

August 27, 2016

**Amendment 1 to the Visioning report**  
**New School versus Additions and Renovations**

The Following Amendment to the Visioning report is to consider the costs of performing an Addition and Renovation to the existing Mid-Coast School of Technology.

Considerations During the Study:

The question of renovations and additions were reviewed at the time of the study and the following information, included in the study, resulted in the Design and Engineering team recommended a new School option.

1. The logistics of a phased-occupied addition and renovation project is very difficult and costly. Unlike traditional high schools, technical high schools have very specific programs and program-specific spatial needs. Constructing new space, while making use of existing space on a temporary basis, is not an easy or cost-effective solution as many programs cannot be offered without the expense of significant infrastructure. Examples, such as creating a temporary machine tooling space, welding space, automotive tech space, etc... will require significant temporary relocation and set-up costs.
2. The existing building was designed as boat repair facility and the structure was design as a 20-year pre-engineered building. The foundations, steel structure, electrical, and mechanical systems all need replacing. The cost of replacing all of these systems will be more costly, as they will need to be installed in phases and temporarily tied into the existing systems to support the phasing.

With regard to the structural systems, reinforcing the existing steel will be tedious and expensive work; meaning more than the cost for constructing new steel framing. The steel and foundations do not meet current wind, snow, roof, or seismic codes; which is expected in an existing facility of this age.

3. A phased-occupied renovation and addition will require numerous phasing. First a 33,000 square-foot (sqft) addition will be required, this will be Phase 1. By building this addition first, several programs can be located within the new space, vacating existing space for renovations. Depending on the programs that move into the new addition, temporary

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interior space and measures will be needed to separate the renovation areas from existing areas that need to remain operational and safe. Phase 2 will be the renovation of approximately 33,000 sqft of the existing building.

Phase 3 will be the renovation of the remaining 24,000 sqft of existing space. These spaces will again need to be separated from newly completed renovation space. Temporary measures and systems will be required.

All of the temporary measures and systems required for this type of project are funds that are not reflected in the finished project; meaning there is no return on these investments of creating temporary space, temporary support, or temporary code-required safety strategies.

4. The overall project schedule for a phased-occupied renovation and addition project will add time to the project, which will require more mobilization and management time from a contractor. Assuming a best-case scenario of 12-months for a 33,000 sqft addition, plus 12-months for renovating 33,000 sqft, plus another 12-months to complete the 24,000 and site work; the project will take a minimum of 3 years. This needs to consider the School schedule, meaning there will be added time to align the project with School activities and three Furniture and Equipment move-ins.

Based on the above, the decision for a 2-year new school project was decided as the cost-effective and educationally-effective solution. It should be considered that a new school design will be more spatially-efficient than an addition and renovation that will be required to work around existing structural elements.

The programming and budgeting resulted in a need for 90,000 sqft of space at a cost of \$25,000,000. This results in a Total Project Budget of \$25,000,000 at \$278 per sqft for all hard construction costs, site costs, permitting, and other required soft costs. The hard Building Construction cost of \$220 per sqft is included in the Total Project Budget, leaving \$58 per sqft for all other related costs.

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The 90,000 sqft is based on the Maine Department of Education spatial standards for the specific programs offered at Mid-Coast School of Technology.

### Considerations in Response to Community Feedback:

In further review, the Design and Engineering team is providing the information below as a cost-budget comparison to the Addition and Renovation question.

If an addition and renovation project was considered, the following should be expected for hard Construction Costs only; as the budgeted soft costs will be addressed at the end of the Construction Cost discussion:

1. We can start by stating the 33,000 sqft addition will cost the same as budgeted for a new school, which amounts to \$7,260,000 for the hard construction cost. This assumes there is no "connection" to the existing structure that will require initial mechanical, electrical, steel and foundation system work. A "link" between structures can be added after renovations are complete. This "link" would be new construction and a minimum of 15 feet long (logistics of construction and wind / snow removal) x 8 feet wide. This is 120 added sqft at \$220 per sqft for an added **\$26,400**.
2. There will be at least one year added to the Project. Current projects on-going with the design team have General Contractor costs of approximately \$66,000 a month for their general conditions to keep the project on-going. Since these projects were bid within the last 2 years, we can add the construction cost escalation of 6% since 2014; for a monthly cost of \$69,960 under an addition and renovation project. This adds **\$839,520** for an added year of construction to the project schedule. Please note in order to align school and construction activities, it may be more than 12 months of additional time.
3. Phase 2 would renovate approximately 33,000 sqft of existing building. Since this will be a complete "gut" renovation there is really no savings; except for the steel and foundations that will remain. Concrete slabs, exterior walls, roofing, interior partitions, mechanical, electrical, and other systems will be replaced as noted in the Facility Assessment portion of the

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Visioning Report that concludes the existing building has outlived its expected life as a pre-engineered building.

The structural analysis has been considered in a budgeted breakdown to outline the impacts of "re-structuring" the existing steel and foundations expected to be \$1,900,000:

- Remove Existing Reinforcing that currently do not work or are damaged.
- Reinforce existing 3x3 angles and W8x31 steel shapes.
- Temporarily shore, cut, and re-weld existing interior columns.
- Repair or replace existing purlin connections at the roof.
- Temporarily shore, cut, and re-weld existing exterior columns.
- Upgrade existing lateral "X" bracing.
- Misc Repairs of steel connections.
- Provide new girts and connections for new roofing and siding systems.
- Provide expected new framed opening required for renovations.
- Phased mobilizations and demobilizations.

This budgeted cost relates to the existing 57,000 sqft and does not include the cost for the 33,000 sqft addition; which is covered in the new construction cost. For comparison, the steel framing for a new 80,000 sqft school bid in 2014 was \$1,267,000. A construction escalation of 6% would amount to a budget of \$1,343,020. This amounts to \$16.80 per sqft. Using this cost per sqft, we can budget a 90,000 sqft frame at \$1,512,000. The incremental difference of **\$338,000** is anticipated from the 3 mobilizations for the steel contractor and piecemealing the existing steel upgrades; as well as temporary shoring requirements.

We can assume the cost of new steel framing construction performed efficiently "all at once" by a steel contractor without the need for temporary shoring conditions will be less costly than a phase-occupied repair and replacement approach.

4. Architecturally, both the new construction addition and the renovated areas will receive all new finishes, windows, doors, etc... which all need to be replaced.

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5. Mechanically and Electrically, we anticipate a premium cost of approximately 15% per sqft per trade over the expected cost of new construction. This would include the following trades:
  - a. HVAC contractor,
  - b. Plumbing contractor,
  - c. Electrical contractor,
  - d. Low-voltage contractors (security, phones, PA system, and data/video),
  - e. Fire-suppression contractor.

This premium is based on the need to either stagger the purchasing of equipment, or provide storage for equipment purchased at once after the bids are received and the project bought-out by the trades. This also considers the extended 12 months for the electrical and mechanical trades, plus 3 mobilizations for the low-voltage contractors.

The traditional breakdown of construction costs applies approximately 35% to the Mechanical and Electrical trades. This proportion applied to the \$220 per sqft for new construction is  $\$77.00 \times 15\% = \$11.55 \times 57,000 \text{ sqft} = \mathbf{\$658,350}$  as the premium paid for providing all new systems within a phased-occupied renovation project,

Conclusion:

We believe that the new school option will be less costly, provide a better academic learning environment, and be completed in less time.

Financially, school construction bonds need to be "spent" within 24 months in order to avoid arbitrage from the IRS; meaning when bonds are sold to finance a public project, those funds need to be expended within 24 months. Bond Anticipation Notes (BANs) allow for a shorter duration normally used for the permitting, design, and engineering services after a bond vote is approved by a community. For projects that will take more than 24 months, communities normally get more than one bond, meaning when bond rates increase, the interest rate of the second bond will most-likely be more than the initial bond.

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Soft costs will also increase as the design and engineering fees will need to be extended from a 2 year project to a 3 year project; as well as increase based on the complexity of additions and renovations. Equipment and Furniture will also increase as items will also need to be either staggered when purchased or stored; both strategies add cost to the activity. Technologically, the equipment will need to be purchased all at once to ensure the same equipment models, software, hardware, and devices are all the same and compatible; given the speed of advances in technology.

Total Project Budgeting will be increased for an addition and renovation project. As noted in all the information above we would budget more for soft costs associated with fees, financing, furniture, and equipment. In addition, the construction cost would add \$1,862,270 to the budget for a new school:

<b>\$26,400</b>	in additional square-footage. (NOTE: the spatial-inefficiency of additions & renovation may require more space).
<b>\$839,520</b>	for an added 12-months of general conditions of construction.
<b>\$338,000</b>	for repairing and replacing the existing structural frame in place over 24-months and two mobilizations.
<b>\$658,350</b>	for replacing all mechanical and electrical systems over 24-months and two mobilizations.
<b>\$1,862,270</b>	Additional hard construction costs for an addition and renovation project

For these reasons, we believe an addition and renovation project will cost at least:

**\$26,862,270 or more** when increased financing, soft costs, and temporary logistics are added.

In many instances, renovating existing school space is a more cost-effective solution, since existing space can be renovated in a way that saves and repurposes walls, structure, and systems. There are some cases where the facility needs to be replaced and the cost for renovating the school exceeds the cost of new construction. These types of projects are found in historic school restorations and, in the case of Mid-Coast School of Technology, when a pre-engineered building initially constructed as a 20-year boat repair facility has outlived its life expectancy.