



Montoursville Area School District

Lycoming County, Pennsylvania



Montoursville Area High School

Value Engineering Study

Implementation Plan



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Montoursville Area High School Renovations

Value Engineering Study Implementation Plan

A. New Buildings \$6,329,600

The Technical Education Center and Classroom Wing were already under construction by the fall of 2016, several months before this Value Engineering Study was authorized. A key premise of this VE Study is the goal to make the best use of this expense, and to avoid demolishing these new buildings if at all possible. The costs are listed separately because the majority have already been spent as of this writing and little opportunity exists to save money. The Tech Ed Center will be completed and placed into service unchanged from its design. The Value Engineering Study concludes that Science Classrooms are the only new educational space needed, because if they are built, all other needs and desires for educational space can be satisfied by repurposing other spaces. The Study thus recommends only building the Science Classrooms part of the Classroom Wing.

1. Technical Education Center \$3,957,600

The new Technical Education Center is nearing completion. The existing Industrial Arts and Agricultural Shops (8,266 sf) were constructed in 1993 and in very good condition. They were in the way of the planned Education Tower and were schedule for the first phase of demolition, therefore the new Technical Education Center was the first thing built.

Lobar \$2,377,400; Farfield \$568,900; Lecce \$466,300; Weather Tech \$307,700; Silvertip \$237,300

2. New Science Wing: \$2,372,000

No space in the existing high school is suitably built or of adequate size for science laboratories/classrooms that would meet current standards. Construct 7 new science labs/classrooms plus boys and girls restrooms in the northern part of the first floor. Only this part of the Classroom Wing would be built, as a single-story addition, not 3-story. Construct a hallway to connect to the end of the C corridor. CRA designed this area as the second floor of the northern 60% of the classroom wing. What was designed as the second floor should be able to be redesigned as the first floor.

The Classroom Wing is Phase 1D for the construction project; the suspension halted this part of the construction, and winterized it to protect from freezing. All of the interior and exterior footers and underground piping have been constructed in this area, along with roughly half of the first floor walls. Contractors have already purchased much of the materials that were to be used to construct this wing. Resumption would involve design modifications. Hot and chilled water to heat and cool this space could be brought out from the existing boiler room, which is located in the basement of this end of the C-Wing. The existing power supply has more than enough excess capacity to serve this added space, and the main power panels are located nearby in the basement below the kitchen. This wing **should** be completed before school starts this fall **if at all possible**. CRA would need to complete the design of modifications before the start of summer to give the Contractors as much time as possible to construct the work. Construction could resume ASAP, before school ends in June. Work could be done anytime, the wing is separate from the existing building. The Science wing's footprint is about 60% of the total classroom wing as designed. We would be building one floor out of 3 so $60\%/3 = 20\%$. However, the foundation is already built, underground pipe and conduit are installed, as is an elevator base. The roof costs the same no matter whether building 1 or 3 stories, so the cost should be about 35% of the cost for the entire education wing.

B. Physical Infrastructure Needs and Possible Modifications \$5,930,000

This second grouping identifies construction that is needed to remedy physical deficiencies in the existing school infrastructure: Codes repairs, windows, locker room moisture and other problems, ADA accessibility, etc. It consists primarily of routine property maintenance and other work that would have been needed even if no other changes were made. Not every task included in this grouping would have to be built at this time, but most would be needed within a few years. Other tasks including providing a new HVAC system and many of the electrical upgrades will improve functionality and reduce operating costs. These are also primary justifications for receiving the LEED Grant. With construction contracts already underway, now is the time to complete these repairs and upgrades.

Structure: The Central Keystone COG Codes inspector wrote a letter dated February 2, 2016 that identified a long list of International Property Maintenance Codes violations and a shorter list of International Building Codes violations in the existing building that had to be repaired within 180 days.

Wood Framing: In response to the Codes inspection, CS Davidson, CRA's structural engineer, investigated the wood framing in the 1931 and 1950 and found several problems that need remedied. The roof supports in D-wing Attic should be reinforced in several locations, particularly the juncture of the 1931 and 1950 structures and the Bell Tower support. Sponginess was reported in the flooring at the main high school entrance, which has been modified several times over the years. An investigation discovered 3 broken joists. The main hall floor may also be flexing excessively in other locations. Wood framing problems can be resolved easily at very low cost compared to all-new construction using a variety of approaches.

Masonry: The VE Concept Plan noted a minor crack at one point on the east wall. A crack at the top of the masonry wall in the chorus room is of concern and should be observed for movement. The brick ledge in the Boys Locker Room needs a permanent support. Some cracks in basement-level concrete walls were identified and should be investigated further but such cracks are common and often not a structural concern. All could be repaired this summer, as could any cracks in the exterior masonry wall at very low cost compared to all-new construction.

Purpose of a Value Engineering: The Value Engineering Team did not identify other issues with the wood framing, interior and exterior masonry foundation walls, brick piers, or steel support frame, in the crawl space under the D-wing. It did not observe significant cracking in the exterior or interior walls of the school. However, as Chad Smith of Central Keystone COG noted in a 2/5/16 email addressing the Codes violations, the purpose of a Value Engineering Study is to review the functionality of a project, and consider major changes to the Project. A Value Engineering Study is not an exhaustive review of minute details of physical conditions. That is the Codes Inspector's responsibility.

Estimated costs for the Codes work are listed below. The issues identified should be readily implemented at reasonable costs.

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| 3. Codes mandated repairs | \$50,000 |
| 4. Reinforce wood framing in D-Wing | \$40,000 |

5. Replace Windows \$208,000

A number of double-pane windows, most from 1989, have clouded up; the seal between the panes leaked, allowing air and moisture in that caused the coating to turn white and flake off. Replacing windows in masonry walls is straightforward. This could be done this summer, using the windows CRA specified. Most likely the sizes are different. Hunt's drawings include window schedules. Lobar's Schedule of Values (SOV) had \$208,000 for glazing materials and labor. To be determined whether CRA had the same quantity (probably close) or size (probably smaller except maybe in the classrooms) of windows as the existing school. Windows in occupied spaces need to be replaced when school is out of session. If all can't be done this summer, could prioritize certain areas for this summer. All could be complete by summer of 2017.

6. ADA accessibility \$250,000

ADA accessibility needs to be improved at multiple locations including the exits from the two courtyards; onto the stage in the Auditorium, from the cafeteria into the courtyard, and from the cafeteria to the parking lot. This could be started this spring and done this summer, although the exterior work could extend into the fall if needed without interrupting classes.

7. Repair EIFS \$5,000

The EIFS above the cafeteria could be repaired this spring, although it could extend into the summer or fall because it's exterior work and not particularly noisy. Any noisy work should be done when school is off. The cost and time to repair and repaint would be minimal.

8. Basement Water Leaks \$110,000

Water leaks into the basements at several locations, and these should be sealed, and the basement windows should be replaced. The B-Dry system would eliminate the leaks, estimated cost is \$70,000. The windows could be replaced for an estimated \$40,000 more. This could start this spring and continue into this summer, and even extend into the fall because it's away from classrooms. Any noisy work needs to be done when school is off.

9. Second Floor Locker Room \$112,000

The second floor locker room has significant issues, primarily floor and plumbing leaks into the first floor lobby at the library. This work is in the existing contract and could be done this summer, move it up in the schedule. This space is next to the library, any noisy work needs to be done when school is out.

10. First Floor Locker Rooms \$153,000

Other items, such as the moisture and ceiling problems in the first floor locker rooms could be remedied fairly easily. Suspended ceilings in all locker rooms should be replaced by a more suitable material. This work is in the existing contract and could be done this summer, move it up in the schedule. This space is next to the library, any noisy work needs to be done when school is out. It would need to be complete by the start of fall sports preseason in mid-August.

11. HVAC

\$3,500,000

Heating, Ventilation and Air Conditioning (HVAC): School officials report that the heating system has not been able to keep up in the coldest winter weather. Our heat load calculations indicate that the 3 existing boilers have twice the heating capacity that should be needed for the existing building. The three steam-hot water converters may be the problem, and/or it may be a local supply or distribution problem. Also, certain rooms are reported to be noticeably colder than others. Updating the buildings current system of automatic temperature controls with a new system of digital controls would improve overall comfort and allow operating efficiency to be optimized. This system would be as was specified for the new school. Altering the operating strategy might improve building temperatures during cold weather and would be easily accomplished utilizing the new automatic temperature control system.

The existing boilers are old enough that replacing them could provide the best value. Significant improvements have been made in the HVAC systems in the past 20 years that both improve comfort and greatly reduce energy consumption. Many of the design features included in CRA's design of the proposed new school could be incorporated into an upgrade of the existing school. The hot-water heating system proposed for the new building is exactly what we would use, were we selecting a system. If the District elects to replace the existing boilers, the new boilers can be set in the existing mechanical room. If new boilers are set, they would need to have sufficient capacity for the existing building and the addition proposed by this value engineering study. New supply and return piping mains would be required in place of the existing steam supply and condensate return piping which currently feed the various steam to hot water converters. These mains, which snake through classroom areas, could be designed and built by the end of this summer.

The converters would be removed and the existing (1993) hot water supply and return piping connected to the new supply and return water mains. The entire hot water heating system would be rebalanced and would function just as was proposed for the new school. This heating system could be completed before the 2016-17 heating season starts this fall, using the specified equipment. CRA's engineer would need to design the system. Larger boilers possibly may be needed, given the old building has a higher heat demand, plus adding the Science Wing. Work away from occupied spaces - in the boiler room, basements, attic and outside the building including on the roofs could be done anytime, except for particularly noisy tasks. Work in classrooms, offices, hallways and other occupied spaces would, along with noisy tasks, need to occur when school is out, mostly in the summer.

Air conditioning could be added at a reasonable cost. Much of the existing school is air conditioned. The existing packaged and unitary equipment (air handlers and rooftop units) could be evaluated and replaced with new as required. The newer equipment would be easily integrated with the new digital automatic temperature control system, which is already part of Farfield's Contract. Existing classrooms are generally not air conditioned.

- Existing classroom unit ventilators handling the fresh air required in each classroom should be reconditioned in place or replaced entirely.
- Options when replacing would include self-contained heating and cooling units with either DX or chilled water as the means for cooling.
- The hot water piping feeding individual heaters most likely is not large enough to also carry chilled water. Therefore, if chilled water is utilized for classroom cooling then new chilled water piping would be needed. This piping, which would snake through classroom areas, could be designed and built by the end of this summer.
- The existing makeup air units could possibly be repaired, but it may make more sense to replace them.

This cooling system could be completed before school starts this fall, using the specified equipment. CRA's engineer would need to design the system. The costs should be less than the new construction listed in Farfield's Schedule of Values lists because fewer components are needed. Work away from occupied spaces - in the boiler room, basements, attic and outside the building including on the roofs could be done anytime, except for particularly noisy tasks. Work in classrooms, offices, hallways and other occupied spaces would, along with noisy tasks, need to occur when school is out, mostly in the summer.

The proposed new science classroom wing would be conditioned as was designed for the new building. This is part of Farfield's ongoing contract.

12. Fire Suppression

\$300,000

Fire Suppression: Jeff McGuire reports that sprinklers could be added to the entire building at a very reasonable cost. This would exceed current fire codes, and in some ways them; not all spaces need to be sprinklered, and CRA's design did not have universal coverage. See attached report.

Requirement: Per the current building code adopted by the state of Pennsylvania, an automatic sprinkler system shall be provided for Educational Group E occupancies as follows:

- Throughout all Group E fire areas greater than 12,000 square feet in area.
- Throughout every portion of educational buildings below the lowest level of exit discharge serving that portion of the building. Exception: An automatic sprinkler system is not required in any area below the lowest level of exit discharge serving that area where every classroom throughout the building has at least one exterior exit door at ground level.

Existing Condition: An automatic sprinkler system was installed throughout the majority of the basement to provide sprinkler coverage in Storage and Mechanical Rooms as part of the 1993 renovation project. This system is supplied by a 6" fire service that is fed from the Montoursville public water system. System components included a 6" Double Detector Check Valve backflow preventer, fire department connection, and black steel distribution piping. All protected areas are zoned via a tampered butterfly valve, flow switch, and test and drain valves.

Recommendation: Retrofit an automatic sprinkler system throughout the existing building(s) and include the new science classrooms. The existing first and second floors should be protected with a wet pipe system zoned per area to limit systems size to 52,000 sq. ft. The combustible attic space shall be protected with a dry pipe system to prevent the potential of freezing. A class I standpipe shall be installed on the stage of the existing Auditorium. All automatic sprinkler systems and standpipe system shall be designed and installed in accordance with NFPA 13 (2007) and NFPA 14 (2007) respectively.

The existing 6" fire service is adequately sized to support a fully sprinklered building. The existing 6" and 4" main, which is currently installed throughout the basement and a portion of the first floor, could be utilized as an express main to supply all the new zone valves. Zone valves could be located in janitor's closets or above ceilings in convenient locations for access. All new piping could be concealed above existing drop ceilings. The existing systems in the basement should be extended to include portions currently not protected, such as the weight room, stairs, and miscellaneous rooms.

The ability of the existing water supply to support the demand of the standpipe and dry system would need further investigation would need to be further investigated to determine if a fire pump would be required. If required, a vertical inline electric fire pump with associated piping and control panels could easily be installed in the location of the existing 6" fire service.

This fire protection system could be completed before school starts this fall, using the specified equipment. CRA's engineer would need to design the system. Silvertip's Schedule of Values includes a cost of \$282,850 for a Sprinkler Subcontractor under the current project. Work away from occupied spaces - in basements, attics, the auditorium, and outside the building could be done anytime, except for particularly noisy tasks. Work in classrooms, offices, hallways and other occupied spaces would, along with noisy tasks, need to occur when school is out, mostly in the summer.

13. Plumbing \$40,000

Some fixtures are reported as damaged or not functioning. They should be repaired or replaced as needed. The plumbing piping in the crawl space and elsewhere is like new, nearly all of it was replaced in 1993. Modern pipe, fittings, valves and fixtures used for plumbing lasts decades. Several sewage pump stations are located in basement spaces, and they cause odor problems. The problems could be eliminated with better ventilation or positive odor control. Another option would be setting these units outside, some distance from the school.

14. Electrical incl. Fire Alarm & Controls: \$932,000

The electrical distribution system is in good working order and has significant excess capacity. Auditorium/stage lighting needs further investigation and may need replaced. The Simplex fire alarm system is a concern due to parts availability, and it should be replaced within 5-10 years at most. High-pressure sodium vapor lights on the building exterior should be replaced, possibly the metal halide parking lot lights also. Exterior Emergency lights need replaced, they only have a single bulb and do not meet current code. Classroom and hall lights appear to be in good condition. The clocks don't work and should be replaced. CRA's Study identified a need to upgrade the wireless computer network.

Mr. Martarano reviewed several years' worth of electric bills, which indicated that the power distribution system is operating at 31% of capacity, so it has more than enough spare capacity to handle the building addition proposed by this value engineering study. The Generator is in good working order, and has few operating hours given its age. We recommend performing a load bank test to determine the emergency electrical system's spare capacity. See attached report for additional information.

The upgrades identified above could be completed before school starts this fall, using the specified equipment. CRA's engineer would need to design the modifications. Lecce's Schedule of Values identifies the costs; it has line items and groupings for Site Lighting, CCTV Clocks, Fire Alarms, data/phone, speakers/sound. Work away from occupied spaces - in basements, attic and outside the building could be done anytime, except for particularly noisy tasks. Work in classrooms, offices, hallways and other occupied spaces would, along with noisy tasks, need to occur when school is out, mostly in the summer. The District accepted delivery of a number of lighting fixtures that Lecce had purchased but could not be returned because they were a custom design. As many of those lights as can be made good use of should be incorporated into the project.

Site Lighting	\$23,100
CCTV Cameras	\$6,500
Clocks	\$8,700
Fire Alarms	\$125,200
Data/phone	\$396,400
speakers/sound	\$332,000
Install lights	\$40,000

15. Security: \$40,000

Federal and building code security guidelines evolve continuously. Door hardware has been purchased under the current construction contract for the new construction. Should all of this hardware not be needed for the new construction, much of it could be used to upgrade the existing entranceways. It is to be determined whether the hardware could be adapted to fit the existing doors, or vice-versa. Security has been identified as a concern that in part justified the new school, but this Study notes that the Tech Ed Center is completely independent and the passage to it is both outdoors and unsecured.

This Study identifies a means to improve security at the main entrance. It is understood that all other doorways are locked from the exterior, but allow people to leave. The proposed new school also had multiple entrances, which are required for fire exits that were locked from the outside. The changes recommended by this Study provide the same functionality as those proposed by the new construction, but at far lower cost by using existing entranceways. New doors could be installed in the existing entranceways for approximately \$40,000.

It would appear that the security upgrades could be implemented by the start of School this fall, and involve modification to the components present in the existing construction contracts. Probably need CRA to provide designs for the existing entrances. Do existing doors need replaced is a key question. Lobar's contract, which identifies the costs, includes-new doors and entranceways. Extra costs to use the specified components on the existing entranceways should be limited. Work in the basements, attic and outside the building including on the roofs could be done anytime, they are away from classrooms, except that particularly noisy tasks should take place when school is out. Work in classrooms, offices, hallways and other occupied spaces would need to occur when school is out, mostly in the summer.

16. Interior finishes: \$880,000

This Study did not include an exhaustive review of interior finishes, but the drawings of the 1993 project indicate just about all of the finishes were renewed under that project. 20-25 years is the useful life of paint, carpet, flooring drop ceilings and other interior finishes. The vinyl composition tile in particular is exhibiting problems. Reviewing the interior finishes and renewing them as needed should be part of the renovation project. All of this would occur in occupied spaces so it would need to be done when school is out, possibly this summer or at the latest the summer of 2017.

Masonry: Any loose brick on the building exterior should be reset and repointed. All cracks, interior and exterior should be repaired as soon as possible using the unit price under Lobar's contract.

Roof: The roof is only 4 years old; much of the old tongue and groove decking was replaced by plywood at that time. All new shingles were placed on the D-Wing roof and new built-up-roofing was placed on all flat roofs. A significant amount of ponding could be seen from the B-wing second floor on the flat roof of the hallway to the Auditorium. This probably could only be permanently resolved by placing a positive pitch on the roof – basically rebuilding the roof. We would not do that at this time. The Value Engineering team recommends using single-ply membrane roofing set at a positive pitch without stone ballast on all future roof upgrades at all facilities. Our experience has been that flat built up roofs with center drains are continuously prone to problems. No \$ at present.

Parking and Practice Field: The building and site layout proposed by this value engineering study would retain all parking that existed before the construction project starting. The football practice field would not shrink further. The parking lot could be restored as soon as the science wing is completed. The practice field will need to remain available to contractors throughout construction, but conceivably the footprint could be reduced.

C. Reconfigure Educational Spaces \$3,049,000

This grouping includes optional improvements that are not specifically required to satisfy existing building deficiencies. They would improve the school's educational function and working spaces for administration and other support functions above what exists at present. These optional enhancements are included to match what CRA had in the new school, and this Value Engineering Study does not specifically recommend implementation of any one or all. Only one, the conversion of the Library to an Auxiliary gym and weight room, is included in the present construction contracts. Costs for all other enhancements were estimated on a per-square-foot basis using RS Means, the industry standard guide for estimating building construction costs.

For each potential improvement or modification listed below, the following recommendations on timing are all predicated by this caveat: Should the Board elect to implement [this component]...

17. Shops to Library & Computer Labs: \$310,000

Former Industrial Arts/Agricultural Shops: This 8,266 sf section was constructed in 1993 and is in very good condition. Options to repurpose this space:

- a. Auxiliary gymnasium: The combined area of these rooms is much greater than a full-sized basketball court (84x50 ft. = 4,200 sf), and would seem to be ideal for this purpose. Unfortunately, the head height is far too low at 14 feet 5 inches to the bottom of the steel joists. In addition, a suitable surface would be needed, typically hardwood or resilient, which would further reduce the head height. Gymnasium flooring is pricey compared to what is needed for other purposes. This is not recommended.
- b. Relocate Library to here. These rooms, together, are larger than the existing Library/Media Center (5,341 sf). The interiors would need refinished and most likely walls removed, and new ones set elsewhere. Windows could be added if desired. This space is remote to most classrooms under the existing layout, but the proposed corridors from the gym entrance to the Proposed Science wing and that Wing to the C Corridor would link this space much more closely to the other core academic spaces.
- c. Relocate Computer Labs to here: The Computer Labs could be relocated here to be adjacent to the Library primarily because these are similar functions and are typically quiet rooms. Both would work well in this space.
- d. Band/Chorus/Drama/Cheerleaders practice room(s). CRA proposed a 'black box theater' in the back of the new auditorium that they designed. This feature and the extravagant-sounding name became focal points for opposition to the project. The administration identified an actual need for such a space to provide functionality of 'black box theater'. The walls here are higher than a conventional classroom, and most of the other building. This space could be converted to a practice room at relatively low cost, and the conversion could include features that would be important for this function, such as soundproofing and acoustic treatments. The relative isolation from the rest of the school would prove a benefit for these functions. Also, it would be next to parking, which would be beneficial because these are primarily after-school activities. This is not recommended because there is other space that would serve this purpose better.

These shops will be vacated no later than the end of this school year. CRA would need to first design the modifications, and contractors would need to propose change orders. Construction could begin ASAP once this is all sorted out, ideally this summer. It may be possible to complete this work by the end of this summer; that should be a key priority. If not, December 2016 should definitely be achievable. Because this area is isolated from the rest of the school, construction could continue during the school year.

If there was a high degree of confidence that this conversion would be completed by the end of this summer, other spaces could also be converted this summer, and be ready by the start of the 2016-17 school year.

18. Computer Labs to Practice Rooms: \$96,000

Three computer labs occupy the end of the B-corridor, adjacent to the Band and Chorus Rooms. As noted above these labs could be relocated next to the Library in the former Industrial Arts/Agricultural Shop. These rooms could be repurposed as Band/Chorus/ Drama/Cheerleaders practice room(s). Having these practice rooms next to Band and Chorus would be ideal because of ready access to instruments and all musical equipment. These rooms could also provide needed storage space, which is lacking on or near the stage, for set pieces and props. As noted above, these rooms are close to an exit and parking, which are particularly useful for after-school activities. Assuming the Computer labs move to the former shops at the end of 2016, these rooms could be converted during the winter and spring of 2017, and be ready to occupy by the end of the 16-17 school year. If no structural modifications are made these rooms possibly could be modified during the school year. Noisy work would need to be completed when school is out. This would make them available when needed for summer band and cheerleading practices.

19. Library to Gym and Weight Room: \$200,000

Original Gym current Library to Auxiliary Gym: This section was the original gymnasium built in 1950, and converted to a Library, Wellness Center and other purposes in 1993. The ongoing construction project includes converting this area into an Auxiliary Gym, with the other half being the Wellness Center. The height is 22 feet to the bottom of the steel joists. The original gym floor (maintained and upgraded between 1950 and 1993) remains in place in the library. However, a new floor may be needed, particularly if the existing was cut up in the conversion. CRA's design could be followed, and the construction allowed to resume.

Free Weight Room: Another goal of the project was to bring the free weight room upstairs, so one instructor can monitor all weightlifting and other physical training. CRA's design had the free weight room in part of the new building that they had planned, adjacent to the old gym. If this option is pursued, the best arrangement for a free weight room would need investigated. Assuming the Library moves to the former shops at the end of 2016, the Library could be converted starting as early as the winter and spring of 2016, and be ready to occupy by the end of the 16-17 school year. However, much of the work in this area would be too disruptive to classes and offices next door, and we believe this conversion would most likely need to occur in the summer of 2017.

20. Auditorium and Stage \$400,000

Auditorium and Stage: The Stage is cramped when larger groups perform. It has wings that obstruct the view of the sides, and the curtains open to the sides. The visible part of the stage could be widened by eliminating small closets on both sides and changing from curtains that open to the side to a drop-down curtain. Space at the back of the stage is taken up by stairs and a landing. The depth of the stage could be increased by freeing up all of the space in the back. Another option would be to expand the stage out into the auditorium, there is a level area, apparently for an orchestra, which is never used. One or both could be done. Stage lighting and sound controls should be investigated further and replaced if needed. ADA accessibility could be provided by adding a ramp on the left side (facing the audience) that loops out into the courtyard and ties into the hallway coming from the B corridor.

The ramp would be enclosed. Costs for the ramp are included above. Changes above the floor - closet, curtain, etc. could be done quickly and inexpensively, it would appear that they could be done this summer. Stage modifications would be intricate, they could be done in the summer of 2017. Any noisy work probably needs to be done when school is out.

Seats: Many seats in the Auditorium are breaking (the metal pans themselves) and repairs are not easily effected. The seat bottoms are the problems, not the backs. We recommend required further investigation into the seating problem whether they can be repaired or should be replaced, individually or by rows. Lobar's SOV included \$207,000 for all-new seating in a somewhat larger Auditorium. Replacing all seats would represent the highest cost option. This could be done anytime, it's away from classrooms and shouldn't be particularly noisy.

21. Music Instruction: \$197,000

The Band and Chorus rooms could be enlarged. The east and west walls support the weight of the roof, so expanding by moving the east wall out into the parking lot could be done but would be complicated and expensive. They could be expanded to the north and south if needed. This area was constructed in 1993 as an addition on the east (back) side of the stage; the rooms are 19 feet tall to the ceiling as is appropriate for this use. The band teachers' office and music library are located in between the band and chorus rooms, and are single-story uses, although the walls are the same height. The office and library could be either shrunk or relocated, and the band and/or chorus rooms expanded into this space. Other spaces – instrument storage and practice rooms - could be reconfigured. Sound proofing panel installation should be completed. We note the unused mezzanine above the instrument storage and practice rooms and is accessed by two stairs. This could be used for instrument storage and/or the music library, supplemented by ADA-accessible space on the first floor. The extent of modifications would control the timing of changes to this area. Major structural modifications should occur over a summer because these spaces are occupied every day during the school year. If a design could be prepared in time, work conceivably could begin this summer; if not, the summer of 2017.

22. Science to other Classrooms: \$415,000

These 7 classrooms and labs are much larger than what is needed for a regular classroom. If needed they could be converted into 8 to 10 regular classrooms by moving walls. Whatever classes are suitable could be relocated to here. They could of course be converted to other uses than classrooms.

If the new Science Wing is built as suggested, these classrooms will be vacated by this August, the start of the 16-17 school year. If they are needed during that school year, they could be used as is, unmodified. If modifications are desired for the long term, CRA could design them, and contractors could propose change orders, over the course of the school year. Construction could then begin ASAP once school ends in June 2017 and be completed over that summer. The reconfigured rooms would then be available at the start of the 17-18 school year. Any structural modifications would be too disruptive to classrooms next door, and we believe this conversion should be limited to school breaks if possible.

23. South end of D-wing to offices: \$225,000

Convert classrooms into administrative offices – District and/or High School. The CRA Design cited a desire to have the High School offices in an area with windows. If the classes that are held in these rooms are relocated, this space could be converted to district and high school offices, guidance offices, the nurse’s suite, whatever would best suit. This Study does not presume to identify how best to reconfigure this space. Converting these classrooms could begin as soon as they are no longer used for classes, possibly as early as this August, the start of the 16-17 school year, if those classes are moved into the former science classrooms, while science moves to the new wing. This space is isolated from the rest of the school so it could be converted during the school year.

Nursing: could be enlarged by expanding in place or relocating. At present, it is isolated from the High School offices and guidance counseling. If relocated this space could be repurposed.

24. High School Offices to Lobby: \$180,000

Relocating offices to the south end of the D-wing, and (possibly) rearranging the district and guidance spaces would allow part or all of this space to be converted into an enlarged lobby/gathering space. This would improve security by providing controlled entrances into the high school itself, and separately into the administrative offices, all from this lobby. The lobby could be enlarged into a gathering space. Conversion could begin once these purposes are relocated, possibly by the end of the 16-17 school year. This space is integral to the school’s function so it should be converted when school is out, possibly the summer of 2017 or at the latest the summer of 2018.

25. Second Floor Fine Arts: \$250,000

A generously sized Fine Arts suite (6,945 sf) was built in 1993 using a unique floating frame structure above the cafeteria. This included four large Classrooms (6,302 sf). The entire structure is supported on a steel frame, none of it bears on the cafeteria walls directly below. Other than the exterior finish and some window issues (mentioned earlier), this relatively new building appears to be in good condition. This exterior finish is a synthetic stucco called Exterior Insulation and Finish System or EIFS. The EIFS has cracked and pulled away from the substructure in many places. It could be repaired by reattaching the loose portions and repairing the cracks. If repaired the entire surface should be recoated because getting the color of the new coat to match the existing exactly is very difficult. Another option: the EIFS could be replaced with a new exterior finish; many alternatives are available.

The administration has identified concerns about the functionality of the Fine Arts Classrooms. For example, the kiln is in a closet that is not next to the ceramics classroom. The total area provided for Fine Arts is substantial and may be excessive for the current needs. It is to be expected that the layout may need changed over time to reflect current instructional needs for art, drafting, graphic arts, etc. For example, manual drafting is dead, everyone uses CAD, as is film photography, all of which is now digital. A dark room is no longer needed. The CRA design only had two Fine Arts classrooms, and half the space. This Study does not presume to identify how best to reconfigure this space except to say that the square footage seems more than adequate for the needs. Further study is warranted to determine whether to change the layout, and if so, how best to do so. If the space available significantly exceeds the needs, some could be repurposed. The extent of modifications would control the timing of changes to this area. Major modifications should occur over a summer because these spaces are regularly occupied during the school year. If a design could be prepared in time, work conceivably could begin this summer; if not, the summer of 2017.

26. Site/Civil Engineering: \$190,000

Bus loop: The CRA Feasibility Study identified bus safety as a concern. In the morning, traffic is heavy with busses parking northbound along Arch Street, and passenger vehicles driving mostly southbound, and some northbound, and dropping students. Arch Street south of Cherry Street is very narrow, just two lanes wide. It is three lanes wide from Mulberry to Cherry. Busses enter at different times over nearly a half hour. Students must pass between busses to enter the school; passenger vehicle traffic is heavy and disorganized. In the afternoons passenger vehicle traffic is much lighter. Many busses are there at the same time for student dismissal. They line up along Arch Street from Mulberry Street to the parking lot entrance south of Cherry. A bus loop could be added parallel to Arch Street starting north of the entrance walkway and ending before Mulberry. The loop would be set west of the oak trees, between the trees and High School. This would allow car drop-off both ways on Arch in the morning and more bus parking in the afternoon. If needed a shorter loop could be added along Mulberry parallel to the Auditorium, or possibly more parking. Any paving added would be at the expense of green space.

The enclosed Site Plan shows the loops, which we estimate to cost \$110,000 for Arch and \$80,000 for Mulberry Street. This work could be designed and constructed by the start of School this fall.

An alternative would be to change Arch Street to two-lanes northbound only from Broad to Mulberry Streets in the mornings and afternoons; this would require Borough approval, but the extent of construction and cost would be minimal. Many municipalities do this.

Conclusion: Adding 20,000 sf of new Building Space (Tech Ed and Science classrooms) frees up enough existing space to enlarge all existing purposes and provide additional new functionality.

Lifespan: A building that has a good roof, a solid foundation, does not have moisture problems from above or below, and has the interior climate controlled maximizes the lifespan of all interior and exterior building materials. Stone walls, reinforced double-Wythe masonry walls (brick and block) and wood framing last for well over a hundred years. The new roof should be good for 30 to 40 years. Doors and windows, interior walls, drop ceilings, gym floors, tile floors, etc. should have a similar lifespan, as do electrical switchgear, wiring, switches and receptacles, plumbing and HVAC piping. Interior finishes (carpet, linoleum, paint, etc.) on the other hand have a useful life in a school of about 20 years. Industrial boilers and other HVAC system components last at least 20 years, and can be rebuilt to last nearly as long again, but rapid technical improvements in boiler construction, energy efficiency and controls can make replacing them after 20 years cost-effective. The same is true for lighting. The intent of this Value Engineering Study's recommendations is that another major project should not be needed due to the building's condition for 20-40 years. However, routine maintenance by the District, *supplemented by manufacturers and specialists as needed* is imperative to avoid decline over time. Also, the District should plan to renew interior finishes about every 20 years.

Components of Existing High School That CRA Design Demolishes and Replaces

- 1. Forty-Four (44) Academic Classrooms plus support rooms**
 - a. **7 English** classrooms **plus** lab, journalism, yearbook
 - b. **6 Math** classrooms
 - c. **7 Social Sciences** classrooms
 - d. **3 Foreign Language** classrooms
 - e. **5 Misc.** classrooms (Health/Drivers Ed, ESL, Suspension/Study Hall)
 - f. **7 Science** classrooms **plus 6** Science prep & storage rooms
 - g. **2 Family & Consumer Science** classrooms
 - h. **7 Special Education** classrooms
2. Nurse's Office
3. Auditorium (renovated in 1993)
4. High School and District Offices (renovated in 1993)
5. Guidance Counseling (renovated in 1993)
6. **5-room** Wood Shop including 4 support rooms (all new building in 1993)
7. **5-room** Metal Shop including 4 support rooms (all new building in 1993)
8. **9-room** Agriculture Suite including Classes, Shop and Greenhouse (all new buildings in 1993)
9. Band and Chorus Suite (all new building in 1993) **2 Band and Chorus rooms plus 7** support rooms
10. Fine Arts Studio (all new building in 1993) **4 classrooms plus 4** art storage and support rooms
11. Cafeteria (renovated in 1993, part new in 1998)

**Montoursville Area School District
Value Engineering Implementation Plan
Estimated Project Costs**

Construction Component	Estimated	Basis
New Buildings		
1 New Science Wing	\$ 2,372,000	Contractors' SOV, Architrave SF estimate
2 Technical Education Building	<u>\$ 3,957,600</u>	Contractors' Schedules of Values (SOV)
Subtotal New Buildings	\$ 6,329,600	
Physical Infrastructure Needs		
3 Codes mandated repairs	\$ 50,000	estimated
4 Reinforce wood framing in D-Wing	\$ 40,000	estimated
5 Replace Windows	\$ 208,000	Eng. review of Lobar SOV, vendor quote
6 ADA accessibility	\$ 250,000	Architrave estimate
7 Repair EIFS	\$ 5,000	Architrave estimate
8 Basement Water Leaks	\$ 110,000	Architrave estimate w/ B-Dry quote
9 Second Floor Locker Room	\$ 112,000	Contractors' SOV, Architrave SF estimate
10 First Floor Locker Rooms	\$ 153,000	Contractors' SOV, Architrave SF estimate
11 Heating, Ventilation and Air Conditioning	\$ 3,500,000	Farfield SOV reviewed by RJ Ertel
12 Fire Suppression	\$ 300,000	ICON Est. & review of Silvertip SOV
13 Plumbing	\$ 40,000	Bassett Eng. & Architrave estimate
14 Electrical incl. Fire Alarm & Controls	\$ 932,000	Lecce SOV reviewed by Martarano
15 Security	\$ 40,000	Eng & Arch. review of Lobar SOV
16 Interior finishes	<u>\$ 880,000</u>	Lobar SOV
Subtotal Physical Infrastructure Needs	\$ 6,620,000	
Reconfigure Educational Spaces		
17 Shops to Library & Computer Labs	\$ 310,000	Architrave square foot (SF) estimate
18 Computer Labs to Practice Rooms	\$ 96,000	Architrave square foot estimate
19 Library to Gym and Weight Room	\$ 200,000	Contractors' SOV, Architrave SF estimate
20 Auditorium and Stage	\$ 400,000	Eng & Arch. Review of Lobar SOV
21 Music Instruction	\$ 197,000	Architrave square foot estimate
22 Science to other Classrooms	\$ 415,000	Architrave square foot estimate
23 South end of D-wing to offices	\$ 225,000	Architrave square foot estimate
24 High School Offices to Lobby	\$ 180,000	Architrave square foot estimate
25 Second Floor Fine Arts	\$ 250,000	Architrave square foot estimate
26 Site/Civil Engineering	<u>\$ 190,000</u>	Bassett Eng. estimate.
Subtotal Reconfigure Ed. Space	\$ 2,463,000	
Subtotal Construction	\$ 15,412,600	
Est. Contractors Overhead & Profit	\$ 3,154,680	balance from original contract
Total Construction	\$ 18,567,280	
CRA Fee, existing + estimated additional	<u>\$ 2,755,000</u>	
Total Project Costs	\$ 21,322,280	

**Montoursville Area School District
Value Engineering Implementation Plan
Estimated Project Costs**

Construction Component	Estimated	Basis
Work under existing Contract		
1 New Science Wing	\$ 2,372,000	Contractors' SOV, Architrave SF estimate
2 Technical Education Building	\$ 3,957,600	Contractors' Schedules of Values (SOV)
5 Replace Windows	\$ 208,000	Eng. review of Lobar SOV, vendor quote
9 Second Floor Locker Room	\$ 112,000	Contractors' SOV, Architrave SF estimate
10 First Floor Locker Rooms	\$ 153,000	Contractors' SOV, Architrave SF estimate
11 Heating, Ventilation and Air Conditioning	\$ 3,500,000	Farfield SOV reviewed by RJ Ertel
12 Fire Suppression	\$ 300,000	ICON Est. & review of Silvertip SOV
14 Electrical incl. Fire Alarm & Controls	\$ 932,000	Lecce SOV reviewed by Martarano
15 Security	\$ 40,000	Eng & Arch. review of Lobar SOV
16 Interior finishes	\$ 880,000	Lobar SOV
19 Library to Gym and Weight Room	\$ 200,000	Contractors' SOV, Architrave SF estimate
Subtotal existing Contract	\$ 12,654,600	82% of project total
Work by Change Order		
3 Codes mandated repairs	\$ 50,000	estimated
4 Reinforce wood framing in D-Wing	\$ 40,000	estimated
6 ADA accessibility	\$ 250,000	Architrave estimate
7 Repair EIFS	\$ 5,000	Architrave estimate
8 Basement Water Leaks	\$ 110,000	Architrave estimate w/ B-Dry quote
13 Plumbing	\$ 40,000	Bassett Eng. & Architrave estimate
17 Shops to Library & Computer Labs	\$ 310,000	Architrave square foot (SF) estimate
18 Computer Labs to Practice Rooms	\$ 96,000	Architrave square foot estimate
20 Auditorium and Stage	\$ 400,000	Eng & Arch. Review of Lobar SOV
21 Music Instruction	\$ 197,000	Architrave square foot estimate
22 Science to other Classrooms	\$ 415,000	Architrave square foot estimate
23 South end of D-wing to offices	\$ 225,000	Architrave square foot estimate
24 High School Offices to Lobby	\$ 180,000	Architrave square foot estimate
25 Second Floor Fine Arts	\$ 250,000	Architrave square foot estimate
26 Site/Civil Engineering	\$ 190,000	Bassett Eng. estimate.
Subtotal Reconfigure Ed. Space	\$ 2,758,000	18% of project total
Subtotal Construction	\$ 15,412,600	
Est. Contractors Overhead & Profit	\$ 3,154,680	balance from original contract
Total Construction	\$ 18,567,280	