Air Force:

Staff Assistance Visit - Facilities Evaluation - Facility Condition Evaluation Checklist

SAC IG Inspection - None

Tactical Air Command:

TAC Annual Facility Inspection Program - TACR 900-2

TAC IG Inspection - TAC/CC Guidance and TAC Inspection Guide 123-3

Appendix B: Senior Civil Engineering Officers.

1) Brigadier General George E. Ellis
Deputy Director of Engineering and Services,
Headquarters USAF, Washington DC.

2) Brigadier General Roy M. Goodwin
Deputy Chief of Staff for Engineering and Services,
Headquarters Tactical Air Command,
Langley AFB, VA.

3) Colonel Mario B. Ginnetti
Chief, Civil Engineering and Services Management
Evaluation Team (CESMET),
Headquarters USAF, Washington DC.

4) Colonel William R. Sims
Deputy Chief of Staff for Engineering and Services,
Headquarters Air Force Systems Command,
Andrews AFB, MD.

5) Colonel Marshall W. Nay
Dean, School of Civil Engineering,
Air Force Institute of Technology
Wright-Patterson AFB, OH.

6) Colonel Frank Bendrick

Commander, 2750th Civil Engineering Squadron

Wright-Patterson AFB, OH.

7) Lieutenant Colonel David S. O'Brien

Former USAF IG team member

Commander, 27th Civil Engineering Squadron

Cannon AFB, NM.

Appendix C: Planning Assistance Team Studies.

	BASE	DATE
1)	Bergstrom AFB, TX	May 1983
2)	Carswell AFB, TX	July 1983
3)	Castle AFB, CA	February 1982
4)	Dobbins AFB, GA	August 1983
5)	Edwards AFB, CA	September 1982
6)	F. E. Warren AFB, WY	Undated
7)	March AFB, CA	August 1981
8)	McConnell AFB, KA	September 1981
9)	Nellis AFB, NV	May 1984
10)	Peterson AFB, CO	October 1982
11)	Sheppard AFB, TX	December 1981

Appendix D: Survey Distribution.

Population of Commanders (4:40-68; 28:170-179; 31:367-385)

AIR BASE	PARENT COMMAND	WING COMMANDER	BASE COMMANDER	BCE
Altus, OK	MAC	X	X	X
Andrews, MD	MAC	X	X	X
Barksdale, LA	SAC	X	X	X
Beale, CA	SAC	X	X	X
Bergstrom, TX	TAC	X	X	X
Blytheville, AR	SAC	X	X	X
Bolling, DC	MAC		X	X
Brooks, TX	AFSC		X	
Cannon, NM	TAC	X	X	X
Carswell, TX	SAC	X	X	X
Castle, CA	SAC	X	X	X
Chanute, IL	ATC	X	X	X
Charleston, SC	MAC	X	X	X
Columbus, MS	ATC	X	X	X
Davis-Monthan, AZ	TAC	X	X	X
Dover, DE	MAC	X	X	X
Dyess, TX	SAC	X	X	X
Edwards, CA	AFSC	X	X	
Eglin, FL	AFSC	X	X	X
Ellsworth, SD	SAC	X	X	X
England, LA	TAC	X	X	X
Fairchild, WA	SAC	X	X	X
Francis E. Warren, WY	SAC	X	X	X
George, CA	TAC	X	X	X
Goodfellow, TX	ATC	X	X	X
Grand Forks, ND	SAC	X	X	X
Griffis, NY	SAC	X	X	X
Grissom, IN	SAC	X	X	X
Hanscom, MA	AFSC		X	X
Hill, UT	AFLC	X	X	X
Holloman, NM	TAC	X	X	X
Homestead, FL	TAC	X	X	X
Hurlburt Field, FL	TAC	X	X	X
K. I. Sawyer, MI	SAC	X	X	X
Keesler, MS	ATC	X	X	X
Kelly, TX	AFLC		X	X
Kirtland, NM	MAC	X	X	X
Lackland, TX	ATC	X	X	
Langley, VA	TAC	X	X	X
Laughlin, TX	ATC	X	X	X
Little Rock, AR	MAC	X	X	X
Loring, ME	SAC	X	X	X

AIR BASE	PARENT COMMAND	WING COMMANDER	BASE COMMANDER	BCE
Lowry, CO	ATC	X	X	X
Luke, AZ	TAC	X	X	X
MacDill, FL	TAC	X	X	X
Malmstrom, MT	SAC	X	X	X
March, CA	SAC	X	X	X
Mather, CA	ATC	X	X	X
Maxwell, AL	ATC	X	X	X
McChord, WA	MAC	X	X	X
McClellan, CA	AFLC	X	X	X
McConnell, KA	SAC	X	X	X
McGuire, NJ	MAC	X	X	X
Minot, ND	SAC	X	X	X
Moody, GA	TAC	X	X	X
Mountain Home, ID	TAC	X	X	X
Myrtle Beach, SC	TAC	X	X	X
Nellis, NV	TAC	X	X	X
Norton, CA	MAC	X	X	X
Offutt, NE	SAC	X	X	X
Patrick, FL	AFSC	X	X	X
Pease, NH	SAC	X	X	X
Plattsburgh, NY	SAC	X	X	X
Pope, NC	MAC	X	X	X
Randolph, TX	ATC	X	X	
Reese, TX	ATC	X	X	X
Robbins, GA	AFLC	X	X	X
Scott, IL	MAC	X	X	X
Seymour Johnson, NC	TAC	X	X	X
Shaw, SC	TAC	X	X	X
Sheppard, TX	ATC	X	X	X
Tinker, OK	AFLC	X	X	X
Travis, CA	MAC	X	X	X
Tyndall, FL	TAC	X	X	X
Vance, OK	ATC	X	X	
Vandenberg, CA	SAC	X	X	X
Whiteman, MO	SAC	X	X	X
Williams, AZ	ATC	X	X	X
Wright-Patterson, OH	AFLC	X	X	X
Wurtsmith, MI	SAC	X	X	X
TOTALS:	AFLC (6)	5	6	6
	AFSC (5)	3	5	3
	ATC (14)	14	14	11
	MAC (13)	12	13	13
	SAC (24)	24	24	24
	TAC (18)	18	18	18
	80	76	80	75

Appendix E: Survey Instruments.

DEPARTMENT OF THE AIR FORCE
AIR FORCE INSTITUTE OF TECHNOLOGY (AU)
WRIGHT-PATTERSON AIR FORCE BASE, OH 45433

Dear Commander

Most Air Force members agree that the appearance of Air Force bases is a fundamental element of our quality of life. Although a number of command agencies inspect and rate appearance, the Air Force does not have a definition of the characteristics that best describe "good" base appearance. We need a definition in order to effectively allocate civil engineering resources to the exterior appearance of the base.

I am developing a management tool for the Air Force Engineering and Services Center (AFESC) to allow base civil engineers to improve their organizations' effectiveness in maintaining the exterior appearance of our bases. An important step in designing this tool is to define the essential qualities of "exterior appearance." Thus, I am asking base users at all levels what characteristics they believe are important to make a base look good. Your opinion as a senior base leader is an essential input to this effort.

The survey should take no more than ten minutes to complete. Of course, your participation is entirely voluntary, and your responses will remain anonymous. I appreciate your cooperation in completing the survey and returning it in the envelope provided as soon as possible. If you have any questions, please contact me at AUTOVON 785-7212.

Kenneth P. Menzie

KENNETH P. MENZIE, Captain, USAF
AFIT Graduate Student

2 Atch
1. Survey (USAF SCN 85-48)
2. Return Envelope

1st Ind, AFIT/LS

1. I hope you will take a few minutes to complete the attached survey.

2. Your response is important for solving a problem identified by the AFESC. In addition, your ideas will aid Captain Menzie's thesis research effort. Thank you for your assistance.

Larry L. Smith

LARRY L. SMITH, Colonel, USAF
Dean
School of Systems and Logistics

A SURVEY TO DEFINE EXTERIOR APPEARANCE
FOR AIR FORCE BASES

PART I. DEMOGRAPHIC DATA

1. What is your position? (circle one)

A. Wing Commander
B. Air Base Wing/Combat Support Group Commander
C. Base Civil Engineer

2. To what MAJCOM does your organization belong? (circle one)

A. AFLC
B. AFSC
C. ATC
D. MAC
E. SAC
F. TAC
G. Other (Specify)_____

PART II. BASE LAND USE CATEGORIES

Below is a list of the LAND USE CATEGORIES for a typical Air Force base. Most commanders will agree that every item in the list is important to the overall appearance of their bases. However, I would like for you to distinguish among the categories by ranking them by their importance for judging base appearance. Place a one (1) beside the most important category, and two (2) through eight (8) beside the others to indicate your opinion of their relative importance.

___ ADMINISTRATIVE FACILITIES - (wing/group headquarters, CBPO, and main gateways to the base)

___ AIRFIELD AND AIRCRAFT OPERATIONS AND MAINTENANCE - (runways, taxiways, and apron pavements, as well as the facilities that directly support flying)

___ COMMUNITY FACILITIES - (commissary, BX, clubs, dining halls, chapel, and indoor recreation)

___ INDUSTRIAL FACILITIES - (base supply, storage areas, vehicle operations, plants, and utilities)

___ MEDICAL FACILITIES

___ MILITARY FAMILY HOUSING

___ OPEN/OUTDOOR RECREATION AREAS

___ UNACCOMPANIED HOUSING

PART III. MAINTENANCE AREAS THAT AFFECT EXTERIOR APPEARANCE

This section contains a list of ten MAINTENANCE AREAS that often affect our perception of exterior appearance. Although each of these maintenance areas has a major impact on overall base appearance, please rank them to indicate their degree of importance in relation to each other. Place a one (1) beside the most important maintenance area, and two (2) through ten (10) beside the others to indicate your opinion of their relative importance. You may add and then rate areas by using the spaces provided.

___ base signs

___ clutter - (placement of utility systems and trash collectors)

___ exterior maintenance - (the condition of windows, gutters, shingles, paint, and siding)

___ exterior paint - (texture and color coordination; compatibility with base environment)

___ fences

___ grounds maintenance - (the condition and cleanliness of grounds)

___ landscaping - (the layout of greenery and natural decorations)

___ lighting

___ parking lots - (siting and condition)

___ pavements - (streets and sidewalks; their condition, cleanliness, and markings)

___ _____

___ _____

PART IV. LAND USE CATEGORIES AND MAINTENANCE AREAS TOGETHER

This final section repeats, in alphabetical order, the LAND USE CATEGORIES you ranked in Part II. Under each category is a list of the specific MAINTENANCE AREAS that may affect the perception of appearance in the individual LAND USE CATEGORIES. Please use the following scale to indicate your opinion of how important each MAINTENANCE AREA is for judging appearance in each of the LAND USE CATEGORIES. Again, you may add and then rate areas by using the spaces provided.

Scale of Relative Importance

1 = NOT IMPORTANT as a maintenance area
2 = SOMEWHAT IMPORTANT
3 = IMPORTANT
4 = VERY IMPORTANT
5 = CRITICALLY IMPORTANT

CATEGORY: ADMINISTRATIVE FACILITIES

Maintenance Areas:

___ base signs

___ clutter - (placement of utility systems and trash collectors)

___ exterior maintenance - (the condition of windows, gutters, shingles, paint, and siding)

___ exterior paint - (texture and color coordination; compatibility with base environment)

___ fences

___ grounds maintenance - (the condition and cleanliness of grounds)

___ landscaping - (the layout of greenery and natural decorations)

___ lighting

___ parking lots - (siting and condition)

___ pavements - (streets and sidewalks; their condition, cleanliness, and markings)

___ _____

___ _____

Scale of Relative Importance

1 = NOT IMPORTANT as a maintenance area
2 = SOMEWHAT IMPORTANT
3 = IMPORTANT
4 = VERY IMPORTANT
5 = CRITICALLY IMPORTANT

CATEGORY: AIRFIELD AND AIRCRAFT OPERATIONS/MAINTENANCE

Maintenance Areas:

___ base signs

___ clutter - (placement of utility systems and trash collectors)

___ exterior maintenance - (the condition of windows, gutters, shingles, paint, and siding)

___ exterior paint - (texture and color coordination; compatibility with base environment)

___ fences

___ grounds maintenance - (the condition and cleanliness of grounds)

___ landscaping - (the layout of greenery and natural decorations)

___ lighting

___ parking lots - (siting and condition)

___ pavements - (streets, sidewalks, and airfield surfaces; their condition, cleanliness, and markings)

___ _____

___ _____

Scale of Relative Importance

1 = NOT IMPORTANT as a maintenance area
2 = SOMEWHAT IMPORTANT
3 = IMPORTANT
4 = VERY IMPORTANT
5 = CRITICALLY IMPORTANT

CATEGORY: COMMUNITY FACILITIES

Maintenance Areas:

___ base signs

___ clutter - (placement of utility systems and trash collectors)

___ exterior maintenance - (the condition of windows, gutters, shingles, paint, and siding)

___ exterior paint - (texture and color coordination; compatibility with base environment)

___ grounds maintenance - (the condition and cleanliness of grounds)

___ landscaping - (the layout of greenery and natural decorations)

___ parking lots - (siting and condition)

___ pavements - (streets and sidewalks; their condition, cleanliness, and markings)

___ _____

___ _____

Scale of Relative Importance

1 = NOT IMPORTANT as a maintenance area
2 = SOMEWHAT IMPORTANT
3 = IMPORTANT
4 = VERY IMPORTANT
5 = CRITICALLY IMPORTANT

CATEGORY: INDUSTRIAL FACILITIES

Maintenance Areas:

___ base signs

___ clutter - (placement of utility systems and trash collectors)

___ exterior maintenance - (the condition of windows, gutters, shingles, paint, and siding)

___ exterior paint - (texture and color coordination; compatibility with base environment)

___ fencing

___ grounds maintenance - (the condition and cleanliness of grounds)

___ landscaping - (the layout of greenery and natural decorations)

___ lighting

___ parking lots - (siting and condition)

___ pavements - (streets and sidewalks; their condition, cleanliness, and markings)

___ _____

___ _____

Scale of Relative Importance

1 = NOT IMPORTANT as a maintenance area
2 = SOMEWHAT IMPORTANT
3 = IMPORTANT
4 = VERY IMPORTANT
5 = CRITICALLY IMPORTANT

CATEGORY: MEDICAL FACILITIES

Maintenance Areas:

___ base signs

___ clutter - (placement of utility systems and trash collectors)

___ exterior maintenance - (the condition of windows, gutters, shingles, paint, and siding)

___ exterior paint - (texture and color coordination; compatibility with base environment)

___ grounds maintenance - (the condition and cleanliness of grounds)

___ landscaping - (the layout of greenery and natural decorations)

___ parking lots - (siting and condition)

___ pavements - (streets and sidewalks; their condition, cleanliness, and markings)

___ _____

___ _____

Scale of Relative Importance

1 = NOT IMPORTANT as a maintenance area
2 = SOMEWHAT IMPORTANT
3 = IMPORTANT
4 = VERY IMPORTANT
5 = CRITICALLY IMPORTANT

CATEGORY: MILITARY FAMILY HOUSING

Maintenance Areas:

___ base signs

___ clutter - (placement of utility systems and trash collectors)

___ exterior maintenance - (the condition of windows, gutters, shingles, paint, and siding)

___ exterior paint - (texture and color coordination; compatibility with base environment)

___ fencing

___ grounds maintenance - (the condition and cleanliness of grounds)

___ landscaping - (the layout of greenery and natural decorations)

___ lighting

___ pavements - (streets and sidewalks; their condition, cleanliness, and markings)

___ _____

___ _____

Scale of Relative Importance

1 = NOT IMPORTANT as a maintenance area
2 = SOMEWHAT IMPORTANT
3 = IMPORTANT
4 = VERY IMPORTANT
5 = CRITICALLY IMPORTANT

CATEGORY: OPEN/OUTDOOR RECREATION AREAS

Maintenance Areas:

___ base signs

___ clutter - (placement of utility systems and trash collectors)

___ fencing

___ grounds maintenance - (the condition and cleanliness of grounds)

___ landscaping - (the layout of greenery and natural decorations)

___ lighting

___ parking lots - (siting and condition)

___ pavements - (streets and sidewalks; their condition, cleanliness, and markings)

___ _____

___ _____

Scale of Relative Importance

1 = NOT IMPORTANT as a maintenance area
2 = SOMEWHAT IMPORTANT
3 = IMPORTANT
4 = VERY IMPORTANT
5 = CRITICALLY IMPORTANT

CATEGORY: UNACCOMPANIED HOUSING

Maintenance Areas:

___ base signs

___ clutter - (placement of utility systems and trash collectors)

___ exterior maintenance - (the condition of windows, gutters, shingles, paint, and siding)

___ exterior paint - (texture and color coordination; compatibility with base environment)

___ grounds maintenance - (the condition and cleanliness of grounds)

___ landscaping - (the layout of greenery and natural decorations)

___ lighting

___ parking lots - (siting and condition)

___ pavements - (streets and sidewalks; their condition, cleanliness, and markings)

___ _____

___ _____

Thank you for your assistance.

DEPARTMENT OF THE AIR FORCE
AIR FORCE INSTITUTE OF TECHNOLOGY (AU)
WRIGHT-PATTERSON AIR FORCE BASE, OH 45433

1 June 1985

Dear Air Force Member

I need your help in completing this survey! I am conducting research for the Air Force Engineering and Services Center (AFESC) to define what Air Force people believe is important in judging the appearance of our bases. The quality of your living and working environment has a major affect on how you feel about the Air Force. Thus, we need to provide facilities you think "look good." However, the AFESC does not have a complete understanding of the characteristics that best describe good appearance. Consequently, we are interested in registering your feelings through the attached survey.

The survey should take no more than ten minutes to complete. The information you provide will help me define what particular areas of a base are important to the base's appearance and also what characteristics of these areas create a favorable impression in your mind. With this definition, civil engineers can more effectively allocate resources to maintain and improve the exterior appearance of our bases.

Let me stress that your opinion does count and I assure you that your responses will remain anonymous. Again, thank you for your assistance.

Sincerely

Kenneth P. Menzie

Kenneth P. Menzie, Capt, USAF
AFIT Graduate Student

A SURVEY TO DEFINE EXTERIOR APPEARANCE
FOR AIR FORCE BASES

PART I. DEMOGRAPHIC DATA

1. Please indicate your relationship to the Air Force (circle one)

A. E-1, E-2, E-3
B. E-4, E-5, E-6
C. E-7, E-8, E-9
D. O-1, O-2, O-3, O-4, O-5, O-6
E. Other (please specify)_____

2. Do you live on base? (check one)

____ Yes ____ No

PART II. BASE LAND USE CATEGORIES

Below is a list of the LAND USE CATEGORIES for a typical Air Force base. Most people will agree that every item in the list is important to the overall appearance of their bases. However, I would like for you to distinguish among the categories by ranking them by their importance for judging base appearance. Place a one (1) beside the most important category, and two (2) through eight (8) beside the others to indicate your opinion of their relative importance.

___ ADMINISTRATIVE FACILITIES - (wing/group headquarters, CBPO, and main gateways to the base)

___ AIRFIELD AND AIRCRAFT OPERATIONS AND MAINTENANCE - (runways, taxiways, and apron pavements, as well as the facilities that directly support flying)

___ COMMUNITY FACILITIES - (commissary, BX, clubs, dining halls, chapel, and indoor recreation)

___ INDUSTRIAL FACILITIES - (base supply, storage areas, vehicle operations, plants, and utilities)

___ MEDICAL FACILITIES

___ MILITARY FAMILY HOUSING

___ OPEN/OUTDOOR RECREATION AREAS

___ UNACCOMPANIED HOUSING

PART III. MAINTENANCE AREAS THAT AFFECT EXTERIOR APPEARANCE

This section contains a list of ten MAINTENANCE AREAS that often affect our perception of exterior appearance. Although each of these maintenance areas has a major impact on overall base appearance, please rank them to indicate their degree of importance in relation to each other. Place a one (1) beside the most important maintenance area, and two (2) through ten (10) beside the others to indicate your opinion of their relative importance. You may add and then rate areas by using the spaces provided.

___ base signs

___ clutter - (placement of utility systems and trash collectors)

___ exterior maintenance - (the condition of windows, gutters, shingles, paint, and siding)

___ exterior paint - (texture and color coordination; compatibility with base environment)

___ fences

___ grounds maintenance - (the condition and cleanliness of grounds)

___ landscaping - (the layout of greenery and natural decorations)

___ lighting

___ parking lots - (siting and condition)

___ pavements - (streets and sidewalks; their condition, cleanliness, and markings)

___ _____

___ _____

PART IV. LAND USE CATEGORIES AND MAINTENANCE AREAS TOGETHER

This final section repeats, in alphabetical order, the LAND USE CATEGORIES you ranked in Part II. Under each category is a list of the specific MAINTENANCE AREAS that may affect the perception of appearance in the individual LAND USE CATEGORIES. Please use the following scale to indicate your opinion of how important each MAINTENANCE AREA is for judging appearance in each of the LAND USE CATEGORIES. Again, you may add and then rate areas by using the spaces provided.

Scale of Relative Importance

1 = NOT IMPORTANT as a maintenance area
2 = SOMEWHAT IMPORTANT
3 = IMPORTANT
4 = VERY IMPORTANT
5 = CRITICALLY IMPORTANT

CATEGORY: ADMINISTRATIVE FACILITIES

Maintenance Areas:

___ base signs

___ clutter - (placement of utility systems and trash collectors)

___ exterior maintenance - (the condition of windows, gutters, shingles, paint, and siding)

___ exterior paint - (texture and color coordination; compatibility with base environment)

___ fences

___ grounds maintenance - (the condition and cleanliness of grounds)

___ landscaping - (the layout of greenery and natural decorations)

___ lighting

___ parking lots - (siting and condition)

___ pavements - (streets and sidewalks; their condition, cleanliness, and markings)

___ _____

___ _____

Scale of Relative Importance

1 = NOT IMPORTANT as a maintenance area
2 = SOMEWHAT IMPORTANT
3 = IMPORTANT
4 = VERY IMPORTANT
5 = CRITICALLY IMPORTANT

CATEGORY: AIRFIELD AND AIRCRAFT OPERATIONS/MAINTENANCE

Maintenance Areas:

___ base signs

___ clutter - (placement of utility systems and trash collectors)

___ exterior maintenance - (the condition of windows, gutters, shingles, paint, and siding)

___ exterior paint - (texture and color coordination; compatibility with base environment)

___ fences

___ grounds maintenance - (the condition and cleanliness of grounds)

___ landscaping - (the layout of greenery and natural decorations)

___ lighting

___ parking lots - (siting and condition)

___ pavements - (streets, sidewalks, and airfield surfaces; their condition, cleanliness, and markings)

___ _____

___ _____

Scale of Relative Importance

1 = NOT IMPORTANT as a maintenance area
2 = SOMEWHAT IMPORTANT
3 = IMPORTANT
4 = VERY IMPORTANT
5 = CRITICALLY IMPORTANT

CATEGORY: COMMUNITY FACILITIES

Maintenance Areas:

___ base signs

___ clutter - (placement of utility systems and trash collectors)

___ exterior maintenance - (the condition of windows, gutters, shingles, paint, and siding)

___ exterior paint - (texture and color coordination; compatibility with base environment)

___ grounds maintenance - (the condition and cleanliness of grounds)

___ landscaping - (the layout of greenery and natural decorations)

___ parking lots - (siting and condition)

___ pavements - (streets and sidewalks; their condition, cleanliness, and markings)

___ _____

___ _____

Scale of Relative Importance

1 = NOT IMPORTANT as a maintenance area
2 = SOMEWHAT IMPORTANT
3 = IMPORTANT
4 = VERY IMPORTANT
5 = CRITICALLY IMPORTANT

CATEGORY: INDUSTRIAL FACILITIES

Maintenance Areas:

___ base signs

___ clutter - (placement of utility systems and trash collectors)

___ exterior maintenance - (the condition of windows, gutters, shingles, paint, and siding)

___ exterior paint - (texture and color coordination; compatibility with base environment)

___ fencing

___ grounds maintenance - (the condition and cleanliness of grounds)

___ landscaping - (the layout of greenery and natural decorations)

___ lighting

___ parking lots - (siting and condition)

___ pavements - (streets and sidewalks; their condition, cleanliness, and markings)

___ _____

___ _____

Scale of Relative Importance

1 = NOT IMPORTANT as a maintenance area
2 = SOMEWHAT IMPORTANT
3 = IMPORTANT
4 = VERY IMPORTANT
5 = CRITICALLY IMPORTANT

CATEGORY: MEDICAL FACILITIES

Maintenance Areas:

___ base signs

___ clutter - (placement of utility systems and trash collectors)

___ exterior maintenance - (the condition of windows, gutters, shingles, paint, and siding)

___ exterior paint - (texture and color coordination; compatibility with base environment)

___ grounds maintenance - (the condition and cleanliness of grounds)

___ landscaping - (the layout of greenery and natural decorations)

___ parking lots - (siting and condition)

___ pavements - (streets and sidewalks; their condition, cleanliness, and markings)

___ _____

___ _____

Scale of Relative Importance

1 = NOT IMPORTANT as a maintenance area
2 = SOMEWHAT IMPORTANT
3 = IMPORTANT
4 = VERY IMPORTANT
5 = CRITICALLY IMPORTANT

CATEGORY: MILITARY FAMILY HOUSING

Maintenance Areas:

___ base signs

___ clutter - (placement of utility systems and trash collectors)

___ exterior maintenance - (the condition of windows, gutters, shingles, paint, and siding)

___ exterior paint - (texture and color coordination; compatibility with base environment)

___ fencing

___ grounds maintenance - (the condition and cleanliness of grounds)

___ landscaping - (the layout of greenery and natural decorations)

___ lighting

___ pavements - (streets and sidewalks; their condition, cleanliness, and markings)

___ _____

___ _____

Scale of Relative Importance

1 = NOT IMPORTANT as a maintenance area
2 = SOMEWHAT IMPORTANT
3 = IMPORTANT
4 = VERY IMPORTANT
5 = CRITICALLY IMPORTANT

CATEGORY: OPEN/OUTDOOR RECREATION AREAS

Maintenance Areas:

___ base signs

___ clutter - (placement of utility systems and trash collectors)

___ fencing

___ grounds maintenance - (the condition and cleanliness of grounds)

___ landscaping - (the layout of greenery and natural decorations)

___ lighting

___ parking lots - (siting and condition)

___ pavements - (streets and sidewalks; their condition, cleanliness, and markings)

___ _____

___ _____

Scale of Relative Importance

1 = NOT IMPORTANT as a maintenance area
2 = SOMEWHAT IMPORTANT
3 = IMPORTANT
4 = VERY IMPORTANT
5 = CRITICALLY IMPORTANT

CATEGORY: UNACCOMPANIED HOUSING

Maintenance Areas:

___ base signs

___ clutter - (placement of utility systems and trash collectors)

___ exterior maintenance - (the condition of windows, gutters, shingles, paint, and siding)

___ exterior paint - (texture and color coordination; compatibility with base environment)

___ grounds maintenance - (the condition and cleanliness of grounds)

___ landscaping - (the layout of greenery and natural decorations)

___ lighting

___ parking lots - (siting and condition)

___ pavements - (streets and sidewalks; their condition, cleanliness, and markings)

___ _____

___ _____

Thank you for your assistance.

Appendix F: Relative Rankings of the Land Use Categories and Maintenance Areas by the Respondents' Major Command and Position

TABLE F.1

Relative Ranking of Base Land Use Categories

for all Commanders by Major Command

Land Use Category	AFLC	AFSC	ATC	MAC	SAC	TAC
Administrative Facilities	1	1	1	1	1	1
Airfield and Aircraft Ops and Maintenance	4	6	7	7	6	2
Community Facilities	2	3	2	2	2	3
Industrial Facilities	8	8	8	8	8	7
Medical Facilities	6	5	6	6	5	6
Military Family Housing	3	2	3	3	3	4
Open/Outdoor Recreation	7	7	5	5	7	8
Unaccompanied Housing	5	4	4	4	4	5

TABLE F.2

Relative Ranking of the Maintenance Areas

for all Commanders by Major Command

Maintenance Area	AFLC	AFSC	ATC	MAC	SAC	TAC
Base Signs	6	6	6	6	4	6
Clutter	4*	3*	5	7	5	5
Exterior Maintenance	2*	2	4	3	3	3
Exterior Paint	1	1	2	2	2	1
Fences	9	7	8	8	9	8
Grounds Maintenance	2*	3*	1	1	1	2
Landscaping	4*	5	3	4	5*	4
Lighting	10	9	10	10	10	10
Parking Lots	7*	10	9	9	8	9
Pavements	7*	8	7	5	7	7

*Note: An asterisk indicates that there was a tie in the median values of the maintenance areas.

TABLE F.3

Relative Ranking of the Maintenance Areas

to Administrative Facilities

for all Commanders by Major Command

Maintenance Area	AFLC	AFSC	ATC	MAC	SAC	TAC
Base Signs	5*	4	7	5*	6	6
Clutter	5*	5	5	5*	5	5
Exterior Maintenance	2	2*	2	3	3	3
Exterior Paint	3	2*	3	2	1	1*
Fences	10	9	9	9	9	9
Grounds Maintenance	1	1	1	1	2	1*
Landscaping	4	5	4	4	4	4
Lighting	9	10	10	10	10	10
Parking Lots	8	7*	8	8	8	8
Pavements	7	7*	6	5*	7	7

*Note: An asterisk indicates that there was a tie in the median values of the maintenance areas.

TABLE F.4

Relative Ranking of the Maintenance Areas

to Airfield and Aircraft Operations and Maintenance

for all Commanders by Major Command

Maintenance Area	AFLC	AFSC	ATC	MAC	SAC	TAC
Base Signs	7	5	8	8	7	8
Clutter	5*	1*	5	7	6	4
Exterior Maintenance	2	7	3	3	5	1
Exterior Paint	4	8	4	2	4	2
Fences	8*	6	9	10	9	10
Grounds Maintenance	2	1*	1	1	2	3
Landscaping	10	10	7	6	10	6
Lighting	5*	1*	6	5	3	7
Parking Lots	8*	9	10	9	8	9
Pavements	1	4	2	4	1	5

*Note: An asterisk indicates that there was a tie in the median values of the maintenance areas.

TABLE F.5

Relative Ranking of the Maintenance Areas

to Community Facilities

for all Commanders by Major Command

Maintenance Area	AFLC	AFSC	ATC	MAC	SAC	TAC
Base Signs	3	4	8	6	5	6
Clutter	4	5	5	5	6	4
Exterior Maintenance	2	1	2	3	3	1
Exterior Paint	1	2*	3	2	2	2
Grounds Maintenance	5*	2*	1	1	1	3
Landscaping	5*	6	4	4	4	5
Parking Lots	7*	7	7	8	7*	8
Pavements	7*	8	6	7	7*	7

*Note: An asterisk indicates that there was a tie in the median values of the maintenance areas.

TABLE F.6

Relative Ranking of the Maintenance Areas

to Industrial Facilities

for all Commanders by Major Command

Maintenance Area	AFLC	AFSC	ATC	MAC	SAC	TAC
Base Signs	10	5*	7	8*	9	6
Clutter	8*	4	4	3	5	4
Exterior Maintenance	1*	1	1	7	2	1
Exterior Paint	1*	5*	2	1	1	2
Fences	8*	5*	8	10	8	8
Grounds Maintenance	3*	3	3	2	3	3
Landscaping	5*	10	6	4	10	5
Lighting	3*	2	10	5	6*	10
Parking Lots	5*	5*	9	8*	6*	9
Pavements	5*	5*	5	6	4	7

*Note: An asterisk indicates that there was a tie in the median values of the maintenance areas.

TABLE F.7

Relative Ranking of the Maintenance Areas

to Medical Facilities

for all Commanders by Major Command

Maintenance Area	AFLC	AFSC	ATC	MAC	SAC	TAC
Base Signs	1	4	8	5	8	6
Clutter	7	7	5	6	5	4
Exterior Maintenance	2	2	1*	2	3	1
Exterior Paint	3	3	1*	3	2	2
Grounds Maintenance	4	1	3	1	1	3
Landscaping	8	8	4	4	4	5
Parking Lots	5	5*	6	7	6	7
Pavements	6	5*	7	8	7	8

*Note: An asterisk indicates that there was a tie in the median values of the maintenance areas.

TABLE F.8

Relative Ranking of the Maintenance Areas

to Military Family Housing

for all Commanders by Major Command

Maintenance Area	AFLC	AFSC	ATC	MAC	SAC	TAC
Base Signs	9	8	8	9	9	9
Clutter	8	4	5	5	4	4
Exterior Maintenance	1*	1	2*	2*	1	1
Exterior Paint	3	2*	2*	2*	2*	2
Fences	7	9	6	6*	7	5
Grounds Maintenance	1*	2*	1	1	2*	3
Landscaping	4*	5*	9	6*	8	8
Lighting	4*	5*	9	6*	8	8
Pavements	4*	7	7	6*	6	6

*Note: An asterisk indicates that there was a tie in the median values of the maintenance areas.

TABLE F.9

Relative Ranking of the Maintenance Areas

to Open/Outdoor Recreation Areas

for all Commanders by Major Command

Maintenance Area	AFLC	AFSC	ATC	MAC	SAC	TAC
Base Signs	2	6	8	5	4	8
Clutter	6	2*	3	3	3	3
Fences	7	2*	5	7	8	6*
Grounds Maintenance	1	1	1	1	1	1
Landscaping	4	4*	2	2	2	2
Lighting	3	4*	4	4	5	4
Parking Lots	5	7*	6	6	6	5
Pavements	8	7*	7	8	7	6*

*Note: An asterisk indicates that there was a tie in the median values of the maintenance areas.

TABLE F.10

Relative Ranking of the Maintenance Areas

to Unaccompanied Housing

for all Commanders by Major Command

Maintenance Area	AFLC	AFSC	ATC	MAC	SAC	TAC
Base Signs	9	7*	9	9	8	7
Clutter	8	6	5	6	5	5
Exterior Maintenance	1	2	2*	3	3	1
Exterior Paint	2	4*	2*	2	2	2
Grounds Maintenance	3*	1	1	1	1	3
Landscaping	7*	7*	4	4	4	4
Lighting	3*	3	7	8	9	9
Parking Lots	3*	4*	6	5	6	6
Pavements	3*	7*	8	7	7	8

*Note: An asterisk indicates that there was a tie in the median values of the maintenance areas.

TABLE F.11

Relative Ranking of Base Land Use Categories

by Respondent Position

Land Use Category	WING CC	BASE CC	BCE	ENLISTED	OFFICER	SPOUSE
Administrative Facilities	1	1	1	1	5	3
Airfield and Aircraft Ops and Maintenance	4	5	7	4	3*	5
Community Facilities	2	2	2	5	1	2
Industrial Facilities	7	8	8	8	8	8
Medical Facilities	6	6	5	2	2	4
Military Family Housing	3	3	3	3	3*	1
Open/Outdoor Recreation	8	7	6	6	6	6
Unaccompanied Housing	5	4	4	7	7	7

*Note: An asterisk indicates that there was a tie in the median values of the maintenance areas.

TABLE F.12

Relative Ranking of the Maintenance Areas

by Respondent Position

Maintenance Area	WING CC	BASE CC	BCE	ENLISTED	OFFICER	SPOUSE
Base Signs	6	6	5	7	8	6
Clutter	5	5	6	8	5	9
Exterior Maintenance	3	3	3	1	1	2
Exterior Paint	1	2	2	4	3	4
Fences	9	8	8	10	10	10
Grounds Maintenance	2	1	1	2	2	1
Landscaping	4	4	4	3	4	3
Lighting	10	10	10	6	9	5
Parking Lots	8	9	9	9	7	8
Pavements	7	7	7	5	6	7

*Note: An asterisk indicates that there was a tie in the median values of the maintenance areas.

TABLE F.13

Relative Ranking of the Maintenance Areas

to Administrative Facilities

by Respondent Position

Maintenance Area	WING CC	BASE CC	BCE	ENLISTED	OFFICER	SPOUSE
Base Signs	6	7	5	9	6	8
Clutter	4	5	6	8	7	9
Exterior Maintenance	3	2*	3	3	2	2
Exterior Paint	1*	2*	2	7	3*	3
Fences	9	9	9	10	10	10
Grounds Maintenance	1*	1	1	1	1	1
Landscaping	5	4	4	4	3*	4
Lighting	10	10	10	5	9	5
Parking Lots	8	8	8	6	8	7
Pavements	7	6	7	2	5	6

*Note: An asterisk indicates that there was a tie in the median values of the maintenance areas.

TABLE F.14

Relative Ranking of the Maintenance Areas

to Airfield and Aircraft Operations and Maintenance

by Respondent Position

Maintenance Area	WING CC	BASE CC	BCE	ENLISTED	OFFICER	SPOUSE
Base Signs	7	7	7	8	10	3
Clutter	4	6	5	7	5	7
Exterior Maintenance	2	2	3	6	4	5
Exterior Paint	3	3	4	10	6*	8
Fences	8	9	10	4	6*	6
Grounds Maintenance	1	1	2	3	2	9
Landscaping	9	8	9	9	8	10
Lighting	5	5	6	1	3	1
Parking Lots	10	10	8	5	9	4
Pavements	6	4	1	2	1	2

*Note: An asterisk indicates that there was a tie in the median values of the maintenance areas.

TABLE F.15

Relative Ranking of the Maintenance Areas

to Community Facilities

by Respondent Position

Maintenance Area	WING CC	BASE CC	BCE	ENLISTED	OFFICER	SPOUSE
Base Signs	6	6	5	8	8	7
Clutter	4	5	6	7	5	8
Exterior Maintenance	3	2	3	5	1	1
Exterior Paint	2	3	1*	6	2	5
Grounds Maintenance	1	1	1*	1	3	3
Landscaping	5	4	4	4	4	6
Parking Lots	7	8	7	3	6	2
Pavements	8	7	8	2	7	4

*Note: An asterisk indicates that there was a tie in the median values of the maintenance areas.

TABLE F.16

Relative Ranking of the Maintenance Areas

to Industrial Facilities

by Respondent Position

Maintenance Area	WING CC	BASE CC	BCE	ENLISTED	OFFICER	SPOUSE
Base Signs	8	10	8	9	8*	8*
Clutter	4	4	5	8	4	6
Exterior Maintenance	1	1	2	5	1	3
Exterior Paint	2	2	1	6	5	5
Fences	9	8*	9	7	10	8*
Grounds Maintenance	3	3	3	4	2	7
Landscaping	6	7	6	10	8*	10
Lighting	5	6	10	1	3	1
Parking Lots	10	8*	7	2	6	2
Pavements	7	5	4	3	7	4

*Note: An asterisk indicates that there was a tie in the median values of the maintenance areas.

TABLE F.17

Relative Ranking of the Maintenance Areas

to Medical Facilities

by Respondent Position

Maintenance Area	WING CC	BASE CC	BCE	ENLISTED	OFFICER	SPOUSE
Base Signs	7	6	6	3	5	2*
Clutter	4	5	5	8	8	6
Exterior Maintenance	2	1	2	5	1	4
Exterior Paint	1	2	3	7	4	5
Grounds Maintenance	3	3	1	4	2*	7
Landscaping	5	4	4	6	7	8
Parking Lots	6	8	7	1	2*	1
Pavements	8	7	8	2	6	2*

*Note: An asterisk indicates that there was a tie in the median values of the maintenance areas.

TABLE F.18

Relative Ranking of the Maintenance Areas

to Military Family Housing

by Respondent Position

Maintenance Area	WING CC	BASE CC	BCE	ENLISTED	OFFICER	SPOUSE
Base Signs	9	9	8	9	6	9
Clutter	4	5	5	7	8	5
Exterior Maintenance	1	1	3	3	1	1
Exterior Paint	2*	2*	2	4	2	3
Fences	8	7	6	8	9	8
Grounds Maintenance	2*	2*	1	2	3	4
Landscaping	5	4	4	6	4	6
Lighting	7	8	9	1	5	2
Pavements	6	6	7	5	7	7

*Note: An asterisk indicates that there was a tie in the median values of the maintenance areas.

TABLE F.19

Relative Ranking of the Maintenance Areas

to Open/Outdoor Recreation Areas

by Respondent Position

Maintenance Area	WING CC	BASE CC	BCE	ENLISTED	OFFICER	SPOUSE
Base Signs	7	8	5	8	8	8
Clutter	3	3	3	4	3	5
Fences	8	7	6	7	7	6
Grounds Maintenance	1	1	1	1	1	1
Landscaping	2	2	2	2	2	3
Lighting	5	4	4	3	4	2
Parking Lots	4	6	7	6	5	7
Pavements	6	5	8	5	6	4

TABLE F.20

Relative Ranking of the Maintenance Areas

to Unaccompanied Housing

by Respondent Position

Maintenance Area	WING CC	BASE CC	BCE	ENLISTED	OFFICER	SPOUSE
Base Signs	9	9	8	9	9	9
Clutter	4	5	5	8*	5	8
Exterior Maintenance	1	1*	3	1	1	4
Exterior Paint	2	3	2	2	2	5
Grounds Maintenance	3	1*	1	5	3	3
Landscaping	5	4	4	6	4	6
Lighting	7	8	9	4	5*	1
Parking Lots	6	6	6	3	7	2
Pavements	8	7	7	7	8	7

*Note: An asterisk indicates that there was a tie in the median values of the maintenance areas.

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Presently, Base Civil Engineers (BCEs) have no way of measuring their organization's day-to-day performance in maintaining and improving the appearance of their installations. This thesis develops a base and facility appearance rating system to meet this need and to support the Air Force Engineering and Services Center's Project IMAGE initiatives.

Preliminary data for the rating system was collected through personal interviews, and a review of Major Command appearance inspection programs. This information allowed the researcher to develop a survey to test which elements of appearance are most important to good base appearance. This survey was sent to all CONUS Wing and Base Commanders, and BCEs. An additional survey study was conducted with a sample of the base population at Wright-Patterson AFB, Ohio.

The analysis showed that both groups believe the condition of the base grounds, the exterior maintenance of the facilities, and the base color scheme are the most important Civil Engineering maintenance activities for good base appearance. Both groups also feel that these activities apply most to a base's administrative facilities, Military Family Housing, and community areas.

These findings were used to develop a survey-based rating system BCEs can use to measure the perceptions of the commander and base population concerning their organization's effectiveness in providing base appearance.

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