
DDESS Facility Transfer Study Facility Condition Report (Final)



Fort Benning, Georgia

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PSC Project # 03811102



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

FORT BENNING SCHOOLS
FORT BENNING, GEORGIA
PROPERTY CONDITION REPORT

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**DEXTER ELEMENTARY SCHOOL
FORT BENNING, GEORGIA
PROPERTY CONDITION REPORT
EXECUTIVE SUMMARY**

1.0 Executive Summary

Data obtained from the survey provides an objective and impartial evaluation of the Dexter 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 38,600 square foot, one-story masonry veneer building originally constructed in 1968 with subsequent additions in 1986 and 2003. This facility serves 269 students from pre-kindergarten to fifth grade.

Observed deficiencies primarily consisted of site ADA issues and some roofing problems. This facility requires alterations to correct these issues.

Opinions of probable costs are calculated for immediate and longterm 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 life safety fire code requirements, ADA accessibility guidelines and potential major building system failures:

Total Immediate Remediation Costs \$180,000

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 longterm remediation costs.

Total Intermediate Remediation Costs \$51,000

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 \$57,000

Total remediation project costs are approximately \$288,000.

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 \$4,206,000. 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 Dexter Elementary School is .12. 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 the school be scheduled for renovation within the next year to correct immediate deficiencies and other repairs to major building systems be scheduled within the next ten years. 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	*28.1	*38.9	4,206,000	62,800	288,000	7,400	.12	Renovate

* Indicates Composite Number



ADA Non-compliant Exit



Roof Leak

**FAITH MIDDLE SCHOOL
FORT BENNING, GEORGIA
PROPERTY CONDITION REPORT
EXECUTIVE SUMMARY**

1.0 Executive Summary

Data obtained from the survey provides an objective and impartial evaluation of the Faith Middle 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 95,600 square foot, one-story masonry veneer building originally constructed in 1987 with additional classroom space added in 1996. This facility serves 698 students from sixth to eighth grade.

Observed deficiencies primarily consisted of ADA and life safety issues. This facility also requires alterations to correct deficiencies in the classroom lighting levels.

Opinions of probable costs are calculated for immediate and longterm 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 life safety fire code requirements, ADA accessibility guidelines and potential major building system failures:

Total Immediate Remediation Costs \$540,000

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 longterm remediation costs.

Total Intermediate Remediation Costs \$0

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 \$421,000

Total remediation project costs are approximately \$961,000.

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 \$10,656,000. 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 Faith Middle School is .11. 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 the school be scheduled forenovation within the next year to correct immediate deficiencies and other repairs to major building systems be scheduled within the next ten years. 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	*14.1	*52.9	10,656,000	159,000	961,000	18,200	.11	Renovate

* Indicates Composite Number



Life Safety Issue



ADA Access Problem

**LOYD ELEMENTARY SCHOOL
FORT BENNING, GEORGIA
PROPERTY CONDITION REPORT
EXECUTIVE SUMMARY**

1.0 Executive Summary

Data obtained from the survey provides an objective and impartial evaluation of the Loyd 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 53,000 square foot, one-story masonry veneer building originally constructed in 1958 with an additional portable building added in 1992. This facility serves 373 students from pre-kindergarten to fifth grade.

Observed deficiencies primarily consisted of ADA and life safety issues and major building systems which have worn out or become obsolete. This facility requires alterations to correct deficiencies in the exterior windows and doors, ADA toilet access and door upgrades for life safety. The exterior wall system and doors will be upgraded for force protection issues.

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 life safety fire code requirements, ADA accessibility guidelines and potential major building system failures:

Total Immediate Remediation Costs \$249,000

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 \$730,000

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 \$292,000

Total remediation project costs are approximately \$1,271,000.

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 \$5,781,000. 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 Loyd Elementary School is .55. 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 the school be scheduled for renovation within the next ~~year~~ ^{year} to correct immediate deficiencies and other repairs to major building systems be scheduled within the next ten years. 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	*36.2	*26.9	5,781,000	86,300	1,271,000	47,200	.55	Renovate

* Indicates Composite Number



Non Life Safety Compliant Doors



Windows in Poor Condition

**MCBRIDE ELEMENTARY SCHOOL
FORT BENNING, GEORGIA
PROPERTY CONDITION REPORT
EXECUTIVE SUMMARY**

1.0 Executive Summary

Data obtained from the survey provides an objective and impartial evaluation of the McBride 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 40,900 square foot, one-story masonry veneer building originally constructed in 1965 with subsequent additions in 1986 and 1996. It was also renovated in 1996. This facility serves 369 students from prekindergarten to third grade.

Observed deficiencies primarily consisted of life safety, ADA and major building systems which have worn out or become obsolete. This facility requires alterations to correct ADA and life safety issues and deficiencies in the roof and exterior glazing, as well as asbestos abatement.

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 life safety fire code requirements, ADA accessibility guidelines and potential major building system failures:

Total Immediate Remediation Costs \$591,000

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 \$175,000

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 \$183,000

Total remediation project costs are approximately \$949,000.

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 \$4,456,000. 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 McBride Elementary School is .42. 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 the school be scheduled for renovation within the next year to correct immediate deficiencies and other repairs to major building systems be scheduled within the next ten years. 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	*33.4	*33.6	4,456,000	66,500	949,000	28,200	.42	Renovate

* Indicates Composite Number



Life Safety Corridor Problem



Current Undersized Bus Drop

**STOWERS ELEMENTARY SCHOOL
FORT BENNING, GEORGIA
PROPERTY CONDITION REPORT
EXECUTIVE SUMMARY**

1.0 Executive Summary

Data obtained from the survey provides an objective and impartial evaluation of the Stowers 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 74,000 square foot, one-story masonry veneer building originally constructed in 1993 with a recent four classroom addition nearing completion. This facility serves 572 students from pre-kindergarten to fifth grade.

Observed deficiencies primarily consisted of major building systems which have worn out or become obsolete. This facility requires alterations to correct deficiencies in the roof system, plumbing system and exterior. It also requires work to address life safety and ADA issues.

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 life safety fire code requirements, ADA accessibility guidelines and potential major building system failures

Total Immediate Remediation Costs \$460,000

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 \$0

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 \$1,211,000

Total remediation project costs are approximately \$1,671,000.

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 \$8,108,000. 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 Stowers Elementary School is .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 the school be scheduled for renovation within the next year to correct immediate deficiencies and other repairs to major building systems be scheduled within the next ten years. 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	*8.5	*58.5	8,108,000	121,000	1,671,000	28,600	.24	Renovate

* Indicates Composite Number



Damaged Roof Membrane



Damaged Roof Edge

**WHITE ELEMENTARY SCHOOL
FORT BENNING, GEORGIA
PROPERTY CONDITION REPORT
EXECUTIVE SUMMARY**

1.0 Executive Summary

Data obtained from the survey provides an objective and impartial evaluation of the White 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 series of buildings totaling 46,000 square foot. They are onestory masonry veneer buildings originally constructed in 1962 with additional construction in 1986 and 1991. This facility serves 422 students from prekindergarten to fifth grade.

Observed deficiencies primarily consisted of life safety and ADA issues and major building systems which have worn out or will become obsolete. This facility requires alterations to correct deficiencies in the mechanical system. It will also require extensive work for ADA and life safety items.

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 life safety fire code requirements, ADA accessibility guidelines and potential major building system failures:

Total Immediate Remediation Costs \$629,000

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 \$47,000

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 \$1,168,000

Total remediation project costs are approximately \$1,844,000.

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 \$5,017,000. 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 White Elementary School is .74. 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 the school be scheduled for renovation within the next year to correct immediate deficiencies and other repairs to major building systems be scheduled within the next ten years. 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	RECO MMEND
67	*33.8	*33.2	5,017,000	74,900	1,844,000	55,500	.74	Renovate

* Indicates Composite Number



Non-compliant Toilet



Non-compliant Exit Door

**WILSON ELEMENTARY SCHOOL
FORT BENNING, GEORGIA
PROPERTY CONDITION REPORT
EXECUTIVE SUMMARY**

1.0 Executive Summary

Data obtained from the survey provides an objective and impartial evaluation of the Wilson 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 51,600 square foot, one-story masonry veneer building originally constructed in 1965 with additional construction in 1986, 1998 and 2003. A major renovation was completed in 1998 that included interiors and mechanical and electrical systems. This facility serves 413 students from pre-kindergarten to fifth grade.

Observed deficiencies primarily consisted of mostly site ADA issues. This facility also requires alterations to correct a few deficiencies in the installed mechanical system.

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 life safety fire code requirements, ADA accessibility guidelines and potential major building system failures:

Total Immediate Remediation Costs \$203,000

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 \$0

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 \$94,000

Total remediation project costs are approximately \$297,000.

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 \$5,621,000. 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 Wilson Elementary School is .10. 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 the school be scheduled for renovation within the next year to correct immediate deficiencies and other repairs to major building systems be scheduled within the next ten years. 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	*31.3	*35.7	5,621,000	83,900	297,000	8,500	.10	Renovate

* Indicates Composite Number



Non-accessible Exit



Pavement Repair Needed

**FORT BENNING SCHOOLS
FORT BENNING, GEORGIA
PROPERTY CONDITION REPORT
PURPOSE AND SCOPE**

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 in March and April 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 2118-01 - 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.
- p. Determination of playground surfacing compliance with ASTM F 1951-99.

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: Dexter Elementary School

I	LT	Reference
		3.1 Overall General Description
		<p>This facility is a 38,600 square foot, one story single building originally constructed in 1968. Subsequent additions were:</p> <ul style="list-style-type: none"> ? Classroom addition in 1986 ? PTR addition in 2003 <p>The facility was also renovated in 1999.</p> <p>This facility serves 269 students in grades pre-kindergarten through five. Total student capacity is 317.</p>
		3.2 Site
		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. Some roof downspouts do not 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 generally fair condition. Corrective action is not required, except to resurface parking along the west side of Yeager Avenue, which is in poor condition.</p>
X		<p>Parking areas appear to provide adequate parking spaces. However, corrective action is required to extend or modify the student drop-off lane because it is congested and can be a safety problem. With the new PTR addition, there is the potential for more students and traffic.</p>
		3.2.3 Flatwork
		<p>Concrete walkways and ramps are in fair 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 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 all areas appear to comply with the U.S. Consumer Safety Commission “Handbook for Public Playground Safety” requirements. Corrective action is not 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 single service, does appear to be adequate and 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>
		3.2.5.4 Special Utility Systems
		Not applicable.

I	LT	Reference
		3.2.5.5 Electrical Service and Metering
		Electrical service is single service with metering, is underground to 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 is cast-in-place concrete columns and beams. Roof decking is cast-in-place concrete. The structural system is in good condition. Corrective action is not required.</p> <p>The existing roofing system for the entire building has been covered with a sloped pre-finished standing seam metal roofing system with light gauge steel framing. Decking is structural metal. 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 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 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 and pre-finished metal spandrel panels in good condition. Corrective action is not required.
		3.3.3.4 Soffits
		Soffits at main entrance/exit and auxiliary exit/entrances are exposed structure and decking in good condition. Corrective action is not required.
		3.3.3.5 Parapets
		Not applicable.
		3.3.4 Roofing
X		<p>The existing roofing system has been covered with a sloped pre-finished standing seam metal roofing system and is in good condition. Minor leaks are evident at penetrations and need to be corrected. Staff reports that the contractor who built roof will not honor warranty. Corrective action is required.</p> <p>Flashing, coping, fascia, gutters and downspouts are pre-finished metal in good condition. Corrective action is not required.</p>
		3.4 Interior Elements
		3.4.1 Common Areas
		<p>Lobbies and Corridors:</p> <p>Flooring is carpet in good condition. Walls are plastic laminate panels 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 in good condition. Walls are 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 and/or carpet in good condition. Walls are concrete masonry units or gypsum board in good condition. Suspended acoustical lay-in panel ceilings are in good condition.</p>

I	LT	Reference
		<p>Cafeteria/Gymnasium:</p> <p>Flooring is vinyl tile in good condition. Walls are glazed concrete masonry unit 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 vinyl tile in good condition. Walls are concrete masonry units in good condition. Solid ceilings are gypsum board in good condition.</p> <p>Kitchen:</p> <p>Flooring is ceramic tile in fair condition. Walls are glazed concrete masonry unit wainscot and plaster in good condition. Suspended acoustical lay-in panel ceilings are in fair condition.</p>
		<p>3.5 Mechanical, Plumbing and Electrical Systems</p>
		<p>3.5.1 HVAC System</p>
X		<p>The 4-pipe HVAC systems are new and in good condition. Equipment includes a chiller and boiler, a 15 hp chilled water pump, a 10 hp heating water pump, 30 unit ventilators, 8 fan coil units, 2 air handling units, 8 exhaust fans, and small stage units.</p> <p>The DDC Energy Management System is Barber Coleman and is in good condition.</p> <p>Relief dampers in classrooms will neither open nor close completely and have been made inoperable and left in the closed position. Inadequate cooling supply temperatures in the administrative area suggest that there is an obstruction in the chilled water flow. An independent water and air balance by a qualified contractor is needed. The water balance testing will be done with the PTR addition, so the costs shown in Section 4 only reflect the cost of the air balance.</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 good condition. Corrective action is not required.</p>

I	LT	Reference
		3.5.2.2 Domestic Hot Water Production
	X	Domestic hot water is provided by two 100-gallon gas water heaters in good condition. Corrective action is required long term, as they will not last ten more years.
		3.5.2.3 Fixtures
		Plumbing fixtures and connections appear to be adequate and are in good condition. Most fixtures were replaced in the 1999 renovation. 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
		The main electrical distribution panel for the building 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.
		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>Classroom lighting is recessed parabolic 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 recessed troffer fixtures with lamps in good condition. Fluorescent lamps are T-8. Light levels appear to be adequate. Corrective action is not required.</p>

I	LT	Reference
		3.5.3.4 Exterior Lighting
		<p>Exterior lighting is provided and is surface mounted wall pack and pole mounted fixtures with high-pressure sodium or metal halide 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 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 if it is not used during evening hours.</p>
		3.5.3.5 Security System
		A security system is provided and is not monitored by a central agency. The security system does appear to provide adequate security or monitoring and is in good condition. Corrective action is not required.
		3.5.3.6 Intercom System
		Intercom system does allow communication to individual classrooms. The system is in good 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.
		3.5.3.8 Computer Network
		A computer network system provides approximately 8 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.

I	LT	Reference
X		<p>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.</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> <p>Ramps along the on-site accessible route are required and are provided. Ramps appear to comply with accessibility guidelines. Required handrails are provided and appear to comply with height and extension requirements. Corrective action is not required.</p>
		3.6.2 Parking
X		<p>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.</p>
		3.6.3 Entrances/Exits
	X	<p>Main entrance/exit and auxiliary exit/entrance approach, doors and hardware appear to comply with accessibility guidelines. Corrective action is not required.</p> <p>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.</p> <p>Interior doors along the accessible route are inset or flush with corridor walls and appear to allow clearance and approach accessibility. Corrective action is not required.</p> <p>Door assemblies appear to meet accessibility guidelines. Corrective action is not required.</p>
		3.6.4 Signage
		<p>Signage along the accessible route does 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 not required.</p>

I	LT	Reference
		3.6.5 Public Toilet Rooms
		<p>Public toilet rooms are provided along the accessible route and appear to comply with accessibility guidelines. Corrective action is not required.</p> <p>Administrative staff and nurse's toilet rooms appear to meet accessibility guidelines. Corrective action is not required.</p> <p>Classroom toilet rooms appear to meet accessibility guidelines. Corrective action is not required.</p>
		3.6.6 Drinking Fountains
X		Drinking fountains are provided along the accessible route and most appear to comply with accessibility guidelines. Drinking fountains are required to be accessible with adequate clearances and corridor protrusion protection. Some drinking fountains were not installed according to the drawings. Corrective action is required.
		3.6.7 Telephones
		Not applicable.
		3.6.8 Elevators/Lifts
	X	<p>Elevators are not required.</p> <p>A required platform/wheelchair lift is not provided at the stage. Corrective action is required.</p>
		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
		<p>A required sprinkler system is provided for the stage. Corrective action is not required.</p> <p>Kitchen Hood: Not applicable. The kitchen cooking equipment is not in use and the hood is not included in the life safety observations.</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		<p>The visual alarm system does appear to comply with ADA guidelines or life safety standards, except in two toilet rooms and the Art Room. Corrective action is not required.</p> <p>A fire alarm and annunciator panel is provided at the front entry. A required smoke detector is provided in front of the panel. Corrective action is not required.</p>
X		Required pull stations are provided at emergency egress doors, except two doors. Corrective action is required.
		3.7.3 Corridor and Separation Walls
		Exit corridor and area separation walls 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 not required.
		3.7.4 Doors
		<p>Corridor doors, frames, hardware and assemblies appear to comply with life safety fire resistance rating standards. Corrective action is not required.</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 with emergency exiting requirements. Corrective action is not required.

I	LT	Reference
		3.7.6 Emergency Egress Lighting
		<p>Corridor emergency egress lighting is provided. Fixtures are every third ceiling light fixture with required testing devices. Corrective action is not required.</p> <p>Emergency egress lighting is provided in required windowless rooms. Fixtures are every third ceiling light fixture with required testing devices. Corrective action is not required.</p> <p>Illuminated directional emergency exit signs are provided at every required location and are clearly visible. Corrective action is not required.</p>
		3.8 Asbestos Concerns
	X	According to the AHERA Report, this facility does not have asbestos-containing material (ACM), except non-friable ACM caulking around fittings that was not removed during the 1999 renovation.

4.0 Opinions of Probable Costs to Remedy Physical Deficiencies (Dexter 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	\$ 180,000
Intermediate	\$ 51,000
Long-term	<u>\$ 57,000</u>
Total Remediation Costs	\$ 288,000

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 \$4,206,000. This cost was determined based on the following square foot cost escalated from TM 5-800-4:

\$109.03/sf

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 Dexter is a combination of two additions and one recent major renovation, 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 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 Dexter Elementary School.

ESL (yrs)	AGE (yrs)	RUL (yrs)	PRV (\$)	TARGET SUSTAIN (Annual \$)	REMED. COSTS (\$)	REQ'D INVEST. (Annual \$)	MRM	RECOMMEND
67	*28.1	*38.9	4,206,00	62,800	288,000	7,400	.12	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 four years ago in renovations and 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

3.0 System Description and Observations: Faith Middle School

I	LT	Reference
		3.1 Overall General Description
		<p>This facility is a 95,600 square foot, one story single building originally constructed in 1987. Subsequent additions were:</p> <p>? Classroom addition in 1996</p> <p>This facility serves 698 students in grades six through eight. Total student capacity is 920.</p>
		3.2 Site
		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. Some 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
		<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
		Concrete walkways are in fair condition. Corrective action is not required.
		3.2.4 Recreational Facilities and Title IX Compliance
		<p>The school does 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>

I	LT	Reference
		<p>A running and exercise track is provided and is in good condition. Corrective action is not required.</p> <p>A gymnasium provides indoor court sport recreational and assembly space. Equal toilet and locker facilities are available for boys and girls indoor team sports. Corrective action is not 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 provided. The backflow preventer is in good condition, but is improperly installed. Corrective action is required to reinstall it horizontally.</p>
		3.2.5.2 Natural Gas
		Gas service is single service, does appear to be adequate and 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>
		3.2.5.4 Special Utility Systems
		Not applicable.
		3.2.5.5 Electrical Service and Metering
		Electrical service is single service without metering, is underground pad mount, does appear to be adequate and is in good condition. Corrective action is not required.

I	LT	Reference
		3.3 Structural Frame and Building Envelope
		3.3.1 Foundation
X		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, except to repair an area near the gym doors.
		3.3.2 Building Frame
		<p>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.</p> <p>Building frame for the gymnasium is concrete masonry unit walls and structural steel columns and beams with steel joists and trusses. Roof decking is structural metal. The structural system is in good condition. Corrective action is not required.</p> <p>The existing roofing system for the entire building has been covered with a sloped pre-finished standing seam metal roofing system with light gauge steel framing. Decking is structural metal. 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 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 and hollow metal doors and frames 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 fair condition. Corrective action is not required.</p>
		3.3.3.3 Fenestration System
		Fenestration system is pre-finished anodized aluminum with double glazing in good condition. Corrective action is not required.

I	LT	Reference
		3.3.3.4 Soffits
		Soffits at main entrance/exit and auxiliary exit/entrances are stucco in fair condition. Corrective action is not required.
		3.3.3.5 Parapets
		Not applicable.
		3.3.4 Roofing
X		<p>The existing roofing system has been covered with a sloped pre-finished standing seam metal roofing system and is in good condition. Minor leaks are evident. Corrective action is not required, except to repair a roof drain over Room 70.</p> <p>Flashing, coping, fascia, gutters and downspouts are pre-finished metal in good condition. Corrective action is not required.</p>
		3.4 Interior Elements
		3.4.1 Common Areas
		<p>Lobbies and Corridors:</p> <p>Flooring is vinyl tile and 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 fair condition.</p> <p>Public and Private 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 fair condition.</p> <p>Administrative Areas, Media Center and Classrooms:</p> <p>Flooring is vinyl tile or carpet in good condition. Walls are concrete masonry units or gypsum board in good condition. Suspended acoustical lay-in panel ceilings are in good condition.</p>

I	LT	Reference
		<p>Cafeteria:</p> <p>Flooring is vinyl tile in good condition. Walls are concrete masonry units in good condition. Suspended acoustical lay-in panel ceilings are in good condition.</p> <p>Gymnasium:</p> <p>Flooring is poured rubber surface 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 and Locker Rooms:</p> <p>Flooring is ceramic tile in good condition. Walls are concrete masonry units and ceramic tile in good condition. Suspended acoustical lay-in panel ceilings are in fair 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 concrete masonry units in good condition. Suspended acoustical lay-in panel ceilings are in poor condition.</p>
		<p>3.5 Mechanical, Plumbing and Electrical Systems</p>
		<p>3.5.1 HVAC System</p>
		<p>The main campus is served by a 4-pipe system with two 135-ton packaged chillers, a Lockinvar modular boiler and six air handling units. This Lockinvar boiler was replaced in December 2002 after repeated maintenance problems with its predecessor. Fresh air is handled separately with six combination gas/direct expansion rooftop units located in the mezzanine area.</p> <p>Major HVAC systems, part of a recent renovation, are in good condition and well maintained.</p> <p>A ten-room addition was added in 1996, conditioned by unit ventilators with direct expansion cooling and heating water coils. There are about ten supplemental split system heat pumps on this campus.</p>

I	LT	Reference
X		A temperature averaging scheme is used to control zoned air handling units with some complaint resulting from lack of individual room control. The system is in good overall condition. Corrective action is not required, except to adjust and repair the HVAC in the 1996 addition.
X		Eliminate restrictions in air distribution in eight classrooms at classroom addition.
		3.5.2 Plumbing System
		3.5.2.1 Plumbing Supply and Waste Piping
		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
		Not applicable.
		3.5.2.3 Fixtures
		Plumbing fixtures and connections appear to be adequate and are in good condition. 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
		The main electrical distribution panel for the building is a 1,600-amp, 277/480-volt, 3-phase, 4-wire panel with ground fault protection. The panel does appear to be adequate and is in fair condition. Corrective action is not required.
		3.5.3.2 Distribution and Panels
X		Electrical distribution and branch panels appear to be adequately sized and are in fair condition. Distribution and dry type step down transformers provide power. Corrective action is not required. The kitchen panel does not have any additional capacity and requires replacement with kitchen hood replacement. Costs are shown in Section 3.7.1.

I	LT	Reference
		3.5.3.3 Interior Lighting
	X	<p>Classroom lighting is recessed troffer fixtures with fluorescent lamps in good condition. Fluorescent lamps are T-8. Light levels do not appear to be adequate in the original building. Corrective action is required.</p> <p>Corridor lighting is recessed troffer fixtures with fluorescent lamps in good condition. Fluorescent lamps are T-12. Light levels appear to be adequate. Corrective action is not required.</p> <p>Gymnasium lighting is surface mounted fixtures with metal halide lamps in good condition. 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 good condition. Lighting levels appear to be adequate. Corrective action is not required.</p> <p>Soffit and entrance lighting is provided and is recessed fixtures with incandescent lamps in fair condition. Lighting levels appear to be adequate. Corrective action is not required.</p> <p>Parking lot lighting is provided and is pole mounted fixtures with metal halide lamps in good condition. Lighting levels appear to be adequate. Corrective action is not required.</p>
		3.5.3.5 Security System
		A security system is provided and is monitored by a central agency. The security system does appear to provide adequate security or monitoring and is in good condition. Corrective action is not required, although some adjustments to post-monitoring may be needed.
		3.5.3.6 Intercom System
		Intercom system does allow communication to individual classrooms and outside telephone calls. The system is in good 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 good condition. Corrective action is not required.

I	LT	Reference
		3.5.3.8 Computer Network
		A computer network system provides approximately 8 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		<p>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.</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>
		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
		<p>Main entrance/exit and auxiliary exit/entrance approach, doors and hardware appear to comply with accessibility guidelines. Corrective action is not required.</p> <p>Interior doors along the accessible route are inset or flush with corridor walls and appear to allow clearance and approach accessibility. Corrective action is not required.</p> <p>Door assemblies appear to meet accessibility guidelines. Corrective action is not required.</p>

I	LT	Reference
		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.
	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.
		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. A portable lift is scheduled for inclusion in a future project; however, since it has not been awarded, costs are included in this report. Corrective action is required.
		3.6.9 Recreational Facilities
		Required accessible routes to play areas are provided. Corrective action is not required.

I	LT	Reference
		3.7 Life Safety and Fire Protection
		3.7.1 Sprinklers, Standpipes and Fire Suppression Systems
X		<p>A sprinkler system is provided for the gymnasium and stage. Corrective action is not required.</p> <p>A required sprinkler system is provided for janitor and custodial spaces. Corrective action is not required.</p> <p>A required sprinkler system is provided for the stage. Corrective action is not required.</p> <p>The kitchen hood is compensating type. Distance from cooking surfaces and edge of kitchen hood do not appear to comply with distance requirements over the steamer. Kitchen hood duct protection is fire resistive construction. The kitchen hood system is in fair condition. Corrective action is required.</p>
X		<p>A required fire suppression system is provided in the kitchen hood. Cooking equipment does not have required shut down capability for electrical upon suppression system 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		<p>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.</p>
X		<p>A fire alarm and annunciator panel is provided. A required smoke detector is not provided in front of the panel. Corrective action is required.</p>
X		<p>Required pull stations are provided at some emergency egress doors. Corrective action is required to remount pull.</p>
		3.7.3 Corridor and Separation Walls
X		<p>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.</p>

I	LT	Reference
		3.7.4 Doors
X		<p>Corridor doors, frames, hardware and assemblies appear to comply with life safety fire resistance rating standards. Some doors have louvers that allow the transfer of air between interior spaces and corridors. Corridor doors are required to have fire resistance rated construction and hardware assemblies. Corrective action is required.</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. Emergency exit doors are required to have non-restrictive emergency exit hardware and assemblies. 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 with emergency exiting requirements. Corrective action is not required.
		3.7.6 Emergency Egress Lighting
X		<p>Corridor emergency egress lighting is provided. Fixtures are every fourth ceiling light fixture with required testing devices. Corrective action is not required.</p> <p>Emergency egress lighting is provided in required windowless rooms. Fixtures are every fourth ceiling light fixture with required testing devices, except in the computer room. Corrective action is required to provide emergency lighting in the computer room.</p> <p>Illuminated directional emergency exit signs are provided at every required location and are clearly visible. Corrective action is not required.</p>
		3.8 Asbestos Concerns
		According to the AHERA Report, this facility does not have asbestos-containing material (ACM). Corrective action is not required.

4.0 Opinions of Probable Costs to Remedy Physical Deficiencies (Faith Middle School)

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	\$ 540,000
Long-term	<u>\$ 421,000</u>
Total Remediation Costs	\$ 961,000

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 \$10,656,000. This cost was determined based on the following square foot cost escalated from TM 5-800-4:

\$109.03/sf

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 Faith is a combination of a recent addition and a fairly new 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 Faith Middle School.

ESL (yrs)	AGE (yrs)	RUL (yrs)	PRV (\$)	TARGET SUSTAIN (Annual \$)	REMED. COSTS (\$)	REQ'D INVEST. (Annual \$)	MRM	RECOMMEND
67	*14.1	*52.9	10,656,00	159,000	961,000	18,200	.11	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 recently to the HVAC system 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

3.0 System Description and Observations: Loyd Elementary School

I	LT	Reference
		3.1 Overall General Description
		<p>This facility is a 53,000 square foot, one story building originally constructed in 1958. Subsequent additions were:</p> <ul style="list-style-type: none"> ? Library expansion in 1992 ? Classroom addition in 2001 ? 5 temporary portable classroom buildings in 1998 <p>This facility serves 373 students in grades pre-kindergarten through five. Total student capacity is 438.</p>
		3.2 Site
		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 do not 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
		<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 walkways and ramps are in good 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>

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. Bleachers are in fair condition. Corrective action is not required.</p> <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 all areas appear to comply with the U.S. Consumer Safety Commission "Handbook for Public Playground Safety" requirements. Corrective action is not 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 single service with low pressure distribution, does appear to be adequate and 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 good condition for all areas except for the upstream grease trap piping. Corrective action is required to replace 127 feet of collapsed 4-inch cast iron sewer piping.</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 single service without metering, is underground serving a pad mounted 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 is concrete masonry unit walls or cast-in-place concrete columns and beams with steel joists. Roof decking is structural metal or cast-in-place concrete. The structural system is in good condition. Corrective action is not required.</p> <p>The existing roofing system for all buildings has been covered with a sloped pre-finished standing seam metal roofing system with steel trusses. Decking is structural metal. The retrofit framing system appears to be in good condition. Corrective action is not required.</p>
		3.3.3 Facades or Curtainwall
		3.3.3.1 Sidewall System
X		Building exterior is face brick masonry veneer with cast stone at entrance in good condition. Corrective action is not required.
		3.3.3.2 Entrances/Exits
X		Main entrance/exit is pre-finished anodized aluminum framing with hollow metal doors and framing with glazing in fair condition. Corrective action is required with replacement of fenestration system.
X		Auxiliary exit/entrances are hollow metal doors and frames with glazing in poor condition. Corrective action is required.

I	LT	Reference
		3.3.3.3 Fenestration System
X		Fenestration system is pre-finished anodized aluminum framing curtain wall system with single or double glazing and pre-finished metal spandrel panels in poor condition. Corrective action is required.
		3.3.3.4 Soffits
		The soffit at main entrance/exit and auxiliary exit/entrances is exposed concrete decking. Roof overhangs are pre-finished aluminum in good condition. Corrective action is not required.
		3.3.3.5 Parapets
		Not applicable.
		3.3.4 Roofing
X		<p>The existing roofing system has been covered with a sloped pre-finished standing seam metal roofing system and is in good condition. Minor leaks are evident. Corrective action is required to repair a roof leak on the eastern-most wing.</p> <p>Flashing, coping, fascia, gutters and downspouts are pre-finished metal in good condition. Corrective action is not required.</p>
		3.4 Interior Elements
		3.4.1 Common Areas
		<p>Lobbies and Corridors:</p> <p>Flooring is carpet in good condition. Walls are glazed concrete masonry unit wainscot and concrete masonry units or concrete masonry units 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 in good condition. Walls are glazed concrete masonry unit wainscot and concrete masonry units in fair condition. Suspended acoustical lay-in panel ceilings are in good condition.</p>

I	LT	Reference
	X	<p>Administrative Areas, Media Center and Classrooms:</p> <p>Flooring is vinyl tile or carpet in fair to poor condition. Walls are glazed concrete masonry unit wainscot and concrete masonry units or concrete masonry units in good condition. Suspended acoustical lay-in panel ceilings are in good condition. Corrective action is required to replace carpet damaged by previous HVAC renovation, although contractor was required to do it per the construction drawings.</p> <p>Cafeteria/Gymnasium:</p> <p>Flooring is vinyl tile in good condition. Walls are glazed concrete masonry unit 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. Suspended acoustical lay-in panel ceilings are in good condition.</p> <p>Kitchen:</p> <p>Flooring is ceramic tile in fair condition. Walls are glazed concrete masonry unit wainscot and plaster in fair condition. Suspended acoustical lay-in panel ceilings are in good condition.</p>
		<p>3.5 Mechanical, Plumbing and Electrical Systems</p>
		<p>3.5.1 HVAC System</p>
	X	<p>This campus is served by a four-pipe system with two water cooled centrifugal 80-ton chillers, two boilers and a cooling tower in excellent condition for the most part. One chiller and compressor has recently been replaced and one requires replacement. Mechanical room equipment includes: two chilled water pumps, two hot water pumps, two condensing water pumps, two domestic water booster pumps and a relatively new hot water storage tank.</p> <p>Terminal air devices include thirty unit ventilators, six fan coil units, and two air handling units for the stage. Most equipment was replaced in 2001.</p> <p>Five 4-ton heat pumps serve portable buildings.</p> <p>All HVAC systems are well maintained and in good condition. The DDC control interface is being installed now.</p> <p>The entire system is in good condition. Corrective action is not required.</p>

I	LT	Reference
		3.5.2 Plumbing System
		3.5.2.1 Plumbing Supply and Waste Piping
		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
		Not applicable.
		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 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 the building is a 2,000-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> <p>The main electrical distribution panel also utilizes a subpanel for the PTR addition that is an 800-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>
		3.5.3.2 Distribution and Panels
		Electrical distribution and branch panels appear to be adequately sized and are in good condition. Corrective action is not required.
		3.5.3.3 Interior Lighting
		Administrative area, media center and classroom lighting is recessed troffer or parabolic fixtures with fluorescent lamps in good condition. Fluorescent lamps are T-8. Light levels appear to be adequate. Corrective action is not required.

I	LT	Reference
		<p>Corridor lighting is recessed parabolic 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>Cafeteria/gymnasium 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>
		3.5.3.4 Exterior Lighting
		<p>Exterior lighting is provided and is surface mounted wall pack or pole mounted fixtures with high-pressure sodium or metal halide 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 lamps in fair condition. Lighting levels appear to be adequate. Corrective action is not required.</p> <p>Covered walkway lighting is not provided. Corrective action is not required.</p> <p>Parking lot lighting is provided and is pole mounted fixtures with metal halide lamps in good condition. Lighting levels appear to be adequate. Corrective action is not required.</p>
		3.5.3.5 Security System
		A security system is provided and is monitored by a central agency. The security system does appear to provide adequate security or monitoring and is in good condition. Corrective action is not required. The Post may need to evaluate some monitoring capabilities.
		3.5.3.6 Intercom System
X		Intercom system does allow communication to individual classrooms. The system is in poor condition. The system does not operate properly and the bell system is also a problem. Corrective action is 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 8 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 not provided. 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.
		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 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. Interior doors along the accessible route are inset or 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, except in the 2001 classroom addition. All doors to accessible spaces are required to have

I	LT	Reference
		non-restrictive hardware and closers. All doors are required to have force protective hardware. Corrective action is required.
		3.6.4 Signage
	X	Signage along the accessible route does not appear to comply with accessibility guidelines, except in the 2001 classroom addition. 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.
	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. 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
		Required platform/wheelchair lifts are provided at the stage. Corrective action is not required.

I	LT	Reference
		3.6.9 Recreational Facilities
X		Required accessible routes to play areas are provided. However, 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
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. A required fire suppression system is not provided in the kitchen hood. Cooking equipment does not have required shut down capability upon suppression system activation. Corrective action is not required, as this kitchen does not use cooking equipment. Should the kitchen be used for cooking, an evaluation of current NFPA standards should be conducted and all deficiencies corrected.</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, except in the 2001 classroom addition. 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 and is located in the hallway at the front entry. It does include multiple buildings and is 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. Corrective action is required.

I	LT	Reference
		3.7.3 Corridor and Separation Walls
		Exit corridor and area separation walls 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 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. Some doors have louvers that allow the transfer of air between interior spaces and corridors. 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. Emergency exit doors are required to have non-restrictive emergency exit hardware and assemblies. Corrective action is not required.</p>
		3.7.5 Classroom Emergency Exiting
X		Exit doors to building exterior provide classroom emergency exiting and do not appear to comply with emergency exiting requirements. Exit doors appear to have hardware and assembly deficiencies. Corrective action is required.
		3.7.6 Emergency Egress Lighting
		<p>Corridor emergency egress lighting is provided. Fixtures are every third ceiling light fixture with required testing devices. Corrective action is not required.</p> <p>Emergency egress lighting is provided in required windowless rooms. Fixtures are every third ceiling light fixture with required testing devices. Corrective action is not required.</p> <p>Illuminated directional emergency exit signs are provided at every required location and are clearly visible. Corrective action is not required.</p>

I	LT	Reference
		3.8 Asbestos Concerns
	X	According to the AHERA Report, this facility does have asbestos-containing material (ACM). Remaining ACM is non-friable, not damaged, inaccessible and is not currently hazardous to building occupants. The AHERA Report recommends managing all remaining ACM in place. Corrective action is required long term to remove a small amount of remaining asbestos in ceiling tiles possibly.

4.0 Opinions of Probable Costs to Remedy Physical Deficiencies (Loyd 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	\$ 249,000
Intermediate	\$ 730,000
Long-term	<u>\$ 292,000</u>
Total Remediation Costs	\$ 1,271,000

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 \$5,781,000. This cost was determined based on the following square foot cost escalated from TM 5-800-4:

\$109.03/sf

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. Twenty-five years for portable buildings.
- Relative Useful Life (RUL): Expected service life minus the age of the building. Because Loyd is a combination of two 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 Loyd Elementary School.

ESL (yrs)	AGE (yrs)	RUL (yrs)	PRV (\$)	TARGET SUSTAIN (Annual \$)	REMED. COSTS (\$)	REQ'D INVEST. (Annual \$)	MRM	RECOMMEND
67	*36.2	*26.9	5,781,000	86,300	1,271,000	47,200	.55	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.

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: McBride Elementary School

I	LT	Reference
		3.1 Overall General Description
		<p>This facility is a 40,900 square foot, one story single building originally constructed in 1965. Subsequent additions were:</p> <ul style="list-style-type: none"> ? Classroom addition in 1986 ? Storage addition in 1996 ? Renovation in 1996 <p>This facility serves 369 students in grades pre-kindergarten through three. Total student capacity is 389.</p>
		3.2 Site
		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 do not 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 condition. Corrective action is not required.</p> <p>Parking areas do not appear to provide adequate parking spaces. Corrective action is not required, although it is recommended.</p>
X		<p>Ingress, egress and bus drop-off areas are congested and hazardous. Corrective action is required.</p>
		3.2.3 Flatwork
		<p>Concrete walkways and ramps are in fair 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 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 all areas appear to comply with the U.S. Consumer Safety Commission "Handbook for Public Playground Safety" requirements. Corrective action is not 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 a single service, 6" low pressure line. It does appear to be adequate and 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 good condition. Corrective action is not required.</p> <p>A single-compartment grease trap is provided for kitchen waste piping, does appear to be adequate and is in poor condition. Replacement with a two-compartment grease trap is required. Corrective action is 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 single service without metering, is underground from a pole mounted 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 is cast-in-place concrete columns and beams. Roof decking is cast-in-place concrete. The structural system is in good condition. Corrective action is not required.</p> <p>The existing roofing system for the entire building has been covered with a sloped pre-finished standing seam metal roofing system with light gauge steel framing. Decking is structural metal. 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 in fair condition. Corrective action is not required.
		3.3.3.2 Entrances/Exits
		<p>Main entrance/exit is hollow metal doors and frames with glazing in fair condition. Corrective action is not required.</p> <p>Auxiliary exit/entrances are hollow metal doors and frames with glazing in fair 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 single glazing in poor condition. Corrective action is required and costs are shown in 3.7.5.
		3.3.3.4 Soffits
		Soffits at main entrance/exit and auxiliary exit/entrances are exposed structure and decking in good condition. Corrective action is not required.
		3.3.3.5 Parapets
		Not applicable.
		3.3.4 Roofing
X		<p>The existing roofing system has been covered with a sloped pre-finished standing seam metal roofing system and is in fair condition. Major leaks are evident. Corrective action is required.</p> <p>Flashing, coping, fascia, gutters and downspouts are pre-finished metal in fair condition. Corrective action is not required. It is recommended that the current roof warranty be enforced should continual leak problems occur and the coping and flashing condition monitored.</p>
		3.4 Interior Elements
		3.4.1 Common Areas
		<p>Lobbies and Corridors:</p> <p>Flooring is carpet in good condition. Walls are glazed concrete masonry unit wainscot and concrete masonry units 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 in good condition. Walls are glazed concrete masonry unit wainscot and 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>

I	LT	Reference
		<p>Administrative Areas, Media Center and Classrooms:</p> <p>Flooring is vinyl tile or 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/Gymnasium:</p> <p>Flooring is vinyl tile in good condition. Walls are glazed concrete masonry unit 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 vinyl tile in good condition. Walls are concrete masonry units in good condition. Solid ceilings and furring are gypsum board in good condition.</p> <p>Kitchen:</p> <p>Flooring is ceramic tile in fair condition. Walls are glazed concrete masonry unit wainscot and concrete masonry units in good condition. Suspended acoustical lay-in panel ceilings are in fair condition.</p>
		<p>3.5 Mechanical, Plumbing and Electrical Systems</p>
		<p>3.5.1 HVAC System</p>
X		<p>The HVAC system includes a water cooled centrifugal chiller, a cooling tower, a boiler, twenty-two fan coil units for classrooms, three air handling units for the computer lab and media center and two stage units.</p> <p>There have been some noise complaints regarding the units serving four classrooms near the front of the building. An investigation should be made to determine the cause to ensure equipment is functioning properly.</p> <p>There are Johnson pneumatic control devices, but no energy management system.</p> <p>This system is well maintained and in good condition overall. Corrective action is not 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 good condition. Corrective action is not required.</p>

I	LT	Reference
		3.5.2.2 Domestic Hot Water Production
	X	Domestic hot water is provided by two 100-gallon gas water heaters in good condition. Corrective action is required long term, as the current hot water heaters will not last another ten years.
		3.5.2.3 Fixtures
		Plumbing fixtures and connections appear to be adequate and are in good condition. 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
		The main electrical distribution panel for the building 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.
		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>Classroom lighting is recessed parabolic 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 parabolic 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>Cafeteria/gymnasium 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>

I	LT	Reference
		3.5.3.4 Exterior Lighting
		<p>Exterior lighting is provided and is surface mounted wall pack fixtures with high-pressure sodium 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 fixtures with high-pressure sodium lamps in fair 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 unless activities are scheduled at night.</p>
		3.5.3.5 Security System
		A security system is provided and is monitored by a central agency. The security system does appear to provide adequate security or monitoring and is in good condition. Corrective action is not required.
		3.5.3.6 Intercom System
		Intercom system does allow communication to individual classrooms. The system is in good 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.
		3.5.3.8 Computer Network
		A computer network system provides approximately 8 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.

I	LT	Reference
X		<p>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.</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>
X		<p>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.</p>
		3.6.2 Parking
X		<p>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.</p>
		3.6.3 Entrances/Exits
		<p>Main entrance/exit and auxiliary exit/entrance approach, doors and hardware appear to comply with accessibility guidelines. Corrective action is not required.</p>
X		<p>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.</p>
X		<p>Interior doors along the accessible route are inset or flush with corridor walls and inset doors do not appear to allow clearance and approach accessibility. At least one door is required for each accessible space with adequate maneuvering, width and opening clearances from both sides. Corrective action is required.</p>
X		<p>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.</p>
		3.6.4 Signage
X		<p>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</p>

I	LT	Reference
		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.
	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. Toilets are required to comply with guidelines similar to public toilets. Corrective action is required to provide an accessible classroom toilet in one room per wing to accommodate a handicapped child.
		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
		Elevators are not required. Required platform/wheelchair lifts are provided at the stage. Corrective action is not 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.

I	LT	Reference
		3.7 Life Safety and Fire Protection
		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		<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>Cooking equipment does not have required shut down capability upon suppression system activation. Corrective action is not required, however, unless the school uses the kitchen to cook, which it currently does not.</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 is not provided. A fire alarm panel is provided and does not include multiple buildings. A required smoke detector is provided in front of the panel. However, a smoke detector is not provided in the media center. Corrective action is required.</p> <p>Required pull stations are provided at emergency egress doors. Corrective action is not required.</p>
		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. Transfer grilles from classroom transoms to HVAC units in corridors do not comply with life safety codes. Corrective action is required.

I	LT	Reference
		3.7.4 Doors
		<p>Corridor doors, frames, hardware and assemblies do not appear to comply with life safety fire resistance rating standards. Some doors have louvers that allow the transfer of air between interior spaces and corridors. 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
X		Operable window units to building exterior provide classroom emergency exiting and do not appear to comply with emergency exiting requirements. Windows appear to have clearance restrictions. Complete classroom window replacement is required.
		3.7.6 Emergency Egress Lighting
		<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 provided in required windowless rooms except the workroom. Fixtures are selected light fixtures with required testing devices. Corrective action is not required.</p> <p>Illuminated directional emergency exit signs are provided at every required location and are clearly visible. Corrective action is not required.</p>
		3.8 Asbestos Concerns
X		According to the AHERA Report, this facility does have asbestos-containing material (ACM). Remaining ACM is non-friable, not damaged and is not currently hazardous to building occupants. The AHERA Report recommends managing all remaining ACM in place. Corrective action is required to remove asbestos floor mastic and window caulking. The window caulk abatement must be performed before window replacement can be done.

4.0 Opinions of Probable Costs to Remedy Physical Deficiencies (McBride 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 walkthrough 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 "preconcept" 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 5800-4 - 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 nonfriable 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	\$ 591,000
Intermediate	\$ 175,000
Long-term	<u>\$ 183,000</u>
Total Remediation Costs	\$ 949,000

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 \$4,456,000. This cost was determined based on the following square foot cost escalated from TM-800-4:

\$109.04 /sf

These costs were then multiplied by the building square footage and applicable cost escalation and contingency factors and area multipliers. 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 McBride is a combination of two additions and one recent renovation, 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 McBride Elementary School.

ESL (yrs)	AGE (yrs)	RUL (yrs)	PRV (\$)	TARGET SUSTAIN (Annual\$)	REMED. COSTS (\$)	REQ'D INVEST. (Annual\$)	MRM	RECOMMEND
67	*33.4	*33.6	4,456,00	66,500	949,000	28,200	.42	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 seven years ago in renovations 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

3.0 System Description and Observations: Stowers Elementary School

I	LT	Reference
		3.1 Overall General Description
		<p>This facility is a 70,000 square foot, one story multi-building complex originally constructed in 1993. Subsequent additions were:</p> <p>? PTR addition in 2002</p> <p>This facility serves 572 students in grades pre-kindergarten through five. Total student capacity is 713.</p>
		3.2 Site
		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 do not 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
		<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 are in good condition. Corrective action is not required.</p> <p>Walkways between main building and separate buildings 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 indoor team sports. 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 all areas appear to comply with the U.S. Consumer Safety Commission “Handbook for Public Playground Safety” requirements. Corrective action is not 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
		<p>Gas service is multiple service. A three-inch line serves the boiler and a two-inch line serves the kitchen. Both appear to be adequate and are in good condition. Corrective action is not required.</p>
		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 single service with metering, and is underground service to a pad mount transformer. It 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
X		<p>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, except at the dock area where a truck has backed into and damaged a steel lintel and the brick it is supporting..</p> <p>Building frame for the separate gymnasium is structural steel columns and beams with steel joists and trusses. Roof decking is structural metal. 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
X		Building exterior is face brick masonry veneer in fair condition. Water damage and efflorescence was noted in several areas. The moisture may be due to leaks in the edge trim and flashing in the roof above. Corrective action is required to clean and repair face brick.
		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 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 in good condition. Corrective action is not required.
		3.3.3.4 Soffits
		Soffits at auxiliary exit/entrances are exterior gypsum board in good condition. Corrective action is not required.
		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	X	<p>Low slope fully adhered EPDM roofing is located on all building areas except the gymnasium and media center, and is in poor condition. Major leaks are evident. Corrective action is required to repair the leaking areas in the near term and complete roofing replacement in the long term.</p> <p>Sloped pre-finished standing seam metal roofing is located on the media center and gymnasium, and is in good condition. Corrective action is not required.</p>
	X	Flashing, coping, fascia, gutters and downspouts are pre-finished metal in good condition. Corrective action is not required until roofing replacement.
		3.4 Interior Elements
		3.4.1 Common Areas
		<p>Lobbies and Corridors:</p> <p>Flooring is vinyl tile or carpet in good condition. Walls are concrete masonry units in good condition. Solid ceilings are gypsum board 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 in good condition. Walls are concrete masonry units in good condition. Suspended acoustical lay-in panel ceilings are in good condition.</p>

I	LT	Reference
		<p>Administrative Areas, Media Center and Classrooms:</p> <p>Flooring is vinyl tile or carpet in good condition. Walls are concrete masonry units, gypsum board or vinyl wall covering in good condition. Solid ceilings are gypsum board in good 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 concrete masonry units in good condition. Suspended acoustical lay-in panel ceilings are in good condition.</p> <p>Gymnasium:</p> <p>Flooring is sheet rubber surface in good 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. Solid ceilings are gypsum board 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 fair condition. Walls are concrete masonry units in good condition. Suspended acoustical lay-in panel ceilings are in good condition.</p>
		<p>3.5 Mechanical, Plumbing and Electrical Systems</p>
		<p>3.5.1 HVAC System</p>
		<p>The HVAC system for this campus is a water source heat pump system that utilizes a cooling tower, boiler and approximately twenty-five indoor heat pump units. Indoor units are located above the corridor ceiling and each serves up to three classrooms. Heating water supply pumps maintain a minimum water temperature for closed loop. Condensing water pumps route the water used to claim the heat byproduct to the cooling tower.</p>

I	LT	Reference
X	X	<p>The gymnasium also utilizes a split system heat pump. The new PTR addition utilizes rooftop units.</p> <p>The heat pump system is well maintained, but aging. It is anticipated that these indoor heat pump units will require replacement in the next ten years. The boiler will also require long term replacement. The condition of the cooling tower is poor and it requires immediate replacement.</p>
		3.5.2 Plumbing System
		3.5.2.1 Plumbing Supply and Waste Piping
		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
	X	Domestic hot water is provided by two PVI domestic water boilers with a storage tank for the main building and a 50-gallon gas water heater for the gymnasium, all in fair condition. Corrective action is required long term.
		3.5.2.3 Fixtures
		Plumbing fixtures and connections appear to be adequate and are in good condition. 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
		There are two electrical distribution panels for the main building. MDP1 is a 600-amp, 277/480-volt, 3-phase, 4-wire panel. The panel does appear to be adequate and is in good condition. MPD 2 is a 600-amp, 277/480-volt, 3-phase, 4-wire panel that does appear to be adequate and in good condition. Because the panels are 600 amps, they do not require ground fault protection. Corrective action is not required.

I	LT	Reference
		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
X		Administrative area, media center and classroom lighting is recessed or pendant mounted fixtures with fluorescent lamps in good condition. Fluorescent lamps are T-12. Light levels do not appear to be adequate. Corrective action is required.
X		Corridor lighting is recessed fixtures with fluorescent lamps in good condition. Fluorescent lamps are T-12. Light levels do not appear to be adequate. Corrective action is required. Gymnasium lighting is pendant mounted fixtures with metal halide lamps in good condition. Light levels appear to be adequate. Corrective action is not required.
		3.5.3.4 Exterior Lighting
		Exterior lighting is provided and is surface mounted wall pack or pole mounted fixtures with high-pressure sodium or metal halide lamps in good condition. Lighting levels appear to be adequate. Corrective action is not required. Soffit and entrance lighting is provided and is recessed fixtures with fluorescent lamps in good condition. Lighting levels appear to be adequate. Corrective action is not required. Covered walkway lighting is provided and is surface mounted fixtures with high-pressure sodium lamps in good condition. Lighting levels appear to be adequate. Corrective action is not required. Parking lot lighting is provided and is pole mounted fixtures with metal halide lamps in good condition. Lighting levels appear to be adequate. Corrective action is not required.
		3.5.3.5 Security System
		A security system is provided and is monitored by a central agency. The security system does appear to provide adequate security or monitoring and is in good condition. Corrective action is not required.

I	LT	Reference
		3.5.3.6 Intercom System
		Intercom system does allow communication to individual classrooms. The system is in good 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.
		3.5.3.8 Computer Network
		A computer network system provides approximately 8 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		<p>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.</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>
		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.

I	LT	Reference
		3.6.3 Entrances/Exits
	X	<p>Main entrance/exit and auxiliary exit/entrance approach, doors and hardware appear to comply with accessibility guidelines. Corrective action is not required.</p> <p>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.</p> <p>Interior doors along the accessible route are inset or flush with corridor walls and appear to allow clearance and approach accessibility. Corrective action is not required.</p> <p>Door assemblies appear to meet accessibility guidelines. Corrective action is not required.</p>
		3.6.4 Signage
	X	<p>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.</p>
		3.6.5 Public Toilet Rooms
X		<p>Public toilet rooms are provided along the accessible route and some 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.</p> <p>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.</p> <p>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.</p>

I	LT	Reference
		3.6.6 Drinking Fountains
X		Drinking fountains are provided along the accessible route and some 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
		Elevators are not required. Required platform/wheelchair lifts are provided at the stage. Corrective action is required.
		3.6.9 Recreational Facilities
X		Required accessible routes to play areas are provided for one play group, but not for the other. Accessible play areas, equipment and surfacing 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
X		A sprinkler system is provided for the gymnasium. Corrective action is not required. A required sprinkler system is provided for janitor and custodial spaces. Corrective action is not required. A required sprinkler system is not provided for the stage. Corrective action is required. 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.

I	LT	Reference
X		<p>A required fire suppression system is provided in the kitchen hood, but only covers half the equipment. Cooking equipment does not have required shut down capability upon suppression system activation for gas, but not electricity. Corrective action is required to extend the fire suppression system in the kitchen hood and to provide a shunt trip on the electrical system.</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		<p>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 to add them and to mount existing strobes at correct heights.</p> <p>A fire alarm and annunciator panel is provided and does include multiple buildings. A required smoke detector is provided in front of the panel. Corrective action is not required.</p>
X		<p>Required pull stations are provided at most emergency egress doors. Corrective action is required to add them to remaining exits.</p>
		3.7.3 Corridor and Separation Walls
		<p>Exit corridor and area separation walls 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 not required.</p>
		3.7.4 Doors
		<p>Corridor doors, frames, hardware and assemblies 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 not required.</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>

I	LT	Reference
		3.7.5 Classroom Emergency Exiting
X		Operable window units and exit doors to building exterior provide classroom emergency exiting and do not appear to comply with emergency exiting requirements. Exit doors appear to have hardware and assembly deficiencies. Corrective action is required.
		3.7.6 Emergency Egress Lighting
X		<p>Corridor emergency egress lighting is provided. Fixtures are every third ceiling light fixture 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 and are clearly visible. Corrective action is required.</p>
		3.8 Asbestos Concerns
		According to the AHERA Report, this facility does not have asbestos-containing material (ACM).

4.0 Opinions of Probable Costs to Remedy Physical Deficiencies (Stowers 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 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	\$ 460,000
Long-term	<u>\$ 1,211,000</u>
Total Remediation Costs	\$ 1,671,000

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 \$8,108,000. This cost was determined based on the following square foot cost escalated from TM 5-800-4:

\$109.04/sf

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 Stowers has had a recent addition, 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 Stowers Elementary School.

ESL (yrs)	AGE (yrs)	RUL (yrs)	PRV (\$)	TARGET SUSTAIN (Annual \$)	REMED. COSTS (\$)	REQ'D INVEST. (Annual \$)	MRM	RECOMMEND
67	*8.5	*58.5	8,108,000	121,000	1,671,000	28,600	.24	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.

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: White Elementary School

I	LT	Reference
		3.1 Overall General Description
		<p>This facility is a 46,000 square foot, one story multi-building complex originally constructed in 1961. Subsequent additions were:</p> <ul style="list-style-type: none"> ? Addition in 1986 ? Addition in 1991 <p>This facility serves 333 students in grades pre-kindergarten through five. Total student capacity is 422.</p>
		3.2 Site
		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 do not 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 condition. Corrective action is not required.</p> <p>Parking areas appear to provide adequate parking spaces. Corrective action is not required.</p> <p>Ingress, egress and bus drop-off areas are congested and hazardous. Corrective action is required.</p>
		3.2.3 Flatwork
		<p>Concrete walkways and ramps are in fair condition. Corrective action is not required.</p> <p>Walkways between main building and separate buildings are protected by covered structures in fair 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 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 all areas appear to comply with the U.S. Consumer Safety Commission "Handbook for Public Playground Safety" requirements. Corrective action is not 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 fair 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 single service, does appear to be adequate and 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. Corrective action is not required.</p> <p>A single-compartment grease trap is not provided for kitchen waste piping, does not appear to be adequate and is in poor condition. Replacement with a two-compartment grease trap is required. Corrective action is required.</p>
		3.2.5.4 Special Utility Systems
		Not applicable.

I	LT	Reference
		3.2.5.5 Electrical Service and Metering
		Electrical service is single service with metering, is underground pad mount, 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 most buildings is cast-in-place concrete columns and beams with wood joists and trusses. Roof decking is cast-in-place concrete. The structural system is in good condition. Corrective action is not required.</p> <p>Building frame for the classroom building addition is structural steel columns and beams with steel joists. Roof decking is structural metal. The structural system is in good condition. Corrective action is not required.</p> <p>The existing roofing system for all buildings has been covered with a sloped pre-finished standing seam metal roofing system with light gauge steel framing. Decking is structural metal. 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 exterior insulation and finish system (EIFS) on the classroom addition in good condition. Corrective action is not required.
		3.3.3.2 Entrances/Exits
	X	<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 fair condition. Corrective action is required with the window replacement.</p>

I	LT	Reference
		3.3.3.3 Fenestration System
	X	Fenestration system is pre-finished anodized aluminum framing curtain wall system with single glazing and pre-finished metal spandrel panels in poor condition in all areas except the classroom addition which has double glazing. Corrective action is required.
		3.3.3.4 Soffits
		Soffits at main entrance/exit and auxiliary exit/entrances are stucco or exposed structure and decking in fair condition. Corrective action is not required.
		3.3.3.5 Parapets
		Not applicable.
		3.3.4 Roofing
		<p>The existing roofing system has been covered with a sloped pre-finished standing seam metal roofing system and is in good condition. Minor leaks are evident. 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>
		3.4 Interior Elements
		3.4.1 Common Areas
		<p>Lobbies and Corridors:</p> <p>Flooring is vinyl tile in good condition. Walls are glazed concrete masonry unit wainscot and concrete masonry units or face brick masonry veneer in good condition. Suspended acoustical lay-in panel ceilings are in poor condition.</p> <p>Public, Private and Classroom Toilets:</p> <p>Flooring is ceramic tile in good condition. Walls are glazed concrete masonry unit wainscot and concrete masonry units in good condition. Suspended acoustical lay-in panel ceilings are in fair condition.</p>

I	LT	Reference
		<p>Administrative Areas, Media Center and Classrooms:</p> <p>Flooring is vinyl tile or carpet in good condition. Walls are concrete masonry units or gypsum board in fair condition. Suspended acoustical lay-in panel ceilings are in fair condition.</p> <p>Cafeteria/Gymnasium:</p> <p>Flooring is vinyl tile in fair condition. Walls are glazed concrete masonry unit wainscot and concrete masonry units and concrete masonry units in fair condition. Suspended acoustical lay-in panel ceilings are in good condition.</p> <p>Stage:</p> <p>Flooring is vinyl tile in good condition. Walls are concrete masonry units in fair 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 glazed concrete masonry unit wainscot and plaster in good condition. Solid ceilings are exposed structure and decking in good condition.</p>
		3.5 Mechanical, Plumbing and Electrical Systems
		3.5.1 HVAC System
	X	<p>HVAC systems include heating, cooling and control equipment.</p> <p>There are six individual classroom buildings, each with a mechanical room, a chiller and a boiler. Recently replaced equipment includes a boiler (1 1/2 years ago) and a chiller (4 years ago). Unit ventilators with integral fresh air intake in each classroom are the terminal devices for this 2-pipe system, each having a fan switch and an internal thermostat.</p> <p>Auxiliary systems for the campus include four-ton split system heat pumps for Wings A and F. Mechanical system condition varies from good to fair. There are, however, two chillers which will require replacement long term.</p>
		3.5.2 Plumbing System
		3.5.2.1 Plumbing Supply and Waste Piping
		Domestic water supply and waste piping within the facility does appear to be adequate and is in fair condition. Corrective action is not required.

I	LT	Reference
		3.5.2.2 Domestic Hot Water Production
	X	Domestic hot water is provided by five electric and one gas water heater, each located in the mechanical rooms of individual classroom buildings. They are currently in good condition. Corrective action is required long term, as their lifespan is less than ten years.
		3.5.2.3 Fixtures
		Plumbing fixtures and connections appear to be adequate and are in good condition. 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>The main electrical distribution panel for the buildings is a 1,200-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 computer power is a 500-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>
		3.5.3.2 Distribution and Panels
X		Electrical distribution and branch panels appear to be adequately sized, except for the kitchen panel, but are in poor condition. Panels have exposed busses, and original panels have exceeded their useful lifespan. Corrective action is required.
X		GFCI receptacles are required for all sinks.
		3.5.3.3 Interior Lighting
X		Administrative area and classroom lighting is recessed or pendant mounted fixtures with fluorescent lamps in fair condition. Fluorescent lamps are T-12. Light levels do not appear to be adequate in Building 1050, A, B, C, D and E. Corrective action is required.

I	LT	Reference
	X	<p>Corridor lighting is recessed or surface mounted fixtures with fluorescent lamps in fair condition. Fluorescent lamps are T-12. Light levels do not appear to be adequate in Building 1050, B, C and E. Corrective action is required.</p> <p>Cafeteria/gymnasium lighting is recessed 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>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 lamps in good condition. Lighting levels appear to be adequate. Corrective action is not required.</p> <p>Covered walkway lighting is provided and is surface mounted fixtures with high-pressure sodium 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
		A security system is provided and is monitored by a central agency. The security system does appear to provide adequate security and is in good condition. Corrective action is not required.
		3.5.3.6 Intercom System
		Intercom system does allow communication to individual classrooms. The system is in good 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.
		3.5.3.8 Computer Network
		A computer network system provides approximately 8 LAN outlets for each classroom. The computer network system does appear to be adequate and is in good condition. Corrective action is not required.

I	LT	Reference
		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. 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 not provided in all required. Ramps do not appear to comply with accessibility guidelines. 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
X		Main entrance/exit and auxiliary exit/entrance approach, doors and hardware appear to comply with accessibility guidelines. Corrective action is not required.
X	X	Some auxiliary exit/entrance doors exit to porches and ramps that do not appear to provide accessible exiting. Exit/entrances are required to accessible by construction of porches, ramps, handrails or site regrading. Corrective action is required.
X		Some interior doors along the accessible route are inset and do not appear to allow clearance and approach accessibility. At least one door is required for each accessible space with adequate maneuvering, width and opening clearances from both sides. School officials also report that Maintenance has problems with doors sticking in frames. Corrective action is required.

I	LT	Reference
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.
	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. 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
		Elevators are not required. Required platform/wheelchair lifts are provided at the stage. Corrective action is not required.

I	LT	Reference
		3.6.9 Recreational Facilities
		Required accessible routes to play areas are provided. Accessible play areas, equipment and surfacing appear to be available in individual play area groups. Corrective action is not required.
		3.7 Life Safety and Fire Protection
		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>Cooking equipment does not have required shut down capability upon suppression system activation. Corrective action is not required, however, because this is not currently being used. Should the kitchen be re-opened in the future, work will be required to meet current life safety standards.</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 and annunciator panel is provided and does include multiple buildings. A required smoke detector is not provided in front of the panel. Corrective action is required.
X		Required pull stations are not provided at most emergency egress doors and are not mounted at heights complying with ADA guidelines. Corrective action is required.

I	LT	Reference
		3.7.3 Corridor and Separation Walls
		Exit corridor and area separation walls 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 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
X		Operable window units and exit doors to building exterior provide classroom emergency exiting and do not appear to comply with emergency exiting requirements. Exit doors appear to have hardware and assembly deficiencies. Corrective action is required.
		3.7.6 Emergency Egress Lighting
X		Corridor emergency egress lighting is provided, but is not operational. Fixtures are wall mounted package units with required testing devices. Corrective action is required.
X		Illuminated directional emergency exit signs are not provided at every required location and are clearly visible. Corrective action is required.
		3.8 Asbestos Concerns
	X	According to the AHERA Report, this facility does have asbestos-containing material (ACM). Remaining ACM is non-friable, not damaged, and is not currently hazardous to building occupants. The AHERA Report recommends managing all remaining ACM in place. Corrective action is required long term. The remaining material consists of window caulking that is beginning to deteriorate and could become friable if not monitored and abated. There is also one room which still has ACM in its floor tile mastic.

4.0 Opinions of Probable Costs to Remedy Physical Deficiencies (White 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.

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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	\$ 629,000
Intermediate	\$ 47,000
Long-term	<u>\$ 1,168,000</u>
Total Remediation Costs	\$ 1,844,000

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 \$5,017,000. This cost was determined based on the following square foot cost escalated from TM 5-800-4:

\$109.04/sf

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 White is a combination of two additions and the original pods, 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 White Elementary School.

ESL (yrs)	AGE (yrs)	RUL (yrs)	PRV (\$)	TARGET SUSTAIN (Annual \$)	REMED. COSTS (\$)	REQ'D INVEST. (Annual \$)	MRM	RECOMMEND
67	*33.8	*33.2	5,017,000	74,900	1,844,000	55,500	.74	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.

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: Wilson Elementary School

I	LT	Reference
		3.1 Overall General Description
		<p>This facility is a 42,200 square foot, one story multi-building complex originally constructed in 1965. Subsequent additions were:</p> <ul style="list-style-type: none"> ? 1986 classroom addition ? 1998 major renovation and minor additions <p>This facility serves 413 students in grades pre-kindergarten through five. Total student capacity is 454.</p>
		3.2 Site
		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 do not 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 condition. Corrective action is required to replace the paving near the dock and dumpster area which is in poor condition.</p> <p>Parking areas do not 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 between main building and separate buildings are protected by covered structures in fair 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. Bleachers are in good condition. Corrective action is not required.</p> <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 all areas appear to comply with the U.S. Consumer Safety Commission "Handbook for Public Playground Safety" requirements. Corrective action is not 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 single service, does appear to be adequate and 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 single service, feeding an underground pad mounted transformer. It 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
X		<p>Building frame for the main building is cast-in-place concrete columns and beams. Roof decking is cast-in-place concrete. The structural system is in good condition. Corrective action is not required. The PTR addition will utilize load bearing CMU walls supporting metal roof deck and steel joints.</p> <p>There are six concrete columns at the main entry that require immediate action to fix stress cracks.</p> <p>The existing roofing system for the entire building has been covered with a sloped pre-finished standing seam metal roofing system with light gauge steel framing. Decking is structural metal. 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
X		Building exterior is face brick masonry veneer in good condition. There are some areas on the interior CMU walls that show evidence of moisture intrusion. It is unclear if this condition is caused by a roof problem or a masonry problem. Remediation costs are included here for waterproofing, sealing and repainting the face brick. Corrective action is required.

I	LT	Reference
		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 hollow metal doors and frames with glazing in good condition. Corrective action is not required.</p>
		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 and auxiliary exit/entrances are exposed structure and decking in good condition. Corrective action is not required.
		3.3.3.5 Parapets
		Not applicable.
		3.3.4 Roofing
		<p>The existing roofing system has been covered with a sloped pre-finished standing seam metal roofing system 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>
		3.4 Interior Elements
		3.4.1 Common Areas
		<p>Lobbies and Corridors:</p> <p>Flooring is vinyl tile in good condition. Walls are plastic laminate panels 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 vinyl tile or carpet in good condition. Walls are concrete masonry units or gypsum board 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. Suspended acoustical lay-in panel ceilings are in good condition.</p> <p>Stage:</p> <p>Flooring is vinyl tile in good condition. Walls are concrete masonry units in good condition. Solid ceilings are gypsum board in good condition.</p> <p>Kitchen:</p> <p>Flooring is ceramic tile in good condition. Walls are glazed concrete masonry unit wainscot and concrete masonry units in good condition. Suspended acoustical lay-in panel ceilings are in good condition.</p>
		<p>3.5 Mechanical, Plumbing and Electrical Systems</p>
		<p>3.5.1 HVAC System</p>
X		<p>The HVAC system was almost completely renovated in 1998. The four-pipe HVAC system is in good physical condition and utilizes a chiller, boiler, a chilled water pump, a heating water pump, thirty-five unit ventilators, twelve fan coil units and four exhaust fans. Most fan coils and unit ventilators are located on the ground, although some are located in a mezzanine. All this equipment is approximately five years old and is in good condition.</p> <p>The controls are a Barber-Coleman energy management system in good condition. However, the controls do not operate properly. From discussions with the designers and the Base facilities staff, the mechanical contractor may not have done an adequate job of testing and balancing the HVAC system. The system likely receives too much outside air. In addition the relief dampers were made inoperable during installation, which makes it more difficult for the controls to operate</p>

I	LT	Reference
		properly. Corrective action is required to do a proper test and balance on the HVAC system and to recommission the controls.
		3.5.2 Plumbing System
		3.5.2.1 Plumbing Supply and Waste Piping
		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
		Not applicable.
		3.5.2.3 Fixtures
		Plumbing fixtures and connections appear to be adequate and are in good condition. 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
		The main electrical distribution panel for the building is a 1,200-amp, 277/480-volt, 3-phase, 4-wire panel with ground fault protection. The panel does appear to be adequate and is in good condition. Corrective action is not required.
		3.5.3.2 Distribution and Panels
X		Electrical distribution and branch panels in the main building appear to be adequately sized and are in good condition. Distribution and dry type step down transformers provide power. The portables utilize an 800-amp, 120/240-volt, single-phase, 3-wire panel in fair condition. Corrective action is required to repair feeder cable under portable building.

I	LT	Reference
		3.5.3.3 Interior Lighting
		<p>Administrative area, media center and classroom lighting is recessed parabolic 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>Cafeteria/gymnasium lighting is recessed fixtures with fluorescent lamps in good condition. Fluorescent lamps are T-8. 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 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 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
		A security system is provided and is monitored by a central agency. The security system does appear to provide adequate security or monitoring and is in good condition. Corrective action is not required.
		3.5.3.6 Intercom System
		Intercom system does allow communication to individual classrooms and outside telephone calls. The system is in good 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 8 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		<p>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.</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> <p>Ramps along the on-site accessible route are required and are provided. Ramps appear to comply with accessibility guidelines. Required handrails are provided and appear to comply with height and extension requirements. Corrective action is not required.</p>
		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	<p>Main entrance/exit and auxiliary exit/entrance approach, doors and hardware appear to comply with accessibility guidelines. Corrective action is not required.</p> <p>Some auxiliary exit/entrance doors exit to porches that do not appear to provide accessible exiting. Exit/entrances are required to accessible by construction of porches, ramps, handrails or site regrading. Portable buildings are not accessible. Corrective action is required.</p>

I	LT	Reference
X		<p>Interior doors along the accessible route are inset or flush with corridor walls and some do not appear to allow clearance and approach accessibility. These doors are located at two offices and the bookroom and were not included. At least one door is required for each accessible space with adequate maneuvering, width and opening clearances from both sides. Corrective action is required.</p> <p>Door assemblies appear to meet accessibility guidelines. All doors to accessible spaces are required to have non-restrictive hardware and closers. Corrective action is not required.</p>
		3.6.4 Signage
		Signage along the accessible route does appear to comply with accessibility guidelines. Corrective action is not required.
		3.6.5 Public Toilet Rooms
		<p>Public toilet rooms are provided along the accessible route and 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 not required.</p> <p>Administrative staff and nurse's toilet rooms appear to meet accessibility guidelines. Toilets are required to comply with guidelines similar to public toilets. Corrective action is not required.</p> <p>Classroom toilet rooms appear to meet accessibility guidelines. Toilets are required to comply with guidelines similar to public toilets. Corrective action is not required.</p>
		3.6.6 Drinking Fountains
		Drinking fountains are provided along the accessible route and appear to comply with accessibility guidelines. Drinking fountains are required to be accessible with adequate clearances and corridor protrusion protection. Corrective action is not required.
		3.6.7 Telephones
		Not applicable.

I	LT	Reference
		3.6.8 Elevators/Lifts
		Elevators are not required. Required platform/wheelchair lifts are provided at the stage. Corrective action is not required.
		3.6.9 Recreational Facilities
		Required accessible routes to play areas are provided. Accessible play areas, equipment and surfacing 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 not required.
3.7 Life Safety and Fire Protection		
		3.7.1 Sprinklers, Standpipes and Fire Suppression Systems
X		A required sprinkler system is provided for janitor and custodial spaces. Corrective action is not required. A required sprinkler system is not provided for the stage. Corrective action is required. The kitchen hood is not in use. Wilson does not utilize cooking equipment. Should Wilson's kitchen be opened for cooking in the future, a code study should be performed and any necessary improvements made.
		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. A fire alarm and annunciator panel is provided. A required smoke detector is provided in front of the panel. Corrective action is not required.
X		Required pull stations are provided at most emergency egress doors. Corrective action is required to put pull stations at the remaining doors.

I	LT	Reference
		3.7.3 Corridor and Separation Walls
		Exit corridor and 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 appear to comply with life safety fire resistance rating standards. Corrective action is not required.</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 with emergency exiting requirements. Corrective action is not required.
		3.7.6 Emergency Egress Lighting
		<p>Corridor emergency egress lighting is provided. Fixtures are every third ceiling light fixture with required testing devices. Corrective action is not required.</p> <p>Emergency egress lighting is provided in required windowless rooms. Fixtures are every third ceiling light fixture with required testing devices. Corrective action is not required.</p> <p>Illuminated directional emergency exit signs are not provided at every required location and are not clearly visible. Corrective action is not required.</p>
		3.8 Asbestos Concerns
		According to the AHERA Report, this facility does not have asbestos-containing material (ACM). The last remaining asbestos was removed with the 1998 renovation per the contract drawings.

4.0 Opinions of Probable Costs to Remedy Physical Deficiencies (Wilson 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	\$ 203,000
Long-term	<u>\$ 94,000</u>
Total Remediation Costs	\$ 297,000

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 \$5,621,000. This cost was determined based on the following square foot cost escalated from TM 5-800-4:

\$109.04/sf

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 Wilson is a combination of two additions and one recent complete renovation, 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 Wilson Elementary School.

ESL (yrs)	AGE (yrs)	RUL (yrs)	PRV (\$)	TARGET SUSTAIN (Annual \$)	REMED. COSTS (\$)	REQ'D INVEST. (Annual \$)	MRM	RECOMMEND
67	*31.3	*35.7	5,621,00	83,900	297,000	8,500	.10	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 ADA issues and repair problems with major building systems. Considerable investment was made five years ago in renovations 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

DEXTER ELEMENTARY SCHOOL



Photo 1: Entrance



Photo 2: ADA Non-compliant Exit



Photo 3: ADA Non-compliant Play Area



Photo 4: ADA Non-compliant Parking



Photo 5: Roof Leak

FAITH MIDDLE SCHOOL



Photo 1: Entrance



Photo 2: ADA Access Problem from Parking



Photo 3: ADA Non-compliant Parking



Photo 4: Life Safety Door Issue



Photo 5: ADA Stage Access

3.0 System Description and Observations: Loyd Elementary School

I	LT	Reference
		3.1 Overall General Description
		<p>This facility is a 53,000 square foot, one story building originally constructed in 1958. Subsequent additions were:</p> <ul style="list-style-type: none"> ? Library expansion in 1992 ? Classroom addition in 2001 ? 5 temporary portable classroom buildings in 1998 <p>This facility serves 373 students in grades pre-kindergarten through five. Total student capacity is 438.</p>
		3.2 Site
		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 do not 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
		<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 walkways and ramps are in good 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>

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. Bleachers are in fair condition. Corrective action is not required.</p> <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 all areas appear to comply with the U.S. Consumer Safety Commission "Handbook for Public Playground Safety" requirements. Corrective action is not 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 single service with low pressure distribution does appear to be adequate and 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 good condition for all areas except for the upstream grease trap piping. Corrective action is required to replace 127 feet of collapsed 4-inch cast iron sewer piping</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 single service without metering, is underground serving a pad mounted 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 is concrete masonry unit walls or cast-in-place concrete columns and beams with steel joists. Roof decking is structural metal or cast-in-place concrete. The structural system is in good condition. Corrective action is not required.</p> <p>The existing roofing system for all buildings has been covered with a sloped pre-finished standing seam metal roofing system with steel trusses. Decking is structural metal. The retrofit framing system appears to be 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 cast stone at entrance in good condition. Corrective action is not required.
		3.3.3.2 Entrances/Exits
	X	Main entrance/exit is pre-finished anodized aluminum framing with hollow metal doors and framing with glazing in fair condition. Corrective action is required with replacement of fenestration system
	X	Auxiliary exit/entrances are hollow metal doors and frames with glazing in poor condition. Corrective action is required.

I	LT	Reference
		3.3.3.3 Fenestration System
	X	Fenestration system is prefinished anodized aluminum framing curtain wall system with single or double glazing and prefinished metal spandrel panels in poor condition. Corrective action is required.
		3.3.3.4 Soffits
		The soffit at main entrance/exit and auxiliary exit/entrances is exposed concrete decking. Roof overhangs are pre-finished aluminum in good condition. Corrective action is not required.
		3.3.3.5 Parapets
		Not applicable.
		3.3.4 Roofing
X		<p>The existing roofing system has been covered with a sloped prefinished standing seam metal roofing system and is in good condition. Minor leaks are evident. Corrective action is required to repair a roof leak on the eastern-most wing.</p> <p>Flashing, coping, fascia, gutters and downspout are pre-finished metal in good condition. Corrective action is not required.</p>
		3.4 Interior Elements
		3.4.1 Common Areas
		<p>Lobbies and Corridors:</p> <p>Flooring is carpet in good condition. Walls are glazed concrete masonry unit wainscot and concrete masonry units or concrete masonry units 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 in good condition. Walls are glazed concrete masonry unit wainscot and concrete masonry units in fair condition. Suspended acoustical lay-in panel ceilings are in good condition.</p>

I	LT	Reference
	X	<p>Administrative Areas, Media Center and Classrooms:</p> <p>Flooring is vinyl tile or carpet in fair to poor condition. Walls are glazed concrete masonry unit wainscot and concrete masonry units in good condition. Suspended acoustical lay-in panel ceilings are in good condition. Corrective action is required to replace carpet damaged by previous HVAC renovation, although contractor was required to do it per the construction drawings.</p> <p>Cafeteria/Gymnasium:</p> <p>Flooring is vinyl tile in good condition. Walls are glazed concrete masonry unit 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. Suspended acoustical lay-in panel ceilings are in good condition.</p> <p>Kitchen:</p> <p>Flooring is ceramic tile in fair condition. Walls are glazed concrete masonry unit wainscot and plaster in fair condition. Suspended acoustical lay-in panel ceilings are in good condition.</p>
		3.5 Mechanical, Plumbing and Electrical Systems
		3.5.1 HVAC System
X	X	<p>HVAC systems include heating, cooling and control equipment</p> <p>This campus is served by a four-pipe system with two water cooled centrifugal 80-ton chillers, two boilers and a cooling tower in excellent condition for the most part. It is anticipated that the chillers will require replacement in the next ten years, as they were not replaced as part of the HVAC renovation in 2001. In addition, one compressor on one of the chillers has recently failed and it is anticipated that another compressor will require short term replacement. Mechanical room equipment includes: two chilled water pumps, two hot water pumps, two condensing water pumps, two domestic water booster pumps and a relatively new hot water storage tank.</p> <p>Terminal air devices include thirty unit ventilators, six fan coil units, and two air handling units for the stage. Most equipment was replaced in 2001.</p> <p>Five 4-ton heat pumps serve portable buildings.</p>

I	LT	Reference
		<p>All HVAC systems are well maintained and in good condition. The DDC control interface is being installed now.</p> <p>The entire system is in good condition. Corrective action is not required.</p>
		3.5.2 Plumbing System
		3.5.2.1 Plumbing Supply and Waste Piping
		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
		Not applicable.
		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 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 the building is a 2,000 -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> <p>The main electrical distribution panel also utilizes a subpanel for the PTR addition that is an 800-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>
		3.5.3.2 Distribution and Panels
		Electrical distribution and branch panels appear to be adequately sized and are in good condition. Corrective action is not required.

I	LT	Reference
		3.5.3.3 Interior Lighting
		<p>Administrative area, media center and classroom lighting is recessed droffer or parabolic 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 parabolic fixtures with fluorescent lamps in good condition. Fluorescent lamps are T8. Light levels appear to be adequate. Corrective action is not required.</p> <p>Cafeteria/gymnasium lighting is recessed droffer fixtures with fluorescent lamps in good condition. Fluorescent lamps are T8. 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 or pole mounted fixtures with high-pressure sodium or metal halide 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 lamps in fair condition. Lighting levels appear to be adequate. Corrective action is not required.</p> <p>Covered walkway lighting is not provided. Corrective action is not required.</p> <p>Parking lot lighting is provided and is pole mounted fixtures with metal halide lamps in good condition. Lighting levels appear to be adequate. Corrective action is not required.</p>
		3.5.3.5 Security System
		A security system is provided and is monitored by a central agency. The security system does appear to provide adequate security or monitoring and is in good condition. Corrective action is not required. The Post may need to evaluate some monitoring capabilities.
		3.5.3.6 Intercom System
X		Intercom system does allow communication to individual classrooms. The system is in poor condition. The system does not operate properly and the bell system is also a problem. Corrective action is required.

I	LT	Reference
		3.5.3.7 Educational Television
		Educational television is provided and does not include 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 8 LAN outlets for each classroom. The computer network system does not 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 not provided. 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.
		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 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		<p>Interior doors along the accessible route are inset or flush with corridor walls and appear to allow clearance and approach accessibility. Corrective action is not required.</p> <p>Door assemblies do not appear to meet accessibility guidelines except in the 2001 classroom addition. All doors to accessible spaces are required to have non-restrictive hardware and closers. Corrective action is required.</p>
		3.6.4 Signage
	X	Signage along the accessible route does not appear to comply with accessibility guidelines except in the 2001 classroom addition. 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		<p>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 stall and recessed insulated lavatory piping. Corrective action is required.</p> <p>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.</p> <p>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.</p>
		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.

I	LT	Reference
		3.6.8 Elevators/Lifts
		Required platform/wheelchair lifts are provided at the stage. Corrective action is not required.
		3.6.9 Recreational Facilities
X		Required accessible routes to play areas are provided. However, 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
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. A required fire suppression system is not provided in the kitchen hood. Cooking equipment does not have required shut down capability upon suppression system activation. Corrective action is not required, as this kitchen does not use cooking equipment. Should the kitchen be used for cooking, an evaluation of current NFPA standards should be conducted and all deficiencies corrected.</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 except in the 2001 classroom addition. 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 and is located in the hallway at the front entry. It does include multiple buildings and is monitored by a central agency. A required smoke detector is not provided in front of the panel. Corrective action is required.

I	LT	Reference
X		Required pull stations are not provided at emergency egress doors. Corrective action is required.
		3.7.3 Corridor and Separation Walls
		Exit corridor and area separation walls 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 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. Some doors have louvers that allow the transfer of air between interior spaces and corridors. 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. Emergency exit doors are required to have non-restrictive emergency exit hardware and assemblies. Corrective action is not required.</p>
		3.7.5 Classroom Emergency Exiting
X		Exit doors to building exterior provide classroom emergency exiting and do not appear to comply with emergency exiting requirements. Exit doors appear to have hardware and assembly deficiencies. Corrective action is required.
		3.7.6 Emergency Egress Lighting
		<p>Corridor emergency egress lighting is provided. Fixtures are every third ceiling light fixture with required testing devices. Corrective action is not required.</p> <p>Emergency egress lighting is provided in required windowless rooms. Fixtures are every third ceiling light fixture with required testing devices. Corrective action is not required.</p> <p>Illuminated directional emergency exit signs are provided at every required location and are clearly visible. Corrective action is not required.</p>

I	LT	Reference
		3.8 Asbestos Concerns
		According to the AHERA Report, this facility does have asbestos containing material (ACM). Remaining ACM is non-friable, not damaged, inaccessible and is not currently hazardous to building occupants. The AHERA Report recommends managing all remaining ACM in place. Corrective action is required long term to remove a small amount of remaining asbestos in ceiling tiles possibly

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

4.1 General

Opinions of probable cost are provided to address physical deficiencies in the facility. Physical deficiencies are divided into two categories: Immediate 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

Exhibit 7.4 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 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 US Army Technical Manual TM 5800-4 - Programming Cost Estimates for Military Construction. 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 5800-4 - 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. 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-removable 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. 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 and Long-term Remediation items are as follows:

Immediate	\$ 312,000
Long-term	\$ <u>990,000</u>
Total Remediation Costs	\$ 1,302,000

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 \$5,781,000. This cost was determined based on the following square foot cost escalated from TM-800-4:

\$136.29/sf

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. Twenty-five years for portable buildings.
- Relative Useful Life (RUL): Expected service life minus the age of the building. Because Loyd is a combination of two 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 Loyd Elementary School.

ESL (yrs)	AGE (yrs)	RUL (yrs)	PRV (\$)	TARGET SUSTAIN (Annual \$)	REMED. COSTS (\$)	REQ'D INVEST. (Annual \$)	MRM	RECOMMEND
67	*36.2	*26.9	5,781,000	86,300	1,302,000	48,400	.56	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.

LOYD ELEMENTARY SCHOOL



Photo 1: Entrance



Photo 2: Non Life Safety Compliant Doors



Photo 3: ADA Non-compliant Toilet



Photo 4: ADA Non-compliant Play Group



Photo 5: Rusted Door



Photo 6: Old Windows

MCBRIDE ELEMENTARY



Photo 1: Entrance



Photo 2: Non Life Safety Compliant Exit



Photo 3: Life Safety Problem, Corridor



Photo 4: Non-accessible Play Surface



Photo 5: Existing Bus Drop



Photo 6: Roof Leak

STOWERS ELEMENTARY SCHOOL



Photo 1: Entrance



Photo 2: Masonry Water Damage



Photo 3: Damaged Roof Membrane



Photo 5: Patched Roof Flashing



Photo 5: Damaged Roof Edge



Photo 6: ADA Non-compliant Access Thru Traffic

WHITE ELEMENTARY SCHOOL



Photo 1: Sign



Photo 2: Life Safety/ADA Non-compliant Secondary Exit



Photo 3: Non-compliant Exit



Photo 4: Non-compliant Door Hardware



Photo 5: ADA Non-compliant Toilet



Photo 6: Single Compartment Grease Trap

WILSON ELEMENTARY SCHOOL



Photo 1: Sign



Photo 2: Non-compliant Exit



Photo 3: ADA Non-compliant Route



Photo 4: Pavement Repair Needed



Photo 5: Concrete Column Repair Needed



Photo 6: Moisture in Wall Cavity