
DDESS Facility Transfer Study Facility Condition Report (Final)



Fort Bragg, North Carolina

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Engineers ■ Architects ■ Planners

FORT BRAGG SCHOOLS
FORT BRAGG, NORTH CAROLINA
PROPERTY CONDITION REPORT

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**ALBRITTON JUNIOR HIGH SCHOOL
FORT BRAGG, NORTH CAROLINA
PROPERTY CONDITION REPORT
EXECUTIVE SUMMARY**

1.0 Executive Summary

Data obtained from the survey provides an objective and impartial evaluation of the Albritton Junior High 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 100,000 square foot, one-story masonry veneer building originally constructed in 1983 with an additional portable building added in 1992. This facility serves 624 students from seventh to ninth 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 mechanical system, plumbing system and roof, 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 \$3,112,000

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 \$1,770,000

Total remediation project costs are approximately \$4,882,000.

The report scope also included the cost of Plant Replacement Value (PRV), defined as the cost of a new facility, including associated sitework and parking. The estimated PRV for this facility is \$12,512,000. 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 Albritton Junior High 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 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	*18.8	*47.4	12,512,000	186,800	4,882,000	103,000	.55	Renovate

* Indicates Composite Number



**BOWLEY ELEMENTARY SCHOOL
FORT BRAGG, NORTH CAROLINA
PROPERTY CONDITION REPORT
EXECUTIVE SUMMARY**

1.0 Executive Summary

Data obtained from the survey provides an objective and impartial evaluation of the Bowley 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 76,000 square foot, one-story masonry veneer building originally constructed in 1989 with additional portable buildings added in 1991 and 1992. This facility serves 507 students from pre-school to fourth grade.

Observed deficiencies primarily consisted of life safety issues and major building systems. This facility requires alterations to comply with life safety codes, minor ADA accessibility items per more recent guidelines and major building systems that have worn out. The major building items of most concern are the mechanical system and the roof.

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 \$1,726,000

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 \$158,000

Total remediation project costs are approximately \$1,884,000.

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 \$9,115,000. 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 Bowley Elementary School is .27. A ratio over one indicates it is more cost effective to build a new school rather than renovate the existing facility. It is our recommendation that 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	*12.8	*50.9	9,115,000	136,000	1,884,000	37,000	.27	Renovate

* Indicates Composite Number

It is important to note that the age and the RUL of the building do not add to 67 years (ESL) because a portion of the square footage of this facility is portable buildings which do not have an anticipated service life of over 25 years.



Damaged Roofing



Damaged Soffit

**BUTNER ELEMENTARY SCHOOL
FORT BRAGG, NORTH CAROLINA
PROPERTY CONDITION REPORT
EXECUTIVE SUMMARY**

1.0 Executive Summary

Data obtained from the survey provides an objective and impartial evaluation of the Butner 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 74,600 square foot, one-story masonry veneer building originally constructed in 1959 with additional construction in 1962, 1988 and 1996. A portable building was added in 1992. A permanent PTR addition will be constructed in 2003 and is included in this study. This facility serves 583 students from pre-kindergarten to fourth grade.

Observed deficiencies primarily consisted of ADA accessibility and life safety issues related to more recent guidelines. This facility requires alterations to comply with life safety codes, ADA accessibility and major building systems guidelines.

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

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

Total Immediate Remediation Costs \$584,000

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 \$1,448,000

Total remediation project costs are approximately \$2,032,000.

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 \$8,946,000. 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 Butner Elementary School is .44. 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	*34.9	8,946,000	133,500	2,032,000	58,200	.44	Renovate

* Indicates Composite Number

It is important to note that the age and RUL of the building do not add to the ESL of 67 years because a portion of the square footage of this facility is portable buildings which do not have an anticipated service life of over 25 years.



Condenser in Poor Condition



ADA Non-compliant Door

**DEVERS ELEMENTARY SCHOOL
FORT BRAGG, NORTH CAROLINA
PROPERTY CONDITION REPORT
EXECUTIVE SUMMARY**

1.0 Executive Summary

Data obtained from the survey provides an objective and impartial evaluation of the Devers 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 an 80,300 square foot, one-story masonry veneer building originally constructed in 1996. This facility serves 580 students from pre-kindergarten to fourth grade.

Observed deficiencies primarily consisted of life safety issues related to more recent guidelines and major building systems dealing with drainage and HVAC. (At the time of printing, HVAC repair and storm drainage improvements have just been awarded for construction. These costs have been deducted from this study.) This facility requires alterations to comply with life safety codes, minor ADA accessibility and major building systems guidelines.

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

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

Total Immediate Remediation Costs \$459,000

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 \$98,000

Total remediation project costs are approximately \$557,000.

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 \$9,631,000. 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 Devers Elementary School is .06. 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	6	61	9,631,000	143,700	557,000	9,100	.06	Renovate



Drainage Problems



Water Retention Problem

**HOLBROOK ELEMENTARY SCHOOL
FORT BRAGG, NORTH CAROLINA
PROPERTY CONDITION REPORT
EXECUTIVE SUMMARY**

1.0 Executive Summary

Data obtained from the survey provides an objective and impartial evaluation of the Holbrook 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 59,228 square foot, one-story masonry veneer building originally constructed in 1960 with additional construction in 1996. Portable buildings were added in 1990 and 1991. This facility serves 391 students from pre-kindergarten to fourth grade.

Observed deficiencies primarily consisted of ADA accessibility, life safety issues and major building systems. This facility requires alterations to comply with life safety codes, ADA accessibility and major building systems deficiencies such as the drainage system, plumbing, HVAC and electrical 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 unsafe conditions, life safety fire code requirements, ADA accessibility guidelines and potential system failures:

Total Immediate Remediation Costs \$1,266,000

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 \$49,000

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 \$1,266,000

Total remediation project costs are approximately \$2,581,000.

The report scope also included the cost of Plant Replacement Value (PRV), defined as the cost of a new facility, including associated sitework and parking. The estimated PRV for this facility is \$7,104,000. 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 Holbrook Elementary School is .78. 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 renovated within the next year for immediate cost items and scheduled for renovation within the next ten years to correct long-term deficiencies. A summary of the MRM calculation is shown below.

ESL(yrs)	AGE (yrs)	RUL (yrs)	PRV (\$)	TARGET SUSTAIN. (Annual \$)	REMED. COSTS (\$)	REQUIRED INVEST. (Annual \$)	MRM	RECOMMEND
67	*32.1	*31.2	7,104,000	106,000	2,581,000	82,700	.78	Renovate

* Indicates Composite Number

Note that the sum of Age and RUL does not equal 67 (ESL) because the life span of a portable building has been set at 25 years for the purpose of this study.



Drainage Problem



ADA Non-compliant Exit/Entrance

**IRWIN MIDDLE SCHOOL
FORT BRAGG, NORTH CAROLINA
PROPERTY CONDITION REPORT
EXECUTIVE SUMMARY**

1.0 Executive Summary

Data obtained from the survey provides an objective and impartial evaluation of the Irwin 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 101,300 square foot, one-story masonry veneer building originally constructed in 1960 with additional construction in 1964. Portable buildings were added in 1975, 1989, 1991 and 1992. This facility serves 700 students from fifth to sixth grade.

Observed deficiencies were numerous and consisted of ADA accessibility, life safety issues and major building systems. Major building deficiencies include HVAC, plumbing, drainage and electrical power and lighting.

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

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

Total Immediate Remediation Costs \$3,714,000

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 \$1,888,000

Total remediation project costs are approximately \$5,602,000.

The report scope also included the cost of Plant Replacement Value (PRV), defined as the cost of a new facility, including associated sitework and parking. The estimated PRV for this facility is \$12,421,000. 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 Irwin Middle School is 1.28. 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 replacement 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	*37.7	*23.6	12,421,000	185,400	5,602,000	237,400	1.28	Replace

* Indicates Composite Number

Note that the sum of the Age and RUL does not equal 67 (ESL) because the lifespan of a portable building has been set at 25 years for the purpose of this study.



Deteriorated Exterior Ductwork



Poor Lighting

The MRM ratio for Irwin Middle School exceeds 1 and replacement has been recommended. Over eighty-six percent of the school was constructed before 1965. The school needs major renovation to comply with current ADA recommendations and life safety issues. In addition, several major building systems appear to be near failure and will need replacement in the next ten years, particularly the inefficient and high maintenance mix of HVAC systems. The school utilizes a series of unit ventilators which have been retrofitted with a DX cooling coil. In combination with air cooled condensers, these units provide air conditioning for the school. The unit ventilators are old and continual problems with both the heating water coil and the condensers are experienced by maintenance staff. Unreliable pneumatic controls further compound the HVAC system. Electrical systems are also in serious need of remediation. All of the interior wiring and branch panels are in poor condition and many areas of the school contain inadequate lighting. Finally, there is a large amount of asbestos abatement of non-friable material anticipated within the next ten years. We recommend replacement of this school within the next ten years because a new facility would be more cost effective to operate if fully sustained.

When replacement is recommended, a plant replacement value is useful for determining the cost of a new school. Using the Army Technical Manual resources, we have calculated a per square foot cost of plant replacement value for a middle school at Fort Bragg to be approximately

\$147.28. Moveable furniture has been added to the PRV cost in this model as directed by DoDEA.

DoDEA has directed that the size building used for replacement cost should be adjusted to reflect the number of students attending school in the building plus 15% for possible enrollment shifts. Total student capacity at Irwin Middle School is 770. Total students enrolled is approximately 700. Currently, Irwin has only 10% more capacity than needed; therefore, the current building square footage will be used to determine its replacement cost. It is important to note that this replacement cost does not match the PRV from the previous page because the additional cost of kitchen equipment and moveable furniture has been added. Given the school's current size of 101,260 square feet, the cost of replacement would be approximately \$14,914,000 plus the costs of kitchen equipment. For a school of this size, kitchen equipment would likely range from \$450,000 to \$500,000. Therefore, a total budgetary construction cost for the same size school would be approximately \$15,400,000, excluding design fees and SIOH. The adequacy of the current building square footage has not been evaluated. The State of North Carolina may require larger classrooms and core spaces depending on the program needs. These considerations are important to consider, but are beyond the scope of this study.

**MCNAIR ELEMENTARY SCHOOL
FORT BRAGG, NORTH CAROLINA
PROPERTY CONDITION REPORT
EXECUTIVE SUMMARY**

1.0 Executive Summary

Data obtained from the survey provides an objective and impartial evaluation of the McNair 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 53,086 square foot, one-story masonry veneer building originally constructed in 1963 with additional construction in 1996. Three portable classroom buildings were added in 1992. This facility serves 443 students from pre-kindergarten to fourth grade.

Observed deficiencies consisted of ADA accessibility and life safety issues related to more recent guidelines. This facility requires alterations to comply with life safety codes, ADA accessibility and major building systems guidelines. Major building systems in poor condition include plumbing, HVAC, electrical and storm water drainage.

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

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

Total Immediate Remediation Costs \$1,040,000

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 \$2,181,000

Total remediation project costs are approximately \$3,221,000.

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 \$6,367,000. 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 McNair Elementary School is .99. 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 to renovate immediate items within the year and long-term items 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	*30.5	*34.4	6,367,000	95,000	3,221,000	93,600	.99	Renovate

* Indicates Composite Number

Note that the sum of Age and RUL does not equal 67 (ESL) because the lifespan of a portable building has been set at 25 years for the purpose of this study.



Old Fan Coil Units



Poor Classroom Lighting

**MURRAY ELEMENTARY SCHOOL
FORT BRAGG, NORTH CAROLINA
PROPERTY CONDITION REPORT
EXECUTIVE SUMMARY**

1.0 Executive Summary

Data obtained from the survey provides an objective and impartial evaluation of the Murray 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 50,200 square foot, one-story masonry veneer building originally constructed in 1957 with additional construction in 1988 and 1996. This facility serves 403 students from pre-kindergarten to fourth grade.

Observed deficiencies consisted of ADA accessibility and life safety issues related to more recent guidelines. This facility requires alterations to comply with life safety codes, ADA accessibility and major building systems guidelines. Major building system deficiencies noted include HVAC, plumbing and electrical systems.

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

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

Total Immediate Remediation Costs \$1,657,000

2. Intermediate Remediation – Items such as force protection, additional site paving, Title IX compliance costs, or playground equipment or surfacing. These are items of low 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 \$1,152,000

Total remediation project costs are approximately \$ 2,809,000.

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 \$6,695,000. 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 Murray Elementary School is .98. 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 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	*34	*28.8	6,695,000	99,900	2,809,000	97,500	.98	Renovate

* Indicates Composite Number

Note that sum of Age and RUL does not equal 67 (ESL) because the lifespan of a portable building has been set at 25 years for the purposes of this study.



ADA Non-compliant Door, Signage and Life Safety Code Non-compliant Louvers



Old Pad Mounted Condensers

**POPE ELEMENTARY SCHOOL
POPE AIR FORCE BASE, NORTH CAROLINA
PROPERTY CONDITION REPORT
EXECUTIVE SUMMARY**

1.0 Executive Summary

Data obtained from the survey provides an objective and impartial evaluation of the Pope 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 46,600 square foot, one-story masonry veneer building originally constructed in 1967 with additional construction in 1996 and 1999. Also, six temporary classroom buildings were added in 1975. A PTR addition will be constructed in 2003 and is included in our study. This facility serves 306 students from pre-kindergarten to fourth grade.

Observed deficiencies consisted of ADA accessibility and life safety issues related to more recent guidelines. This facility requires alterations to comply with life safety codes, ADA accessibility and major building systems guidelines. Major building system deficiencies noted include plumbing, HVAC and lighting.

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

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

Total Immediate Remediation Costs \$1,702,000

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 \$1,136,000

Total remediation project costs are approximately \$2,838,000.

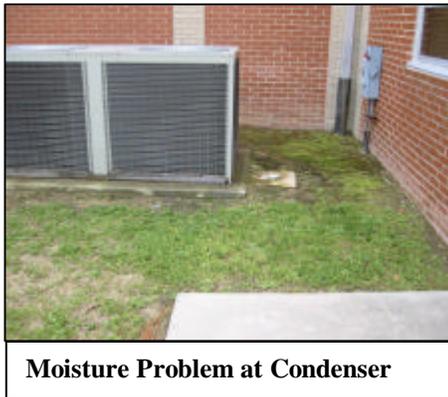
The report scope also included the cost of Plant Replacement Value (PRV), defined as the cost of a new facility, including associated sitework and parking. The estimated PRV for this facility is \$5,593,000. By comparing the remediation costs, plant replacement costs and the age of the

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 Pope Elementary School is 0.91. 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 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	*21.4	*45.6	5,593,000	83,500	2,838,000	62,200	0.74	Renovate

* Indicates Composite Number

Note that the Age and RUL of portable buildings has not been included in the study because they are not used for instruction.



**FORT BRAGG SCHOOLS
FORT BRAGG, NORTH CAROLINA
PROPERTY CONDITION REPORT**

2.0 Purpose and Scope

2.1 Survey Team

An inspection team from Parkhill, Smith & Cooper, Inc., Engineers-Architects-Planners, performed a Property Condition Assessment for these facilities 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 2112-01 - 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-thorough 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-thorough 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 or classrooms.
- b. Entering crawl or confined spaces; walking on pitched roofs or roofs without built-in access.
- c. Determination of plumbing pressures, flow rates or fixture counts.
- d. Observation of flue connections, interiors of chimneys, flues or boiler stacks.
- e. Removal of electrical panel and device covers or operating electrical devices.
- f. Examination of elevator cables, sheaves, controllers, motors inspection tags or entering pits or shafts.
- g. Determining NFPA hazard classifications.
- h. Classifying, or testing fire rating assemblies; operating appliances or fixtures.
- i. Determining sound transmission coefficient (STC) ratings, flammability issues or regulations.
- j. Engineering calculations to determine any system's adequacy or compliance with any specific or commonly accepted design requirements.

- k. 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.
- l. Identification, damage assessment or remediation recommendations for any type of mold, mildew or algae formations.
- m. Additional issues are outlined in ASTM E 2018 Paragraph 11.
- n. Force protection. As no Joint Service Integrated Vulnerability Assessments were provided to the survey team, no costs are shown in this study for any recommendations contained in them. Some costs were included for specific force protection items requested by DoDEA.

2.9 Professional Services

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

2.10 Assumptions

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

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

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

2.11 Indoor Air Quality

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

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

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

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

3.0 System Description and Observations: Albritton Junior High School

I	LT	Reference
		3.1 Overall General Description
		<p>This facility is a 100,000 square foot, one story multi-building complex originally constructed in 1983. Subsequent additions were:</p> <p>? One 2,000 square foot temporary portable classroom building was installed in 1992.</p> <p>This facility serves 624 students in grades seven through nine. Total student capacity is 771.</p>
		3.2 Site
		3.2.1 Topography and Storm Water Drainage
		<p>Slopes away from building are relatively flat, but appear to provide adequate surface runoff drainage in all areas and the site does not appear to exhibit water-retaining problems. Corrective action is not required.</p> <p>Site storm water drainage is area drains and storm water drainage system. Roof downspouts connect to the storm water drainage system. The system does appear to be adequate for storm water control. Corrective action is not required.</p>
		3.2.2 Paving, Curbing and Parking
		<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 fair condition. Corrective action is not required.</p> <p>Walkways from drop off areas between main building and separate buildings are protected by covered structures in good condition. Corrective action is not required.</p>
		3.2.4 Recreational Facilities and Title IX Compliance
		<p>The school does 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. Bleachers are in</p>

I	LT	Reference
		<p>good condition. Corrective action is not required. There are no concessions or restrooms.</p> <p>The girls' softball field and the boys' baseball field appear to be relatively new and are in good condition. The football and soccer field was in fair condition. The field does not appear to be irrigated.</p> <p>X Asphaltic concrete basketball/tennis courts are provided and are in poor condition. Corrective action is required.</p> <p>X A 6-lane running and exercise track is been provided and is in poor condition. Corrective action is required to replace the surfacing. A scoreboard is provided at the track, but is broken and needs repair.</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, without metering and is in good condition. Corrective action is not required.</p> <p>A required backflow preventer on the main water service line is not provided. Backflow prevention is required.</p>
		3.2.5.2 Natural Gas
		Gas service is single service, does appear to be adequate and in is in good condition. Corrective action is not required.
		3.2.5.3 Sanitary Sewer
X		<p>The sanitary sewer service does appear to be adequate and is in fair condition. Corrective action is not required.</p> <p>A field-built grease trap is provided for kitchen waste piping, does not appear to be adequate and is in fair-to-poor condition. Replacement with a two-compartment grease trap 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. The service comes in underground and serves a pad mounted transformer. It does appear to be adequate and is in good condition. It enters the building on the north side in the boiler room. 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
		Building frame for the main building is structural steel columns and beams in some areas and cast-in-place concrete columns and structural steel beams in other areas. The beams support steel joists. Roof decking is structural metal. The structural system is in good condition. Corrective action is not required.
		3.3.3 Facades or Curtainwall
		3.3.3.1 Sidewall System
		Building exterior is pre-cast concrete panels in fair condition. Corrective action is not required.
		3.3.3.2 Entrances/Exits
		Main entrance/exit is painted hollow metal doors and frames with glazing in fair condition. Corrective action is not required. Auxiliary exit/entrances are painted hollow metal doors and frames with glazing in fair condition. Corrective action is not required.
		3.3.3.3 Fenestration System
		Fenestration system is pre-finished anodized aluminum framing with double glazing in good condition. Corrective action is not required.

I	LT	Reference
		3.3.3.4 Soffits
	X	Soffits at main entrance/exit and auxiliary exit/entrances are pre-finished aluminum in good condition. Some damaged areas at the high roof need repair.
		3.3.3.5 Parapets
		Not applicable.
		3.3.4 Roofing
X	X	<p>Sloped composition shingle roofing is located on the main building and is in fair-to-poor condition. Leaks are evident in some areas, like the gymnasium for example. The shingles were visibly bowed and buckled at roof expansion joints. Corrective action is required to repair leaks, and it is anticipated complete replacement will be required in the next ten years. A skylight glazed with composite translucent plastic panels is on the Media Center. Roof repair and replacement of the skylight is required. The UV has deteriorated the fiberglass panels and they are in poor condition.</p> <p>Flashing, coping, fascia, gutters and downspouts are pre-finished metal in fair condition. Corrective action is required with roofing replacement.</p>
		3.4 Interior Elements
		3.4.1 Common Areas
		All lay-in ceilings will be replaced as part of the HVAC replacement project currently in construction.
	X	<p>Lobbies and Corridors:</p> <p>Flooring is terrazzo in fair to poor condition. Walls are concrete masonry units in fair condition. Solid ceilings and furring are gypsum board in good condition. Suspended acoustical lay-in panel ceilings are in good condition.</p> <p>Public and Private Toilets:</p> <p>Flooring is terrazzo in poor condition and requires replacement. Walls are concrete masonry units in fair condition. Solid ceilings are gypsum board in fair condition. Suspended acoustical lay-in panel ceilings are in good condition.</p>

I	LT	Reference
		<p>Administrative Areas, Media Center and Classrooms:</p> <p>X Flooring is vinyl tile, carpet, or terrazzo in fair to poor condition. The VAT flooring is poor. Replacement of vinyl asbestos tile with new vinyl composition tile will be required after abatement is complete. Abatement of the VAT is recommended in Section 3.8. Walls are concrete masonry units and pre-cast concrete in fair condition. Solid ceilings and furring are gypsum board in good condition. Suspended acoustical lay-in panel ceilings are in good condition.</p> <p>Cafeteria:</p> <p>X Flooring is terrazzo in fair condition. Walls are concrete masonry units and pre-cast concrete in fair condition. Solid ceilings and furring are gypsum board in fair condition. Suspended acoustical lay-in panel ceilings are in fair condition.</p> <p>Gymnasium:</p> <p>X X Flooring is vinyl tile and carpet in fair to poor condition. The VCT shows lots of wear and age. We recommend replacement of all flooring. Replacement should be coordinated with asbestos abatement of the vinyl tile mastic. Walls are concrete masonry units and pre-cast concrete panels in fair condition. Suspended acoustical lay-in panel ceilings are in poor condition. Ceilings will be replaced in conjunction with lighting replacement.</p> <p>Gymnasium Toilets and Locker Rooms:</p> <p>Flooring is terrazzo in fair condition. Walls are concrete masonry units in fair condition. Suspended acoustical lay-in panel ceilings are in fair condition.</p> <p>Stage:</p> <p>X Stage is a pull-out type. Flooring is finished wood in fair condition. Walls are concrete masonry units and pre-cast concrete panels in fair condition. Suspended acoustical lay-in panel ceilings are in poor condition and should be replaced.</p> <p>Kitchen:</p> <p>X Flooring is terrazzo in poor condition, appears stained and will require long-term replacement. Replacement of flooring is required. Walls are concrete masonry units in fair condition. Solid ceilings are painted gypsum board in fair condition.</p> <p>Kitchen equipment appears to be fairly new and is in good condition. Corrective action is not required.</p>

I	LT	Reference
		3.5 Mechanical, Plumbing and Electrical Systems
		3.5.1 HVAC System
X		<p>The HVAC system at this school is primarily water source heat pumps. There are also some air-cooled units for the administration. Most heat pump units serve two classrooms. Currently, there is an HVAC repair project underway to replace the existing PVC water loop piping with a copper loop. These new copper lines will supply the existing heat pumps and provide heating water and chilled water to future fan coil units to be installed in a later phase. The current heat pumps are failing at an accelerated rate and require immediate replacement. These Janitrol units are no longer made. In addition, their supply ductwork lining needs replacement. Because the second phase of the HVAC replacement has not been awarded or funded, we have shown the costs for the new fan coils in this study.</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.
		3.5.2.2 Domestic Hot Water Production
		Domestic hot water is provided by gas fired water heaters in fair to poor condition. Corrective action is required within the next ten years. Costs for replacing are included with the HVAC costs.
		3.5.2.3 Fixtures
X		Plumbing fixtures and connections do not appear to be adequate and are in poor condition. Corrective action is required.
		3.5.2.4 Fuel Piping
		Natural gas piping does appear to be adequate and in is in good condition. Corrective action is not required.

I	LT	Reference
		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. 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 fair 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 troffer fluorescent fixtures in fair condition. Fluorescent lamps are T-12. Light levels appear to be adequate. Corrective action is required, however, when the new HVAC ductwork is installed.
X		Corridor lighting is recessed troffer fluorescent fixtures in good condition. Fluorescent lamps are T-8. Light levels appear to be adequate. Corrective action is required when HVAC replacement is performed.
X		Gymnasium lighting is recessed troffer fluorescent fixtures in poor condition. Fluorescent lamps are T-12. Light levels do not appear to be adequate. Corrective action is required when HVAC replacement is performed.
		3.5.3.4 Exterior Lighting
		<p>Exterior lighting is provided and is pole mounted high-pressure sodium fixtures 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 metal halide fixtures 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 metal halide fixtures in good condition. Off-site parking lighting is not provided. Lighting levels appear to be adequate. Corrective action is not required.</p>

I	LT	Reference
		3.5.3.5 Security System
X		A Radionics security system is provided and is not monitored by a central agency. The security system does not appear to be operable. Corrective action is required to replace this old system with current technology.
		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.
		3.5.3.8 Computer Network
		A computer network system provides approximately 5 LAN outlets for each classroom. The computer network system does appear to be adequate and is in good condition. Corrective action is not required.
		3.6 ADA Tier I: Visual Accessibility Survey
		3.6.1 Path of Travel
		<p>A required adequately marked accessible route from parking is provided. Corrective action is not required.</p> <p>Curb ramps on approaches to the facility from student drop off areas and parking appear to provide accessible slopes, but not required textures. Corrective action is not required.</p> <p>The walkway approach to main entrance doors does appear to provide accessible slopes without threshold entry restrictions. Corrective action is not required.</p>
		3.6.2 Parking
X		Parking does not appear to comply with accessibility guidelines. 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 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. ADA guidelines set a goal to make all exit/entrances accessible by ramps, handrails or site regrading. Corrective action is required long-term.</p> <p>Interior doors along the accessible route are inset and 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 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>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. Refer to Section 3.5.2.3 for costs.</p>
		3.6.6 Drinking Fountains
	X	<p>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.</p>
		3.6.7 Telephones
		Not applicable.

I	LT	Reference
		3.6.8 Elevators/Lifts
		Elevators are not required. Platform/wheelchair lifts are not required due to the pull-out stage.
		3.6.9 Recreational Facilities
	X	Required accessible routes to play areas are not provided to the athletic facilities. The courts and surfacing appear to be accessible. Corrective action is required to provide ramps and walks from the building to athletic facilities.
		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. A sprinkler system is not provided for the stage due to size limitations. Corrective action is not required. The kitchen hood is make-up air 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. A required fire suppression system is provided in the kitchen hood. Cooking equipment does have required shut down capability upon suppression system activation. Corrective action is not required. Provision of fire extinguishers within required travel distances appear to comply with life safety standards. Corrective action is not required.
		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. Currently, visual alarms are only provided in the corridors. Corrective action is required. In addition, some exit signs need to be remounted at correct heights. A fire alarm panel is provided and does include the portable buildings. The system is Honeywell and is addressable. A required smoke detector is provided in front of the panel. Corrective action is not required.

I	LT	Reference
		Required pull stations are provided at emergency egress doors. Corrective action is not 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. Ductwork penetrations appear to have required fire/smoke dampers. Corrective action is not required.
		3.7.4 Doors
		<p>Corridor doors, frames, hardware and assemblies appear to comply with ADA guidelines or life safety fire resistance rating standards, except closers are required. Closers can be installed as part of routine maintenance. Doors appear to swing in the direction of egress travel. Corrective action is required. Refer to Section 3.6 for Opinions of Probable Costs of remediation.</p> <p>Emergency exit doors, frames, hardware and assemblies appear to comply with life safety standards. Corrective action is not required.</p> <p>Area separation doors, frames, hardware and assemblies appear to comply with life safety fire resistive rating requirements. Required smoke detectors are provided. Corrective action is not required.</p>
		3.7.5 Classroom Emergency Exiting
		Operable window units and exit doors to building exterior provide classroom emergency exiting and appear to comply with life safety standards. Corrective action is not required.
		3.7.6 Emergency Egress Lighting
		<p>Corridor emergency egress lighting is provided and does appear to comply with life safety standards. Emergency lighting fixtures are selected fixtures with required testing switches. Corrective action is required.</p> <p>Emergency egress lighting is provided in windowless rooms and appear to comply with life safety standards. Emergency lighting fixtures are selected fixtures with required testing switches. Corrective action is not required.</p> <p>Visible illuminated emergency exit signs, with directional indicators, are provided and some do not appear to comply with life safety standards. Corrective action is required. Refer to Section 3.7.2 for costs.</p>

I	LT	Reference
		3.8 Asbestos Concerns
	X	<p>According to the AHERA Report, this facility does have asbestos-containing material (ACM). Remaining ACM is non-friable, not damaged, inaccessible and is not hazardous to building occupants at this time. The AHERA Report recommends managing all remaining ACM in place in the short term.</p> <p>Much of the vinyl floor tile is twenty years old and deteriorating. The asbestos mastic will require abatement when the tile is removed. The tile will need replacement within the next ten years. We also recommend abating the sheet gasketing at the boiler room. The remaining asbestos is sink coating and can be managed in place per the recommendations of the AHERA report.</p>

4.0 Opinions of Probable Costs to Remedy Physical Deficiencies (Albritton Junior High)

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 is indicated in tabular form for all items requiring remediation.

4.5 Discussion of Results

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

Immediate	\$ 3,112,000
Long-term	<u>\$ 1,770,000</u>
Total Remediation Costs	\$ 4,882,000

A calculation of Plant Replacement Value (PRV) was also performed for this facility. Plant replacement value represents the cost of a new building and associated sitework for FY04 pricing. The PRV for this school is approximately \$12,512,000. This cost was determined based on the following square foot cost escalated from TM 5-800-4:

\$ 122.66/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 Albritton is a combination of portable buildings and the main 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 Albritton Junior High School.

ESL (yrs)	AGE (yrs)	RUL (yrs)	PRV (\$)	TARGET SUSTAIN (Annual \$)	REMED. COSTS (\$)	REQ'D INVEST. (Annual \$)	MRM	RECOMMEND
67	*18.8	*47.4	12,512,00	186,800	4,882,000	103,000	.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 to 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: Bowley 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 1989. Subsequent additions were:</p> <ul style="list-style-type: none"> ? Two temporary office/classroom buildings in 1991 ? One temporary office/classroom building in 1992 <p>This facility serves 507 students in grades pre-school through four. Total student capacity is 544.</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 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 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 fair condition. Corrective action is not required.</p>
		3.2.4 Recreational Facilities and Title IX Compliance
		<p>The school does not sponsor specific team sport programs and does appear to be in compliance with Title IX regulations. Corrective action is not required.</p>

I	LT	Reference
		<p>A gymnasium provides indoor court sport recreational and assembly space. Corrective action is not required.</p> <p>Play areas are provided with various types of equipment in good condition. Corrective action is not required.</p> <p>Play surfaces are in 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
		Not applicable.
		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
X		Fuel oil service is single service, does not appear to be adequate, in is in poor condition and needs to be replaced with a natural gas system. Corrective action is required.
		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.

I	LT	Reference
		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
		Building frame for the main building is concrete masonry unit walls and structural steel columns and beams with steel joists. Roof decking is fibrous board. The structural system is in good condition. Corrective action is not required.
		3.3.3 Facades or Curtainwall
		3.3.3.1 Sidewall System
		Building exterior is face brick masonry veneer and stucco under window units in good condition. Corrective action is not required.
		3.3.3.2 Entrances/Exits
		Main entrance/exit is painted hollow metal doors and frames with glazing in fair condition. Corrective action is not required. Auxiliary exit/entrances are painted hollow metal doors and frames with glazing in fair condition. Corrective action is not required.
		3.3.3.3 Fenestration System
		Fenestration system is pre-finished anodized aluminum framing with double glazing in good condition. Corrective action is not required.
		3.3.3.4 Soffits
	X	Soffits at main entrance/exit, auxiliary exit/entrances and roof overhangs are stucco in fair condition. Corrective action is required to replace damaged areas.
		3.3.3.5 Parapets
		Not applicable.
		3.3.4 Roofing
X		Low slope, paver ballasted EPDM roofing is located on all flat roof areas and is in poor condition. Leaks are evident. Corrective action is required.

I	LT	Reference
X		Sloped composition shingle roofing is located on the exterior wall roof surface and is in poor condition. Leaks are evident. Corrective action is required.
X		Flashing, coping, fascia, gutters and downspouts are pre-finished metal in fair condition. Corrective action is required with roofing replacement.
		3.4 Interior Elements
		3.4.1 Common Areas
		<p>Lobbies and Corridors:</p> <p>Flooring is terrazzo in good condition. Walls are concrete masonry units in good condition. Solid ceilings and furring are gypsum board in good condition. Suspended acoustical lay-in panel ceilings are in good condition.</p> <p>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, carpet and some 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>Cafeteria:</p> <p>Flooring is terrazzo 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 carpet in fair condition. Walls are painted concrete masonry units in good condition. Solid ceilings are exposed structure and decking in good condition.</p> <p>Stage:</p> <p>Stage is a roll-out type. Flooring is finished wood in good condition.</p>

I	LT	Reference
		<p>Kitchen:</p> <p>Flooring is ceramic 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 equipment is in good condition. Corrective action is not required.</p>
		3.5 Mechanical, Plumbing and Electrical Systems
		3.5.1 HVAC System
X		<p>The HVAC system is water source heat pumps located throughout the school. They utilize a cooling tower and a fuel oil fired boiler to temper water returning from the heat pumps.</p> <p>The controls for the system are DDC, but are not functioning due to damage incurred from a lightening strike. The controls are not reparable and are no longer made.</p>
X		The system equipment and controls are in poor condition and require replacement.
		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 fuel oil tank type water heaters in fair condition. Corrective action is required to provide new natural gas water heaters when the system is converted.
		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
		Fuel oil piping does not appear to be adequate, is in poor condition, and needs to be replaced with a natural gas system. Corrective action is required. Costs are shown in Section 3.2.5.4.

I	LT	Reference
		3.5.3 Electrical System
		3.5.3.1 Main Service
		The main electrical distribution panel for the entire facility is a 1,600-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 fair condition. Distribution and dry type step down transformers provide power. Corrective action is not required.
		3.5.3.3 Interior Lighting
		<p>Administrative area, media center and classroom lighting is recessed troffer fluorescent fixtures in fair condition. Fluorescent lamps are T-12. Light levels appear to be adequate. Corrective action is not required.</p> <p>Corridor lighting is recessed troffer fluorescent fixtures in fair condition. Fluorescent lamps are T-12. Light levels appear to be adequate. Corrective action is not required.</p> <p>Gymnasium lighting is pendant mounted metal halide and incandescent fixtures in good condition. Light levels appear to be adequate. Corrective action is not required.</p>
		3.5.3.4 Exterior Lighting
		<p>Exterior lighting is not provided. Corrective action is not required.</p> <p>Soffit and entrance lighting is provided and is recessed incandescent fixtures in good 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 high-pressure sodium and metal halide fixtures in good condition. Lighting levels appear to be adequate. Corrective action is not required.</p>

I	LT	Reference
		3.5.3.5 Security System
X		A security system is provided and is not monitored by a central agency. The security system does not appear to provide adequate security or monitoring and is in poor condition. Corrective action is required.
		3.5.3.6 Intercom System
		Intercom system does allow communication to individual classrooms and outside telephone calls. The system is in 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 5 LAN outlets for each classroom. The computer network system does appear to be adequate and is in good condition. Corrective action is not required.
		3.6 ADA Tier I: Visual Accessibility Survey
		3.6.1 Path of Travel
		<p>A required adequately marked accessible route from parking is provided and does appear to comply with accessibility guidelines. Corrective action is not required.</p> <p>Curb ramps on approaches to the facility from student drop off areas and parking are provided and appear to comply with accessibility guidelines. Curb ramps along the accessible route are required to have compliant slopes and detectable warnings. Corrective action is not required.</p> <p>The walkway approach to main entrance doors does appear to provide accessible slopes without threshold entry restrictions. Corrective action is not required.</p>
		3.6.2 Parking
X		Parking does not appear to completely comply with accessibility guidelines. 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 approach, doors and hardware appear to comply with accessibility guidelines. Corrective action is not required.</p> <p>Interior doors along the accessible route are 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. 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. 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 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 Group 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
		Elevators are not required. Platform/wheelchair lifts are not required due to pull-out stage.
		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
		A required sprinkler system is provided for janitor and custodial spaces. Corrective action is not required. A sprinkler system is not provided for the stage due to size limitations. Corrective action is not 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. A required fire suppression system is provided in the kitchen hood. Cooking equipment does have required shut down capability upon suppression system activation. Corrective action is not required Provision of fire extinguishers within required travel distances appear to comply with life safety standards. Corrective action is not required.
		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 non-addressable Honeywell F590 fire alarm and panel is provided. A required smoke detector is not provided in front of the panel. The system is in fair condition and corrective action is required.

I	LT	Reference
		Required pull stations are provided at emergency egress doors and are mounted at heights complying with ADA guidelines. Corrective action is not 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 are splitting at seams. 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>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> <p>Area separation doors, frames, hardware and assemblies appear to comply with life safety fire resistive rating requirements. Required smoke detectors are not provided. Corrective action is not required.</p>
		3.7.5 Classroom Emergency Exiting
		Operable window units and exit doors to building exterior provide classroom emergency exiting and appear to comply with emergency exiting requirements. Corrective action is required.
		3.7.6 Emergency Egress Lighting
		<p>Corridor emergency egress lighting is provided. Fixtures are individual wall packs with required testing devices. Corrective action is not required.</p> <p>Emergency egress lighting is provided in required windowless rooms. Fixtures are individual wall packs with required testing devices. Corrective action is not required.</p> <p>Visible illuminated directional emergency exit signs are provided at every required location and appear to comply with life safety standards, except on classroom exterior exit doors. Corrective action is required and costs are included with Section 3.7.2.</p>

I	LT	Reference
		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 (Bowley 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 is indicated in tabular form for all items requiring remediation.

4.5 Discussion of Results

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

Immediate	\$ 1,726,000
Long-term	<u>\$ 158,000</u>
Total Remediation Costs	\$ 1,884,000

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 \$9,115,000. This cost was determined based on the following square foot cost escalated from TM 5-800-4:

\$ 119.94/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 Bowley is a combination of additions and the original building, a composite relative useful life has been used.
- Target Sustainment: The annual investment required to keep the building in good working order to achieve an ESL of 67 years. It is calculated by dividing the plant replacement value by the ESL.
- Plant Replacement Value (PRV): The cost to replace the school building, sitework, furniture and associated assets. It is presented in FY 2004 dollars for this study.
- Remediation Costs: These are the total construction costs associated with correcting deficiencies noted in this study.
- Required Investment: The level of investment required to correct the current deficiencies spread out over the remaining useful life. It is calculated by dividing remediation costs by the RUL.

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

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

ESL (yrs)	AGE (yrs)	RUL (yrs)	PRV (\$)	TARGET SUSTAIN (Annual \$)	REMED. COSTS (\$)	REQ'D INVEST. (Annual \$)	MRM	RECOMMEND
67	*12.8	*50.9	9,115,00	136,000	1,884,000	37,000	.27	Renovate

*Represents Composite Number

Based on our analysis of the remediation costs, it is our opinion that this school should be renovated to bring it into compliance with applicable codes and repair problems with major building systems.

Refer to 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: Butner Elementary School

I	LT	Reference
		3.1 Overall General Description
		<p>This facility is a 68,846 square foot, one story multi-building complex originally constructed in 1959. Subsequent additions were:</p> <ul style="list-style-type: none"> ? Classroom addition in 1962 ? Classroom addition in 1988 ? Temporary portable classroom buildings in 1992 ? Classroom addition in 1996 <p>An additional 5,744 square feet will be added as part of a PTR project in 2003, bringing total square footage to 74,590.</p> <p>This facility serves 583 students in grades pre-kindergarten through four. Total student capacity is 582.</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 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. Pavement marking is 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 good condition. Corrective action is not required.
		3.2.4 Recreational Facilities and Title IX Compliance
		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.

I	LT	Reference
		<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. 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
X	X	<p>Domestic water main service does appear to be adequate and is in fair to poor condition. Corrective action is required in the long term.</p> <p>A required backflow preventer on the main water service line is not provided. Backflow prevention is required.</p>
		3.2.5.2 Natural Gas
		Gas service is single service, does appear to be adequate and in is in good condition. Corrective action is not required.
		3.2.5.3 Sanitary Sewer
	X	<p>The sanitary sewer service does appear to be adequate and is in fair to poor condition. Replacement of the old sewer line at the back side of the building is 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 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
		Building frame for the main building is concrete masonry unit walls or structural steel columns and beams with steel joists. Roof decking is structural metal or bulb tees and gypsum. The structural system is in good condition. Corrective action is not required.
		3.3.3 Facades or Curtainwall
		3.3.3.1 Sidewall System
	X	Building exterior is face brick masonry veneer in fair condition. Some of the brick at older portions of the building is discolored and slightly damaged. Corrective action is required.
		3.3.3.2 Entrances/Exits
		Main entrance/exit is painted hollow metal doors and frames with glazing in good condition. Corrective action is not required. Auxiliary exit/entrances are pre-finished anodized aluminum doors and framing with glazing and painted hollow metal doors and frames with glazing in fair condition. Corrective action is not required.
		3.3.3.3 Fenestration System
		Fenestration system is pre-finished anodized aluminum framing with double glazing and composite translucent plastic panels in good condition. Corrective action is not required.

I	LT	Reference
		3.3.3.4 Soffits
		Soffits at main entrance/exit, auxiliary exit/entrances and roof overhangs are stucco in good condition. Corrective action is not required.
		3.3.3.5 Parapets
		Areas with parapets are extensions of the indicated wall systems and are protected with metal coping in fair condition. Corrective action is not required.
		3.3.4 Roofing
X	X	<p>Low slope gravel surface built-up roofing is located over the Media Center and connecting corridor and is in fair to poor condition. Drainage problems around the downspout are evident. Corrective action is required.</p> <p>Low slope fully adhered EPDM roofing is located on most of the building and is in generally good condition. Leaks are not evident. Corrective action is not required.</p> <p>Sloped pre-finished standing seam roofing is located on the main entrance canopy and is in good condition. Leaks are not evident. Corrective action is not required.</p>
	X	Flashing, coping, fascia, gutters and downspouts are pre-finished metal in fair condition at the Media Center roof. Corrective action is required with roofing replacement.
X		Areas of ponding were noted near the kitchen and cafeteria area, and will require repair.
3.4 Interior Elements		
		3.4.1 Common Areas
		<p>Lobbies and Corridors:</p> <p>Flooring is terrazzo in good condition. Walls are glazed concrete masonry unit wainscot and concrete masonry units, painted concrete masonry units, painted gypsum board and face brick masonry veneer 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 fair condition. Walls are ceramic tile wainscot and concrete masonry units in fair condition. Solid ceilings are painted gypsum board 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, carpet or sheet vinyl in fair 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:</p> <p>Flooring is terrazzo in fair condition. Walls are concrete in good condition. Suspended acoustical lay-in panel ceilings are in good condition.</p> <p>Gymnasium:</p> <p>Flooring is vinyl tile in poor condition. Walls are concrete masonry units in fair condition. Solid ceilings are gypsum board and painted plaster in fair condition.</p> <p>Stage:</p> <p>Flooring is finished wood in poor condition. Walls are concrete masonry units in fair condition. Solid ceilings are in fair condition.</p> <p>Kitchen:</p> <p>Flooring is terrazzo in fair condition. Walls are glazed concrete masonry units in good condition. Suspended acoustical lay-in panel ceilings are in good condition.</p> <p>Kitchen equipment is in fair to poor condition. Corrective action is not required, as kitchen equipment is not included in this study.</p> <p>X Replace flooring after asbestos abatement.</p>
3.5 Mechanical, Plumbing and Electrical Systems		
3.5.1 HVAC System		
	X	<p>The HVAC system at this school consists of unit ventilators on a two-pipe system. Pad mounted condensers are located outside each classroom to provide air conditioning. The air cooled condensers fail at an accelerated rate due to high usage. Heating water is provided by two large boilers.</p>
	X	<p>The controls in the boiler room are DDC and are in good condition. The controls for the remainder of the building are pneumatic, are not functioning properly and require constant maintenance. Replacement of approximately half the condensing units and new controls is anticipated long-term. In addition, the exhaust fan in the kitchen requires replacement.</p>

I	LT	Reference
		3.5.2 Plumbing System
		3.5.2.1 Plumbing Supply and Waste Piping
	X	Domestic water supply and waste piping within the facility does appear to be adequate and is in poor condition. Corrective action is required.
		3.5.2.2 Domestic Hot Water Production
		Domestic hot water is provided by tank type water heaters in good condition. Corrective action is not required.
		3.5.2.3 Fixtures
		Plumbing fixtures and connections appear to be adequate and are in fair condition. Corrective action is not required.
		3.5.2.4 Fuel Piping
		Natural gas piping does appear to be adequate and in is in good condition. Corrective action is not required.
		3.5.3 Electrical System
		3.5.3.1 Main Service
		The main electrical distribution panel for the building is a 2,000-amp, 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.
		3.5.3.2 Distribution and Panels
	X	Electrical distribution and branch panels appear to be adequately sized and are in poor condition in all areas except new classroom addition. Corrective action is required to replace panels and wiring.
		3.5.3.3 Interior Lighting
		Administrative area, media center and classroom lighting is recessed troffer fluorescent fixtures in good condition. Fluorescent lamps are T-8. Light levels appear to be adequate. Corrective action is not required.
		Corridor lighting is recessed troffer fluorescent fixtures in good condition. Fluorescent lamps are T-12. Light levels do appear to be adequate. Corrective action is not required.

I	LT	Reference
		Gymnasium lighting is pendant mounted metal halide fixtures in good condition. Light levels appear to be adequate. Corrective action is not required.
		3.5.3.4 Exterior Lighting
		<p>Exterior lighting is provided and is surface mounted and pole mounted metal halide fixtures 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 incandescent fixtures 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 metal halide fixtures in good condition. Lighting levels appear to be adequate. Corrective action is not required.</p>
		3.5.3.5 Security System
X		A security system is provided and is not monitored by a central agency. The security system does not appear to provide adequate security or monitoring and is in poor condition. Corrective action is required.
		3.5.3.6 Intercom System
		Intercom system does allow communication to individual classrooms and outside telephone calls. The system is in good condition. Corrective action is not required.
		3.5.3.7 Educational Television
		Educational television is provided and does not allow internal broadcasting. The system is in good condition. Corrective action is not required.
		3.5.3.8 Computer Network
		A computer network system provides approximately 5 LAN outlets for each classroom. The computer network system does appear to be adequate and is in good condition. Corrective action is not required.
		3.6 ADA Tier I: Visual Accessibility Survey
		3.6.1 Path of Travel
X		A required adequately marked accessible route from parking is 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>
		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 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 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 new 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	<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 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.</p>

I	LT	Reference
X		<p>Corrective action is required to provide an accessible toilet at each group toilet room and in at least one kindergarten room.</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 to provide at least one room with accessible toilet.</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.
		3.6.8 Elevators/Lifts
	X	<p>Elevators are not required.</p> <p>Required platform/wheelchair lifts are 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
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>

I	LT	Reference
X		<p>The kitchen hood is make-up air type. Distance from cooking surfaces and edge of kitchen hood appear to comply with distance requirements. Kitchen hood duct protection is fire resistive construction. The kitchen hood system is in good condition. Corrective action is not required.</p> <p>A required fire suppression system is provided in the kitchen hood. Cooking equipment does not have required shut down capability upon suppression system activation. Corrective action is required.</p> <p>Provision of fire extinguishers within required travel distances appear to comply with life safety standards. Corrective action is not required.</p>
		3.7.2 Alarm Systems
X		<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 panel is provided. A required smoke detector is not provided in front of the panel. Corrective action is required.</p> <p>Required pull stations are provided at emergency egress doors. Corrective action is not required.</p>
		3.7.3 Corridor and Separation Walls
X		<p>Exit corridor and area separation walls appear to have required firestopping sealing between wall and structural surfaces and framing or around wall penetrations except at area separation walk. Borrowed lights do not appear to have fire resistive construction. Ductwork penetrations appear to have required fire/smoke dampers. Corrective action is required.</p>
		3.7.4 Doors
		<p>Corridor doors, frames, hardware and assemblies do not appear to comply with life safety fire resistance rating standards except in the 1990 classroom addition. 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>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>

I	LT	Reference
		3.7.5 Classroom Emergency Exiting
		Operable window units and exit doors to building exterior provide classroom emergency exiting and appear to comply with emergency exiting requirements. Corrective action is not required.
		3.7.6 Emergency Egress Lighting
		Corridor emergency egress lighting is provided. Emergency lighting fixtures are every third fixture with required testing devices. Corrective action is not required. Illuminated directional emergency exit signs are provided at every required location and are clearly visible. Corrective action is not required.
		3.8 Asbestos Concerns
	X	According to the AHERA Report, this facility does have asbestos-containing material (ACM). Remaining ACM consists primarily of asbestos floor tile and mastic. It is anticipated that floor finishes will be replaced in the next ten years at such time as abatement of the VAT may be required. No costs have been shown to abate sink coatings, as they are undamaged and the AHERA report recommends managing it in place. The AHERA Report recommends managing all remaining ACM in place. Corrective action is required to abate the asbestos floor tile long-term.

4.0 Opinions of Probable Costs to Remedy Physical Deficiencies (Butner 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 is indicated in tabular form for all items requiring remediation.

4.5 Discussion of Results

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

Immediate	\$ 584,000
Long-term	<u>\$ 1,448,000</u>
Total Remediation Costs	\$ 2,032,000

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 \$8,946,000. This cost was determined based on the following square foot cost escalated from TM 5-800-4:

\$ 119.94/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 Butner is a combination of additions and the original building, a composite relative useful life has been used.
- Target Sustainment: The annual investment required to keep the building in good working order to achieve an ESL of 67 years. It is calculated by dividing the plant replacement value by the ESL.
- Plant Replacement Value (PRV): The cost to replace the school building, sitework, furniture and associated assets. It is presented in FY 2004 dollars for this study.
- Remediation Costs: These are the total construction costs associated with correcting deficiencies noted in this study.
- Required Investment: The level of investment required to correct the current deficiencies spread out over the remaining useful life. It is calculated by dividing remediation costs by the RUL.

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

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

ESL (yrs)	AGE (yrs)	RUL (yrs)	PRV (\$)	TARGET SUSTAIN (Annual \$)	REMED. COSTS (\$)	REQ'D INVEST. (Annual \$)	MRM	RECOMMEND
67	*31	*34.9	8,946,00	133,500	2,032,000	58,200	.44	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 to 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: Devers Elementary School

I	LT	Reference
		3.1 Overall General Description
		<p>This facility is an 80,300 square foot, one story single building originally constructed in 1996.</p> <p>This facility serves 580 students in grades pre-kindergarten through four. Total student capacity is 621.</p>
		3.2 Site
		3.2.1 Topography and Storm Water Drainage
		<p>Slopes away from building do not appear to provide adequate surface runoff drainage in all areas and the site does appear to exhibit water-retaining problems. Corrective action is required. (Update: Project recently awarded, no costs shown in this study).</p> <p>The metal roof drains off on all sides onto the ground about a foot away from the wall. The ground in this area has eroded and water stands. Algae growth on the ground and discoloration of the brick was noted. In some areas, the brick was efflorescing.</p> <p>Provision of a gutter system or mow strip would help the erosion and speed up the flow of water away from the building. Slopes away from the building are very slight within 5 feet of the building, although the site away from the building has significant fall.</p> <p>Site storm water drainage is area drains and storm water drainage system. The system does not appear to be adequate for storm water control. Corrective action is required. (Update: Project recently awarded, no costs shown in this study).</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
		Concrete walkways are in good condition. Corrective action is not required.

I	LT	Reference
		3.2.4 Recreational Facilities and Title IX Compliance
	X	<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 poor condition. Localized areas with drainage problems were present and the field was half sand and half grass. Corrective action is required.</p> <p>A gymnasium provides indoor court sport recreational and assembly space. Corrective action is not required.</p> <p>Play areas are provided with various types of equipment in good condition. Corrective action is not required.</p>
	X	<p>Play surfaces are in fair condition. Play surfaces in some areas do not appear to comply with the U.S. Consumer Safety Commission "Handbook for Public Playground Safety" requirements. Corrective action is required. Most play areas are sand. There are no provisions for a handicap play area or equipment within the main play groups. Refer to Section 3.9 for opinions of cost.</p>
		3.2.5 Utilities
		3.2.5.1 Water
		<p>Domestic water main service does appear to be adequate, without 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 single service, does appear to be adequate and in is 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 fair condition. Corrective action is not required.</p>

I	LT	Reference
		3.2.5.4 Special Utility Systems
		A generator provides emergency power, does appear to be adequate and is in fair condition. Corrective action is not required.
		3.2.5.5 Electrical Service and Metering
		Electrical service is single service with metering. It is underground service feeding a 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
		Building frame for the main building 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.
		3.3.3 Facades or Curtainwall
		3.3.3.1 Sidewall System
X		Building exterior is face brick masonry veneer in good condition in most areas. However, several cracks were noted at the corners of wings and in the gym area above the low roof. These cracks are primarily the result of moisture and settlement, although one door was affected by temperature. Corrective action is required.
		3.3.3.2 Entrances/Exits
		Main entrance/exit is pre-finished anodized aluminum doors and framing with glazing in good condition. Corrective action is not required. Auxiliary exit/entrances are pre-finished anodized aluminum doors and framing with glazing in good condition. Corrective action is not required.

I	LT	Reference
		3.3.3.3 Fenestration System
		Fenestration system is pre-finished anodized aluminum framing with double glazing in good condition. Windows are double hung operable. Corrective action is not required.
		3.3.3.4 Soffits
		Soffits at entrances and exits are stucco in good condition. Corrective action is not required.
		3.3.3.5 Parapets
		Not applicable.
		3.3.4 Roofing
X		Sloped pre-finished standing seam metal roofing is located on the entire building and is in good condition. Leaks are evident around the gym area. Corrective action is required at the gym to limit the amount of moisture intrusion, which may also be causing problems with the face brick.
X		Flashing and fascia are pre-finished metal in good condition. Perimeter gutters and downspouts are recommended to channel water away from the building. Corrective action is required.
		3.4 Interior Elements
		3.4.1 Common Areas
		<p>Lobbies and Corridors:</p> <p>Flooring is carpet or ceramic tile in good condition. Walls are concrete masonry units and vinyl wall covering in good condition. Solid ceilings and furring are gypsum board in good condition. Suspended acoustical lay-in panel ceilings are in good condition.</p> <p>Public, Private and Classroom Toilets:</p> <p>Flooring is ceramic tile in good condition. Walls are ceramic tile 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 carpet and some sheet vinyl in good condition. Walls are painted concrete masonry units, gypsum board, and vinyl wall covering in good condition. Solid ceilings and furring are gypsum board in good condition. Suspended acoustical lay-in panel ceilings are in good condition.</p> <p>Cafeteria:</p> <p>Flooring is ceramic tile in good condition. Walls are concrete masonry units and painted gypsum board in good condition. Solid ceilings and furring are painted gypsum board in good condition. Suspended acoustical lay-in panel ceilings are in good condition.</p> <p>Gymnasium:</p> <p>Flooring is carpet in good condition. Walls are concrete masonry units in good condition. Solid ceilings and furring are gypsum board in good condition. Suspended acoustical lay-in panel ceilings are in good condition.</p> <p>Stage:</p> <p>The stage is a pull-out type. Flooring is finished wood in good condition. Walls are concrete masonry units in good condition. Suspended acoustical lay-in panel ceilings are in good condition.</p> <p>Kitchen:</p> <p>Flooring is ceramic tile in good condition. Walls are concrete masonry units in good condition. Suspended acoustical lay-in panel ceilings are in good condition.</p> <p>Kitchen equipment is in good condition. Corrective action is not required.</p>
		<p>3.5 Mechanical, Plumbing and Electrical Systems</p>
		<p>3.5.1 HVAC System</p>
X		<p>The existing HVAC system includes water source heat pumps mounted in a mezzanine throughout the facility. Water feeding the heat pumps is tempered with two natural gas fired boilers and an industrial fluid cooler (cooling tower with a coil on top). A project is underway to provide a new makeup air system which will dehumidify and filter the air. This system will consist of an air-cooled chiller feeding low temperature water to chilled water coils in new makeup air units. When required, the makeup air would be reheated using electric heat. This project has not been funded, but is on the priority list for this year (FY 04). Costs for this work are shown in this study.</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
		Domestic hot water is provided by two 250-gallon tank type water heaters in good condition. Corrective action is not required.
		3.5.2.3 Fixtures
		Plumbing fixtures and connections appear to be adequate and are in good condition. Corrective action is not required.
		3.5.2.4 Fuel Piping
		Natural gas piping does appear to be adequate and in is in good condition. Corrective action is not required.
		3.5.3 Electrical System
		3.5.3.1 Main Service
		The main electrical distribution panel for the building is a 1,600-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>Administrative area, media center and classroom lighting is recessed troffer fluorescent fixtures in fair condition. Fluorescent lamps are T-8. Light levels appear to be adequate. Corrective action is not required.</p> <p>Corridor lighting is recessed troffer and recessed compact fluorescent fixtures in fair condition. Fluorescent lamps are T-8. Light levels appear to be adequate. Corrective action is not required.</p>

I	LT	Reference
		Gymnasium lighting is recessed troffer fluorescent fixtures in good condition. Fluorescent lamps are T-8. Light levels appear to be adequate. Corrective action is not required.
		3.5.3.4 Exterior Lighting
		<p>Exterior lighting is provided and is surface mounted metal halide fixtures 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 high-pressure sodium fixtures in good condition. Lighting levels appear to be adequate. Corrective action is not required.</p> <p>Parking lot lighting is provided and is pole mounted high-pressure sodium fixtures in good condition. Lighting levels appear to be adequate. Corrective action is not required.</p>
		3.5.3.5 Security System
X		A security system is provided and is not monitored by a central agency. The security system does not appear to provide adequate security or monitoring and is in poor condition. Corrective action is 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.
		3.5.3.8 Computer Network
X		A computer network system provides approximately 3 LAN outlets for each classroom. Most DDESS schools have five LAN drops per classroom. The computer network system may not meet teaching requirements, but is in good physical condition. Corrective action is required as part of this study.
		3.6 ADA Tier I: Visual Accessibility Survey
		3.6.1 Path of Travel
		A required adequately marked accessible route from parking is provided. Corrective action is not required.

I	LT	Reference
		<p>Curb ramps on approaches to the facility from student drop off areas and parking are provided and appear to provide accessible slopes, but not required textures. Curb ramps along the accessible route are required to have compliant slopes and detectable warnings. Corrective action is not required.</p> <p>The walkway approach to main entrance doors does appear to provide accessible slopes without threshold entry restrictions. Corrective action is not required.</p>
		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. Addition of one van accessible space is required. Corrective action is required.</p>
		3.6.3 Entrances/Exits
	X	<p>Main entrance/exit 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 flush with corridor walls and 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 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. Corrective action is not required.</p>
		3.6.5 Public Toilet Rooms
		<p>Public toilet rooms are provided along the accessible route and appear to comply with accessibility guidelines with the exception of insulated lavatory piping. Corrective action is not required, as this insulation can be added as part of normal maintenance.</p>

I	LT	Reference
		<p>Administrative staff and nurse's toilet rooms appear to meet accessibility guidelines, with the exception of insulated lavatory piping and one missing grab bar at back of toilet. Toilets are required to comply with guidelines similar to public toilets. Corrective action is not required, as this insulation can be added as part of normal maintenance.</p> <p>Classroom toilet rooms appear to meet accessibility guidelines, with the exception of insulated lavatory piping and one missing grab bar at back of toilet. 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. Corrective action is not required.
		3.6.7 Telephones
		Not applicable.
		3.6.8 Elevators/Lifts
		<p>Elevators are not required.</p> <p>Platform/wheelchair lifts are not required due to the pull-out stage.</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
X		<p>A required sprinkler system is not provided for janitor and custodial spaces. Corrective action is required.</p> <p>A sprinkler system is not provided for the stage due to size limitations. Corrective action is not 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</p>

I	LT	Reference
		<p>protection is fire resistive construction. The kitchen hood system is in good condition. Corrective action is not required.</p> <p>A required fire suppression system is provided in the kitchen hood. Cooking equipment does have required shut down capability upon suppression system activation. Corrective action is not required.</p> <p>Provision of fire extinguishers within required travel distances appear to comply with life safety standards. Corrective action is not required.</p>
		3.7.2 Alarm Systems
X		<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 panel is provided. A required smoke detector is not provided in front of the panel. Corrective action is required. The fire alarm panel itself requires a significant amount of work. Replacement of the system 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
		<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. Ductwork penetrations appear to have required fire/smoke dampers. 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. 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> <p>Area separation doors, frames, hardware and assemblies appear to comply with life safety fire resistive rating requirements. Required smoke detectors are provided. Corrective action is not required.</p>

I	LT	Reference
		3.7.5 Classroom Emergency Exiting
		Operable window units and exit doors to building exterior provide classroom emergency exiting and appear to comply emergency exiting requirements. Corrective action is not required.
		3.7.6 Emergency Egress Lighting
		Corridor emergency egress lighting is provided by standby generator and does appear to comply with life safety standards. Corrective action is not required. Visible illuminated directional emergency exit signs are provided at every required location and are clearly visible. Corrective action is not required.
		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 (Devers 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 is indicated in tabular form for all items requiring remediation.

4.5 Discussion of Results

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

Immediate	\$ 459,000
Long-term	<u>\$ 98,000</u>
Total Remediation Costs	\$ 557,000

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 \$9,631,000. This cost was determined based on the following square foot cost escalated from TM 5-800-4:

\$ 119.94/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.
- 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 Devers Elementary School.

ESL (yrs)	AGE (yrs)	RUL (yrs)	PRV (\$)	TARGET SUSTAIN (Annual \$)	REMED. COSTS (\$)	REQ'D INVEST. (Annual \$)	MRM	RECOMMEND
67	6	61	9,631,000	143,700	557,000	9,100	.06	Renovate

Based on our analysis of the remediation costs, it is our opinion that this school should be renovated to bring it into compliance with applicable codes and repair problems with major building systems.

Refer to 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: Holbrook Elementary School

I	LT	Reference
		3.1 Overall General Description
		<p>This facility is a 59,228 square foot, one story multi-building complex originally constructed in 1960. Subsequent additions were:</p> <ul style="list-style-type: none"> ? One temporary classroom building in 1990 ? Two temporary classroom buildings in 1991 ? Classroom addition in 1996 <p>This facility serves 391 students in grades pre-kindergarten through four. Total student capacity is 430.</p>
		3.2 Site
		3.2.1 Topography and Storm Water Drainage
X		<p>Slopes away from building do not appear to provide adequate surface runoff drainage in all areas and the site does appear to exhibit water-retaining problems between some wings. Corrective action is required.</p> <p>Site storm water drainage is area drains and storm water drainage system. Most roof downspouts connect to the storm water drainage system. The system does appear to be adequate for storm water control. Corrective action is not required.</p>
		3.2.2 Paving, Curbing and Parking
	X	<p>Parking area paving is asphaltic concrete in poor condition. Corrective action is required.</p> <p>Parking areas do not appear to provide adequate parking spaces. Corrective action is not required as there is not site available for parking.</p>
		3.2.3 Flatwork
	X	<p>Concrete walkways and ramps are in fair to poor condition. Corrective action is required long-term to correct damaged areas.</p> <p>Walkways from drop off areas and 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 off-site and are in good condition. Corrective action is not required.</p> <p>A gymnasium provides indoor court sport recreational and assembly space. Corrective action is not required.</p> <p>Play areas are provided with various types of equipment in good condition. Corrective action is not required.</p> <p>Play surfaces are in 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 to the building does appear to be adequate, with metering, but is in poor 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 in is in good condition. Corrective action is not required.
		3.2.5.3 Sanitary Sewer
		<p>The sanitary sewer service does appear to be adequate and appears to be in fair condition. Corrective action is not required, as the Base is responsible for the first manhole on out.</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. Service is underground feeding a 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
X		The foundation is assumed to be concrete grade beams, supported by continuous spread and spot footings with concrete slab-on-grade floor in fair condition. Corrective action is required to correct areas of settlement.
		3.3.2 Building Frame
		Building frame for the main building is concrete masonry unit walls or structural steel columns and beams with steel joists. Roof decking is structural metal or bulb tees and gypsum. The structural system is in good condition. Corrective action is not required.
		3.3.3 Facades or Curtainwall
		3.3.3.1 Sidewall System
X		Building exterior is face brick masonry veneer in fair condition. Corrective action is required to repair damaged and cracked masonry.
		3.3.3.2 Entrances/Exits
		Main entrance/exit is hollow metal doors and frames with glazing in fair condition. Corrective action is not required. Auxiliary exit/entrances are in fair condition. Corrective action is not required.
		3.3.3.3 Fenestration System
		Fenestration system is pre-finished anodized aluminum framing with double glazing in good condition. Corrective action is not required.
		3.3.3.4 Soffits
		Soffits at main entrance/exit, auxiliary exit/entrances, or roof overhangs are stucco in good condition. Corrective action is not required.

I	LT	Reference
		3.3.3.5 Parapets
		Areas with parapets are extensions of the indicated wall systems and are protected with metal coping in fair condition. Corrective action is not required.
		3.3.4 Roofing
X		<p>Low slope mechanically fastened EPDM roofing is located on the main building and is in good condition. Minor leaks are evident. Flashing where low roof meets walls of high roof needs repair as does isolated areas of coping. Corrective action is required.</p> <p>Flashing, coping, fascia, gutters and downspouts are pre-finished metal in fair condition. Corrective action is not required.</p>
		3.4 Interior Elements
		3.4.1 Common Areas
		<p>Lobbies and Corridors:</p> <p>Flooring is terrazzo or 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 fair condition. Walls are ceramic tile wainscot and concrete masonry units or plaster in fair condition. Suspended acoustical lay-in panel ceilings are in good condition.</p> <p>Administrative Areas, Media Center and Classrooms:</p> <p>Flooring is carpet and some sheet vinyl in good condition. Walls are concrete masonry units in good condition. Suspended acoustical lay-in panel ceilings are in good condition.</p> <p>Cafeteria:</p> <p>Flooring is carpet in good condition. Walls are 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>

I	LT	Reference
		<p>Gymnasium:</p> <p>Flooring is carpet in good condition. Walls are concrete masonry units in good condition. Suspended acoustical lay-in panel ceilings are in good condition.</p> <p>Stage:</p> <p>Flooring is finished wood in fair 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 terrazzo in good condition. Walls are glazed concrete masonry units in good condition. Suspended acoustical lay-in panel ceilings are in good condition.</p> <p>Kitchen equipment is in fair condition. Corrective action is not required.</p>
		3.5 Mechanical, Plumbing and Electrical Systems
		3.5.1 HVAC System
X	X	<p>This school utilizes a two-pipe heating water system which feeds unit ventilators. Each unit ventilator was modified to have a DX coil and condenser outside the building to provide air conditioning. While the boilers and pumps feeding the unit ventilators are sound, the unit vents themselves are in fair to poor condition. Replacement of all unit vents and approximately half the condensers and coils is anticipated in the next ten years.</p>
X		<p>DDC control system is available to the boiler room area and needs to be expanded to the remainder of the building. A field-fabricated pneumatic system serves the remainder of the building, is not adequate, and is in poor condition.</p>
		3.5.2 Plumbing System
		3.5.2.1 Plumbing Supply and Waste Piping
	X	<p>Domestic water supply and waste piping within the facility does not appear to be adequate and is in poor condition. Corrective action is required.</p>
		3.5.2.2 Domestic Hot Water Production
		<p>Domestic hot water is provided by instantaneous hot water boilers in good condition. Corrective action is not required.</p>

I	LT	Reference
		3.5.2.3 Fixtures
		Plumbing fixtures and connections appear to be adequate and are in fair condition. Corrective action is not required.
		3.5.2.4 Fuel Piping
		Natural gas piping does appear to be adequate and in is in good condition. Corrective action is not required.
		3.5.3 Electrical System
		3.5.3.1 Main Service
		The main electrical distribution panel for the building is a 1,600-amp, 120/208-volt, 3-phase, 4-wire panel. The panel does appear to be adequate and is in good condition. Corrective action is not required.
		3.5.3.2 Distribution and Panels
	X	Electrical distribution and branch panels appear to be adequately sized, but are in poor condition in all areas except the 1996 classroom addition. Corrective action is required to replace panels and wiring.
		3.5.3.3 Interior Lighting
	X	Administrative area, media center and classroom lighting is recessed troffer fixtures with fluorescent lamps in fair condition. Fluorescent lamps are T-12. Light levels do not appear to be adequate and ballasts are not energy efficient. Corrective action is required.
	X	Corridor lighting is recessed troffer fixtures with fluorescent lamps in fair condition. Fluorescent lamps are T-12. Light levels do not appear to be adequate. Corrective action is required.
		Gymnasium lighting is recessed troffer fixtures with fluorescent lamps in good condition. Light levels do not appear to be adequate. Corrective action is not required.
		3.5.3.4 Exterior Lighting
	X	Exterior lighting is provided and is pole mounted fixtures with metal halide lamps in fair condition. Lighting levels appear to be adequate. Corrective action is not required.
		Soffit and entrance lighting is provided and is surface mounted fixtures with incandescent lamps in poor condition. Lighting levels do not appear to be adequate.

I	LT	Reference
		<p>Corrective action is 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
X		A security system is provided and is not monitored by a central agency. The security system does not appear to provide adequate security or monitoring and is in poor condition. Corrective action is required.
		3.5.3.6 Intercom System
		Intercom system does allow communication to individual classrooms and outside telephone calls. The system is in good condition. Corrective action is not required.
		3.5.3.7 Educational Television
		Educational television is provided and does not allow internal broadcasting. The system is in good condition. Corrective action is not required.
		3.5.3.8 Computer Network
		A computer network system provides approximately 5 LAN outlets for each classroom. The computer network system does appear to be adequate and is in good condition. Corrective action is not required.
		3.6 ADA Tier I: Visual Accessibility Survey
		3.6.1 Path of Travel
X		<p>A required adequately marked accessible route from parking is not provided. One accessible route is required from the boundary of the site from public transportation stops, accessible parking spaces, passenger loading zones, public streets or walkways to an accessible building entrance. Corrective action is required.</p> <p>X</p> <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>

I	LT	Reference
X		<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 interior accessible route are required and are provided. Ramps do not appear to comply with accessibility guidelines. Required handrails are not provided. 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
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 accessible by construction of porches, ramps, handrails or site regrading. Corrective action is required.</p> <p>Interior doors along the accessible route are flush with corridor walls and appear to allow clearance and approach accessibility. Corrective action is not required.</p>
X		<p>Door assemblies do not appear to meet accessibility guidelines, except in the 1996 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		<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 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>

I	LT	Reference
	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
	X	Elevators are not required. Required platform/wheelchair lifts are not provided at the stage. Corrective action is required.
		3.6.9 Recreational Facilities
X		Required accessible routes to play areas near the building are provided. Play equipment across the street is not accessible. 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 to provide a means of access, compliant play groups and compliant equipment.
		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		A required sprinkler system is not provided for the stage. Corrective action is required.

I	LT	Reference
	X	<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 fair condition and should be planned for replacement within the next ten years. A makeup air hood with a wet type fire suppression system is recommended.</p> <p>A required fire suppression system is provided in the kitchen hood. It utilizes an Ansul powder type fire suppression system. Cooking equipment does have required shut down capability 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 panel is provided and does include multiple buildings. A required smoke detector is not provided in front of the panel. Corrective action is required.</p> <p>Required pull stations are provided at emergency egress doors. Corrective action is not required.</p>
		3.7.3 Corridor and Separation Walls
X		<p>Most 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. Ductwork penetrations appear to have required fire/smoke dampers. Corrective action is required.</p>
		3.7.4 Doors
X		<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>

I	LT	Reference
		Emergency exit doors, frames, hardware and assemblies appear to comply with emergency exiting requirements. Corrective action is not required.
		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		Corridor emergency egress lighting is not provided. Corrective action is required.
X		<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 not required.</p>
		3.8 Asbestos Concerns
	X	According to the AHERA Report, this facility does have asbestos-containing material (ACM). The ACM consists of window caulking, vinyl floor tile, mastic and a small portion of ceiling. The AHERA Report recommends managing all remaining ACM in place. Corrective action is required long-term to remove the ACM.

4.0 Opinions of Probable Costs to Remedy Physical Deficiencies (Holbrook 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 is indicated in tabular form for all items requiring remediation.

4.5 Discussion of Results

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

Immediate	\$ 1,266,000
Intermediate	\$ 49,000
Long-term	<u>\$ 1,266,000</u>
Total Remediation Costs	\$ 2,581,000

A calculation of Plant Replacement Value (PRV) was also performed for this facility. Plant replacement value represents the cost of a new building and associated sitework for FY04 pricing. The PRV for this school is approximately \$7,104,000. This cost was determined based on the following square foot cost escalated from TM 5-800-4:

\$ 119.94/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 Holbrook is a combination of additions and the original building, a composite relative useful life has been used.
- Target Sustainment: The annual investment required to keep the building in good working order to achieve an ESL of 67 years. It is calculated by dividing the plant replacement value by the ESL.
- Plant Replacement Value (PRV): The cost to replace the school building, sitework, furniture and associated assets. It is presented in FY 2004 dollars for this study.
- Remediation Costs: These are the total construction costs associated with correcting deficiencies noted in this study.
- Required Investment: The level of investment required to correct the current deficiencies spread out over the remaining useful life. It is calculated by dividing remediation costs by the RUL.

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

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

ESL (yrs)	AGE (yrs)	RUL (yrs)	PRV (\$)	TARGET SUSTAIN (Annual \$)	REMED. COSTS (\$)	REQ'D INVEST. (Annual \$)	MRM	RECOMMEND
67	*32.1	*31.2	7,104,000	106,000	2,581,000	82,700	.78	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 to 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: Irwin Middle School

I	LT	Reference
		3.1 Overall General Description
		<p>This facility is an 87,500 square foot, one story multi-building complex originally constructed in 1960. Subsequent additions were:</p> <ul style="list-style-type: none"> ? Classroom addition in 1964 ? Four temporary classroom buildings in 1975 ? One temporary office building in 1989 ? Two temporary classroom buildings in 1991 ? Two temporary office buildings in 1992 <p>This facility serves 700 students in grades five through six. Total student capacity is 770.</p>
		3.2 Site
		3.2.1 Topography and Storm Water Drainage
X		Slopes away from building do not appear to provide adequate surface runoff drainage in all areas and the site does appear to exhibit water-retaining problems. Corrective action is required.
	X	Site storm water drainage is area drains and storm water drainage system. Most roof downspouts do not connect to the storm water drainage system. The system does not appear to be adequate for storm water control. Corrective action is required.
		3.2.2 Paving, Curbing and Parking
	X	<p>Parking area paving is asphaltic concrete in poor condition. Pavement parking is in poor condition. Corrective action is required.</p> <p>Parking areas do not appear to provide adequate parking spaces. Corrective action is not required.</p>
		3.2.3 Flatwork
	X	<p>Concrete and asphaltic concrete walkways and ramps are in fair-to-poor condition. Corrective action is required.</p> <p>Walkways from drop off areas 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 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 and locker 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>
		3.2.5 Utilities
		3.2.5.1 Water
		<p>A 3-inch water main enters the facility at the northwest corner of the mechanical room. 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 single service, does appear to be adequate and in is in good condition. The service is a 2" line, 2 psig, located at the east end of the boiler room. Corrective action is not required.</p>
		3.2.5.3 Sanitary Sewer
	X	<p>The sanitary sewer service does not appear to be adequate and is in poor condition. The school has replaced several sections in the past year. Corrective action is required, with the exception of the kitchen line.</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, located in the boiler room. The service is metered. It is underground feeding a pad mounted transformer, and does appear to be adequate 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	Building frame for the main building is cast-in-place concrete columns and beams. Roof decking is fibrous board. The structural system is in generally good condition. However, several areas of gypsum roof deck have been damaged by roof leaks and require replacement. The area over the locker rooms is one such area. Corrective action is required.
		3.3.3 Facades or Curtainwall
		3.3.3.1 Sidewall System
	X	Building exterior is face brick masonry veneer in good condition. Masonry at chimney is a potential hazard. Repair is required. The masonry can be removed down to the roof deck and the hole capped as the chimney is no longer used. Corrective action is required.
		3.3.3.2 Entrances/Exits
		Main entrance/exit is pre-finished anodized aluminum doors and framing with glazing in good condition. Corrective action is not required. Auxiliary exit/entrances are painted hollow metal doors and frames with glazing in fair condition. Corrective action is not required.
		3.3.3.3 Fenestration System
		Fenestration system is pre-finished anodized aluminum framing curtain wall system with double glazing in good condition. Corrective action is not required.

I	LT	Reference
		3.3.3.4 Soffits
	X	Soffits at main entrance/exit, auxiliary exit/entrances and roof overhangs are painted structure and decking or tectum in fair condition. Corrective action is required to replace areas worn or damaged by roof leaks.
		3.3.3.5 Parapets
		Not applicable.
		3.3.4 Roofing
X		<p>Low slope fully adhered EPDM roofing is located on the main building and is in generally good condition. Leaks are evident in some areas. Corrective action is required to correct leaks at low spots and torn seams.</p> <p>Flashing, coping, fascia, gutters and downspouts are pre-finished metal in fair condition. Corrective action is not required.</p>
		3.4 Interior Elements
		3.4.1 Common Areas
	X	<p>Lobbies and Corridors:</p> <p>Flooring is terrazzo in good condition. Walls are ceramic tile wainscot and concrete masonry units in good condition. Solid ceilings are painted structure and decking in fair condition. Suspended acoustical lay-in panel ceilings are in fair condition.</p> <p>Public, Private and Classroom Toilets:</p> <p>Flooring is ceramic tile and terrazzo in good condition. Walls are concrete masonry units and ceramic tile wainscot and concrete masonry units in fair condition. Solid ceilings are exposed structure and decking in good condition.</p> <p>Administrative Areas, Media Center and Classrooms:</p> <p>Flooring is vinyl tile or carpet in fair to poor condition. Walls are concrete masonry units in good condition. Solid ceilings are exposed structure and decking in good condition. Replacement of these floor coverings will be required when the asbestos floor tile is abated.</p>

I	LT	Reference
		<p>Cafeteria:</p> <p>Flooring is terrazzo in fair condition. Walls are ceramic tile wainscot and concrete masonry units and concrete masonry units in good condition. Solid ceilings are exposed structure and decking in good condition.</p> <p>Gymnasium:</p> <p>Flooring is vinyl tile in fair condition. Walls are concrete masonry units in fair condition. Solid ceilings are exposed structure and decking in good condition.</p> <p>Gymnasium Toilets and Locker Rooms:</p> <p>Flooring is terrazzo in fair condition. Walls are concrete masonry units in fair condition. Solid ceilings are exposed structure and decking 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 poured resinous surface in good condition. Walls are ceramic tile wainscot and concrete masonry units in good condition. Suspended acoustical lay-in panel ceilings are in good condition.</p> <p>Kitchen equipment is new and in good condition. Corrective action is not required.</p>
		3.5 Mechanical, Plumbing and Electrical Systems
		3.5.1 HVAC System
X		<p>The existing HVAC system uses three heating water boilers to feed unit ventilators and some heating radiators throughout the building. Some wings are fed directly from the boiler room. However, original wings are primarily fed using a primary loop that runs down the corridor with secondary loop pumps that feed each wing located in janitor's closets. A DX cooling coil has been retrofitted to unit ventilators and individual air-cooled condensers are located outside each classroom. A great deal of trouble has been experienced with the existing unit ventilators and air-cooled condensers. Several heating water coils have broken and condensers failed recently. It is recommended that replacement of this system be a short-term requirement.</p>
X		<p>There are presently two types of control systems in the facility. A new DDC system controls the heating and hot water boilers, and pumps in the boiler room. Individual</p>

I	LT	Reference
		control of units using pneumatic thermostats is used for heating radiators and unit ventilators. There were some timers installed originally, but they are only partially operational at this time. Expansion of the DDC system throughout the school is necessary to have a fully functional and energy efficient system.
		3.5.2 Plumbing System
		3.5.2.1 Plumbing Supply and Waste Piping
	X	Domestic water supply and waste piping within the facility does not appear to be adequate and is in poor condition. The kitchen piping is the exception. It is new and in good condition. Corrective action is required in the remainder of the building.
		3.5.2.2 Domestic Hot Water Production
		Domestic hot water is provided by two high efficiency instantaneous hot water boilers in good condition. They are three to four years old. Corrective action is not required.
		3.5.2.3 Fixtures
	X	Plumbing fixtures and connections appear to be adequate, but are in poor condition in the original building. Corrective action is required.
		3.5.2.4 Fuel Piping
		Natural gas piping does appear to be adequate and in is in good condition. Corrective action is not required.
		3.5.3 Electrical System
		3.5.3.1 Main Service
		The main electrical distribution panel for the building is a 2,000-amp, 277/480-volt, 3-phase, 4-wire panel located outside the south wall of the boiler room. 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	The electrical main switchboard, electrical panels in the boiler room and electrical panels in the kitchen were replaced in the last 6 years. However, the original main switchboard is unsatisfactory and potentially dangerous and needs to be replaced. In addition, interior panelboards are no longer made, in poor condition and need to be replaced, as well as half the wiring.

I	LT	Reference
		3.5.3.3 Interior Lighting
	X	Administrative area, media center and classroom lighting is pendant mounted fluorescent fixtures in poor condition. Fluorescent lamps are T-12. Light levels appear to be adequate. Corrective action is required.
	X	Corridor lighting is recessed troffer and pendant mounted fluorescent fixtures in poor condition. Fluorescent lamps are T-12. Light levels appear to be adequate. Corrective action is required.
	X	Gymnasium lighting is pendant mounted fluorescent fixtures in poor condition. Fluorescent lamps are T-12. Light levels appear to be adequate. Corrective action is required.
		3.5.3.4 Exterior Lighting
		<p>Exterior lighting is provided and is surface mounted, pole mounted, or metal halide incandescent fixtures 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 metal halide fixtures in good 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 metal halide fixtures in good condition. Off-site parking lighting is not provided. Lighting levels appear to be adequate. Corrective action is not required.</p>
		3.5.3.5 Security System
X		A security system is provided and is not monitored by a central agency. The security system does not appear to be operating. Corrective action is required.
		3.5.3.6 Intercom System
		Intercom system does allow communication to individual classrooms and outside telephone calls. The system is in 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 5 LAN outlets for each classroom. The computer network system does appear to be adequate and is in good condition. Corrective action is not required.
		3.6 ADA Tier I: Visual Accessibility Survey
		3.6.1 Path of Travel
X		A required adequately marked accessible route from parking is not provided. One accessible route is required from the boundary of the site from public transportation stops, accessible parking spaces, passenger loading zones, public streets or walkways to an accessible building entrance. Corrective action is required.
X		Curb ramps on approaches to the facility from student drop off areas and parking are provided and do not appear to comply with accessibility guidelines. Curb ramps along the accessible route are required to have compliant slopes and detectable warnings. Corrective action is required.
		The walkway approach to main entrance doors does appear to provide accessible slopes without threshold entry restrictions. Corrective action is not required.
X		Ramps along the on-site accessible route are required and are provided. Ramps do not appear to comply with accessibility guidelines. Required handrails are not provided. Corrective action is required.
X		Ramps along the interior 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.
		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	X	<p>Main entrance/exit approach, doors and hardware appear to comply with accessibility guidelines. Corrective action is not required.</p> <p>Interior doors along the accessible route are 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. 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. 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 stalls and recessed insulated lavatory piping. Corrective action is required.</p> <p>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. The existing fixtures require replacement per their physical condition and costs are shown in Section 3.5.2.3.</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
	X	Elevators are not required. Required platform/wheelchair lifts are not provided at the stage. Corrective action is required.
		3.6.9 Recreational Facilities
	X	Required accessible routes to play areas are provided. Accessible play areas, equipment and surfacing do not appear to be available in individual play area groups. ADA guidelines require a minimum of one play area with an accessible route, equipment and accessible surfacing material for each play area group. Corrective action is required.
		3.7 Life Safety and Fire Protection
		3.7.1 Sprinklers, Standpipes and Fire Suppression Systems
X		A required sprinkler system is not provided for janitor and custodial spaces. Corrective action is required.
X		A required sprinkler system is not provided for the stage. Corrective action is required. The kitchen hood is compensating type and is approximately two years old. 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. A required fire suppression system is provided in the kitchen hood. Cooking equipment does have required shut down capability upon suppression system activation. Corrective action is not required. Provision of fire extinguishers within required travel distances appear to comply with life safety standards. Corrective action is not required.
		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. Corridors are the only areas where strobes were noted. Corrective action is required to provide strobes throughout.

I	LT	Reference
X		<p>A fire alarm panel is provided. A required smoke detector is not provided in front of the panel. Corrective action is required.</p> <p>Required pull stations are provided at emergency egress doors and appear to be mounted at heights complying with ADA guidelines. 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 and transoms appear to be plain annealed glass and not fire resistive construction. Corrective action is required.
		3.7.4 Doors
		<p>Corridor doors, frames, hardware and assemblies do not appear to comply with life safety fire resistance rating standards. Corridor doors are required to have fire resistance rated construction and hardware assemblies. Corrective action is required. Refer to Section 3.6 for Opinions of Probable Costs of remediation.</p> <p>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> <p>Area separation doors, frames, hardware and assemblies appear to comply with life safety fire resistive rating requirements. Required smoke detectors are provided. 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 and does appear to comply with life safety standards. Emergency lighting fixtures are every third fixture with required testing devices. Corrective action is not required.</p> <p>Visible 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	<p>According to the AHERA Report, this facility does have asbestos-containing material (ACM). Remaining ACM is non-friable, inaccessible and is not currently hazardous to building occupants. Most of this material consists of vinyl asbestos floor tile and mastic. The existing flooring is currently in poor condition whether it is VAT or the carpet above. Removal of VAT will be required in the next ten years along with the sheet gaskets. Sink coatings can be managed in place according to the AHERA reports.</p>

4.0 Opinions of Probable Costs to Remedy Physical Deficiencies (Irwin 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 is indicated in tabular form for all items requiring remediation.

4.5 Discussion of Results

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

Immediate	\$ 3,714,000
Long-term	<u>\$ 1,888,000</u>
Total Remediation Costs	\$ 5,602,000

A calculation of Plant Replacement Value (PRV) was also performed for this facility. Plant replacement value represents the cost of a new building and associated sitework for FY04 pricing. The PRV for this school is approximately \$12,421,000. This cost was determined based on the following square foot cost escalated from TM 5-800-4:

\$ 122.66/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 Irwin is a combination of several additions and the original building, a composite relative useful life has been used.
- Target Sustainment: The annual investment required to keep the building in good working order to achieve an ESL of 67 years. It is calculated by dividing the plant replacement value by the ESL.
- Plant Replacement Value (PRV): The cost to replace the school building, sitework, furniture and associated assets. It is presented in FY 2004 dollars for this study.
- Remediation Costs: These are the total construction costs associated with correcting deficiencies noted in this study.
- Required Investment: The level of investment required to correct the current deficiencies spread out over the remaining useful life. It is calculated by dividing remediation costs by the RUL.

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

The following table summarizes the MRM calculation for Irwin Middle School.

ESL (yrs)	AGE (yrs)	RUL (yrs)	PRV (\$)	TARGET SUSTAIN (Annual \$)	REMED. COSTS (\$)	REQ'D INVEST. (Annual \$)	MRM	RECOMMEND
67	*37.7	*23.6	12,421,000	185,400	5,602,000	237,400	1.28	Replace

*Represents Composite Number

Based on our analysis of the remediation costs, it is our opinion that this school should be replaced due to the high cost needed to bring it into compliance with applicable codes and repair problems with major building systems.

Refer to 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: McNair Elementary School

I	LT	Reference
		3.1 Overall General Description
		<p>This facility is a 47,447 square foot, one story multi-building complex originally constructed in 1963. Subsequent additions were:</p> <ul style="list-style-type: none"> ? Three temporary classroom buildings in 1992 ? Classroom addition in 1996 <p>An additional 5,639 square feet will be added as part of PTR project in 2003, bringing the total square footage to 53,086.</p> <p>This facility serves 443 students in grades pre-kindergarten through four. Total student capacity is 428.</p>
		3.2 Site
		3.2.1 Topography and Storm Water Drainage
	X	Slopes away from building do not appear to provide adequate surface runoff drainage in all areas and the site does appear to exhibit water -retaining problems. The foundation wall a the front perimeter of the school near the cafeteria is open and allows water into the crawl spaces and pipe chases below the floor. Corrective action is required.
	X	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 not appear to be adequate for storm water control. Corrective action is required.
		3.2.2 Paving, Curbing and Parking
		Parking area paving is asphaltic concrete in fair condition. Corrective action is not required.
	X	Parking areas do not appear to provide adequate parking spaces. Corrective action is required.
		3.2.3 Flatwork
	X	<p>Concrete walkways are generally in fair condition. Corrective action is required to replace areas of severe damage .</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>A gymnasium provides indoor court sport recreational and assembly space. Corrective action is not required.</p> <p>Play areas are provided with various types of equipment in good condition. Corrective action is not required.</p> <p>Play surfaces are in 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 in is in good condition. Corrective action is not required.
		3.2.5.3 Sanitary Sewer
X	X	<p>The sanitary sewer service does appear to be adequate , but is in poor condition. Corrective action is required.</p> <p>A single -compartment grease trap is 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 . It is underground serving a pad mounted transformer, and does appear to be adequate . Service is in good condition. Corrective action is not required.
		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. The foundation well at the front of the building near the cafeteria allows water to flow in under the building. This condition should be addressed immediately to prevent undermining of the foundation and rusting of the floor deck over the pipe chases. Corrective action is required.
		3.3.2 Building Frame
X		<p>Building frame for the main building is concrete masonry unit walls at corridors and cast -in-place concrete columns and beams with pre-cast concrete planks . Roof decking is pre-cast concrete planks. The structural system is in fair condition. Several concrete columns have cracked at the top at the bearing condition of the pre-cast beams. These columns and beams should be investigated by a structural engineer and repaired at his or her direction. Corrective action is required.</p> <p>Building frame for the building addition 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>
		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 painted hollow metal doors and frames with glazing in good condition. Corrective action is not required.</p> <p>Auxiliary exit/entrances are painted 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 , auxiliary exit/entrances and roof overhangs are cast -in-place concrete in fair 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		<p>Low slope fully adhered EPDM roofing is located on building additions and the administrative area and is in good condition. Leaks are evident, however, in some areas. Replacement of roofing at administrative area is required.</p> <p>Low slope ballasted EPDM roofing is located on the original building areas and is in good condition. Leaks are not evident. Corrective action is not required.</p> <p>Flashing, coping, fascia, gutters and downspouts are pre-finished metal in fair condition. Corrective action is not required.</p>
		3.4 Interior Elements
		3.4.1 Common Areas
		<p>Lobbies and Corridors:</p> <p>Flooring is terrazzo in good condition. Walls are glazed concrete masonry unit wainscot and concrete masonry units and painted 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
	X	<p>Administrative Areas, Media Center and Classrooms:</p> <p>Flooring is carpet or sheet vinyl in fair condition. Walls are concrete masonry units in good condition. Solid ceilings and furring are gypsum board in good condition. Suspended acoustical lay -in panel ceilings are in good condition. Flooring will be replaced after the VAT is abated.</p> <p>Cafeteria:</p> <p>Flooring is terrazzo 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 vinyl tile in fair condition. Walls are gypsum board 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 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 units in good condition. Solid ceilings are plaster in good condition.</p> <p>Kitchen equipment is in fair condition. Corrective action is not required.</p>
		3.5 Mechanical, Plumbing and Electrical Systems
		3.5.1 HVAC System
X	X	<p>The HVAC system is a 2 -pipe system with unit ventilators . Heating water is supplied by the boiler room. The units have been retrofitted with DX coil for cooling and pad mounted condensers at the exterior of each classroom. The condensers and DX coils fail at an accelerated rate. It is anticipated that half the condensers and unit ventilators will fail in the next ten years. Corrective action is required.</p> <p>X</p> <p>A DDC control system is available to the boiler room only and needs to be expanded to remainder of building. A field -fabricated pneumatic control system serves the remainder of the building, is not adequate, and is in poor condition. Maintenance has continual problems with the controls. Corrective action is required.</p>

I	LT	Reference
		3.5.2 Plumbing System
		3.5.2.1 Plumbing Supply and Waste Piping
	X	Domestic water supply and waste piping within the facility does not appear to be adequate and is in poor condition. Corrective action is required.
		3.5.2.2 Domestic Hot Water Production
		Domestic hot water is provided by two high efficiency water heater boilers and a boiler with a storage tank in good condition. Corrective action is not required.
		3.5.2.3 Fixtures
		Plumbing fixtures and connections appear to be adequate and are in fair condition. Corrective action is not required.
		3.5.2.4 Fuel Piping
		Natural gas piping does appear to be adequate and in is in good condition. Corrective action is not required.
		3.5.3 Electrical System
		3.5.3.1 Main Service
		The main electrical distribution panel for the entire facility is a 2,000-amp, 120/208-volt, 3-phase, 4-wire panel. The panel does appear to be adequate and is in good condition. Corrective action is not required.
		3.5.3.2 Distribution and Panels
	X	Electrical distribution and branch panels in the boiler room are good, but others throughout the building do not appear to be adequately sized and are in poor condition. Distribution and dry type step down transformers provide power. Corrective action is required at the branch panels and their runouts to the main panel.
		3.5.3.3 Interior Lighting
	X	Administrative area, media center and classroom lighting is recessed troffer fluorescent fixtures in fair condition. Fluorescent lamps are T-12. Light levels appear to be adequate. Corrective action is not required.
	X	Corridor lighting is recessed troffer fluorescent fixtures in fair condition. Fluorescent lamps are T-12. Light levels do not appear to be adequate. Corrective action is required.

I	LT	Reference
	X	Gymnasium lighting is recessed ceiling mounted metal halide fixtures in fair condition. Light levels do not appear to be adequate. Corrective action is required.
		3.5.3.4 Exterior Lighting
	X	<p>Exterior lighting is provided and is surface mounted metal halide fixtures 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 incandescent fixtures in poor condition. Lighting levels do not appear to be adequate. Corrective action is required.</p> <p>Covered walkway lighting is not provided. Corrective action is required.</p> <p>Parking lot lighting is provided and is pole mounted metal halide fixtures in good condition. Lighting levels appear to be adequate. Off-site parking lighting is not provided. Corrective action may be required to provide lighting in the offsite parking area should it be used after dark. Costs are included in Paragraph 3.2.2.</p>
		3.5.3.5 Security System
	X	A security system is provided and is not monitored by a central agency. The security system does not appear to provide adequate security or monitoring and is in poor condition. Corrective action is required.
		3.5.3.6 Intercom System
		Intercom system does allow communication to individual classrooms and outside telephone calls. The system is in 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 5 LAN outlets for each classroom. The computer network system does appear to be adequate and is in good condition. Corrective action is not required.

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		<p>Curb ramps on approaches to the facility from student drop off areas and parking 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
		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. Costs are shown in 3.6.1.
		3.6.3 Entrances/Exits
		Main entrance/exit approach, doors and hardware appear to comply with accessibility guidelines. Corrective action is not required.
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> <p>Interior doors along the accessible route are flush with corridor walls and appear to allow clearance and approach accessibility. Corrective action is not required.</p>
X		Some 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

I	LT	Reference
		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. One kindergarten classroom is included in these costs. 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.
	X	Required platform/wheelchair lifts are not provided at the stage. Corrective action is 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. 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		A required sprinkler system is not provided for janitor and custodial spaces. Corrective action is required.
X		A required sprinkler system is not provided for the stage. Corrective action is required.
X		The kitchen hood is compensating type and has been turned off to avoid lead paint contamination. Distance from cooking surfaces and edge of kitchen hood do not appear to comply with distance requirements. Kitchen hood duct protection is fire resistive construction. The kitchen hood system is in poor condition. Corrective action is required and has been funded. However, costs have been included for the purposes of this study because a construction contract has not been awarded.
X		A required fire suppression system is provided in the kitchen hood. Cooking equipment does not have required shut down capability upon suppression system activation. Corrective action is required with hood replacement. Provision of fire extinguishers within required travel distances appear to comply with life safety standards. Corrective action is not required.
		3.7.2 Alarm Systems
X		The visual alarm system does not appear to comply with ADA guidelines or life safety standards. Visual alarms located 80 inches above the floor to the bottom of the lens are required in all corridors, common use spaces and rooms with more than one occupant. Corrective action is required.
X		A fire alarm panel is provided. 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.
		3.7.3 Corridor and Separation Walls
X		Exit corridor and area separation walls do not appear to have required firestopping sealing between wall and structural surfaces and framing or around wall penetrations. Borrowed lights appear to have fire resistive construction. Corrective action is required.

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>Emergency exit doors, frames, hardware and assemblies appear to comply with life safety standards . Corrective action is not required.</p> <p>Area separation doors, frames, hardware and assemblies appear to comply with life safety fire resistive rating requirements. Required smoke detectors are not provided. Corrective action is required with addition of visual alarms in Section 3.7.2 .</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 individual wall packs and selected light fixtures with required testing devices. Corrective action is not required.</p> <p>Visible illuminated directional emergency exit signs are not provided at every required location. Corrective action is required when visual alarms are added per Section 3.7.2.</p>
		3.8 Asbestos Concerns
	X	<p>According to the AHERA Report, this facility does have asbestos -containing material (ACM). Remaining ACM is friable, not damaged, accessible and is not currently hazardous to building occupants.</p> <p>Removal of all accessible ACM consisting primarily of vinyl asbestos floor tile and replacement of affected flooring is required. In addition, there is encapsulated asbestos insulation in the under -floor pipe chases that should be removed, although it is not referenced in the AHERA report. The piping under the building is in poor condition so this abatement must occur before the piping is replaced.</p>

4.0 Opinions of Probable Costs to Remedy Physical Deficiencies (McNair 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 is indicated in tabular form for all items requiring remediation.

4.5 Discussion of Results

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

Immediate	\$ 1,040,000
Long-term	<u>\$ 2,181,000</u>
Total Remediation Costs	\$ 3,221,000

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 \$6,367,000. This cost was determined based on the following square foot cost escalated from TM 5-800-4:

\$ 119.94/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 McNair is a combination of additions and the original building, a composite relative useful life has been used.
- Target Sustainment: The annual investment required to keep the building in good working order to achieve an ESL of 67 years. It is calculated by dividing the plant replacement value by the ESL.
- Plant Replacement Value (PRV): The cost to replace the school building, sitework, furniture and associated assets. It is presented in FY 2004 dollars for this study.
- Remediation Costs: These are the total construction costs associated with correcting deficiencies noted in this study.
- Required Investment: The level of investment required to correct the current deficiencies spread out over the remaining useful life. It is calculated by dividing remediation costs by the RUL.

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

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

ESL (yrs)	AGE (yrs)	RUL (yrs)	PRV (\$)	TARGET SUSTAIN (Annual \$)	REMED. COSTS (\$)	REQ'D INVEST. (Annual \$)	MRM	RECOMMEND
67	*30.5	*34.4	6,367,000	95,000	3,221,000	93,600	.99	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 to 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: Murray Elementary School

I	LT	Reference
		3.1 Overall General Description
		<p>This facility is a 50,230 square foot, one story multi-building complex originally constructed in 1957. Subsequent additions were:</p> <ul style="list-style-type: none"> ? Three temporary classroom buildings in 1975 ? Classroom addition in 1988 ? One temporary classroom building in 1991 ? Classroom addition in 1996 <p>This facility serves 403 students in grades pre-kindergarten through four. Total student capacity is 436.</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 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 poor condition. Corrective action is required.</p> <p>Parking areas do not appear to provide adequate parking spaces and site ingress/egress is severely restricted . Corrective action is not required.</p>
		3.2.3 Flatwork
X		Concrete walkways are in fair -to-poor condition. Corrective action is required to repair damaged areas .

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. 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 in is in good condition. Corrective action is not required.
		3.2.5.3 Sanitary Sewer
	X	<p>The sanitary sewer service does not appear to be adequate and is in poor condition. Corrective action is 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 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
X		Building frame for the main building is concrete masonry unit walls or structural steel columns and beams with steel joists. Roof decking is structural metal or bulb tees and gypsum. The structural system is in generally good condition. Some areas of gypsum roof deck will require replacement long-term.
		3.3.3 Facades or Curtainwall
	X	Some of the portable buildings on site were installed in 1975. Per direction from DoDEA, costs are included to replace portable buildings over 25 years old.
		3.3.3.1 Sidewall System
X		Building exterior is face brick masonry veneer in fair condition. Brick is cracked and damaged at building corners. Corrective action is required.
X		Pre-cast concrete panels around columns and grout is in poor condition. Corrective action is required to regrout these joints.
		3.3.3.2 Entrances/Exits
		Main entrance/exit is pre-finished anodized aluminum doors and framing with glazing in good condition. Corrective action is not required. Auxiliary exit/entrances are pre-finished anodized aluminum doors and framing with glazing and hollow metal doors and frames with glazing in fair condition. Corrective action is not required.
		3.3.3.3 Fenestration System
		Fenestration system is pre-finished anodized aluminum framing with double glazing, pre-finished metal spandrel panels, and composite translucent plastic panels in fair condition. Corrective action is not required.

I	LT	Reference
		3.3.3.4 Soffits
		Soffits at main entrance/exit, auxiliary exit/entrances , and roof overhangs are wood or tecturm in fair condition. Corrective action is not required.
		3.3.3.5 Parapets
		Areas with parapets are exte nsions of the indicated wall systems and are protected with metal coping in good condition. Corrective action is not required.
		3.3.4 Roofing
		<p>Low slope gravel surface built -up roofing is located on Art and Media Center and is in good condition. Leaks are not evident. Corrective action is not required.</p> <p>Low slope fully adhered EPDM roofing is located on remainder of building and is in good condition. Leaks are not evident. Corrective action is not required.</p> <p>Portable buildings utilize metal roofing. The 1975 building requires a new roof. In addition, the study directive is to show costs of replacing portables older than 25 years old. HVAC work has recently been completed in these older buildings.</p> <p>Flashing, coping, fascia, gutters and downspouts are pr e-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 terrazzo or vinyl tile in good condition. Walls are glazed concrete masonry unit wainscot and concrete mas onry units and painted gypsum board, concrete masonry units, and face brick masonry veneer 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 co ndition. Walls are glazed concrete masonry units and ceramic tile 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, carpet, and some sheet vinyl in good condition. Walls are concrete masonry units in good condition. Suspended acoustical lay -in panel ceilings are in good condition.</p> <p>Cafeteria:</p> <p>Flooring is terrazzo in good condition. Walls are glazed concrete masonry unit wainscot and stucco or concrete masonry units in good condition. Suspended acoustical lay -in panel ceilings are in good condition.</p> <p>Gymnasium:</p> <p>Flooring is carpet in good condition. Walls are painted concrete masonry units in good condition. Solid ceilings and furring are gypsum board in good condition. Suspended acoustical lay -in panel ceilings are in good condition.</p> <p>Stage (Some offices have been added to the stage.) :</p> <p>Flooring is finished wood in poor condition. Walls are concrete masonry units and wood paneling in fair condition. Suspended acoustical lay -in panel ceilings are in good condition.</p> <p>Kitchen:</p> <p>Flooring is ceramic tile in good condition. Walls are glazed concrete masonry unit wainscot and painted stucco and painted concrete masonry units in good condition. Suspended acoustical lay -in panel ceilings are in good condition.</p> <p>Kitchen equipment is in fair condition. Corrective action is not required.</p> <p>General:</p> <p>X Replace flooring after asbestos abatement.</p>
		3.5 Mechanical, Plumbing and Electrical Systems
		3.5.1 HVAC System
X		<p>The HVAC system is a 2 -pipe system with unit ventilators. Heating water is supplied by the boiler room. The units have been retrofitted with DX coil for cooling and pad mounted condensers at the exterior of each classroom. The condensers and DX coils fail at an accelerated rate. It is anticipated that half the condensers and unit ventilators will fail in the next ten years. Corrective action is required.</p>

I	LT	Reference
X		A DDC control system has been installed in boiler room only. Field fabricated pneumatic system in remainder of school is in poor operating condition and required continual maintenance. The DDC system needs to be expanded to the rest of the school.
		3.5.2 Plumbing System
		3.5.2.1 Plumbing Supply and Waste Piping
	X	Domestic water supply and waste piping within the facility does not appear to be adequate and is in poor condition. Corrective action is required.
		3.5.2.2 Domestic Hot Water Production
		Domestic hot water is provided by two high efficiency water heating boilers in good condition. Corrective action is not required.
		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
		The main electrical distribution panel for outside the entire facility is a 2,000-amp, 120/208-volt, 3-phase, 4-wire panel. The panel does appear to be adequate and is in good condition. Corrective action is not required.
		3.5.3.2 Distribution and Panels
	X	Electrical distribution and branch panels do not appear to be adequately sized and are in poor condition. Corrective action is required along with the runouts to the main panel.
		3.5.3.3 Interior Lighting
		Administrative area, media center and classroom lighting is recessed troffer fluorescent fixtures in good condition. Fluorescent lamps are T-12. Light levels appear to be adequate. Corrective action is not required.

I	LT	Reference
		<p>Corridor lighting is recessed troffer fluorescent fixtures in good condition. Fluorescent lamps are T-12. Light levels appear to be adequate. Corrective action is not required.</p> <p>Gymnasium lighting is recessed troffer fixtures 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
	X	<p>Exterior lighting is provided and is surface mounted or pole mounted metal halide fixtures 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 incandescent fixtures in poor condition. Lighting levels do not appear to be adequate. Corrective action is not required.</p> <p>Parking lot lighting is not provided. Corrective action is not required.</p>
		3.5.3.5 Security System
X		A security system is provided and is not monitored by a central agency. The security system does not appear to provide adequate security or monitoring and is in poor condition. Corrective action is required.
		3.5.3.6 Intercom System
		Intercom system does allow communication to individual classrooms and outside telephone calls. The system is in good condition. Corrective action is not required.
		3.5.3.7 Educational Television
		Educational television is provided and does not allow internal broadcasting. The system is in good condition. Corrective action is not required.
		3.5.3.8 Computer Network
		A computer network system provides approximately 5 LAN outlets for each classroom. The computer network system does appear to be adequate and is in good condition. Corrective action is not required.

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 with threshold entry restrictions. Corrective action is not required.
		3.6.2 Parking
		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. Costs are included in 3.6.1.
		3.6.3 Entrances/Exits
X		<p>Main entrance/exit 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 flush with corridor walls and 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 not required.</p> <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>

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		One of the sets of public toilet rooms provided along the accessible route does 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 not 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 at least one kindergarten classroom with an accessible toilet.
		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.
	X	Required platform/wheelchair lifts are not provided at the stage. Corrective action is 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,

I	LT	Reference
		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 not provided for janitor and custodial spaces. Corrective action is required.
X		A required sprinkler system is not provided for the stage. Corrective action is required.
X		The kitchen hood is compensating type. Distance from cooking surfaces and edge of kitchen hood appear to comply with distance requirements. Kitchen hood duct protection is fire resistive construction. The paint on the hood may also be lead-based. The kitchen hood system is in poor condition. Corrective action is required.
X		A required fire suppression system is provided in the kitchen hood. Cooking equipment does not have required shut down capability upon suppression system activation. Corrective action is required with hood replacement. Provision of fire extinguishers within required travel distances appear to comply with life safety standards. Corrective action is not required.
		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. A required smoke detector is not provided in front of the panel. Corrective action is required. Required pull stations are provided at emergency egress doors and are mounted at heights complying with ADA guidelines. Corrective action is not required.
		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. Some borrowed lights do not appear to have fire resistive construction. 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>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> <p>Area separation doors, frames, hardware and assemblies appear to comply with life safety fire resistive rating requirements. Required smoke detectors are provided. Corrective action is not required.</p>
		3.7.5 Classroom Emergency Exiting
		Operable window units and exit doors to building exterior provide classroom emergency exiting and appear to comply emergency exiting requirements. Corrective action is not required.
		3.7.6 Emergency Egress Lighting
		<p>Corridor emergency egress lighting is provided. Fixtures are individual wall packs with required testing devices. Corrective action is not required.</p> <p>Emergency egress lighting is provided in required windowless rooms. Fixtures are individual wall packs with required testing devices. Corrective action is not required. Classroom emergency exit doors do not have required exit signs.</p> <p>Visible 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) in the form of vinyl asbestos floor tile, window caulk and some cove base mastic. Remaining ACM is non-friable, not damaged, and is not hazardous to building occupants. Because work in these areas will be required due to routine maintenance, modernization or required replacements of material above or in proximity to this asbestos, it should be removed. Corrective action is required.

4.0 Opinions of Probable Costs to Remedy Physical Deficiencies (Murray 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 is indicated in tabular form for all items requiring remediation.

4.5 Discussion of Results

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

Immediate	\$ 1,657,000
Long-term	<u>\$ 1,152,000</u>
Total Remediation Costs	\$ 2,809,000

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 \$6,695,000. This cost was determined based on the following square foot cost escalated from TM 5-800-4:

\$ 119.94/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 Murray is a combination of 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 Murray Elementary School.

ESL (yrs)	AGE (yrs)	RUL (yrs)	PRV (\$)	TARGET SUSTAIN (Annual \$)	REMED. COSTS (\$)	REQ'D INVEST. (Annual \$)	MRM	RECOMMEND
67	*34	*28.8	6,695,000	99,900	2,809,000	97,500	.98	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 to 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: Pope Elementary School

I	LT	Reference
		3.1 Overall General Description
		<p>This facility is a 49,927 square foot, one story multi-building complex originally constructed in 1967. Subsequent additions were:</p> <ul style="list-style-type: none"> ? Six temporary classroom buildings in 1975 ? Classroom addition in 1996 ? Classroom addition in 1999 <p>(Note: Square footage includes temporary classroom buildings.)</p> <p>A Media Center will be added in 2003, which will bring the total square footage to 53,831.</p> <p>This facility serves 306 students in grades pre-kindergarten through four. Total student capacity is 320.</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 most areas, but the site does appear to exhibit water -retaining problems between the library and portables. Corrective action is not required as modifications to the storm sewer will be made by a PTR addition .</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, as this work should be accomplished by routine maintenance .</p>
		3.2.2 Paving, Curbing and Parking
X		<p>Parking area paving is asphaltic concrete in poor condition. Corrective action is required.</p> <p>Parking areas do not appear to provide adequate parking spaces. Corrective action is not required.</p>
		3.2.3 Flatwork
X		Concrete walkways are in fair condition. Corrective action is required to replace severely damaged areas .

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>A cafeteria/gymnasium and gymnasium provide 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>A three inch domestic water main service does appear to be adequate, with metering and is in good condition. It was replaced in recent years. Corrective action is required.</p> <p>Two backflow preventers are provided on the main water service line. The backflow preventers are in good condition. Corrective action is not required.</p>
		3.2.5.2 Natural Gas
X		A single 2" natural gas service was added to the facility to serve a domestic water heater. The service is adequate with some spare capacity. Corrective action is required to paint the line and repair the gas meter support.
		3.2.5.3 Sanitary Sewer
X	X	<p>The sanitary sewer service does not appear to be adequate and is in poor condition. Corrective action is not required at this time.</p> <p>A single -compartment grease trap is 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
		Propane service is multiple service for temporary classroom buildings, does appear to be adequate and in is in fair condition. Corrective action is not required. Propane use is minimal because temporary buildings are used primarily for storage.

I	LT	Reference
		3.2.5.5 Electrical Service and Metering
		Electrical service is single service with primary metering, is an overhead feed to the underground service and utilizes a pad mount transformer. The service appears 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 structural steel beams with steel joists. Roof decking is fibrous board. There is damage at perimeter cast-in-place column and steel beam connections. The structural system is in fair condition. Corrective action is required to repair the tops of the columns, particularly at the Multipurpose Room exterior.</p> <p>Building frame for the 1996 classroom addition 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>
		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 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>
		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.

I	LT	Reference
		3.3.3.4 Soffits
	X	Soffits at main entrance/exit, auxiliary exit/entrances and roof overhangs are exposed structure and decking in good condition primarily. There are areas of damage which require repair. Corrective action is 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	<p>Low slope fully adhered EPDM roofing is located on the 1996 and 1999 classroom addition and is in good condition. Corrective action is not required.</p> <p>Low slope ballasted EPDM roofing is located on the original building and is in good condition in all areas except the Media Center. Corrective action is required at the Media Center.</p> <p>Flashing, coping, fascia, gutters and downspouts are pre-finished metal in fair condition. Corrective action is not required except in areas requiring roofing replacement.</p>
		3.4 Interior Elements
		3.4.1 Common Areas
		<p>Lobbies and Corridors:</p> <p>Flooring is terrazzo in good condition. Walls are glazed concrete masonry unit wainscot and concrete masonry units or concrete masonry units in good condition. Solid ceilings are exposed structure and decking in fair condition and are located in the original building. Suspended acoustical lay-in panel ceilings are in good condition.</p> <p>Public, Private and Classroom Toilets:</p> <p>Flooring is ceramic tile in fair condition. Walls are concrete masonry units or ceramic tile wainscot and concrete masonry units in fair condition. Solid ceilings are exposed structure and decking in good 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 carpet and sheet vinyl in fair condition. Walls are concrete masonry units or gypsum board in good condition. Solid ceilings are exposed structure and decking in good condition. Suspended acoustical lay -in panel ceilings are in fair condition. Ceilings in older classrooms will be replaced when the lighting is replaced. Some flooring will be replaced when the VAT is abated.</p> <p>Cafeteria:</p> <p>Flooring is vinyl tile in fair condition. It will be replaced when the VAT is abated. Walls are concrete masonry units in good condition. Solid ceilings are exposed structure and decking in good condition.</p> <p>Gymnasium:</p> <p>Flooring is carpet in good condition. Walls are concrete masonry units in good condition. Suspended acoustical lay -in panel ceilings are in good condition.</p> <p>Stage (Some of the stage has been converted into 3 offices.) :</p> <p>Flooring is finished wood in fair condition. Walls are concrete masonry units and wood paneling in good condition. Suspended acoustical lay -in panel ceilings are in good condition.</p> <p>Kitchen:</p> <p>Flooring is ceramic tile in good condition. Walls are ceramic tile wainscot and concrete masonry units in good condition. Suspended acoustical lay -in panel ceilings are in good condition.</p> <p>Kitchen equipment is in fair to poor condition. Corrective action is not required, as this equipment is outside the scope of this report.</p>
		3.5 Mechanical, Plumbing and Electrical Systems
		3.5.1 HVAC System
X		<p>School heating and cooling is predominantly made up of unitary heat -pump ventilators with electric resistant supplementary heat. The multipurpose/cafeteria is served by a split heat pump system having outside condensers and an interior air - handling unit. Resistance electric unit heaters are utilized in the kitchen and in some hallways (baseboard units). Individual room control of heat pumps is utilized. A central time clock to sequence off at night was originally installed, but is not operational. Corrective action is required to provide proper control of the HVAC system.</p>

I	LT	Reference
		3.5.2 Plumbing System
		3.5.2.1 Plumbing Supply and Waste Piping
	X	Domestic water supply and waste piping within the facility does not appear to be adequate and is in poor condition. Corrective action is required.
		3.5.2.2 Domestic Hot Water Production
X		Domestic hot water is provided by a single 77-gallon water heater without combustion air in good condition. Corrective action is required to provide combustion air. The gas line also needs to be supported.
		3.5.2.3 Fixtures
	X	Plumbing fixtures and connections appear to be adequate and are in fair -to-poor condition. Corrective action is required.
		3.5.2.4 Fuel Piping
		<p>Natural gas piping does appear to be adequate and is in good condition. Piping is not painted or properly supported. The gas meter is not properly supported either. It is anticipated that these repairs and support can be made by maintenance personnel, although a minimal cost has been shown in Paragraph 3.2.5.2.</p> <p>Propane service piping does appear to be adequate and in is in fair condition. The system is only utilized in temporary classroom buildings which are not used for storage and does not require much use. Corrective action is not required.</p>
		3.5.3 Electrical System
		3.5.3.1 Main Service
		The main electrical distribution panel for the entire facility 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.

I	LT	Reference
		3.5.3.3 Interior Lighting
	X	<p>Administrative area, media center and classroom lighting is recessed or pendant mounted or mounted on ceiling beams. Fixtures utilize fluorescent lamps in poor condition. Fluorescent lamps are T -12. Light levels are not adequate in the original building but are within IESNA standards in additions. Corrective action is required except in the 1996 and 1999 classroom additions .</p>
	X	<p>Corridor lighting is recessed troffer fixtures with fluorescent lamps in good condition in additions. Fluorescent lamps are T -8. Light levels appear to be adequate in the original building. Corrective action is not required. Lighting levels from surface, or pendant mounted fixture in original hallways need repair. Light levels are below IESNA standards.</p> <p>Gymnasium lighting is recessed fixtures with fluorescent lamps in good condition. Fluorescent lamps are T -8. Light levels are at IESNA minimums. Corrective action is not required.</p>
		3.5.3.4 Exterior Lighting
	X	<p>Exterior lighting is provided and is pole mounted fixtures with metal halide lamps in fair condition. Lighting levels appear to be adequate. Corrective action is not required.</p> <p>Soffit and entrance lighting is provided and is surface mounted fixtures with incandescent lamps in fair condition. Lighting levels do not appear to be adequate. Corrective action is required.</p> <p>Covered walkway lighting is not provided. Corrective action is not required.</p> <p>Parking lot lighting is provided using pole mounted fixtures with metal halide lamps in good condition. Off-site parking lighting is not provided. Lighting levels appear to be adequate. Corrective action is not required.</p>
		3.5.3.5 Security System
	X	<p>A Radionics 8112G2 security system is provided and is not monitored by a central agency. The security system is not operational and needs to be replaced. Corrective action is required.</p>
		3.5.3.6 Intercom System
		<p>Intercom system does allow communication to individual classrooms and outside telephone calls. The system is in good condition. Corrective action is not required.</p>

I	LT	Reference
		3.5.3.7 Educational Television
		Educational television is provided and does not allow internal broadcasting. The system is in good condition. Corrective action is not required.
		3.5.3.8 Computer Network
		A computer network system provides approximately 5 LAN outlets for each classroom. The computer network system does appear to be adequate and is in good condition. Corrective action is not required.
		3.6 ADA Tier I: Visual Accessibility Survey
		3.6.1 Path of Travel
X		<p>A required adequately marked accessible route from parking is not provided . One accessible route is required from the boundary of the site from public transportation stops, accessible parking spaces, passenger loading zones, public streets or walkways to an accessible building entrance. Corrective action is required.</p> <p>Curb ramps on approaches to the facility from student drop off areas and parking are provided and appear to comply with accessibility guidelines. Corrective action is not required.</p> <p>The walkway approach to main entrance doors does appear to provide accessible slopes with 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
	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 flush with corridor walls and appear to allow clearance and approach accessibility. Corrective action is not required.</p>

I	LT	Reference
X	X	Door assemblies do not appear to meet accessibility guidelines except in the 1996 and 1999 classroom additions . 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		<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>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. Costs are reflected in Section 3.5.2.3.</p> <p>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. Costs are reflected in Section 3.5.2.3.</p>
		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
	X	<p>Elevators are not required.</p> <p>Required platform/wheelchair lifts are not provided at the stage. Corrective action is required.</p>

I	LT	Reference
		3.6.9 Recreational Facilities
X		Required accessible routes to play areas are provided. Accessible play areas, equipment and surfacing do not appear to be available in individual play area groups. ADA guidelines require a minimum of one play area with an accessible route, equipment and accessible surfacing material for each play area group. Corrective action is required.
		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		A required sprinkler system is not provided for the stage. Corrective action is required.
X		The kitchen hood is exhaust only 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 fair condition. Replacement with a compensating hood is required.
X		<p>A required fire suppression system is provided in the kitchen hood but does not meet current NFPA requirements. Cooking equipment does not have required shut down capability 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		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>A Monicorf fire alarm panel has been installed by the base and is monitored by a central agency. A required smoke detector is not provided in front of the panel. Corrective action is required.</p> <p>Required pull stations are provided at emergency egress doors. Corrective action is required.</p>

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. Ductwork penetrations appear to have required fire/smoke dampers. 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 except in the 1996 and 1999 classroom additions. Corridor doors are required to have fire resistance rated construction and hardware assemblies. Corrective action is required. Refer to Section 3.6 for Opinions of Probable Costs of remediation.</p> <p>Area separation doors, frames, hardware and assemblies appear to comply with fire resistance rated construction requirements. Corrective action is not required.</p> <p>Emergency exit doors, frames, hardware and assemblies appear to comply with emergency exiting requirements. Corrective action is not required.</p>
		3.7.5 Classroom Emergency Exiting
		Operable window units and exit doors to building exterior provide classroom emergency exiting and appear to comply emergency exiting requirements. Corrective action is not required.
		3.7.6 Emergency Egress Lighting
X		<p>Corridor emergency egress lighting is provided. Fixtures are wall mounted package units and selected light fixtures with required testing devices. Corrective action is not required.</p> <p>Emergency egress lighting and access is not provided in required windowless rooms, such as the offices created behind the stage. 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). Currently, remaining ACM is non -friable, not damaged, and is not hazardous to building occupants. This ACM consists primarily of vinyl floor tile and exterior and interior caulks. This material will likely be encountered by renovation work within the next ten years and thus will require removal. Corrective action is required.
		3.9 Portable Classroom Buildings
	X	Removal of portable classrooms will be required long -term.

4.0 Opinions of Probable Costs to Remedy Physical Deficiencies (Pope 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 is indicated in tabular form for all items requiring remediation.

4.5 Discussion of Results

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

Immediate	\$ 1,702,000
Long-term	<u>\$ 1,136,000</u>
Total Remediation Costs	\$ 2,838,000

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 \$5,593,000. This cost was determined based on the following square foot cost escalated from TM 5-800-4:

\$ 119.94/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 Pope is a combination of 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 Pope Elementary School.

ESL (yrs)	AGE (yrs)	RUL (yrs)	PRV (\$)	TARGET SUSTAIN (Annual \$)	REMED. COSTS (\$)	REQ'D INVEST. (Annual \$)	MRM	RECOMMEND
67	*21.4	*45.6	5,593,000	83,500	2,838,000	62,200	.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 to Appendix for Total Cost Summary

Refer Appendix for Immediate Remediation Item Detail Table

Refer Appendix for Long-Term Remediation Item Detail Table

ALBRITTON JUNIOR HIGH SCHOOL



Photo 1: Albritton Middle School Entrance



Photo 2: ADA Non-compliant Parking



Photo 3: Roof EJ Problem



Photo 4: ADA Non-compliant Drinking Fountain

ALBRITTON JUNIOR HIGH SCHOOL



Photo 5: Tennis Court in Poor Condition



Photo 6: Track in Poor Condition

BOWLEY ELEMENTARY SCHOOL



Photo 1: Bowley Elementary Sign



Photo 2: Damaged Roofing



Photo 3: Damaged Soffit

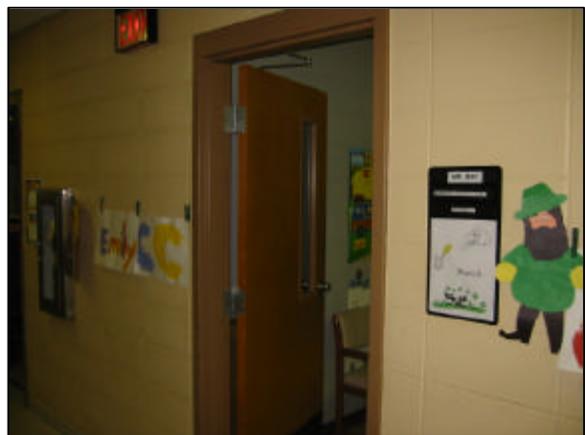


Photo 4: ADA Non-compliant Door

BOWLEY ELEMENTARY SCHOOL



Photo 5: Compliant Playground



Photo 6: ADA Non-compliant Drinking Fountain

BUTNER ELEMENTARY SCHOOL



Photo 1: Butner Elementary Entrance



Photo 2: Damaged Masonry



Photo 3: ADA Non-compliant Parking



Photo 4: ADA Non-compliant Exit/Entrance

BUTNER ELEMENTARY SCHOOL



Photo 5: ADA Non-compliant Door



Photo 6: Condenser in Poor Condition



Photo 7: ADA Non-compliant Drinking Fountain



Photo 8: Damaged Coping

DEVERS ELEMENTARY SCHOOL



Photo 1: Devers Elementary Sign



Photo 2: Topography/Drainage Problems



Photo 3: Drainage Problems



Photo 4: Damaged Masonry

DEVERS ELEMENTARY SCHOOL



Photo 5: Water Retention Problem



Photo 6: ADA Non-compliant Exit/Entrance



Photo 7: Brick Crack at Multipurpose Room



Photo 8: ADA Non-compliant Play Area

HOLBROOK ELEMENTARY SCHOOL



Photo 1: Holbrook Elementary Sign



Photo 2: Drainage Problem



Photo 3: ADA Non-compliant Interior Sign



Photo 4: ADA Non-compliant Exit/Entrance

HOLBROOK ELEMENTARY SCHOOL



Photo 5: ADA and Life Safety Code Non-compliant Door



Photo 6: Damaged Coping

IRWIN MIDDLE SCHOOL



Photo 1: Irwin Middle School Sign



Photo 2: Non-rated Corridor Glass



Photo 3: Deteriorated Chimney



Photo 4: Poor Lighting

IRWIN MIDDLE SCHOOL



Photo 5: ADA Non-compliant Door and Signage



Photo 6: Deteriorated Exterior Ductwork



Photo 7: Old Condensing Units



Photo 8: ADA Non-compliant Play Area

MCNAIR ELEMENTARY SCHOOL



Photo 1: McNair Elementary Sign



Photo 2: Old Fan Coil Units



Photo 3: Non-Life Safety Compliant Kitchen Hood



Photo 4: Poor Classroom Lighting

MCNAIR ELEMENTARY SCHOOL



Photo 5: ADA Non-compliant Door and Life Safety Code Non-compliant louver



Photo 6: Drainage Problem at Foundation Wall



Photo 7: ADA Non-compliant Drinking Fountain



Photo 8: Cracked Concrete Column Cap

MURRAY ELEMENTARY SCHOOL



Photo 1: Murray Elementary Sign



Photo 2: ADA Non-accessible Entry



Photo 3: Exhaust Only Kitchen Hood



Photo 4: ADA Non-compliant Door, Signage and Life Safety Code Non-compliant Louvers

MURRAY ELEMENTARY SCHOOL



Photo 5: ADA Non-compliant Drinking Fountains



Photo 6: Old Pad Mounted Condensers



Photo 7: ADA Non-compliant Play Areas

POPE ELEMENTARY SCHOOL



Photo 1: Pope Elementary Sign



Photo 2: Damaged Walkway



Photo 3: ADA Non-compliant Parking



Photo 4: Moisture Problem at Condenser

POPE ELEMENTARY SCHOOL



Photo 5: Concrete Column Damage



Photo 6: Damaged Soffit



Photo 7: ADA Non-compliant Drinking Fountain



Photo 8: ADA Non-compliant Play Area