BEN EIELSON JUNIOR/SENIOR HIGH SCHOOL

Facility Condition Assessment Report

SCHOOL SUMMARY	
Date of Assessment	09-January-2018
Year Built[1]	1962 - 1980
GSF	103,401
Current Condition	
Condition Index	89%
Q-Rating	Q-2
Forecast Condition (FY2023)	
Condition Index	76%
Q-Rating	Q-3

[1] *Indicates range of dates construction was present on campus*

FUNCTIONAL ADEQUACY SUMMARY	
Enrollment	351
LEA Reported Capacity	616
Calculated Capacity	615

CONSTRUCTION TYPE SUMMARY *(Building Count)*			
Perm	Semi	Temp	Relo
1	1	0	5

I. INTRODUCTION

Ben Eielson Junior/Senior High School is located at Eielson Air Force Base, Alaska. This school services 351 students in grades Seventh through Twelfth.

This report provides a summary of findings for the physical condition and functional adequacy assessment of buildings at this school.

The physical condition assessment includes a general description of typical building systems found on campus and includes current (FY2018) conditions and forecast (FY2023) conditions. When multiple types of a system are present, the predominant system is shown.

Following Office of the Secretary of Defense (OSD) Facility Sustainment Model guidelines, and consistent with Department of Defense Education Activity (DoDEA) practice, this assessment uses Condition Index (CI) and Quality Ratings (Q-Ratings) as a standard of measure to assess the condition of all public schools located on Department of Defense installations. The CI and associated Q-Ratings are calculated as the ratio of maintenance and repair needs (requirements) to plant replacement value. The resulting percentages are then aligned against the OSD Q-Rating guidance to determine the overall rating of the facility. Q-Ratings will be developed for Permanent (Perm) and Semi-Permanent (Semi)

types of construction only. Q-Ratings will not be developed for Temporary (Temp) and Relocatable (Relo) types of construction. Definitions for types of construction are: a) Permanent – expected to be used for more than 25 years; b) Semi-permanent – expected to be used 5 to 25 years; c) Temporary – expected to be used less than 5 years; and d) Relocatable – designed for specific purpose of being readily moved, erected, disassembled, stored, and reused without structural damage and a minimum of refurbishment.

The functional adequacy assessment includes two parts: spatial adequacy and capacity. Spatial adequacy examines the size of core spaces within the facility compared to the adopted educational specification and how these spaces affect the school's capacity and learning environment. School capacity calculations consider the instructional spaces and sizes of the cafeteria and kitchen.

Note: Details of the standards and processes used are presented in Appendix A, Facility Condition Assessment Standards and Processes.

II. SCHOOL PHYSICAL DESCRIPTION

a. STRUCTURAL/EXTERIOR ENCLOSURE: The building exterior is primarily exterior insulation finishing system (EIFS). The predominant roofing system is cementitious panels. Exterior doors are predominantly pre-finished aluminum with glazing. Window systems are mostly double pane glass mounted on vinyl.

b. INTERIORS: Flooring systems used include resilient tile, wood, ceramic tile and carpet. Walls are generally painted surfaces. Ceilings are predominantly exposed structure.

c. MECHANICAL: Campus facilities have heating which is typically provided by offsite steam. No campus facilities have air conditioning.

d. ELECTRICAL: Major electrical upgrades have been completed to support the computer network, but most wiring appears to be original. Most lighting is surface mounted fixtures with fluorescent lamps. Ground-fault circuit interrupter (GFCI) receptacles appear to be present in required locations. The campus has an intercom system. In addition, the campus has a security system.

e. PLUMBING: Plumbing fixtures have been replaced and piping has been partially upgraded. Domestic hot water is typically provided by offsite steam.

III. ASSESSMENT FINDINGS

The current Q-Rating for Ben Eielson Junior/Senior High School is Q-2; enrollment at the time of the site visit was 351; and the calculated capacity using DoDEA standards is 615.

The school was found to be well maintained and it provided a fair learning environment. As a result of interviews with district staff and visual observations, some building systems were found to be beyond useful service life. A summary of all systems that are beyond their useful service life is contained in Table 2, Expired Systems (FY2018). In addition, building systems forecasted to be beyond their expected service life by FY2023 are summarized in Table 3, Expired Systems (Forecast FY2023).

IV. QUALITY / CONDITION RATINGS

Table 1 shows building-specific information to include type of construction, year built, gross area, Condition Index (CI) and Q-Rating. Table 2 contains requirements and plant replacement values, which are used to calculate CI and Q-Ratings shown in Table 1.

TABLE 1: QUALITY / CONDITION RATINGS

				Current		Forecast (FY2023)	
Building[2]	Type of Construction	Year Built	GSF	CI (%)	Q-Rating	CI + 5 Years	Q-Rating
Main	Perm	1962	103,200	89%	Q-2	76%	Q-3
Press Box	Semi	1980	201	83%	Q-2	77%	Q-3

[2] *Building naming convention in agreement with local education agency.*

V. SUMMARY OF EXPIRED SYSTEMS (FY2018)

Table 2 reflects building systems that are beyond service life and that should be replaced now. Please note requirements and plant replacement values are used to calculate CI and Q-Ratings in Table 1.

The PRV and maintenance and repair requirements should be considered a representative value and should not be used for any other purpose than to calculate CI. Actual construction costs may deviate from the current published dollar values due to local market fluctuations and any unique building specifications. In the event a facility is to be replaced or renovated, a more detailed cost estimate must be completed to validate funding.

The requirement dollars reflect the estimated cost of necessary maintenance and repairs generated from the cost models established for each building assessed. See Appendix A for additional detail. Maintenance and repair requirements consist of the work necessary to ensure the asset is restored to a condition substantially equivalent to the originally intended and designed capacity, efficiency or capability.

The Plant Replacement Value (PRV) is calculated using industry and DoD standard methodology. According to DoD Pricing Guide, PRV represents the cost to design and construct a notional facility to current standards to replace an existing facility at the same location. The PRV represents the sum of the current estimated values of the building components.

TABLE 2: EXPIRED SYSTEMS (FY2018)

Building	Systems	Requirements	Plant Replacement Value (PRV)
Main	**Casework**	**$2,821,077**	
Main	**Computer Cooling**	**$376,246**	
Main	**Fire Alarm System**	**$360,889**	
Main	**Floor Finishes**	**$3,775,513**	

TABLE 2: EXPIRED SYSTEMS (FY2018)			
Building	**Systems**	**Requirements**	**Plant Replacement Value (PRV)**
Main	**LAN**	**$545,173**	
	Subtotal for Main:	**$7,878,898**	**$76,784,928**
Press Box	**Ceiling Finishes**	**$3,817**	
Press Box	**Exit Lights**	**$67**	
Press Box	**Exterior Doors**	**$823**	
Press Box	**Exterior Finishes**	**$467**	
Press Box	**Lighting**	**$4,995**	
Press Box	**Roof Coverings**	**$12,491**	
Press Box	**Wall Finishes**	**$2,109**	
	Subtotal for Press Box:	**$24,769**	**$149,552**
	Grand Total:	**$7,903,667**	

VI. SUMMARY OF EXPIRED SYSTEMS (FORECAST FY2023)

Table 3 reflects building systems that are still functional, but expected to be beyond useful service life by FY2023.

TABLE 3: EXPIRED SYSTEMS FORECAST (FY2023)

Building	Systems	Requirements
Main	Bleachers	$844,634
Main	Ceiling Finishes	$1,959,550
Main	Emergency Lights	$178,525
Main	Exit Lights	$34,553
Main	Exterior Finishes	$239,953
Main	Intercom / PA System	$383,924
Main	Plumbing Piping	$4,865,090
Main	Security System	$222,676
Main	Wall Finishes	$1,082,667
	Subtotal for Main:	$9,811,572
Press Box	Branch Circuits	$6,356
Press Box	Electrical Service/Distribution	$2,477
	Subtotal for Press Box:	$8,833
	Grand Total:	$9,820,405

VII. FUNCTIONAL ADEQUACY SUMMARY

The Functional Adequacy study for this facility includes school capacity and spatial analysis. The findings are summarized and deficiencies, where identified, are assigned a cost. Representative photos of interior spaces are provided at the end of the summary.

a. SCHOOL CAPACITY ANALYSIS

As part of the functional adequacy study, a student capacity was computed for this facility using the data collected by the field observers. Capacity calculations were based on the methodology discussed in the section called Facility Condition Assessment Standards and Processes. Capacities for the existing classroom count and kitchen serving line follow:

There are no classes in relocatable buildings; there are two classroom sized spaces that are not being used for instruction that contribute to permanent capacity. The school capacity calculation versus enrollment indicates that the facility needs zero additional classrooms to support the school's programs. The cost for additional classroom space is shown in Table 5 under the grade designation of 'ACN'.

CLASSROOM CAPACITY SUMMARY	
School District Reported Capacity	616
Calculated Capacity (permanent construction)	615
Calculated Capacity (all construction types)	615
Enrollment	351
Additional Permanent Classrooms Needed	0

Based on the information provided, the serving line appears to be adequate for the number of students participating. Lunch is served in the Cafeteria and the number and length of lunch periods does not appear to affect its use for other activities. The school does have a separate gymnasium. Corrective action for food service areas are summarized in Table 5: Functional Adequacy Opinion of Probable Cost.

KITCHEN SERVING LINE CAPACITY SUMMARY	
Number of Serving Lines	1
Number of Lunch Periods	2
Length of Lunch Periods (minutes)	35
Actual Lunches Served (total)	140
Kitchen Serving Line Capacity (total all periods)	350

b. SPATIAL ADEQUACY ANALYSIS

The space types studied and listed below in Table 4 were observed, measured on-site and compared with the sizes from the adopted educational specifications of the Department of Defense Education Activity.

The results of the spatial adequacy analysis indicate deficiencies in space at the school, according to the size standards provided in the DoDEA Educational Specifications. The food service area, including the kitchen and serving line, is too small per DoDEA standards. Spaces that are far below the DoDEA size standard include Family/Consumer Science and Food Service. The grades shown directly correlate to costs shown in Table 5. Spaces receiving grades of 'D' or 'F' are existing but too small. Spaces with a grade of 'R' are not provided but are required.

TABLE 4: SPATIAL ADEQUACY RESULTS

SPACE TYPE	Actual Provided (avg. sf)	Number Provided in School	DoDEA Ed Spec (sf)	Grade*
General Purpose Classroom (All)	813	22	900	A
Art Room (All)	1,613	2	1,650	A
Family / Consumer Science	1,182	1	2,000	F
Cafeteria / Cafetorium	4,694	1	2,991	A
Gymnasium / Multipurpose	20,827	2	11,856	A
Information Center	5,345	1	2,916	A
Music Suite	2,282	1	2,625	B
Science Classroom (Chemistry)	918	2	1,440	D
Science Classroom (General Lab)	841	2	1,200	D
Science Lab (Prep Room)	412	1	240	A
Computer Lab	971	2	1,300	D
Special Needs	971	2	1,600	D
Food Service	1,483	1	2,601	F

**Grade designations are explained in opinion of probable cost and are based on the DoDEA Educational Specifications only.*

c. FUNCTIONAL ADEQUACY OPINION OF PROBABLE COST

Table 5 reflects functional adequacy costs.

TABLE 5: FUNCTIONAL ADEQUACY OPINION OF PROBABLE COST

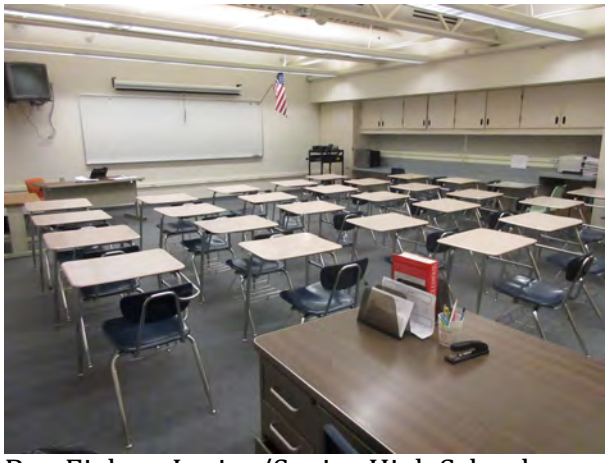
Grade	Designation	Space Type	Cost
R	Non-Existent, Required		$0
ACN	Additional Classrooms Needed	The school capacity calculation indicates that no additional classrooms are needed.	$0
F	Inadequate	Family/Consumer Science, Food Service.	$3,737,000
D	Marginal	Science Classroom Chemistry, Science Classroom General, Computer Lab, Special Needs.	$9,507,000
NR	Not Required, Not Provided	Kindergarten, Pre-Kindergarten, Auditorium, General Music Room.	
C	Good		
B	Very Good	Music Suite.	
A	Exceptional	General Purpose Classroom, Art Room, Cafeteria/Cafetorium, Gymnasium/Multipurpose Room, Information Center, Science Prep Room.	
		Total Opinion of Probable Cost	$13,244,000

Note that costs for functional adequacy deficiencies are provided for comparative purposes only and represent a rough order of magnitude of anticipated costs per square foot based on the DoD Facilities Pricing Guide for 2011. Projects to address noted inadequacies should be scoped and priced individually.

VIII. REPRESENTATIVE PHOTOGRAPHS

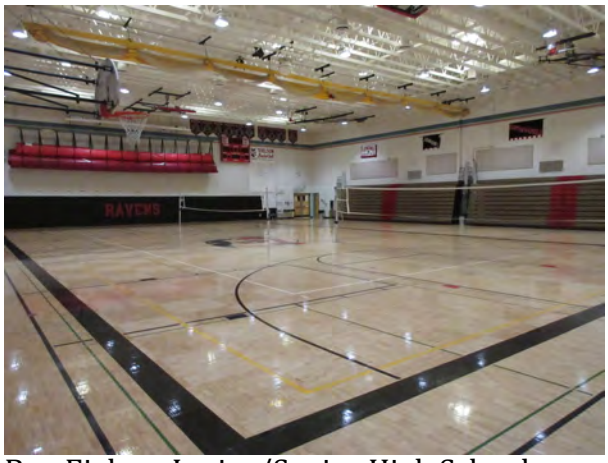
Ben Eielson Junior/Senior High School
Chemistry Lab

Ben Eielson Junior/Senior High School
Cafetorium



Ben Eielson Junior/Senior High School
Classroom

Ben Eielson Junior/Senior High School
Library



Ben Eielson Junior/Senior High School
Gym

Ben Eielson Junior/Senior High School
Computer Lab

Appendix A

FACILITY CONDITION ASSESSMENT STANDARDS AND PROCESSES

The following provides a summary of the standards and processes used for this project.

1.0 STANDARDS

Applied in varying degrees of rigor as defined in the scope of work, the following standards are the basis for the assessment and data analyses processes. The OSD Quality Rating (Q-Rating) for the physical condition of buildings and other guidance listed below set forth the standards for measurement of facility physical conditions.

Life safety building codes:

- International Building Code (IBC)
- National Electric Code (NEC)
- National Fire Protection Association (NFPA)

OSD Facilities Physical Q-Rating Guidance

OSD Facilities Sustainment Model (FSM)

DoD Facilities Pricing Guide for FY 2018 (UFC-3-701-01, Change 13, July 2017)

DoDEA Education Facilities Specifications (Ed Specs)

Q-Ratings and Facilities Sustainment Model (FSM)

Following FSM guidelines, and consistent with DoDEA practice this assessment uses Condition Index (CI) and Quality Ratings (Q-Ratings) as a standard of measure to assess the condition of all public schools located on Department of Defense installations. The CI, and associated Q-Ratings are calculated as the ratio of maintenance and repair needs (requirements) to Plant Replacement Value. The resulting percentages are then aligned against the OSD Q-Rating guidance to determine the overall rating of the facility. DoDEA has been an active participant in the Q-Rating working group since its formation and has contracted independent Architectural and Engineering (A/E) firms to assess school facilities since 2002.

2.0 PROCESSES

One of the ways DoDEA headquarters supports its organizations is by providing consistent tools and metrics of performance to assist them in their management of facility assets. The facility assessment processes used in this project follow basic procedures used to determine system level current and forecast physical conditions, and functional space-capacity adequacy. A functional adequacy assessment is useful in comparing instructional and support spaces in a school with a recognized standard, to evaluate the impact on capacity and learning environment.

FACILITY CONDITION ASSESSMENT STANDARDS AND PROCESSES

2.1 PHYSICAL FACILITY CONDITION ASSESSMENTS (FCA)

Physical FCAs are conducted in unison with Functional Adequacy (FA) FCAs.

The physical FCA provides engineers and facility planners with the data needed to help make informed decisions on facility sustainment. It is designed to support programming and budgeting for current and future capital renewal costs quickly and accurately. The physical FCA provides a mathematical-parametric model, confirmed by site survey, of a facility's component building systems to determine its current and predicted conditions based on its components' planned life cycles. It is a strategic tool for programming and budgeting capital renewal costs - a macro view of facility status. Capital renewal is the future, systematic replacement of building component and utility systems to extend their useful life - for example; a roof system will age to its planned life in 15 years and will need replacement. The physical FCA records information related to these systems, so that facility engineers are aware of the remaining useful life of the various components, and of the costs associated with capital renewal.

The physical FCAs are generally conducted at three levels of detail - Level 1, Level 2 and Level 3. The 'Level' relates to the amount of detail describing conditions, and corrections. Longer term (> 18 months) facility project planning requires less detail (Level 1) than details needed to support project definition for immediate correction (L2 and L3; within 6 to 18 months).

2.1.1 LEVEL 1 ASSESSMENT

Level 1 assessments are physical condition assessments in which deficiencies are categorized into two groups; architectural and mechanical, electrical and plumbing (MEP). Results include rough order of magnitude (ROM) cost estimates to replace systems and/or sub-systems that are currently beyond expected useful service life, and future renewal requirements for systems and/or sub-systems with remaining service life. A district engineer and facility planners can use this information to identify projects that may include repair or replacement of expired systems and sub-systems. In the case of currently expired systems, engineers and planners may use the ROM correction estimate for preliminary budgeting. The district engineer should then confirm the system or sub-systems are beyond are expired and no longer functioning adequately, and conduct a Level 3 assessment to determine specific scope and budget requirements for the project.

A Level 1 assessment predicts facility component life expirations using statistical guidelines developed by Building Owners and Managers Association (BOMA) and endorsed by national facility management organizations such as the Council for Educational Facility Planners International and the Association for Higher Education Facility Officers (AHEFO). Also used is R.S. Means, a nationally recognized reference for cost data, to model component building systems' costs. Deficiency and renewal cost estimates are adjusted using DoD local area cost factors (UFC-3-701-01, July 2017 UNIFIED FACILITIES CRITERIA (UFC) DoD FACILITIES PRICING GUIDE FOR FY 2017).

The Level 1 physical FCA generally consists of:

Build Cost Models

Developing and updating cost models of the buildings to be studied by reviewing existing documents and interviewing maintenance staffs to determine types, age, and components of buildings, and the last renewal of each component. Each building component is then assigned a useful life according to BOMA standards, or local experience, and estimated replacement cost using cost per square foot data provided by DoD and R.S. Means. However, a system's actual life can vary significantly from BOMA standards under existing conditions - lack of routine maintenance, environmental conditions, inappropriate design, or poor installation shortens system and building useful lives. System life cycles are adjusted to fit a facility manager's actual experience.

For example, BOMA uses five years to estimate the useful life of exterior painting. If a facility manager's standards are to repaint every three years in lieu of the BOMA recommended five years, adjustment to the model's life cycle criteria for painting is added.

As another example, a four-ply built-up roof may have a current renewal value of $2.09 per SF and a life expectancy of 25 years. If we find through records review or interviews that the existing roof is 30 years old in the example above, we know the roof is five years beyond its expected life. The result is an immediate need for capital renewal for the roof system using an area cost factor adjusted budget of $2.09 per SF plus the renewal premiums to complete the replacement. Renewal-replacement premiums may include cost for items such as installing a new built-up roof on an existing building that requires removing the old roof-premium costs for demolition, dumpster charges, replacement difficulty, special requirements, and other anticipated costs are added to complete the roof replacement cost projection.

FACILITY CONDITION ASSESSMENT STANDARDS AND PROCESSES

SAMPLE GENERIC COST MODEL

SYSTEM	SUB SYSTEM	% of TOTAL PRV	EXPECTED USEFUL LIFE	% RENEWED[1]
Architectural	Bleachers	1.31%	15	110.00%
Architectural	Casework	3.66%	20	110.00%
Architectural	Ceiling Finishes	2.47%	15	110.00%
Architectural	Exterior Doors	0.53%	15	110.00%
Architectural	Exterior Finishes	0.26%	7	125.00%
Architectural	Fixed Seating	1.01%	15	110.00%
Architectural	Exterior Walls	4.63%	70	0.00%
Architectural	Exterior Windows	3.31%	25	110.00%
Architectural	Floor Finishes	4.75%	12	110.00%
Architectural	Foundations	9.05%	70	0.00%
Architectural	Moveable Interior Walls/Partitions	1.00%	15	110.00%
Architectural	Interior Doors	2.15%	25	100.00%
Architectural	Student Lockers	1.90%	20	110.00%
Architectural	Interior Walls	7.69%	70	0.00%
Architectural	Roof Coverings	0.55%	25	120.00%
Architectural	Superstructure	15.02%	70	0.00%
Architectural	Wall Finishes	1.50%	25	100.00%
MEP	Branch Circuits	4.52%	20	100.00%
MEP	Electrical Service/Distribution	1.96%	30	90.00%
MEP	Elevators	0.55%	25	75.00%
MEP	Emergency Lights	0.33%	15	75.00%
MEP	Exit Lights	0.06%	20	75.00%
MEP	Fire Alarm System	0.50%	20	100.00%
MEP	Fire Sprinklers	1.38%	25	130.00%
MEP	HVAC Cooling Equipment	6.61%	10	110.00%
MEP	HVAC Distribution	2.23%	30	110.00%
MEP	HVAC Heating Equipment	2.54%	30	110.00%
MEP	HVAC Hydronics	2.84%	30	110.00%
MEP	Intercom / PA System	0.53%	15	100.00%
MEP	Kitchen Hoods	0.32%	25	0.00%
MEP	LAN	0.75%	15	100.00%
MEP	Lighting	3.56%	15	100.00%
MEP	Plumbing Fixtures	4.09%	20	110.00%
MEP	Plumbing Piping	6.13%	20	110.00%
MEP	Security System	0.31%	15	100.00%
		100.00%		

[1]Percent renewed is used to account for differences between new construction and restoration costs. When restoration of a system requires substantial demolition and disposal costs, percent renewed is greater than the cost of new construction (Percent renewed is greater than 100 percent). When restoration of a system allows use of some elements of the initial construction and demolition and disposal costs are minimal, the percent renewed is less than the cost of new construction (Percent renewed is less than 100 percent).

Confirm Cost Models

In this step, the contractor confirms the cost modeling developed in the preceding step. This is necessary because facilities upgrades and repairs are frequently not documented, and actual remaining life in a component may vary from manufacturers' guidelines. To confirm the cost model, the contractor surveys appropriate facility areas after developing the cost models to validate the data in the cost models. As an example, a component's record shows it to be expired, but a field survey may find that it was already replaced and not documented. Cost models are changed to reflect actual conditions and records observed on site. They are then able to identify obvious deficiencies that are out of sequence with the component's useful life (i.e., roof leaks in a new roof, failed window gaskets, under - or over - conditioned air in building). Data collected includes digital photographs of each building to help record the facility condition. Photographs are linked to individual building reports within the cost modeling software and are a part of the overall database.

2.1.2 FCA DATA ANALYSES

In multiple building portfolios and especially with widespread geographic portfolios, it is important to know how building conditions compare. The Condition Index (CI) and Quality Ratings (Q-Ratings) are determined for each building assessed using guidelines shown below, which are taken directly from the DoD Facility Quality-Rating guidance dated 5 September 2007.

Condition Index (CI) – A measure of the constructed asset's condition at a specific point in time with respect to physical condition and ability to support the current occupant or mission. CI is calculated as the ratio of estimated cost of maintenance and repair requirements to Plant Replacement Value (PRV). Maintenance and repair requirements consist of that work necessary to ensure that a constructed asset is restored to a condition substantially equivalent to the originally intended and designed capacity, efficiency or capability.

Facility Physical Quality Rating – Real Property Inventory data field that captures the CI rating.

FACILITY CONDITION ASSESSMENT STANDARDS AND PROCESSES

Plant Replacement Value – Cost of replacing the existing constructed asset at today's standards, adjusted for location (Area Cost Factor; ACF), overhead costs such as planning and design (P&D), supervision, inspection and overhead factor (SIOF), and other construction overhead costs (reference United Facilities Criteria (UFC) 3-701-10, para 3-2.2) The formula for PRV is:

Plant Replacement Value = Facility Quantity x Replacement Unit Cost x Area Cost Factor[1] x Historical Records Adjustment[2] x Planning and Design Factor[3] x Supervision Inspection and Overhead Factor[4] x Contingency Factor[5]

[1]A geographic location adjustment for costs of labor, material, and equipment, published in Chapter 4.
[2]An adjustment to account for increased costs for replacement of historical facilities or for construction in a historic district; the current value of the factor is 1.05.
[3] A factor to account for the planning and design of a facility; the current value of this factor is 1.09 for all but medical facilities and 1.13 for medical facilities.
[4] A factor to account for the supervision, inspection, and overhead activities associated with the management of a construction project; the current value of the factor is 1.057 for facilities in the continental US (CONUS) and 1.065 for facilities outside the continental US (OCONUS).
[5] A factor to account for construction contingencies; the current value of the factor is 1.05.

Rated Asset – Per Federal Real Property Council (FRPC) 2007 Guidance for Real Inventory Reporting, all buildings and structures are to be rated.

Requirements (for CI/Q-Rating Calculations) – Per FRPC, "repair needs" (numerator in the calculation) is "the amount necessary to ensure that a facility is restored to a condition substantially equivalent to the originally intended and designed capacity, efficiency, or capability." (FRPC 2007 Guidance for Real Inventory Reporting, page 10, paragraph 11) DoD Q-Rating calculations equate to work required to correct existing facility deficiencies through sustainment, restoration, and modernization, or replacement to achieve a serviceable condition fully able to support the current mission or function of the facility. The table below provides a quick reference for work to be "included" in the condition assessment formula numerator for computing Q-Ratings for existing assets. Also shown is work "excluded" from condition assessments for calculating Q-Ratings. Work is excluded when it is specifically required to convert a facility to another use; or when the result is new footprint construction (regardless of fund source, e.g. O&M, NAF, MILCON, etc.).

Formula Numerator	Facilities Sustainment	Facilities Restoration and Modernization
Included	Sustainment requirements that are present are materially degrading the condition of a facility	Repair requirements to restore or replace facility components, services systems, or meet codes or mission needs (except conversion)
Excluded	Regularly scheduled adjustments and inspections; preventive maintenance tasks	Conversion and "new footprint" construction

$$CI = 1 - \left(\frac{Requirements}{PRV}\right) \text{x } 100$$

Q-Rating Bands: Bands allow OSD, Military Services, and Defense Agencies/Activities to group facilities by condition for the purposes of developing investment strategies.

TABLE 1: Q-RATING DESCRIPTIONS		
Rating Band	**Calculated Rating** (Condition Index)	**General Description**
Q-1	100% to 90%	Facility new or well maintained (Good Condition)
Q-2	89% to 80%	Facility is satisfactorily maintained (Fair Condition)
Q-3	79% to 60%	Facility is under maintained (Poor Condition)
Q-4	59% to 0%	Facility should be considered for replacement (Failing Condition)

2.2 FUNCTIONAL ADEQUACY

The functional adequacy study is comprised of two parts: spatial adequacy, and capacity coupled with specialized instructional programs at secondary campuses. Spatial adequacy examines the size of core spaces within the facility compared to the DoDEA educational specifications, and how these spaces affect the school's capacity and learning environment. Information on state and local educational specifications is also collected. School capacity calculations consider the instructional spaces and the size of the cafeteria and kitchen. Middle schools and high schools may also offer professional and vocational preparatory courses that contribute to the educational environment. The survey includes interviews with administrative and facilities personnel with the Local Education Agencies, installation points of contact, and review of available construction drawings, space utilization plans, and current enrollment data. Representative photographs are taken to give readers a feel for instructional and support spaces at the facility.

2.2.1 SPATIAL ADEQUACY ANALYSIS

Typical school space types for the spatial adequacy analysis have been identified in the scope of work and include those that are common to the school categories identified. These spaces contribute heavily to the capacity of the school and the overall environment for learning. The spaces to be observed for the functional adequacy study are:

1. General Purpose Classroom
2. Kindergarten
3. Pre-Kindergarten/Sure Start
4. Art Room
5. Auditorium
6. Family Consumer Science
7. General Music Room
8. Cafeteria/Multipurpose Room
9. Gymnasium
10. Information Center/Media Center/Library
11. Music Suite (Band or Choral)
12. Science Classroom (Chemistry)
13. Science Classroom (General Lab)
14. Science Prep Room
15. Food Service/Kitchen
16. Computer Lab
17. Special Needs

The school space types listed were observed, measured on-site, and compared with the sizes from the DoDEA educational specifications.

The governing size standards used for this study are the DoDEA Educational Specifications, which represent a single and consistent benchmark for space type comparisons. A corresponding letter grade is shown for each space based on how closely it meets the DoDEA specifications. Neither the Local Education Agency nor State Education Agency educational specifications are used in determining grades or cost. The following ratios of actual size to DoDEA educational specifications summarize the letter grade rating system:

ROOM SPACE GRADING CRITERIA	
Grade	**Description**
A 90%-100%	**Exceptional:** Classroom exceeds the size standard and provides modern enhancements. Provides an exceptional learning environment.
B 80%-89%	**Very Good:** Classroom provides minimal standards in all areas.
C 75%-79%	**Good:** Classroom provides adequate learning environment, but does not meet all standards
D 60%-74%	**Marginal:** Classroom provides the minimally adequate learning environment.
F <59%	**Inadequate:** Classroom size does not provide a proper, adequate learning environment.

These ratios match the metric used by DoDEA. Spaces scoring a 'D' or 'F' do not meet the size standard for an adequate space and are assigned a cost for corrective action using the Uniform Facilities Pricing Guide (UFC 3-701-01, July 2017). The assessment also addresses key non-existent spaces such as auditoriums, cafeterias, gymnasium/multipurpose rooms, information centers and kitchens. Non-existent spaces are assigned a new construction cost for the entire square footage that is not provided.

2.2.1.1 COST MODEL FOR SPATIAL ADEQUACY

Costs for Marginal and Inadequately sized spaces (Grades D and F) are computed using the following formula:

Grade D or F Cost = (((Undersized Room Square Footage x MILCON $/SF) x 50%) + ((DoDEA Ed Spec Size Std x MILCON $/SF) x 50%)) x (Installation Area Location Factor) x (Escalation to 2020) x (Gross to Net SF ratio of 1.42) x (State's Gross Receipts or excise tax, if applicable)

Costs for Non-existent, required spaces (Grade R) are computed using the following formula:

Grade R Cost = (DoDEA Ed Spec Size Std x MILCON $/SF) x (Installation Area Location Factor) x (Escalation to 2020) x (Gross to Net SF ratio of 1.42) x (State's Gross Receipts or excise tax, if applicable)

It is important to note that costs reported do not consider the modernization costs that could be incurred to other spaces in the facility as a result of modifying or adding to the space types noted in this report that show a corrective cost. For example, if a cafeteria or kitchen is enlarged to meet space needs, it might trigger life safety code or ADA (Americans with Disabilities Act) improvements to the facilities or adjoining spaces that add cost. A detailed life safety and ADA review of facilities is not part of the scope of this report. Furthermore, there are cases where a local or state educational specification space type size is larger than the DoDEA size. These requirements can vary significantly as can their enforcement. As such, additional cost for these requirements is a potential that should be investigated further if improvements are planned. Costs for compliance with local and state education agency requirements are not included in this report. Information on these state and local educational specifications is part of the data collection phase so that additional analysis can be made if needed.

2.2.2 SCHOOL CAPACITY ANALYSIS

As part of the functional adequacy study, student capacities are computed for each facility using the data collected by the field assessment teams. The numbers of each contributing space are counted, measured, and their average size noted. Average sizes are based on a representative sampling of spaces. Capacity calculations are based on the DoDEA Facility Capacity Calculation Model. Two calculated capacity values are shown: one for the permanent construction type and one value for all building construction types. A capacity value from the Local Education Agency is also reported, when given. In facilities where inadequate space is identified to house the current student load, based on the DoDEA Capacity Model, a cost for the additional square footage needed to accommodate them is shown. This cost is only computed based on the permanent construction type capacity.

The DoDEA Capacity model calculates capacity for an elementary school as:

> (Number of General Purpose, Kindergarten, Pre-Kindergarten, and General Science Classrooms, including classroom-sized spaces that could be used as classrooms) x 19 students per space

The DoDEA Capacity model calculates capacity for middle schools and high schools based on the number of teaching stations for full and partial contributing spaces:

> **Middle Schools**
> (Number of Full Contributing Teaching Stations) x (22 students each) x (85% efficiency factor) + (Number of Partial Contributing Teaching Stations) x (10 students each)
>
> **High Schools**
> (Number of Full Contributing Teaching Stations) x (20 students each) x (85% efficiency factor) + (Number of Partial Contributing Teaching Stations) x (10 students each)

Examples of full contributing spaces include classrooms, science labs, computer labs, gym/multipurpose, music suite, information center, art rooms, and classroom-sized spaces that could be used as classrooms. An example of a partial contributing space is a special needs room.

An analysis of existing serving line capacity for the kitchen at each school is provided. Ideally, lunch periods will last less than 90 minutes. For the purposes of this study, when the total length of lunch period exceeds 90 minutes or has more than four different periods, the report will indicate that cafeteria usage for other activities, besides dining, may be limited. The serving line capacity shown is calculated using four students per minute at the elementary level and an average of five students per minute at the secondary level.

2.2.2.1 COST MODEL FOR CAPACITY

Additional Classrooms Needed (Grade ACN spaces) costs are also reported to address capacity shortfalls in the number of classrooms provided. The school's enrollment is compared to the permanent capacity calculated from the DoDEA Capacity Model. Where enrollment exceeds calculated permanent capacity, a number for additional classrooms is calculated using that difference in students, with the appropriate efficiency factor applied.

The cost for additional classrooms is:

> Grade ACN Cost = (DoDEA Ed Spec Size Std for General Purpose Classroom x MILCON $/SF) x (Installation Area Location Factor) x (Escalation to 2020) x (Gross to Net SF ratio of 1.42) x (State's Gross Receipts or excise tax, if applicable)

Costs for inadequate kitchen and cafeteria serving capacity are addressed within the cost model for inadequately sized or non-existent spaces.