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# DDESS Facility Transfer Study Facility Condition Report (Final)

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## Fort Rucker, Alabama

December 10, 2003

PSC Project # 03811102



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

**FORT RUCKER SCHOOLS  
FORT RUCKER, ALABAMA  
PROPERTY CONDITION REPORT**

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**RUCKER ELEMENTARY SCHOOL  
FORT RUCKER, ALABAMA  
PROPERTY CONDITION REPORT  
EXECUTIVE SUMMARY**

1.0 Executive Summary

Data obtained from the survey provides an objective and impartial evaluation of Rucker 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 107,000 square foot, one-story masonry veneer and stucco building constructed in 1963 with additional construction in 1965, 1967 and 2003. This facility serves 549 students from second to sixth grade.

This facility requires alterations to comply with ADA accessibility, life safety 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           \$748,000

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           \$25,000

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           \$862,000

Total remediation project costs are approximately \$1,635,000.

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 \$11,954,000. 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 Rucker Elementary School is 0.29. 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 old mechanical unit deficiencies. 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	*37.3	*29.7	11,954,000	178,400	1,635,000	55,100	.31	Renovate

\*Indicates Composite Number



**ADA Non-compliant Exit/Entrance**



**ADA Non-compliant Play Area**

**RUCKER PRIMARY SCHOOL  
FORT RUCKER, ALABAMA  
PROPERTY CONDITION REPORT  
EXECUTIVE SUMMARY**

1.0 Executive Summary

Data obtained from the survey provides an objective and impartial evaluation of Rucker Primary 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 69,000 square foot, one-story masonry veneer and metal siding building constructed in 1972. This facility serves 475 students from pre-kindergarten to first grade.

This facility requires alterations to comply with ADA accessibility, life safety and major building items such as roof repairs and HVAC controls.

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           \$703,000

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       \$25,000

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         \$296,000

Total remediation project costs are approximately \$1,024,000.

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 \$7,743,000. 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 Rucker Primary School is 0.24. 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 and life safety issues, 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	30	37	7,743,000	115,600	1,024,000	27,500	.24	Renovate



**ADA Non-compliant Toilet**



**ADA Non-compliant Parking**

**FORT RUCKER SCHOOLS  
FORT RUCKER, ALABAMA  
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 5th and 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 Processes.

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, 60<sup>th</sup> 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 or classrooms.
- 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 architects' or engineers' 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 (Rucker Elementary School)

I	LT	Reference
		<b>3.1 Overall General Description</b>
		<p>This facility is a 107,485 square foot, one story building originally constructed in 1963. Subsequent additions were:</p> <ul style="list-style-type: none"> <li>? Classroom addition in 1965</li> <li>? Classroom addition in 1967</li> <li>? Media Center addition and renovation in 2003</li> </ul> <p>This facility serves 549 students in grades two through six.</p>
		<b>3.2 Site</b>
		3.2.1 Topography and Storm Water Drainage
		<p>Slopes away from building appear to provide adequate surface runoff drainage in all areas and the site does not appear to exhibit water -retaining problems. Corrective action is not required.</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 appear to be adequate for storm water control. Corrective action is not required.</p>
		3.2.2 Paving, Curbing and Parking
	X	<p>Parking area paving is asphaltic concrete in fair to poor condition. The parking area needs seal coating. Corrective action is required.</p> <p>Parking areas appear to provide adequate parking spaces. Corrective action is not required.</p>
		3.2.3 Flatwork
	X	<p>Concrete walkways and ramps are in fair condition. Corrective action is required.</p> <p>Walkways from drop off areas and between main building are protected by covered structures in fair condition. Corrective action is not required.</p>
		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>

I	LT	Reference
X		<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 running and exercise track is been p rovided and is in good condition. Corrective action is not required.</p> <p>A gymnasium provides indoor court sport recreational and assembly space. Corrective action is not required.</p> <p>Play areas are provided with various types of equipment in good condition. Corrective action is not required.</p> <p>Play surfaces are in fair condition. Play surfaces in some areas do not appear to comply with the U.S. Consumer Safety Commission "Handbook for Public Playground Safety" requirements. Corrective action is required.</p>
		3.2.5 Utilities
		3.2.5.1 Water
X		<p>Domestic water main service does appear to be adequate, with metering and is in good condition. Water is non-metered to shop building. Corrective action is not required.</p> <p>A required backflow preventer on the main water service li ne is not provided. Corrective action is required.</p>
		3.2.5.2 Natural Gas
		Gas service is single service, does appear to be adequate and in is in good condition. Corrective action is not required.
		3.2.5.3 Sanitary Sewer
X		<p>The sanitary sewer service does ap pear to be adequate and is in good condition. Corrective action is not required.</p> <p>Two single -compartment grease trap s are provided for kitchen waste piping, do not appear to be adequate and are in good condition. Replacement with two two-compartment greas e traps is required.</p>
		3.2.5.4 Special Utility Systems
		Not applicable.

I	LT	Reference
		3.2.5.5 Electrical Service and Metering
	X	Electrical service is multiple service with metering . Some of the service is over head mounted while other service feeds a pad mounted transformer . The service does not appear to be adequate for the size per the National Electric Code. Existing service is in fair condition. Corrective action is required to upgrade service .
		<b>3.3 Structural Frame and Building Envelope</b>
		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
		Building frame for the main building is concrete masonry unit walls with steel joists. Roof decking is structural metal. The structural system is in good condition. Corrective action is not required.
		3.3.3 Facades or Curtainwall
		3.3.3.1 Sidewall System
		Building exterior is face brick masonry veneer and stucco in good condition. Corrective action is not required.
		3.3.3.2 Entrances/Exits
		Main entrance/exit is hollow metal doors and frames with glazing in good condition. Corrective action is not required.  Auxiliary exit/entrances are hollow metal doors and frames with glazing in fair condition. Corrective action is not required.
		3.3.3.3 Fenestration System
		Fenestration system is pre -finished anodized aluminum framing with double glazing and pre -finished metal spandrel 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 wood in fair condition. Corrective action is not required.

I	LT	Reference
		3.3.3.5 Parapets
		Not applicable.
		3.3.4 Roofing
		<p>Low slope fully adhered EPDM roofing is located on all building areas except Media Center renovation and is in good condition. Minor leaks are evident but can be corrected through routine maintenance . Corrective action is not required.</p> <p>Sloped pre-finished standing seam metal roofing is located on the Media Center renovation and is in good condition. Corrective action is not required.</p> <p>Flashing, coping, fascia, gutters and downspouts are pre -finished metal in good condition. Corrective action is not required.</p>
		<b>3.4 Interior Elements</b>
		3.4.1 Common Areas
		<p>Lobbies and Corridors:</p> <p>Flooring is vinyl tile, carpet, or poured resinous material in fair condition. Walls are concrete masonry units or face brick masonry veneer in fair condition. Suspended acoustical lay -in panel ceilings are in good condition.</p> <p>Public, Private and Classroom Toilets:</p> <p>Flooring is poured resinous material in good condition. Walls are 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 vinyl tile in good condition and carpet in poor condition. Walls are concrete masonry units or face brick masonry veneer in fair condition. Suspended acoustical lay -in panel ceilings are in good condition.</p> <p>Cafeteria:</p> <p>Flooring is vinyl tile in good condition. Walls are plaster in fair condition. Suspended acoustical lay -in panel ceilings are in fair condition.</p>

I	LT	Reference
		<p>Gymnasium:</p> <p>Flooring is vinyl tile in good condition. Walls are concrete masonry units and wood paneling in fair 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. Suspended acoustical lay -in panel ceilings are in good condition.</p> <p>Kitchen:</p> <p>Flooring is ceramic tile in good condition. Walls are pre -finished fiberglass panels in good condition. Suspended acoustical lay -in panel ceilings are in good condition.</p>
		<b>3.5 Mechanical, Plumbing, and Electrical Systems</b>
		3.5.1 HVAC System
X		<p>Rucker Elementary School utilizes several different mechanical systems to heat and cool the building. Classrooms are served by a two -pipe chilled water / hot water system with fan coil units. The media center and art rooms are served by a four - pipe system while a DX cooling unit with a hot water coil serves the gym. Finally, rooftop units heat and cool the administration and kitchen areas.</p> <p>Hot water is provided by a total of five natural gas boilers, three located in the north building and the other two in the south building. The system is controlled with a summer and winter switch to changeover two pipe units.</p> <p>Other observations included encapsulated asbestos around some piping. Some of the rooftop units were in poor condition and require replacement. It also appeared that a new fresh air makeup unit was needed for fresh air distribution. An indoor air quality study has already been performed at this school. Finally, the piping runouts to the unit ventilators are in poor condition and require replacement. It is also recommended that the water valves at the fan coil units be tested and balanced to allow them to track properly.</p>
		3.5.2 Plumbing System
		3.5.2.1 Plumbing Supply and Waste Piping
		Domestic water supply and waste piping within the facility is currently being upgraded. Corrective action is not required.

I	LT	Reference
		3.5.2.2 Domestic Hot Water Production
		Domestic hot water is provided by natural gas water heaters in good condition. Corrective action is not required.
		3.5.2.3 Fixtures
		Plumbing fixtures and connections are currently being upgraded. Corrective action is not required.
		3.5.2.4 Fuel Piping
		Natural gas piping does appear to be adequate and is in good condition. Corrective action is not required.
		3.5.3 Electrical System
		3.5.3.1 Main Service
	<p>X</p> <p>X</p>	<p>The main electrical distribution panel for the gymnasium, computer and northwest part of building is a 1,600-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 the southwest part of the building is an 800-amp, 120/208-volt, 3-phase, 4 -wire panel. The panel does appear to be adequate but is in poor condition. Corrective action is required.</p> <p>The main electrical distribution panel for the southeast part of the building is an 800-amp, 120/208-volt, 3-phase, 4 -wire panel. The panel does appear to be adequate but is in poor condition. The panel exceeds the maximum number of disconnects allowed. Corrective action is required.</p> <p>The main electrical distribution panel for the northeast part of the building is a 1,200-amp, 120/208-volt, 3-phase, 4 -wire panel. The panel does appear to be adequate and is in fair condition. Corrective action is not required.</p> <p>The main electrical distribution panel for the back warehouse and exterior toilets is a 125-amp, 120/208 volt, 1-phase, 3 -wire panel. The panel does appear to be adequate and is in fair 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 and are in fair condition. Corrective action is required to fix water lines directly over panels and exposed buss bars.

I	LT	Reference
		3.5.3.3 Interior Lighting
		<p>Administrative area, media center and classroom 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>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 surface mounted parabolic fixtures with fluorescent lamps in good condition. Fluorescent lamps are T -12. Light levels appear to be adequate. Corrective action is not required.</p>
		3.5.3.4 Exterior Lighting
	<p>X</p> <p>X</p>	<p>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.</p> <p>Soffit and entrance lighting is provided and is surface mounted fixtures with high-pressure sodium or incandescent lamps in fair and poor condition. Lighting levels appear to be adequate. Corrective action is required to replace incandescent fixtures.</p> <p>Covered canopy lighting is provided and is surface mounted fixtures with high - pressure sodium lamps in fair and poor condition. Lighting levels appear to be adequate. Corrective action is required.</p> <p>Parking lot lighting is not provided. Corrective action is not required unless night activities are planned or if desired by the base for security reasons .</p>
		3.5.3.5 Security System
X		A security system is not provided and is required.
		3.5.3.6 Intercom System
		Intercom system does allow communication to individual classrooms. The system is in fair condition. Corrective action is not required.
		3.5.3.7 Educational Television
		Educational television is provided and does allow internal broadcasting. The system is in good condition. Corrective action is not required.

I	LT	Reference
		3.5.3.8 Computer Network
		A computer network system provides approximately 5 -9 LAN outlets for each classroom. The computer network system does appear to be adequate and is in good condition. Corrective action is not required.
		<b>3.6 ADA Tier I: Visual Accessibility Survey</b>
		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.
		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 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.
		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
		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 and ramps 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.

I	LT	Reference
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. 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.
		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.  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. Toilets are required to comply with guidelines similar to public toilets. 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.

I	LT	Reference
		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.
		<b>3.7 Life Safety and Fire Protection</b>
		3.7.1 Sprinklers, Standpipes and Fire Suppression Systems
X		<p>A required sprinkler system is provided for janitor and custodial spaces. Corrective action is not required.</p> <p>A required sprinkler system is not provided for the stage. Corrective action is required.</p> <p>The kitchen hood is compensating type. Distance from cooking surfaces and edge of kitchen hood appear to comply 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 required.</p>
		3.7.2 Alarm Systems
X		The visual alarm system does not appear to comply with ADA guidelines or life safety standards. 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		<p>An annunciator or fire alarm panel is provided and is monitored by a central agency. A required smoke detector is not provided in front of the panel. Corrective action is required.</p> <p>Required pull stations are provided at emergency egress doors. Corrective action is not required.</p>

I	LT	Reference
		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 and transoms appear to have fire resistive construction. Ductwork penetrations do not appear to have required fire/smoke dampers. Corrective action is required.
		3.7.4 Doors
		<p>Corridor doors, frames, hardware and assemblies do not appear to comply with life safety fire resistance rating standards. Corridor doors are required to have fire resistance rated construction and hardware assemblies. Corrective action is required. Refer to Section 3.6 for Opinions of Probable Costs of remediation.</p> <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 to building exterior provide classroom emergency exiting and appear to comply emergency exiting requirements. Corrective action is not required.
		3.7.6 Emergency Egress Lighting
X		<p>Corridor emergency egress lighting is provided. Fixtures are selected light fixtures with required testing devices. Corrective action is not required.</p> <p>Emergency egress lighting is not provided in required windowless rooms. Corrective action is required.</p> <p>Illuminated directional emergency exit signs are provided at every required location are clearly visible. Corrective action is not required.</p>
		<b>3.8 Asbestos Concerns</b>
		According to the AHERA Report, this facility does have asbestos -containing material (ACM). Remaining ACM is friable and non -friable, not damaged, inaccessible and is not hazardous to building occupants in its current location. The AHERA Report recommends managing all remaining ACM in place until it can be removed.

<b>I</b>	<b>LT</b>	<b>Reference</b>
		Remaining asbestos consists of pipe fitting insulation and a small amount of floor tile and some sheet gasketing.
	X	Removal of all ACM located as described above and replacement of affected flooring, piping and insulation is required long-term.

## 4.0 Opinions of Probable Costs to Remedy Physical Deficiencies (Rucker 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, 60<sup>th</sup> 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 is 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	\$ 748,000
Intermediate	\$ 25,000
Long-term	<u>\$ 862,000</u>
Total Remediation Costs	\$ 1,635,000

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 \$15,435,000. This cost was determined based on the following square foot cost escalated from TM 5 -800-4:

Building	\$ 110.39/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 Rucker Elementary is a combination of one recent addition and two older additions, 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 Rucker Elementary School.

ESL (yrs)	AGE (yrs)	RUL (yrs)	PRV (\$)	TARGET SUSTAIN (Annual \$)	REMED. COSTS (\$)	REQ'D INVEST. (Annual \$)	MRM	RECOMMEND
67	*37.3	*29.7	11,954,000	178,400	1,635,000	55,100	.31	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. An investment into the mechanical systems and ADA and life safety improvements 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

### 3.0 System Description and Observations (Rucker Primary School)

I	LT	Reference
		<b>3.1 Overall General Description</b>
		<p>This facility is a 69,000 square foot, one story single building originally constructed in 1972. Subsequent additions were:</p> <p>? Storage Room addition is scheduled for future construction.</p> <p>This facility serves 475 students in grades pre-kindergarten through first grade.</p>
		<b>3.2 Site</b>
		3.2.1 Topography and Storm Water Drainage
		<p>Slopes away from building appear to provide adequate surface runoff drainage in all areas and the site does not appear to exhibit water-retaining problems. Corrective action is not required.</p> <p>Site storm water drainage is area drains and storm water drainage system. Roof downspouts connect to the storm water collection system. The system does appear to be adequate for storm water control. Corrective action is not required.</p>
		3.2.2 Paving, Curbing and Parking
		<p>Parking area paving is asphaltic concrete in good 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 walkways and ramps are in fair condition. Corrective action is not required.</p> <p>Walkways from drop off areas and between main building are protected by covered structures in good condition. Corrective action is not required.</p>
		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. Bleachers are in good condition. Corrective action is not required.</p>

I	LT	Reference
X		<p>A cafeteria/gymnasium provides indoor court sport recreational and assembly space. Corrective action is not required.</p> <p>Play areas are provided with various types of equipment in good condition. Corrective action is not required.</p> <p>Play surfaces are in good condition. Play surfaces in some areas do not appear to comply with the U.S. Consumer Safety Commission “Handbook for Public Playground Safety” requirements. Corrective action is required.</p>
		3.2.5 Utilities
		3.2.5.1 Water
X		<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 not provided. Corrective action is required.</p>
		3.2.5.2 Natural Gas
		Gas service is single service, does appear to be adequate and in is in good condition. Corrective action is not required.
		3.2.5.3 Sanitary Sewer
X		<p>The sanitary sewer service does appear to be adequate and is in fair condition. Replacement of 100 feet of 6 -inch cast iron sewer pipe from grease trap to manhole is required.</p> <p>A two-compartment grease trap is provided for kitchen waste piping . Piping appears to be adequate and is in good condition. Corrective action is not required.</p>
		3.2.5.4 Special Utility Systems
		Not applicable.
		3.2.5.5 Electrical Service and Metering
		Electrical service is single service with metering . Underground surface feeds a pad mounted transformer that does appear to be adequate and is in good condition. Corrective action is not required.

I	LT	Reference
		<b>3.3 Structural Frame and Building Envelope</b>
		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 is structural steel columns and beams with steel joists. Roof decking is lightweight concrete. The structural system is in good condition. Corrective action is not required.</p> <p>Building frame for the gymnasium is concrete masonry unit walls with pre-cast concrete tees. Roof decking is concrete fill over pre-cast concrete tees. 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 and pre-finished metal demountable partitions 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 fair condition. Corrective action is not required.</p> <p>Auxiliary exit/entrances are pre-finished anodized aluminum doors and framing with glazing in fair condition. Corrective action is not required.</p>
		3.3.3.3 Fenestration System
		Fenestration system is pre-finished anodized aluminum framing with double glazing 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 pre-finished aluminum or exterior grade suspended lay-in panels in good condition. Corrective action is not required.

I	LT	Reference
		3.3.3.5 Parapets
		Areas with parapets are extensions of the indicated wall systems and are protected with metal coping in good condition. Corrective action is not required.
		3.3.4 Roofing
X		<p>Low slope fully adhered PVC roofing is located on the main building and is in good condition. Minor leaks are evident and should be corrected. Corrective action is required.</p> <p>Sloped pre-finished standing seam metal roofing is located on the storage room addition and is in good condition. Corrective action is not required.</p> <p>Flashing, coping, fascia, gutters and downspouts are pre-finished metal in good condition. Corrective action is not required.</p>
		<b>3.4 Interior Elements</b>
		3.4.1 Common Areas
		<p>Lobbies and Corridors:</p> <p>Flooring is carpet in fair condition. Walls are concrete masonry units or pre-finished metal demountable partitions in good condition. Suspended acoustical lay-in panel ceilings are in good condition.</p> <p>Public, Private and Classroom Toilets:</p> <p>Flooring is ceramic tile or vinyl tile in good condition. Walls are 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 with sheet vinyl in fair condition. Walls are concrete masonry units and pre-finished metal demountable partitions in good condition. Suspended acoustical lay-in panel ceilings are in good condition.</p> <p>Cafeteria/Gymnasium:</p> <p>Flooring is vinyl tile in good condition. Walls are concrete masonry units in good condition. Solid ceilings are exposed structure and decking in good condition.</p>

I	LT	Reference
		<p>Gymnasium Toilets:</p> <p>Flooring is ceramic tile in good condition. Walls are ceramic tile wainscot and 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. Wal ls are ceramic tile wainscot and concrete masonry units in good condition. Suspended acoustical lay -in panel ceilings are in good condition.</p>
		<p><b>3.5 Mechanical, Plumbing, and Electrical Systems</b></p>
		<p>3.5.1 HVAC System</p>
X		<p>The heating and cooling system consists of nine large rooftop units which are less than five years old. They are DX units with gas packs and can control both humidity and temperature. Three units have multiple zones th at vary air volume. A few complaints have been observed concerning comfort of space as the units tend to overshoot set points. Overall, t he system is in good condition and corrective action is not required.</p> <p>Controls are KM Digital . The graphical interface is not working. Modified controls may address response time for sensors a nd the humidity and temperature control sequence. Corrective action is required.</p>
		<p>3.5.2 Plumbing System</p>
		<p>3.5.2.1 Plumbing Supply and Waste Piping</p>
		<p>Domestic water supply and waste piping within the facility does appear to be adequate and is in fair condition. ADA compliance is required . These co sts are reflected in Section 3.6.5 .</p>
		<p>3.5.2.2 Domestic Hot Water Production</p>
		<p>Domestic hot water is provided by two 250-gallon gas water boilers in good condition. Corrective action is not required.</p>

I	LT	Reference
		3.5.2.3 Fixtures
		Plumbing fixtures and connections appear to be adequate and are in fair condition. Corrective action is not required.
		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
		The main electrical distribution panel for the building is a 2,000-amp, 277/480-volt, 3-phase, 4-wire panel. The panel does appear to be adequate and is in fair condition. Corrective action i s not required.
		3.5.3.2 Distribution and Panels
		Electrical distribution and branch panels appear to be adequately sized and are in good condition. Distribution and dry type step down transformers provide power. Corrective action is not required.
		3.5.3.3 Interior Lighting
		<p>Administrative area and c lassroom 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>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 required.</p> <p>Cafeter ia/gymnasium lighting is surface 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
		<p>Exterior lighting is provided and is surface mounted wall pack fixtures with metal halide lamps in fair condition. Lighting levels appear to be adequate. Corrective action is not required.</p> <p>Soffit and entrance lighting is provided and is recessed and surface mounted fixtures with high-pressure sodium lamps in good condition. Lighting levels appear to be adequate. Corrective action is not required.</p>

I	LT	Reference
	X	<p>Covered walkway lighting is provided and is surface mounted fixtures with high - pressure sodium lamps in fair condition. Lighting levels do appear to be adequate. Corrective action is not required.</p> <p>Parking lot lighting is provided and is pole mounted fixtures with fluorescent lamps in poor condition. Lighting levels do not appear to be adequate. Corrective action is required.</p>
		3.5.3.5 Security System
X		A security system is not provided and is required.
		3.5.3.6 Intercom System
		Intercom system does allow communication to individual classrooms . The system is in fair condition. Corrective action is not required.
		3.5.3.7 Educational Television
X		Educational television is provided and does allow internal broadcasting. The system is in poor condition. Corrective action is 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.
<b>3.6 ADA Tier I: Visual Accessibility Survey</b>		
		3.6.1 Path of Travel
X		<p>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.</p> <p>Curb ramps on approaches to the facility from student drop off areas and parking are provided and appear to comply with accessibility guidelines. Corrective action is not required.</p> <p>The walkway approach to main entrance doors does appear to provide accessible slopes without threshold entry restrictions. Corrective action is not required.</p>

I	LT	Reference
		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.  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.  Interior doors along the accessible route are flush with corridor walls and appear to allow clearance and approach accessibility. Corrective action is not required.
	X	Door assemblies do not appear to meet accessibility guidelines. 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.
		3.6.5 Public Toilet Rooms
X		Public toilet rooms are provided along the accessible route and do not appear to comply with accessibility guidelines. Public toilets are required to provide accessible entry, maneuverability, clear floor space and accessible fixtures, accessories, controls, partitioned stalls and recessed insulated lavatory piping. Corrective action is required to provide the minimum number of ADA compliant fixtures.  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.

I	LT	Reference
	X	Classroom toilet rooms do not appear to meet accessibility guidelines. Toilets are required to comply with guidelines similar to public toilets. 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.
<b>3.7 Life Safety and Fire Protection</b>		
		3.7.1 Sprinklers, Standpipes and Fire Suppression Systems
X		A required sprinkler system is not provided for janitor and custodial spaces. Corrective action is required.
X		A required sprinkler system is not provided for the stage. Corrective action is required.
X		The kitchen hood is compensating type. Distance from cooking surfaces and edge of kitchen hood do not appear to comply with distance requirements. Kitchen hood duct protection is fire resistive construction. The kitchen hood system is in good condition. Corrective action is required.
X		A required fire suppression system is provided in the kitchen hood. Cooking equipment does not have required shut down capability upon suppression system

I	LT	Reference
		<p>activation. Corrective action is required with hood replacement.</p> <p>Provision of fire extinguishers within required travel distances appear to comply with life safety standards. Corrective action is not required.</p>
		3.7.2 Alarm Systems
X		The visual alarm system does not appear to comply with ADA guidelines or life safety standards. 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 panel is provided and is not monitored by a central agency . A required smoke detector is not provided in front of the panel. Corrective action is required.
X		Required pull stations are not provided at emergency egress doors in classrooms and are not mounted at heights complying with ADA guidelines. Corrective action is required.
		3.7.3 Corridor and Separation Walls
		Area separation walls appear to have required firestopping sealing between wall and structural surfaces and framing or around wall penetrations. Corrective action is not required.
		3.7.4 Doors
		<p>Corridor doors, frames, hardware and assemblies do not appear to comply with life safety fire resistance rating standards. Corridor doors are required to have fire resistance rated construction and hardware assemblies. Corrective action is required. Refer to Section 3.6 for Opinions of Probable Costs of remediation.</p> <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
		Exit doors to building exterior provide classroom emergency exiting and appear to comply with emergency exiting requirements. Corrective action is not required.

<b>I</b>	<b>LT</b>	<b>Reference</b>
		3.7.6 Emergency Egress Lighting
X		Corridor emergency egress lighting is not provided. Corrective action is required.
X		<p>Emergency egress lighting is not provided in windowless rooms. Corrective action is required.</p> <p>Illuminated directional emergency exit signs are provided at every required location and are clearly visible. Corrective action is not required.</p>
		<b>3.8 Asbestos Concerns</b>
		<p>According to the AHERA Report, this facility does have asbestos -containing material (ACM). Remaining ACM is non -friable, not damaged, inaccessible and is not hazardous to building occupants. The AHERA Report recommends managing all remaining ACM in place until it can be removed.</p>
X		<p>According to the AHERA Report, remaining asbestos consists of cove base adhesive, vinyl floor tile and sheeting and their adhesives. Removal of all ACM described above and replacement of affected flooring is required.</p>

## 4.0 Opinions of Probable Costs to Remedy Physical Deficiencies (Rucker Primary)

### 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, 60<sup>th</sup> 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 is 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 and Long-term Remediation items are as follows:

Immediate	\$ 703,000
Intermediate	\$ 25,000
Long-term	<u>\$ 296,000</u>
Total Remediation Costs	\$ 1,024,000

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 \$7,743,000. This cost was determined based on the following square foot cost escalated from TM 5 -800-4:

Building	\$ 110.39/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.
- 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 Rucker Primary School.

ESL (yrs)	AGE (yrs)	RUL (yrs)	PRV (\$)	TARGET SUSTAIN (Annual \$)	REMED. COSTS (\$)	REQ'D INVEST. (Annual \$)	MRM	RECOMMEND
67	30	37	7,743,000	115,600	1,024,000	27,500	.24	Renovate

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. Renovations 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



**Photo 1: Sign**



**Photo 2: ADA Non-compliant Path of Travel**



**Photo 3: ADA Non-compliant Ramp**



**Photo 4: ADA Non-compliant Interior Ramp**



**Photo 5: ADA Non-compliant Exit/Entrance**



**Photo 6: ADA Non-compliant Door and Signage**



**Photo 7: ADA Non-compliant Drinking Fountains**



**Photo 8: ADA Non-compliant Play Area**





**Photo 1: Sign**



**Photo 2: ADA Non-compliant Parking**



**Photo 3: ADA Non-compliant Exit/Entrance**



**Photo 4: ADA Non-compliant Exit Entrance**



**Photo 5: ADA Non-compliant Toilet**



**Photo 6: ADA Non-compliant Drinking Fountain**



**Photo 7: ADA Non-compliant Doors and Signage**



**Photo 8: ADA Non-compliant Play Area**