

Review of Capital Construction Projects

for

Wyoming School Facilities Commission

**New Cowley Elementary School
Rocky Mountain Middle School Gym Renovation
Rocky Mountain High School Renovation
Big Horn County School District #1**

November 25, 2002

Prepared by:

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Executive Summary – New Cowley Elementary School

Project Authorization:

Enrollment: 225 students
Building SF: 29,925
SF / Student: 133 SF
Recommendation: As part of the Consolidate and Renovate approach approved for the District, consolidate three existing elementary schools, Cowley, Frannie and Byron into one new facility in Cowley.
Total Project Cost: \$ 4,769,872 (\$159.40 / SF)

Proposed Project:

Projected Enrollment: 209 students maximum (19 students / classroom)
Current classroom loading is 16 students / classroom.
Building SF: 42,310
SF / Student: 202 SF
Design Phase: Schematic Design, Sept. 30, 2002
Architect: Plan One / Architects
Cost Estimator: Groathouse Construction, Inc.
Total Project Cost: \$6,264,695 (\$161 / SF)

Adjustments / Reductions:

(based on Capital Construction Project Review completed November 5 – 8, 2002)

1. Reduce overall square footage to meet the new Elementary School Model, to a total of 36,040 SF. (172 SF / student)
2. Remove Pre-Kindergarten classroom
3. Delete track from project
4. Delete demolition of existing Frannie Elementary School from budget. The District will address the disposition of this facility outside of this project budget.
5. Add costs due to poor soil conditions to cover over-excavation of approximately 8 ft. and import of engineered fill.

Recommendation:

Approve 36,040 SF Elementary School for a total project cost of \$166.64 / SF. (\$161 + \$5.64 / SF for site soil conditions) Total project cost of \$6,005,705. This is an increase of 6,115 SF (approx. 20%) over the authorized square footage.

Discussion / Justification:

1. Project size is in conformance with the new Elementary School Model.
2. The cost increase is due to the following:
 - a. Additional square footage above the authorized amount. (6,115 SF)
 - b. Increased excavation costs due to poor soil conditions - \$ 5.64 / SF x 36,040 = \$203,265.

VALUE ENGINEERING SUMMARY

Cowley Elementary School

SiteTek Financial Arts, Inc.

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ITEM NO.	DESCRIPTION	COST SAVINGS				TOTAL RECOMMENDED COST SAVINGS	TOTAL IMPLEMENTED COST SAVINGS
		ORIGINAL COST	PROPOSED COST	INITIAL COST SAVINGS	O& M COST SAVINGS		
G	GENERAL					\$891,095	
P	PROGRAM					\$9,563	
SI	SITE					(\$145,850)	
A	ARCHITECTURAL					(\$739,085)	
S	STRUCTURAL					(\$76,737)	
M	MECHANICAL					\$99,400	
E	ELECTRICAL					\$63,900	
TOTAL SUMMARY						\$102,286	

VALUE ENGINEERING ALTERNATIVES	CATEGORY: GENERAL	Cowley Elementary School	SiteTek Financial Arts, Inc.	PAGE 2 OF 9
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CREATIVE / EVALUATION PHASE					DEVELOPMENT PHASE					IMPLEMENTATION PHASE			
ITEM NO.	DESCRIPTION	ADVANTAGES	DISADVANTAGES	SELECTED	COST SAVINGS				TOTAL RECOMMENDED COST SAVINGS	ACCEPT	REJECT	REVIEW	TOTAL IMPLEMENTED COST SAVINGS
					ORIGINAL COST	PROPOSED COST	INITIAL COST SAVINGS	O & M COST SAVINGS					
G-1	Adjust SF / CF estimate to reflect the current schematic design	Adjust SF / CF estimate to more accurately reflect site conditions and current design	Increase in project estimate	X	\$452,657	\$1,343,752	\$891,095		\$891,095				
TOTAL GENERAL									\$891,095				

VALUE ENGINEERING ALTERNATIVES	CATEGORY: PROGRAM	Cowley Elementary School	SiteTek Financial Arts, Inc.	PAGE 3 OF 9
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CREATIVE / EVALUATION PHASE					DEVELOPMENT PHASE				IMPLEMENTATION PHASE				
ITEM NO.	DESCRIPTION	ADVANTAGES	DISADVANTAGES	SELECTED	COST SAVINGS				TOTAL RECOMMENDED COST SAVINGS	ACCEPT	REJECT	REVIEW	TOTAL IMPLEMENTED COST SAVINGS
					ORIGINAL COST	PROPOSED COST	INITIAL COST SAVINGS	O & M COST SAVINGS					
P-1	Remove Pre-K classroom	Less SF, initial cost, maintenance and operating expense.	Less programs for small children	X					(\$121,158)				
P-2	Increase classroom size at grades 1 - 5 to 900 SF each	Better classroom space = Better learning environment	Increased cost.	X					\$65,291				
P-3	Re-design Exceptional Children suite, move Health office to Administration area	Provides better functional layout.	None	X					\$0				
P-4	Increase Art / Science room to 1400 SF	Better learning environment, more activities can take place.	Increase square footage and construction cost.	X					\$46,580				
P-5	Increase Gym storage	Better storage capabilities	Increased first costs	X					\$18,850				
P-6	Delete ramp at Kitchen, add restroom and kitchen office	Improves function of kitchen within same square footage	Loss of ramp.	X					\$0				
TOTAL PROGRAM									\$9,563				

VALUE ENGINEERING ALTERNATIVES	CATEGORY: SITE	Cowley Elementary School	SiteTek Financial Arts, Inc.	PAGE 4 OF 9
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CREATIVE / EVALUATION PHASE					DEVELOPMENT PHASE					IMPLEMENTATION PHASE			
ITEM NO.	DESCRIPTION	ADVANTAGES	DISADVANTAGES	SELECTED	COST SAVINGS				TOTAL RECOMMENDED COST SAVINGS	ACCEPT	REJECT	REVIEW	TOTAL IMPLEMENTED COST SAVINGS
					ORIGINAL COST	PROPOSED COST	INITIAL COST SAVINGS	O& M COST SAVINGS					
SI-1	Revise parking layouts - location, size, access												
SI-2	Add K-2 playground												
SI-3	Check fire lane												
SI-4	Consider moving footprint away from Division Street												
SI-5	Check off-site												
SI-6	Check adequacy of off-site water												
SI-7	Include costs to demolish Frannie building	More accurate schematic cost estimate.	Increase in project estimate	X					\$75,000				
SI-8	Remove track	Lowers cost	No track facility within District	X	\$350,000	\$72,000	(\$278,000)		(\$278,000)				
SI-9	Address stormwater retention												
SI-10	Add fence around track and field	Improved safety and security.	Additional costs	X			\$57,150		\$57,150				
TOTAL SITE									(\$145,850)				

VALUE ENGINEERING ALTERNATIVES	CATEGORY: ARCHITECTURAL	Cowley Elementary School	SiteTek Financial Arts, Inc.	PAGE 5 OF 9
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CREATIVE / EVALUATION PHASE					DEVELOPMENT PHASE					IMPLEMENTATION PHASE			
ITEM NO.	DESCRIPTION	ADVANTAGES	DISADVANTAGES	SELECTED	COST SAVINGS				TOTAL RECOMMENDED COST SAVINGS	ACCEPT	REJECT	REVIEW	TOTAL IMPLEMENTED COST SAVINGS
					ORIGINAL COST	PROPOSED COST	INITIAL COST SAVINGS	O & M COST SAVINGS					
A-1	Reduce length and configuration of skylights	Owner concern for operable skylights in snow climates.	Loss of natural light through roof	X			(\$32,004)		(\$32,004)				
A-2	Change material from brick masonry to other material at high walls (approximately 30% of exterior wall area)	Reduced cost – possibly more visual interest	Less durable, but durability not required at high areas.	X			(\$34,225)		(\$34,225)				
A-3	Add Cowley Stone accent at entrance to relate to existing buildings (combine with A-4)												
A-4	Reduce volume of building by revising roof design	Less wall height and cost, lower building profile fitting better into the residential neighborhood.	Less room for Mechanical.	X									
A-5	Reduce gymnasium to 5,480 SF	Reduced cost – less SF, less maintenance & utility cost	Reduced play area, not a regulation basketball court	X			(\$267,103)		(\$267,103)				
A-6	Synthetic floor in lieu of wood at gymnasium	Better floor for a variety of different activities including cafeteria	Not as well suited for basketball	X	\$47,676	\$27,400	(\$20,276)		(\$20,276)				
A-7	Reduce amount of glazing in exterior walls (%)	Lower cost, less heat gain / loss	Reduction in natural daylight	X			(\$33,335)		(\$33,335)				
A-8	Reduce depth of roof overhangs and covered areas	Less cost, fewer structural piers	Less covered area for protection of students	X			(\$47,625)		(\$47,625)				
A-9	Reduce size of entry area (vestibule)	Smaller building footprint	Less commons / circulation area	X			(\$32,310)		(\$32,310)				
SUB-TOTAL ARCHITECTURAL									(\$466,878)				

VALUE ENGINEERING ALTERNATIVES	CATEGORY: ARCHITECTURAL	Cowley Elementary School	SiteTek Financial Arts, Inc.	PAGE 6 OF 9
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CREATIVE / EVALUATION PHASE					DEVELOPMENT PHASE					IMPLEMENTATION PHASE			
ITEM NO.	DESCRIPTION	ADVANTAGES	DISADVANTAGES	SELECTED	COST SAVINGS				TOTAL RECOMMENDED COST SAVINGS	ACCEPT	REJECT	REVIEW	TOTAL IMPLEMENTED COST SAVINGS
					ORIGINAL COST	PROPOSED COST	INITIAL COST SAVINGS	O & M COST SAVINGS					
A-10	Reduce building perimeter & length - fill in negative areas, pull back entry vestibule			X									
A-11	Reduce main hallway width from 12 - 10 ft.	Reduces square footage and cost	Student congestion, inappropriate architectural statement for main corridor, "Galleria" concept not	X			(\$77,541)		(\$77,541)				
A-12	Add monument / entry sign												
A-13	Add fence at outdoor science area	Additional security for outdoor instructional space.	Slight increase in cost.	X	\$0	\$5,334	\$5,334		\$5,334				
A-14	Brick wainscot with exterior insulation and finish system (EIFS)			X					See A-2				
A-15	Use shingles in lieu of metal roof	Lower cost, better snow management	Change in aesthetic	X			(\$200,000)		(\$200,000)				
A-16	Evaluate ice and snow impact on roof design												
A-17	Use over excavation material to positively drain site away from building												
A-18	Add mow strip around building perimeter												
TOTAL ARCHITECTURAL									(\$739,085)				

VALUE ENGINEERING ALTERNATIVES	CATEGORY: STRUCTURAL	Cowley Elementary School	SiteTek Financial Arts, Inc.	PAGE 7 OF 9
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CREATIVE / EVALUATION PHASE					DEVELOPMENT PHASE				IMPLEMENTATION PHASE				
ITEM NO.	DESCRIPTION	ADVANTAGES	DISADVANTAGES	SELECTED	COST SAVINGS				TOTAL RECOMMENDED COST SAVINGS	ACCEPT	REJECT	REVIEW	TOTAL IMPLEMENTED COST SAVINGS
					ORIGINAL COST	PROPOSED COST	INITIAL COST SAVINGS	O & M COST SAVINGS					
S-1	Adjust cost estimate to reflect worst case foundation scenario	More accurate schematic cost estimate to account for site soil conditions.	Increases project estimate	X					See G-1				
S-2	Use spread footings, over excavation and concrete slab on engineered fill in lieu of worst case design												
S-3	Use pier foundations and concrete floor slab on engineered fill in lieu of worst case design												
S-4	Use metal studs for bearing in lieu of steel post & beam	Lower initial cost	Longer schedule, potential weather considerations (6 weeks of General Requirements at \$37,500)	X			(\$76,737)		(\$76,737)				
S-5	Use wood joists in lieu of steel			X									
S-6	Use steel stud walls w/ spread footings in lieu of CMU at gym												
S-7	Use catwalks and suspended mechanical units in lieu of structured mezzaines												
S-8	Consider alternatives for roof overhang framing (reduce # of piers, combine with A-8)			X									
S-9	Consider bolted ledger in lieu of formed concrete at joist bearing			X									
S-10	Add mechanical mezzanines to structural drawings	More accurate schematic cost estimate.	Increase in schematic cost estimate.	X					See G-1				
TOTAL STRUCTURAL									(\$76,737)				

VALUE ENGINEERING ALTERNATIVES	CATEGORY: MECHANICAL / PLUMBING	Cowley Elementary	SiteTek Financial Arts, Inc.	PAGE 1 OF 7
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CREATIVE / EVALUATION PHASE					DEVELOPMENT PHASE					IMPLEMENTATION PHASE			
ITEM NO.	DESCRIPTION	ADVANTAGES	DISADVANTAGES	SELECTED	COST SAVINGS				TOTAL RECOMMENDED COST SAVINGS	ACCEPT	REJECT	REVIEW	TOTAL IMPLEMENTED COST SAVINGS
					ORIGINAL COST	PROPOSED COST	INITIAL COST SAVINGS	O & M COST SAVINGS					
M-1	Consider natural ventilation in lieu of Air Conditioning												
M-2	Stand-Alone A/C system for Tech Head Room	Provides capacity to air condition this room year-around.	Costs more to install.	DS	\$0	\$2,500	\$2,500		\$2,500				
M-3	Separate Unit Ventilator for Kitchen.	Large UV serving Gym does not need to run when kitchen is in operation.	Costs more to install.	DS	\$0	\$5,200	\$5,200	\$450/yr	\$5,200				
M-4	Sensor Operated Flush Valves and Lav Faucets.	Saves water. Reduces vandalism problems.	Costs more to install.	DS	\$0	\$400	\$400		\$400				
M-5	Building Exhaust on EMS.			DS									
M-6	Add fire sprinklers to Entire Bldg.	Proposed cost includes fire pump and tank. Original costs includes piping and heads.		X	\$70,000	\$148,000	\$78,000		\$78,000				
M-7	Add Sinks w/ bubblers on classroom sinks.			DS	\$0	\$7,500	\$7,500		\$7,500				
M-8	Add 3 sinks in Art/Science Room.			X	\$0	\$3,800	\$3,800		\$3,800				
M-9	Add sink with acid waste in Science Room.			X	\$0	\$2,000	\$2,000		\$2,000				
M-10	Use dual circuited chiller.			DS									
TOTAL MECHANICAL / PLUMBING									\$99,400				

VALUE ENGINEERING ALTERNATIVES	CATEGORY: ELECTRICAL	Cowley Elementary	SiteTek Financial Arts, Inc.	PAGE 1 OF 7
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CREATIVE / EVALUATION PHASE					DEVELOPMENT PHASE					IMPLEMENTATION PHASE			
ITEM NO.	DESCRIPTION	ADVANTAGES	DISADVANTAGES	SELECTED	COST SAVINGS				TOTAL RECOMMENDED COST SAVINGS	ACCEPT	REJECT	REVIEW	TOTAL IMPLEMENTED COST SAVINGS
					ORIGINAL COST	PROPOSED COST	INITIAL COST SAVINGS	O & M COST SAVINGS					
E-1	Use HPS Exterior Lighting	Highest efficiency and long life lighting.	"Yellow" color lighting.	DS	no cost impact								
E-2	Put lighting on EMS	Saves energy.	Costs more to install.	DS	\$0	\$8,000	\$8,000		\$8,000				
E-3	Use Recessed fixtures in lieu of direct/indirect in classrooms.	Saves constr. Cost.	Not good for computer monitor viewing. More glare.	X	\$40,000	\$32,000	(\$8,000)		(\$8,000)				
E-4	Use Alum. Conductors for 100 amp circuits and larger.	Saves constr. Cost.	Not used in local area; contractor's not too familiar with installation procedures.	X			(\$2,000)		(\$2,000)				
E-5	Use Single tube Hot-5 fixtures in classrooms.	Reduces number of fixtures; saves constr. Cost.(reduces lamps, not number of fixtures)	May not provide lighting levels at design guidelines.at night	X	saves energy not const.cost			700/yr					
E-6	Use wire mold for computer stations.	More flexibility in location & number of computers that can be connected.	Costs more to install.	DS									
E-7	Explore 480 volt service availability.	Smaller conduit & wire sizes. More energy efficient.	480 volt service not available.										
E-8	Size SES for future expansion.	Saves constr. Cost to add additional power capacity in the future.	Costs more to install.	DS									
E-9	Add CCTV & Low freq. FM system in classrooms.	Provides more teaching capabilities; Students learning experience enhanced.	Costs more to install. About \$2000/class for audio, about \$1500/class for CCTV	X	\$0	\$66,500	\$66,500		\$66,500				
E-10	Automatic Ext. Door locking & Pod Doors.(elec.connection) (For 8 exterior entry doors only, does not include classroom exit doors)	Enhances security of school.	Costs more to install. (Cost does not include hardware, it is for electrical connection only)	X	\$0	\$2,400	\$2,400		\$2,400				
E-11	Provide lighting in classrooms to account for daylighting.	Reduces cost of lighting. Saves energy costs, but not necessarily construction cost	Reduces artificial lighting levels below design guidelines.	X	\$40,000	\$37,000	(\$3,000)	\$600/yr	(\$3,000)				
E-12	Confirm allowance for stage lighting.	Makes SD cost estimate more accurate.	Adds cost to project.	X	\$0	from theater consultant							
TOTAL ELECTRICAL									\$63,900				

VALUE ENGINEERING ALTERNATIVE			No. A-1
PROJECT: Cowley Elementary School			
ITEM: Reduce length of skylights			
ORIGINAL DESIGN: 14 – 10 ft. skylights 4 ft. wide			
ALTERNATIVE DESIGN: Eliminate all skylights			
DISCUSSION / JUSTIFICATION: (Advantages / Disadvantages)			
Advantages: Owner concern for operable skylights in snow climates.			
Disadvantages: Loss of natural light through roof			
COST SUMMARY	CAPITAL COST	ANNUAL O&M	TOTAL SAVINGS
Original Design	\$	\$	\$ 32,004
Proposed Design	\$	\$	\$ - 0 -
Savings	\$	\$	\$ 32,004
ANNUAL O&M SAVINGS			\$
TOTAL SAVINGS			\$ 32,004

VALUE ENGINEERING ALTERNATIVE		No. A-2	
PROJECT: Cowley Elementary School			
ITEM: Change material at high walls			
ORIGINAL DESIGN: Full height brick veneer approximately 22,000 SF total area			
ALTERNATIVE DESIGN: Reduce brick to 30% would change 15,400 SF of brick to exterior insulation & finish system or metal siding (\$1.75 / SF difference)			
DISCUSSION / JUSTIFICATION: (Advantages / Disadvantages)			
Advantages: Reduced cost – possibly more visual interest			
Disadvantages: Less durable, but durability not required at high areas.			
COST SUMMARY	CAPITAL COST	ANNUAL O&M	TOTAL SAVINGS
Original Design	\$	\$	\$
Proposed Design	\$	\$	\$
Savings	\$	\$	\$ 34,225
ANNUAL O&M SAVINGS			\$
TOTAL SAVINGS			\$ 34,225

VALUE ENGINEERING ALTERNATIVE		No. A-4	
PROJECT: Cowley Elementary School			
ITEM: Reduce volume of building by revising roof design			
ORIGINAL DESIGN: See Sheets A2.1 & A4.1			
ALTERNATIVE DESIGN: See revised sketches			
DISCUSSION / JUSTIFICATION: (Advantages / Disadvantages)			
Advantages: Less wall height and cost, lower building profile fitting better into the residential neighborhood.			
Disadvantages: Less room for Mechanical.			
COST SUMMARY	CAPITAL COST	ANNUAL O&M	TOTAL SAVINGS
Original Design	\$	\$	\$
Proposed Design	\$	\$	\$
Savings	\$	\$	\$
ANNUAL O&M SAVINGS			\$
TOTAL SAVINGS			\$

VALUE ENGINEERING ALTERNATIVE		No. A-5	
PROJECT: Cowley Elementary School			
ITEM: Design elementary school gymnasium at 5,480 SF			
ORIGINAL DESIGN: 8,000 SF gym			
ALTERNATIVE DESIGN: 5,480 SF gym (at \$106 / SF)			
DISCUSSION / JUSTIFICATION: (Advantages / Disadvantages)			
Advantages: Reduced cost – less SF, less maintenance & utility cost			
Disadvantages: Reduced play area, not a regulation basketball court			
COST SUMMARY	CAPITAL COST	ANNUAL O&M	TOTAL SAVINGS
Original Design	\$	\$	\$
Proposed Design	\$	\$	\$
Savings	\$	\$	\$
ANNUAL O&M SAVINGS			\$
TOTAL SAVINGS			\$ 267,103

VALUE ENGINEERING ALTERNATIVE			No. A-6
PROJECT: Cowley Elementary School			
ITEM: Synthetic floor in lieu of wood at gymnasium			
ORIGINAL DESIGN: Maple wood sports floor (5,480 SF)			
ALTERNATIVE DESIGN: Synthetic multi-use flooring (5,480 SF)			
DISCUSSION / JUSTIFICATION: (Advantages / Disadvantages)			
Advantages: Better floor for a variety of different activities including cafeteria.			
Disadvantages: Not as well suited for basketball			
COST SUMMARY	CAPITAL COST	ANNUAL O&M	TOTAL SAVINGS
Original Design	\$	\$	\$ 47,676
Proposed Design	\$	\$	\$ 27,400
Savings	\$	\$	\$ 20,276
ANNUAL O&M SAVINGS			\$
TOTAL SAVINGS			\$ 20,276

VALUE ENGINEERING ALTERNATIVE			No. A-7
PROJECT: Cowley Elementary School			
ITEM: Reduce amount of glazing in exterior walls			
ORIGINAL DESIGN: See Schematic elevations.			
ALTERNATIVE DESIGN: Reduce approximately 750 SF of glazing (at \$35 / SF)			
DISCUSSION / JUSTIFICATION: (Advantages / Disadvantages)			
Advantages: Lower cost, less heat gain / loss			
Disadvantages: Reduction in natural daylight			
COST SUMMARY	CAPITAL COST	ANNUAL O&M	TOTAL SAVINGS
Original Design	\$	\$	\$
Proposed Design	\$	\$	\$
Savings	\$	\$	\$ 33,335
ANNUAL O&M SAVINGS			\$
TOTAL SAVINGS			\$ 33,335

VALUE ENGINEERING ALTERNATIVE		No. A-8	
PROJECT: Cowley Elementary School			
ITEM: Reduce depth of roof overhangs and covered areas			
ORIGINAL DESIGN: Large canopy at front entrance			
ALTERNATIVE DESIGN: Reduce canopy by 2,000 SF (\$15 / SF)			
DISCUSSION / JUSTIFICATION: (Advantages / Disadvantages)			
Advantages: Less cost, fewer structural piers			
Disadvantages: Less covered area for protection of students			
COST SUMMARY	CAPITAL COST	ANNUAL O&M	TOTAL SAVINGS
Original Design	\$	\$	\$
Proposed Design	\$	\$	\$
Savings	\$	\$	\$ 47,625
ANNUAL O&M SAVINGS			\$
TOTAL SAVINGS			\$ 47,625

VALUE ENGINEERING ALTERNATIVE		No. A-9	
PROJECT: Cowley Elementary School			
ITEM: Reduce size of entry area & vestibule			
ORIGINAL DESIGN: Entry area of 1010 SF.			
ALTERNATIVE DESIGN: Reduce lobby area by 240 SF (at \$134 / SF)			
DISCUSSION / JUSTIFICATION: (Advantages / Disadvantages)			
Advantages: Smaller building footprint			
Disadvantages: Less commons / circulation area			
COST SUMMARY	CAPITAL COST	ANNUAL O&M	TOTAL SAVINGS
Original Design	\$	\$	\$
Proposed Design	\$	\$	\$
Savings	\$	\$	\$ 32,310
ANNUAL O&M SAVINGS			\$
TOTAL SAVINGS			\$ 32,310

VALUE ENGINEERING ALTERNATIVE		No. A-10	
PROJECT: Cowley Elementary School			
ITEM: Reduce building perimeter / length & "negative" areas			
ORIGINAL DESIGN: See Schematic floor plans.			
ALTERNATIVE DESIGN: Covered in items A-5, A-9 & A-11			
DISCUSSION / JUSTIFICATION: (Advantages / Disadvantages)			
Advantages:			
Disadvantages:			
COST SUMMARY	CAPITAL COST	ANNUAL O&M	TOTAL SAVINGS
Original Design	\$	\$	\$
Proposed Design	\$	\$	\$
Savings	\$	\$	\$
ANNUAL O&M SAVINGS			\$
TOTAL SAVINGS			\$

VALUE ENGINEERING ALTERNATIVE		No. A-11	
PROJECT: Cowley Elementary School			
ITEM: Reduce hallway width to 10 ft.			
ORIGINAL DESIGN: 12 ft. corridors			
ALTERNATIVE DESIGN: 10 ft. corridor. Reduces footprint by 576 SF. (at \$106 / SF)			
DISCUSSION / JUSTIFICATION: (Advantages / Disadvantages)			
Advantages: Reduces square footage and cost			
Disadvantages: Student congestion, inappropriate architectural statement for main corridor, "Galleria" concept not achieved			
COST SUMMARY	CAPITAL COST	ANNUAL O&M	TOTAL SAVINGS
Original Design	\$	\$	\$
Proposed Design	\$	\$	\$
Savings	\$	\$	\$ 77,541
ANNUAL O&M SAVINGS			\$
TOTAL SAVINGS			\$ 77,541

VALUE ENGINEERING ALTERNATIVE		No. A-13	
PROJECT: Cowley Elementary School			
ITEM: Add fence to outdoor science room			
ORIGINAL DESIGN: No fencing			
ALTERNATIVE DESIGN: 150 ft. of vinyl coated chain link fence, 6 ft. high			
DISCUSSION / JUSTIFICATION: (Advantages / Disadvantages)			
Advantages: Additional security for outdoor instructional space.			
Disadvantages: Slight increase in cost.			
COST SUMMARY	CAPITAL COST	ANNUAL O&M	TOTAL SAVINGS
Original Design	\$	\$	\$
Proposed Design	\$	\$	\$
Savings	\$	\$	\$
ANNUAL O&M SAVINGS			\$
TOTAL ADD			\$ 5,334

VALUE ENGINEERING ALTERNATIVE			No. A-14
PROJECT: Cowley Elementary School			
ITEM: Use brick wainscot with exterior insulation and finish system			
ORIGINAL DESIGN: See Schematic floor plan.			
ALTERNATIVE DESIGN: Addressed in A-2			
DISCUSSION / JUSTIFICATION: (Advantages / Disadvantages)			
Advantages:			
Disadvantages:			
COST SUMMARY	CAPITAL COST	ANNUAL O&M	TOTAL SAVINGS
Original Design	\$	\$	\$
Proposed Design	\$	\$	\$
Savings	\$	\$	\$
ANNUAL O&M SAVINGS			\$
TOTAL SAVINGS			(See A-2)

VALUE ENGINEERING ALTERNATIVE		No. A-15	
PROJECT: Cowley Elementary School			
ITEM: Shingles in lieu of metal roofing			
ORIGINAL DESIGN: Standing seam metal roof			
ALTERNATIVE DESIGN: 50 year asphalt shingles			
DISCUSSION / JUSTIFICATION: (Advantages / Disadvantages)			
Advantages: Lower cost, better snow management			
Disadvantages: Change in aesthetic.			
COST SUMMARY	CAPITAL COST	ANNUAL O&M	TOTAL SAVINGS
Original Design	\$	\$	\$
Proposed Design	\$	\$	\$
Savings	\$	\$	\$
ANNUAL O&M SAVINGS			\$
TOTAL SAVINGS			\$ 200,000

VALUE ENGINEERING ALTERNATIVE		No. P-1	
PROJECT: Cowley Elementary School			
ITEM: Remove Pre-Kindergarten Classroom			
ORIGINAL DESIGN:		Included two Kindergarten classrooms for full-day kindergarten and a pre-school	
ALTERNATIVE DESIGN:		Delete Pre-Kindergarten Classroom	
DISCUSSION / JUSTIFICATION: (Advantages / Disadvantages)			
Advantages: Less SF, initial cost, maintenance and operating expense.			
Disadvantages: Less programs for small children			
COST SUMMARY	CAPITAL COST	ANNUAL O&M	TOTAL SAVINGS
Original Design	\$	\$	\$
Proposed Design	\$	\$	\$
Savings	\$	\$	\$ 121,158
ANNUAL O&M SAVINGS			\$
TOTAL SAVINGS			\$ 121,158

VALUE ENGINEERING ALTERNATIVE		No. P-2	
PROJECT: Cowley Elementary School			
ITEM: Increase classroom size for grades 1 – 5 to 900 SF.			
ORIGINAL DESIGN: Pre-K: 2 rooms at 840 SF Grades 3 – 5 at 865 SF			
ALTERNATIVE DESIGN: All classrooms to be increased to 900 SF. Adds a total of 435 SF to the project			
DISCUSSION / JUSTIFICATION: (Advantages / Disadvantages)			
Advantages: Better classroom space = Better learning environment			
Disadvantages: Increased cost.			
COST SUMMARY	CAPITAL COST	ANNUAL O&M	TOTAL SAVINGS
Original Design	\$	\$	\$
Proposed Design	\$	\$	\$
Savings	\$	\$	\$
ANNUAL O&M SAVINGS			\$
TOTAL ADD			\$ 65,291

VALUE ENGINEERING ALTERNATIVE		No. P-3	
PROJECT: Cowley Elementary School			
ITEM: Rework Exceptional Children Suite, move health office to administration			
ORIGINAL DESIGN: See schematic drawings.			
ALTERNATIVE DESIGN: Plan revisions only – no increase or decrease in square footage			
DISCUSSION / JUSTIFICATION: (Advantages / Disadvantages)			
Advantages: Provides better functional layout.			
Disadvantages: None			
COST SUMMARY	CAPITAL COST	ANNUAL O&M	TOTAL SAVINGS
Original Design	\$	\$	\$
Proposed Design	\$	\$	\$
Savings	\$	\$	\$
ANNUAL O&M SAVINGS			\$
TOTAL SAVINGS			\$ - 0 -

VALUE ENGINEERING ALTERNATIVE		No. P-4	
PROJECT: Cowley Elementary School			
ITEM: Increase Art / Science Room to 1400 SF			
ORIGINAL DESIGN: Art / Science Room of 1054 SF			
ALTERNATIVE DESIGN: Increase Art / Science Room to 1400 SF. Adds 346 SF to project.			
DISCUSSION / JUSTIFICATION: (Advantages / Disadvantages)			
Advantages: Better learning environment, more activities can take place.			
Disadvantages: Increase square footage and construction cost.			
COST SUMMARY	CAPITAL COST	ANNUAL O&M	TOTAL SAVINGS
Original Design	\$	\$	\$
Proposed Design	\$	\$	\$
Savings	\$	\$	\$
ANNUAL O&M SAVINGS			\$
TOTAL ADD			\$ 46,580

VALUE ENGINEERING ALTERNATIVE		No. P-5	
PROJECT: Cowley Elementary School			
ITEM: Increase Gym Storage			
ORIGINAL DESIGN: Physical Education Storage of 160 SF.			
ALTERNATIVE DESIGN: Increase Gym Storage to 300 SF (increase of 140 SF)			
DISCUSSION / JUSTIFICATION: (Advantages / Disadvantages)			
Advantages: Better storage capabilities			
Disadvantages: Increased first costs.			
COST SUMMARY	CAPITAL COST	ANNUAL O&M	TOTAL SAVINGS
Original Design	\$	\$	\$
Proposed Design	\$	\$	\$
Savings	\$	\$	\$ 18,850
ANNUAL O&M SAVINGS			\$
TOTAL ADD			\$ 18,850

VALUE ENGINEERING ALTERNATIVE		No. P-6	
PROJECT: Cowley Elementary School			
ITEM: Delete ramp at kitchen – add toilet & office			
ORIGINAL DESIGN: Ramp up to serving line for younger students.			
ALTERNATIVE DESIGN: Delete ramp, use area for kitchen office and toilet			
DISCUSSION / JUSTIFICATION: (Advantages / Disadvantages)			
Advantages: Improves function of kitchen within same square footage.			
Disadvantages: Loss of ramp.			
COST SUMMARY	CAPITAL COST	ANNUAL O&M	TOTAL SAVINGS
Original Design	\$	\$	\$
Proposed Design	\$	\$	\$
Savings	\$	\$	\$
ANNUAL O&M SAVINGS			\$
TOTAL SAVINGS			\$ - 0 -

VALUE ENGINEERING ALTERNATIVE		No. G-1	
PROJECT: Cowley Elementary School			
ITEM: Adjust SF / CF estimate to reflect latest schematic drawings			
ORIGINAL DESIGN:	Current cost estimate was based on an earlier design concept.		
	Flat roof, EPDM roof: \$4.50 / SF =		\$ 190,395
	Standard footings, foundation, slab on grade:		\$ 262,262
	No skylights		\$ 0
	2 small mechanical mezzanines		\$ 0
			<u>\$ 452,657</u>
ALTERNATIVE DESIGN:	Sloped Roof, metal roofing: 50,000 SF @ \$11/SF = \$ 550,000		
	Deep foundation (30 ft. cased piers)		\$ 634,152
	Skylights: 560 SF @ \$45 / SF =		\$ 25,200
	Add 1,920 SF @ \$70 / SF =		\$ 134,400
			<u>\$1,343,752</u>
DISCUSSION / JUSTIFICATION:			
(Advantages / Disadvantages)			
Advantages: Adjust SF / CF estimate to more accurately reflect site conditions and current design			
Disadvantages: Increase in project estimate.			
COST SUMMARY	CAPITAL COST	ANNUAL O&M	TOTAL SAVINGS
Original Design	\$	\$	\$ 452,657
Proposed Design	\$	\$	\$ 1,343,752
Savings	\$	\$	\$
ANNUAL O&M SAVINGS			\$
TOTAL ADD			\$ 891,095

VALUE ENGINEERING ALTERNATIVE		No. SI-7	
PROJECT: Cowley Elementary School			
ITEM: Include costs to demolish Frannie School building			
ORIGINAL DESIGN:		Demolition costs for Frannie School are not included in the current estimate	
ALTERNATIVE DESIGN:		Add demolition and abatement costs to schematic estimate	
DISCUSSION / JUSTIFICATION: (Advantages / Disadvantages)			
Advantages: More accurate schematic cost estimate.			
Disadvantages: Increase in project estimate			
COST SUMMARY	CAPITAL COST	ANNUAL O&M	TOTAL SAVINGS
Original Design	\$	\$	\$ - 0 -
Proposed Design	\$	\$	\$ 25,000
Add	\$	\$	\$ 25,000
ANNUAL O&M SAVINGS			\$
TOTAL ADD			\$ 25,000

VALUE ENGINEERING ALTERNATIVE			No. SI-8
PROJECT: Cowley Elementary School			
ITEM: Remove running track			
ORIGINAL DESIGN: Full size competition track			
ALTERNATIVE DESIGN: No track, grass play area remains			
DISCUSSION / JUSTIFICATION: (Advantages / Disadvantages)			
Advantages: Lowers cost			
Disadvantages: No track facility within District			
COST SUMMARY	CAPITAL COST	ANNUAL O&M	TOTAL SAVINGS
Original Design	\$	\$	\$ 350,000
Proposed Design	\$	\$	\$ 72,000
Savings	\$	\$	\$ 278,000
ANNUAL O&M SAVINGS			\$
TOTAL SAVINGS			\$ 278,000

VALUE ENGINEERING ALTERNATIVE			No. SI-10
PROJECT: Cowley Elementary School			
ITEM: Add fence around track / field			
ORIGINAL DESIGN: No fence around athletic fields.			
ALTERNATIVE DESIGN: Add 1,800 lf of fencing, 6 ft. chainlink			
DISCUSSION / JUSTIFICATION: (Advantages / Disadvantages)			
Advantages: Improved safety and security.			
Disadvantages: Additional costs			
COST SUMMARY	CAPITAL COST	ANNUAL O&M	TOTAL SAVINGS
Original Design	\$	\$	\$ - 0 -
Proposed Design	\$	\$	\$ 57,150
Add	\$	\$	\$ 57,150
ANNUAL O&M SAVINGS			\$
TOTAL ADD			\$ 57,150

VALUE ENGINEERING ALTERNATIVE		No. S-1	
PROJECT: Cowley Elementary School			
ITEM: Adjust cost estimate to reflect the worst case scenario for foundation design			
ORIGINAL DESIGN: Current cost estimate is based on assumed standard spread footings, 4 ft. foundation walls, concrete slab-on-grade - \$262,262			
ALTERNATIVE DESIGN: 30 ft. drilled 18" dia. Piers, reinforced concrete, cased due to wet conditions - \$634,152			
DISCUSSION / JUSTIFICATION: (Advantages / Disadvantages)			
Advantages: More accurate schematic cost estimate to account for site soil conditions.			
Disadvantages: Increases project estimate			
COST SUMMARY	CAPITAL COST	ANNUAL O&M	TOTAL SAVINGS
Original Design	\$	\$	\$
Proposed Design	\$	\$	\$
Savings	\$	\$	\$
ANNUAL O&M SAVINGS			\$
TOTAL ADD			See G-1

VALUE ENGINEERING ALTERNATIVE			No. S-4
PROJECT: Cowley Elementary School			
ITEM: Use metal studs for bearing			
ORIGINAL DESIGN: Post & beam (structural steel) bearing			
ALTERNATIVE DESIGN: Steel stud bearing			
DISCUSSION / JUSTIFICATION: (Advantages / Disadvantages)			
Advantages: Lower initial cost			
Disadvantages: Longer schedule, potential weather considerations (6 weeks of General Requirements at \$37,500)			
Costs taken from R.S. Means			
COST SUMMARY	CAPITAL COST	ANNUAL O&M	TOTAL SAVINGS
Original Design	\$	\$	\$ 114,237
Proposed Design	\$	\$	\$ 37,500
Savings	\$	\$	\$ 76,737
ANNUAL O&M SAVINGS			\$
TOTAL SAVINGS			\$ 76,737

VALUE ENGINEERING ALTERNATIVE		No. S-5	
PROJECT: Cowley Elementary School			
ITEM: Use wood joists in lieu of steel			
ORIGINAL DESIGN: Steel bar joists on structural steel.			
ALTERNATIVE DESIGN: Wood joist on structural steel, except at gymnasium			
DISCUSSION / JUSTIFICATION: (Advantages / Disadvantages)			
Not a recognized savings, pending re-design of roof			
COST SUMMARY	CAPITAL COST	ANNUAL O&M	TOTAL SAVINGS
Original Design	\$	\$	\$
Proposed Design	\$	\$	\$
Savings	\$	\$	\$
ANNUAL O&M SAVINGS			\$
TOTAL SAVINGS			\$

VALUE ENGINEERING ALTERNATIVE		No. S-10	
PROJECT: Cowley Elementary School			
ITEM: Add mechanical mezzanines			
ORIGINAL DESIGN: Two small mechanical mezzanines were included in the current cost estimate			
ALTERNATIVE DESIGN: One additional mezzanine, one enlarged mezzanine.			
DISCUSSION / JUSTIFICATION: (Advantages / Disadvantages)			
Advantages: More accurate schematic cost estimate.			
Disadvantages: Increase in schematic cost estimate.			
COST SUMMARY	CAPITAL COST	ANNUAL O&M	TOTAL SAVINGS
Original Design	\$	\$	\$
Proposed Design	\$	\$	\$
Savings	\$	\$	\$
ANNUAL O&M SAVINGS			\$
TOTAL SAVINGS			See G-1

VALUE ENGINEERING ALTERNATIVE		No. M-6	
PROJECT: Cowley Elementary			
ITEM: Add Fire Sprinklers to Entire Bldg.			
ORIGINAL DESIGN: No fire sprinkler system in design.			
ALTERNATIVE DESIGN: Install Wet pipe fire sprinkler system in new school.			
DISCUSSION / JUSTIFICATION: (Advantages / Disadvantages)			
Advantages:			
Disadvantages:			
COST SUMMARY	CAPITAL COST	ANNUAL O&M	TOTAL SAVINGS
Original Design	\$ 0	\$	\$
Proposed Design	\$ 107,467	\$ 0	\$107,467
Add	\$	\$	\$
ANNUAL O&M SAVINGS			\$ 0
TOTAL ADD			\$ 107,467

VALUE ENGINEERING ALTERNATIVE		No. M-8	
PROJECT: Cowley Elementary			
ITEM: Add 3 sinks in Art / Science Room			
ORIGINAL DESIGN: Only one sink provided in the Art/Science Room.			
ALTERNATIVE DESIGN: Add 3 sinks for student use, for a total of 4 sinks.			
DISCUSSION / JUSTIFICATION: (Advantages / Disadvantages)			
Advantages:			
Disadvantages:			
COST SUMMARY	CAPITAL COST	ANNUAL O&M	TOTAL SAVINGS
Original Design	\$ 0	\$	\$
Proposed Design	\$ 3,800	\$ 0	\$ 3,800
Add	\$ 3,800	\$	\$ 3,800
ANNUAL O&M SAVINGS			\$ 0
TOTAL ADD			\$ 3,800

VALUE ENGINEERING ALTERNATIVE		No. M-9	
PROJECT: Cowley Elementary			
ITEM: Add Teacher's sink with acid waste piping in Science room			
ORIGINAL DESIGN: Only 1 sink provided for Teacher and student use in the Art/Science Room.			
ALTERNATIVE DESIGN: Add island demo table with acid resistant sink, acid waste piping for teacher use.			
DISCUSSION / JUSTIFICATION: (Advantages / Disadvantages)			
Advantages:			
Disadvantages:			
COST SUMMARY	CAPITAL COST	ANNUAL O&M	TOTAL SAVINGS
Original Design	\$ 0	\$	\$
Proposed Design	\$ 2,000	\$	\$ 2,000
Add	\$ 2,000	\$	\$ 2,000
ANNUAL O&M SAVINGS			\$ 0
TOTAL ADD			\$ 2,000

VALUE ENGINEERING ALTERNATIVE		No. E-4	
PROJECT: Cowley Elementary			
ITEM: Use Alum. Conductors for 100 amp circuits and larger.			
ORIGINAL DESIGN: All copper conductors on all circuit wiring .			
ALTERNATIVE DESIGN: Allow the contractor the option to install aluminum conductors on electrical circuits of 100 amps or more. This will require special construction methods by the Electrical Contractor to ensure wire is safely installed.			
DISCUSSION / JUSTIFICATION: (Advantages / Disadvantages)			
Advantages:			
Disadvantages:			
COST SUMMARY	CAPITAL COST	ANNUAL O&M	TOTAL SAVINGS
Original Design	\$ 0	\$	\$
Proposed Design	\$	\$	\$
Savings	(\$ 2,000)	\$	(\$ 2,000)
ANNUAL O&M SAVINGS			\$ 0
TOTAL SAVINGS			(\$ 2000)

VALUE ENGINEERING ALTERNATIVE			No. E-5
PROJECT: Cowley Elementary			
ITEM: Use Single tube Hot-5 fixtures in classrooms.			
ORIGINAL DESIGN: Existing lighting design is use of direct/indirect T8 fixtures.			
ALTERNATIVE DESIGN: Install single tube Hot T5 direct/indirect fixtures in classrooms to reduce the number of fixtures required.			
DISCUSSION / JUSTIFICATION: (Advantages / Disadvantages)			
Advantages:			
Disadvantages:			
COST SUMMARY	CAPITAL COST	ANNUAL O&M	TOTAL SAVINGS
Original Design	\$ 0	\$	\$
Proposed Design	\$ SAME	\$700/yr	\$0
Savings	\$	(\$6,354)	(\$6,354)
ANNUAL O&M SAVINGS			\$ 700/yr
TOTAL SAVINGS			(\$6,354)

VALUE ENGINEERING ALTERNATIVE		No. E-9	
PROJECT: Cowley Elementary			
ITEM: Add CCTV & Low frequency FM system in classrooms.			
ORIGINAL DESIGN: No CCTV and/or FM audio systems are included in design.			
ALTERNATIVE DESIGN: Provide CCTV and FM audio boost systems in new school.			
DISCUSSION / JUSTIFICATION: (Advantages / Disadvantages)			
Advantages:			
Disadvantages:			
COST SUMMARY	CAPITAL COST	ANNUAL O&M	TOTAL SAVINGS
Original Design	\$ 0	\$	\$
Proposed Design	\$ 66,500	\$ 150 / yr	\$66,500
Add	\$ 66,500	\$	\$
ANNUAL O&M SAVINGS			\$ 6,354 (add)
TOTAL ADD			\$ 66,500

VALUE ENGINEERING ALTERNATIVE		No. E-10	
PROJECT: Cowley Elementary			
ITEM: Automatic Ext. Door locking & Pod Doors.(elec.connection)			
ORIGINAL DESIGN: No electrical door locks included in original design.			
ALTERNATIVE DESIGN: Provide electrical door locks on 8 exterior doors to building, remotely controllable.			
DISCUSSION / JUSTIFICATION: (Advantages / Disadvantages)			
Advantages:			
Disadvantages:			
COST SUMMARY	CAPITAL COST	ANNUAL O&M	TOTAL SAVINGS
Original Design	\$ 0	\$	\$
Proposed Design	\$2,400	\$ 0	\$2,400
Add	\$	\$	\$
ANNUAL O&M SAVINGS			\$ 0
TOTAL ADD			\$2,400

VALUE ENGINEERING ALTERNATIVE			No. E-11
PROJECT: Cowley Elementary			
ITEM: Provide lighting in classrooms to account for daylighting.			
ORIGINAL DESIGN: Lighting levels designed to State Criteria.			
ALTERNATIVE DESIGN: Reduce artificial lighting levels during day use to account for day lighting benefit.			
DISCUSSION / JUSTIFICATION: (Advantages / Disadvantages)			
Advantages:			
Disadvantages:			
COST SUMMARY	CAPITAL COST	ANNUAL O&M	TOTAL SAVINGS
Original Design	\$ 0	\$	\$
Proposed Design	(\$3,000)	(\$ 600 / yr)	(\$ 3,000)
Savings	(\$3,000)	\$	\$
ANNUAL O&M SAVINGS			(\$ 5,447)
TOTAL SAVINGS			(\$ 3,000)

VALUE ENGINEERING ALTERNATIVE			No. E-12
PROJECT: Cowley Elementary			
ITEM: Confirm allowance for stage lighting.			
ORIGINAL DESIGN: An allowance is not included for the stage lighting system in design.			
ALTERNATIVE DESIGN: Verify stage lighting scope of work and estimated construction cost with theater consultant. This will make DD cost estimate more accurate. No costs are available at this time for VE study.			
DISCUSSION / JUSTIFICATION: (Advantages / Disadvantages)			
Advantages:			
Disadvantages:			
COST SUMMARY	CAPITAL COST	ANNUAL O&M	TOTAL SAVINGS
Original Design	\$ 0	\$	\$
Proposed Design	\$ Unknown	\$ 0	\$ Unknown add
Savings	\$	\$	\$
ANNUAL O&M SAVINGS			\$ 0
TOTAL SAVINGS			\$ Unknown add

Review of Capital Construction Projects for Wyoming School Facilities Commission

District: Big Horn School District #1

Project: New Cowley Elementary School

Architect: Plan One

1. FACILITIES GUIDELINES

Comment	Resolution
1.1 Site Requirements	
1.1.1 Sht C1.2: Question - the athletic fields shown are more appropriate for a HS or college layout rather than an elementary school. Are there community needs being addressed?	
1.1.2 Provide additional buffer space along street frontage adjacent to existing neighborhood.	
1.1.3 Confirm that building program and athletic functions will fit on the site given the abandonment of the town street and location of row of existing trees on the north end of the site.	
1.2 School Size vs. Enrollment	
1.2.1 Sht A2.1: General comment - the architectural massing seems HUGE for a single story building. Example: the Gym area is 40' tall vs. the HS Gym which is 28' tall.	
1.3 Regular Classroom	
1.3.1 Increase size of classrooms for grades 1 - 5 to approximately 900 SF each.	
1.4 Science Classroom	
1.4.1 Increase size of Art / Science Classroom to 1400 SF.	
1.5 Exceptional Children	
1.5.1 Re-design Exceptional Children area to better address the needs of the program including adding a restroom with shower, counseling office, etc.	
1.6 Art Education Classroom	
1.6.1 See comment 1.4 above.	
1.7 Physical Education	
1.7.1 Consider synthetic flooring at Multi-purpose gym since this area is used to serve meals and to hold functions related to the adjacent stage.	
1.8 Commons, Circulation and Entries	
1.8.1 Reduce overall length of main circulation corridor.	

Review of Capital Construction Projects for Wyoming School Facilities Commission

District: Big Horn School District #1

Project: New Cowley Elementary School

Architect: Plan One

1.9 Electrical and Lighting Considerations

1.9.1	Electrical Service Entrance per the design analysis should be 800 to 1000 amps at 120/208 volt, 3 phase, 4 wire. However, they based this SES size on 38,000 square feet; the Architect shows 44,700 square feet. Using a minimum of 14 VA per square feet or 625,800 VA according to the facilities guidelines of 500 KVA and more the voltage should be 277/480 Volts, 3 phase, 4 wire and 753 amps. Use at least a 1000 amp service. Step down transformers for low voltage 120V circuits. No 1-line idagram shown on the drawings.	
1.9.2	The available fault current should be 30,000 amps for a 1000 amp, 277/480 volt, 3 phase, 4 wire service versus 65,000 amps for a 2000 amp, 120/208 volt SES.	
1.9.3	Panel boards are to have 42 circuits and designed for 25% spare capacity. OK. Electronic panel boards for computer rooms with high harmonics; oversized neutral and ground busses. Use surge suppressors to protect electronic equipment. No panel schedules shown on the drawings.	
1.9.4	Wiring under specifications section 16120 calls for all copper wiring. Facilities guidelines state use of aluminum wiring is acceptable for 100 amp and larger circuits. If compression lugs are used. We prefer compact aluminum conductors with compression lugs. Saves money.	
1.9.5	No grounding is shown on the drawings nor in the specifications. Must be in accordance with the latest version of the NEC.	
1.9.6	Add CCTV & low frequency FM system in Classrooms	

1.10 Plumbing Considerations

1.10.1	Use of sensor operated water closets, urinals, and lavatories.	
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1.11 Heating, Ventilating and Air Conditioning (HVAC) Considerations

1.11.1	Recommend separate UV on kitchen area. Recommend separate a/c for Tech server room. Provide ventilation air to corridors. Need to provide OSA and Relief air on all Air Handling Units. Two hr separation walls in two classroom wings will require fire/smoke dampers on penetrations of wall. Recommend water/water or air/air heat recovery on all Air Handling Units. Recommend two chillers or dual circuited chillers for redundancy (each sized for 50 to 60% of total load).	
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Review of Capital Construction Projects for Wyoming School Facilities Commission

District: Big Horn School District #1

Project: New Cowley Elementary School

Architect: Plan One

2. ENERGY EFFICIENCY

Comment	Resolution
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2.1 Lighting fixtures and bulbs

2.1.1 Most of the lighting fixtures shown on the drawings and listed in the specifications are of high efficient type. HID lights in inside rooms need auxiliary fluorescent lights for power outages or special emergency lights with off delay timers.	
2.1.2 Use 3-lamp and 4-lamp fluorescent T8 ballasts for energy conservation. More efficient than 1-2 lamp and 2-2 lamp ballasts.	

2.2 Security lighting and parking lot lighting

2.2.1 All security lighting outside is metal halide. Locations appear to be located properly. We believe high pressure sodium fixtures are more efficient and the HPS lamps are rated for 20,000 hours; metal halide lamps have 10,000 hour life.	
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2.3 Exit Lighting

2.3.1 Exit and emergency lights are shown on the drawings. Adequate quantities are shown except in some rooms. Check the 1 foot candle minimum illumination. You should consider an emergency generator for emergency power instead of battery packs.	
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2.4 Window types and area

2.4.1 Reduce amount of glazed area at entrances	
---	--

2.5 Load shedding controls

2.5.1 Recommend EMS control system for mechanical systems.	
--	--

2.6 Occupancy sensors

2.6.1 Toilet rooms, storage rooms, maybe classrooms.	
--	--

2.7 Lighting and fan timers

2.7.1 Building exhaust fans should be on EMS. Lighting could be controlled by EMS.	
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2.8 Water Saving Devices

2.8.1 Self closing faucets on Lavs (sensor operated). Low flow water closets, and Urinals.	
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2.9 Trash Compactors

Review of Capital Construction Projects for Wyoming School Facilities Commission

District: Big Horn School District #1

Project: New Cowley Elementary School

Architect: Plan One

2.9 Trash Compactors

2.9.1	Add trash compactor at Kitchen	
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3. SAFETY AND SECURITY

Comment	Resolution
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3.1 Entrances and exits

3.1.1	Public use restrooms for Gym activities are not located near the gym with restricted access to remaining areas of the school.	
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3.2 Building access system

3.2.1	There is no building access system currently specified or indicated on the drawings.	
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3.3 Security system

3.3.1	Provide lock-down capability for main exterior doors.	
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3.4 Exterior and interior lighting

3.4.1	All areas the exterior lighting is adequate. We suggest high pressure sodium in place of metal halide.	
3.4.2	Exit and emergency lights are shown. Some areas need more emergency lights. Must be at least 1 FC average.	

3.8 Security cameras

3.8.1	Only 7 security cameras shown on the drawings. Some areas may need additional cameras. Specification is not adequate. No symbols shown on symbol list.	
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3.9 Site fencing and gates

3.9.1	Add fence at outdoor science area	
3.9.2	Add perimeter fence at athletic field and track.	

3.10 Emergency vehicle access

3.10.1	Show fire access road on site plan.	
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3.11 Fire Protection

3.11.1	Evaluate cost of fire sprinkler system. If Wyoming adopts the International Building Code prior to construction, a sprinkler system will be required.	
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ATTENDANCE LIST

Value Engineering Workshop

Project: **Cowley Elementary School, Rocky Mountain Middle School Gym,
Rocky Mountain High School**

Date: **November 4 & 5, 2002**

PARTICIPANTS:

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Executive Summary – Rocky Mountain High School Renovation

Project Authorization:

Enrollment: 162
Building SF: 75,925
Year Built: 1939
Condition Score: 33.44 (immediate need)
Recommendation: As part of the Consolidate and Renovate approach recommended by MGT, renovation of the Rocky Mountain High School is recommended.
Total Project Cost: \$ 4,677,937 (\$61.62 / SF)

Proposed Project:

Building SF: 72,609 SF renovation, Gym addition 18,478 SF itemized as follows:

- High School Renovation – 60,825 SF - \$93.79 / SF
- Exist. Gym Renovation – 11,784 SF - \$76.28 / SF
- New Gym – 18,748 SF - \$141.64 / SF
- Convert Byron Elem. – 12,860 SF - \$88.33 / SF

Design Phase: Schematic Design, Oct. 14, 2002
Architect: Plan One / Architects
Cost Estimator: Groathouse Construction, Inc.
Total Project Cost: \$ 10,356,814

Recommendation:

Authorize funding for the renovation of 85,469 SF of existing building at \$71.19 / SF = \$6,084,430 which includes limited renovation of the school to correct the identified building inadequacies including replacement of the existing gym.

Discussion / Justification:

1. A new high school could be constructed for the same cost as the proposed renovation. The construction cost for new high school for 167 students is estimated at \$169.40 / SF for a 55,420 SF High School based on the 150 Student High School model = \$9,388,148 x 10% (students over 150) = \$10,326,962.
2. Authorize limited renovation for \$6,084,430 which provides a renovated school and a new gymnasium.
 - a. The existing gymnasium portion of the building was constructed in 1933 and would be cost prohibitive to renovate.
 - b. The size of the existing gym does not allow for two Physical Education teaching stations required by the District.
 - c. The existing three story portion of the gym would require significant renovation due to the lack of code compliant egress and lack of ADA accessibility.
 - d. Renovation of the existing Byron Elementary School space for administrative functions allows the liquidation of four other District owned structures thereby reducing the District's maintenance square footage.

VALUE ENGINEERING SUMMARY

Rocky Mountain High School, Byron, WY

SiteTek Financial Arts, Inc.

PAGE 1 OF 4

ITEM NO.	DESCRIPTION	COST SAVINGS				TOTAL RECOMMENDED COST SAVINGS	TOTAL IMPLEMENTED COST SAVINGS
		ORIGINAL COST	PROPOSED COST	INITIAL COST SAVINGS	O& M COST SAVINGS		
A	ARCHITECTURAL						
M	MECHANICAL / PLUMBING					(\$48,300)	
E	ELECTRICAL					\$60,000	
TOTAL SUMMARY						\$11,700	

VALUE ENGINEERING ALTERNATIVES	CATEGORY: ARCHITECTURAL	Rocky Mountain High School, Byron, WY	SiteTek Financial Arts, Inc.	PAGE 2 OF 4
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CREATIVE / EVALUATION PHASE					DEVELOPMENT PHASE					IMPLEMENTATION PHASE			
ITEM NO.	DESCRIPTION	ADVANTAGES	DISADVANTAGES	SELECTED	COST SAVINGS				TOTAL RECOMMENDED COST SAVINGS	ACCEPT	REJECT	REVIEW	TOTAL IMPLEMENTED COST SAVINGS
					ORIGINAL COST	PROPOSED COST	INITIAL COST SAVINGS	O & M COST SAVINGS					
A-1	Keep Byron Elementary School, pool, auditorium - add new			X									
A-2	\$5 million solution, basic remodel (+ \$1.2 million)			X									
A-3	Byron Elementary School \$1.1 million plus current plan Option 3			X									
A-4	Scale back renovation to minimum												
A-5	Identify enhancement amount for bonding (\$2 million)												
TOTAL ARCHITECTURAL									\$0				

VALUE ENGINEERING ALTERNATIVES	CATEGORY: MECHANICAL / PLUMBING	Rocky Mountain High School, Byron, WY	SiteTek Financial Arts, Inc.	PAGE 3 OF 4
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CREATIVE / EVALUATION PHASE					DEVELOPMENT PHASE					IMPLEMENTATION PHASE			
ITEM NO.	DESCRIPTION	ADVANTAGES	DISADVANTAGES	SELECTED	COST SAVINGS				TOTAL RECOMMENDED COST SAVINGS	ACCEPT	REJECT	REVIEW	TOTAL IMPLEMENTED COST SAVINGS
					ORIGINAL COST	PROPOSED COST	INITIAL COST SAVINGS	O & M COST SAVINGS					
M-1	Delete Air Conditioning Upgrade.												
M-2	Delete EMS												
M-3	Exhaust/Eye Wash in Pool Equipment Room			DS	\$0	\$2,200	\$2,200		\$2,200				
M-4	Separate Dx A/C unit for Server Room.	Provides capacity to air condition this room year-around.	Costs more to install.	DS	\$0	\$3,000	\$3,000		\$3,000				
M-5	Sensor Faucets/Flush Valves	Saves water. Reduces vandalism problems.	Costs more to install.	DS	\$0	\$1,500	\$1,500		\$1,500				
M-6	Push Button Valves on Showers	Included in initial cost estimate		DS	\$0	\$0	\$0		\$0				
M-7	Dual Circuited Chillers			DS	\$0	\$0	\$0		\$0				
M-8	Insulate existing ductwork	Included in initial cost estimate		DS	\$0	\$0	\$0		\$0				
M-9	Alt. Solution for Pool Dehumidification (heat recovery/exhaust system)	Lower first cost	Increased energy usage. Need to analyze energy impacts	X	\$95,000	\$40,000	(\$55,000)		(\$55,000)				
M-10	Evaluate fire sprinkler requirements			X									
TOTAL MECHANICAL / PLUMBING									(\$48,300)				

VALUE ENGINEERING ALTERNATIVES	CATEGORY: ELECTRICAL	Rocky Mountain High School, Byron, WY	SiteTek Financial Arts, Inc.	PAGE 4 OF 4
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CREATIVE / EVALUATION PHASE					DEVELOPMENT PHASE				IMPLEMENTATION PHASE				
ITEM NO.	DESCRIPTION	ADVANTAGES	DISADVANTAGES	SELECTED	COST SAVINGS				TOTAL RECOMMENDED COST SAVINGS	ACCEPT	REJECT	REVIEW	TOTAL IMPLEMENTED COST SAVINGS
					ORIGINAL COST	PROPOSED COST	INITIAL COST SAVINGS	O & M COST SAVINGS					
E-1	Delete new Service if A/C not installed				\$45,000	\$0	\$45,000		\$45,000				
E-2	Replace existing light fixtures w/ new electronic ballast type to match existing			X	\$170,000	\$145,000	(\$25,000)		(\$25,000)				
E-3	Motion Sensors on lights			DS	no cost impact								
E-4	Alum. Conductors for circuits over 100 amps.			DS	no cost impact								
E-5	Add FM system		costs about \$2000/classroom	X	\$0	\$40,000	\$40,000		\$40,000				
TOTAL ELECTRICAL									\$60,000				

VALUE ENGINEERING ALTERNATIVE		No. A-1	
PROJECT: Rocky Mountain High School, Byron, WY			
ITEM: Keep Byron Elementary School, pool & auditorium – add new			
ORIGINAL DESIGN:		Complete remodel of existing Byron Elementary & High School buildings with new Gymnasium addition.	
ALTERNATIVE DESIGN:		Renovate Byron Elementary School portion, retain existing pool and auditorium. Demolish remainder of existing high school and build new high school.	
DISCUSSION / JUSTIFICATION: (Advantages / Disadvantages)			
Advantages: Renovates and retains best components of existing building. Builds new gymnasium and athletic facilities. Demolishes existing "Figure 8" classroom pods.			
Disadvantages: Higher cost option than total renovation.			
COST SUMMARY	CAPITAL COST	ANNUAL O&M	TOTAL SAVINGS
Original Design	\$	\$	\$
Proposed Design	\$	\$	\$
Savings	\$	\$	\$
ANNUAL O&M SAVINGS			\$
TOTAL SAVINGS			\$

VALUE ENGINEERING ALTERNATIVE		No. A- 2	
PROJECT: Rocky Mountain High School, Byron, WY			
ITEM: \$5 million solution, basic remodel (+ \$1.1 million Byron Elementary Renovation)			
ORIGINAL DESIGN:		Complete remodel of existing Byron Elementary & High School buildings with new Gymnasium addition.	
ALTERNATIVE DESIGN:		Renovate existing Rocky Mountain High School within the \$5 million allocated budget. No new construction. Add the \$1.1 million budget for the conversion of Byron Elementary to a high school.	
DISCUSSION / JUSTIFICATION: (Advantages / Disadvantages)			
Advantages: Delivers a project within the allocated budget.			
Disadvantages: No new gymnasium.			
COST SUMMARY	CAPITAL COST	ANNUAL O&M	TOTAL SAVINGS
Original Design	\$	\$	\$
Proposed Design	\$	\$	\$
Savings	\$	\$	\$
ANNUAL O&M SAVINGS			\$
TOTAL SAVINGS			\$

VALUE ENGINEERING ALTERNATIVE		No. A- 3	
PROJECT: Rocky Mountain High School, Byron, WY			
ITEM: Byron Elementary School (\$1.1 million) plus current Option 3			
ORIGINAL DESIGN:		Complete remodel of existing Byron Elementary & High School buildings with new Gymnasium addition.	
ALTERNATIVE DESIGN:		Total renovation of high school with new gymnasium addition including \$1.1 million to renovate the existing Byron Elementary School.	
DISCUSSION / JUSTIFICATION: (Advantages / Disadvantages)			
Advantages: Builds new gymnasium.			
Disadvantages: Over allocated budget.			
COST SUMMARY	CAPITAL COST	ANNUAL O&M	TOTAL SAVINGS
Original Design	\$	\$	\$
Proposed Design	\$	\$	\$
Savings	\$	\$	\$
ANNUAL O&M SAVINGS			\$
TOTAL SAVINGS			\$

VALUE ENGINEERING ALTERNATIVE		No. M-9	
PROJECT: Rocky Mountain High School, Byron, WY			
ITEM: Alt. Solution for Pool Dehumidification (heat recovery/exhaust system)			
ORIGINAL DESIGN:		Refrigerated air conditioning system with heat recovery to reheat supply air and supplemental pool heating.	
ALTERNATIVE DESIGN:		Exhaust system with heat Pipe or Water to air heat recovery coil in outside air Unit Ventilator. This alternate may have an impact on the energy consumption of the de-humidification system; the energy consumption calculations for this alternative design, as well as the original design is beyond the capability of this study. Since both design solutions have energy recovery components, the energy savings difference between the two designs is probably minor, and will not be evaluated for this study.	
DISCUSSION / JUSTIFICATION: (Advantages / Disadvantages)			
Advantages:			
Disadvantages:			
COST SUMMARY	CAPITAL COST	ANNUAL O&M	TOTAL SAVINGS
Original Design	\$ 95,000	\$	\$
Proposed Design	\$ 40,000	\$	\$
Savings	(\$ 55,000)	\$	(\$55,000)
ANNUAL O&M SAVINGS			\$ not evaluated
TOTAL SAVINGS			(\$55,000)

VALUE ENGINEERING ALTERNATIVE			No. M-10
PROJECT: Rocky Mountain High School, Byron, WY			
ITEM: Evaluate Fire Sprinklers.			
ORIGINAL DESIGN: No wet pipe fire sprinkler system is in current design.			
ALTERNATIVE DESIGN: Evaluate installation of wet pipe fire sprinkler system in the building to improve life safety of the students and teachers. May reduce/eliminate the need for fire rated corridors in the building. May be required to meet new adopted fire codes in the state of Wyoming. The cost of this alternative assumes that adequate water pressure and volume are available from local water service to serve the fire sprinkler demand. Fire pumps and water storage tanks, if required, will add significantly to the cost of this alternative design.			
DISCUSSION / JUSTIFICATION: (Advantages / Disadvantages)			
Advantages:			
Disadvantages:			
COST SUMMARY	CAPITAL COST	ANNUAL O&M	TOTAL ADD
Original Design	\$ 0	\$	\$
Proposed Design	\$ 315,734	\$	\$ 315,734
Add	\$ 315,734	\$ 0	\$ 315,734
ANNUAL O&M SAVINGS			\$ 0
TOTAL ADD			\$ 315,734

VALUE ENGINEERING ALTERNATIVE			No. E-5
PROJECT: Rocky Mountain High School, Byron, WY			
ITEM: Add FM Sound System			
ORIGINAL DESIGN: No special sound systems proposed for this project.			
ALTERNATIVE DESIGN: Provide wireless FM sound system in each classroom for Teacher's use in boosting their voice in the classroom to improve hearing capability of the students.			
DISCUSSION / JUSTIFICATION: (Advantages / Disadvantages)			
Advantages:			
Disadvantages:			
COST SUMMARY	CAPITAL COST	ANNUAL O&M	TOTAL ADD
Original Design	\$ 0	\$	\$
Proposed Design	\$ 40,000	\$ 0	\$ 40,000
Add	\$ 40,000	\$	\$ 40,000
ANNUAL O&M SAVINGS			\$ 0
TOTAL ADD			\$ 40,000

Review of Capital Construction Projects for Wyoming School Facilities Commission

District: Big Horn School District #1
Project: Byron High School Renovation **Architect: Plan One**

1. FACILITIES GUIDELINES

Comment	Resolution
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1.1 Physical Education

1.1.1	Sht A1.4: WPS Facilities Guidelines, pg 13, Showers - there is a privacy issue with the design of the showers with an adjacent dressing area.	
1.1.2	Sht A1.4: EXCEPTION to WPS Facilities Guidelines, pg 13, Lockers and dressing rooms are NOT visible from PE teacher's offices.	
1.1.3	Sht A3.1: East Elevation - Key notes are reversed.	

1.2 Electrical and Lighting Considerations

1.2.1	Electrical Service Entrance per the design analysis is too small at 1200 Amps, 120/208V, 3 phase, 4 wire.	
1.2.2	Analysis suggests increasing the size to a 2500A, 120/208V, 3 phase, 4 wire.	
1.2.3	The available fault current should be 35,000A for a 1600A, 277/480V service versus 65,000 for a 2500A, 120/208V Service.	
1.2.4	Wiring under specification section 16120 calls for <u>all</u> copper wiring.	
1.2.5	Electrical Panels are to be replaced with new. Electronic panelboards are to be used where high harmonics are present. Such as computer rooms, etc.	

1.3 Plumbing Considerations

1.3.1	Use sensor operated Flush Valves, and lav faucets to save water and reduce vandalism. Recommend separate domestic water heater for kitchen and shower/lav use. Recommend use of tempered water (saves installing cold water piping) for showers and lavs.	
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1.4 Heating, Ventilating and Air Conditioning (HVAC) Considerations

Review of Capital Construction Projects for Wyoming School Facilities Commission

District: Big Horn School District #1		
Project: Byron High School Renovation	Architect: Plan One	

1.4.1	Recommend separate a/c for server room. Provide ventilation air to corridors. Fire separation walls and/or corridors in bldg will require fire/smoke dampers on penetrations of wall. Recommend water/water or air/air heat recovery on all Air Handling Units	
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2. ENERGY EFFICIENCY

Comment	Resolution
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2.1 Security lighting and parking lot lighting

2.1.1	Most of the security lighting shown is metal halide. Distance between some outside wall mounted security lights is too much.	
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2.2 Lighting and fan timers

2.2.1	Connect exhaust fans to EMS.	
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2.3 Water Saving Devices

2.3.1	Recommend sensor operated Flush Valves and lav faucets to save water. Recommend push button timed shower valves to save water and reduce vandalism.	
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3. SAFETY AND SECURITY

Comment	Resolution
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3.1 Exterior and interior lighting

3.1.1	In some areas the exterior lighting is inadequate; too far apart. Most of the external lighting is adequate. Exterior lighting around the new gym is inadequate. Also, around the pool and N.W. areas are inadequate and unsafe.	
3.1.2	Interior lighting: several rooms have no lights. Main welding room lighting is inadequate. Common area calls for F2 or F4 lights. But none shown. Larger plan of N.W. area called Byrom Elementary School does not exist. Swimming pool area needs more light.	
3.1.3	No Exit and emergency lights are shown and they must be furnished. Symbols don't exist.	

Executive Summary – Rocky Mountain Middle School Shop Renovation

Project Authorization:

Enrollment: N/A
Building SF: 5,700
Year Built: 1954
Condition Score: 43.04 (immediate need)
Recommendation: As part of the Consolidate and Renovate approach recommended by MGT, renovation of the Rocky Mountain Middle School Shop is recommended.
Total Project Cost: \$ 461,587 (\$ 80.98 / SF)

Proposed Project:

Building SF: 5,855
Design Phase: Schematic Design, Oct. 14, 2002
Architect: Plan One / Architects
Cost Estimator: Groathouse Construction, Inc.
Total Project Cost: \$ 671,010 (\$114.60)

Recommendation:

Authorize funding for the construction of a new Vocational Education facility for 3,705 SF at \$123.09 / SF for a total project cost of \$456,048. This size is based on the 150 Student Middle School Model as follows:

- Multi-purpose Shop / Lab (heavy) – 1,500 SF
- Storage – 350 SF
- Multi-purpose Shop Lab (light) – 1,000 SF
- Circulation @ 30%

Coordinate the design and construction of this project with the additional projects planned for this campus.

Discussion / Justification:

1. A new Vocational Education facility can be constructed for less than the cost to renovate the existing facility.
2. A new Vocational Education facility could be properly located on the campus closer and contiguous with other existing buildings and proposed improvements.