
DDESS Facility Transfer Study Facility Condition Report (Final)



Maxwell Air Force Base, Alabama

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PSC Project # 03811102



Parkhill, Smith & Cooper, Inc.
Engineers ■ Architects ■ Planners

**MAXWELL AIR FORCE BASE, ALABAMA
MAXWELL ELEMENTARY SCHOOL
PROPERTY CONDITION REPORT**

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**MAXWELL AIR FORCE BASE, ALABAMA
MAXWELL ELEMENTARY SCHOOL
PROPERTY CONDITION REPORT
EXECUTIVE SUMMARY**

1.0 Executive Summary

Data obtained from the survey provides an objective and impartial evaluation of Maxwell Elementary School for the Department of Defense Education Activity (DoDEA) in their object benefit analysis, to ascertain the feasibility of renovating or replacing facilities.

This facility is a 108,000 square foot, one-story masonry veneer and stucco building constructed in 1963 with additional construction in 1987, 1991 and 1997. This facility serves 546 students from pre-kindergarten to sixth grade.

This facility requires alterations to comply with ADA accessibility, life safety, site drainage and major building systems guidelines.

Opinions of probable costs are calculated for immediate and long-term remediation planning. Opinions of probable costs are listed in Paragraph 4.0 and are summarized as follows:

1. Immediate Remediation - Items recommended for repairs or replacement within one year to resolve unsafe conditions, life safety fire code requirements, ADA accessibility guidelines and potential system failures:

Total Immediate Remediation Costs \$880,000

2. Intermediate Remediation – Items such as force protection, additional site paving, Title IX compliance costs, or playground equipment or surfacing. These are items of lower priority than immediate costs, but are higher priority than long-term remediation costs.

Total Intermediate Remediation Costs \$243,000

3. Long-term Remediation - Items recommended for repair or replacement within one to ten years for deferred maintenance of aging systems, non-life-threatening issues, other code requirements and remainder of ADA accessibility guidelines:

Total Long-term Remediation Costs \$1,384,000

Total remediation project costs are approximately \$2,507,000.

The report scope also included the cost of Plant Replacement Value (PRV), defined as the cost of a new facility, including associated sitework and parking. The estimated PRV for this facility is \$12,242,000. By comparing the remediation costs, plant replacement costs and the age of the building, we determined a modified recapitalization metric (MRM) for this facility. This ratio is

defined as the required investment to correct deficiencies divided by the target investment required for a new building. The ratio for Maxwell Elementary School is 0.27. A ratio over one indicates it is more cost effective to build a new school rather than renovate the existing facility. It is our recommendation that school be scheduled for renovation within the next year and other repairs to major building systems be scheduled within the next ten years to address ADA issues, life safety and plumbing deficiencies, primarily. A summary of the MRM calculation is shown below.

ESL (yrs)	AGE (yrs)	RUL (yrs)	PRV (\$)	TARGET SUSTAIN. (Annual \$)	REMED. COSTS (\$)	REQUIRED INVEST. (Annual \$)	MRM	RECOMMEND
67	*17.1	*49.9	12,242,000	182,700	2,507,000	50,200	.27	Renovate

* Indicates Composite Number



Life Safety Non-compliant Louvered Door



Site Drainage Problem

**MAXWELL AIR FORCE BASE, ALABAMA
MAXWELL ELEMENTARY SCHOOL
PROPERTY CONDITION REPORT**

2.0 Purpose and Scope

2.1 Survey Team

An inspection team from Parkhill, Smith & Cooper, Inc., Engineers -Architects-Planners, performed a Property Condition Assessment for these facilities on March 6th of 2003. The administration and staff fully cooperated with the survey team. The survey is based on the process, scope and intent of ASTM E 2018 -01 - Standard Guide for Property Assessments: Baseline Property Condition Assessment Process.

Parkhill, Smith & Cooper, Inc., working as an independent contractor, staffed the property survey with qualified registered professional architects and engineers as field observers. Each observer has experience commensurate with the subject property type and scope.

2.2 Published Standards

The following published standards, codes and guidelines were used for the property assessment survey:

- a. Americans with Disabilities Act Accessibility Guidelines (ADAAG) - ADA Standards for Accessible Design - 28 CFR Part 36, Revised July 1,1994 (ADAAG) - The Americans with Disabilities Act of 1990

This standard establishes guidelines for accessibility for individuals with disabilities under the Americans with Disabilities Act of 1990. The guideline specifies design tolerances for parking spaces, accessible routes, curb ramps, ramps, detectable warnings, signage, walkways, egress, entrances, exits, aisle and corridor widths, stairs, clear floor areas, toilets, doors, windows, drinking fountains, telephones, elevators , life safety warning systems and play areas.

The guideline specifies that no additions or alterations shall be undertaken which decreases accessibility or usability of a facility below that of new construction. Additions or alterations are not required to achieve greater accessibility than that required for new construction. Remediation recommendations are considered mandatory to achieve an acceptable facility.

The survey included a Tier I: Visual Accessibility Survey to identify possible problems concerning the Americans with Disabilities Act Accessibility Guidelines (ADAAG). The survey was limited to observations during the walk-through survey and included path-of travel, parking, entrances/exits, signage,

public toilet rooms, drinking fountains, elevators/lifts, recreational facilities and alarm systems. The survey did not include physical measurements or counts for any component or system. Opinions of probable costs for ADA remediation are identified separately and are not combined with other physical deficiencies.

- b. ASTM E 2018-01 - Standard Guide for Property Assessments: Baseline Property Condition Assessment Process - American Society of Testing Materials International

This guide defines customary practice for conducting a baseline property condition assessment to identify and communicate physical deficiencies to a user in a Property Condition Report. Walk-through procedures are outlined recommending various systems, components and equipment that should be observed. Physical deficiencies include presence of conspicuous defects or material deferred maintenance of a subject property's material systems, components or equipment.

The resulting Property Condition Report incorporates the information obtained from the walk-through survey, document review, staff interviews and opinions of probable costs for suggested remedies of identified physical deficiencies. Remediation of specific items in non-compliance is mandatory to achieve an acceptable facility.

- c. NFPA 101 Life Safety Code - ASNI/NFPA 101, 1994 Edition, Chapter 11 Existing Educational Occupancies - National Fire Protection Association

This code provides minimum requirements, with regard to function, for the design, operation and maintenance of new and existing buildings and structures to protect occupants by providing for safety from fire and similar emergencies. Safety is achieved by a combination of prevention, protection, warning systems and unobstructed egress. The code addresses construction, protection and occupancy features necessary to minimize danger to life from fire, smoke, fumes and panic. Warning systems are required to conform to ADAAG/ADA guidelines.

The resulting Property Condition Report incorporates the information obtained from the walk-through survey, document review, staff interviews and opinions of probable costs for suggested remedies of identified physical deficiencies. Remediation of specific items in non-compliance is mandatory to achieve an acceptable facility.

- d. Title IX Gender Equality - 34 CFR Part 106, Paragraph 106.41, Federal Register, May 9, 1980 - Nondiscrimination on the Basis of Sex in Education Programs or Activities Receiving Federal Financial Assistance

The major federal law prohibiting sex discrimination in educational institutions receiving financial assistance. A school must provide equal athletic opportunity

for both sexes, including facilities, equipment, supplies, game and practice schedules, travel and per diem allowances, coaching (including assignment and compensation of coaches), academic tutoring, housing, dining facilities and publicity. For the purposes of this study, only comparable facilities for each gender were considered. The facilities investigated were limited to those on each school campus. Off-site athletic facilities are not included in this study.

- e. Technical Manual TM 5-800-4, May 1994 - Programming Cost Estimates for Military Construction - Headquarters, Department of the Army

The basis of estimating opinions of probable costs, including unit cost values, escalation and contingency factors, and application of area location factors for military projects.

- f. RS Means Building Construction Cost Data, 60th Edition – 2002

The basis for determining unit and construction assembly values for detailed opinions of probable costs included as an Exhibit in this report.

- g. Guidance from the Under Secretary of Defense, June 3rd, 2002.

This guidance lists the most recent area location factors for each military installation.

- h. Facilities Recapitalization Front-End Assessment, Department of Defense, August 2002

The basis for determining the recapitalization metric for Department of Defense facilities.

2.3 Property Assessment Survey Requirements

A walk-through property assessment survey was conducted during the field observers' site visit of the subject property to ascertain material physical deficiencies of the subject property and opinions of probable costs for remediation. Data obtained from the survey provides an objective and impartial evaluation of Domestic Dependent Elementary and Secondary Schools (DDESS) schools in the continental United States for the Department of Defense Education Activity (DoDEA), to ascertain the feasibility of facility transfers to Local Education Agencies (LEAs). The data will also aid DoDEA's analysis of associated costs to the Government for the possible transfer of DDESS students, facilities and operations to the corresponding adjacent LEAs.

2.4 Analysis

An analysis of each school was required to determine current physical condition, noting deficiencies and providing opinions of probable costs of remediation for each building

and system component in accordance with minimum acceptable standards and guidelines as listed previously.

2.5 Observations

The survey was based on the field observers' visual observations of representative areas and materials while walking through the subject property. The survey included interviews with administrative and facilities personnel, review of available construction documents, prior assessment reports and asbestos inspection reports.

2.6 Survey Methods

The survey consisted of non-intrusive visual observations, which were readily accessible and easily visible components and systems of the subject property. The survey was not technically exhaustive, excluded the operation of equipment and was conducted without the use of special protective clothing. The scope of work did not include removal of materials, testing, or use of equipment, such as scaffolding, metering/testing equipment or other devices.

2.7 Document Review and Interviews

The survey included interviews with administrative and facilities personnel, review of available construction documents, prior assessment reports and asbestos inspection reports. A copy of the Pre-Survey Questionnaire including facilities services responses to various physical conditions is included as Exhibit 7.3.

2.8 Out-of Scope Considerations

Out of scope considerations include, but are not limited to:

- a. Temporary maintenance buildings.
- b. Entering crawl or confined spaces; walking on pitched roofs or roofs without built-in access.
- c. Determination of plumbing pressures, flow rates or fixture counts.
- d. Observation of flue connections, interiors of chimneys, flues or boiler stacks.
- e. Removal of electrical panel and device covers or operating electrical devices.
- f. Examination of elevator cables, sheaves, controllers, motors inspection tags or entering pits or shafts.
- g. Determining NFPA hazard classifications.
- h. Classifying, or testing fire rating assemblies.
- i. Operating appliances or fixtures.
- j. Determining sound transmission coefficient (STC) ratings, flammability issues or regulations.
- k. Engineering calculations to determine any system's adequacy or compliance with any specific or commonly accepted design requirements.

- l. Adherence with AHERA or other hazardous material identification, abatement or operations and maintenance programs. Information from previous AHERA cost estimates is included in the opinions of probable costs.
- m. Identification, damage assessment or remediation recommendations for any type of mold, mildew or algae formations.
- n. Additional issues are outlined in ASTM E 2018 Paragraph 11.
- o. Force protection. As no Joint Service Integrated Vulnerability Assessments were provided to the survey team, no costs are shown in this study for any recommendations contained in them. Some costs were included for specific force protection items requested by DoDEA.

2.9 Professional Services

The survey is not a professional architecture or engineering service and the resulting report and opinion of probable costs is not subject to laws governing the professional practice of architecture or engineering. Documents will not include an architect's or engineer's seal.

2.10 Assumptions

The following assumptions are included in the recommended remediation work and opinions of probable costs:

- a. Professional consulting service fees for remediation actions are excluded from opinions of probable costs.
- b. Replacement of HVAC supply ducting includes costs for removal and replacement of existing ceilings, light fixtures and other accessories with new.
- c. Sealing between the top of walls and roof or floor deck to achieve required fire rating includes costs for sealing all conduit and duct penetrations through the fire rated walls.
- d. Structural systems, general construction and utilities obscured by earth, paving, concrete slabs, solid walls or ceilings may have deterioration that was undiscoverable during the property survey. Remediation costs for undiscoverable conditions are excluded from opinions of probable costs. Contingency factors are included as described in Paragraph 4.0.
- e. New or existing duct penetrations through fire rated walls between rooms and paths of egress will have fire/smoke dampers. Fire rated walls between two spaces that are not utilized as a path of egress will have fire dampers. Costs are included for this work.
- f. Costs are included for future scheduled work not already awarded under construction contract as of 1 October 2003. The exception is that PTR (Pupil - Teacher Ratio) projects are included in the study even though some have not been awarded. Per direction from DoDEA, these additions are included in the overall square footage of each school facility for the purposes of this study.
- g. Opinions of probable costs are expressed in FY04 values. Phase II cost escalation will be required for all work scheduled after this time.

- h. Title IX costs are for athletic facilities and associated amenities. Costs for personnel required under the law are not included.
- i. Life safety features such as fire sprinklers, fire alarms, strobes, emergency lighting and other equipment was assumed to be operational unless visible damage was observed. Equipment maintenance, repair and testing were assumed to be the Owner's responsibility.
- j. Costs for ADA compliance are based on current ADAAG accessibility guidelines. Compliance with all laws regarding ADA varies in each jurisdiction and may affect costs accordingly. Within this report, immediate remediation ADA items include the main public route into the building, at least one set of restrooms along the public route and accessible exits out of classrooms. Long-term items include signage, secondary exits and other toilet rooms. It is important to note that ADAAG accessibility guidelines are not immediate action requirements for existing buildings. The immediate priorities listed in this report are reasonable expectations of an LEA's requirements for transfer.
- k. Asbestos abatement costs exclude costs of consulting design, air monitoring or air testing during abatement activities or at final clearance, or material disposal.
- l. PRV costs are based on the size of the existing building.

2.11 Indoor Air Quality

The subject of indoor air quality has been receiving considerable attention by school officials all across the country, whether public, private or DDESS school system. Indoor air quality complaints can be due to a wide variety of factors that include: personal perceptions, a person's health, the amount of fresh air in a building, the humidity of the air in a building, and the building envelope. Some of these factors are difficult to quantify or detect. Terms like mold or mildew are often attached to indoor air quality complaints. It is important to note that there are several thousand types of mold and a relatively small portion have been tied to health problems. The issue of indoor air quality is difficult to address because there is not a set of definable symptoms and it is also difficult to define the source of an individual's discomfort.

People's symptoms are difficult to document. Allergies could be a contributing factor to IAQ complaints. Factors outside the school environment cannot be controlled by school staff. Fresh air, humidity control, and the building exterior envelope are areas school officials concentrate on to try to achieve acceptable indoor air quality. There are recommended guidelines for mechanical systems published by the American Society of Heating, Refrigeration and Air Conditioning Engineers that address fresh air requirements and humidity control. These guidelines have been implemented by building designers over the past ten to fourteen years. As such, schools designed and constructed before 1989 were not subject to these guidelines. Moisture intrusion in a building can also contribute to the possibility of mold growth. Older buildings in particular can have leaks in roofs, pipes or wall cavities that could allow moisture in a building. It is important for building owners to address moisture intrusion problems promptly.

In the responses received from Local Education Agencies during the course of this study, indoor air quality was listed as a high priority concern. Older schools or schools with older air conditioning systems generally do not comply with the ASHRAE standards and guidelines mentioned previously. In many cases, renovating a building to comply fully with current ASHRAE standards would be so costly as to require building a new school rather than renovating an existing facility. This cost is not economically possible in many school districts. In discussing the approach taken by LEA's, one responded saying their district makes improvements when a piece of mechanical equipment fails. They cannot satisfy all ASHRAE requirements in an older building, but they try to improve the overall air quality when they install new equipment.

The purpose of our study was to document the physical condition of the building and its systems. Indoor air quality testing was beyond the scope of our report. If a facility had IAQ complaints, we asked the school staff to report them to us in their pre-survey questionnaire and provide us an IAQ report if one had been performed. Where IAQ reports were provided, we used them to include costs for repair in the immediate term. In the case where a report was not performed, we recommended an IAQ study report with microbe classification. In the case where staff voiced an IAQ concern and we noticed a physical deficiency in the mechanical system or building envelope, we included cost to repair the physical deficiency. We did not perform any calculations on the mechanical systems.

3.0 System Description and Observations

I	LT	Reference
		3.1 Overall General Description
		<p>This facility is a 108,200 square foot, one story single building, with “A” wing originally constructed in 1963. Subsequent additions were:</p> <ul style="list-style-type: none"> ? Administration Addition “A” in 1987 ? Building “C” in 1987 ? Classroom addition to Building “C” in 1991 ? Building “B” in 1997 <p>This facility serves 546 students in grades pre -kindergarten through six.</p>
		3.2 Site
		3.2.1 Topography and Storm Water Drainage
X	X	<p>Slopes away from building do not appear to provide adequate surface runoff drainage in all areas and the site does appear to exhibit water -retaining problems. Corrective action is required, especially in the courtyard area between Buildings “A” and “B.”</p> <p>Site storm water drainage is area drains and storm water drainage system. Roof downspouts connect to the storm water drainage system. The system does not appear to be adequate for storm water control. Corrective action is required.</p>
		3.2.2 Paving, Curbing and Parking
		<p>Parking area paving is asphaltic concrete in fair condition. Corrective action is not required.</p> <p>Parking areas appear to provide adequate parking spaces. Corrective action is not required.</p>
		3.2.3 Flatwork
		<p>Concrete and asphaltic concrete walkways and ramps are in fair condition. Corrective action is not required.</p> <p>Walkways from drop off areas and between main building and exterior paths are protected by covered structures in good condition. Corrective action is not required.</p>

I	LT	Reference
		3.2.4 Recreational Facilities and Title IX Compliance
		<p>The school does not sponsor specific team sport programs and does appear to be in compliance with Title IX regulations. Corrective action is not required.</p> <p>Play fields for boys' and girls' field sports are available on-site and are in good condition. Corrective action is not required.</p> <p>A gymnasium provides indoor court sport recreational and assembly space. Equal toilet facilities are available for boys and girls. Corrective action is not required.</p> <p>X Play areas are provided with various types of equipment in fair condition. Corrective action is required to replace worn out equipment.</p> <p>The equipment is old, wooden, and needs sanding frequently to prevent splinters. It is a continual maintenance problem. In addition, some of the existing playground surfacing is peeling and could cause tripping problems.</p> <p>X Play surfaces are in good condition. Play surfaces in some areas do not appear to comply with the U.S. Consumer Product Safety Commission "Handbook for Public Playground Safety" requirements. Corrective action is required.</p>
		3.2.5 Utilities
		3.2.5.1 Water
		<p>Domestic water main service does appear to be adequate, with metering, and is in good condition. Corrective action is not required.</p> <p>A required backflow preventer on the main water service line is provided. The backflow preventer is in good condition. Corrective action is not required.</p>
		3.2.5.2 Natural Gas
		Gas service is multiple service, does appear to be adequate and in is in good condition. Corrective action is not required.
		3.2.5.3 Sanitary Sewer
		<p>The sanitary sewer service does appear to be adequate and is in good condition. Corrective action is not required.</p> <p>A two-compartment grease trap is provided for kitchen waste piping, does appear to be adequate and is in good condition. Corrective action is not required.</p>

I	LT	Reference
		3.2.5.4 Special Utility Systems
		Not applicable.
		3.2.5.5 Electrical Service and Metering
		Electrical service is multiple service with metering, is underground with a pad mount transformer, does appear to be adequate and is in good condition. Corrective action is not required.
		3.3 Structural Frame and Building Envelope
		3.3.1 Foundation
		The foundation is assumed to be concrete grade beams, supported by continuous spread and spot footings with concrete slab -on-grade floor in good condition. Corrective action is not required.
		3.3.2 Building Frame
		<p>Building frame for the main building “A” is concrete masonry unit walls and structural steel columns and beams with steel joists. Roof decking is gypsum deck or structural metal in buildings “A” and “B”, respectively. The structural system is in good condition. Corrective action is not required.</p> <p>Building frame for area “B” is concrete plank on load -bearing CMU. Wood roof trusses and sheathing are supported by the plank. The system is in good condition.</p> <p>Building frame for the Building “C” kindergarten addition is wood frame with wood joists and trusses. Roof decking is plywood sheathing. The structural system is in good condition. Corrective action is not required.</p>
		3.3.3 Facades or Curtainwall
		3.3.3.1 Sidewall System
		Building exterior is face brick masonry veneer with ceramic tile accents and stucco in good condition. Corrective action is not required.
		3.3.3.2 Entrances/Exits
		<p>Main entrance/exit is pre -finished anodized aluminum doors and framing with glazing in good condition. Corrective action is not required.</p> <p>Auxiliary exit/entrances are pre -finished anodized aluminum doors and framing with glazing or hollow metal doors and frames with glazing in good condition. Corrective action is not required.</p>

I	LT	Reference
		3.3.3.3 Fenestration System
		Fenestration system is pre-finished anodized aluminum framing with double glazing, pre-finished metal spandrel panels or composite translucent plastic panels in good condition. Corrective action is not required.
		3.3.3.4 Soffits
		Soffits at main entrance/exit, auxiliary exit/entrances, and roof overhangs are stucco in good condition. Corrective action is not required.
		3.3.3.5 Parapets
	X	Areas with parapets are extensions of the indicated wall systems and are protected with metal coping in fair condition. Corrective action is not required.
		3.3.4 Roofing
	X	<p>Low slope ballasted EPDM roofing is located on the classroom areas of Building "A" and is in poor condition. Numerous leaks are evident. Corrective action is currently underway to repair these leaks although it will not be a permanent fix. Within next ten years, it is anticipated that this roof will require replacement. In fact, a roof replacement design was performed five years ago but never constructed. The costs shown in this report are for a ballasted EPDM system.</p> <p>Sloped composition shingle roofing is located on Buildings "B" and "C" and is in fair to poor condition, respectively. Shingles at wing "C" are curling, brittle and deteriorating. Leaks are evident in wing "C." Corrective action is required in wing "C."</p> <p>Flashing, coping, fascia, gutters and downspouts are pre-finished metal in fair condition. Corrective action is required when composition roofing is replaced.</p>
		3.4 Interior Elements
		3.4.1 Common Areas
		<p>Lobbies and Corridors:</p> <p>Flooring carpet or poured resinous surface in good condition. Walls are glazed concrete masonry unit wainscot and concrete masonry units, concrete masonry units, or face brick masonry veneer in good condition. Solid ceilings and furring are gypsum board in good condition. Suspended acoustical lay-in panel ceilings are in good condition.</p>

I	LT	Reference
		<p>Public, Private and Classroom Toilets:</p> <p>Flooring is ceramic tile in good condition. Walls are concrete masonry units or ceramic tile wainscot and concrete masonry units in good condition. Suspended acoustical lay-in panel ceilings are in good condition.</p> <p>Administrative Areas, Media Center and Classrooms:</p> <p>Flooring is carpet in good condition. Walls are concrete masonry units in good condition. Suspended acoustical lay-in panel ceilings are in good condition.</p> <p>Cafeteria:</p> <p>Flooring is carpet in good condition. Walls are concrete masonry units in good condition. Solid ceilings and furring are gypsum board in good condition. Suspended acoustical lay-in panel ceilings are in good condition.</p> <p>Gymnasium:</p> <p>Flooring is rubber tile in fair condition. Walls are concrete masonry units in good condition. Solid ceilings are exposed structure and decking in good condition.</p> <p>Gymnasium Toilets:</p> <p>Flooring is ceramic tile in good condition. Walls are concrete masonry units in good condition. Suspended acoustical lay-in panel ceilings are in good condition.</p> <p>Stage:</p> <p>Flooring is finished wood in good condition. Walls are concrete masonry units in good condition. Solid ceilings are exposed structure and decking in good condition.</p> <p>Kitchen:</p> <p>Flooring is ceramic tile in good condition. Walls are ceramic tile wainscot and concrete masonry units in good condition. Solid ceilings and furring are gypsum board in good condition. Suspended acoustical lay-in panel ceilings are in good condition.</p>

I	LT	Reference
		3.5 Mechanical, Plumbing, and Electrical Systems
		3.5.1 HVAC System
	X	<p>The system in the original building is a 2 -pipe system with automatic changeover serving fan coil units in the classrooms. Replacement of some of the fan coils in area “A” is anticipated long -term. The boilers have been recently replaced, but the fan coil units are 15 years old and are in fair condition. There is some asbestos in the crawl space. Corrective action is not required.</p> <p>Fresh air to the original building is served by 6 heat pumps over the corridors.</p> <p>New buildings have 4 pipe, single duct central station air handling units with variable air volume boxes and hot water reheat.</p> <p>The chillers for the campus are as follows: 2 -90 ton machines, 2 -60 ton machines and 2-50 ton machines, ranging from 3 to 10 years old.</p> <p>The controls are by Seibe. Pneumatic controls are utilized for wings A and C. Electronic controls are used in wing B. The maintenance CPU for the HVAC control has a failed hard drive and compatible software for a new hard drive has not been found. New PC software is required for interface with the mechanical system. Costs are included with the fan coil replacement.</p> <p>No action is required on the equipment in wings B or C.</p>
		3.5.2 Plumbing System
		3.5.2.1 Plumbing Supply and Waste Piping
	X	Domestic water supply and waste piping within the facility does appear to be adequate and is in good condition. Corrective action is not required.
		3.5.2.2 Domestic Hot Water Production
		Domestic hot water is provided by natural gas and one electric water heater in good condition. Corrective action is not required.
		3.5.2.3 Fixtures
		Plumbing fixtures and connections appear to be adequate and are in good condition. Corrective action is not required.

I	LT	Reference
		3.5.2.4 Fuel Piping
		Natural gas piping does appear to be adequate and in is in good condition. Corrective action is not required.
		3.5.3 Electrical System
		3.5.3.1 Main Service
		<p>The main electrical distribution panel for Building “A” is a 1,000 -amp, 120/208-volt, 3-phase, 4-wire panel. The panel does appear to be adequate and is in good condition. Corrective action is not required.</p> <p>The main electrical distribution panel for Building “B” is a 1,200 -amp, 277/480-volt, 3-phase, 4-wire panel. The panel does appear to be adequate and is in good condition. Corrective action is not required.</p> <p>The main electrical distribution panel for Building “C” is a 600 -amp, 120/208-volt, 3-phase, 4-wire panel. The panel does not appear to be adequate and is in good condition. Corrective action is not required.</p>
		3.5.3.2 Distribution and Panels
	X	Electrical distribution and branch panels appear to be adequately sized in Buildings “B” and “C” and are in good condition. Distribution and dry type step down transformers provide power. Corrective action is required for Building “A.”
		3.5.3.3 Interior Lighting
	X	<p>Administrative area, media center and classroom lighting is recessed troffer fixtures with fluorescent lamps in fair condition. Fluorescent lamps are T -8. Light levels do not appear to be adequate in Area “A.” Corrective action is required in Area “A.”</p> <p>Corridor lighting is recessed troffer fixtures with fluorescent lamps in good condition. Fluorescent lamps are T -8. Light levels appear to be adequate. Corrective action is not required.</p> <p>Gymnasium lighting is pendant mounted fixtures with metal halide lamps in good condition. Light levels appear to be adequate. Corrective action is not required.</p>
		3.5.3.4 Exterior Lighting
		Exterior lighting is provided and is surface mounted wall pack fixtures with high - pressure sodium lamps in good condition. Lighting levels appear to be adequate. Corrective action is not required.

I	LT	Reference
		<p>Soffit and entrance lighting is provided and is recessed fixtures with incandescent lamps in good condition. Lighting levels appear to be adequate. Corrective action is not required.</p> <p>Covered walkway lighting is provided and is recessed fixtures with incandescent lamps in good condition. Lighting levels appear to be adequate. Corrective action is not required.</p> <p>Parking lot lighting is not provided. Corrective action is not required.</p>
		3.5.3.5 Security System
X		A security system is provided and is not monitored by a central agency. The security system does not appear to provide adequate security or monitoring and is in poor condition. Corrective action is required.
		3.5.3.6 Intercom System
		Intercom system does allow communication to individual classrooms and outside telephone calls. The system is in fair condition. Corrective action is not required.
		3.5.3.7 Educational Television
		Educational television is provided and does not allow internal broadcasting. The system is in good condition. Corrective action is not required.
		3.5.3.8 Computer Network
		A computer network system provides approximately 5 LAN outlets for each classroom. The computer network system does appear to be adequate and is in good condition. Corrective action is not required.
		3.6 ADA Tier I: Visual Accessibility Survey
		3.6.1 Path of Travel
X		A required adequately marked accessible route from parking is not provided. One accessible route is required from the boundary of the site from public transportation stops, accessible parking spaces, passenger loading zones, public streets or walkways to an accessible building entrance. Corrective action is required.
X		Curb ramps on approaches to the facility from student drop off areas and parking are provided and do not appear to comply with accessibility guidelines. Curb ramps along the accessible route are required to have compliant slopes and detectable warnings. Corrective action is required.

I	LT	Reference
	X	The walkway approach to main entrance doors does appear to provide accessible slopes without threshold entry restrictions. Corrective action is not required.
	X	Ramps along the on-site accessible route are required and are provided. Ramps do not appear to comply with accessibility guidelines. Required handrails are provided and do not appear to comply with height and extension requirements. Corrective action is required.
	X	Ramps along the interior accessible route are required and are provided. Ramps appear to comply with accessibility guidelines. Required handrails are provided at all but one ramp in Building "C" kindergarten addition and appear to comply with height and extension requirements. Corrective action is required at ramp in Building "C."
		3.6.2 Parking
X		Required accessible parking for cars and vans is not provided. Parking areas require marked spaces based on 1 accessible space for each 25 spaces, a minimum of one van accessible space for each 8 accessible spaces with slopes not exceeding 1:50 (2%) in all directions, access aisles, signage and marked accessible route. Corrective action is required.
		3.6.3 Entrances/Exits
	X	Main entrance/exit and auxiliary exit/entrance approach, doors and hardware appear to comply with accessibility guidelines. Corrective action is not required.
	X	Some auxiliary exit/entrance doors exit to porches that do not appear to provide accessible exiting. Exit/entrances are required to be accessible by construction of porches, ramps, handrails or site regrading. Corrective action is required.
	X	Interior doors along the accessible route are flush with corridor walls and appear to allow clearance and approach accessibility. Corrective action is not required. Door assemblies do not appear to meet accessibility guidelines in Buildings "A" and "C." All doors to accessible spaces are required to have non-restrictive hardware and closers. Corrective action is required.
		3.6.4 Signage
	X	Signage along the accessible route does not appear to comply with accessibility guidelines. Signage is required at all designated parking spaces, along the marked accessible route and building interior. Signage with raised Braille characters is required at all doors designating permanent rooms or spaces. Corrective action is required.

I	LT	Reference
		3.6.5 Public Toilet Rooms
	X	Public toilet rooms are provided along the accessible route and appear to comply with accessibility guidelines. Corrective action is not required.
	X	Administrative staff and nurse’s toilet rooms do not appear to meet accessibility guidelines. Toilets are required to comply with guidelines similar to public toilets. Corrective action is required.
	X	Classroom toilet rooms do not appear to meet accessibility guidelines in the kindergarten Building “C”. We recommend one set of accessible toilets between rooms for pre-kindergarten, kindergarten and first grade. Should a child require modification, the school is equipped. Corrective action is required.
		3.6.6 Drinking Fountains
X		Drinking fountains are provided along the accessible route and do not appear to comply with accessibility guidelines. Drinking fountains are required to be accessible with adequate clearances and corridor protrusion protection. Corrective action is required.
		3.6.7 Telephones
		Not applicable.
		3.6.8 Elevators/Lifts
	X	Elevators are not required. Required platform/wheelchair lifts are not provided at the stage. Corrective action is required.
		3.6.9 Recreational Facilities
X		Required accessible routes to play areas are provided. Accessible play areas, equipment and surfacing do not appear to be available in individual play area groups. ADA guidelines require a minimum of one play area with an accessible route, equipment and accessible surfacing material for each play area group. Corrective action is required.
		3.7 Life Safety and Fire Protection
		3.7.1 Sprinklers, Standpipes and Fire Suppression Systems
		A required sprinkler system is provided for janitor and custodial spaces. Corrective action is not required.

I	LT	Reference
X		<p>A required sprinkler system is not provided for the stage. Corrective action is required.</p> <p>The kitchen hood is make -up air type. Distance from cooking surfaces and edge of kitchen hood appear to comp ly with distance requirements. Kitchen hood duct protection is fire resistive construction. The kitchen hood system is in good condition. Corrective action is not required.</p> <p>A required fire suppression system is provided in the kitchen hood. Cooking equipment does have required shut down capability upon suppression system activation. Corrective action is not required.</p> <p>Provision of fire extinguishers within required travel distances appear to comply with life safety standards. Corrective action is not requ ired.</p>
		3.7.2 Alarm Systems
X		The visual alarm system does not appear to comply with ADA guidelines or life safety standards in Buildings “A” and “C.” Visual alarms located 80 inches above the floor to the bottom of the lens are required in all corridors, common use spaces and rooms with more than one occupant. Corrective action is required.
X		A fire alarm and annunciator panel is provided. A smoke detector is not provided in front of the panel. Corrective action is not required, although the sch ool may want to consider it. In Building “C”, the fire alarm is old and outdated compared to the other two buildings. A new fire alarm system is required.
X		Required pull stations are provided at emergency egress doors and are not mounted at heights compliy ng with ADA guidelines. Corrective action is required, but can be performed by school personnel.
		3.7.3 Corridor and Separation Walls
X		Exit corridor and area separation walls do not appear to have required firestopping sealing between wall and structural surfaces and framing or around wall penetrations. Borrowed lights appear to have fire resistive construction. Corrective action is required in Buildings “A” and “C” .
		3.7.4 Doors
X		Some corridor doors do not appear to comply with life safety fire resistanc e rating standards in Buildings “A” and “C.” Because they have louvers that allow the transfer of air between interior spaces and corridors. Corridor doors in existing occupancies are required to be solid core, tight sealing doors in metal frames. Corrective action is required. Refer to Section 3.6 for Opinions of Probable Costs of remediation.

I	LT	Reference
		<p>Area separation doors, frames, hardware and assemblies appear to comply with fire resistance rated construction requirements. Corrective action is not required.</p> <p>Emergency exit doors, frames, hardware and assemblies appear to comply with emergency exiting requirements. Corrective action is not required.</p>
		3.7.5 Classroom Emergency Exiting
		Operable window units and exit doors to building exterior provide classroom emergency exiting and appear to comply with emergency exiting requirements. Corrective action is not required.
		3.7.6 Emergency Egress Lighting
X		<p>Corridor emergency egress lighting is not provided in Building “A.” Fixtures are selected light fixtures without required testing devices. Corrective action is required in Building “A.”</p> <p>Illuminated directional emergency exit signs are provided at every required location are clearly visible. Corrective action is not required.</p>
		3.8 Asbestos Concerns
	X	<p>According to the AHERA Report, this facility does have asbestos-containing material (ACM). Remaining ACM is non-friable in its current location, not damaged, inaccessible, and is not hazardous to building occupants. The AHERA Report currently recommends managing all remaining ACM in place.</p> <p>Removal of all ACM located at a few pipe joints and in small areas of Building “A” is required long-term. Replacement of resilient flooring over the affected areas is included in the cost.</p>

4.0 Opinions of Probable Costs to Remedy Physical Deficiencies (Maxwell Elementary)

4.1 General

Opinions of probable cost are provided to address physical deficiencies in the facility. Physical deficiencies are divided into three categories: Immediate, Intermediate, and Long-term Remediation items as requested in the scope of work. The costs shown are based on visual observations from the walk-through survey. Quantities used in performing the estimate are approximate; no measurements were taken on site. Unit costs are parametric based on gross square footage for major building systems and components.

4.2 Parametric Costs

The appendix of each report contains the parametric opinions of probable costs. Each major physical deficiency is listed with the report section number. The unit prices shown were derived from RS Means Building Construction Costs Data, 60th Edition, 2002 and from prior experience at the Military Base. Immediate, Intermediate, and Long-term Remediation Costs are based on Fiscal Year 2004 (FY04) values. Each item is marked up for general contractor overhead and profit and escalated for two years at 2.87% per year. It is assumed that these costs will be escalated beyond 2004 by the user. Each cost is also adjusted by a location adjustment factor based on the average nationwide statistical labor costs as established by the office of the Under Secretary of Defense, June 3, 2002. An estimate contingency is applied to all costs to cover costs for unforeseen conditions and unknown quantities. The contingency amount is contingent upon the level of scope and detail. Typically, budgetary opinions of probable costs provided at a "pre-concept" phase include a 15% contingency. Opinions of probable costs for "construction document" phase projects include 5 - 10% contingencies. A 15% contingency for the opinions of costs, based on the US Army Technical Manual TM 5-800-4 - Programming Cost Estimates for Military Construction, is included in this study due to the broad nature of the survey.

4.3 Overall Cost Summary

The total cost summary for remediation of physical deficiencies follows in this section. The summary indicates the distribution of Immediate Remediation costs for the three primary standards used for evaluation: life safety, ADA, and major building system guidelines. Intermediate remediation items fall into categories of Title IX, force protection, play surfacing, and additional sitework for safe traffic flow. Long-term Remediation costs are indicated for additional ADA work and deferred maintenance items. Deferred maintenance is work that cannot be performed by routine maintenance and requires capital improvements. Examples of deferred maintenance include new roofing and asbestos abatement of non-friable materials.

4.4 Detailed Cost Summary

A detailed cost summary is included at the end of this section for Immediate Remediation work recommended for completion within 1 year, and Long-term Remediation recommended for completion within 1 –10 years. Detailed distributions are not given for intermediate costs as they apply to individual line items, in general. Intermediate costs are a lower priority item than immediate costs. Cost distributions for each building system are indicated in tabular form for all items requiring remediation.

4.5 Discussion of Results

Section 3.0 of the report lists the physical deficiencies and associated opinions of probable costs of remediation for each building system. Total costs for Immediate , Intermediate, and Long-term Remediation items are as follows:

Immediate	\$ 880,000
Intermediate	\$ 243,000
Long-term	<u>\$ 1,384,000</u>
Total Remediation Costs	\$ 2,507,000

A calculation of Plant Replacement Value (PRV) was also performed for this facility. Plant replacement value represents the cost of a new building and associated sitework for FY04 pricing. The PRV for this school is approximately \$ 12,242,000. This cost was determined based on the following square foot cost escalated from TM 5 -800-4:

Building	\$ 113.12/sf
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These costs were then multiplied by the building square footage and applicable cost escalation and contingency factors. PRV is often used as a comparison to renovation and repair costs for economic feasibility studies.

Before a comparison of remediation costs and Plant Replacement Value (PRV) can be performed, it is important to consider the age of the building. According to the Department of Defense's "Facilities Recapitalization Front End Assessment, August 2002," the government's goal is a 67 year recapitalization rate. Sixty-seven years is the expected service life for a building in the DOD inventory and we have carried that assumption to this analysis. For the purpose of our study, we are utilizing relative useful life of a building, defined as the 67 year expected service life minus the age of the building. In facilities with additions, we have compiled a composite facility age using the areas and ages of each component making up the whole facility.

The above DOD reference calculates recapitalization rate as the plant replacement value divided by the planned annual sustainment costs to determine the number of years of expected life. A number greater than 67 is considered good because it exceeds the government goal. Sustainment in this model is the cost of annual maintenance and improvements. Because our study is based on a large, one-time investment and not

annual maintenance dollars, it does not transfer directly to our study. However, the logic of the method is easily transformed into a Modified Recapitalization Metric (MRM).

For the purpose of this study, the modified recapitalization metric (MRM) is computed considering the following factors:

- Expected Service Life (ESL): 67 years per DOD
- Relative Useful Life (RUL): Expected service life minus the age of the building. Because Maxwell is a combination of several additions and the original building, a composite relative useful life has been used.
- Target Sustainment: The annual investment required to keep the building in good working order to achieve an ESL of 67 years. It is calculated by dividing the plant replacement value by the ESL.
- Plant Replacement Value (PRV): The cost to replace the school building, sitework, furniture and associated assets. It is presented in FY 2004 dollars for this study.
- Remediation Costs: These are the total construction costs associated with correcting deficiencies noted in this study.
- Required Investment: The level of investment required to correct the current deficiencies spread out over the remaining useful life. It is calculated by dividing remediation costs by the RUL.

The MRM is the ratio of required investment to target sustainment (investment). A ratio less than one indicates it may be more cost effective to renovate a facility rather than replacing it. Conversely, an MRM greater than one indicates replacement may be the better option because the government could spend less sustaining a new facility rather than investing in an older, less modern facility.

The following table summarizes the MRM calculation for Maxwell Elementary School.

ESL (yrs)	AGE (yrs)	RUL (yrs)	PRV (\$)	TARGET SUSTAIN (Annual \$)	REMED. COSTS (\$)	REQ'D INVEST. (Annual \$)	MRM	RECOMMEND
67	*17.1	*49.9	12,242,000	182,700	2,507,000	50,200	.27	Renovate

*Represents Composite Number.

Based on our analysis of the remediation costs, it is our opinion that this school should be renovated to bring it into compliance with applicable codes and repair problems with major building systems. Considerable investment was made six years ago in additions that will help keep the building serviceable for several years.

Refer Appendix for Total Cost Summary

Refer Appendix for Immediate Remediation Item Detail Table

Refer Appendix for Long -Term Remediation Item Detail Table

MAXWELL ELEMENTARY SCHOOL



Photo 1: ADA Non-compliant Ramp



Photo 2: ADA Non-compliant Parking



Photo 3: ADA Non-compliant Interior Ramp



Photo 4: ADA Non-compliant Exit/Entrance

MAXWELL ELEMENTARY SCHOOL



Photo 5: ADA Non-compliant Drinking Fountain



Photo 6: ADA Non-compliant Stage Access



Photo 7: ADA Non-compliant CPSC Wood Play Equipment



Photo 8: Life Safety Non-compliant Louvered Door



Photo 9: Roof Leak at Building "A" Canopy



Photo 10: Site Drainage Problem