# Review of Capital Construction Projects

## for

## Wyoming School Facilities Commission

### New Torrington High School Voc. Ed. Building
### New Lingle-Ft. Laramie Middle School Addition
### New Southeast High School Gym Addition
### Goshen County School District #1

December 3, 2002

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# Executive Summary – New Torrington High School Voc. Ed. Building

## Project Authorization:

| | |
|---|---|
| Enrollment: | N/A |
| Building SF: | 6,905 |
| Recommendation: | Build a new vocational facility to house all programs (welding, electronics, air conditioning / refrigeration, horticulture, aquaculture and auto mechanics) Close the existing Auto Mechanics building at Torrington High School |
| Total Project Cost: | $ 895,993 ($795,947 construction cost, $116 / SF) |

## Proposed Project:

| | |
|---|---|
| Building SF: | 7,896 |
| Design Phase: | Schematic Design, Oct. 15, 2002 |
| Architect: | TSP |
| Cost Estimator: | TSP Construction Services |
| Construction Costs: | $ 1,108,798 ($140 / SF) |

## Adjustments / Reductions:

(based on Capital Construction Project Review completed November 11 - 13, 2002)

1. Increase project budget to reflect the increase from the authorized square footage. 7,896 SF vs. 6,905 SF = 991 SF @ $130 / SF = $128,830.
2. Adjust authorized budget to reflect additional costs not included in the original budget.
    a. Demolition and site remediation of existing Auto Mech. Shop on West E St. Add $63,000.
    b. Partial demolition of existing Maintenance Building to facilitate siting of new shop building. Add $20,000.
    c. Premium for construction cost increase due to hazardous occupancy classification. Add $10 / SF x 7,896 SF = $78,960.
3. Revise the current site plan to provide all building access from West 23rd Avenue and not from the existing alley.

## Recommendation:

1. Authorize 7,896 SF Voc Ed. Building with building systems and design similar to the Schematic Design submittal dated Oct. 15, 2002.
2. Increase project budget by $290,790 to $1,186,783 to account for additional square footage, demolition costs and hazardous occupancy requirements.

## Discussion / Justification:

1. The square footage proposed is within the range of 7,750 – 8,050 SF for Vocational Education space allocated in the models being developed by the SFC.
2. The existing Auto Mech. Shop needs to be demolished as part of this project and the site adjacent to the existing football field restored to an acceptable condition.
3. The curriculum includes welding and fabrication processes that require hazardous occupancy classifications. This classification may mandate additional area separation walls, explosion-proof fixtures and outlets and smoke/fire dampers.

| VALUE ENGINEERING SUMMARY | Torrington Auto Mech / Voc Ag Bldg. | SiteTek Financial Arts, Inc. | PAGE 1 OF 6 |
|---|---|---|---|

| ITEM NO. | DESCRIPTION | COST SAVINGS | | | | TOTAL RECOMMENDED COST SAVINGS | TOTAL IMPLEMENTED COST SAVINGS |
|---|---|---|---|---|---|---|---|
| | | ORIGINAL COST | PROPOSED COST | INITIAL COST SAVINGS | O& M COST SAVINGS | | |
| C | CIVIL | | | | | | |
| A | ARCHITECTURAL | | | | | | |
| S | STRUCTURAL | | | | | | |
| M | MECHANICAL | | | | | | |
| E | ELECTRICAL | | | | | | |
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| | | | | | | | |
| TOTAL SUMMARY | | | | | | $0 | |

| VALUE ENGINEERING ALTERNATIVES | CATEGORY: CIVIL | Torrington Auto Mech / Voc Ag Bldg. | SiteTek Financial Arts, Inc. | PAGE 2 OF 6 |
|---|---|---|---|---|

| CREATIVE / EVALUATION PHASE | | | | | DEVELOPMENT PHASE | | | | | IMPLEMENTATION PHASE | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | COST SAVINGS | | | | | | | | |
| ITEM NO. | DESCRIPTION | ADVANTAGES | DISADVANTAGES | SELECTED | ORIGINAL COST | PROPOSED COST | INITIAL COST SAVINGS | O& M COST SAVINGS | TOTAL RECOMMENDED COST SAVINGS | ACCEPT | REJECT | REVIEW | TOTAL IMPLEMENTED COST SAVINGS |
| C-1 | Revise building placement on site | Better use of site | Significant amount of re-design | X | | | | | | | | X | |
| C-2 | Provide for mirrored access to service bays from both sides | Improved safety in bays when no backing is required. | None | X | | | | | | | | X | |
| C-3 | Add perimeter security fencing | Increased security for equipment and vehicles due to remote location of facility | Restrictive site may make placement of fencing difficult. | X | | | | | $7,000 | | | X | |
| C-4 | "Soften" site edge adjacent to residential neighborhood | Reduce potential for complaints from neighbors | Additional cost and restrictive site conditions. | X | | | | | $8,000 | | | X | |
| C-5 | Demolish existing Auto Mech shop. Add barrier to West E Street | Takes excess square footage out of District maintenance inventory Screening mitigates loss of structure along West E Street. | Increased project costs for demolition and site screening. (walls or landscaping) | X | | | | | $63,000 | X | | | |
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| | | | | | | | | | | | | | |
| | TOTAL CIVIL | | | | | | | | $78,000 | | | | |

| VALUE ENGINEERING ALTERNATIVES | CATEGORY: ARCHITECTURAL | Torrington Auto Mech / Voc Ag Bldg. | SiteTek Financial Arts, Inc. | PAGE 3 OF 6 |
|---|---|---|---|---|

| CREATIVE / EVALUATION PHASE | | | | | DEVELOPMENT PHASE | | | | | IMPLEMENTATION PHASE | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | COST SAVINGS | | | | | | | | |
| ITEM NO. | DESCRIPTION | ADVANTAGES | DISADVANTAGES | SELECTED | ORIGINAL COST | PROPOSED COST | INITIAL COST SAVINGS | O& M COST SAVINGS | TOTAL RECOMMENDED COST SAVINGS | ACCEPT | REJECT | REVIEW | TOTAL IMPLEMENTED COST SAVINGS |
| A-1 | Limit extent of hazardous (H) occupancies in building | Reduce cost associated with Hazardous Occupancies. | Potential compromise in function and surveillance of curriculum spaces. | X | | | | | | X | | | |
| A-2 | Create hazardous materials storage space | Required by code for storage of hazardous materials. | None | X | | | | | | X | | | |
| A-3 | Revise restroom layouts | Improved restroom design. | None | X | | | | | | X | | | |
| A-4 | Confirm classroom use requirements and plan location | Accommodate needs of teaching curriculum. | May be costly, or impossible to accomplish due to area separation requirements of | X | | | | | | | | | |
| A-5 | Analyze computer layout (relative to lighting, windows and use requirements) | | | DS | | | | | | | | | |
| A-6 | Confirm occupancy type and exiting requirements with Fire Marshall | Resolution of issues impacting construction cost early in the design process. | Preliminary reviews may not be consistent with final reviews | DS | | | | | | | | | |
| A-7 | Use roll-up doors in lieu of overhead doors | Less interference with lighting, sprinklers, ductwork, etc. in ceiling | | X | | | | | $5,500 | | | X | |
| A-8 | Consider use of alternative exterior building material | Reduce construction cost. | Metal panels less durable than masonry. | X | | | | | | | X | | |
| A-9 | Address vehicle lift safety issues | | | DS | | | | | | | | | |
| A-10 | Test floor plan layouts in Voc. Ag. and Auto Shop areas | | | DS | | | | | | | | | |
| | TOTAL ARCHITECTURAL | | | | | | | | $5,500 | | | | |

| VALUE ENGINEERING ALTERNATIVES | CATEGORY: STRUCTURAL | Torrington Auto Mech / Voc Ag Bldg. | SiteTek Financial Arts, Inc. | PAGE 4 OF 6 |
|---|---|---|---|---|

| CREATIVE / EVALUATION PHASE | | | | | DEVELOPMENT PHASE | | | | | IMPLEMENTATION PHASE | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | COST SAVINGS | | | | | | | | |
| ITEM NO. | DESCRIPTION | ADVANTAGES | DISADVANTAGES | SELECTED | ORIGINAL COST | PROPOSED COST | INITIAL COST SAVINGS | O& M COST SAVINGS | TOTAL RECOMMENDED COST SAVINGS | ACCEPT | REJECT | REVIEW | TOTAL IMPLEMENTED COST SAVINGS |
| S-1 | Consider alternative structural systems | | | X | | | | | | X | | | |
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| TOTAL STRUCTURAL | | | | | | | | | $0 | | | | |

| VALUE ENGINEERING ALTERNATIVES | CATEGORY: MECHANICAL / PLUMBING | Torrington H.S. Auto/Ag Building | SiteTek Financial Arts, Inc. | PAGE 1 OF 7 |
|---|---|---|---|---|

| CREATIVE / EVALUATION PHASE | | | | | DEVELOPMENT PHASE | | | | | IMPLEMENTATION PHASE | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | COST SAVINGS | | | | | | | | |
| ITEM NO. | DESCRIPTION | ADVANTAGES | DISADVANTAGES | SELECTED | ORIGINAL COST | PROPOSED COST | INITIAL COST SAVINGS | O& M COST SAVINGS | TOTAL RECOMMENDED COST SAVINGS | ACCEPT | REJECT | REVIEW | TOTAL IMPLEMENTED COST SAVINGS |
| M1 | Sensor controls on Lavs, wc, and urinals. | Saves water and lower maintenance. | Higher constr. Cost. | DS | | | | | $1,000 | | | X | |
| M2 | Timeclocks on exhaust systems. | Saves energy. | Higher constr. Cost. | DS | | | | | | | | | |
| M3 | Linear exhaust hoods at welding stations. | Increases safety of occupants. Makes building more OSHA code compliant. | Higher constr. Cost. | DS | | | | | $16,000 | | | X | |
| M4 | Radiant floor heating in lieu of unit heaters. | Better heat of shop floors. | Higher constr. Cost. | X | | | | | $35,000 | | | X | |
| M5 | Manifold Oxy-Acetylene in lieu of carts. | Reduces potential of welding gas handling accidents. | Higher constr. Cost. | X | | | | | $2,000 | | | X | |
| M6 | Evaluate nomber of vehicle exhaust outlets. | Lowers construction costs. Reduces energy use. | Limits number of vehicles that can operate at one time in the auto shop. | X | | | | | ($1,500) | X | | | |
| TOTAL MECHANICAL / PLUMBING | | | | | | | | | $52,500 | | | | |

| VALUE ENGINEERING ALTERNATIVES | CATEGORY: ELECTRICAL | Torrington H.S. Auto/Ag Building | SiteTek Financial Arts, Inc. | PAGE 1 OF 7 |
|---|---|---|---|---|

| CREATIVE / EVALUATION PHASE | | | | | DEVELOPMENT PHASE | | | | | IMPLEMENTATION PHASE | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | COST SAVINGS | | | | | | | | |
| ITEM NO. | DESCRIPTION | ADVANTAGES | DISADVANTAGES | SELECTED | ORIGINAL COST | PROPOSED COST | INITIAL COST SAVINGS | O& M COST SAVINGS | TOTAL RECOMMENDED COST SAVINGS | ACCEPT | REJECT | REVIEW | TOTAL IMPLEMENTED COST SAVINGS |
| E1 | Review emergency lighting. | May reduce constr. Cost | none | DS | | | | | | | | | |
| E2 | High cut-off lighting at alley elevation. | Reduce complaints from residential neighborhood. | none | DS | | | | | | X | | | |
| E3 | Evaluate auto shop lighting locations. | Better lighting in space. | None | DS | | | | | | X | | | |
| E4 | Add security cameras to restricted areas. | Beter security on building | Higher constr. Cost. | X | | | | | $8,000 | | | X | |
| E5 | Add occupancy sensors at storage/low occupancy areas. | Reduce energy consumption. | Higher constr. Cost. | DS | | | | | $2,000 | | | X | |
| E6 | Filtered power for computers. | Reduce computer problems. | Higher constr. Cost. | DS | | | | | | | | | |
| E7 | Data interconnection to Main Campus (all communication systems). | Integrates building paging and security/Fire Alarm systems with main campus. | Higher constr. Cost. | X | | | | | $8,000 | | | X | |
| E8 | Add explosion proof fixtures/ outlets to hazardous areas. | Required to meet building codes. | Higher constr. Cost. | X | | | | | | X | | | |
| | **TOTAL ELECTRICAL** | | | | | | | | **$18,000** | | | | |

| VALUE ENGINEERING ALTERNATIVE | No. C-1 |
|---|---|

**PROJECT: Torrington Auto Mech / Voc Ag Building**

**ITEM: Revise placement on site**

**ORIGINAL DESIGN:** Schematic design has L-shaped building in the northeast corner of the site fronting on West 23rd Avenue and a residential alley.

**ALTERNATIVE DESIGN:** Revise site plan to provide better site access and mitigate potential noise and access problems with adjacent neighborhood. Access should be from West 23rd Avenue due to traffic and congestion on West E Street. Consider partial demolition of existing storage / wood shop building along West E Street.

**DISCUSSION / JUSTIFICATION:**
(Advantages / Disadvantages)

Advantages: Better use of site.

Disadvantages: Significant amount of re-design.

| COST SUMMARY | CAPITAL COST | ANNUAL O&M | TOTAL SAVINGS |
|---|---|---|---|
| Original Design | $ | $ | $ |
| Proposed Design | $ | $ | $ |
| Savings | $ | $ | $ |
| ANNUAL O&M SAVINGS | | | $ |
| TOTAL SAVINGS | | | $ |

| VALUE ENGINEERING ALTERNATIVE | No. C-2 |
|---|---|

**PROJECT: Torrington Auto Mech / Voc Ag Building**

**ITEM: Provide for mirrored access to service bays from both sides**

**ORIGINAL DESIGN:** Access to service bays for Voc Ag and Auto Mech are pull in / back out off of West 23rd Avenue and the adjacent residential alley.

**ALTERNATIVE DESIGN:** Provide for drive-thru access at all service bays or provision for future access via knock-out panels.

**DISCUSSION / JUSTIFICATION:**
(Advantages / Disadvantages)

Advantages: Improved safety in bays when no backing is required.

Disadvantages: None

| COST SUMMARY | CAPITAL COST | ANNUAL O&M | TOTAL SAVINGS |
|---|---|---|---|
| Original Design | $ | $ | $ |
| Proposed Design | $ | $ | $ |
| Savings | $ | $ | $ |
| ANNUAL O&M SAVINGS | | | $ |
| TOTAL SAVINGS | | | $ |

| VALUE ENGINEERING ALTERNATIVE | No. C-3 |
|---|---|

**PROJECT: Torrington Auto Mech / Voc Ag Building**

**ITEM: Add perimeter security fencing**

**ORIGINAL DESIGN:** Site plan does not indicate any perimeter security fencing.

**ALTERNATIVE DESIGN:** Add perimeter security fencing.

**DISCUSSION / JUSTIFICATION:**
(Advantages / Disadvantages)

Advantages: Increased security for equipment and vehicles due to remote location of facility.

Disadvantages: Restrictive site may make placement of fencing difficult.

| COST SUMMARY | CAPITAL COST | ANNUAL O&M | TOTAL ADD |
|---|---|---|---|
| Original Design | $ | $ | $ |
| Proposed Design | $ | $ | $ |
| Add | $ | $ | $ |
| **ANNUAL O&M SAVINGS** | | | $ |
| **TOTAL ADD** | | | $ 7,000 |

| VALUE ENGINEERING ALTERNATIVE | No. C- 4 |
|---|---|

**PROJECT: Torrington Auto Mech / Voc Ag Building**

**ITEM: "Soften" site edge adjacent to residential neighborhood**

**ORIGINAL DESIGN:** Voc Ag Shop bays and parking lot front on adjacent residential neighborhood.

**ALTERNATIVE DESIGN:** Screen building functions and parking from adjacent residences.

**DISCUSSION / JUSTIFICATION:**
(Advantages / Disadvantages)

Advantages: Reduce potential for complaints from neighbors

Disadvantages: Additional cost and restrictive site conditions.

| COST SUMMARY | CAPITAL COST | ANNUAL O&M | TOTAL ADD |
|---|---|---|---|
| Original Design | $ | $ | $ |
| Proposed Design | $ | $ | $ |
| Add | $ | $ | $ |
| **ANNUAL O&M SAVINGS** | | | $ |
| **TOTAL ADD** | | | $ 8,000 |

| VALUE ENGINEERING ALTERNATIVE | No. C- 5 |
|---|---|

**PROJECT: Torrington Auto Mech / Voc Ag Building**

**ITEM: Demolish existing Auto Mech shop. Add barrier to West E Street**

**ORIGINAL DESIGN:** Existing Auto Mech Shop between West E Street and football field to remain. No budget in current cost estimate for demolition of this building or site improvements.

**ALTERNATIVE DESIGN:** Demolish existing Auto Mech Shop building. Add screening between football field and West E Street. Building replacement implies demolition of existing structures.

**DISCUSSION / JUSTIFICATION:**
(Advantages / Disadvantages)

Advantages: Takes excess square footage out of District maintenance inventory. Screening mitigates loss of structure along West E Street.

Disadvantages: Increased project costs for demolition and site screening. (walls or landscaping)

| COST SUMMARY | CAPITAL COST | ANNUAL O&M | TOTAL ADD |
|---|---|---|---|
| Original Design | $ | $ | $ |
| Proposed Design | $ | $ | $ |
| Add | $ | $ | $ |
| **ANNUAL O&M SAVINGS** | | | $ |
| **TOTAL ADD** | | | $ 63,000 |

| VALUE ENGINEERING ALTERNATIVE | No. A-1 |
|---|---|

**PROJECT: Torrington Auto Mech / Voc Ag Building**

**ITEM: Limit extent of hazardous (H) occupancies in building**

**ORIGINAL DESIGN:** Schematic design floor plan does not identify layouts and uses in Voc Ag and Auto Mech Shops.

**ALTERNATIVE DESIGN:** Further discussion of curriculum and program requirements indicates the need for a plasma cutter / welder and other welding equipment in these spaces. The type of equipment and use may require Hazardous Occupancy construction including explosion-proof fixtures, outlets and four-hour separation walls. Hazardous occupancy requirements should be reduced and / or segregated from the rest of the facility.

**DISCUSSION / JUSTIFICATION:**
(Advantages / Disadvantages)

Advantages: Reduce cost associated with Hazardous Occupancies.

Disadvantages: Potential compromise in function and surveillance of curriculum spaces.

| 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: Torrington Auto Mech / Voc Ag Building**

**ITEM: Create hazardous materials storage space**

**ORIGINAL DESIGN:** Schematic design floor plans do not indicate any hazardous material storage.

**ALTERNATIVE DESIGN:** Add hazardous material storage for products used in Voc Ag and Auto Mech Shops. Either separate storage room or code approved metal storage units.

**DISCUSSION / JUSTIFICATION:**
(Advantages / Disadvantages)

Advantages: Required by code for storage of hazardous materials.

Disadvantages: None

| 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: Torrington Auto Mech / Voc Ag Building**

**ITEM: Revise restroom layouts**

**ORIGINAL DESIGN:** Boys and Girls restrooms per Schematic Design set dated 10/11/02

**ALTERNATIVE DESIGN:** Improve restroom layouts. Add urinal to Boys restroom, consider back-to-back plumbing wall.

**DISCUSSION / JUSTIFICATION:**
(Advantages / Disadvantages)

Advantages: Improved restroom design.

Disadvantages: None

| 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- 4 |
|---|---|

**PROJECT: Torrington Auto Mech / Voc Ag Building**

**ITEM: Confirm classroom use requirements and plan location**

**ORIGINAL DESIGN:** Combined classroom is located in the northeast corner of the floor plan.

**ALTERNATIVE DESIGN:** Auto Mech instructor has expressed a need for the classroom to have an observation window into the Auto Mechanics Shop.

**DISCUSSION / JUSTIFICATION:**
(Advantages / Disadvantages)

Advantages: Accommodate needs of teaching curriculum.

Disadvantages: May be costly, or impossible to accomplish due to area separation requirements of hazardous occupancies.

| 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: Torrington Auto Mech / Voc Ag Building**

**ITEM: Analyze computer layout (relative to lighting, windows and use requirements)**

**ORIGINAL DESIGN:** Current design shows computer counter area along the west wall of Classroom 103. Computer screens will get glare from the window on the opposite side of the classroom.

**ALTERNATIVE DESIGN:** Revise layout to reduce glare and accommodate the curriculum.

**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 | | | Design Suggestion |

| VALUE ENGINEERING ALTERNATIVE | No. A- 6 |
|---|---|

**PROJECT: Torrington Auto Mech / Voc Ag Building**

**ITEM: Confirm occupancy type and exiting requirements with Fire Marshall**

**ORIGINAL DESIGN:** Schematic floor plan has been developed based on assumptions made by the Architect regarding the code. State Fire Marshall interpretation could impact the floor plan and construction materials.

**ALTERNATIVE DESIGN:** Conduct a preliminary review with the Fire Marshall to determine occupancy type and discuss exiting issues.

**DISCUSSION / JUSTIFICATION:**
(Advantages / Disadvantages)

Advantages: Resolution of issues impacting construction cost early in the design process.

Disadvantages: Preliminary reviews may not be consistent with final reviews.

| COST SUMMARY | CAPITAL COST | ANNUAL O&M | TOTAL SAVINGS |
|---|---|---|---|
| Original Design | $ | $ | $ |
| Proposed Design | $ | $ | $ |
| Savings | $ | $ | $ |
| ANNUAL O&M SAVINGS | | | $ |
| TOTAL SAVINGS | | | Design Suggestion |

| VALUE ENGINEERING ALTERNATIVE | No. A- 7 |
|---|---|

**PROJECT: Torrington Auto Mech / Voc Ag Building**

**ITEM: Use roll-up doors in lieu of overhead doors**

**ORIGINAL DESIGN:** Schematic design elevations indicate segmented overhead doors at service bays.

**ALTERNATIVE DESIGN:** Use roll-up doors in lieu of overhead segmented doors.

**DISCUSSION / JUSTIFICATION:**
(Advantages / Disadvantages)

Advantages: Less interference with lighting, sprinklers, ductwork, etc. in ceiling.

Disadvantages: Minimal cost increase.

| COST SUMMARY | CAPITAL COST | ANNUAL O&M | TOTAL ADD |
|---|---|---|---|
| Original Design | $ | $ | $ |
| Proposed Design | $ | $ | $ |
| Add | $ | $ | $ |
| ANNUAL O&M SAVINGS | | | $ |
| TOTAL ADD | | | $ 5,500 |

| VALUE ENGINEERING ALTERNATIVE | No. A- 8 |
|---|---|

**PROJECT: Torrington Auto Mech / Voc Ag Building**

**ITEM: Consider use of alternative exterior building material**

**ORIGINAL DESIGN:** Schematic design elevations indicate a combination of various finishes of concrete masonry units.

**ALTERNATIVE DESIGN:** Consider alternative exterior building materials including metal panels or precast concrete panels. Maintain wainscot of masonry for durability.

**DISCUSSION / JUSTIFICATION:**
(Advantages / Disadvantages)

Advantages: Reduce construction cost.

Disadvantages: Metal panels less durable than masonry.

| 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-4 |
|---|---|

**PROJECT: Torrington High School Auto/Ag Building**

**ITEM: Radiant floor heating in lieu of unit heaters.**

**ORIGINAL DESIGN:** Auto and Agriculture Shop areas are heated with Infra-red gas fired radiant heat tubes with forced air combustion fans.

**ALTERNATIVE DESIGN:** In-floor hot water piping to provide radiant heat in the floor of the auto/ag shops. This alternate provides a more even heat at the working area, allows for melting of snow on the floor, and lower heating costs to achieve same comfort levels in the shop areas.

**DISCUSSION / JUSTIFICATION:**
(Advantages / Disadvantages)

Advantages:

Disadvantages:

| COST SUMMARY | CAPITAL COST | ANNUAL O&M | TOTAL ADD |
|---|---|---|---|
| Original Design | $ | $ | $ |
| Proposed Design | $ | $ | $ |
| Add | $ | $ | $ |
| **ANNUAL O&M SAVINGS** | | | $ |
| **TOTAL ADD** | | | $ 35,000 |

| VALUE ENGINEERING ALTERNATIVE | No. M-5 |
|---|---|

**PROJECT: Torrington High School Auto/Ag Building**

**ITEM: Manifold Oxy-Acetylene in lieu of carts.**

**ORIGINAL DESIGN:** Currently, welding carts are used to supply oxy/acetylene gases to the student welding stations.

**ALTERNATIVE DESIGN:** Locate welding gases outside in covered, secure storage area, and pipe welding gases to the various student welding stations. This eliminates the hazard of storing gases inside the shop area, and handling the compressed welding gas bottles; the outside storage bottles would be larger bottles that would be serviced / filled by local welding gas supplier.

**DISCUSSION / JUSTIFICATION:**
(Advantages / Disadvantages)

Advantages:

Disadvantages:

| COST SUMMARY | CAPITAL COST | ANNUAL O&M | TOTAL ADD |
|---|---|---|---|
| Original Design | $ | $ | $ |
| Proposed Design | $ | $ | $ |
| Add | $ | $ | $ |
| ANNUAL O&M SAVINGS | | | $ |
| TOTAL ADD | | | $ 2,000 |

| VALUE ENGINEERING ALTERNATIVE | No. M-6 |
|---|---|

**PROJECT: Torrington High School Auto/Ag Building**

**ITEM: Evaluate number of vehicle exhaust outlets.**

**ORIGINAL DESIGN:** Currently, there are six floor exhaust outlets provided in the three auto service bays for tune-ups, etc.

**ALTERNATIVE DESIGN:** Provide one exhaust outlet per work bay.

**DISCUSSION / JUSTIFICATION:**
(Advantages / Disadvantages)

Advantages: Typically, only 1 or 2 cars would need to be hooked up to a vehicle exhaust system at any one time. Reducing the number of exhaust outlets would save construction cost of the vehicle exhaust system, and save energy on the amount of make-up air to heat to replace the exhausted air from the shops.

Disadvantages:

| COST SUMMARY | CAPITAL COST | ANNUAL O&M | TOTAL SAVINGS |
|---|---|---|---|
| Original Design | $ | $ | $ |
| Proposed Design | $ | $ | $ |
| Savings | $ | $ | $ |
| **ANNUAL O&M SAVINGS** | | | $ |
| **TOTAL SAVINGS** | | | $ 1,500 |

| VALUE ENGINEERING ALTERNATIVE | No. E-7 |
|---|---|

**PROJECT: Torrington High School Auto/Ag Building**

**ITEM: Data interconnection to Main Campus (all communication systems).**

**ORIGINAL DESIGN:** No provisions made to interconnect new building with main campus.

**ALTERNATIVE DESIGN:** Conduit and/or wiring would be provided in this project to interconnect the new Auto/Ag shop building with the main campus paging, security and Fire Alarm systems.

**DISCUSSION / JUSTIFICATION:**
(Advantages / Disadvantages)

Advantages:

Disadvantages:

| COST SUMMARY | CAPITAL COST | ANNUAL O&M | TOTAL ADD |
|---|---|---|---|
| Original Design | $ | $ | $ |
| Proposed Design | $ | $ | $ |
| Add | $ | $ | $ |
| ANNUAL O&M SAVINGS | | | $ |
| TOTAL ADD | | | $ 8,000 |

| VALUE ENGINEERING ALTERNATIVE | No. E-8 |
|---|---|

**PROJECT: Torrington High School Auto/Ag Building**

**ITEM: Add explosion proof fixtures/ outlets to hazardous areas.**

**ORIGINAL DESIGN:** No explosion proof design features in the current project scope.

**ALTERNATIVE DESIGN:** Building Codes may require extensive explosion proof lighting/electrical outlets if building is classified as an H-1 or higher occupancy by the Fire Marshall.

**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 | | | $ |

# ATTENDANCE LIST

***Value Engineering Workshop***

Project: **Goshen County School District #1**
**Lingle / Ft. Laramie Middle School Addition, Southeast HS Addition**
**Torrington HS Voc Ed Building**
Date: **November 11 - 13, 2002**

## PARTICIPANTS:

| Name: | Job Function: | Organization/Address: | Phone/ Fax/ e-mail: |
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# Review of Capital Construction Projects for
# Wyoming School Facilities Commission

**District: Goshen County School District #1**

**Project: Torrington HS Voc Ed Building** **Architect: TSP**

## 1. FACILITIES GUIDELINES

| | Comment | Resolution |
|---|---|---|
| **1.1 Site Requirements** | | |
| 1.1.1 | Building fronts onto unimproved residential alley. Mitigate noise & access problems. | |
| 1.1.2 | Add perimeter security fencing | |
| 1.1.3 | Confirm location of existing utility poles in alley. May conflict with current design for parking and access to Voc Ag bays. | |
| 1.1.4 | Provide sufficient area for vehicle maneuvering on site to prevent backing onto public street. (current situation at existing facility) | |
| 1.1.5 | Provide sufficient off-street parking for projects and vehicles. | |
| **1.2 Vocational Education** | | |
| 1.2.1 | Explore a Master Plan for the entire property considering a combined Vocational Education facility with the existing wood shop. Consider relocation of existing maintenance functions to existing Voc Ag building and demolition of maintenance building. | |
| 1.2.2 | Test floor plan areas in Auto Mech and Voc Ag shop areas. Show proposed bay configuration, equipment, welding stations and Clean Lab area of Auto Shop. | |
| 1.2.3 | Confirm requirements of combined Classroom 103. Auto Mech instructor indicated need for visual contact to shop area. | |
| 1.2.4 | Analyze computer layout in Classroom 103 (relative to lighting, windows and use requirements) | |
| 1.2.5 | Consider drive-thru design for service bays to avoid backing of vehicles. | |
| 1.2.6 | Explore sharing wood shop equipment with existing wood shop program to avoid code issues of wood shop in proximity to welding functions. | |
| **1.3 Student Support Areas** | | |
| 1.3.1 | Revise restroom layouts. Consider common plumbing chase. Add urinal in Boy's Restroom. | |
| **1.4 Commons, Circulation and Entries** | | |
| 1.4.1 | Confirm exiting and corridor requirements with Fire Marshall. | |

## Review of Capital Construction Projects for
## Wyoming School Facilities Commission

**District: Goshen County School District #1**

**Project: Torrington HS Voc Ed Building** **Architect: TSP**

**1.5 Exceptional Children**

| | | |
|---|---|---|
| 1.5.1 | Confirm program requirements to meet the needs of special needs children within the Vocational Education curriculum area. This may include expanded restrooms to include shower facilities and instructor offices. | |

**1.6 Electrical and Lighting Considerations**

| | | |
|---|---|---|
| 1.6.1 | The outline specifications indicate a new overhead service (800A, 120/208V, 3 phase, 4 wire) will be provided by the local power company. The proposed panel distribution is as follows: 400Amp panel for AG Shop, 200 Amp panel for auto shop, and 200 amp for | |
| 1.6.2 | Provide fault current calculations for all new panels. | |
| 1.6.3 | New panel boards are to have 42 circuits and designed for 25% minimum spare capacity. Hinged door-in-door type panel fronts for maintenance ease are recommended. | |
| 1.6.4 | Wiring under specification section 16123 calls for call copper wire, which is consistant with facilities guidelines for small loads. As an alternate. Consider aluminum wire with compression lugs for 100 amps and larger wire. | |
| 1.6.5 | No grounding is shown on the drawings but is covered in the outline specifications. | |
| 1.6.6 | Interior lighting: Fixture layout and type are shown on the drawings and in a fixture schedule, and appear to be within facilities guidelines. | |
| 1.6.7 | Exterior lighting: 100W metal halide lights are proposed for exit/entrance doors, which is adequate for door illumination. However, site security lighting has not been approved. | |
| 1.6.8 | Evaluate light fixture location in Auto. Mech. Shop. Use wall mounted fixtures in service bays. Coordinate fixture locations with overhead doors. | |

**1.7 Plumbing Considerations**

| | | |
|---|---|---|
| 1.7.1 | Use of sensor operated water closets, urinals, and lavatories. | |

## Review of Capital Construction Projects for
## Wyoming School Facilities Commission

**District: Goshen County School District #1**

**Project: Torrington HS Voc Ed Building** **Architect: TSP**

**1.8 Heating, Ventilating and Air Conditioning (HVAC) Considerations**

| | | |
|---|---|---|
| 1.8.1 | Fire separation walls between Auto/Ag shops and classroom hallway will require fire/smoke dampers on penetrations of rated wall. Recommend water/water or air/air heat recovery on all Air Handling Units. | |
| 1.8.2 | Consider radiant floor heating in lieu of co-ray vac system | |
| 1.8.3 | Use linear exhaust hoods at welding area | |
| 1.8.4 | Control exhaust system with time clocks | |
| 1.8.5 | Evaluate number of vehicle exhaust outlets required | |

## 2. ENERGY EFFICIENCY

| | Comment | Resolution |
|---|---|---|

**2.1 Lighting fixtures and bulbs**

| | | |
|---|---|---|
| 2.1.1 | Use 3-lamp fixtures in classroom areas and 2-lamp fixtures in corridors, store rooms and restrooms. Consider using tandum 4'-T8 lamps in the shop area for the 8' fixtures. This eliminates two fluorescent lamp lengths for stocking. | |

**2.2 Security lighting and parking lot lighting**

| | | |
|---|---|---|
| 2.3.1 | Outside wall-mounted security lights are 100W metal halide. For area security, more lights are needed. Consider using high pressure sodium for more efficiency and longer lamp life. | |

**2.4 Exit Lighting**

| | | |
|---|---|---|
| 2.4.1 | Exit and emergency lights are shown on the drawings and appear to be most adequate. Exit lights are LED. | |

**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/Janitor rooms, Auto/AG Shops, maybe classrooms. | |

**2.7 Lighting and fan timers**

| | | |
|---|---|---|
| 2.7.1 | Building exhaust fans should be on EMS or 7 day time clock. Lighting could be controlled by EMS. | |

## Review of Capital Construction Projects for
## Wyoming School Facilities Commission

**District: Goshen County School District #1**

**Project: Torrington HS Voc Ed Building** **Architect: TSP**

**2.8 Electrical panels**

| | | |
|---|---|---|
| 2.8.1 | New panel boards are shown on the drawings and adequately specified. We suggest door-in-door in the front cover for maintenance ease. | |

**2.9 Water Saving Devices**

| | | |
|---|---|---|
| 2.9.1 | Self closing faucets on lavatories (sensor operated). Low flow water closets, and urinals. | |

## 3. SAFETY AND SECURITY

| | Comment | Resolution |
|---|---|---|

**3.1 Entrances and exits**

| | | |
|---|---|---|
| 3.1.1 | Consider drive-thru design for service bays to reduce backing of vehicles. | |
| 3.1.2 | Current access configuration to Voc Ag bays is via a residential alley with restricted turning area. Confirm ability to access Voc Ag bays for projects, specifically horse trailer fabrication. | |

**3.2 Building access system**

| | | |
|---|---|---|
| 3.2.1 | No building access system is specified or noted on the drawings. Consider adding a building access system similar to other buildings on campus with connection to main campus. | |

**3.3 Security system**

| | | |
|---|---|---|
| 3.3.1 | Security system symbols are shown in the symbol list, but none on the drawings. Verify requirements for this project. | |

**3.4 Internal communication system**

| | | |
|---|---|---|
| 3.4.1 | Provide interconnection to Main Campus for all communication systems | |

**3.5 Exterior and interior lighting**

| | | |
|---|---|---|
| 3.5.1 | Exterior lighting is not adequate on all sides of the new building. HPS lighting should be considered for area lighting in connection with parking lot lighting. | |

**3.6 Visual surveillance of building and site**

| | | |
|---|---|---|
| 3.6.1 | Area separation requirements for hazardous occupancies may restrict visual surveillance of Auto Mech and/or Voc Ed Shop areas. Add surveillance cameras as necessary for monitoring of these areas. | |

**3.7 Security cameras**

| | | |
|---|---|---|
| 3.7.1 | Security cameras are shown in the symbols list and specified. However, camera locations are not shown on the drawings. | |

## Review of Capital Construction Projects for
## Wyoming School Facilities Commission

**District: Goshen County School District #1**

**Project: Torrington HS Voc Ed Building** **Architect: TSP**

**3.8 Site fencing and gates**

| | | |
|---|---|---|
| 3.8.1 | Provide perimeter security fencing. | |

**3.9 Emergency vehicle access**

| | | |
|---|---|---|
| 3.9.1 | Indicated emergency vehicle access on site plan. | |

**3.10 Traffic segregation**

| | | |
|---|---|---|
| 3.10.1 | Maintain main ingress / egress to the site from West 23rd Avenue.<br>Adjacent stockyard west of the site causes traffice congestion on West E | |

**3.11 Educational equipment**

| | | |
|---|---|---|
| 3.11.1 | Address vehicle lift safety issues in Auto Mech Shop. | |

# Executive Summary – New Lingle- Ft. Laramie Middle School Addition

## Project Authorization:

| | |
|---|---|
| Enrollment: | 75 |
| Building SF: | 15,720 |
| Recommendation: | Approve funding for schematic design for a new middle school facility in Lingle at the existing elementary and high school site. Close the existing Fort Laramie / Lingle Middle School. |
| Total Project Cost: | $ 2,209,068 ($1,951,365 construction cost, $124 / SF) |

## Proposed Project:

| | |
|---|---|
| Building SF: | 17,019 |
| Design Phase: | Schematic Design, Oct. 15, 2002 |
| Architect: | TSP |
| Cost Estimator: | TSP Construction Services |
| Construction Costs: | $ 2,210,108 ($130 / SF) |

## Adjustments / Reductions:

(based on Capital Construction Project Review completed November 11 -13, 2002)

1. Delete demolition of existing Ft. Laramie Middle School from the budget. The District will address the disposition of this facility in their five-year plan.
2. Incorporate accepted value engineering savings recommendations.
    a. Reduce classroom addition building height by 6".
    b. Delete or reduce heights of all parapets
    c. Use one type of masonry at exterior walls
3. Increase project budget to reflect the increase from the authorized square footage. 17,019 SF vs. 15,720 SF = 1,299 SF @ $140.52 / SF = $182,535.
4. Adjust authorized budget to reflect additional costs not included in the original budget.
5. New 8" perimeter fire loop and fire lane. Add $71,800.

## Recommendation:

1. Authorize 17,019 SF Middle School addition with building systems and design similar to the Schematic Design submittal dated Oct. 15, 2002.
2. Increase project budget by $254,335 to $2,463,403 to account for additional square footage and additional site costs encountered during schematic design.

## Discussion / Justification:

1. The square footage increase proposed is consistent with the new Middle School Model being developed by the SFC.
2. Added costs are justifiable as unforeseen conditions that have arisen during Schematic Design.
3. Project design is the best value solution to meet the needs of the District.

| VALUE ENGINEERING ALTERNATIVES | CATEGORY: CIVIL | Lingle / Ft. Laramie High School Addition | SiteTek Financial Arts, Inc. | PAGE 1 OF 6 |
|---|---|---|---|---|

| CREATIVE / EVALUATION PHASE | | | | | DEVELOPMENT PHASE | | | | | IMPLEMENTATION PHASE | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | COST SAVINGS | | | | | | | | |
| ITEM NO. | DESCRIPTION | ADVANTAGES | DISADVANTAGES | SELECTED | ORIGINAL COST | PROPOSED COST | INITIAL COST SAVINGS | O& M COST SAVINGS | TOTAL RECOMMENDED COST SAVINGS | ACCEPT | REJECT | REVIEW | TOTAL IMPLEMENTED COST SAVINGS |
| C-1 | Revise size of gym, combine with classroom addition | Economy of scale of one structure instead of two. Easier access to gym for middle school students and after hours events. Better consolidation of the campus plan. | Loss of staff parking area. Potential access issues for existing bus garage and shop buildings. | X | | | | | | | X | | |
| C-2 | Confirm layout of practice fields with new fire lane | | | DS | | | | | | | | | |
| C-3 | Explore alternatives to direct, off-road parking | Improved safety. | Restricted site may not allow alternative location. | X | | | | | | X | | | |
| C-4 | Consider connecting gym sewer at existing shop | Reduction in sewer piping required to make connection. | Existing sewer line invert elevations may not allow enough fall to make connection to new restrooms at gym addition. | X | | | | | | | X | | |
| C-5 | Consider new gas service to classroom addition | | | X | | | | | $3,500 | | X | | |
| C-6 | Feed gas to classroom from elementary school | | | X | | | | | | X | | | |
| C-7 | Use Torrington Agricultural Building for Bus Storage | | | | | | | | | | X | | |
| C-8 | Add costs to demolish existing abandoned Ft. Laramie school building | | | | | | | | | X | | | |
| | TOTAL CIVIL | | | | | | | | $3,500 | | | | |

| CREATIVE / EVALUATION PHASE | | | | | DEVELOPMENT PHASE | | | | | IMPLEMENTATION PHASE | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | COST SAVINGS | | | | | | | | |
| ITEM NO. | DESCRIPTION | ADVANTAGES | DISADVANTAGES | SELECTED | ORIGINAL COST | PROPOSED COST | INITIAL COST SAVINGS | O& M COST SAVINGS | TOTAL RECOMMENDED COST SAVINGS | ACCEPT | REJECT | REVIEW | TOTAL IMPLEMENTED COST SAVINGS |
| A-1 | Reduce size of gym to approximately 5,500 SF | SF reduction directly reduces construction costs. Size more appropriate for a Middle School multi-purpose facility. | Smaller gym. | X | | | | | | | X | | |
| A-2 | Reduce size of windows by 20 - 30% | | | | | | | | | | X | | |
| A-3 | Use one type of masonry at exterior walls | Simpler to construct. No need for separate maintenance procedures for different types of masonry. Eliminates porous concrete masonry material adjacent to the ground and at roc drain leaders. | Deviation from current schematic design concept. | X | | | | | | X | | | |
| A-4 | Specify bird resistant exterior insulation and finish system (EIFS) | | | DS | | | | | | | | | |
| A-5 | Reduce building height by 6" | Reduction in exterior wall materials. Reduction in building volume. | Slight reduction in clear space to run ductwork and electrical conduit. | X | | | | | | X | | | |
| A-6 | Add two new vesibules | Conserves energy. Provides walk-off area for snow & mud. | Additional cost. | X | | | | | $8,000 | | | X | |
| A-7 | Increase General Classroom sizes to 875 - 900 SF | Value enhancement to make classrooms slightly larger while keeping within current total square footage. | None | X | | | | | | X | | | |
| A-8 | Add demonstration sink at Science Classroom | Allow instructor to demonstrate experiments without interference with student participation. | Increase in construction cost. | X | | | | | $6,500 | | | X | |
| A-9 | Reduce corridor width to 8 ft. | Allows increase in classroom size without increasing overall square footage | Slight reduction in secondary corridor width. | X | | | | | | X | | | |
| | SUBTOTAL ARCHITECTURAL | | | | | | | | $14,500 | | | | |

| VALUE ENGINEERING ALTERNATIVES | CATEGORY: ARCHITECTURAL | Lingle / Ft. Laramie High School Addition | SiteTek Financial Arts, Inc. | PAGE 3 OF 6 |
|---|---|---|---|---|

| CREATIVE / EVALUATION PHASE | | | | | DEVELOPMENT PHASE | | | | | IMPLEMENTATION PHASE | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | COST SAVINGS | | | | | | | | |
| ITEM NO. | DESCRIPTION | ADVANTAGES | DISADVANTAGES | SELECTED | ORIGINAL COST | PROPOSED COST | INITIAL COST SAVINGS | O& M COST SAVINGS | TOTAL RECOMMENDED COST SAVINGS | ACCEPT | REJECT | REVIEW | TOTAL IMPLEMENTED COST SAVINGS |
| A-10 | Consider foam roof in lieu of single-ply | Owner preference for foam roofing. Local applicator has been providing quality installations for many years at District facilities. | Possibility that preferred applicator may not get the bid. Not preferred specification of the design architect. | X | | | | | $17,000 | | | X | |
| A-11 | Provide roof access | | | DS | | | | | | | | | |
| A-12 | Delete or reduce height of all parapets | Reduces amount of exterior wall construction materials over the entire building perimeter. | None. | X | | | | | | X | | | |
| A-13 | Improve access to Gym - link both Gyms via a common vestibule | | | DS | | | | | | | | | |
| A-14 | Reduce amount of masonry | EIFS is a lower cost per SF system and would reduce the overall cost of the exterior for each additional SF of EIFS used. EIFS is lighter in weight and may have a slight impact the footing size, particularly at the Gymnasium. | EIFS is not as durable as masonry, has a shorter life-cycle and requires more maintenance. | X | | | | | | X | | | |
| A-15 | Consider metal siding with brick wainscot at Gym | Metal siding is a lower cost per SF system and would reduce the overall cost of the exterior for each additional SF of metal siding used. Metal siding is lighter in weight and may have a slight impact the footing size, particularly at the Gymnasium. | None. | X | | | | | | X | | | |
| | TOTAL ARCHITECTURAL | | | | | | | | $17,000 | | | | |

| VALUE ENGINEERING ALTERNATIVES | CATEGORY: STRUCTURAL | Lingle / Ft. Laramie High School Addition | SiteTek Financial Arts, Inc. | PAGE 4 OF 6 |
|---|---|---|---|---|

| CREATIVE / EVALUATION PHASE | | | | | DEVELOPMENT PHASE | | | | | IMPLEMENTATION PHASE | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | COST SAVINGS | | | | | | | | |
| ITEM NO. | DESCRIPTION | ADVANTAGES | DISADVANTAGES | SELECTED | ORIGINAL COST | PROPOSED COST | INITIAL COST SAVINGS | O& M COST SAVINGS | TOTAL RECOMMENDED COST SAVINGS | ACCEPT | REJECT | REVIEW | TOTAL IMPLEMENTED COST SAVINGS |
| S-1 | Two spans in lieu of three at Classroom Building (span over corridor) | Deletes footing, steel post and beams at Column Line C. | Increases depth of D – B bar joists. Increased depth may conflict with ductwork and mechanical equipment at 1-hour "Tunnel" design at corridor | X | | | | | | | X | | |
| S-2 | Masonry bearing walls in lieu of steel post and beam | | | DS | | | | | | | | | |
| S-3 | Check snow loads due to drifting at low roof | | | DS | | | | | | | | | |
| S-4 | Insulated pre-cast concrete panels in lieu of masonry at Gym | Reduces construction schedule. Precast concrete is readily available. | None. | X | | | | | | | X | | |
| S-5 | Use concrete masonry units in lieu of brick veneer at Gym | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | TOTAL STRUCTURAL | | | | | | | | $0 | | | | |

| VALUE ENGINEERING ALTERNATIVES | CATEGORY: MECHANICAL / PLUMBING | Lingle / Ft. Laramie High School Addition | SiteTek Financial Arts, Inc. | PAGE 5 OF 6 |
|---|---|---|---|---|

| CREATIVE / EVALUATION PHASE | | | | | DEVELOPMENT PHASE | | | | | IMPLEMENTATION PHASE | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | COST SAVINGS | | | | | | | | |
| ITEM NO. | DESCRIPTION | ADVANTAGES | DISADVANTAGES | SELECTED | ORIGINAL COST | PROPOSED COST | INITIAL COST SAVINGS | O& M COST SAVINGS | TOTAL RECOMMENDED COST SAVINGS | ACCEPT | REJECT | REVIEW | TOTAL IMPLEMENTED COST SAVINGS |
| M-1 | Use Sensor Operated Faucets, Battery Operated Flush Valves. | Saves water. Reduces vandalism problems. | Costs more to install. | DS | | | | | $3,500 | | | X | |
| M-2 | Add Drinking Fountains in classrooms & Gyms | Necessary to meet minimum plumbing fixtures required by cods. | Costs more to install. | DS | | | | | $3,000 | X | | | |
| M-3 | Locate Unit Ventilators on Low Roof at Gym | Reduce transmitted noise into Gym space. Easier access for maintenance. | None | DS | | | | | | X | | | |
| M-4 | Consider Heat Recovery on Gym & Classroom Units. | Saves energy. | Costs more to install. | X | | | | | $8,600 | | | X | |
| M-5 | Use Tempered water for Lavs. | Reduces constr. Costs. | None | DS | | | | | $700 | | | X | |
| M-6 | Add Eyewash on Science Teacher's Station. | Required to meet OSHA safety standards. | Costs more to install. | DS | | | | | $600 | X | | | |
| M-7 | Move A/C Units away from Corridor. | May reduce cost of smoke & fire dampers on penetrations of corridor one hour constr. | May cost more to implement. | DS | | | | | | | X | | |
| M-8 | Move Exhaust fan above Science Tables. | Reduces chance of recirculating bad air into the rooftop units. | None | DS | | | | | | X | | | |
| M-9 | Evaluate cost to add Fire Sprinkler System to new addition. | Enhances life safety. | Costs more to install. May require fire pump/water storage to satisfy Fire Codes. | X | | | | | $35,000 | | X | | |
| | TOTAL MECHANICAL / PLUMBING | | | | | | | | $51,400 | | | | |

| VALUE ENGINEERING ALTERNATIVES | CATEGORY: ELECTRICAL | Lingle / Ft. Laramie High School Addition | SiteTek Financial Arts, Inc. | PAGE 6 OF 6 |
|---|---|---|---|---|

| CREATIVE / EVALUATION PHASE | | | | | DEVELOPMENT PHASE | | | | | IMPLEMENTATION PHASE | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | COST SAVINGS | | | | | | | | |
| ITEM NO. | DESCRIPTION | ADVANTAGES | DISADVANTAGES | SELECTED | ORIGINAL COST | PROPOSED COST | INITIAL COST SAVINGS | O& M COST SAVINGS | TOTAL RECOMMENDED COST SAVINGS | ACCEPT | REJECT | REVIEW | TOTAL IMPLEMENTED COST SAVINGS |
| E-1 | Use Direct/Indirect in lieu of troffers. | Better lighting for computer environment, less stress on eyes lower lighting levels. | Higher installation costs. | X | | | | | $3,500 | | | X | |
| E-2 | High Intensity T-8 in lieu of metal halide. | No start-up time on lamps. | May be more expensive to install. | | | | | | $5,000 | | | X | |
| E-3 | Use T-5 Indirect fixtures at Gym | Better lighting; no start-up time on lighting. | May be more expensive to install. | X | | | | | $7,500 | | | X | |
| E-4 | Review need for outlets at casework walls. | Reduces constr. Costs | May limit computer use in classrooms. | DS | | | | | | X | | | |
| E-5 | Consider motion sensor controls at restrooms, storage, corridors. | saves energy. | More expensive to install. | DS | | | | | $2,000 | | | X | |
| E-6 | Add timer/photocell/motion sensor controls to exterior lighting. | saves energy. | More expensive to install. | DS | | | | | | X | | | |
| E-7 | Add electric hold-opens at corridor walls. | Allows teachers to leave hallway doors on classroom open; provides code compliant solution to doors being open on hallways. | Adds to constr. Cost. | DS | | | | | $1,500 | | | X | |
| E-8 | Evaluate new data/telecom hub and location. | May reduce constr. Costs on data/telecom wiring. | None | X | | | | | $1,500 | | | X | |
| | **TOTAL ELECTRICAL** | | | | | | | | **$21,000** | | | | |

| VALUE ENGINEERING ALTERNATIVE | No. A-1 |
|---|---|

**PROJECT: Lingle / Ft. Laramie High School Addition**

**ITEM: Reduce size of gym to approximately 5,500 SF**

**ORIGINAL DESIGN:** Current design is for a gym of approximately 8,000 SF. (50 x 84 competition court with 6 ft. each side and 8 ft. on each end with space for bleacher seating)

**ALTERNATIVE DESIGN:** Reduce size of gym to approximately 5,500 SF.

**DISCUSSION / JUSTIFICATION:**
(Advantages / Disadvantages)

Advantages: SF reduction directly reduces construction costs. Size more appropriate for a Middle School multi-purpose facility.

Disadvantages: Smaller gym.

| 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: Lingle / Ft. Laramie High School Addition**

**ITEM: Use one type of masonry at exterior walls**

**ORIGINAL DESIGN:** Schematic design elevations indicate a combination of stack bond concrete masonry units, face brick and exterior insulation and finish system for the exterior walls.

**ALTERNATIVE DESIGN:** Limit masonry to either face brick or concrete masonry units, not a combination of both. A similar articulation of the elevations can be accomplished with the face brick.

**DISCUSSION / JUSTIFICATION:**
(Advantages / Disadvantages)

Advantages: Simpler to construct. No need for separate maintenance procedures for different types of masonry. Eliminates porous concrete masonry material adjacent to the ground and at roof drain leaders.

Disadvantages: Deviation from current schematic design concept.

| 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: Lingle / Ft. Laramie High School Addition**

**ITEM: Reduce Classroom Addition building height by 6".**

**ORIGINAL DESIGN:** Schematic design elevations indicate a building height to top of parapet of 15' – 8".

**ALTERNATIVE DESIGN:** Reduce overall building height by approximately 6" to 15' – 2".

**DISCUSSION / JUSTIFICATION:**
(Advantages / Disadvantages)

Advantages: Reduction in exterior wall materials. Reduction in building volume.

Disadvantages: Slight reduction in clear space to run ductwork and electrical conduit.

| 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- 6 |
|---|---|

**PROJECT: Lingle / Ft. Laramie High School Addition**

**ITEM: Add two new vestibules at Classroom Addition**

**ORIGINAL DESIGN:** Both entrances to the Classroom Addition do not have vestibules.

**ALTERNATIVE DESIGN:** Add vestibules at both entrances to the Classroom Addition.

**DISCUSSION / JUSTIFICATION:**
(Advantages / Disadvantages)

Advantages: Conserves energy. Provides walk-off area for snow & mud.

Disadvantages: Additional cost.

| COST SUMMARY | CAPITAL COST | ANNUAL O&M | TOTAL SAVINGS |
|---|---|---|---|
| Original Design | $ | $ | $ |
| Proposed Design | $ | $ | $ |
| Add | $ | $ | $ |
| ANNUAL O&M SAVINGS | | | $ |
| TOTAL ADD | | | $ 8,000 |

| VALUE ENGINEERING ALTERNATIVE | No. A- 7 |
|---|---|

**PROJECT: Lingle / Ft. Laramie High School Addition**

**ITEM: Increase General Classroom size (#111 – 114) to 875 – 900 SF**

**ORIGINAL DESIGN:** General Classrooms are currently approximately 800 SF.

**ALTERNATIVE DESIGN:** Increase General Classroom square footage to 875 – 900 SF. Take space out of corridor width. (see A-9)

**DISCUSSION / JUSTIFICATION:**
(Advantages / Disadvantages)

Advantages: Value enhancement to make classrooms slightly larger while keeping within current total square footage.

Disadvantages: None

| 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- 8 |
|---|---|

**PROJECT: Lingle / Ft. Laramie High School Addition**

**ITEM: Add instructor demonstration sink at Science Classroom**

**ORIGINAL DESIGN:** Schematic design shows four sink locations for use by students.

**ALTERNATIVE DESIGN:** Add demonstration sink for instructor with acid drain.

**DISCUSSION / JUSTIFICATION:**
(Advantages / Disadvantages)

Advantages: Allow instructor to demonstrate experiments without interference with student participation.

Disadvantages: Increase in construction cost.

| COST SUMMARY | CAPITAL COST | ANNUAL O&M | TOTAL SAVINGS |
|---|---|---|---|
| Original Design | $ | $ | $ |
| Proposed Design | $ | $ | $ |
| Add | $ | $ | $ |
| ANNUAL O&M SAVINGS | | | $ |
| TOTAL ADD | | | $ 6,500 |

| VALUE ENGINEERING ALTERNATIVE | No. A- 9 |
|---|---|

**PROJECT: Lingle / Ft. Laramie High School Addition**

**ITEM: Reduce corridor width to 8 ft.**

**ORIGINAL DESIGN:** Schematic design has a 10 ft. clear corridor with lockers on one side with recessed classroom door openings.

**ALTERNATIVE DESIGN:** Reduce corridor width to 8 ft., put square footage into general classrooms. (see A-7) Guidelines allow 8 ft. width for corridors serving more than two, but less than ten classrooms.

**DISCUSSION / JUSTIFICATION:**
(Advantages / Disadvantages)

Advantages: Allows increase in classroom size without increasing overall square footage.

Disadvantages: Slight reduction in secondary corridor width.

| 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- 10 |
|---|---|

**PROJECT: Lingle / Ft. Laramie High School Addition**

**ITEM: Consider foam roof in lieu of single-ply.**

**ORIGINAL DESIGN:** Membrane roofing over rigid roof insulation.

**ALTERNATIVE DESIGN:** Spray-on foam roofing.

**DISCUSSION / JUSTIFICATION:**
(Advantages / Disadvantages)

Advantages: Owner preference for foam roofing. Local applicator has been providing quality installations for many years at District facilities.

Disadvantages: Possibility that preferred applicator may not get the bid. Not preferred specification of the design architect.

| COST SUMMARY | CAPITAL COST | ANNUAL O&M | TOTAL SAVINGS |
|---|---|---|---|
| Original Design | $ | $ | $ |
| Proposed Design | $ | $ | $ |
| Add | $ | $ | $ 17,000 |
| ANNUAL O&M SAVINGS | | | $ |
| TOTAL ADD | | | $ 17,000 |

| VALUE ENGINEERING ALTERNATIVE | No. A- 12 |
|---|---|

**PROJECT: Lingle / Ft. Laramie High School Addition**

**ITEM: Delete or reduce heights of all parapets.**

**ORIGINAL DESIGN:** Schematic design building sections indicate parapets at the Classroom Addition and Gymnasium.

**ALTERNATIVE DESIGN:** Reduce parapet heights or delete parapets and use gravel edge with gutters for roof drainage. Consider double pitch top chord truss at gym roof to reduce slope and height of parapets.

**DISCUSSION / JUSTIFICATION:**
(Advantages / Disadvantages)

Advantages: Reduces amount of exterior wall construction materials over the entire building perimeter.

Disadvantages: None.

| 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- 14 |
|---|---|

**PROJECT: Lingle / Ft. Laramie High School Addition**

**ITEM: Reduce amount of masonry**

**ORIGINAL DESIGN:** Schematic design elevations indicate a combination of brick masonry, concrete masonry units and exterior insulation and finish system (EIFS) at exterior walls.

**ALTERNATIVE DESIGN:** Reduce amount of masonry and increase amount of exterior insulation and finish system.

**DISCUSSION / JUSTIFICATION:**
(Advantages / Disadvantages)

Advantages: EIFS is a lower cost per SF system and would reduce the overall cost of the exterior for each additional SF of EIFS used. EIFS is lighter in weight and may have a slight impact the footing size, particularly at the Gymnasium.

Disadvantages: EIFS is not as durable as masonry, has a shorter life-cycle and requires more maintenance.

| 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- 15 |
|---|---|

**PROJECT: Lingle / Ft. Laramie High School Addition**

**ITEM: Consider metal siding with brick wainscot at Gym**

**ORIGINAL DESIGN:** Schematic design elevations indicate a combination of brick masonry, concrete masonry units and exterior insulation and finish system (EIFS) at exterior walls.

**ALTERNATIVE DESIGN:** Use brick masonry wainscot with metal studs and metal siding above for gym exterior wall.

**DISCUSSION / JUSTIFICATION:**
(Advantages / Disadvantages)

Advantages: Metal siding is a lower cost per SF system and would reduce the overall cost of the exterior for each additional SF of metal siding used. Metal siding is lighter in weight and may have a slight impact the footing size, particularly at the Gymnasium.

Disadvantages: None.

| 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- 1 |
|---|---|

**PROJECT: Lingle / Ft. Laramie High School Addition**

**ITEM: Two spans in lieu of three at Classroom Building (span over corridor)**

**ORIGINAL DESIGN:** Schematic design roof framing plan has two clear spans over the classrooms to post & beam in both corridor walls with a short span over the corridor.

**ALTERNATIVE DESIGN:** Span from Column Line D to B, eliminating Column Line C.

**DISCUSSION / JUSTIFICATION:**
(Advantages / Disadvantages)

Advantages: Deletes footing, steel post and beams at Column Line C.

Disadvantages: Increases depth of D – B bar joists. Increased depth may conflict with ductwork and mechanical equipment at 1-hour "Tunnel" design at corridor.

| 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- 4 |
|---|---|

**PROJECT: Lingle / Ft. Laramie High School Addition**

**ITEM: Use insulated pre-cast concrete panels in lieu of masonry at Gym**

**ORIGINAL DESIGN:** Concrete masonry bearing walls with face brick and EIFS at Gymnasium.

**ALTERNATIVE DESIGN:** Insulated, pre-cast concrete bearing walls at Gymnasium.

**DISCUSSION / JUSTIFICATION:**
(Advantages / Disadvantages)

Advantages: Reduces construction schedule. Precast concrete is readily available.

Disadvantages: None.

| 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-4 |
|---|---|

**PROJECT: Lingle Middle School Addition**

**ITEM: Consider Heat Recovery on Gym & Classroom Units.**

**ORIGINAL DESIGN:** Original design utilizes Rooftop Gas Fired Unit Ventilators to serve the Gym and Rooftop Air Conditioning Units with Gas heat to serve the classroom building.

**ALTERNATIVE DESIGN:** Provide air to air heat recovery wheels in the rooftop equipment to recover 80% of the heat/cooling energy in the air exhausted from the building to satisfy the outside air requirements.

**DISCUSSION / JUSTIFICATION:**
(Advantages / Disadvantages)

Advantages:

Disadvantages:

| COST SUMMARY | CAPITAL COST | ANNUAL O&M | TOTAL SAVINGS |
|---|---|---|---|
| Original Design | $ | $ | $ |
| Proposed Design | $ | $ | $ |
| Add | $ | $ | $ |
| **ANNUAL O&M SAVINGS** | | | $ |
| **TOTAL ADD** | | | $ 8,600 |

| VALUE ENGINEERING ALTERNATIVE | No. M-9 |
|---|---|

**PROJECT: Lingle Middle School Addition**

**ITEM: Evaluate cost to add Fire Sprinkler System to new addition.**

**ORIGINAL DESIGN:** No fire sprinkler piping included in current project scope.

**ALTERNATIVE DESIGN:** Install wet pipe fire sprinkler in both buildings to increase life safety considerations. And eliminate/reduce rated corridors, etc.

**DISCUSSION / JUSTIFICATION:**
(Advantages / Disadvantages)

Advantages:

Disadvantages:

| COST SUMMARY | CAPITAL COST | ANNUAL O&M | TOTAL SAVINGS |
|---|---|---|---|
| Original Design | $ | $ | $ |
| Proposed Design | $ | $ | $ |
| Add | $ | $ | $ |
| ANNUAL O&M SAVINGS | | | $ |
| TOTAL ADD | | | $ 35,000 |

| VALUE ENGINEERING ALTERNATIVE | No. E-1 |
|---|---|

**PROJECT: Lingle Middle School Addition**

**ITEM: Use direct / indirect Lighting in lieu of recessed fluorescent light troffers.**

**ORIGINAL DESIGN:** Lighting for classrooms based on recessed fluorescent light fixtures with standard acrylic lenses.

**ALTERNATIVE DESIGN:** Lighting in classrooms to be direct/indirect fluorescent light fixtures to improve lighting levels with computer monitors.

**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 ADD** | | | $ 3,500 |

| VALUE ENGINEERING ALTERNATIVE | No. E-3 |
|---|---|

**PROJECT: Lingle Middle School Addition**

**ITEM: Use T-5 indirect fixtures at Gym.**

**ORIGINAL DESIGN:** Metal Halide light fixtures to be mounted to bottom of structural roof framing.

**ALTERNATIVE DESIGN:** Use T-5 high intensity indirect fluorescent light fixtures in Gym to provide better lighting with instant start.

**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 ADD** | | | $ 7,500 |

| VALUE ENGINEERING ALTERNATIVE | No. E-8 |
|---|---|

**PROJECT: Lingle Middle School Addition**

**ITEM: Evaluate new data/telecom hub and location.**

**ORIGINAL DESIGN:** Current design based on cable trays with multiple fiber optic/cat 6 wiring between classroom terminals and hub located in existing building.

**ALTERNATIVE DESIGN:** Investigate computer/telecom needs in new classroom wing to determine if hub can be located in the classroom wing to eliminate need for cable trays and extensive computer wiring between new classroom wing and existing computer hub located in existing building.

**DISCUSSION / JUSTIFICATION:**
(Advantages / Disadvantages)

Advantages:

Disadvantages:

| COST SUMMARY | CAPITAL COST | ANNUAL O&M | TOTAL SAVINGS |
|---|---|---|---|
| Original Design | $ | $ | $ |
| Proposed Design | $ | $ | $ |
| Add | $ | $ | $ 1,500 |
| ANNUAL O&M SAVINGS | | | $ |
| TOTAL ADD | | | $ 1,500 |

# Review of Capital Construction Projects for
# Wyoming School Facilities Commission

**District: Goshen County School District #1**

**Project: Lingle-Ft. Laramie HS Addition** **Architect: TSP**

## 1. FACILITIES GUIDELINES

| | Comment | Resolution |
|---|---|---|
| **1.1 Site Requirements** | | |
| 1.1.1 | Confirm layout of practice fields with new fire lane. Size and location of fire lane may restrict amount of practice field available. | |
| 1.1.2 | Explore alternatives to direct, off-street parking at Third Street | |
| 1.1.3 | New gym is sited at the rear of the property and is difficult to access for both the public and new middle school classrooms. | |
| 1.1.4 | Evaluate design and financial feasibility of providing paved staff parking lot north of new classroom addition. Seems short sighted to spend the amount of money on improvements and still have a gravel parking lot. | |
| **1.2 Regular Classroom** | | |
| 1.2.1 | Regular Classroom sizes are currently designed at just over 800 SF. Increase General Classroom sizes to 875 - 900 SF | |
| **1.3 Science Classroom** | | |
| 1.3.1 | Add wet instructional area at Science Classroom | |
| 1.3.2 | Add safety goggle cabinet at Science Classroom | |
| 1.3.3 | Add eyewash fountain in Prep Room 108 | |
| **1.4 Physical Education** | | |
| 1.4.1 | Sht A-102: Multipurpose Addition Floor Plan - WPS Fac. Guidelines refer to 400-500 sf for 100 seats; suggest showing telescoping bleachers along south wall as an additive alternate. | |
| 1.4.2 | Improve internal access to new gym. Currently students must pass through the existing gym to get to the new gym from inside the building. Consider linking both gyms by one common vestibule. | |
| 1.4.3 | Consider reduction in size of multi-purpose gym. Current design is approximately 8,000 SF which is larger than the existing high school gym. A gym of approximately 5,500 SF is more consistent with this student population. | |
| 1.4.4 | Consider a dividing curtain in the multi-purpose gym to allow combined practice courts for after school activities. | |

## Review of Capital Construction Projects for
## Wyoming School Facilities Commission

**District: Goshen County School District #1**

**Project: Lingle-Ft. Laramie HS Addition** **Architect: TSP**

**1.5 Commons, Circulation and Entries**

| | | |
|---|---|---|
| 1.5.1 | Reduce corridor width to 8 feet plus 2 feet for lockers along one wall. | |
| 1.5.2 | Add vesitibules at west entrance to Classroom Addition and at connecting link to existing building. | |

**1.6 Technology Areas**

| | | |
|---|---|---|
| 1.6.1 | Test size of Computer Classroom 105. Current SF is just over 900 SF. Facilities Guidelines suggest SFSF of 1,050 - 1,400 SF for 6 - 8 Computer / Keyboarding Labs. | |

**1.7 Electrical and Lighting Considerations**

| | | |
|---|---|---|
| 1.7.1 | The outline specifications indicates the service and distribution system has been resently upgraded and has capacity to accommodate the new additions at 120/208V, 3 phase, 4 wire. The proposed 100A new panel "MIA" feeding the receptacles in the new classr | |
| 1.7.2 | Provide fault current calculations for all new panels. | |
| 1.7.3 | New panel boards are to have 42 circuits and designed for 25% minimum spare capacity. Hinged door-in-door type panel fronts for maintenance ease are recommended. | |
| 1.7.4 | Wiring under specification section 16123 calls for call copper wire, which is consistant with facilities guidelines for small loads. | |
| 1.7.5 | No grounding is shown on the drawings but is covered in the outline specifications. | |
| 1.7.6 | Interior lighting: Fixture layout and type are shown on the drawings and in a fixture schedule, and appear to be within facilities guidelines. | |

## Review of Capital Construction Projects for
## Wyoming School Facilities Commission

**District: Goshen County School District #1**

**Project: Lingle-Ft. Laramie HS Addition** **Architect: TSP**

| | | |
|---|---|---|
| 1.7.7 | Exterior lighting: 100W metal halide lights are proposed for exit/entrance doors, which is adequate for door illumination. However, site security lighting has not beem approved. | |

**1.8 Plumbing Considerations**

| | | |
|---|---|---|
| 1.8.1 | Use of sensor operated water closets, urinals, and lavatories. | |

**1.9 Heating, Ventilating and Air Conditioning (HVAC) Considerations**

| | | |
|---|---|---|
| 1.9.1 | Fire separation walls in classroom hallway will require fire/smoke dampers on penetrations of rated wall. Recommend water/water or air/air heat recovery on all Air Handling Units. | |

## 2. ENERGY EFFICIENCY

| | Comment | Resolution |
|---|---|---|

**2.1 Lighting fixtures and bulbs**

| | | |
|---|---|---|
| 2.1.1 | Use 3-lamp fixtures in classroom areas and 2-lamp fixtures in corridors, store rooms and restrooms. | |
| 2.1.2 | Consider use of indirect lighting in Classrooms | |

**2.2 Security lighting and parking lot lighting**

| | | |
|---|---|---|
| 2.2.1 | Outside wall-mounted security lights are 100W metal halide. For area security, more lights are needed. Consider using high pressure sodium for more efficiency and longer lamp life. | |

**2.3 Load shedding controls**

| | | |
|---|---|---|
| 2.3.1 | Recommend EMS control system for mechanical systems. | |

**2.4 Exit Lighting**

| | | |
|---|---|---|
| 2.4.1 | Exit and emergency lights are shown on the drawings and appear to be most adequate. Exit lights are LED. | |

**2.5 Occupancy sensors**

| | | |
|---|---|---|
| 2.5.1 | Toilet rooms, storage/Janitor rooms, weight rooms rooms, maybe classrooms. | |

**2.6 Lighting and fan timers**

| | | |
|---|---|---|
| 2.6.1 | Building exhaust fans should be on EMS or 7 day time clock. Lighting could be controlled by EMS. | |

**2.7 Water Saving Devices**

| | | |
|---|---|---|
| 2.7.1 | Self closing faucets on lLavs (sensor operated). Low flow water closets, and Urinals. | |

**2.8 Electrical panels**

| | | |
|---|---|---|
| 2.8.1 | New panel boards are shown on the drawings and adequately specified. We suggest door-in-door in the front cover for maintenance ease. | |

## 3. SAFETY AND SECURITY

| Comment | Resolution |
|---|---|

**3.1 Building access system**

| | | |
|---|---|---|
| 3.1.1 | Main entrance doors at new additions should be connected to the building access system. | |

**3.2 Security system**

| | | |
|---|---|---|
| 3.2.1 | Security system symbols are shown in the symbol list, but none on the drawings. Verify requirements for this project. | |

**3.3 Exterior and interior lighting**

| | | |
|---|---|---|
| 3.3.1 | Exterior lighting is not adequate on the north and south sides of the classroom addition, and on the north, east and west sides of the gym. HPS lighting should be considered for area lighting. | |
| 3.3.2 | Interior lighting appears to be quite adequate. If metal halide is used in the gym, auxiliary fluorescent fixtures will be needed. | |

**3.4 Security cameras**

| | | |
|---|---|---|
| 3.4.1 | Security cameras are shown in the symbols list and specified. However, camera locations are not shown on the drawings. | |

**3.5 Temporary and out-buildings**

| | | |
|---|---|---|
| 3.5.1 | Existing Maintenance, Garage and Bus Garage structures located on the north side of the site should have an assessment of their functions, condition and remaining useful life. These structures are located in a part of the site that restricts any further potential development. | |

**3.6 Bus loading area**

| | | |
|---|---|---|
| 3.6.1 | The proposed bus loading area is at the west end of the new Classroom Addition. This area shares the same access to the staff parking area. A separate bus loading pull-out area should be designated to avoid any potential traffic conflicts. | |

**3.7 Traffic segregation**

| | | |
|---|---|---|
| 3.7.1 | Bus loading and staff parking traffic use the same driveway. See item 3.6.1. | |

## Review of Capital Construction Projects for
## Wyoming School Facilities Commission

**District: Goshen County School District #1**

**Project: Lingle-Ft. Laramie HS Addition** **Architect: TSP**

**3.8 Fire Protection**

| | | |
|---|---|---|
| 3.8.1 | Evaluate cost of fire sprinkler system. If Wyoming adopts the International Building Code prior to construction, a sprinkler system will be required. | |

# Executive Summary – New Southeast High School Gym Addition

## Project Authorization:

| | |
|---|---|
| Building Name: | Southeast HS Old Gym |
| Building SF: | 9,000 |
| Year Built: | 1959 |
| Condition Score: | 30.00 (immediate need) |

| | |
|---|---|
| Building Name: | Southeast HS Red Brick Building |
| Building SF: | 9,180 |
| Year Built: | 1923 |
| Condition Score: | 23.91 (immediate need) |

| | |
|---|---|
| Recommendation: | Demolish the old red brick building and old gym at Southeast High School. Build a new 11,500 SF gym at Southeast HS |
| Total Project Cost: | $ 1,618,277 ($1,313,964 construction cost) |

## Proposed Project:

| | |
|---|---|
| Building SF: | 12,572 |
| Design Phase: | Schematic Design, Oct. 15, 2002 |
| Architect: | TSP |
| Cost Estimator: | TSP Construction Services |
| Construction Costs: | $ 1,943,819 |

## Adjustments / Reductions:

(based on Capital Construction Project Review completed November 11 & 13, 2002)

1. Reduce square footage of schematic design by approximately 1072 SF to meet the 11,500 SF authorization.
    a. Delete Corridor #101 (approximately 500 SF)
    b. Reduce size of Storage, Wrestling, Weight Training areas to 41'- 3" x 96'- 9" (3167 SF) Maintain 40 ft. depth dimension for wrestling mats.
2. Incorporate value engineering savings recommendations.
    a. Reduce parapet heights
    b. Reduce amount of emergency lighting
3. Adjust authorized budget to reflect additional costs not included in the original budget.
    a. Deep pile foundation system. Add $153,000.
    b. Demolition and disposal of existing structures. Add $170,000.
    c. New 8" perimeter fire loop. Add $83,000.
4. Bid wood gym floor as an additive alternate.

## Recommendation:

1. Authorize 11,500 SF gym addition with building systems and design similar to the Schematic Design submittal dated Oct. 15, 2002.
2. Increase project budget by $406,000 to $2,024,277 to account for unknown additional costs encountered during schematic design.

## Discussion / Justification:

1. Project meets the square footage authorized by MGT.
2. Added costs are justifiable as unforeseen conditions that have arisen during Schematic Design.
3. Project design is the best value solution to meet the needs of the District.

| VALUE ENGINEERING ALTERNATIVES | CATEGORY: CIVIL | Southeast Attendance Center | SiteTek Financial Arts, Inc. | PAGE 2 OF 6 |
|---|---|---|---|---|

| CREATIVE / EVALUATION PHASE | | | | | DEVELOPMENT PHASE | | | | | IMPLEMENTATION PHASE | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | COST SAVINGS | | | | | | | | |
| ITEM NO. | DESCRIPTION | ADVANTAGES | DISADVANTAGES | SELECTED | ORIGINAL COST | PROPOSED COST | INITIAL COST SAVINGS | O& M COST SAVINGS | TOTAL RECOMMENDED COST SAVINGS | ACCEPT | REJECT | REVIEW | TOTAL IMPLEMENTED COST SAVINGS |
| C-1 | Analyze site drainage issues including positive drainage away from structure | | | DS | | | | | | | | | |
| | | | | | | | | | | | | | |
| C-2 | Add protection at existing propane tank | | | DS | | | | | | | | | |
| | | | | | | | | | | | | | |
| C-3 | Expand existing parking lot - delete new lawn area | Grass will be difficult to grow and maintain at that location | Loss buffer zone between parking and new building. | X | | | | | $2,500 | | | X | |
| | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | TOTAL CIVIL | | | | | | | | $2,500 | | | | |

| VALUE ENGINEERING ALTERNATIVES | CATEGORY: ARCHITECTURAL | Southeast Attendance Center | SiteTek Financial Arts, Inc. | PAGE 3 OF 6 |
|---|---|---|---|---|

| CREATIVE / EVALUATION PHASE | | | | | DEVELOPMENT PHASE | | | | | IMPLEMENTATION PHASE | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | COST SAVINGS | | | | | | | | |
| ITEM NO. | DESCRIPTION | ADVANTAGES | DISADVANTAGES | SELECTED | ORIGINAL COST | PROPOSED COST | INITIAL COST SAVINGS | O& M COST SAVINGS | TOTAL RECOMMENDED COST SAVINGS | ACCEPT | REJECT | REVIEW | TOTAL IMPLEMENTED COST SAVINGS |
| A-1 | Evaluate need for north corridor | Overall square footage reduction of approximately 500 SF. | Coordination of door openings with bleacher seating arrangement | X | | | | | | X | | | |
| A-2 | Evaluate door swings from Wrestling and Weight Training rooms | Meets code requirement for exiting. | Coordination of location of out-swinging doors at Gymnasium | X | | | | | | | | | |
| A-3 | Reduce size of Gym | Reduction in square footage reduces construction cost. | Smaller gym. | X | | | | | | | X | | |
| A-4 | Consider alternative floor finish | Lower cost material and installation. More durable for multi-purpose functions. Less maintenance. | Not a competition basketball court. | X | | | | | ($60,000) | | X | | |
| A-5 | Salvage materials from Red Brick School for use in new building | | | DS | | | | | | | | | |
| A-6 | Reduce amount of seating in Gym | | | DS | | | | | | | | | |
| A-7 | Consider alternative external wall materials | Reduction in amount of face brick with some other less costly material will reduce the construction cost. EIFS or metal panel will be lighter in weight and could impact the size of substructure at the gym. This could be significant since the gym is on a deep pile foundation system. | Alternative materials may be less durable, shorter life-cycle and require additional maintenance. | X | | | | | | X | | | |
| A-8 | Reduce parapet heights | Reduction in masonry and EIFS materials around perimeter of both buildings | None | X | | | | | | X | | | |
| | **TOTAL ARCHITECTURAL** | | | | | | | | **($60,000)** | | | | |

| VALUE ENGINEERING ALTERNATIVES | CATEGORY: STRUCTURAL | Southeast Attendance Center | SiteTek Financial Arts, Inc. | PAGE 4 OF 6 |
|---|---|---|---|---|

| CREATIVE / EVALUATION PHASE | | | | | DEVELOPMENT PHASE | | | | | IMPLEMENTATION PHASE | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | COST SAVINGS | | | | | | | | |
| ITEM NO. | DESCRIPTION | ADVANTAGES | DISADVANTAGES | SELECTED | ORIGINAL COST | PROPOSED COST | INITIAL COST SAVINGS | O& M COST SAVINGS | TOTAL RECOMMENDED COST SAVINGS | ACCEPT | REJECT | REVIEW | TOTAL IMPLEMENTED COST SAVINGS |
| S-1 | Use precast concrete panel bearing walls for entire structure | Faster construction reducing lost time of second gym. Precast concrete is readily available. Lower cost in comparison to masonry. | Need to include brick masonry wainscot and accents to be compatible with existing building. | X | | | | | | | X | | |
| | | | | | | | | | | | | | |
| S-2 | Authorize preliminary geotechnical report ($10,000) | | | DS | | | | | | | | | |
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| | | | | | | | | | | | | | |
| TOTAL STRUCTURAL | | | | | | | | | $0 | | | | |

| VALUE ENGINEERING ALTERNATIVES | CATEGORY: MECHANICAL / PLUMBING | Southeast Attendance Center | SiteTek Financial Arts, Inc. | PAGE 5 OF 6 |
|---|---|---|---|---|

| CREATIVE / EVALUATION PHASE | | | | | DEVELOPMENT PHASE | | | | | IMPLEMENTATION PHASE | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | COST SAVINGS | | | | | | | | |
| ITEM NO. | DESCRIPTION | ADVANTAGES | DISADVANTAGES | SELECTED | ORIGINAL COST | PROPOSED COST | INITIAL COST SAVINGS | O& M COST SAVINGS | TOTAL RECOMMENDED COST SAVINGS | ACCEPT | REJECT | REVIEW | TOTAL IMPLEMENTED COST SAVINGS |
| M-1 | Move Rooftop Units onto lower roof. | Keeps equipment noise out of Gym. | None. | DS | | | | | | X | | | |
| M-2 | Tie into existing EMS. | Allows management of energy use. Saves energy. | Costs more to install. | DS | | | | | | | | | |
| M-3 | Evaluate Heat Recovery on Rooftop Units. | Saves energy. | Costs more to install. | X | | | | | $8,600 | | | X | |
| M-4 | Evaluate Cost of Fire Sprinkler System. | Enhances life safety. | Costs more to install. May require fire pump/water storage to satisfy Fire Codes. | X | | | | | $65,000 | | | X | |
| | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | |
| TOTAL MECHANICAL / PLUMBING | | | | | | | | | $73,600 | | | | |

| VALUE ENGINEERING ALTERNATIVES | CATEGORY: ELECTRICAL | Southeast Attendance Center | SiteTek Financial Arts, Inc. | PAGE 6 OF 6 |
|---|---|---|---|---|

| CREATIVE / EVALUATION PHASE | | | | | DEVELOPMENT PHASE | | | | | IMPLEMENTATION PHASE | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | COST SAVINGS | | | | | | | | |
| ITEM NO. | DESCRIPTION | ADVANTAGES | DISADVANTAGES | SELECTED | ORIGINAL COST | PROPOSED COST | INITIAL COST SAVINGS | O& M COST SAVINGS | TOTAL RECOMMENDED COST SAVINGS | ACCEPT | REJECT | REVIEW | TOTAL IMPLEMENTED COST SAVINGS |
| E-1 | Evaluate T-5 indirect lighting in Gym. | Better lighting; no start-up time on lighting. | May be more expensive to install. | X | | | | | $7,000 | | | X | |
| E-2 | Evaluate Aluminium Conductors on circuits over 100 amps. | Less expensive to install. | Requires care in installation. | DS | | | | | ($4,000) | | | X | |
| E-3 | Motion Sensors on lighting in corridors, storage, weight room. | Saves Energy. | More expensive to install. | DS | | | | | $3,000 | | | X | |
| E-4 | Reduce amount of Emergency lighting fixtures. | Less expensive to install. | None. | DS | | | | | ($2,000) | X | | | |
| E-5 | Add Rough-in for future perimeter security. | Provides for future upgrades. | More expensive to install. | | | | | | $1,300 | | | X | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | TOTAL ELECTRICAL | | | | | | | | $5,300 | | | | |

| VALUE ENGINEERING ALTERNATIVE | No. C- 3 |
|---|---|

**PROJECT: Southeast Attendance Center Addition, Yoder, WY**

**ITEM: Expand existing parking lot – delete new lawn**

**ORIGINAL DESIGN:** Add new lawn area north of new Gym / Wrestling / Weight Room Addition

**ALTERNATIVE DESIGN:** Use area north of new addition for additional student parking.

**DISCUSSION / JUSTIFICATION:**
(Advantages / Disadvantages)

Advantages: Grass will be difficult to grow and maintain at that location.

Disadvantages: Loss buffer zone between parking and new building.

| COST SUMMARY | CAPITAL COST | ANNUAL O&M | TOTAL ADD |
|---|---|---|---|
| Original Design | $ | $ | $ |
| Proposed Design | $ | $ | $ |
| Add | $ | $ | $ |
| ANNUAL O&M SAVINGS | | | $ |
| TOTAL ADD | | | $ 2,500 |

| VALUE ENGINEERING ALTERNATIVE | No. A-1 |
|---|---|

**PROJECT: Southeast Attendance Center Addition, Yoder, WY**

**ITEM: Evaluate need for north corridor**

**ORIGINAL DESIGN:** Six foot wide corridor between gymnasium and wrestling, weight training & storage rooms for length of gym.

**ALTERNATIVE DESIGN:** Delete corridor and enter wrestling, weight training and storage rooms directly from gymnasium.

**DISCUSSION / JUSTIFICATION:**
(Advantages / Disadvantages)

Advantages: Overall square footage reduction of approximately 500 SF.

Disadvantages: Coordination of door openings with bleacher seating arrangement.

| 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: Southeast Attendance Center Addition, Yoder, WY**

**ITEM: Evaluate door swings from Wrestling and Weight Training Rooms**

**ORIGINAL DESIGN:** Doors into Wrestling, Weight Training and Storage Rooms are in-swinging

**ALTERNATIVE DESIGN:** Due to size of the rooms, two exits may be required with out-swinging doors.

**DISCUSSION / JUSTIFICATION:**
(Advantages / Disadvantages)

Advantages: Meets code requirement for exiting.

Disadvantages: Coordination of location of out-swinging doors at 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: Southeast Attendance Center Addition, Yoder, WY**

**ITEM: Reduce size of Gym**

**ORIGINAL DESIGN:** 50 x 84 competition size court with 6 ft. on each side and 8 ft. on each end and space for bleacher seating. (approximately 6,500 SF)

**ALTERNATIVE DESIGN:** Reduce size of gymnasium

**DISCUSSION / JUSTIFICATION:**
(Advantages / Disadvantages)

Advantages: Reduction in square footage reduces construction cost.

Disadvantages: Smaller gym.

| 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- 4 |
|---|---|

**PROJECT: Southeast Attendance Center Addition, Yoder, WY**

**ITEM: Consider alternative floor finish**

**ORIGINAL DESIGN:** Hardwood basketball floor.

**ALTERNATIVE DESIGN:** Consider synthetic multi-purpose material or vinyl composition tile (VCT)

**DISCUSSION / JUSTIFICATION:**
(Advantages / Disadvantages)

Advantages: Lower cost material and installation. More durable for multi-purpose functions. Less maintenance.

Disadvantages: Not a competition basketball court.

| COST SUMMARY | CAPITAL COST | ANNUAL O&M | TOTAL SAVINGS |
|---|---|---|---|
| Original Design | $ | $ | $ |
| Proposed Design | $ | $ | $ |
| Savings | $ | $ | $ 60,000 |
| ANNUAL O&M SAVINGS | | | $ |
| TOTAL SAVINGS | | | $ 60,000 |

| VALUE ENGINEERING ALTERNATIVE | No. A- 7 |
|---|---|

**PROJECT: Southeast Attendance Center Addition, Yoder, WY**

**ITEM: Consider alternative exterior wall materials**

**ORIGINAL DESIGN:** Schematic elevations indicate face brick to 17'- 4" with exterior insulation and finish system above at gym.

**ALTERNATIVE DESIGN:** Evaluate alternative exterior wall materials to reduce amount of face brick and reduce weight on deep pile foundations.

**DISCUSSION / JUSTIFICATION:**
(Advantages / Disadvantages)

Advantages: Reduction in amount of face brick with some other less costly material will reduce the construction cost. EIFS or metal panel will be lighter in weight and could impact the size of substructure at the gym. This could be significant since the gym is on a deep pile foundation system.

Disadvantages: Alternative materials may be less durable, shorter life-cycle and require additional maintenance.

| 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- 8 |
|---|---|

**PROJECT: Southeast Attendance Center Addition, Yoder, WY**

**ITEM: Reduce parapet heights**

**ORIGINAL DESIGN:** Parapets at gym roof and low roof over wrestling, weight room & storage.

**ALTERNATIVE DESIGN:** Reduce height of parapets or delete parapets and use gravel edge with gutter for drainage. Consider using double pitch truss at gym to reduce amount of slope and height of parapets.

**DISCUSSION / JUSTIFICATION:**
(Advantages / Disadvantages)

Advantages: Reduction in masonry and EIFS materials around perimeter of both buildings.

Disadvantages: None

| 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 -1 |
|---|---|

**PROJECT: Southeast Attendance Center Addition, Yoder, WY**

**ITEM: Use precast concrete panel bearing walls for entire structure**

**ORIGINAL DESIGN:** Concrete masonry unit bearing walls with a combination of face brick veneer and exterior insulation and finish system

**ALTERNATIVE DESIGN:** Use insulated, pre-cast concrete bearing walls for the entire structure.

**DISCUSSION / JUSTIFICATION:**
(Advantages / Disadvantages)

Advantages: Faster construction reducing lost time of second gym. Precast concrete is readily available. Lower cost in comparison to masonry.

Disadvantages: Need to include brick masonry wainscot and accents to be compatible with existing building.

| 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-3 |
|---|---|

**PROJECT: Southeast Gym**

**ITEM: Evaluate Heat Recovery on Rooftop Units.**

**ORIGINAL DESIGN:** No heat recovery in current design.

**ALTERNATIVE DESIGN:** Provide heat wheel/heat pipe to recover the heat in the exhaust air back into the outside air introduced in the building to satisfy indoor air quality codes.

**DISCUSSION / JUSTIFICATION:**
(Advantages / Disadvantages)

Advantages:

Disadvantages:

| COST SUMMARY | CAPITAL COST | ANNUAL O&M | TOTAL ADD |
|---|---|---|---|
| Original Design | $ | $ | $ |
| Proposed Design | $ | $ | $ |
| Add | $ | $ | $ 8,600 |
| ANNUAL O&M SAVINGS | | | $ |
| TOTAL ADD | | | $ 8,600 |

| VALUE ENGINEERING ALTERNATIVE | No. M-4 |
|---|---|

**PROJECT: Southeast Gym**

**ITEM: Evaluate cost of Fire Sprinkler System.**

**ORIGINAL DESIGN:** No fire sprinkler system proposed for facility in current design.

**ALTERNATIVE DESIGN:** Install Wet pipe fire sprinkler system to satisfy State Codes.

**DISCUSSION / JUSTIFICATION:**
(Advantages / Disadvantages)

Advantages:

Disadvantages:

| COST SUMMARY | CAPITAL COST | ANNUAL O&M | TOTAL ADD |
|---|---|---|---|
| Original Design | $ | $ | $ |
| Proposed Design | $ | $ | $ |
| Add | $ | $ | $ 65,000 |
| ANNUAL O&M SAVINGS | | | $ |
| TOTAL ADD | | | $ 65,000 |

| VALUE ENGINEERING ALTERNATIVE | No. E-1 |
|---|---|

**PROJECT: Southeast Gym**

**ITEM: Evaluate T-5 indirect lighting in Gym.**

**ORIGINAL DESIGN:** Current lighting to be Metal Halide hanging fixtures.

**ALTERNATIVE DESIGN:** T-5 high intensity indirect fluorescent light fixtures.

**DISCUSSION / JUSTIFICATION:**
(Advantages / Disadvantages)

Advantages:

Disadvantages:

| COST SUMMARY | CAPITAL COST | ANNUAL O&M | TOTAL ADD |
|---|---|---|---|
| Original Design | $ | $ | $ |
| Proposed Design | $ | $ | $ |
| Add | $ | $ | $ 7,000 |
| ANNUAL O&M SAVINGS | | | $ |
| TOTAL ADD | | | $ 7,000 |

## Review of Capital Construction Projects for
## Wyoming School Facilities Commission

**District: Goshen County School District #1**

**Project: Southeast HS Gym Addition** **Architect: TSP**

### 1. FACILITIES GUIDELINES

| | Comment | Resolution |
|---|---|---|
| **1.1 Site Requirements** | | |
| 1.1.1 | Due to expansive soil conditions, analyze site drainage issues including positive drainage away from structure, elevated floor slabs and stormwater retention. | |
| 1.1.2 | Add protection at existing above ground propane tank located west of the existing gymnasium. | |
| 1.1.3 | Consider another alternative to the lawn area north of the new addition. Lawn areas are difficult to maintain in this climate. | |
| **1.2 Physical Education** | | |
| 1.2.1 | Sht A-101: Floor Plan - WPS Fac. Guidelines refer to 400-500 sf for 100 seats; suggest showing telescoping bleachers along north wall as an additive alternate. | |
| 1.2.2 | Sht A-101: Floor Plan - In Wrestling Rm 103 show 42 ft square wrestling mat to verify proper placement and circulation around perimeter of room. | |
| 1.2.3 | Sht A-101: Floor Plan - In Weight Training Rm 104 show weight equipment to verify proper space allocation. | |
| 1.2.4 | Consider reduction in size of multi-purpose gym. Current design is approximately 7,800 SF. A gym of approximately 5,500 SF is more consistent with this student population. | |
| 1.2.5 | Evaluate need for ceiling finishes in the Storage, Wrestling and Weight Training rooms. | |
| 1.2.6 | Consider a lower cost alternative floor finish to hardwood sports floor. There is already one competition gym at the school. | |
| 1.2.7 | Consider a dividing curtain in the to allow combined practice courts and / or physical education activities. | |
| **1.3 Commons, Circulation and Entries** | | |
| 1.3.1 | Evaluate need for Corridor 101 between gymnasium and Wrestling, Weight Training and Storage. | |
| 1.3.2 | Sht A-101: Floor Plan - Size (area) of Wrestling Rm 103 and Weight Training Rm 104 require doors into corridor to swing into the corridor as the direction of egress. | |

# Review of Capital Construction Projects for
# Wyoming School Facilities Commission

**District: Goshen County School District #1**

**Project: Southeast HS Gym Addition** **Architect: TSP**

### 1.4 Building Support Areas

| | | |
|---|---|---|
| 1.4.1 | Sht A-101: Floor Plan - Consider Storage Rm 102 with a 6070 HM door in lieu of the 3070 door shown. | |

### 1.5 Electrical and Lighting Considerations

| | | |
|---|---|---|
| 1.5.1 | Sht E-201: Lighting Plan in Wrestling Rm 103 shows suspended 2x4 grid ceiling in contrast to Building Section on Sht A-301 which shows no ceiling and exposed steel roof joists. | |
| 1.5.2 | The outline specifications indicate the facility is served by a 1200A, 120/208V, 3 phase, 4 wire service. Two new panels are proposed to accommodate the new addition, one 200A and one not noted. The drawings indicate the following loads: Lighting Fluoresc | |
| 1.5.3 | Provide fault current calculations for all new panels. | |
| 1.5.4 | New panel boards are to have 42 circuits and designed for 25% minimum spare capacity. Hinged door-in-door type panel fronts for maintenance ease are recommended. | |
| 1.5.5 | Wiring under specification section 16123 calls for all copper wire, which is consistant with facilities guidelines for small loads. | |
| 1.5.6 | No grounding is shown on the drawings, but is covered in the outline specifications. | |
| 1.5.7 | Interior lighting: fixture layout and type are shown on the drawings and in the fixture schedule, and appear to be within facilities guidelines. | |
| 1.5.8 | Exterior lighting: 100W metal halide lights are proposed at exit/entrance doors, which is adequate for door illumination. However, site security lighting has not been addressed. | |

### 1.6 Plumbing Considerations

| | | |
|---|---|---|
| 1.6.1 | Provide drinking fountain somewhere in new addition. | |

# Review of Capital Construction Projects for Wyoming School Facilities Commission

**District: Goshen County School District #1**

**Project: Southeast HS Gym Addition** **Architect: TSP**

### 1.7 Heating, Ventilating and Air Conditioning (HVAC) Considerations

| | | |
|---|---|---|
| 1.7.1 | Recommend water/water or air/air heat recovery on all Air Handling Units. | |

## 2. ENERGY EFFICIENCY

| | Comment | Resolution |
|---|---|---|

### 2.1 Lighting fixtures and bulbs

| | | |
|---|---|---|
| 2.1.1 | New interior light fixtures are high efficient fluorescent with T8 lamps and electronic ballasts. | |
| 2.1.2 | Use 2-lamp fixtures in wrestling, training, storage and corridor areas. | |

### 2.2 Security lighting and parking lot lighting

| | | |
|---|---|---|
| 2.2.1 | Outside wall-mounted security lights are 100W metal halide. For area security more lights are needed. Consider using high pressure sodium for more efficiency and longer lamp life. | |

### 2.3 Exit Lighting

| | | |
|---|---|---|
| 2.3.1 | Exit and emergency lights are shown on the drawings and appear to be adequate. Exit lights are LED. | |

### 2.4 Load shedding controls

| | | |
|---|---|---|
| 2.4.1 | Recommend EMS control system for mechanical systems. | |

### 2.5 Occupancy sensors

| | | |
|---|---|---|
| 2.5.1 | Storage/Janitor rooms, weight rooms rooms. | |

### 2.6 Lighting and fan timers

| | | |
|---|---|---|
| 2.6.2 | Building exhaust fans should be on EMS or 7 day time clock. Lighting could be controlled by EMS. | |

### 2.7 Electrical panels

| | | |
|---|---|---|
| 2.7.1 | New panel boards are shown on the drawings and adequately specified. Suggest door-in-door in the front cover for maintenance ease. | |

## Review of Capital Construction Projects for
## Wyoming School Facilities Commission

**District: Goshen County School District #1**

**Project: Southeast HS Gym Addition** **Architect: TSP**

### 3. SAFETY AND SECURITY

| | Comment | Resolution |
|---|---|---|

#### 3.1 Building access system

| | | |
|---|---|---|
| 3.1.1 | Main entrance doors at new additions should be connected to the building access system. | |

#### 3.2 Security system

| | | |
|---|---|---|
| 3.2.1 | Security system symbols are shown in the symbols list, but none appear on the drawings. Verify requirements for this project. | |

#### 3.3 Exterior and interior lighting

| | | |
|---|---|---|
| 3.3.1 | Exterior security lighting is not addressed on the north, west and south sides of the new addition. Consider using high pressure sodium lighting for area lighting for more efficiency and longer lamp life. | |
| 3.3.2 | Interior lighting appears to be quite adequate. If metal halide is used in the gym, auxiliary fluorescent fixtures will be needed. | |

#### 3.4 Security cameras

| | | |
|---|---|---|
| 3.4.1 | Security cameras are shown in the symbols list and specified. However, camera locations are not shown on the drawings. | |

#### 3.5 Fire Protection

| | | |
|---|---|---|
| 3.5.1 | Evaluate cost of fire sprinkler system. If Wyoming adopts the International Building Code prior to construction, a sprinkler system will be required. | |