Bond Reimbursement and Grant Review Committee Meeting Agenda

September 8, 2020
1:30pm - 4:30pm

Teleconference – School Finance Conf. Room
801 W. Tenth Street, Juneau, Alaska

Audio Teleconference available through free online WebEx application.
Join via Computer -- Meeting Number: 133 679 4200 Password: BRGR920
Join via Phone – 1-650-479-3207 Call-in toll number (US/Canada) Meeting: 133 679 4200 Password: 2747920

Chair: Heidi Teshner

Tuesday, September 8, 2020 Agenda Topics

1:30 – 1:35 PM	Committee Preparation • Call-in, Roll Call, Introductions • Chair's Opening Remarks • Agenda Review/Approval • Past Minutes Review/Approval
1:35 – 1:45 PM	Public Comment
1:45 – 2:45 PM	Subcommittee Reports • Design Ratios – O:EW Ratio Recommendation • Model School ▪ Construction Standards Handbook – Recommend Additional Development • Commissioning – Subcommittee Termination • School Space
2:45 – 3:00 PM	Preventive Maintenance Regulation Implementation • Proposed Tools & Metrics for Retro/Re-Commissioning
3:00 – 3:15 PM	Preventive Maintenance Regulation 4 AAC 31.013(a)(2) Review • Lake and Peninsula SD Issue
3:15 – 3:50 PM	Publications • *Cost Format* ▪ Action Item – Acknowledge Final Publication • *Alaska School Facilities Preventive Maintenance Handbook*
3:50 – 4:00	ASHRAE 90.1-2016 Update
4:00 – 4:20	BR&GR Workplan Review & Update
4:20 – 4:30 PM	Committee Member Comments
4:30 PM	Adjourn

BOND REIMBURSEMENT & GRANT REVIEW COMMITTEE
Tuesday, June 16, 2020 - 1:30 p.m. – 3:49 p.m.

DRAFT MEETING MINUTES FOR APPROVAL

Committee Members Present	**Staff**	**Additional Participants**
Heidi Teshner, Chair	Tim Mearig	Kevin Lyon, Kenai Pen. SD
Senator Cathy Giessel	Lori Weed	Larry Morris
Randy Williams	Sharol Roys	
Dale Smythe		
William Glumac		
Don Hiley		
David Kingsland		

June 16, 2020

CALL TO ORDER and ROLL CALL at 1:32 p.m.

Chair Heidi Teshner called the meeting to order at 1:32 p.m. Roll call and introduction of members present; James Estes excused. Quorum was established to conduct business.

PAST MEETING MINUTES REVIEW/APPROVAL – April 14 – 15, 2020

William Glumac **MOVED** to approve the minutes as presented, **SECONDED** by Dale Smythe. Hearing no objection, the motion **PASSED**, and the minutes were approved as presented.

CHAIR'S OPENING REMARKS

Chair Teshner thanked members of the committee for their attendance, and she appreciated each of them for supporting the Department and continuing to do the work in the subcommittees.

DEPARTMENT BRIEFING – CIP Workshop Debrief

Tim Mearig thanked Lori Weed and Larry Morris for their efforts in the 2020 CIP Workshop. He noted that due to the pandemic, the workshop morphed from an on-site meeting to a series of WebEx delivered content. The content was excellent, and there was great interaction by participants.

Don Hiley commented that the workshop was good, although when it can't be done in person, people miss out on the networking aspect of such an event. It was nice that some people who ordinarily aren't able to attend were able to. Lori Weed agreed that there were new people in attendance, particularly from Southeast, that don't normally attend because of the Anchorage location of the workshop. They had a lot of new superintendents, new facility directors, and other facilities maintenance people that were able to join for the first time.

SUBCOMMITTEE REPORTS

Design Ratios

Dale Smythe referred committee members to the summary report in their packets. He stated that the subcommittee is still working on the language for the O:EW design ratio recommendation. Once that is finalized within the subcommittee, it will be brought before the full committee. He noted that the intent is to continue down the same path of taking the design ratios related to

building compactness, compare those to the information they have on performance of existing structures as well as some rules of thumb that they now know from the cost modelin,g and relate it to building compactness. The idea is that they will be providing ratio guides for those measurement that determine volume.

Tim Mearig noted that the way they measure volume and efficiencies of buildings is very important, and these are some key industry metrics they are trying to vet for use in Alaska on schools that will help designers around the state in terms of cost-effective school construction.

Model School

Don Hiley reported that BDS Architects was put under contract in April 2020 to start to create the Model School standard and the template for how things would be added to that standard in the future. In mid-May BDS delivered their first draft standard in three parts: Purpose and use, design principles, and more specific system standards. The Model School standard had largely been based on a standard from the state of Maine and hadn't become Alaska specific yet. There was discussion and comments provided that they needed to ensure it wasn't a duplication of state and federal regulations, building codes, and so forth. They also discussed ensuring the standards don't get contradicted within itself. With that further direction, BDS Architects recently completed another draft that has been distributed to the committee in a supplemental packet. The Model School Subcommittee has not had another meeting to discuss this or to receive comments from others on it.

Commissioning

Randy Williams reported that there has not been much activity for the Commissioning Subcommittee. This subcommittee's main task was to provide assistance to the Department for developing a tool for identifying candidate schools for recommissioning. They currently have no other meetings planned for the future.

School Space

Dale Smythe reported that the School Space Subcommittee is currently on hold after discussion on the importance of completing the design ratios. He stated that this subcommittee plans to resume meeting in September after the ratios are finalized in August.

ACTION ITEM: DESIGN RATIO APPROVAL

Chair Teshner stated that approval of the design ratio will be postponed pending finalization.

PREVENTATIVE MAINTENANCE REGULATION IMPLEMENTATION

Proposed Tools and Metrics for Retro/Recommissioning

Tim Mearig stated that he was with the Department when they initially rolled out the Preventative Maintenance Standards that were created through a special legislative appointed committee, the Preventative Maintenance Task Force, in 1999. It took a couple of years to get traction with those standards and to get districts to a point where they understood the process of watching maintenance and facility management practices as they were required to. Tim stated that they have identified at the committee and State Board level the benefit of periodically recommissioning existing buildings. He directed committee members to the background statement in the meeting packet that highlights that, as part of a district energy management plan,

one component of facility management and maintenance management is to evaluate the effectiveness and need for commissioning in existing buildings.

Tim stated that they hope to start the process of testing district compliance with that regulation during the upcoming preventative maintenance assessment cycle, which traditionally runs from November 1 through June 1. They typically do s fifth of districts per year in this cycle, but because this is a new requirement, the Department needs to have a way for every district to add this to their requirements in the upcoming FY'21 cycle. The Department is sensitive to the need to help districts in an effective, simple way.

Tim Mearig stated that the briefing paper on this topic is to outline for the committee what the department is doing, and the Department seeks the committee's assistance with the options presented therein. The options presented for discussion are as follows:

Option 1 – District Tools/District Metrics
Under this option, a district would demonstrate compliance with the regulation requirements by asserting its own retro commissioning needs evaluation (EUI-based), effectiveness assessment, and regularity with an annual minimum.

Option 2 – Department Tools/Department Metrics
Under this option, a district would demonstrate compliance with the regulation by using the DEED-supplied retro commissioning needs evaluation and effectiveness assessment tools on an annual basis.

Option 3 – Department/District Collaboration Using EPA's Portfolio Manager
Under this option, districts and the Department would collaborate and adopt the EPA Energy Star platform as the process for demonstrating compliance with the regulation in the area of retro commissioning needs evaluation and effectiveness assessment.

Dale Smythe asked if there was a sense for the impact to the school district on potential efforts or costs for them to implement one option over the other. Tim Mearig responded that there hasn't been a cost-based analysis, but the Department expects that of all the options, Option 1 would be the most intensive requirement for districts, and Option 2 would be the least because the Department provides a set of criteria tools. Option 3 would be somewhat of a learning curve for both the Department and the district.

Don Hiley recognizes that this is a requirement, understands the purpose of it, and does not have any issue with the intent. His only concern is the difference in the districts that they are dealing with relative to the number of students served and the availability and technological sophistication of maintenance staff. Smaller districts are already having problems trying to just do energy reporting. Some districts are trying to go out and buy meters and all kinds of equipment solely to meet the department's regulations so they can keep their programs certified. This just adds one more layer on top of that. He feels that they are making them go figure all this out, track all this information, and then figure out whether they need retro commissioning without bothering to care whether or not the district can even afford to have a building retro commissioned. This is a one-size-fits-all solution where there are some very vast differences in districts' and maintenance programs' abilities to do things. He is not sure what the solution is,

but he's not confident that enough concern is being paid to the relative differences between districts. He feels it's another instance where the large urban districts will have a distinct advantage over the smaller, more rural districts, and it seems like that gap keeps widening with every one of these things they implement. Tim Mearig responded that the Department is absolutely sensitive to that, and that is the purpose of this discussion. How can the Department help districts of all sizes achieve this important need of understanding how their buildings are performing, with respect primarily to energy use, so they will understand that having a building that is performing poorly is not the right thing to do? In order for the Department to feel like it should be contributing to capital work within that building, that factor should be addressed. Tim referred back to the briefing paper and noted that Option 2 is informed by the requirement in statute for every school district to have a capital renewal plan for all of their buildings larger than a thousand square feet. He stated that the Renewal and Replacement Spreadsheet Tool was created and was met with unqualified success in allowing districts to take information they already had, use industry metrics that were defined, and get enough information to be able to develop a six-year plan for a building over a thousand square feet. This is what they are spring boarding from for this issue; using already existing information to bridge into an assessment of a building's performance and need for retro commissioning.

Randy Williams discussed the EPA's Portfolio Manager and noted that it covers every ZIP Code in the United States. It is nationwide and is quite in-depth. It is also broken up by type of school, and they have adjustments for population of the school relative to its size. It's quite granular, but it's also very simple to use. The entry from the district point of view is very straightforward and uses the information they are already gathering for energy records. Districts could use it to track energy use and to report that energy use with the same tool. It is a free resource through the EPA's website. Tim also noted that another point is that districts will automatically then begin adding their building's performance data into a national database.

Don Hiley felt that this is yet another disconnect between the theoretical and the practical/reality version of life. He commented on the unqualified success of the Renewal and Replacement Tool. This year they worked with approximately 36 separate school districts on a variety of things, and he doesn't believe that even one of those 36 districts manages their capital program using that tool. They all have to do it because they have to submit it, but it's not being used as a useful tool for districts in managing what's upcoming on their capital projects. Don stated that it's a fine thing, but the reality of it is when a building is falling apart and they're trying to get projects funded, they don't need to look at a theoretical tool like that that's very generalized of how long this system should last or that system should last and how much it should cost. It all kind of goes out the window when they're talking about a small school out in a very rural area where the cost of having an engineer go out to look at something is very expensive, and the cost of getting a contractor out to look at something is very expensive. He stated that he doesn't have any qualms about the intention of it and he likes the idea in theory, but in practical use, will it really help people? He knows there is a requirement for this, but they need to be careful about saying how wonderful this is going to be for people, because unfortunately it's just going to add more work to somebody that's already been piled high with other work that they can't get done in the hours in the day that they already have. This is one more thing that basically is going to be viewed as just meeting a state requirement and not really being that useful to them.

Tim Mearig stated that in Option 2, one notion that is implicit is that there is some possibility of norming between all regions, climactic regions, geographic regions, et cetera, when it comes to measuring the performance of a school and its energy use by assessing an element called heating degree days, which would allow them to be able to compare something in Ketchikan with something in Utqiagvik. He doesn't know if that is realistic, but it would simplify things if the Department, through a vetted process, could set some broad-based parameters. He asked the committee to comment on if it would be helpful to have every building benchmarking itself or if it's helpful to have districts be able to benchmark building by building of if there should be a benchmark for a building type for the whole state. Kevin Lyon commented that they have all worked through building benchmarks, and the biggest thing at the Kenai Peninsula Borough School District is having the money to be able to implement the plan that needs to be done. They have identified what they need to do, but they struggle to get there to do it. He gave a recent example of a school that was recently consuming more energy because the insulation was getting saturated. Unfortunately, energy issues are not just adjusting a piece of equipment; it's replacing a roof with the insulation that is saturated in it.

Tim Mearig stated that in the past 20 years, buildings have been designed and built substantially for Alaska; whereas, previously there were some challenging building systems and conditions and some definitely old buildings. If they were to use a one-size-fits-all approach, they would be missing an opportunity to understand that some buildings are never going to get to the benchmark whether they are recommissioned or not. Kevin Lyons agreed that modern buildings can be fine-tuned, but other buildings will probably never get there. Tim then noted that there is a suggestion in the briefing paper that they would only be holding school districts to do the analysis on schools that were greater than 5,000 square feet. He asked if there should be some language included that gives districts a pass if their buildings were built before a certain date. Kevin Lyon stated that they need to make changes in some of the older buildings to be able to save energy costs, and he believes the goal of the Department and of districts is to not just throw money at some of those things, but some of those are major components that would need to be replaced or complete systems upgraded. Some consideration of old buildings would be a reasonable factor.

Randy Williams thought those comments were very valid, but he thinks the difference is that some of those older schools aren't really going to benefit from retro commissioning, but maybe they just don't apply to this tool or even the purpose of this whole regulation. He stated that major problems that are more capital intensive don't normally fall under the retro commissioning umbrella and should be pulled out of the analysis. Tim asked Randy to suggest a year where building controls and building systems were at a point that they reach that level of complexity. Randy stated that it depends on where the building is located. Anchorage has a more continuous variation of complexity than a lot of other places to. Some places may just have one school that was built at a certain date, and that's it. Anchorage has got a spectrum of schools, ages, and qualities. What he would call the modern controls age is probably 20 years, plus or minus. He can say that for Anchorage, but he doesn't know that those same controls and technologies were demonstrated at the same time throughout the state. Tim disagreed and stated that post Hootch v. Alaska State-Operated School System, there was sense of education equity and building performance equity, and one of the first significant projects happened in Buckland followed by Chevak. There has since been a lot of discussion about whether or not too complex of systems were put into those early rural schools, or if even today they are continuing to do that. From his

perspective, he would say that 20 years ago is the point in time where they started putting very complex systems into buildings all across the state.

Randy Williams continued on to note that there is a particular brand or era of controls they are finding they are removing because they aren't supported anymore. He believes that would be the tipping point. If it was one of these older control systems that isn't supported anymore, then that is no long a retro commissioning effort. That is then getting into the capital improvement side of things were the building might need a new roof and a new control system in order to make it meet the benchmark that gets established. He also stated that all of these issues can be identified by taking a look at energy use. Whether or not they have a benchmark and whether or not it's statewide, just having it collected for review will tell someone a lot about what's going on.

Randy Williams weighed in on the statewide benchmarking versus local. He would be opposed to a statewide one-size-fits-all solution. One could be made, but he believes it would be open to challenge.

Larry Morris commented that he has never been a big supporter of using EUI. It should be more of how much are they spending on heating per square foot and how much for electrical, lighting, and general circuitry. The idea of tracking these, which has been in statute for a while, whether it's recommissioning or doing a capital project, these measurements are part of what they are supposed to be using to make these determinations. He also agreed with Randy that using a statewide benchmarking wouldn't work because the operations of buildings are too varied.

Tim Mearig asked committee members to consider the proposed motion in their packets. He would like the committee's support in moving this regulation forward. He noted that they have time for further development through district surveys and the public comment process to follow on to some of the discussion they have had today on the topic.

Randy Williams stated that he feels like the Department and the committee have achieved a good way to implement the regulation and minimize the impact on the districts that can't support it and still allow for a more robust management system. Randy **MOVED** that the BR&GR Committee approve the options as presented and recommend that the Department open a period of public comment, **SECONDED** by Dale Smythe. Hearing no objection, the motion **PASSED.**

PUBLICATION UPDATES

Guide for School Facility Condition Surveys

Tim Mearig stated that they have reached the point that the Department is looking for the committee's approval to issue this updated publication. He referred committee members to the packet to review the public comments that were received and how the Department responded to those comments. The publication also underwent a few Department edits as they continue to try to align the structure of how they segregate buildings into components and systems.

Randy Williams stated that there was a comment from the public recommending example timelines 1, 5, and 10 year, and the response was that no changes were planned. He wondered if they could talk to what the issue was for, why the suggestion was not implemented. Tim Mearig stated that the Department didn't feel like they had the ability to flesh out additional elements

about how to tell between routine maintenance and major maintenance based on how they interpreted the comment. They didn't really see a good way to implement a 1, 5, or 10 metric for things they were trying to guess at what the condition might be.

William Glumac **MOVED** that the Bond Reimbursement and Grant Review Committee approve the proposal for the *Guide for Condition Surveys of School Facilities* publication, **SECONDED** by David Kingsland. Hearing no opposition, the motion **PASSED.**

Tim Mearig thanked the committee and stated that they will get it published and distributed. Lori Weed added that there will be a companion Word template document that will be published along with it.

Cost Format Publication

Tim Mearig referred committee members to page 115 of their packet and stated that the *Cost Format* is more of a tool that the Department uses to manage grants. The purpose for bringing it before the committee today is for approval to open up a standard 30-day public comment period on it. Tim provided some additional background on the tool's origins and stated that what is before the committee now is a reversion to the format used by the Department from 2001 to 2008 with some enhancements to integrate it with the Department's other publications to help them with consistency.

Dale Smythe agreed with where the *Cost Format* is at. He would love to see a scorecard annually that would compare actual bid results to the cost model. He thinks it would be interesting to see, but it would take some effort.

Chair Teshner stated that not hearing any opposition to this, the Department will take their next step and put it out for public comment.

Alaska School Facilities Preventative Maintenance Handbook

Chair Teshner directed committee members to the supplemental packet for the meeting. Tim Mearig stated that this publication was the oldest publication the Department had in its update cycle. The original document was prepared in 1997 with an update in 1999, and it has remained that edition ever since. The original document was still providing accurate information about the Department's preventative and facility maintenance requirements, and its primary focus is on maintenance management. Tim provided background and overview on the timeline the committee has gone through regarding the update of this publication and the ways in which the publication contents evolved based on public input. The briefing for the committee today shows the best information the Department has put together to date on this update, where they stand on it, and where the gaps are. He apologized to the committee that publication has not advanced sooner, because it does feed in a lot of information to both the standards and the CIP process that are part of the committee's charge. This publication dovetails into those areas and is very much a committee resource where they would have a heavy role in understanding what they are communicating as a joint committee and department regarding maintenance in districts.

Chair Teshner directed committee members to page 2 of the cover memo and asked for the following actions:

- Review and validate the purpose statement of this publication (p.6)
- Review and validate the developing, implementing, and sustaining structure
- Review and validate additional considerations and appendices planned.

Tim Mearig reviewed the above-mentioned topics with committee members by referencing the supplemental packet. Committee members provided feedback as follows:

Don Hiley referenced page 11, where at the bottom of the page it talks about the five normal reports that are submitted. He thinks it's time that somebody take another look at those five reports, because he knows his system can't generate any of those reports natively. Maybe it's time to rethink something that provides a more useful report that is actually natively generated within the software that everybody in the state is using as opposed to having to export data out to an Excel spreadsheet. He noted that SERRC is using software called Maintenance Connection, and they have 25 districts that work with them in the state. He believes that Valdez is now using that same system on their own. There are probably 50 districts using either Maintenance Connection or SchoolDude.

WORK PLAN REVIEW

Chair Teshner directed committee members to page 152 of the packet to review the work plan. Staff and committee members discussed the work plan and made adjustments for addressing various topics during their September 8 and December 2, 2020 meetings.

Tim Mearig noted that the Commissioning Subcommittee has completed the assignments they were tasked with. The committee as a whole will need to decide whether or not to sunset that subcommittee and reassign its members to other subcommittees.

COMMITTEE MEMBER COMMENTS

Committee members each took an opportunity to thank the other members of the group and staff for their continued participation and hard work during these difficult times. Chair Teshner added that Larry Morris is no longer with DEED, but he is always welcome at any future BR&GR Committee meeting.

MEETING ADJOURNED

Dale Smythe **MOVED** to adjourn, **SECONDED** by William Glumac. Hearing no objection, the motion **PASSED**, and the meeting adjourned at 3:49 p.m.

State of Alaska **Department of Education & Early Development**
Bond Reimbursement & Grant Review Committee

Design Ratios

S U B C O M M I T T E E R E P O R T

August 25, 2020

Mission Statement

Under AS 14.11.014(b)(3), evaluate and propose construction design ratio guidelines for use by the department, school districts, and the design community to design new and renovated school facilities to reduce first cost (construction) and long-term cost (operation).

Current Members

Dale Smythe, Chair	Michael Spencer, AHFC	Larry Morris, DEED
William Glumac	Gary Eckenweiler, BSSD	Lori Weed, DEED
Randy Williams	Karen Zaccaro, ECI	

Status Update

Status is unchanged since June.

Recommendations from 2017 Report to the Legislature:

1) *Adopt the Alaska Climate Zones established by the Alaska Building Energy Efficiency Standard (BEES) and used by the Alaska Housing Finance Corporation.*

   Status: Confirmed with AHFC that the BEES Alaska climate zones can be used by the department as needed for development of ratios and potential regulations.

2) *Implement a school design ratio of Openings Area to Exterior Wall Area (O:EW).*
3) *Implement a school design ratio of Building Footprint Area to Gross Square Footage (FPA:GSF). This ratio would be applied to facilities in excess of 30,000 GSF.*
4) *Implement a school design ratio of Building Volume to Net Floor Area (V:NSF).*
5) *Implement a school design ratio of Building Volume to Exterior Surface Area (V:ES).*

   Status: The group has continued with our focus on recommendations for the ratio of O:EW, Openings to Exterior Wall area prior to working on the other design ratio recommendations. The group presented at a one-hour workshop at the A4LE Alaska Chapter Annual conference December 7, 2019 to involve industry experts for input and review of potential impacts of ratios and recommendations for moving forward. This effort gained new members that have helped provide valuable information on existing schools and reminders of the importance of including daylighting and its benefits to student performance.

   The groups recent effort was to compare the 15%-17% ratio range identified in the model study and in the white paper presented by Larry Morris as the most cost effective for first cost and operational cost against existing school ratios.

The effort included gathering existing ratios and energy use metrics where available. The information has not yet been completely analyzed yet seems to support all the previous conclusions. The collection of the data also has been helpful to inform the measurement effort as a "test run" of how to request and receive the measurements from architectural elevation drawings.

The group will continue with this recommendation while also adding language recommended to ensure student access to daylight in the classrooms and areas of the school are not inadvertently sacrificed.

The next step agreed is to consider the combining of the two remaining ratio concepts (V:NSF and V:ES) these are both ratios selected to measure building compactness. This will be a separate task prior to selecting a ratio for both

Schedule

Late Sept 2020 – Review with DEED recommendations for O:EW ratios (Confirm Language).
Oct 2020 - Begin process of combining compactness ratios (V:NSF and V:ES).
Oct/Nov 2020 - Present status report of combining compactness ratios.
Nov/Dec 2020 - Present recommendations for a compactness ratio.
Dec/March 2021 - Optional effort - Develop test method for identified ratio and potential savings, compare 5 existing schools with known heating fuel usage.

State of Alaska **Department of Education & Early Development**
Bond Reimbursement & Grant Review Committee

Design Ratios

D E E D P o s i t i o n P a p e r

August 25, 2020

Background

The concept of using design ratios as a tool to establish cost-effective school construction in Alaska was discussed and vetted by the Bond Reimbursement & Grant Review (BR&GR) Committee in April 2017. Subsequently, a subcommittee was appointed to continue investigation and development in the area of design ratios. In December of 2017, the subcommittee's work led to inclusion of 5 criteria in a report to the Legislature on the topic of measuring cost-effective school construction in the state—four of which were specific design ratios. In 2018, the 30th Alaska Legislature passed HB212 requiring that the department, with the BR&GR, develop criteria for cost-effective school construction, a portion of which was include design ratio. A fiscal note to the bill resulted in $323,000 in FY19 funding for the department to implement the bill's provisions. Subcommittee work continued in 2018 to develop a scope of work for design ratio analysis and in early 2019, an RFP was issued, and a team was selected to provide the needed analysis. A final report, delivered in July of 2019, has formed the basis of subsequent work by the subcommittee in developing design ratios in support of the following statute:

> AS14.11.017(d)
> The department shall develop and periodically update regionally based model school construction standards that describe acceptable building systems and anticipated costs **and establish school design ratios** to achieve efficient and cost-effective school construction. In developing the standards, the department shall consider the standards and criteria developed under AS 14.11.014(b).

Discussion

At a subcommittee meeting on October 30, 2019, the group determined it would focus first on recommendations for the ratio of O:EW, Openings to Exterior Wall area. From conference presentations in late 2019 to a series of subcommittee meeting in early 2020, analysis and discussion has continued on the O:EW ratio. However, despite activity and effort, key milestones to advance a ratio recommendation were not met by the subcommittee. In response, the department is attempting to advance this initial design ratio (O:EW) by setting out a draft standard based on the assimilation of data and discussion to date. The following factors are addressed:

Ratio Definition – Two elements of the recommendation assist with clarity on this ratio. The first is a baseline definition. The DEED recommendation has some development beyond the last documented subcommittee iteration. There is also a section with clarifications on making the actual calculations—this is a sort of lessons-learned or FAQ-based guidance.

Ratio(s) – The ratio are presented as both a Target and a Range. This provides dual usefulness. Expressed only an upper and lower limit, there would be little incentive to not "get everything

you could get". Having a stated target allows district and design professionals to aim for an optimal solution. Comments are used to describe the basis for the allowable ratios. Ideally, this basis will always be transparent, data-driven, and reproduceable. If achieved, this level of clarity will also for a basis for any proposed revisions over time. Also important is regional variation. This should be introduced in every instance where one or more reasonably clear variables exist.

Guidance – The Guidance section can offer best-practice considerations in achieving the ratio. There are always ways to make standards appear ridiculous. Elements listed here can serve to establish the normative conditions under which the ratio was developed and should be implemented. One of the more recent developments in the subcommittee discussions was how a recommended O:EW ratio should incorporate elements related to the benefits of openings relative to the cost of openings. Guidance can recognize such variables but keep them effectively in the context of the cost-effectiveness strategy.

References – References can serve as a gathering of supporting documents and source documents for the ratios.

Variances – A section for variances was considered by the department but not included at this time. Ideally the Definition and Guidance sections should help mitigate the need for variances. Realistically, though, a for-cause variance is likely to be a necessary process over time.

Summary

The O:EW Recommendation provided by the department is intended to serve as both a model format and as a specific set of recommendations for this ratio. The specific ratios should only need changing to conform with additional statistical data.

Recommendation(s)

1. Approve the structure and format of the O:EW Recommendation.

2. Approve the recommended O:EW ratios, by geographic area with final numbers to conform to the following:

Regional, climate-based Targets will be based on lowest first cost/operating cost based on the methodology established in the DEED BEM Study July 2019. Regional, climate-based Ranges will be calculated as +/- 20% costs of Target.

Schedule

December 2020 – bring amended/corrected final O:EW ratios to BR&GR.
February 2021 – Present draft recommendations for V:NSF ratios to BR&GR.
March 2021 – Present draft recommendations for V:ES ratios to BR&GR.
April 2021 – Bring final recommendation, all ratios, to BR&GR for public comment release.

State of Alaska **Department of Education & Early Development**
Bond Reimbursement & Grant Review Committee

Openings to Exterior Wall
School Construction Standard
DEED RECOMMENDATION

Ratio Definition

Openings Area to Exterior Wall Area (O:EW).
Opening Area ("O") defined as "the square footage of all windows, doors, and translucent panels measured to the outside of their frame elements". Exterior Wall Area ("EW") defined as "the square footage of the exterior vertical enclosure bounding heated space, inclusive of all openings".

Calculation Clarifications

1) Boundary edges of EW top/bottom are the intersection with horizontal (i.e., roof, floor) thermal construction.
2) Boundary edges of EW sides are the 'corners' used for GSF measurements in 4 AAC 31.020.
3) Roof gables and vertical faces of floor soffits are included in EW if enclosing heated space.
4) Be conscious of eave overhang lines when setting top boundary edges.
5) Mechanical louvers in exterior walls are not counted as Openings Area (O) but are included in the EW.

- Skylights are Premium construction and not supported with state funds. If included, they will be counted as openings.
- Light Monitors/Clerestories are acceptable construction and will be included as defined in the O:EW calculation.

Regional O:EW Ratio

Zone 6	**Comments**
Target: 15% Range: [10% - 20%]	Target is based on lowest first cost/operating cost from DEED BEM Study July 2019. Ranges are calculated +/- 20% costs of target.

Zone 7	**Comments**
Target: 14% Range: [9% - 18%]	Target is based on lowest first cost/operating cost from DEED BEM Study July 2019. Ranges are calculated +/- 20% costs of target.

Zone 8	**Comments**
Target: 10% Range: [7% - 14%]	Target is based on lowest first cost/operating cost from DEED BEM Study July 2019. Ranges are calculated +/- 20% costs of target.

Zone 9	**Comments**
Target: 8.5% Range: [6% - 11%]	DEED BEM Study July 2019 showed no lower boundary for O:EW cost savings (i.e., less openings always saved money). Target is set at 15% below Zone 8. Ranges are calculated +/- 20% of target except that lower boundary is a fixed 6% to reflect the importance of visual access to the exterior on teaching and learning.

Guidance

In applying the ratio to school design and construction, designers and DEED reviewers are encouraged give consideration to the following items.

- Distribution and sizes of openings versus concentration
- Ability to incorporate daylighting elements
- Window placement for visual access to the exterior in student and staff performance
- Variation in local climate (local average heating degree difference from zone, local average wind speed variance from zone, local average precipitation (overcast) from zone, etc.)

References

Building Energy Modeling Services: Final Report Prepared for DEED, July 2019, HMS Inc. and Coffman Engineers, Inc., Alaska Department of Education & Early Development.

Daylighting in Schools: An Investigation into the Relationship Between Daylighting and Human Performance, August 1999, Heshong Mehone Group, © 1999 by Pacific Gas and Electric Company.

State of Alaska **Department of Education & Early Development**
Bond Reimbursement & Grant Review Committee

Model School

S U B C O M M I T T E E R E P O R T

August 25, 2020

Mission Statement

To provide minimum criteria and expectations to test the performance of a school's mechanical, electrical, plumbing, fuel, controls and envelope systems; to promote energy efficiency of the school and save operational costs over the life of the building.

Current Members

Don Hiley, Chair
Jim Estes
Dana Menendez, ASD
Tim Mearig, DEED
Sharol Roys, DEED

Status Update

Recommendations from 2017 Report to the Legislature:

1) *Enhance the Cost Model for possible use as a cost limit standard to include: a) defining/updating geographic cost factors, b) adding detail to the 4.XX Site Work elements, and c) adding detail to the 11.XX Renovation elements.*

   Task 1: Prepare scope, issue an RFQ, award and manage the update.

   Status: Cost Model enhancement has been completed by HMS. The 18th Edition is much more complete than previous versions, and now provides more flexibility in the variety of projects that can be estimated. Some usability and functionality issues were found after delivery, but have now been resolved. The updated version is available to public online.

   Task 2: Develop regulations, as needed, to establish the Cost Model as a cost limit for projects.

   Status: Subcommittee to prepare analysis of need and make recommendation to BR&GR. This has not yet been scheduled. Issues found in the latest version illustrate the difficulty in broadening the Cost Model's scope, and will likely take at least one or two more iterations to work out issues needed to complete this task.

   The subcommittee recommended transfer of the committee work plan elements listed below from the subcommittee to the department:

1.1.1	Cost Model As Cost Control Tool		May 18-Dec 20
1.1.1.1.	Analyze, Recommend Cost Model As Cost Control	Dept	Jul 2019

1.1.1.2.	Draft Regulation Language For Cost Control Use	Dept	Jan 2020
1.1.1.3.	Review Draft Reg Language, Recommend To State Board	Committee	Mar 2020
1.1.1.4.	Manage Regulation Development and Implementation	Dept	Dec 2020

Geographic Factors - Subcommittee received and reviewed new geographic factors for the Cost Model. To be shared with the full Committee at September meeting. Department to compare changes made since this was first presented at the December meeting. Does this need further public review?

2) *Establish a process of reviewing model school elements within the Cost Model so that those updates become researched, vetted, and intentional.*

Task 1 & 2: Develop a best-practice strategy for updating model school elements in conjunction with HMS, Inc.. Analyze effectiveness of BR&GR vs. consultant vetting.

Status: Subcommittee and department staff provided a great deal of input and feedback into development of the 18th Edition. More user feedback is anticipated as this version is put into practice during the FY21 CIP cycle. The department will keep the committee apprised of feedback received. Committee should maintain current roll of reviewing model school element changes proposed in each new edition.

Procedures for Updating the Model School File – Need direction: would the Committee support contracting out review of the model file if funding was available annually? Would the Committee support review of the file by a volunteer organization (e.g. A4LE)? These may not be mutually exclusive.

There appears to be some funding available for initial development and for subsequent update and maintenance of the standards. The subcommittee discussed how a paid consultant might fit into this process. The initial idea would be for DEED staff and the subcommittee/committee to put together the outline of the manual. The consultant would then help to fill in details for specific items as needed based on current practice. The finished product would then be available for public/peer review prior to implementation. Annual or periodic updates would be made as needed based on user feedback and other information. Updates to the Cost Model tool would be made to follow development of the model and standards.

These tasks have essentially now been completed. The Subcommittee and Department staff recommendation is that the current update process continues wherein the Cost Model and Model School Building Escalation file is updated by the cost consultant using their experience with Department guidance on the scoping of their contract, and Committee review of the recommendations made under that contract.

3) *Develop Model Alaskan School standards by building system (ref. DEED Cost Format) needed to ensure cost effective school construction.*

Task 1: Complete outline-level standards for remaining seven systems.

Status: Department has not produced additional draft sections for subcommittee review.

Task 2: Conduct an independent feasibility and cost/benefit analysis on developing outline standards into comprehensive state-level model school standards.

Status: A contract was awarded to the McDowell Group to conduct the feasibility study, which was completed and delivered on July 5, 2019. Along with Department staff and BRGR Committee members, a number of people in state and provincial governments in the US and Canada were interviewed as part of the study. These interviews looked not only the implementation, but also the motivation in adopting standards by these different entities. School equity and efficiency/sustainability appear to be at least as much, if not greater factors in developing standards as cost savings for many.

The study provided good information about potential costs for developing and implementing a standard, either by Department staff or by contracting much of the work out to a consultant. The assumption has been made that implementation of a standard would likely result in cost savings due to relatively low cost to develop and update the standard versus the amount spent on school construction and renovation. A tool was developed, along with the report, to aid in putting together a cost benefit analysis.

Subcommittee discussed the need for more review and input by members of the design community in relation to standards that was somewhat lacking in feasibility study. One of the major questions to be addressed is what level of detail is appropriate in the standards? Subcommittee plans to review examples of standards currently in use by other entities to see how detailed they get in various areas, and seek input to try determine what the level of detail should be for Alaska.

In response to the need identified at the previous meeting to determine the appropriate level of detail in any proposed standards, DEED staff provided the subcommittee with several examples of facility design and construction standards from agencies in other locations. In all, the committee looked at six sets of standards including Alberta, Arkansas, Florida, Maine, New Jersey, and New Mexico. Each of these had somewhat different approaches and levels of detail. This ranged from fairly general to quite specific, for example, including specifying minimum pipe sizes. Some provided standard detail drawings for use by the design teams.

After reviewing these, the subcommittee reached the following recommendations:

1. Standards should be at more of a policy level, with greater detail provided as needed in some areas. Examples of added detail might be specifying minimum and/or maximum thicknesses for metal roofing and siding. The goal would be to try to keep the manual to a more manageable size of

perhaps 50-100 pages, which would help to make periodic updates of the manual more realistic, and allow the information to be more easily digested by the design teams as they worked on projects. This was more in the vein of the Arkansas and Maine examples.

2. The standards manual should somewhat mirror the layout and organization of a standard project manual, which should make it easier to use and follow during project design. More discussion is needed as to whether the standards manual should be more narrative/bullet point format, or more specification number format.
3. The standards manual might identify "premium inclusions" that would be permitted, but at the district's expense. This might be similar to that found in the Maine example.

Other issues discussed by the subcommittee, but not resolved, include:

- The cost/benefit analysis is not complete. Information required to make use of the tool provided will take more time and effort to gather.
- Not much input from outside A/E professionals to this point.
- Not much discussion of the downsides of their standards, if any, by other entities. What were pitfalls/lessons learned?
- What is the appropriate level of detail for the standards? Some areas possibly more specific or general than others. Are performance based standards more appropriate for some things?
- Can the standard be maintained over time and not become outdated?
- How do standards integrate with other codes adopted by the state and/or municipalities?
- How do the building systems standards integrate with other aspects of the cost effective construction mandate?

Task 3: Review analysis and publish a handbook or regulations as recommended.

Status: The $50k in funding previously discussed for acquiring professional assistance in creating the Model School Standards Manual was recently made available to the Department. The Subcommittee met on March 18th to discuss and review an RFP for professional services for "*development of a DEED School Design & Construction Standards building system template, and for the completion of drafts of four building system standards using the approved template."* The initial four building systems include exterior closure, interiors, mechanical, and electrical. The standards template is to be based around "*a more narrative format with a focus on simplicity and brevity*" as previously discussed by the subcommittee. An RFP for professional services was issued with proposals due April 7th, and award of the contract targeted for April 10th. The consultant will be able to consult with the Department staff as well as Committee members through the process. The contract work is due to be completed by the end of June. At that point, the template and completed parts of the manual would be available for review by Department staff, BRGR Committee, and the public.

BDS Architects submitted the only proposal to deliver the Model School Standards template and draft standards, and was awarded the contract in April 2020. A draft standard, along with the template, was submitted to the subcommittee for review by BDS on May 18th. Comments regarding the draft were collected, and the subcommittee then met on May 22nd to discuss the draft and review comments received, both from subcommittee members and Department staff.

The draft standards consisted of three parts: Part 1 - Purpose and Use, Part 2 - Design Principles, and Part 3 – System Standards. The initial draft was based largely upon the standards developed by the state of Maine, and still contained a great deal of "placeholder" information at that point, which needed to be fleshed out and rewritten more specifically for Alaska. The System Standards piece, although included in the template, had not been provided.

Discussion of the content included in the draft standard included concerns that it not try to duplicate building codes, other government regulations, other DEED publications, and/or the Educational Specifications. Also of importance was that the standard itself be structured such that the Design Principles would not potentially contradict the System Standards over time. The subcommittee thought that it is probably better to error on the side of more general information in the standard initially, and that the template would allow additional more specific information to be added over time if needed. The experience and perspective of the design team/community would help to determine the appropriate level of detail. There was also some concern that the draft standard had seemed to deal primarily with school construction, and had so far not addressed smaller component type renovation projects.

BDS has recently provided a second draft of the standard to DEED. However, this has not yet been reviewed by the subcommittee. The final draft of the template and standard is still scheduled to be completed by the end of June.

BDS delivered a draft of the Alaska School Design and Construction Standards by the end of June 2020 as called for in their contract. That draft was still very much a work in progress. BDS agreed to continue working on the document into July. The Subcommittee met with BDS on July 8th to go over review comments made by members, and to provide direction for continuation of their work.

A second review meeting took place on July 28th to review progress in implementing the previous comments. Additional review comments were offered by Subcommittee members, and were discussed with BDS for inclusion of a final draft.

On August 17th, BDS delivered their final draft of the standards included in the September BRGR packet for Committee review. There was general

agreement that while the template was fairly defined, the information was still far from complete. For example, the BDS contract only stipulated providing the information for four building systems. Other building systems outlined remain to be fleshed out. This was estimated at approximately 40% complete. Likewise the design principles section still also has much work to be done, and that section was estimated at approximately 20% complete.

The Subcommittee met once again on August 24th to approve a recommendation to the full Committee on how to proceed in further completing the standards. That recommendation to make use of Department staff to fill out the missing information required to allow implementation of the standards with Subcommittee review, was also included in the September 2020 BRGR packet.

The Subcommittee, as well as the Department staff believe that this work can be completed over the fall and winter, and ready for full Committee approval and issuance for public comment at the April 2020 BRGR meeting.

4) *As part of describing a Model School, identify school elements that do not further the core educational mission of the school.*

Task 1: Review current Topic Paper and include in Report to Legislature.

Status: Completed January 2018.

Task 2: DEED to develop regulations that define non-core amenities based on legislative direction.

Status: No current action. DEED could use the Legislative Proposal process to advance. Subcommittee would need to make recommendations to Committee. BR&GR recommendations to department.

Schedule

No subcommittee meeting is currently scheduled. However, the subcommittee will be meeting again shortly to review and discuss the latest draft of the Model School Standard/Template.

State of Alaska **Department of Education & Early Development**
Bond Reimbursement & Grant Review Committee

Construction Standards Advancement BRIEFING PAPER

By: Don Hiley
Chair, Model School Subcommittee

Phone: 586-6806

For: Bond Reimbursement & Grant Review Committee

Date: August 25, 2020

File: G:\SF Facilities\....docx

Subject: Standards Advancement Recommendation

Background

The Model School Subcommittee had received an initial draft of the new Alaska School Design and Construction Standards document from the contracted professional consultant, BDS Architects, for review early in June. After initial review comments from the Subcommittee, BDS delivered a more complete draft by the end of the contract period at the end of June. At that time, it was felt that there were still issues to be addressed in the layout and organization, as well as some areas that still needed to be fleshed out a bit more. BDS graciously agreed to continue working on the document, and met with the Subcommittee again on July 8th and a second time on July 29th to review and discuss comments on that draft for inclusion into their final product. BDS Architects delivered their final version of the standards document, incorporating those comments, on August 17th, thus fulfilling their contractual obligations on the project. The final product of this work is in the September BR&GR meeting packet.

Discussion

The overall structure for the document, as proposed by BDS after completing the research phase of their contract, consists of three parts: Purpose and Application, Design Principles, and System Standards. The Design Principles portion of the standard offers guidance on broad design issues such as Safety & Security, and High Performance Buildings. It also offers a structure that would allow planning and design standards applicable to each of the typical functional spaces found in schools. We estimate that at the completion of the BDS contract, the Design Principles section is approximately 20% complete. The System Standards section follows the elemental cost structure used by the department in its *CostFormat* and *Guide for School Facility Condition Surveys* publications. This structure identifies 11 site and facility systems. The BDS contract required that the basic template layout for the standards be completed, and that four sections of building systems be addressed in its initial form. Those sections included Exterior Closure, Interiors, Mechanical, and Electrical systems. Though some work has been done by the subcommittee on other systems, such as Substructure, only the four sections addressed by BDS are complete. We estimate that the System Standards section of the document is approximately 40% complete.

With these latest steps now completed, the task of how to move forward to complete the sections for other systems identified and included in the template now remains. There are a number of

ways in which this work could proceed. These are outlined in the following options and recommendation.

If the subcommittee recommendation is approved by the Committee, the proposed timeline would be to have the remaining building system sections completed, and the initial publication available for Committee review at the April 2021 meeting. If approved, it would then be made available for public comment, and final publication in June 2021 once any needed modifications have been addressed.

As the Alaska School Construction Standards manual must be a living document if the standards are to remain relevant and workable, a process must also be implemented for ongoing review and updating. It is anticipated that approximately $15,000 will be appropriated to the Department budget each year in to facilitate this task. This should permit a small contract for annual professional review and modifications to be issued.

Options

Option 1: One possibility would be that the Subcommittee, or the full BR&GR Committee, could work as a group to draft and add the incomplete information. There is a great deal of facilities and design experience amongst Committee members that could be made use of in creating these additional system standards. However, this would be a very time consuming exercise that would be in addition to other Committee responsibilities; it may not be realistic to get the level of time commitment from the members required for such a task.

Option 2: A second possibility might be to award a second contract for professional services to further expand upon the work already completed, whether by BDS or following a new solicitation. While this would offer the benefit of having working professionals again contributing to the document, funding for such an endeavor is not currently available.

Option 3: A third possibility is to make use of Department staff to import and adapt work previously completed on an in-house drafted school standards document into the new standards template. For sections in which the previously drafted work was still missing or incomplete, Department staff would work to draft the new standards language. This would essentially be the Department staff assuming the role of "consultant" from the previous process with BDS. The Subcommittee members would then continue to periodically review and comment on the Department's proposed additions as work progressed. As before, review comments and modifications would then be incorporated into the manual with Subcommittee consensus.

Recommendation(s)

It is the Subcommittee's recommendation that the Committee adopt the Option 3 to complete the initial implementation of the Alaska School Design and Construction Standards. This appears to be the most realistic and expeditious method in which to proceed. It leverages standards work already completed in past years to partially reduce the magnitude of the task and makes use of the experience and resources of Department staff. While this clearly increases staff workload, the Department feels that this additional work is manageable with its current staffing. And while there will be additional commitment required for Subcommittee staff, that time commitment would be reduced. It is also hoped that additional design and facilities professionals might be persuaded to join with the Subcommittee in reviewing the document in order to bring additional eyes and perspectives to the process, and to help speed the review process.

ALASKA SCHOOL DESIGN & CONSTRUCTION STANDARDS

Part 1. PURPOSE & APPLICATION

1. Background

These Standards achieve two primary objectives. They fulfill a statutory mandate, and they establish consistency for state aid. In 1993, the Alaska legislature created the Bond Reimbursement and Grant Review Committee under AS14.11.014 and identified the committee's purpose. Among their many tasks, the committee was charged, through the Department of Education & Early Development (DEED), with the development of criteria intended to achieve cost effective school construction in the State of Alaska. These Standards are those criteria and are the result of decades of work by the committee. They also set the stage for continued work toward ensuring cost effective school construction into the future.

Regarding consistency, powers granted to DEED provide broad authority for the state to revise a project's scope and budget if the costs are excessive, and to reject projects not in the state's best interests. These Standards have been developed to make these determinations more transparent; to provide consistent, clear information for school districts and design professionals, and to establish a uniform level of quality and performance for all of Alaska's public-school buildings.

The Standards also provide a framework for research, "best practices," accepted procedures, "lessons learned," statutory and regulatory requirements, and for inclusion of the experience of students and educators across the State of Alaska. The best of what is currently known and available in these areas is included; future knowledge and understanding will be incorporated through a vetted public process.

It should be acknowledged that the Standards are also very DEED-centric in fulfilling the two objectives stated above. They are not a building code. Alaska's adopted statewide building code requirements for schools, are already well developed and are enforced by the appropriate authority having jurisdiction (AHJ). Neither are the Standards district-level facilities manuals. They do not, for example, establish a preference for a side-coiling grill versus an upward acting grill for security or access separation. These standards fit between national code standards and local preferences. Their focus will always be cost effectiveness from a state perspective. The Standards apply to all new school construction and new additions to existing buildings. Renovation to existing facilities will adhere to the Standards, whenever possible, as approved by DEED.

School construction in Alaska encompasses a wide range of climates, differences in school sizes, and the logistics of building in remote areas with limited access to labor and materials. Building system and component types, quantities, and quality vary widely across school projects with state aid. Where applicable the Standards are tailored to address this wide range of conditions.

The Standards recognize the need to consider the long-term operations and maintenance of a school facility rather than focus solely on initial construction cost. Therefore, these Standards will not only consider the initial cost of construction but also operations and maintenance expenses, by looking at design and construction decisions on a life cycle basis.

It is evident that there is an extensive need for new and renovated school facilities. Many of the older schools in Alaska do not meet the program needs of today's complex learning environments. Older schools tend to be costly to maintain, energy inefficient, and non-code compliant in some cases. There are also many safety issues within and outside of older school buildings. With a deep financial involvement by the State of Alaska, the Department of Education and Early Development has a responsibility to assure that projects meet established criteria for cost effectiveness including durability, economy, and quality.

One of the major objectives of the State is to address as many projects as possible within the limited financial resources at both the State and local levels. To this end the State wants to avoid unnecessarily expensive designs, unapproved assemblies, and products that carry premium costs. The Standards are intended as a baseline for architects, engineers, and other design professionals, along with school districts, to develop cost effective solutions to meet the needs of individual school communities. The information is provided to allow the planning, design, and construction process to proceed most efficiently—without undo restriction on the design of facilities—focusing efforts on the creation of the best possible educational environments for each project

2. Document Organization

These standards are intended to be used in conjunction with other school planning guidelines developed by DEED including those for alternative project delivery, school condition surveys, and site selection. When available, the Standard may also incorporate Design Ratios whose purpose will be to measure the efficiency of a school design as it relates to cost effectiveness. The Standards do not include all possible building components and materials used in school construction. They reflect the department's belief that good design is occurring every day based on the compendium of knowledge present in Alaska's design firms and school districts. Instead, they are to provide both general guidance to the design professional in key areas of concern, and specific guidance on selected design elements and materials that DEED has identified, based on experience from prior projects.

Part 1 – Purpose and Applications is an introduction to the Standards, their background, intended purpose and implementation

Part 2 – Design Principles deals with overall design, construction, and project management principles. Each design principle includes a list of standards and guidelines. These standards are displayed in three sections as *Required, Recommended,* and *Premium*.

Part 3 – System Standards is organized by a DEED-specific elemental cost structure with specific material or system selections, design criteria, and guidance.

Levels of Implementation
In Part 3 the System Standards are grouped into categories with the following definitions:

Required: These are required elements that are accepted practice by DEED. Not all Required elements are intended to be incorporated into any one project and will vary based on design intent, budget, region, climate and school size.

Recommended: These elements are recommended as alternatives and possible improvements or upgrades to the Required elements. These are also accepted practice by DEED.

Premium: These elements are considered substantial upgrades to the Required and Recommended designations. They can be included in projects but in most cases will not qualify for DEED funding. Inclusion of Premium elements requires DEED review.

Cost Factor and Life Cycle Cost Analysis Index
Selected materials described in Part 3 System Standard, have been designated with indicators of CF (Cost Factor) and LCCA (Life Cycle Cost Analysis). The indicators are followed by a numerical scale of 1 through 5.

For CF, a factor of 1 is the least costly option, 5 is the most expensive. For LCCA, 1 has the least life cycle to cost benefit, 5 has the most benefit.

3. Prerequisites

[This placeholder section title is for possible DEED-specific content developed around "prerequisites" on how the state might implement this document.]

4. Flexibility and Innovation

The State recognizes that there will be constant modifications to this document as new technologies and products enter the construction market. Design professionals are encouraged to discuss new approaches, technologies, and materials with DEED officials. Many design decisions should be based on a “life-cycle analysis” that considers energy use, first cost, operational cost, equipment life, and replacement cost. In addition, consideration should be given to materials that can be recycled and are not hazardous to the environment.

The State recognizes that school facilities will differ with each school district’s educational program and internal organization. The design of the building will also be influenced by the school site, region, climate, and other external factors. A one-design-fits-all approach is not advocated; however, these Standards do attempt to address cost-effectiveness, quality considerations, and design efficiency. To allow for appropriate flexibility and innovation, as discussed above, the Standards set out elements as Required, Recommended, or Premium. Recipients of state-aid that wish to incorporate elements that exceed these standards (indicated as Premium) shall do so with non-state funds unless a variance is obtained from DEED.

The State has a commitment to the development of quality educational spaces that will meet the educational needs of students in Alaska schools. Spaces and buildings should be flexible in order that present and future programs can be housed appropriately to meet the needs of an ever-changing public-school curriculum. These standards and guidelines will be used by DEED when reviewing school capital projects approved for state-aid.

DEED encourages an integrated planning and design process that combines the Recipient's project requirements with these Standards to provide the design team with greater clarity as to the needs of both. The process of qualifying for state-aid for school capital projects as established in AS 14.11 provides all the necessary steps for close collaboration between the recipient district or city/borough regarding the scope of a project. From the initial application and evaluation process through the design iterations, the importance of maintaining collaboration and DEED oversight throughout is critical. A cooperative approach will ensure a smooth process.

Part 2. DESIGN PRINCIPLES

1. REGIONALLY BASED DESIGN

School construction in Alaska encompasses a wide range of climates and must respond to the challenging logistics of building in remote areas with limited construction seasons. Design principles must be adapted based on climate and geographic region. The climates zones illustrated below will be used as a baseline to identify and evaluate appropriate design strategies in the application of these Standards. It remains the responsibility of design and facility professionals to understand any micro-climate or site-specific conditions which may impact the application of the Standards on a project-by-project basis.

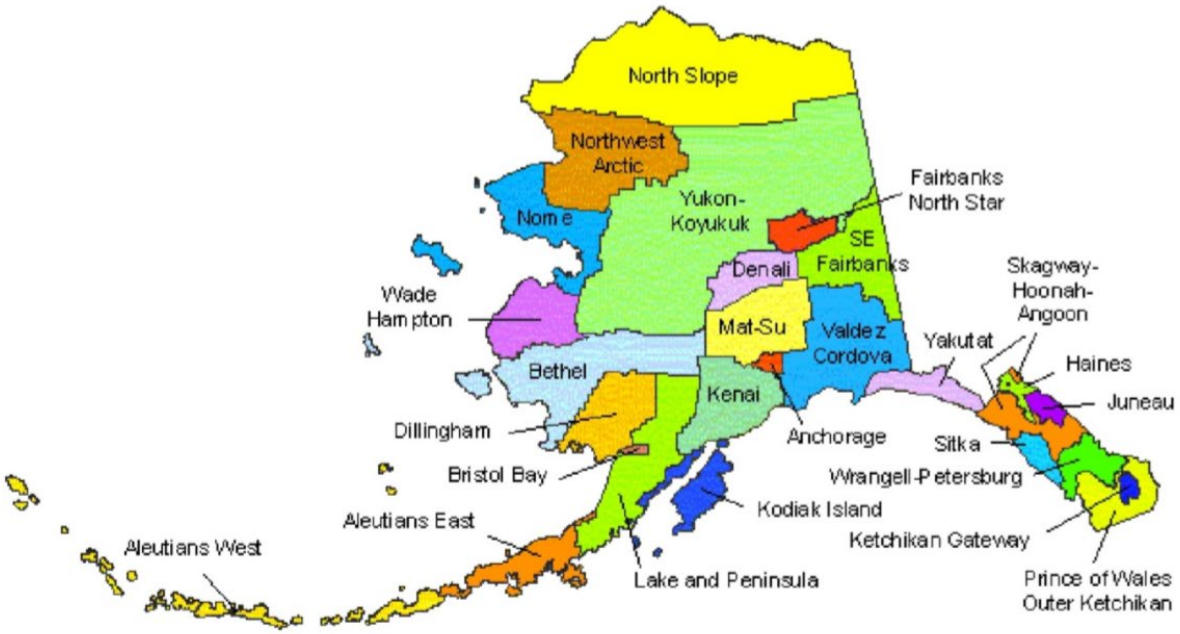

Table A301 Alaska Census Areas

Zone 6	Zone 7	Zone 8	Zone 9
Juneau	Aleutians East	Bethel	North Slope
Ketchikan Gateway	Aleutians West	Denali	
Prince of Wales	Anchorage	Fairbanks North Star	
Sitka	Bristol Bay	Nome	
Skagway-Hoonah-Angoon	Dillingham	Northwest Arctic	
Wrangell-Petersburg	Kenai Peninsula	Southeast Fairbanks	
Yakutat	Kodiak Island	Kusilvak (Wade Hampton)	
Haines	Lake & Peninsula	Yukon-Koyukuk	
	Matanuska-Susitna		
	Valdez-Cordova		

Consideration of geographic regions in the application of the Standards relate primarily to initial construction costs. The department has established an analytical model for the evaluation of

geographic cost variations across Alaska, as it relates to school facilities, and publishes the results of that analysis as part of the Demand Cost Model for Alaskan Schools. The geographic cost factors identified in that DEED publication will be used as a baseline to identify and evaluate appropriate design strategies in the application of these Standards. As with climate zones, it remains the responsibility of design and facility professionals to understand any local variations and site-specific conditions which may impact the application of the Standards on each project.

2. SITE & INFRASTRUCTURE

The State must be involved in reviewing site selection, design, and programming. Selected sites should be affordable, easily developed, and close to commercial-grade utilities wherever possible. Sites requiring extensive earthwork, long driveways, or environmental challenges should be avoided. In urban areas, schools should not be located directly on major roadways with high speeds or heavy traffic.

Recent tragedies at schools around the country have reinforced the need for designs to keep students and staff safe in our public schools. School safety experts and educational facility planners have been working together to develop recommendations that cover the outside and inside of school buildings. DEED encourages school districts to consider student safety as one of the most important criteria when designing or renovating schools.

A. Safety + Security Site Design

Required:

1. Develop site plans that allow two separate points of access to the site.
2. Make the main entrance easily identifiable from the street, primary parking area or main access route.
3. In settings where the school building is at or near grade, develop main entrances with discrete physical barriers such as concrete-filled steel bollards, boulders, planters or other physical barriers, as applicable, to prevent cars or trucks from being driven into the school.
4. Maintain clear and unobstructed sight lines for security and safety.
5. Obtain preliminary approvals from the Department of Transportation, the Army Corp of Engineers, and other appropriate agencies before site approval.
6. In school settings where emergency services are available, provide emergency vehicle access to all areas of the site, including playgrounds and fields.
7. In school settings where bus service is available, separate bus loop and parent drop-off areas and install fencing or guardrails to limit pedestrian circulation to designated crosswalks and sidewalks.
8. At urban schools, provide safe access for pedestrian and bicycle circulation from site entrances to the main building entrance and consider keeping pedestrian paths away from automobiles.
9. Provide safe, clearly marked pedestrian pathways, sidewalks, and boardwalks through the site.
10. Locate play areas away from vehicle circulation and parking areas. Provide accessible pedestrian pathways to playgrounds and athletic fields that avoid vehicular traffic.

11. Provide chain link fencing at the perimeter of playgrounds as required.
12. Avoid sidewalks that link to high speed roads and highways.
13. Provide clear vehicular circulation patterns and signage. Provide stop signs and speed tables.
14. Provide LED lighting at all travel ways, parking areas, and building perimeter.
15. Oil, propane, and gasoline tanks are preferred to be located below ground. When above ground protect the tank with fencing, berms or bollards. Small propane tanks serving kitchen or science room equipment may be located above ground.
16. Separate service vehicles from bus and parent drop-off areas.
17. Keep perennial bushes and trees a minimum of 20'-0 away from each side of major entrance doors.
18. Keep electric and telephone services secure from vandalism. Use the preferred method of protection, underground service from a street telephone pole to the entering point of a building.
19. Provide adequate lighting for the main entrance sidewalk and parking lot to discourage loitering and vandalism.
20. Provide appropriate site security gates at fire lanes to prevent non-authorized vehicles from driving around the sides or back of the school.
21. Provide exterior public address systems that can be heard in the parking lot, bus loop, and playgrounds.

Recommended:

22. Consider developing emergency off-site staging areas.
23. Consider providing a secondary access to the site for emergency vehicles.
24. Consider how an emergency evacuation will be conducted. Consider bus loading areas and/or staging areas.

Premium:

25. Locally required (i.e., municipality, borough, etc.) off-site improvements.
26. Masonry or stone pavers in locations with a geographic area cost factor above 105.
27. Concrete sidewalks further than 50'-0" from the main entrance.

B. Building Location and Orientation

Required:

1. Select the building site to minimize environmental impact and encourage a simple, straightforward construction process.
2. Orient the main entrance to face primarily south. Avoid entrances facing north.
3. Consider prevailing wind and wind speeds with regard to doors. Provide measures such as wing walls or rails to prevent wind from catching doors and causing damage.
4. Orient the building design to maximize natural daylighting in classrooms and other occupied spaces.
5. Keep building ventilation intakes away from vehicle exhaust and other sources of air pollution. Consider the site's prevailing winds when locating intake and exhaust equipment.

Recommended:

6. Consider orienting the longer axis of the building East-West for maximum solar impact.

Premium:

7. Building pads/sites with slopes in excess of 10 percent.

C. High-Performance Site Principles

Required:

1. Site buildings to maximize daylighting (a north-south orientation for classrooms).
2. Orient buildings with a major entrance on the south side whenever possible.
3. Choose native and adaptive plants that do not need permanent irrigation systems.
4. Conduct a Phase I Environmental Assessment (and Phase II if necessary, based on Phase I) to identify hazardous materials. Conduct required mediation on site.
5. Control erosion and sedimentation during construction.

Recommended:

6. Consider opportunities to reduce light trespass onto adjacent sites and improve nighttime visibility by reducing up-lighting, reducing maximum lumens of fixtures above horizontal, and locating luminaires well inside the project site boundary.
7. Consider opportunities to reduce impervious surfaces on site, reduce quantity and improve quality of stormwater runoff. Practice low-impact rainwater management strategies.

Premium:

8. Stormwater management: bioswales, pervious pavers.
9. Green roofs.
10. School vegetable gardens.

D. Building Entrances

Required:

1. Provide a single point of entry for all visitors that is easily identifiable from the main approach to the school. When called for by school district policy, visitors shall enter through a secure vestibule at the main building entrance. This arrangement may not be practical in a renovation or necessary in a very small school.
2. Design all exits and entrances so the building can be securely locked down after the start of school if desired
3. Safety and Security **at** Main Office
    a. Locate the main office door adjacent to the security vestibule lobby so office personnel can maintain visual supervision while visitors come in to sign the visitor log.
    b. Provide a hidden electronic security panic button in the office that can send a signal to police or emergency responders when a crisis is developing at the school.
    c. Provide a minimum of two locations for interior intercom and exterior public address system. The second location should be designated as a “safe room.”
    d. Design main offices with a second means of exit, either directly outdoors or into a more remote hallway.
    e. Provide security cameras at the main entrance and other remote locations around the school. Video systems should be capable of being reviewed for live on-demand broadcasting as well as a minimum thirty-day archival library system.

   f. Design the main office so it has easy supervision of the security vestibule, the main entrance lobby, and one or more main corridors leading into the "heart" of the school.
4. In a secure vestibule arrangement, the interior bank of doors of the vestibule should be equipped with an electronic strike that allows the door to be unlocked electronically by main office personnel after visitors have been approved for entrance.
5. Provide proximity card readers for staff at the main, kitchen, and at least one other staff entrance.
6. Provide video cameras in the ceiling of the security vestibule and directly inside of the vestibule doors so that visitors can be photographed on video loops for later review.
7. Design all major entrances and exits with vestibules if they are likely to be used during school hours.
8. Design entrance doors to be controllable from a remote location, preferably at the administrative office, with a direct view and oversight of the main entrance security vestibule.
9. Install exterior rain canopies at the main entrance and exterior doors that are expected to have high usage.
10. In buildings that are at our near grade, protect all front entrances and other major doors used on a regular basis throughout the school day with concrete-filled steel bollards or other appropriate, rugged obstructions.

Premium:

11. Pivot hinges, sliders, or revolving doors.
12. Electric door openers other than at the ADA main entrance.
13. Overly complex ceiling finishes and features.

3. SCHOOL FACILITIES

Every school plan should be a reflection of the Space Allocation Guidelines found in Alaska Administrative Code (4 AAC 31.020), as well as the school district's educational specifications and pedagogy. The opportunity to design new or redesign existing school buildings is often a once-in-a-lifetime experience for teachers, school boards, and the local community. Serious consideration should be given to a comprehensive educational visioning process at local expense that reviews current state-of-the-art thinking and considers which educational strategies are most appropriate for the school's age group and local community values. Learning spaces should support traditional as well as expeditionary, and "virtual" learning experiences. The following general planning principles apply to all school facility design:

A. General Planning Principles

Required:

1. Design interior wall layouts to be simple and straightforward.
2. Zone the building for public and after-hours use.
3. Consider zoning the building for lockdowns that allow different sections of the building to be securely isolated.
4. Design the floor plan to carefully separate quiet, academic areas from noisy, high activity functions.

5. Design classrooms to conform to best practices for acoustic isolation and separation as defined by ANSI-S12.60-2010 (Acoustical Performance Criteria, Design Requirements, and Guidelines for Schools Part I).
6. Organize functional layouts to support small- and large-group activities.
7. Designs should emphasize multi-functioning rooms to maximize daily use and minimize underutilized spaces.
8. Design the floor plan to optimize multi-functioning spaces such as cafeterias, commons, gymnasiums, and exploratory labs.
9. At the Concept Design or Schematic Design phase, school designs must demonstrate the ability to be expanded to accommodate a 15% increase in student population.
10. Provide acoustical and smoke separation by designing classroom walls to extend to the underside of the structural deck whenever possible and when required by codes.

Recommended:

11. Consider single or double intercommunicating doors between classrooms.
12. Schools should be designed to be as flexible as possible to accommodate future learning styles and technology
13. Operable partitions or large sliding doors.

Premium:

14. Complex floor patterns involving curves, cuts, and intricate details.
15. Wood floors, except where allowed for gymnasiums, or natural stone floors.
16. Elaborate, expensive, curved or complex walls, ceilings, windows, and arches.
17. Building plans with more than one elevator.
18. Stairways not required by code for egress.
19. Elaborate, monumental stairs, regardless of location or code compliance.
20. Interior channel glass wall systems or glass block walls.
21. Complex ceilings with multiple levels and decorative soffits.
22. Wood or metal slat ceilings.
23. Plaster or fiberglass shaped ceiling planes.
24. Ceiling tiles larger than 24" x 48".

B. General Building Safety + Security Planning Principles

Required:

1. Design the building so it can be locked down into separate security zones, preferably at internal firewalls requiring rated steel fire doors.
2. Provide a minimum of two means of exit out of any gymnasium, cafeteria, or library.
3. Provide a secure steel service door at the service entrance with a proximity reader and a means of identifying visitors without opening the door.
4. Provide locked, secure chemical storage areas that are not accessible to students or visitors.
5. Provide laminated security glass at remote exterior doors or sidelights.
6. Reduce the number of exterior doors that need to be supervised or checked for security and safety purposes.

7. Provide exterior doors convenient to playgrounds and playfields that can be quickly unlocked by proximity card readers in cases requiring “reverse evacuation.”

Recommended:

8. Consider providing steel frame doors with no glass vision panels at remote, unsupervised doors.
9. Consider putting fire doors on electric hold opens and having them tied into the emergency security notification system that allows the main office to release fire doors for lockdown.

Premium:

10. X

C. Safety + Security at Classrooms

Required:

1. Provide commercial-grade hardware and locksets on all doors.
2. Provide heavy duty, commercial-grade hardware at classroom doors where the door can be quickly locked by the teacher from the inside.
3. Provide small vision panels with laminated security glass in classroom doors.
4. Provide a phone and two-way intercom system in every classroom.
5. Provide a minimum of one National Fire Protection Assoc. (NFPA)-approved escape window in every classroom, where necessary.

Recommended:

6. X

Premium:

7. X

D. Category A – Instructional or Resource

1) General Classrooms

Required:

1. Design classroom walls to the underside of the deck for smoke and acoustical performance.
2. Design all classroom doors to be easily lockable from the inside by the teacher but to allow egress from the classroom at any time.
3. Specify sinks and countertops with postformed backsplash and front edge.
4. Provide bookcases and teacher storage closets as required.
5. Provide waterproof finishes for winter boot storage.
6. Provide separate row switching to allow artificial light levels to be reduced when natural daylight can be maximized.
7. Design the classrooms for excellent acoustics.
8. Provide a simple, straightforward lighting plan that provides appropriate light levels on white boards and does not interfere with projectors or TV video screens.

9. Provide a technology plan that shows how technology can be incorporated in the classroom and supports the educational pedagogy.

Recommended:

10. Demountable wall systems
11. Operable wall systems or large sliding doors
12. Consider radiant floor heating for grade levels where children are likely to sit on the floors.
13. Consider classroom cubbies for coats, hats, and boots in grades Pre-K–2.
14. Consider toilets in the classrooms for grades Pre-K–1. For classroom toilets, provide seamless or ceramic tile flooring.
15. Consider ceramic tile to a wainscoting height of 48" on the wet wall.
16. Consider sinks in the classroom for grades Pre-K–5. Specify paperless and water-resistant materials, such as sheetrock, for wet walls.

Premium:

17. Decorative or specialty lighting other than standard classroom lights
18. Decorative wall sconces
19. Custom designed sliding doors or operable wall systems
20. Casework or architectural woodwork such as picture rails, wainscoting, crown moldings, or paneling
21. Decorative or expensive non-standard ceiling tiles or ceiling systems such as metal or wood slat ceilings

2) Library & Media Spaces

Required:

1. Refer to the [enter appropriate space standard source(s)] for acceptable room sizes based on student population.
2. Design the library in consultation with school district librarians and design guidelines developed by the [Alaska?] Library Association.
3. Design the library for easy adult supervision.
4. Provide appropriate structural design to accommodate heavy book loading.

Recommended:

5. X

Premium:

6. Space required for non-district, municipal/borough-owned library functions.
7. Excessively high ceilings or volumes.
8. Expensive architectural woodworking, paneling, and custom millwork.
9. Custom ceilings, soffits, skylights, or other monumental architectural features.

3) Special Education Areas

Required:

1. Integrate special education spaces within the larger school population.

2. Provide appropriate storage for special education equipment.
3. Provide appropriate structural support for special swings or hanging equipment.
4. Provide quiet spaces or timeout rooms that are hygienic, vandal proof, and code compliant.

Recommended:

5. Consider OT and PT space adjacent to or inside of other multi-functioning spaces to maximize efficiency.

Premium:

6. N/A

4) Bi-Cultural/Bilingual Spaces

Required:

1. TBD

Recommended:

2. X

Premium:

3. X

5) Art Classrooms

Required:

1. Provide separate storage area and separate kiln room with exhaust (see also, Premium).
2. Specify cleanable and stain resistant room finishes, including countertops, floors, and wall backsplashes.
3. Design for abundant natural lighting with preferred north orientation.
4. Provide appropriate acoustical absorption in rooms with open ceiling structure.
5. Provide adequate storage for student projects.
6. Provide adequate wall display systems for hanging two-dimensional artwork.

Recommended:

7. Consider concrete or seamless floors that can resist paint, markers, and other art materials.
8. Consider floor drains with appropriate traps and trap primers.
9. Consider multiple station student cleanup sinks.

Premium:

10. Ceramics/pottery equipment in schools serving students below grade 9.
11. Stone or epoxy countertops
12. Wood cabinetry or architectural millwork
13. Decorative or special light track lighting
14. Expensive tile floors such as stone, ceramic tile, or quarry tile

6) Science Labs

Required:

1. Design and equip science labs to support the educational specifications and to conform to the [enter appropriate space standard source(s)]. Equip science rooms and labs to serve only the science program for which the room is designed.
2. Design science rooms or labs using best practices for safety.
3. Design science labs to allow for adult supervision throughout the room.
4. Provide deluge showers, eye wash stations, and emergency shut-off equipment where required for safety.
5. In science rooms and labs where chemicals will be used, specify appropriate chemical-resistant furniture and countertops, fume hoods, acid neutralization tanks, and plumbing that will prevent wastewater contamination.
6. In science rooms and labs where chemicals will be used, design appropriate safety equipment into the room and design appropriate prep rooms with lockable storage and fireproof, chemical-resistant cabinets.
7. In middle and high school science labs, provide appropriately designed tables and countertops for computer use with experiments.
8. Design to maximize shared amenities such as fume hoods, prep rooms, and storage.

Recommended:

9. X

Premium:

10. Compressed air systems
11. Gas at rooms other than chemistry
12. Fume hoods at rooms other than chemistry

7) Music Classrooms

Required:

1. Design band, chorus, keyboard, and practice rooms to prevent noise from leaking into adjacent spaces and floors. Design walls and floors to prevent noise through ceilings or structural elements.
2. Provide acoustic vestibules at doorways to prevent music from disturbing the rest of the building.
3. Tune band and chorus rooms with sound absorbing materials and acoustic mass to prevent sound transmission.
4. Tune chorus spaces to help amplify the human voice without the use of amplification systems.
5. Specify washable hard surface floors in band rooms.
6. Provide security glass in the doors of keyboarding and practice rooms.
7. Prefer flat floors with portable risers over permanent concrete step floors.
8. Design door configurations to allow for the easy movement of pianos, drums, and other large instruments.
9. Provide lockable storage for music instruments.

10. Design for convenient access to stages and other performance areas.

Recommended:

11. N/A

Premium:

12. Natural hardwood paneling or woodwork used as acoustical baffles and reverberation panels
13. Specialty flooring
14. Television or acoustical recording studios or services
15. Prefabricated practice rooms

8) Computer Lab/Technology Resource

Required:

1. TBD

Recommended:

2. X

Premium:

3. X

9) Consumer Education Classroom

Required:

1. TBD

Recommended:

2. X

Premium:

3. X

10) Career and Technology Education

Required:

1. TBD

Recommended:

2. X

Premium:

3. X

11) Gymnasiums

Required:

1. Provide synthetic sports floors in Pre-K-5 schools.
2. Specify MFMA-RL second or better grade, plain sawn hard maple floor systems for middle and high schools only.
3. Provide minimum underslab 15 mil vapor retarder that meets Class “B” WYB.

4. Refer to the [enter appropriate space standard source(s)]to determine the size of the gymnasium, locker rooms, bleachers and support areas.
5. Provide public toilet areas near the gymnasium.
6. Provide for wireless network computer access in the gymnasium and offices.
7. Locate gymnasiums adjacent to or with easy access to exterior playfields and parking lots for public events.
8. Locate bleachers and gymnasium doors to protect floors from street shoe traffic.
9. Provide energy-efficient lighting that can resist damage from thrown basketballs, softballs and dodge balls.
10. Provide safety and security cages around light switches, thermostats, sensors, etc.
11. Locate door swings, equipment, and other enclosures so they do not become dangerous obstructions to running students playing within the space.
12. Present affordable strategies for maintaining appropriate humidity levels for wood flooring.
13. Design gymnasiums with supporting toilet and shower facilities.
14. Consider sports net dividers to maximize class use of gyms.
15. Limit wall padding to competition court basketball backstops only.
16. Floor painting and striping for intended sports and physical education purposes.

Recommended:

17. Consider gymnasiums as possible multi-functioning and multipurpose spaces. Provide enough sound absorbing material to allow for good voice recognition, and appropriate sound amplification for group presentations
18. School names, mascots, or logos on floor and walls.

Premium:

19. Separate, specialized dehumidification systems for wood floors
20. Glass backboards or automatic electric winch backboards other than two for the main court
21. Climbing walls
22. Movable bleacher systems designed to be relocated throughout the room
23. Large, tall, electric operable divider systems
24. Specialty equipment other than basketball and volleyball supports or tie-downs
25. Batting cages
26. Television platforms for broadcasting games and events
27. College or professional grade floor systems

12) Auditoriums + Stage

Required:

28. Consult the [enter appropriate space standard source(s)] for state-supported stage sizes based upon program and grade configuration.
29. Specify a state-supported basic stage curtain, sound system, and theatrical lighting systems
30. Design dressing rooms, storage rooms, and scenery shops only if academic theater programs exist as part of the school curriculum.
31. Design a reasonably sized control booth, 10’-0" x 15'-0".

32. Specify sealed or painted concrete floors with carpeted aisles.
33. Locate the control booth for visual supervision of the stage and for video and audio recording of performances.
34. Design the auditorium stage and all support areas to be ADA accessible.

Recommended:

35. X

Premium:

36. Square footage that exceeds that required for seating one-third of the student body or for the appropriate stage as recommended by the [enter appropriate space standard source(s)]
37. Additional seating
38. Additional theater curtains
39. Proscenium arches wider than 60'-0"
40. Fly galleries
41. Stage gridirons, pin rails, or catwalks over stages
42. Proscenium openings higher than 25'-0" or stage ceilings higher than 30'-0"
43. Under-stage storage
44. Orchestra pits
45. Professional theater lighting systems
46. Theater balconies or spectator boxes
47. Elevators dedicated to serving just the auditorium
48. Special curved plaster wall or ceiling assemblies designed for acoustic balancing
49. Decorative wood paneling, wallpaper, and murals
50. Spaces and systems for “black-box” theaters

E. Category B – Support Teaching

1) Counseling/Testing

Required:

1. TBD

Recommended:

2. X

Premium:

3. X

2) Teacher Workrooms/Offices

Required:

1. TBD

Recommended:

2. X

Premium:

3. X

3) Teacher Breakroom

Required:

1. TBD

Recommended:

2. X

Premium:

3. X

4) Educational Resource Storage

Required:

1. TBD

Recommended:

2. X

Premium:

3. X

5) Time-out Rooms

Required:

1. TBD

Recommended:

2. X

Premium:

3. X

6) Parent Resource Rooms

Required:

1. TBD

Recommended:

2. X

Premium:

3. X

F. Category C – General Support

1) Administrative Areas

Required:

1. TBD

Recommended:

2. X

Premium:

3. X

2) Health Clinic + Nurse Space

Required:

1. TBD

Recommended:

2. X

Premium:

3. X

3) Conference Rooms

Required:

1. TBD

Recommended:

2. X

Premium:

3. X

4) Commons/Lobby

Required:

1. TBD

Recommended:

2. X

Premium:

3. X

5) Cafeteria

Required:

1. TBD

Recommended:

2. X

Premium:

3. X

6) Kitchen

Required:

1. TBD

Recommended:

2. X

Premium:

3. X

7) Multipurpose Room

Required:

1. TBD

Recommended:

2. X

Premium:

3. X

8) Student Store

Required:

1. TBD

Recommended:

2. X

Premium:

3. X

9) Weight Room

Required:

1. TBD

Recommended:

2. X

Premium:

3. X

10) Locker Rooms

Required:

1. TBD

Recommended:

2. X

Premium:

3. X

11) Pool

Required:

1. TBD

Recommended:

2. X

Premium:

3. X

G. Category D – Supplementary

1) Corridors

Required:

1. TBD

Recommended:

2. X

Premium:

3. X

2) Stairwells/Elevators

Required:

1. TBD

Recommended:

2. X

Premium:

3. X

3) Mechanical

Required:

1. TBD

Recommended:

2. X

Premium:

3. X

4) Telecom Rooms

Required:

1. Provide dedicated space for telecom rooms. Avoid co-locating racks in electrical or mechanical rooms.
2. Use 2-post racks unless equipment needs call for a 4-post.
3. Provide cable runway over racks for routing cabling.
4. Limit number of telecom rooms to minimum required per standards for size of the building.
5. Locate telecom room in central area of building where possible to average cable lengths.
6. Electrical panel serving the telecom room should have surge protection.

Recommended:

7. Provide rack-mounted UPS for essential systems.
8. Coordinate with Mechanical for cooling needs.
9. Locate utility service entrance in Main Telecom Room where possible.
10. Size room large enough to allow for fire alarm, access control, intrusion detection, DDC, and other similar systems to be located in the room.
11. Provide one circuit per rack, with a larger circuit provided to the main rack with UPS.
12. Use multi-connection KVM units instead of fixed monitors/workstations.
13. Install a paging speaker and telephone in the room.

Premium:

14. Central UPS systems.
15. Air conditioning if temperatures are not excessive in-rack cooling systems.

5) Maintenance & Receiving

Required:

1. TBD

Recommended:

2. X

Premium:

3. X

6) Building Storage

Required:

1. TBD

Recommended:

2. X

Premium:

3. X

7) Restrooms

Required:

1. TBD

Recommended:

2. X

Premium:

3. X

8) Custodial

Required:

1. TBD

Recommended:

2. X

Premium:

3. X

9) Conditioned Food Storage

Required:

1. TBD

Recommended:

2. X

Premium:

3. X

10) Recycling Rooms

Required:

1. TBD

Recommended:

2. X

Premium:

3. X

4. HIGH PERFORMANCE FACILITIES

The Alaska DEED encourages high-performance schools for Alaska communities. A high-performance school is designed to conserve natural resources, save money, and improve the overall health and well-being of students, staff, and community. Emphasis is placed on low-impact site design, reduced impact on local infrastructure, energy efficiency, water use reduction, non-toxic materials, waste management, indoor air quality, efficient operations, and community engagement.

High performance school design principles can be broken into three general areas of emphasis:

- Integrative design process
- Human health and comfort
- Demand reduction

These principles are woven throughout this document as both required strategies and suggestions for premium strategies. Resources on high-performance school design are included at the end of this section to provide further guidance to project teams.

A. Integrative Design Process

One of the key ingredients to creating a high-performance school is to conduct an integrative design process. The integrative design process is a collaborative approach that includes the full team in decision-making from project inception through design, construction, and commissioning. The process focuses on a whole-systems design approach: recognition that all the components of the building work interdependently and affect the performance of one another.

A few key steps to implementing an integrative design process include:

- Set sustainability goals with the owner at project inception.
- Conduct a full team meeting at the beginning of each project phase.
- Include high-performance design principles as an agenda item at all project meetings.
- Incorporate life cycle costs and operating costs into the project decision-making process.

Buildings are often budgeted on first costs alone. Life cycle costing takes a more integrated approach, factoring in energy savings over time, durability and reduced maintenance of systems and materials, and enhanced occupant health and productivity. High performance design principles place emphasis on looking at the building as a whole over time to minimize energy use, maximize cost savings, and create comfortable and healthy spaces for the occupants.

B. Human Health and Comfort

Learning environments have a huge impact on student performance, health, and overall well-being. High performance schools can provide high quality indoor air and thermal, visual, and acoustical comfort. Emphasis is placed on daylight in classrooms and views to the outdoors, HVAC and lighting controls, non-toxic materials, enhanced filtration, carbon dioxide sensors, cross-contamination prevention, natural ventilation, and increased outdoor airflow rates in mechanically ventilated spaces.

Benefits of high-performance schools can include improved student performance, increased student health, reduced student absentee rates, and greater staff satisfaction.

Required:

1. Low water consumption plumbing fixtures.
2. Provide third-party commissioning starting at project concept design.
3. Design heating and cooling systems to meet the requirements of ASHRAE 55 Thermal Comfort in Buildings (latest edition).
4. "Right sizing" of HVAC equipment based on development of building massing and envelope. May require multiple iterations as building layout changes during design.
5. Avoid operating independent heating and cooling systems simultaneously. Utilize HVAC systems that will redistribute heat while also providing cooling, such as variable refrigerant flow (VRF) systems.
6. Design variable output HVAC systems to adapt to varying building heating and cooling demands.
7. Utilize low temperature heating and cooling systems, such as in-floor radiant.
8. Use high-efficiency HVAC equipment.
9. Provide building occupants with individual access to building temperature controls.
10. Minimum MERV-13 filtration on all ventilation systems.
11. Demand control ventilation, with carbon dioxide (CO2) sensors installed in spaces with high occupant density.

Recommended:

12. Best practices include providing green spaces, open spaces, and shared community spaces in the building; reusing and recycling materials during construction and occupancy; and creating an environment that is a community teaching tool for high performance building and sustainable living.
13. Consider using energy modeling and iterative design to reduce building energy consumption by 5% over ASHRAE-90.1 (current version).
14. Consider providing more than ASHRAE 62.1 minimum outdoor air rates. This may not be appropriate for all locations in Alaska.
15. Consider using the building control system to monitor indoor air quality and adjust ventilation rates to mitigate contaminants such as CO2 and VOCs.
16. Consider providing a building flushout post construction.

Premium:

17. Provide on-going commissioning of the facility every 5 years.
18. Consider utilizing grey water reclamation systems for use with flushing plumbing fixtures.
19. Consider on-site harvesting of renewable energy such as wind and solar.
20. Provide static and/or dynamic educational displays describing the sustainable features of the facility.
21. Provide a display showing instantaneous and aggregate building water and energy consumption.

C. Demand Reduction

High-performance schools are designed to reduce demand on energy and natural resources, to optimize the performance of building systems, and to reduce the overall operating costs of the school. Emphasis is placed on energy efficient mechanical systems, high-performance envelope design, low-flow water fixtures, renewable energy systems, lighting and daylight controls, and energy efficient equipment and appliances.

As part of an integrative design process, energy modeling and commissioning will confirm that all systems and components are integrated to achieve optimum results and are installed and operated as designed. One strategy may offset another. For instance, daylight sensors may cost more up front as an individual strategy, but once energy savings and associated reduced mechanical loads are considered, the team may realize that they can save money by selecting a smaller mechanical system.

Practices to optimize systems integration and increase efficiency include energy modeling and building commissioning. Design-phase energy modeling is a tool to use early and throughout the design process to test a variety of energy efficiency measures to determine the best way to align systems and components. Commissioning also offers an opportunity to make adjustments in the field and to train occupants on how to use the systems, improving efficiency even further.

Employing high-performance principles such as demand reduction, energy efficiency, and system optimization results in climate appropriate solutions, buildings that have low-to-no impact on local infrastructure, and an overall reduction in the project's carbon footprint.

D. High-Performance Certifications

High-performance building certification systems such as the United States Green Building Council (USGBC) LEED for Schools Rating System can provide detailed guidance on implementing high performance school design strategies.

Although DEED recognizes the value of building certifications by a third-party organization, the State will not participate in costs associated with these certifications that may result in materials and systems that cannot be supported by the State.

Premium:

1. Green Building Certification: Register the project with the USGBC LEED Rating System and obtain LEED for Schools certification.
2. Educational Display: Provide a permanent display, building signage, digital dashboard, or building tour that describe the high-performance features of the school.
3. Carbon Footprint Reporting: Calculate the school's carbon footprint. Include a greenhouse gas inventory and opportunities to reduce greenhouse gas emissions.
4. Climate Action Plan: Develop and implement a climate action plan to raise awareness of the school community's carbon footprint and engage students, staff, and the community in reducing that carbon footprint.
5. Performance Benchmarking: Track the school's energy use over time, using a tool such as the US EPA's Energy Star Portfolio Manager.

Part 3. SYSTEM STANDARDS

1. SITE AND INFRASTRUCTURE

A. Circulation and Parking – Urban Schools

Required:

1. Design paved areas to prevent stormwater and snowmelt from flowing across crosswalks and sidewalks.
2. Design vehicle circulation and parking areas to maximize site safety.
3. Specify heavy duty bituminous pavement at bus and delivery truck paths.
4. Design the radii of turns to accommodate emergency vehicles and buses.
5. Design to accommodate appropriate truck deliveries.
6. Minimize islands and other obstructions in parking areas, except where needed for circulation control, to accommodate snow removal and storage.
7. Avoid locating light pole foundations within parking areas when possible. Concrete pole bases shall be 36" high to limit damage.
8. Install speed control measures at long straightaways and other areas.
9. Locate ADA parking spaces and drop-off zones near the main and frequently used entrances.

Recommended:

10. Consider designating parking spaces near the main entrance for carpool and low-emitting vehicles.
11. Consider providing headbolt heaters at staff parking areas in climate zones 8 and 9.

Premium:

12. Concrete or asphalt pavers.
13. Additional parking and locally mandated parking above the standards.
14. Concrete walks other than at the main entrance.
15. Heavy-duty pavement other than at loading dock, service drives, bus loops, and dumpsters.
16. “Porous” drainage pavement.
17. Radiant sidewalk and parking snow melt systems.
18. Headbolt heaters beyond 50% of of the anticipated number of school staff.

B. Playgrounds and Athletic Fields

Required:

1. Design field orientation to conform with National Associations–Court and Field Diagrams.
2. Design play areas to conform to ASTM (American Society of Testing Materials) standards and the publication by the National Principals Association.
3. Specify play area equipment and surfaces to meet Consumer Product Safety Commission standards.
4. Schools that have unique circumstances will be dealt with on a case-by-case basis.
5. Provide drainage for play areas to prevent ponding.

6. Specify surfaces and play equipment for soft play areas that meet ADA and OSHA standards.
7. Provide subsurface drainage systems under soft play areas.
8. Use linear shapes and simple forms at play areas to accommodate snow removal and maintenance.
9. Specify playground equipment constructed of durable, weather-resistant, low maintenance materials.

Recommended:

10. Consider bike racks at the main entrances to the building.
11. Consider installing empty conduit for future power to the athletic fields.

Premium:

12. Athletic and play areas that exceed the DEED's minimum standards.
13. Bike trails or exercise trails.
14. Bleachers, lighting, concession stands, irrigation systems, press boxes, scoreboards, and drinking fountains.
15. Site irrigation systems for athletic fields.

C. Landscaping

Required:

1. Prioritize the location of plantings at the main entrance and as buffering for paved areas and walks, and along public building facades.
2. Avoid plantings that create a security or visibility issue near entrances.
3. Provide native, water conserving plants.
4. Plant trees of a reasonable size and caliper.
5. Locate trees away from the building to provide a minimum of 12'-0" clearance from the drip line of a fully grown tree.

Recommended:

6. X

Premium:

7. Annual plantings.
8. Buffering plantings required by local authorities.
9. Decorative benches and elements.
10. Stone benches or plazas.
11. Chain link fence coatings and screen slats.
12. Non-native plantings or trees.

D. Site Structures

Required:

1. X

Recommended:

2. X

Premium:

3. X

E. Site Civil/Mechanical Utilities

Required:

1. Select sites with public water & sewer.
2. Design an on-site drainage system to keep stormwater run-off away from the building and to keep grounds, paved areas, and playfields free of standing water.
3. Design “open pond” stormwater storage systems. Avoid buried storage systems.
4. Enclose stormwater ponds and holding areas with 4'-0"-high galvanized chain link fencing. Provide gates for maintenance.
5. Provide drip edges at sloped roof areas with positive means of collecting roof runoff and a pipe to convey the flow to the drainage system. Do not use perimeter foundation drains to intercept roof runoff.
6. Locate kitchen delivery areas, school maintenance, delivery, and dumpsters away from the main building entrance or student activity areas.
7. Locate the dumpster to encourage and maximize recycling of waste materials. Show storage areas for recycled materials in and outside the building on site and building plans.
8. Enclose the dumpster with an 8'-0"-high chain link fence and set it on a bituminous concrete slab with steel bollard bumpers. Provide a 12'-0"-long reinforced concrete pad on the loading side of the dumpster.
9. Avoid depressed loading docks.
10. Locate water, waste water utility connections away from main building entrance.
11. Coordinate water, waste water, and fuel utility connections to enter building at mechanical utility spaces.
12. Where water, waste water, and fuel utility piping is installed above ground outside of buildings, locate piping away from the main building entrance. Locate piping to allow access for pipe maintenance and building maintenance. Locate piping away from pedestrian walkways and vehicle traffic to the greatest extent practicable.
13. Provide recirculating and/or heat trace on water and wastewater supply mains as required by site climate conditions.
14. Locate fuel oil storage away from the building front entrance.
15. Enclose bulk fuel oil storage areas with 8'-0"-high galvanized chain link fencing. Provide gates for maintenance.
16. Install UL-142 above grade double wall intermediate fuel oil storage tank as close as practicable to fuel-fired mechanical equipment. Enclose with 6'-0"-high galvanized chain link fencing. Provide gates for maintenance.
17. Provide containment for fuel oil piping installed below ground including double-wall fuel-rated piping, corrugated carrier pipe, pipe transition and containment sumps.
18. Do not bury ferrous fuel oil piping.

Recommended:

19. Consider wastewater pretreatment systems at sites with septic systems.
20. Consider coordinating with the vacuum waste utility to have vacuum collection sumps installed within the school building, for sites served by utility level vacuum waste systems.
21. Consider installing a fuel leak detection system with alarms to monitor integrity of fuel storage tank and distribution piping.

Premium:

22. Install fuel level monitoring system with digital outputs for remote viewing and connection to building energy management system/control system.

F. Site Electrical Service and Distribution

Required:

1. Utilize 3-phase power if available.
2. Coordinate with the local utility for connection point, distribution voltage, and power plant capacity early in the design.

Recommended:

3. If designing the line extension, try to locate transformers as close as practical to service entrance.

Premium:

4. X

G. Site Data/Comm Service and Distribution

Required:

1. Utilize public fiber optic services if available.

Recommended:

2. Where practical, use the same routing as power to reach site/building.

Premium:

3. X

H. Site Lighting and Equipment

Required:

1. This lighting is for general use. Specific applications such as athletic fields, hockey rinks, and similar would be included in design of those site elements.
2. Building-mounted lighting may be used for site lighting if practical, or as a supplement to pole-mounted lighting.
3. Pole-mounted lighting should be designed for roadway, driveway, and parking areas per IES standards. Additional lighting should be considered for hardscape, playground equipment, sledding hills, and similar areas where use may require artificial lighting.
4. Poles should be located on the perimeter of parking areas to stay out of the way of snow removal paths as much as possible.

5. Lighting parameters including minimum lighting levels, glare, uniformity, and similar should meet IES standards where no local code is in effect.

Recommended:

6. Consider providing conduit to new poles for signal wiring to cameras, wireless access points, etc., as design budget and need allows.

Premium:

7. X

2. SUBSTRUCTURE

A. Foundations

Required:

1. Design the perimeter drainage system at the footings to keep ponded water away from the foundation.
2. Avoid building on soils with high water tables, exceptionally high seasonal water tables.
3. Provide a quality vapor retarder at the first floor foundation and concrete slab.
4. Terminate all exterior wall flashing and weeps above the finish ground level. Insulate foundations as required by DEED-adopted energy codes to eliminate or minimize heat loss through the perimeter.
5. Design all exterior entry slabs to resist frost heaving. Provide full depth frost wall foundations where necessary to prevent frost heaving.
6. Provide exterior sheet waterproofing on the foundation and footing and exterior side of all concrete walls that enclose space below the finish grade level. This includes occupied space as well as below-grade mechanical and storage spaces.

Recommended:

7. Wherever possible, provide a minimum of 12" of grade difference between the finished floor slab and the finished exterior grade.

Premium:

8. X

3. SUPERSTRUCTURE

4. EXTERIOR CLOSURE

The overall building design affects the performance of the exterior closure. The footprint, configuration, and structural grid should be simple and straightforward, without complex geometries. The State prefers multi-level buildings to reduce the overall footprint and to decrease the exterior surface and roof area. Design Ratios are referenced where applicable. Exterior walls should be straight, with few, if any, curves. Avoid complex configurations with unnecessary corners and changes of materials. DEED-adopted energy codes will have a significant influence on envelope design and

must be complied with in the most cost-effective way possible. Exterior closures should be designed holistically to control transfer of heat, air, moisture, vapor drive, daylight and noise.

A. Exterior Walls and Soffits

Required:

1. Wall and soffit assemblies should be designed to consider life-cycle analysis, energy efficiency, durability, low or no required maintenance and overall costs of assemblies.
2. Materials used for exterior enclosures shall be of commercial grade, durable with an intended 20-year or longer usable life.
3. Consider use of a load-bearing exterior wall assembly where feasible. Wall assemblies constructed from dimensional lumber, structural insulated panels, metal studs, and concrete masonry units are all capable of serving this dual-purpose role as exterior closure and structural system.
    a. Wood studs – FC-3, LCCA-3, Labor intensive.
    b. Structural insulated panels FC-3 to 4 (better in remote locations), LCCA-3.
    c. Metal Studs – FC-4, Thermal Bridging leads to more complex total wall assembly. LCCA=3.
    d. Concrete masonry units FC-3 (rural location 1). LCCA-1. CMU become very expensive in rural location due to freight. CMU has addition LCCA cost for future renovation as it is difficult to remove/modify.
4. Exterior Cladding and Siding: Exterior material choices are numerous and diverse. When choosing cladding, careful consideration should be given to design guidelines listed above and coordinated with District design preferences. Products that require sealants and repeated paint and stain maintenance are discouraged. Products include:
    a. Structural Insulated Panels (SIP): Overall thickness, surface thickness, and R-value appropriate to region and structural design intent. FC-3, LCCA-3
    b. Metal Wall Panels: 24-gauge minimum thickness zinc-coated (galvanized) or aluminum-zinc alloy-coated sheet steel. fluoropolymer exterior finish with minimum 20-year finish warranty. FC-2, LCCA-2, (in rural locations overall wall system maybe more expensive as more layers of material are used in total system.
    c. Insulated Metal Wall Panels (IMP): 24-gauge minimum thickness zinc-coated (galvanized) or aluminum-zinc alloy-coated sheet steel. fluoropolymer exterior finish with minimum 20-year finish warranty. R-value as appropriate to the climate and region. FC-2, LCCA-2
    d. Phenolic Resin Panels: install per manufacturer's instructions on recommended mounting and fastening systems. Specify colors and patterns proven to not fade over time due to ultraviolet radiation exposure. FC-4, LCCA-2
    e. Fiber Cement Panels: install per manufacturer's instructions on recommended mounting and fastening systems. FC-4, LCCA-2
    f. Exterior Insulation Finish System (EIFS). Specify impact resistant mesh that will resist damage from projectiles. Provide flashing to prevent water intrusion into the system. Provide drainage layer behind insulation layer to allow moisture to escape if needed. FC-4, LCCA-2 to 4, (expensive to repair in rural locations).

   g. Exterior Masonry: Can also serve as the structural system. Consider also as an exterior 4’ to 8’ high protective “wainscot” with different materials above. Avoid use in remote areas due to transportation costs. Schedule installation to avoid the need for temporary heat. Masonry or concrete walls should contain weep holes at the base of walls 8"-12" above finish grade, unobstructed, with insect screen. FC-3, LCCA-1 to 2

5. Wall Insulation: Types and R-values; the following values or those values tested from manufacturers may be used in determining R-values of wall assemblies.
   a. Expanded Polystyrene (EPS) Board R-Value = 4.17 per inch FC-2, LCCA-2
   b. Extruded Polystyrene (XPS) Board R-Value = 4.17 per inch FC-3, LCCA-3
   c. Polyisocyanurate (Polyiso) Board R-Value = 5.6 per inch FC-2, LCCA-2
   d. Glass-Fiber Batt Insulation R-Value = 3.16 per inch FC-1, LCCA-2
   e. Glass-Fiber Batt Insulation (High Density) R-Value = 4.28 per inch FC-1, LCCA-2
   f. Glass-Fiber Blown-In Insulation R Value = 3.7 - 4.28 per inch FC-1, LCCA-2
   g. Mineral Wool Batt Insulation R-Value = 4.0 per inch FC-4, LCCA-2
   h. Open Cell Spray Foam Insulation R-Value = 3.6 per inch FC-3, LCCA-3
   i. Closed Cell Spray Foam Insulation R-Value = 6.0 - 6.5 per inch FC-3, LCCA-3
6. Soffits such as at overhangs: Provide the following:
   a. Siding material as described in Siding and Cladding, item 4 above.
   b. Exterior Air/Weather Barrier System as described in item 12 below.
7. Soffit areas that separate exterior space from heated space: This construction should be avoided or minimized. Where used in fire sprinklered buildings, and the size of the soffit requires sprinkler coverage, sprinkler piping must be in a heated space or a dry sprinkler system provided.
8. Continuous Exterior Insulation (CI): provide a continuous layer of insulation at the exterior side of the wall assembly. Protect CI with air/weather barrier and siding material in a rain screen assembly. Minimum R-Value of continuous insulation layer of R-7. Use CI to mitigate thermal conductance through wall structure. CF-1, LCCA-1 low first cost and significant LCCA advantage due to energy savings.
9. Vapor Retarders at Exterior Walls: Provide vapor retarder at the warm side of wall insulation with permeance rating not to exceed 0.13 perms, polyethylene, 6-10 mils thick. Where vapor retarder is not in direct contact with a cover material such as gypsum wallboard, vapor retarder shall have a flame-spread rating not to exceed 25 and a smoke density not to exceed 450. Ensure vapor retarder is continuous at wall to roof transitions. Minimize penetrations of vapor retarder.
10. Vapor Retarders at Concrete Floor Slabs: Floor slabs on grade with non-permeable floor finishes should have a vapor retarder of 0.05 perms or less, polyethylene, 10-15 mils thick. Non-permeable floor finishes include (but are not limited to) epoxy, polyurethane, vinyl, linoleum, and rubber. Under slab vapor retarders must be durable enough to withstand construction activity. Penetrations should be detailed according to the manufacturer’s instructions. Specifications should require measurement of slab relative humidity in accordance to meet the requirements of the floor finish manufacturer.
11. Thermal Resistance: Insulation and minimum R-values of wall assemblies shall accommodate regional climate. Minimum wall assembly value in all Climate Regions is R-19.

12. Exterior Air/Weather Barrier Systems: Self-adhering sheets, fluid applied membrane, or mechanically attached building wrap. Detail wall/roof intersection to provide continuous air/weather barrier system. FC-2 to 4, LCCA-2 to 3 (product vary in cost and performance)
13. Impact Resistance at Exteriors: Provide impact resistant material up to a minimum of four feet above ground height. FC-3, LCCA-3
14. Corrosion Resistance: Consider local risks of corrosion from environmental or industrial sources.
15. Graffiti Resistance: Enable the removal of graffiti without damage to the appearance, finish, and durability of the substrate
16. Acoustics: Consider local conditions for requirements.
17. Building massing should limit exterior exposure of large high bay spaces to wind loads
18. Design flashing details as per Sheet Metal and Air Conditioning Contractors' National Assoc. (SMACNA) flashing recommendations to prevent water infiltration into the wall.
19. Design simple, cost effective steel, concrete, or masonry lintels. Specify galvanized at exterior steel lintels.
20. Do not use paper or organic products that support mold growth when wet in any exterior wall assembly.

Recommended:

21. Avoid materials that require paint or sealers to prevent water intrusion.
22. Impact Resistance: Provide impact resistant material up to a minimum of eight feet above ground height. CF-1, LCCA-1
23. Avoid masonry veneer. CF-3, LCCA-2
24. Consider power and data raceways at exterior walls to reduce the number of penetrations in the vapor retarder.
25. Insulated Metal Wall Panels (IMP) with addition of air/weather barrier directly behind the IMP for additional protection. Air/Weather Barrier CF-1, LCCA-1

Premium:

26. Glazed bricks, cast stone, "architectural" finish cast-in-place concrete. Cost prohibitive in most rural applications CF-4, LCCA-3
27. Precast concrete Cost prohibitive in rural application due to freight and need of large equipment to handle. CF-3 to 4 LCCA-2.
28. Granite, slate, or other stone that is more expensive than common masonry. CF-5, LCCA-2
29. Lead-coated copper, stainless steel, zinc, or other metal shingles and siding products. CF-4, LCCA-1, may have application in saltwater environments
30. Ceramic, porcelain, or other tile products that are more expensive than common brick. CF-3 to 4, LCCA-2
31. Enamel panels or other manufactured curtain wall products. CF-4, LCCA-3
32. Exterior porcelain tile, glass tile, or glass cladding systems. CF-4, LCCA-3
33. Composite stone veneer cladding CF-4, LCCA-3 weight of material is problematic in rural locations.
34. Channel glass facades. CF-5, LCCA-4

B. Underbuilding Soffits

Required:

1. Buildings located in some regions are recommended to be elevated based on local geotechnical and climatic condition. In such a structure, where the space underneath the building is exposed to the elements, consider enclosure with sheathing or another weather-resistant covering.
2. Consider structural insulated panels (SIPs), which are all capable of serving a dual-purpose role as exterior closure and structural system. FC-3, LCCA-3
3. Exposed underside of SIPs:
    a. Plywood bottom surface
    b. Provide coverage of any exposed foam insulation with intumescent paint
4. Moisture Resistance: Provide vapor retarder to inside of insulation.
5. Thermal Resistance: Insulation and minimum R-values to accommodate regional climate.
6. Provide barrier system (skirting) to prevent public access to underside of building for fire-safety prevention. CF-1, LCCA-1
    a. Chain link fence

Recommended:

7.

Premium:

8. Building skirting:
    a. Perforated metal panel or CF-4 LCCA-2
    b. Welded wire fabric. CF-4 LCCA-2
9. Metal panel siding on underside of SIPs. CF-2 LCCA-1

C. Exterior Glazing

Required:

10. Provide glass thickness and safety glass materials appropriate to safety risk, energy performance requirements and local conditions, including wind loads and internal air pressures, deflections, safety and code compliance.
11. Conduct life cycle analysis and collect detailed warranty information on vinyl, vinyl-clad, and fiberglass windows for DEED review and approval prior to incorporation into the design. CF-3
12. Exterior windows must have insulated glazing system (outer glazing low E coating with an air space and interior glazing that meets latest adopted edition of IBC for wind pressures). Consider building energy efficiency, interior glare, daylighting, acoustic performance, and security when selecting exterior window and glazing systems. Consider high performance glazing units with high visible light transmittance for better daylighting and a low solar heat gain coefficient (SHGC) in accordance the National Fenestration Rating Council.
13. Exterior glazing: area recommended not to exceed 10% of the entire exterior closure area. Consider a balance of natural lighting, view, solar gain and heat loss.
14. Glazing in windows in high-traffic areas and vandal-prone areas should provide an appropriate level of impact resistance.

15. To simplify replacement of broken units, avoid individual glass pieces larger than 4 feet in width or 6’ in height.
16. Exterior windows constructed with thermally broken frames to reduce heat loss and prevent thermal conduction.
17. Provide thermally broken aluminum windows, aluminum clad wood windows or storefront systems for larger window installations. CF-4, LCCA-3
18. Provide commercial-grade windows. Provide prefinished exterior surfaces as opposed to field finished or painted options.
19. Provide casement and awning windows with screens at operable vents. Casement and awning windows must not be oversized and must be easily opened by crank mechanisms. Do not locate operable windows at locations where persons can accidently strike the frame of an open window. Provide adequate number of locking points to provide positive closure
20. Specify windows with sub-frame construction for efficiency and to resist water penetration.

Recommended:

21. Consider single or double hung windows with window screens in appropriate climates (primarily zones 6 and 7) as a character defining feature of an existing building or as an historic treatment. CF-3, LCCA-3
22. Consider specifying high-performance glazing as determined by orientation and energy modeling. CF-4, LCCA-TBD Depending on glazing price of windows can double, LCCA analysis of the systems vary.
23. Consider polycarbonate covers at windows susceptible to vandalism and in remote areas where window replacement is not readily available.

Premium:

24. Stainless steel, mahogany, teak, or exotic hardwood windows, skylights, or doors.
25. Triple-glazed windows in climate zones 6 and 7 without an LCCA.
26. Bullet-proof glass. Consider providing UL 752 Ballistic Rating of Levels 3 through 7. Degree of ballistic protection level should be determined by school district or community policy and design parameters for each school.
27. Any manufacturer’s non-standard window sizes.
28. Any windows of special sizes requiring manufacturer’s premium costs.
29. Silicone glazing systems, butt glazing systems, or double wall glazing systems.
30. Non-standard colors or finishes on windows that require manufacturer’s premium costs.
31. Glazed channel glass wall systems.
32. Arched or complex windows and frames.

D. Exterior Doors

Required:

1. Exterior doors shall be water-tight, weather-tight, and protected from climatic influences, including rain and strong winds.
2. Exterior doors subject to continual heavy use must be constructed both for strength and resilience against wear, and against accidental and deliberate damage. Sufficiently robust to provide appropriate building security and to withstand high traffic conditions without stress or

damage to the door, glazing or hinges. Specify exterior doors with fully welded metal frames. Avoid “knock-down” frames at exterior doors.

3. Door materials include:
    a. Insulated, fully galvanized steel, primed and painted. CF-2, LCCA-1
    b. Fiberglass, especially suitable for coastal, salt environments, climate zones 6 and 7.
    c. Aluminum, factory finish CF-2, LCCA-1
4. Avoid the use of fully glazed door systems
5. Specify Grade 5 exterior door hardware with stainless steel components and no plastic components in hinges, locks, panic hardware, or lever handles. CF-4, LCCA-1
6. Specify exterior doors with fully welded metal frames. Avoid “knock-down” frames at exterior doors. CF-3, LCCA-1
7. Provide electronic locks and controls at exterior doors where required for security.

Recommended:

8. Specify 42" wide doors only at limited locations when functionally necessary such as at service doors. CF-2, LCCA-1
9. When selecting exterior materials for remote communities consider the site-specific local complexities of construction logistics.

Premium:

10. Non-standard doors that are higher than 84" or wider than 36" – other than service doors. CF-4, LCCA-1
11. Any doors of special sizes requiring manufacturer’s premium costs. CF-4, LCCA-1
12. Non-standard colors or finishes on doors that require manufacturer’s premium costs. CF-4, LCCA-2
13. Stainless steel doors or frames. CF-4, LCCA-1
14. Overhead doors except at service/delivery. CF-3, LCCA-3
15. Bullet-proof doors. Consider providing UL 752 Ballistic Rating of Levels 3 through 7. Degree of ballistic protection level should be determined by school district or community policy and design parameters for each school.

E. Exterior Accessories

Required:

16. Louvers: specify internally draining style. In all climate zones, in high wind environments provide protective exterior wall mounted hoods to prevent accumulation of rain, snow and ice within louvers. Hoods shall be galvanized and painted metal or stainless steel with sloped tops.
17. Guardrails and handrails: Provide at locations and construction as required by IBC. Materials include galvanized, galvanized and painted or high performance coated steel; aluminum (bare or coated); treated wood or combinations of the above.

Recommended:

18. Screening enclosures at services areas and dumpsters: cedar fencing, front of the enclosure may have a gate, however, may also be left open for ease of access.

19. Light Shelves: at large window areas to reduce interior glare and solar heat gain, primarily at south and west facing facades. Light shelves may be pre-manufactured as part of the window system or “stick built”.

Premium:

20. Light shelf on the interior side of windows can deflect solar gain and also reflect light upward to augment or reduce artificial light needs.

5. ROOF SYSTEMS

A. Pitched Roofs

Required:

1. Recommended pitch for major portion of roofs is 3 in 12 to 6 in 12. Where the size of the structure in a pitched roof design causes an excessive volume of unused attic space consider changing to a low slope roof design.
2. Snow shedding: On roof materials prone to snow shedding carefully consider the discharge areas to provide occupant safety and to avoid damaging nearby surfaces. Snow shedding shall not occur at any door, including service and maintenance doors.
3. Gutters and downspouts: Where needed to control run off provide commercial grade gutter and downspouts. Ensure downspout discharge is in a controlled drainage system. Do not discharge run-off over sidewalks or other pedestrian circulation.
4. Roof penetrations: minimize the number of roof penetrations. Where possible, sidewall penetrations such as mechanical intake and exhaust are preferred. On metal roof surfaces locate necessary penetrations near to the ridge to minimize risk of sliding snow damage. Provide heavy gage snow diverters above penetrations where shedding may damage penetrations.
5. Installation detailing shall consider and accommodate thermal expansion and contraction.
6. Roof Materials: When choosing roofing systems, careful consideration should be given to design guidelines listed above and coordinated with District design preferences
    a. Standing Seam Metal Roofs: Sheet material, 24 gauge minimum in portable roll formed or factory formed profiles. Base metal aluminum-zinc alloy coated hot-dipped process and prepainted. Preferred 2-coat fluoropolymer finish system, 20-year warranty on the finish. Avoid large roofs where metal lengths exceed practical lengths due to shipping, handling and machine roll forming considerations. Avoid field splices. CF-3, LCCA-3
    b. Insulated Metal Roof Panels (IMP). Overall thickness, surface thickness, and R-value appropriate to region and structural design intent. CF-3, LCCA-3
    c. Asphalt Shingles: asphalt coated glass felt, mineral granule surfaced, Class A fire resistance. Installation must be rated for site wind conditions. 35 year warranty. Do not specify residential grade shingles. CF-1, LCCA-3
    d. Structural Insulated Panels (SIP) covered with an approved roofing option: Overall thickness, surface thickness, and R-value appropriate to region and structural design intent. Provide ventilation space above SIP. C-2, LCCA-2

e. Underlayment: self-adhering polymer-modified asphalt sheet, 40 mil total thickness, polyethylene sheet top surface, specify slip resistant top surface when needed for safe installation. CF-2, LCCA-1

7. Roof Insulation: Types and R-values; the following values, or tested values from manufacturers may be used in determining R-values of roof assemblies.
   a. Expanded Polystyrene (EPS) Board R-Value = 4.17 per inch CF-2, LCCA-1
   b. Extruded Polystyrene (XPS) Board R-Value = 4.17 per inch CF-3, LCCA-1
   c. Polyisocyanurate (Polyiso) Board R-Value = 5.6 per inch CF-2 to 3, LCCA-1
   d. Glass-Fiber Batt Insulation R-Value = 3.16 per inch CF-1, LCCA-1
   e. Glass-Fiber Batt Insulation (High Density) R-Value = 4.28 per inch CF-1, LCCA-1
   f. Glass-Fiber Blown-In Insulation R Value = 3.7 - 4.28 per inch CF-1, LCCA-1
   g. Mineral Wool Batt Insulation R-Value = 4.0 per inch CF-3, LCCA-1
   h. Open Cell Spray Foam Insulation R-Value = 3.6 per inch CF-3, LCCA-1
   i. Closed Cell Spray Foam Insulation R-Value = 6.0 - 6.5 per inch CF-4, LCCA-1
8. Ventilation: provide ventilation openings equal to or exceeding building code requirements for the roof area to be ventilated. Ensure the structure and associated blocking does not impede air movement. In high wind areas provide design to mitigate infiltration of wind driven rain, snow or ice crystals through use of filters and/or baffle design at ventilation openings. Provide weep holes, or similar, to allow escapement of moisture accumulation such as at ridge vents.

Recommended:

9. Attachment: Fasten sheet metal roofing to supports with concealed clips at each standing-seam joint, avoid exposed fastener systems.
10. Provide (2) layers of underlayment at slopes of 2 in 12 or less. CF-1, LCCA-1
11. At asphalt shingle installations, minimum of one daub of roofing cement at each shingle, one inch in diameter, to prevent wind uplift
12. Asphalt Shingles: asphalt coated glass felt, mineral granule surfaced, Class A fire resistance. Installation must be rated for site wind conditions. 50 year warranty.

Premium:

13. Polyurethane Foam (PUF) roof assemblies.
14. Metal shingles and tiles – required DEED review and approval
15. Clay or ceramic roof tiles - require DEED review and approval
16. On large roof areas served by gutters: Gutter system large enough to walk in and with safety rail along the side of gutter and tie offs for cleaning.

B. Flat Roofs (Low Slope)

Required:

1. Low slope roofs to be exposed membrane over coverboard, insulation, vapor retarder and thermal barrier board over structural deck. Specify roofs with extended warranties with 20-year minimum life. CF-3, LCCA-3

2. Assemblies should be fully adhered systems. Mechanically attached systems may be used when conditions do not allow for fully adhered. In a mechanically attached system provide self-healing vapor retarder to reduce impact of attachment penetrations through the system.
3. Slope of the surface membrane to drain is 3/8 inch per foot preferred, 1/4 inch per foot minimum. Calculate slope of valleys at tapered crickets to maintain positive drainage.
4. Membranes:

   Note, membranes requiring heated asphaltic products may not be practical in remote locations due to transportation costs and logistics.

   a. Ethylene propylene diene monomer (EPDM) single ply membrane, 60 mil, internally reinforced. CF-2, LCCA-2
   b. Ethylene propylene diene monomer (EPDM) single ply membrane, 90 mil, non-reinforced. CF-2, LCCA-2
   c. Asphaltic built-up, 5-ply (BUR) consisting of base sheet, 3 ply sheets plus cap sheet. CF-4, LCCA-3
   d. Asphaltic mineral cap built-up, 5-ply (MCBUR) consisting of base sheet, 3 ply sheets plus mineral cap top sheet. CF-4, LCCA-3
   e. Weldable Thermoplastic Polyolefin (TPO) single ply membrane CF-3, LCCA-2
   f. Weldable Thermoplastic Polyvinyl Chloride (PVC) single ply membrane CF-3, LCCA-2
   g. Modified Bitumen, multi-ply membranes CF-4, LCCA-2
5. Insulation: See 5.A.7 above for insulation types and R-values.
6. Roof drains: Provide code required secondary overflow drains. Connect to internal rain leaders leading to storm drain system where available. Provide insulation sump at roof drains. Rain leaders may lead to dry wells or to daylight where storm drains are not available. Avoid the use of scuppers except for secondary overflow drains. Provide rock/debris screening at any discharge pipes where accessible from ground level. Provide measures to prevent freezing around roof drains such as reduced R-value around drains, minimum R-value around drains is R-12. Use heat trace as a last option.
7. Do not discharge water, snow, and ice along the face of the walls. Design systems to prevent water from sheeting down across the face of exterior walls or splashing against exterior walls at grade.
8. Parapets: Top of parapet to be minimum 12” above the roof surface. Roof membrane to lap up and over the parapet and be protected by a cap flashing. Cap flashing to be held by a continuous wind cleat, fastened at an on-center distance capable of resisting site-specific wind conditions.
9. Minimize roof penetrations through the roof membrane. All roof penetrations to be made by certified installers with approved roofing manufacturer’s details. Avoid “shelves” on the exterior faces of parapet that might hold ice to prevent potential of falling and personal injury and to avoid melting and staining down the face of the wall.
10. Mechanical equipment curbs should have diversion crickets to maintain rainwater flow and avoid damming. Elevate mechanical equipment a minimum of 18” above the roof surface. Locate mechanical air intakes a minimum of 24” above the roof surface.

Recommended:

11. EPDM, 90 mil, single ply membrane. CF=3, LCCA-3

12. At BURs – Built-up bituminous roofing: asphalt saturated glass fiber felts, four ply plus base sheet. CF-4, LCCA-4
13. Where possible, achieve roof slope by sloping the building structure to reduce the quantity of tapered insulation.
14. Minimize complex and multiple roof levels in the building design.

Premium:

15. Roof warranties exceeding 30 years
16. Liquid Applied Membranes (LAM) CF-3
17. Any colored roofing system other than manufacturer's standard colors CF-4, LCCA-1
18. Green/vegetative roofs. CF-5, LCCA-5

C. Roof Accessories

Required:

1. Provide OSHA compliant rooftop safety railings where rooftop equipment requires access within 10 feet of a roof edge.
2. Design roof hatches for maintenance large enough to accommodate individuals equipped with full emergency gear or service personnel with supplies and toolboxes.
3. Design roof access with regular stairways or alternating tread stairs, not by ship's ladders or exterior roof ladders whenever possible.
4. Provide snow guards to prevent large accumulations of snow and ice from shedding. CF-1, LCCA-1

Recommended:

5. Skylights are discouraged with preference given to vertical glazed clerestories. Locate base of glazing minimum 24" about roof surface
6. Permanently mounted safety harness tie offs CF-1, LCCA-4

Premium:

7. Roof deck plazas with pavers and protective railings, walls and supports.

6. INTERIORS

Interior partitions, soffits, openings, finishes, and specialties typically account for ~10-12 % of a project's total construction cost. In a traditional school design, the cost of partitions and doors are fairly consistent. However, the use and quantity of special partitions such as glazing and movable partitions varies between school designs and can significantly impact the cost of the interiors. The use and quantity of casework also varies between school designs, thus affecting the project cost. The material choice and specification of interior floor, wall, and ceiling also plays a large part in determining the cost of a project's interiors. Guidelines for these systems and their components are as follows:

A. Partitions/Soffits

Required:

1. Specify interior construction materials of high durability, low maintenance, and an expected life span of 30 years.
2. All walls to be durable and provide the appropriate STC ratings for school spaces (per ANSI/ASA S12.60 on Classroom Acoustics):
3. Standard partition construction will be 20-gauge metal framing sized for needed wall cavity widths, 5/8" gypsum wall board each side, taped, mudded and finished to Level 4. Add the following: CF-3 LCCA-3
    a. plywood sheathing where required for shear CF-2 LCCA-1
    b. wood blocking as permitted by code where required for wall-mounted accessories CF-2 LCCA-1
    c. 18-20 ga metal backing if wood is not permitted CF-3 LCCA-1
    d. cementitious backer board where installing wall tile CF-3 LCCA-1
    e. acoustical insulation, resilient channel, and sealant where required for STC ratings CF-3 LCCA-1
    f. impact resistant GWB or surface applied impact resistance at high-traffic areas
4. Standard soffit construction will be 20-gauge metal framing, cold rolled channel, or fabricated metal suspended-ceiling systems sized for anticipated loads and spans, 5/8" gypsum wall board, taped, mudded and finished to Level 4. Add the following:
    a. additional gypsum wall board where required for fire resistance CF-3 LCCA-3
    b. wood blocking as permitted by code where required for wall-mounted accessories CF-2 LCCA-1
    c. 18-20 ga metal backing if wood is not permitted CF-3 LCCA-1
    d. acoustical insulation, resilient channel, and sealant where required for STC ratings
5. Partitions and soffits to be easy to maintain and easily cleanable
6. High traffic areas to be impact resistant CF-4 LCCA-1
7. Provide expansion/control joints as required
8. Gymnasium wall finishes to have hard surfaces below 8' to allow for rebound of balls. Cost and LCCA vary on types of surfaces
9. Non-porous, easily cleanable surfaces for food services areas. Ceramic or porcelain tile wainscot to 4'-0" A.F.F. at a minimum for wet areas. Provide full height ceramic tile at grease-prone areas. CF-3 LCCA-3

Recommended:

10. Concrete masonry walls where cost effective and deemed essential by design team (may need LCCA) CF-3 to 5 in rural locations LCCA-1
11. Wood framed walls where more cost effective. CF-3 LCCA-3
12. At glazed porcelain and/or ceramic tile, consider use of manufactured metal trim pieces at base, corners, and terminations. CF-1 LCCA-1
13. Acoustical panels: fabric wrapped panels or paint-grade wood fiber strand board CF-1 LCCA-2

Premium:

14. Radiused and curved walls.
15. Walls that exceed the minimum STC rating for school spaces
16. Walls that use both impact resistant GWB and an impact resistant applied wall finish

B. Special Partitions

Required:

1. X

Recommended:

2. Consider 2-way mirrors in observation areas; safety glazing.

Premium:

3. Operable partitions or large sliding doors.

C. Interior Openings

Required:

1. Interior doors systems shall be readily available and have a wide variety of offerings including acoustical, fire rated, hollow metal and flush wood veneer. CF-varies LCCA-varies
2. All doors within public use areas to be ADA compliant
3. All swing doors throughout to have ADA compliant, lever-style, commercial grade hardware
4. Overhead doors at food service pass-throughs, shop areas, or for separating zones ; lockable
5. Specify interior doors with welded metal frames in all new construction. “Knock-down” frames are discouraged. CF-3 LCCA-3
6. Standard door assemblies to be solid core, factory-finished wood doors and painted hollow metal frames, with fire resistive ratings as required by code. 1 ¾” 16 gauge insulated hollow metal doors may be used in lieu of wood; metal doors should be used in PE, shops, gym, labs and locker rooms.
    a. Provide glass vision lite kits and/or louvre openings as indicated by ed specification and/or program.
    b. In un-rated assemblies, provide ¼” clear tempered glass door inserts and relites
    c. Vision Lite kits within doors to have 18 gauge cold rolled steel frames with mitered and welded corners and should utilize standard sizes: 6”x27”, 12”x12”, 24” x 24”, 24” x 36”, 24” x 60”.
7. Door hardware in a variety of configurations including, but not limited to:
    a. Office sets: full-perimeter gaskets and door bottom with neoprene element, office lockset, wall or floor stop
    b. Storage sets: full-perimeter gaskets and door bottom with neoprene element, storage lockset, wall or floor stop, closer, kickplate.
    c. Classrooms: full-perimeter gaskets and door bottom with neoprene element, closer, wall or floor stop, lockdown locking mechanism
    d. Gymnasium doors or sets of double doors used to close down portions of the school: panic hardware, closers, kickplates, locking doors (manual or card reader), floor or wall

stops where possible, overhead stops where floor/wall stops aren't possible and full-perimeter gaskets and door bottom with neoprene element. Double doors should not have astragals. CF-3 LCCA-3

e. ADA/Unisex single-toilet room doors: full-perimeter gaskets and door bottom with neoprene element, lockset with occupied indicator, wall or floor stop.
f. Teacher work and support spaces: silencers, proximity card readers, closer, wall or floor stop

8. Limit the size of windowpanes and relites to standard sizes: 18, 24, 36, 48, 60 inches wide by 18, 24, 36, 48 or 60 inches high. Limit overall size of windowpanes; use multiple smaller windows in lieu of one large window. Glazing/relites adjacent to doors can go up to 84 inches high.
9. Relite and frames to be painted hollow metal, with fire resistive ratings as required by code.
10. Window & relite frames and sills to be paint grade. CF-3 LCCA-3

Recommended:

11. All classroom doors to have closers, with closing mechanism to be mounted on the classroom side to allow for locking devices to be applied in the event of lockdown situations.
12. Door glazing insert kits in a variety of sizes, safety glazing. CF-3 LCCA-3
13. Consider single or double intercommunicating doors between classrooms. CF-3 LCCA-2

Premium:

14. Bulletproof doors & glazing; UL Listed Level 1- Level 3 is acceptable. CF-5 LCCA varies
15. A. UL 752 - Level 1 - protects against 9mm full metal copper jacked with lead core. No spall, no penetration.
    a. UL 752 – Level 2 – protects against .357 Magnum jacketed lead soft poont. No spall, no penetration.
    b. UL 752 – Level 3 – protects against .44 Magnum lead semi-wadcutter gas checked. No spall, no penetration
16. Motorized overhead doors with glazing used as space dividers walls between classrooms CF-4 LCCA-4
17. Non-standard doors that are higher than 84" or wider than 36". CF-4 LCCA-2
18. Any doors or windows of special sizes requiring manufacturer's premium costs. CF-4 LCCA-2
19. Non-standard colors or finishes on doors that require manufacturer's premium costs. CF-4 LCCA-1
20. Silicone glazing systems, butt glazing systems or double wall glazing systems.
21. Arched or complex windows and frames
22. *Non-standard relites and vision lite kits*

D. Special Floors

Required:

1. X

Recommended:

2. Provide floors in stage/platform areas appropriate for a variety of performances: dance performances, vocal/music performances, etc. Floors, where required by the program, shall be a cost-effective, self-install sprung floor, resilient finish panel system designed for permanent installation. CF-4 to 5 LCCA-3

Premium:

3. Raised floor raceway systems CF-3 LCCA-3
4. Auditorium spring floor panel system with hardwood surfaces

E. Interior Finishes

Required:

1. Specify applied finishes shall be easy to clean and resistant to moisture and mold/bacterial growth
2. Selected finishes to be sustainable and contribute to a healthy, productive learning environment. Evaluate products for recycled content, recyclability, waste reduction, energy efficient maintenance, low VOC content and post-installation product emissions.
3. Acoustical ceilings and panels to contain recycled content where possible
    a. Sound absorptive with a minimum NRC of .55 and a CAC rating of 35.
    b. Ceilings to be installed with a standard 15/16” grid system and seismically braced. Ceiling suspension system to be hot dipped galvanized steel to inhibit rust
    c. Ceilings within food service and lab areas to be washable & scrubbable
    d. Acoustic ceilings shall meet ASTM C 1264 for Class A materials
    e. Acoustical wall treatments to be rigid fiberglass board and fine-grain cork core faced with fabric approved for wall panel use.
4. Provide a walk-off mat system at every main entrance
5. Carpet tiles are preferred for office and classroom spaces throughout (exception: labs and art rooms)
    a. Carpet tile should have a high wear / TARR rating, stain resistance and cleanability; carpet to have moisture impervious backing
    b. Carpet tiles should have a minimum of 25% recycled content and a minimum of 17 ounce face weight.
    c. Carpets to be low-voc, use low-voc adhesives and be compatible with low-voc, water based solvents/cleaning agents.
6. Resilient flooring such as linoleum, sheet vinyl, rubber flooring or vct is preferred for hallways/corridors, art classrooms, storage rooms and other locations where carpet is not ideal.
    a. Resilient floor materials to be low-voc, use low-voc adhesives and be compatible with low-voc, water based solvents/cleaning agents.
    b. All resilient materials shall be commercially rated for heavy-duty wear
    c. Resilient sports flooring to have striping for common indoor sports played within the district.
    d. Science labs to have chemical resistant flooring.

    e. Provide static dissipative flooring where required by the program.
7. Adhesives and sealants used in the building interior (inside the exterior moisture barrier) must be low VOC
8. Acoustical wall panels above 8'-0" in gymnasiums, pool areas or other echo-producing locations. Design team to include an acoustical engineer to determine the number/type of acoustical panels needed for each specific environment.
9. Paint / sealers used throughout should be durable and scrubbable, with low to no-VOC content
    a. Use acrylic, water based for non-metal surfaces
    b. Use alkyd enamel paints on metal surfaces
    c. Use water-based epoxy paints in interior spaces with high humidity or areas subject to surface moisture
    d. Use concrete sealer and/or concrete paint where required by the program
    e. Wall paint to have a minimum of three (3) applied coats
    f. Door/relite frames to have a minimum of two (2) applied coats
10. Standard resilient wall base should be use throughout office, classroom, and hallway areas with slight modifications based on the rooms
    a. Tile base where walls are receiving tile applications
    b. resilient sheet cove base with top trim in toilet rooms or food service areas
11. Wood sports flooring, where required by the program, to be second and better grade maple strip flooring with striping for common indoor sports played within the district CF-4 to 5 LCCA-3

Recommended:

12. Consider Porcelain tile and mosaic tile floor and wall finishes in toilet/shower rooms where required by the program. All tile and grouts should be installed based on the installation conditions and as recommended by the Tile Council of America. CF-3 LCCA-1
    a. Use epoxy-modified grout mixture for high moisture areas
    b. Wall padding in gymnasiums to be limited to competition court basketball backstops
13. Consider ceiling grids to support hanging displays in all classrooms and hallways
14. Consider FRP panels as needed for service and as required CF-2 LCCA-1
15. Gymnasium wall finishes to have hard surfaces below 8' to allow for rebound of balls. Surfaces above 8' to have acoustical wall panels
16. Non-porous, easily cleanable surfaces for food services areas. Ceramic or porcelain tile wainscot to 4'-0" A.F.F. at a minimum for wet areas. Provide full height ceramic tile at grease-prone areas.

Premium:

17. LEED and/or WELL Certified building CF-3 LCCA-1
18. Wall paneling or wallpaper CF-4 LCCA-2
19. Full height wall tile except at grease-prone areas in Kitchens CF-4 LCCA-1
20. Flooring materials other than rubber, vinyl composition tile, linoleum, or floor carpet.
21. Wood sports flooring for elementary schools

22. Cork, bamboo, recycled rubber, or other expensive flooring materials
23. Wood, Plywood wrapped or stainless steel wall base
24. Wax-free resilient floor systems
25. Recessed walk-off grate entry system CF-4 LCCA-1
26. Decorative or expensive non-standard ceiling tiles or ceiling systems such as metal or wood slat ceilings CF-5 LCCA-2
27. ACT ceiling trims other than 15/16" grid profiles
28. Ballistic and blast mitigation coatings or films
29. Architectural resin panels
30. Chair rails, crown mouldings, picture rails or art display systems
31. Cove base in areas other than toilet rooms
32. Acoustical felt wall panels

F. Specialties

Required:

33. Specify durable and easily cleaned casework. Base requirement is high pressure laminates over stable substrate with 4mil PVC edge banding. Counters are high pressure laminate with postformed backsplash and front edge profile. Standard casework to be provided throughout with the following special conditions: CF-3 LCCA-1
    a. Resin counters in science labs space. CF-4 LCCA-1
    b. High school science labs to have lockable, ventilated acid storage cabinets, lockable and labeled alkali metals & halogens storage cabinet, lockable casework for with minimum 15” inside useable depth, and trays to fit cabinets/shelves under bottles to prevent liquid spills
    c. Polycarbonate or wired glazing to be used for casework within science lab space. CF-3 LCCA-1
    d. Coat cubby areas with coat hooks, storage above and benches for changing shoes/outdoor gear. Provide dividers and spacing between hooks to prevent the spread of head lice
    e. Boot racks with space below to allow for cleaning
    f. Perimeter counter with sab sinks/stations, and art drying racks in art classrooms
    g. Library Circulation desk with 6’ minimum counter space including ADA height counter, book drop, supply drawers, files, and technology including computer, printer & storage
34. Interior signage to be provided at all areas required by code to receive signage
    a. All signs to have grade 2 Braille, tactile characters and pictograms as required by code
    b. All signs to coordinate with interior and exterior finish palettes
35. Student lockers shall be provided as required by the programming documents, and should be steel construction with sloped top and closed base; locks requirements to be selected by the school. Lockers within locker rooms and changing areas to be ventilated steel construction.
36. 3 eye bolts to be provided in the ceiling, 18” apart, and designed load of 750 lbs. minimum in occupational/physical therapy/special needs classrooms to be used to attach swings or other therapy equipment.

37. Built-in toilet room items to include, but not limited to commercial-grade, readily available:
    a. Soap dispensers
    b. Mirrors
    c. Toilet paper dispenser
    d. Seat cover dispensers
    e. Sanitary napkin receptacles
    f. Grab bars
    g. Paper towel dispensers
    h. Baby changing stations and/or adult-sized changing stations for special needs classrooms as indicated by the program documents.
    i. Waste receptacles
    j. Toilet partitions; to be durable and graffiti resistant. Partition hardware or door type to be selected to provide maximum privacy and minimum gaps between stall components.
    k. ADA shower with shower seat
38. Corner guards to be minimum of 2mm thick, have a 1 ½" wing on either side and be a minimum of 4'-0" A.F.F. Material to be textured rigid material and available in 90 degree and 135-degree corner styles. CF-2 to 4 LCCA-1
39. Fire extinguishers to be provided per code. All fire extinguisher cabinets to be recessed. Provide signage and stickers on cabinet for fire extinguisher visibility.
40. Stage curtains and backdrops in auditorium and performance spaces
41. Fixed seating in auditoriums to have tilting upholstered seat and back and integral arms. Seat number/row letters to be Americans with Disabilities Act (ADA) compliant. Provide wheelchair access as required by code.
42. Adjustable, retractable basketball backboards/hoops
    a. Recessed floor plates for volleyball posts
    b. Wall-hung hand sanitizer stations
43. Window treatments to be roller shades or miniblinds. Provide fascia on coverings to hide mounting brackets and mechanisms.
44. Install sliding double whiteboards with an integrated map/poster rail at top and tackboards, typical within all classrooms where markerboards are called out. Music rooms to have whiteboards with and without staff lines
45. Cork bulletin boards with aluminum frame in manufacturer standard sizes
46. Install retractable, recessed projection screens

Recommended:

47. X

Premium:

48. Signage: signage with changeable inserts, ADA signage on acrylic with standoffs or vinyl graphic signage
49. Toilet room premiums: motion-sensored soap dispensers, automatic hand dryers CF-4 LCCA-3

50. Antimicrobial lockers to help protect against bacteria, mold, yeast and mildew or hardwood or hardwood veneer lockers. CF-4 LCCA-3
51. Wood or metal framed mirrors of custom size, backlit
52. Stainless steel corner guards
53. Hardware pulls greater than 6" in length
54. Solid surface countertops and backsplash
55. Climbing walls
56. Magnetic glass whiteboards, electronic smartboards or other technology-based display boards
57. Dry-erase wallcovering surfaces that double as projection screen
58. Motor operated projection screen in any location other than auditoriums or presentation lecture areas
59. Solid surface counters and backsplashes, solid vinyl, recycled glass, or polycarbonate counters
60. Stainless steel lab storage & cabinetry
61. Solid wood cabinets or wood veneer cabinets
62. Casework or architectural woodwork such as picture rails, wainscoting, crown moldings, or paneling
63. Suspended acoustical felt baffles & wall panels
64. Lit display cases
65. Motorized roller shades
66. Built-in bleachers or built-in, retractable bleachers

G. Built-in Furnishings, Equipment & Technology

Modern school design requires detailed coordination between the building shell and built-in furnishings and technology. This section outlines the built-in components installed by general contractors and the movable furnishings and technology provided and installed by other vendors prior to occupancy of the building.

The voice/data components of any building are changing rapidly from year to year with new technology resulting in faster, lightweight, affordable, and portable "plug-in" equipment. The State expects schools to take advantage of the latest technology that can simplify building systems and lower installed technology costs.

Required: *(list includes basic items; additional items may be required)*

1. Building entry vestibules to have perimeter benches in the parent pick-up / drop-off zones and lost & found bin CF-3 LCCA-1
2. Hallway areas to have lockable display cases for 2-d and 3-D displays, benches near toilet rooms and tackboards CF-3 LCCA-1
3. IT/Communications room to have the following items:
    a. Dedicated space. Avoid co-locating within electrical/mechanical spaces.
    b. Limit number of telecom rooms to minimum required per standards for size of the building.

c. Locate telecom room in central area of building where possible to average cable lengths.
d. Open wall shelving
e. 4-post server racks where necessary
f. IT desk or workstation for monitoring of equipment
g. Servers, routers, monitoring equipment, patch panels, data distribution panels
h. Uninterrupted power supply for essential systems.
i. Servers for security cameras / CCTV system
j. Room for fire alarm control panel if located there
k. Security panel
l. Intercom head end
m. Layout space for building/repairing equipment
n. 4-post server racks
o. Servers, routers, monitoring equipment, patch panels, data distribution panels
p. CCTV system DVR recorder (can be rack mounted within this space)
q. Intercom head end

4. Classroom equipment & furniture for classrooms and relocatable/portable classrooms includes, but is not limited to:
    a. Provide built-in furniture, equipment and technology within teaching spaces to aid in a variety of teacher teaching and display methods
    b. Teacher workstations: desk, ergonomic task chair, adult guest chair, file storage, phone and computer workstation
    c. Two-pod combined space capability
    d. Reconfigurable / combinable tables or student desks and chairs; maximize the use of these items
    e. Low bookcases
    f. Up to 6 computer stations with mobile tables
    g. Lockable storage units/wardrobes
    h. Provide analog clock in a visible location
    i. Intercom system with speakers in all occupied spaces
    j. Provide two flag older brackets for the US and Alaska flags in each classroom
    k. Shelving with storage within classrooms
    l. Mobile screens / dividers with markerboard and tackable surface
    m. Casework/counter with handwashing sink and wall-mounted soap and paper towel dispensers
    n. Wall-hung hand sanitizer stations
    o. Bookshelves or open shelving in usable and easily accessible heights for each age group
    p. Storage cabinets for supplies
    q. Kitchen / cafeteria / kitchenette cabinetry
    r. Cabinetry with resin counters within science and lab areas

5. Library furniture items to include, but not be limited to:
    a. Book drop with catch bin in library space
    b. Display case for 3D displays
    c. Perimeter storage
    d. Book stacks for approximately 20,000 volumes
    e. 2-shelf picture book storage, including bins and vertical storage for 4,000 books with low round tables and 6 chairs
    f. Online catalog computer stations with work surface for books & papers
    g. Desk for teacher materials, and mobile tables and chairs for 30 students
    h. Recreational reading area
    i. Study carrels and chairs
    j. Markerboards & tackboards
    k. Projection screens
    l. Analog wall clock
    m. Library office / workroom within the library space to have a minimum of 20 lineal feet of perimeter cabinetry with sink and intermittent openings for knee space, lockable storage cabinets, ergonomic task chairs, lockable file cabinets, librarian desk/workstation, guest chair, paper towel & soap dispensers at sink, tackboards and markerboards and storage space for book cart storage
    n. Library storage room to have upper & lower cabinetry, heavy duty shelving, lockable file cabinets, video monitors and other A/V equipment on rolling carts and laptop carts.
6. Administration area should maximize the use of modular, moveable furniture. Furniture includes but is not limited to:
    a. Built-in reception counter with ADA height section and lockable storage pedestals, waiting area with chair rail
    b. Waiting area with guest chairs, chair rail
    c. Principal office with workstation, file cabinets, pedestal, task chair
    d. Administrative work area with desks, task chairs, file cabinets, storage cabinets, copy/print areas, mail service center, tackboards and staff workroom
    e. Secure storage area to have staff work space for 1-2 staff, space for a fireproof safe and fireproof lateral file cabinets for student records.
    f. Student quiet area outside Principal's office to have one study table & chair
7. Staff work area and support space furniture includes but is not limited to:
    a. Copy/print/scan machines in teacher work areas, and administrative office areas
    b. Built-in cabinetry and open shelving for materials & resources
    c. Kitchenette with base & upper cabinets, microwave shelf at ADA height, and refrigerator
    d. Conference table with chairs and/or stools, equipment carts
    e. Markerboard and tackable surfaces
    f. Analog clock
8. Art & Science Labs

a. Soap & paper dispensers and rubbish bins
b. 1 teacher workstation table with single lab sink/station, 1 teacher desk & ergonomic chair
c. Moveable lab tables with adjustable height chairs
d. Kiln, clay mixer and clay reclamation bin
e. Heavy-duty shelving in kiln area
f. Lockable bins for clay storage and mobile carts for moving greenware into the kiln room
g. Markerboard and tackable surfaces
h. Analog clock
i. Retractable projection screen
j. Probe-ware: thermistors, acid probes, etc.
k. Alcohol burners and/or hot plates for science use; gas only for high school use
l. Fume hood
m. Lockable flammable materials storage cabinet; secure to wall

9. Technology lab
    a. 30 computer workstations with ergonomic, adjustable student height chairs
    b. 1 teacher workstation with ergonomic chair
    c. Production station with printer, supplies
    d. Lockable storage cabinet
    e. Markerboard and tackboards
    f. Retractable projection screen
    g. Analog wall clock
10. OT / PT Equipment Storage room should accommodate at a minimum the following:
    a. Balance beams
    b. Exercise bolsters & ball swings
    c. Balance boards
    d. Standers
    e. Stairs
    f. Wedge positioning devices
    g. Sideline chairs
    h. Wheelchair and HOYA lift
    i. Heavy-duty open shelves of varying depths with adjustable shelves
    j. Bins for PT Equipment
11. Speech therapy classrooms to include, but is not limited to:
    a. Markerboards
    b. Student chairs
    c. Teacher desk, ergonomic chair and 3 adult chairs
    d. Locking file cabinets
    e. Moveable tables for computers / technology

f. Wall-hung hand sanitizer stations
g. Bookshelves or open shelving in usable and easily accessible heights
h. Analog wall clock

12. Music Classrooms to include, but is not limited to:
    a. Tackboards
    b. Minimum of 60 music stands with storage cart
    c. Stackable chairs
    d. Lectern
    e. Tall storage cabinets
    f. Lockable wall cabinets for instrument storage
    g. Piano, electronic keyboard and benches
    h. Portable risers for use on stage
    i. Analog wall clock
    j. Music sorting rack and sheet music storage
    k. Music office & storage with open wall shelving, work counter with stool for instrument repair, upper and lower cabinetry for storage of materials and resources, lockable wardrobe storage, teacher desk with ergonomic chair, copy/printer/scanner, tackboard
13. PE office equipment and furniture:
    a. Casework for instructional materials & recourses
    b. Workstations with desk, lockable pedestals, computer, ergonomic task chair
    c. Lockable wardrobe storage units
    d. Lockable file cabinets
    e. Copier/printer/scanner
    f. Markerboard and tackable surfaces
14. Gymnasium equipment to include, but is not limited to:
    a. Ceiling mounted tracks for climbing ropes
    b. Safety wall padding
    c. Two flag holders (US and Alaska flags)
    d. Electronic scoreboard and associated speaker system
    e. Safety caging around clocks, exit signs, emergency lighting, speakers, fire alarm apparatus or other equipment
    f. Storage room for sports equipment and associated fixed racks or rolling cart storage for tumbling mats, volleyball nets and standards, kickballs, basketballs, volleyballs, soccer balls, balance beams, equipment for various Native Youth Olympics events, cones, hoops, jump ropes, tug-of-war ropes, baseball equipment, cross country skis and poles.
15. Cafeteria / Food Service equipment to include, but is not limited to:
    a. Double ovens
    b. Range with exhaust hood
    c. Refrigerators, freezers

d. Hot carts
e. Microwaves
f. Handwashing sink, prep-sink, 3-compartment sink with disposal
g. Dishwasher / dish sanitizer
h. Foldable lunch tables and chairs
i. Recycle and rubbish bins
j. Tackboards
k. Markerboard
l. Motor-operated retractable projection screen

16. Observation / conference combo rooms to include:
    a. Conference table & chairs
    b. Markerboards & tackboards
17. Achievements for rewarding good behavior to include, but not be limited to:
    a. Comfortable lounge-type furniture
    b. Gaming equipment with monitors, video access and controls
18. Chair dollies and table storage carts for multi-purpose room furniture
19. Kitchenette equipment to include, but is not limited to:
    a. Rolling carts
    b. Microwave
    c. Refrigerator / freezer
    d. Tackboards
    e. Recycle and rubbish bins
20. Outdoor Storage equipment to include, but is not limited to:
    a. Lockable fireproof storage cabinet for volatile materials
    b. Metal shelving for exterior maintenance items/tools
21. Custodial room equipment to include, but is not limited to:
    a. Workstation for controls computer in boiler room with tackboard
    b. Locking metal storage cabinets
    c. Rubber discharge mats and lockable storage cabinets in electrical rooms
22. Group rooms to have marker boards, tackable surfaces, a conference table and 8-10 chairs
23. Window coverings on all windows within occupied spaces; roller-shade style
24. Storage rooms to have counters with lockable cabinets for storage of instructional supplies and materials, heavy-duty shelving and lockable file cabinets and mobile technology carts

Recommended:

Premium:

25. Magnetic glass whiteboards, electronic smartboards or other technology-based display boards CF-3 LCCA-1
26. Dry-erase wallcovering surfaces that double as projection screen CF-2 LCCA-1
27. Motor operated projection screen CF-2 LCCA-1

28. Solid surface counters and backsplashes, solid vinyl, recycled glass, or polycarbonate counters CF-4 LCCA-1
29. Stainless steel lab storage & cabinetry CF-4 LCCA-1
30. Solid wood cabinets or wood veneer cabinets CF-3 LCCA-1
31. Casework or architectural woodwork such as picture rails, wainscoting, crown moldings, or paneling CF-2 LCCA-1
32. Suspended acoustical felt baffles & wall panels CF-5 LCCA-3
33. Lit display cases CF-2 LCCA-2
34. Motorized roller shades CF-3 LCCA-2

7. CONVEYING SYSTEMS

A. Passenger Conveyors

Required:

Recommended:

Premium:

B. Material Handling Systems

Required:

Recommended:

Premium:

8. MECHANICAL

The building mechanical systems encompass plumbing, heating, ventilation and air-conditioning (HVAC), and fire sprinkler protection systems. Mechanical systems shall be designed to conserve energy and water to reduce operating costs and demand on community resources. The systems shall be integrated with the design of the building plan and envelope to optimize performance and provide occupant comfort. The systems shall be durable, expandable, and easily maintained. Mechanical systems shall comply with DEED-adopted energy codes.

A. General

Required:

1. Design in accordance with the version of ASHRAE 90.1 currently required by DEED, including amendments by DEED.
2. Incorporate redundancy into critical mechanical systems at remote sites.
3. Provide sufficient floor space to provide minimum equipment clearances, and to allow maintenance activities and maintenance equipment.
4. Design piping systems to provide ease of maintenance - valves and equipment that are readily accessible, clearly indicated access locations, and clearly labeled piping, valves and equipment.
5. Do not abandon equipment or systems in building for remodel/addition projects. Demolish piping, ducts and wiring back to active portions of the systems.
6. Install low volatile organic compound (VOC) containing materials in accordance with 40 CFR 59, the **National Volatile Organic Compound Emission Standards For Consumer And Commercial Products.**
7. Design building systems to allow for future expansion.

Recommended:

8. Consider accommodating future removal and replacement of all mechanical equipment, with appropriate coordination between disciplines to provide for this occurrence.

Premium:

9. X

B. Plumbing

Required:

1. Meet the requirements of NSF-61 for materials in contact with drinking water.
2. Provide water conserving fixtures that meet the Energy Policy Act (EPAct) 1992, with Amendments.
3. Design potable water systems to conserve water to the greatest extent practicable, without compromising system performance.
4. For sites that use sewage lift stations, design waste and vent piping systems to use as few lift stations as practicable.
5. Provide furred out walls for plumbing fixtures installed on exterior walls. Do not install plumbing piping in the building thermal envelope.
6. Provide commercial fixtures that are durable and easily maintained.
7. Specify floor mounted wall carriers for urinals, lavatories and drinking fountains.
8. Group spaces with high fixture counts together – i.e. public restrooms, commercial kitchens, custodial.
9. Provide plumbing walls large enough for wall-mounted water closet carriers – 11-inches minimum for single-wall carriers, and 16-inches for back-to-back carriers.
10. Install isolation valves on piping serving rooms with ganged fixtures – such as restrooms, science rooms, kitchens.

11. Provide toilets in Pre-k–1st grade classrooms.
12. Provide sinks in classrooms for elementary grades including grade 5.
13. Provide solids interceptors (plaster traps) at art rooms.
14. Provide grease interceptors in commercial kitchens.
15. Specify floor drains with trap primers.
16. Pitch all slabs to floor drains.
17. Avoid locating floor and roof drains over electrical and data system equipment.
18. Install floor drains next to air handlers.
19. Install floor drains next to all equipment that produces condensate.
20. Install floor drains next to fire sprinkler pumps if practicable.
21. Provide emergency eyewash, shower units, floor drains, and sloped slabs as required by Occupational Safety and Health Administration (OSHA) in science rooms, art rooms, shop and maintenance spaces, and any classroom where chemicals are used.
22. Provide tamper-proof hose bibs adequately spaced around the perimeter of the building, except in locations where water supply is limited.
23. Locate plumbing vents away from roof edges, and snow drift locations, and near the ridge of sloping roofs.
24. Install roof plumbing vents in visually discrete locations to the greatest extent practicable.
25. Install cleanouts in locations readily accessible to maintenance personnel.
26. Use cast iron dome strainers on roof drains. Do no use plastic.
27. Specify insulated roof drain sumps to prevent condensation from forming inside the building.
28. Store domestic hot water at minimum 140°F to prevent Legionella growth.
29. Provide recirculation loop for domestic hot water systems out to the furthest hot water fixture. Only operate during occupied hours.
30. Provide hot water in accordance with Alaska Food Code_18 AAC 31 for facilities with commercial kitchens.
31. Garbage disposals are not an accepted fixture.
32. Utilize rainwater and/or snowmelt capture systems for facilities with limited access to potable water.

Recommended:

33. Avoid installing plumbing fixtures on exterior walls.
34. Consider reducing potable water use by choosing low-flow water fixtures that meet these maximum flow rates:
    - Lavatories 0.5 gpm metered
    - Sinks 0.5 gpm
    - Water closet 1.28 gpf
    - Urinal 0.125 gpf
    - Showerhead 1.5 gpm
    - Kitchen sink (commercial kitchen sink excluded) 1.5 gpm
35. Avoid using ultra-low flow or waterless water closets and urinals.
36. Consider providing automatic controls at lavatories, water closets and urinals.

37. Specify intuitional/penal grade shower heads.
38. Consider providing bottle fill stations.
39. Consider providing multi-station wash fountains with automatic operation for elementary ganged restrooms.
40. Install hose bibbs with backflow protection in mechanical equipment rooms for equipment cleaning.
41. Consider installing bubblers on elementary classroom sinks.
42. Consider providing above-floor grease traps with automatic grease skimming technology in commercial kitchens.
43. Consider providing large sinks – minimum 30" wide x 18" front-to-back – with solids interceptors in Alaska Native cultural studies classrooms.
44. Consider install ceiling anchor points above lift stations, for mounting equipment to aid in removing pumps.
45. Consider choosing equipment and appliances with an Energy Star label.

Premium:

46. Install electric heat trace and insulation on roof plumbing vents.
47. Provide flow meter on the domestic water service for monitoring by the building control system. CF-2 LCCA-2
48. Design gray water and rainwater capture, treatment and distribution systems for urinal and water closet flushing. CF-varies LCCA-varies

C. HVAC

Required:

1. Locate mechanical rooms away from educational spaces to avoid the transfer of noise and vibrations.
2. Avoid placement of equipment and building openings on leeward side of building where subject to snow drifting.
3. Locate balancing valves and dampers to allow easy access for testing and balancing.
4. Coordinate with local electric utility for equipment motor sizes requiring variable frequency drives (VFD).
5. Control indoor air quality during construction, meeting SMACNA IAQ Guideline for Occupied Buildings under Construction 2007, Chapter 3.
6. Cover and seal ventilation equipment and ductwork during construction to prevent dust and debris in ductwork and equipment.
7. Provide radon testing for buildings with slab-on-grade construction, below grade crawlspaces, and basements, particularly in locations known to have radon. Design radon mitigation systems as needed.
8. Use energy recovery on ventilation systems according to size, based on DEED requirements.
9. Install preheat coils on outside air ducts in locations with winter design temperatures lower than 40°F to avoid condensation when mixing with return air. Provide preheat coils with summer filters.

10. Locate equipment like make-up air units (MAU) for kitchens on the roof, where practicable due to climate.
11. Implement demand control ventilation.
12. Utilize economizer cooling and natural ventilation to the greatest extent practicable.
13. Use sound attenuation for air handlers and ductwork serving classrooms, media centers, theaters and administrative spaces.
14. Locate building air intakes away from sources of air pollution such as buses, exhaust vents, kitchens, and shop spaces.
15. Exceed minimum distances as needed between outside air intakes and pollution sources if subject to entrainment and carryover from wind.
16. Locate louvers at least 8'-0" above grade and keep plantings away from louvers.
17. Locate intake louvers away from sources of air pollution such as buses, exhaust vents, kitchens, and shop spaces.
18. Avoid using louvers on outside air intakes in locations with frequent wind driven snow and rain, and subject to heavy frosting. Use arctic-tee hoods instead.
19. Maintain outside air intake velocities at or below 500 feet per minute to avoid entraining rain and snow.
20. Use 3/4” birdscreen on outside air intakes to avoid frost build up.
21. Provide deck-to-deck partitions, dedicated exhaust to the outdoors, and negative air pressure for spaces with hazardous materials (janitors’ closets, chemical mixing areas, darkrooms, and high-volume copy rooms, etc.).
22. Operate exhaust fans with lighting controls in small restrooms.
23. Operate exhaust fans with dedicated wall switches in janitor closets to allow continuous operation.
24. Provide appropriate air conditioning in computer rooms, computer labs, and data hub rooms. Utilize economizer cooling for server and data rooms and reject heat to return path of building ventilation system, to the greatest extent practicable.
25. Limit air conditioning to spaces used year-round: administrative offices, auditoriums, data and equipment rooms with equipment that generates heat, and spaces needed for summer school programs.
26. Provide exhaust fans sized for 5 air changes per hour in spaces that allow access to below-floor sewage lift stations. Exhaust fans to have dedicated switches to allow continuous operation.
27. Install duct access doors at inlet and outlet side of all duct mounted equipment.
28. Install control systems capable of operation by school district personnel.
29. Maintain monthly and annual records of resource consumption (water, fuel, electric).
30. Provide individual room temperature controls.
31. Use locking enclosures on temperature sensors and thermostats in public spaces

Recommended:

32. Consider hiring a 3rd party agent to perform commissioning in accordance with DEED requirements based on facility size construction scope. Systems to consider for commissioning

include: heating ventilation and cooling (HVAC), controls, lighting and power loads, and air barrier systems.

33. Consider requiring extended warranties on boilers, air handlers and other major equipment.
34. Consider locating HVAC equipment in mechanical rooms or penthouses, not on roofs, in most regions of Alaska.
35. Consider installing floor mounted equipment on 4” tall concrete housekeeping pads.
36. Consider providing variable frequency drives (VFD) or electrically commutated motors (ECM) on all equipment for balancing.
37. Consider providing VFDs with integral disconnects.
38. Consider installing BTU metering of hydronic heating.
39. Consider using condensing boilers and low temperature (140 °F and lower heating supply) hydronic heating systems when using natural gas or propane as heating fuel.
40. Use high efficiency 3-pass cast iron boilers for locations heating with fuel oil.
41. Consider providing glycol fill and storage tanks with integral pump, check valve, isolation valves, pressure switch, and alarm panel.
42. Consider installing radiant ceiling panels or radiant floors in restrooms and locker rooms, rather than fintube.
43. Consider using utility waste heat where available. Size plate-and-frame heat exchangers for future expansion.
44. Consider using utility load-shed electric heat where available. Provide sufficient storage/buffer capacity for electrothermal systems.
45. Consider installing bypass filtration on new hydronic heating systems connected to existing piping and equipment.
46. Consider using energy recovery on all ventilation systems.
47. Consider using energy modeling during the design phase for system selection and building configuration.
48. Consider compiling comprehensive life cycle analyses throughout the design phase that addresses the initial cost of the systems, annual operating cost, maintenance costs, and replacement costs.
49. Consider providing passive radon venting that can be converted to active ventilation when site soil test confirm radon mitigation is needed.
50. Consider using factory-fabricated, listed grease duct for Type 1 kitchen hoods.
51. Consider using listed fire-wrap insulation on welded grease duct rather than architectural shafts.
52. Consider providing Minimum Efficiency Reporting Value (MERV) 13 filters, MERV 11 minimum if higher-rated filters are not provided by the unit manufacturer.
53. Consider designing building systems to allow for 15% capacity for future expansion when population rates indicate future growth.
54. Consider direct digital control (DDC) system with remote (web) access, alarms, graphics of all monitored and controlled equipment and systems, and programming tools for maintenance personnel.

55. Consider requiring control contractor to inspect control system performance, confirm occupant comfort, and provide training 1 month prior to 1-year warranty date

Premium:

56. Provide ongoing building commissioning.
57. Consider renewable energy sources such as geothermal, biomass, and thermal electric storage from turbines.
58. Install variable refrigerant flow (VRF) or variable refrigerant volume (VRV) for interior spaces that need cooling, and reject heat in other portions of the building.
59. Dehumidification systems for summer use
60. Electrostatic precipitators for wood chip systems
61. Building flush-out following LEED requirements. CF-varies LCCA-low
62. Connect a permanent metering system to the building management system to track water and energy consumption, manage use, and identify opportunities for additional savings.
63. Establish service contract with control contractor with clearly stipulated and measurable performance requirements.
64. Re-commission systems two years after the school opens to ensure the energy conservation features are operating as intended and to make adjustments to increase efficiency..

D. Fire Protection

Required:

1. Check with the AHJ for special requirements related to fire panel types/locations and fire department connections (FDC).
2. Provide complete National Fire Protection Assoc (NFPA) 13 systems.
3. Design sprinkler systems in conformance with local sprinkler ordinances.
4. Use cross contamination protection (i.e. backflow prevention) when connecting fire sprinkler system to potable water supply, including fire pumps.
5. Do not combine potable water and fire sprinkler water storage if practicable.
6. Do not recirculate fire sprinkler pump discharge to a potable water supply.
7. Provide a dedicated fire pump room with fire-rated construction, and door directly accessible to the outdoors or through a fire-resistant-rated corridor, per NFPA 20, for facilities with fire pumps.
8. Provide direct access from the fire sprinkler pump room
9. Use Schedule 40 black steel pipe for threaded fittings.
10. Use galvanized Schedule 40 black steel pipe for dry pipe systems.
11. Avoid dry sprinkler systems as much as practicable.
12. Use dry heads at entry/exit vestibules on wet fire sprinkler systems.
13. Conceal fire sprinkler piping to the greatest extent practicable in occupied spaces.
14. Do not install exposed sprinkler piping below 10 feet above finished floor to the greatest extent practicable.
15. Standardize on sprinkler heads throughout building.

Recommended:

16. Consider using electric fire pumps if electric utility has sufficient capacity.
17. Consider installing diesel fire sprinkler pumps near other fuel-fired equipment for efficient fuel storage and distribution.
18. Consider fabricating all exterior building overhangs, walkways, balconies, porches, etc., of dimensions and/or materials to avoid fire sprinkler protection.
19. Consider nitrogen-generator for dry sprinkler systems, rather than air compressor only.

Premium:

20. X

E. Special Mechanical Systems

Required:

1. Provide dust collection systems designed to NFPA 68, 69 and 654, as applicable, in facilities with equipment producing combustible dust – vocational education, maintenance shops, etc.
2. Compressed air and vacuum systems to have dedicated equipment rooms with limited access, constructed per the building code based on the type of gases stored.
3. Provide lab exhaust hoods for labs and science rooms, with lighting, fan switch, retractable sash. Install other accessories as required by school district.
4. Install HVAC systems for swimming pools to maintain space temperature and humidity levels between 82°F to 86°F, and 50% to 60% relative humidity.
5. Provide water mist fire sprinkler protection system designed to NFPA 750, where water mist is used in lieu of an NFPA 13 sprinkler system.

Recommended:

6. Use outside air only for pool room dehumidification, if possible, based on site climate conditions.

Premium:

7. X

9. ELECTRICAL

Building systems shall be energy efficient to reduce initial construction costs as well as long-term energy consumption and operating costs. Electrical systems shall comply with DEED-adopted energy codes.

1. The building electrical systems encompass lighting, power, telecommunications, and electronic safety and security systems. These systems are for the purposes of life safety, user convenience, building and user security, occupant comfort, and educational delivery.
2. Electrical systems shall be designed in accordance with applicable codes and standards and shall conserve energy while also meeting the needs of the building and users.

3. The systems shall be integrated with the building programming, floor plan, and local District requirements to enhance and support the building's usefulness and longevity.
4. The systems shall be robust, expandable where feasible, and easily maintained.
5. Design shall meet present needs, with consideration given to future. Spare capacity or the ability to expand in the future should be evaluated within budgetary constraints.
6. Electrical systems should be considered for replacement based on age, condition, availability of parts, availability of support, and obsolescence.

A. Service and Distribution

1) MDPs & Switchgear

Required:

1. Size equipment for all building and site systems.
2. Locate equipment as close to the service entrance as practical to minimize the length of large feeders.
3. Use secondary distribution panels to consolidate panels and reduce the number of feeders running throughout the building.

Recommended:

4. Limit spare capacity to around 25% of physical breaker capacity or overall electrical capacity.
5. Provide surge protection at the main distribution panel, particularly on grids with lower reliability.
6. Provide metering with a network connection at the main distribution panel and any large distribution panels for accurate energy monitoring.
7. Allow listed series-rated systems to lower rating and cost of downstream panels and breakers.
8. Allow aluminum conductors on large feeders to lower project costs, if local District maintenance personnel are in agreement.

2) Panels & Motor Control Centers

Required:

1. Locate panels away from student-occupied areas unless unavoidable. Try to consolidate in electrical rooms, storage rooms, or similar spaces. Coordinate locations during design and monitor during construction to maintain working clearance. Provide an equipment grounding conductor in all conduits containing line voltage conductors.
2. Provide a dedicated neutral conductor for all circuits requiring a neutral.

Recommended:

3. Feed lighting circuits from a single panel that can be monitored.
4. Limit spare capacity to around 25% of physical breaker capacity or overall electrical capacity.
5. Provide surge protection for panels primarily serving classroom and office receptacles, or telecom equipment.
6. Locate a panel in areas with high numbers of circuits required, such as the kitchen and mechanical rooms, to minimize the length of branch circuits and number of disconnects.

Premium:

7. Building-wide monitoring of all panels.

3) Transformers

Required:

1. Size transformers for required load.
2. Avoid excessive transformer capacity and losses.
3. Coordinate with the electrical utility early in the project to identify delineation of work, particularly with respect to utility/medium-voltage transformers and circuit.
4. Vibration isolators are required where transformers may affect nearby spaces.

Recommended:

5. Consider using 120/208V where practical to avoid step-down transformers.
6. Utilize wall-mount or suspended configurations to maximize floor space.

Premium:

7. X

4) Power Distribution

Required:

1. Provide adequate electrical capacity for future building expansion.
2. Specify variable speed/frequency drives on electrical motors. Coordinate requirements with Mechanical.
3. Specify a minimum of two (2) double duplex outlets (2 outlets per circuit) per classroom wall unless covered with cubbies/casework that makes them inaccessible.
4. Provide receptacle load control in private offices, computer labs, and open office areas per energy code requirements. Switch receptacles with lighting occupancy sensor.
5. Provide tamper-resistant and GFCI receptacles where required by code.
6. Provide dedicated circuits for 120V equipment and appliances equal to or greater than 10 amps of draw.
7. Provide power and data for electronic whiteboards or digital TVs in classrooms.

Recommended:

8. Consider using GFCI circuit breakers where maintaining ready access to GFCI receptacles may be difficult.
9. Limit general purpose circuits to 6 duplex outlets.
10. Limit high-draw areas (kitchen, break room/lounge, workroom, etc.) to 2 duplex outlets per circuit in areas with high concentrations of equipment.
11. Use floor boxes and power poles in areas where they serve a specific purpose, instead of general power distribution.
12. Avoid headbolt heater outlets over 50% of staff positions. Consider time or occupancy based control of these circuits.
13. Provide locations with dedicated circuits for laptop charging stations if programmed.

Premium:

14. Excessive receptacle counts, including surface raceway with high quantities outside of labs or workbenches where required.

B. Lighting

Required:

1. Fixture types should be commodity level, commonly available, and cost effective to the extent possible. The use of custom/architectural fixtures, whether for general or decorative/accent lighting, should be limited to small areas of architectural interest and fit within budgetary constraints of the project.
2. Fixture source should be LED for efficiency and life expectancy unless design criteria justifies use of alternate sources.
3. Maintenance should be considered in fixture placement and selection. Fixtures should have field replaceable components, readily available replacement parts, and be installed in a manner that allows for access by local maintenance staff to clean, test, or repair.
4. Minimize the types of lamps to reduce inventory and replacement costs.
5. Provide fixtures that are easily relamped and cleaned.
6. Lighting levels shall be in accordance with Illuminating Engineering Society standards and Alaska Administrative Code (AAC). Lighting levels shall meet or exceed minimum recommended levels of the latest published version of the IES Handbook (25-65 age group) unless AAC requires higher light levels.
7. Emergency lighting/exit signs shall be provided in all code-required areas. Additional emergency lighting should be provided in areas with either increased risk of injury during an outage, or likelihood of persons unfamiliar with the space. These would include support spaces (electrical/mechanical/telecom rooms), large restrooms, conference/meeting rooms, kitchen, and similar.
8. Coordinate ceiling plan and lights with projectors and IT equipment.
9. Provide light emitting diode (LED) site lighting with zero cut-off fixtures where light trespass is unwelcome.
10. Provide lighting controls for dimming or multi-level light switching in educational spaces.
11. Install task lighting at instructional area wall surfaces where necessary.
12. Install LED fixtures or extended life lamps in areas with high ceilings where relamping is difficult.
13. Lighting control shall meet current codes at a minimum. Additional energy savings may be achievable with a more complex system but should be balanced with local maintenance capabilities and project budget constraints.
14. Minimum lighting control elements should include exterior photocell control, interior occupancy sensor control of applicable spaces, dimming of fixtures either through manual interface, daylight sensor input, or occupancy sensors, and multi-zone layouts for more functional use of spaces. Examples would be a separate teaching wall zone in classrooms, or multiple zones in a gym or multi-purpose room to allow for most lighting to be off while maintaining some visibility.

Recommended:

15. Consider control for site and corridor lighting systems with the direct digital control system or a lighting control system.
16. Consider direct/indirect fixtures in classrooms with 10'-0" ceilings or greater.
17. Track energy use through a building automation system (BAS) or local metering of the lighting panel.
18. Use dimmable site lighting with integral photocell/occupancy sensors to reduce energy use.
19. Use fixtures with integral controls where practical to reduce device count and cabling.

Premium:

20. Building-wide lighting controls with extensive individual control of fixtures or connection with other systems. CF-3 LCCA-2
21. Architectural fixtures outside of limited use noted above. CF-4 to 5 LCCA-3

C. Special Systems

1) General Design Principles

1. Design principles apply as noted in Electrical.
2. In the absence of code requirements, design should follow BICSI or similar standards to the extent possible.

2) Data and Communications

Required:

1. Provide classroom ceilings with an outlet with voice/data capability and power for technology (if required, verify if PoE first)
2. Provide for wireless connectivity. Coordinate with IT for number and location of needed devices.
3. Provide minimum CAT 6 cabling–all horizontal cabling to be less than 295' in length.
4. Provide one (1) voice/data jack at each classroom wall unless inaccessible due to cubbies/casework.
5. During design development, provide layouts and cut sheets for all equipment requiring active electrical equipment to be built-in or purchased as part of movable equipment budget.
6. Provide cable pathways between all points.
7. Use plenum-rated cabling where distributed in open-air environments.

Recommended:

8. Provide fiber optic backbone between telecom rooms.
9. Provide Category 6A cabling to wireless access points.
10. Use J-hooks for smaller cable counts, consolidate into cable tray for larger counts.
11. Coordinate with Architect to minimize number of inaccessible conduit sleeves in cable pathway to telecom rooms.

Premium:

12. Raised floor raceway systems

13. Oversize cable tray systems.
14. PON or similar fiber distribution systems.

3) Clock/Intercom

Required:

1. Provide general paging throughout the building, with ability to page via phone system.

Recommended:

2. Provide multiple paging zones, including classrooms, corridors, exterior, support spaces. Consider a network-based solution with individual zones for each classroom.
3. Provide synchronized central clock system.

Premium:

4. Augmented/Virtual Reality Systems

4) Audio/Video

Required:

1. Provide power and data for electronic whiteboards or digital TVs in classrooms.
2. Provide HDMI connection at teacher's desk for electronic media.
3. Provide sound system in Gym/MPR/Commons with speakers, microphones, media input (CD optional/Aux input), amplifier and digital signal processor/mixer.
4. Provide small sound system in Band/Orchestra/Choir for support of program.
5. Coordinate location of motorized screen controls with sound input, basketball hoops, stage controls, lighting, etc.

Recommended:

6. X

Premium:

7. Augmented/Virtual Reality Systems
8. Multiple fixed projectors in large spaces.
9. TV Walls instead of projector screens.
10. Digital Signage, Graphic Walls for decorative/accent purposes.

D. Safety and Security

1) Electronic Safety and Security- General Design Principles

1. Except for code-required fire alarm systems, all other systems in this section are optional and should be considered based on budget, local District wants and needs, and area considerations such as likelihood of vandalism or intrusion.

2) Fire Alarm System

Required:

1. Code-minimum coverage for initiating and notification devices.

2. Code-required monitoring of mechanical equipment, generator, suppression systems, fire pump.
3. 24-hour monitoring service in areas served with a fire department.
4. Automatic dialer with local contacts in areas without a fire department.

Recommended:

5. Additional detection in areas with elevated risk of fire, such as storage rooms, kitchen, mechanical/electrical spaces, public restrooms.
6. Exterior notification on at least two sides of the building.
7. Low-frequency sounder/horn and high-candela strobe in areas that may be used for sleeping, even if occupancy is not called out for itinerant housing.

Premium:

8. Pre-action systems.
9. Full coverage detection.

3) Access Control System

Required:

1. If a system is used, limit number of doors to main entry points, including front, playground, staff entry, and loading dock/kitchen. Office area may be controlled.

Recommended:

2. Verify requirements with School District.
3. Use card readers or combination card reader/key pad.
4. Minimize use of key pad only, and if so assign unique codes to individuals. Do not assign a common code to a given door.
5. Use of a reader or button to initiate lockdown in the office should be provided. Lockdown should re-lock all doors, and release any magnetic door holders to seal off corridors/MPR/Gym, etc.
6. System should function independently if network connection is lost.
7. System should use standard readers, locks, and hardware to the extent possible to allow for migration to a different software.

Premium:

8. Card readers on interior doors except for the office area, particularly when used widely to eliminate keys.
9. Cabinet locks and similar where keys would normally be used.
10. Proprietary hardware (such as wireless locksets, hubs, etc.) that cannot migrate in case of software replacement.
11. Badging printers at every school in a District instead of centralized credentials.

4) Intrusion Detection System

Required:

1. Verify need/want with School District.

Recommended:

2. Utilize a combination of door contacts, glassbreak sensors, motion sensors for intrusion detection.
3. Locate a keypad at main entry and staff or kitchen entry.
4. Provide either a 24-hour monitoring service or automatic dialer with local contacts (particularly if no local law enforcement agency exists).
5. Connect to lighting controls if used to switch on corridor/site lighting upon alarm.
6. System can monitor industrial alarms, but avoid redundancy with building control system.

5) Video Surveillance System

Required:

1. Verify need/want with School District.

Recommended:

2. Provide surveillance cameras at least at all major entry points and corridor intersections, with traffic in and out of the office covered.
3. Provide a workstation in the Principal's office for review/download of video, and a monitor in the main office.
4. In schools with a security officer, Assistant Principal, or other similar party, additional workstations should be provided for effective monitoring.
5. IK08 impact resistance is the minimum allowed for cameras that can be touched, or objects thrown at them from less than 10' away.
6. Playgrounds should be monitored.
7. Use multi-sensor or wide-angle cameras wherever possible to replace multiple cameras with a single camera.
8. IK10 impact resistance is recommended.
9. Video system can integrate with access control/intrusion detection to assist those systems.

Premium:

10. Surveillance cameras at locations other than exterior doors, office, playgrounds, or corridors.
11. Interior cameras that exceed the ratio of 1 camera per 5,000 sf
12. Security camera systems that exceed 20 cameras for schools under 50,000 sf. For schools over 50,000 sf, add 2 cameras (one inside, one outside) per 5,000 sf.
13. Pan-tilt-zoom cameras, particularly without an active security officer.
14. Video walls, analytics packages if not justified, thermal or other specialty cameras.

6) Secure Entry and Lockdown

Required:

1. Verify need/want with School District.

Recommended:

2. Provide a lockdown button at the main office and security office. Lockdown should re-lock all doors, and release any magnetic door holders to seal off corridors/MPR/Gym, etc.

3. If lockdown is only used for duress (as opposed to abundance of caution such as non-custodial parent), button should call local law enforcement and/or alert District.
4. If lockdown and duress functions differ, provide two buttons.
5. Broadcast a coded message to classroom paging zone upon activation of button to alert teachers to lock doors.
6. Provide a controlled point at main entry to screen visitors, including intercom/camera.

E. Other Electrical Systems

1) Power Generation and Distribution

Required:

1. None

Recommended:

2. Use battery backup instead of an emergency generator. If a generator is included, design it for standby functions.
3. Consider a standby generator to support safety, security, and core building systems..
4. Locate the generator inside of the building, or in an equipment enclosure instead of a walk-in module to preserve square footage.

Premium:

5. Photovoltaic arrays or systems
6. Electrical wind generators
7. Standby generator beyond critical systems.
8. Walk-in generator modules or buildings.
9. Excessive capacity, either electrically or physical.
10. Redundant generators or bypass isolation automatic transfer switches.

10. EQUIPMENT & FURNISHINGS

A. Equipment

Required:

1. X

Recommended:

2. X

Premium:

3. X

B. Furnishings

Required:

Recommended:

Premium:

11. SPECIAL CONDITIONS

A. Special Construction

Required:

Recommended:

Premium:

B. Special Demolition

Required:

Recommended:

Premium:

C. Special Site Conditions

Required:

Recommended:

Premium:

State of Alaska **Department of Education & Early Development**
Bond Reimbursement & Grant Review Committee

Model School File Updates
BRIEFING PAPER

By: Tim Mearig
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Phone: 465-1858

For: Bond Reimbursement & Grant Review Committee

Date: August 25, 2020

File: G:\SF Facilities\BR_GRCom\Papers\Const Standards\Model School File Update by Committee BP.docx

Subject: Model School File Update by BRGR

Background

In its December 2017 Report to the Legislature on Criteria for Cost-Effective School Construction, the BR&GR Committee identified the following recommendation:

> ***Criteria #10*** *(Model Alaskan School Recommendation #2)*
> *Establish a process of reviewing and regularly updating school costs within the Cost Model so that those updates become researched, vetted, and intentional. Vetting could occur as a function of the BR&GR committee or a broader working group, if deemed necessary.*

In SLA 2018, the legislature passed HB212 which generally incorporated the preceding criteria. The corresponding section of statute reads:

> AS14.11.017(d)
> The department shall develop and **periodically update** regionally based model school construction standards that describe acceptable building systems and anticipated costs and establish school design ratios to achieve efficient and cost-effective school construction. In developing the standards, the department shall consider the standards and criteria developed under AS 14.11.014(b).

During the development of the 2017 legislative report, it became clear that a type of construction standard which described acceptable building systems already existed—this was the Model School Bldg Escalation Study file which functioned as a component of the department's Demand Cost Model for Alaskan Schools. In the 2017 updates of that tool, department staff took responsibility for reviewing the model school elements and coordinated directly with the cost consultant on system and component changes. (Prior to that time, the consultant had made changes to systems largely at their sole discretion.) In April 2018, and again in 2019, the BR&GR Committee was included in the review process for this file. Following some initial guidance on system changes from the department during contract solicitation, that process consisted of the consultant: 1) adding additional elements based on current school projects, 2) gathering the needed expertise evaluate possible modifications, 3) preparing an analysis of recommended changes, and 4) presenting those recommendations to the BR&GR Committee.

In accordance with the Model School Subcommittee responsibilities under the BR&GR Work Plan, this paper provides an assessment and recommendation of the efficacy of that process.

Discussion

Committee action in the 2018 and 2019 process has been, basically, to affirm recommendations with some clarifying discussion. However, the scope of effort differed substantially over those two years. In 2018, the department specifically tasked the consultant with evaluating how accurately the model school incorporated the requirements of ASHRAE Standard 90.1—this having been adopted by the state in 2013. In making this evaluation, the cost consultant had to broaden their expertise and gather input from other design professionals—specifically architects, mechanical engineers, and electrical engineers. In 2019, recommended system changes were more modest and where handled within the cost consultant's expertise. The necessary technical expertise was added at the cost consultant level. In both instances—one relatively demanding and the other relatively simple—the BR&GR Committee members were able to bring sufficient knowledge and expertise to the review and approval process. (The committee make up requires two design professionals and two members with experience in school facility work. At the time of these reviews an architect and a mechanical engineer were filling the professional positions; experienced school facility personnel were filling two other positions.)

The fiscal note prepared by DEED in response to HB212 identified $5000 in one-time costs and $15,000 in annual costs to update building system and cost information. Specifically, the $5000 was to have been an FY19 expenditure for a consultant contract to establish a process for vetting the Model School Escalation file noted in this paper (see *Background, Criteria 10* above). This contract and its analysis were never executed and are now overcome by events; no funds are available. The ongoing funding for updating the to-be-developed construction standards is uncertain. It doesn't appear to have been included in the department's FY20 or FY21 budget. This hasn't been a burden to date since the standards have yet to be finalized and published. When that occurs, it will be important to secure that funding on an annual basis.

Summary

As long as the task of updating model school construction standards remains limited to the Cost Model's *Model School Bldg Escalation Study* file, the analysis of accepted building systems and their costs can be adequately accomplished by: 1) the cost consultant's professional services, 2) the department's guidance of the scope of that contract, and 3) the BR&GR Committee's review of the recommendations from that contract. The cost for this specific effort, as a portion of the overall Cost Model update, can be absorbed within the currently budgeted $10,000 - $15,000 cost of that tool's update. When that task changes to require both the update of the Cost Model tool and the proposed *Alaska School Design & Construction Standards*, additional resources will be needed, as will alignment between the two products and their respective processes of being updated.

Options

Option 1: Close the Model School Subcommittee task (3.1.1) of evaluating committee-driven updates to the Cost Model's *Model School Bldg Escalation Study* file. Continue pursuing updates to model school elements as they pertain to the Cost Model using the current process.

Option 2: Pursue funding for additional analysis of updates to the Cost Model's *Model School Bldg Escalation Study* file. Subcommittee to draft a scope of services when funding becomes available.

Recommendation(s)

Implement Option 1. Pursue funding for additional reviews following publication and implementation of the *Alaska School Design & Construction Standards.* Current schedules project the need for $15,000 in FY22 funding for a consultant contract to accomplish the first update in March 2022.

State of Alaska **Department of Education & Early Development**

Bond Reimbursement & Grant Review Committee

Commissioning

S U B C O M M I T T E E R E P O R T

August 5, 2020

Mission Statement

To provide minimum criteria and expectations to test the performance of a school's mechanical, electrical, plumbing, fuel, controls and envelope systems; to promote energy efficiency of the school and save operational costs over the life of the building.

Current Members

Randall Williams PE, PDC Engineers, Chair

William Glumac

Wayne Marquis, DEED

Industry Partners

Craig Fredeen, Cold Climate Engineering

JaDee Moncur, Support Services of Alaska

Status Update

No action since last BRGR meetings. Subcommittee has completed its purpose.

Recommendation from Chair that BRGR Committee disband the Commissioning Subcommittee.

Schedule

None

State of Alaska **Department of Education & Early Development**
Bond Reimbursement & Grant Review Committee

School Space

S U B C O M M I T T E E R E P O R T

August 25, 2020

Mission Statement

[DRAFT] Review accuracy and adequacy issues relative to the state's space allocation guidelines and recommend updates that support the board of education's mission and vision for Alaska public education.

Current Members

Dale Smythe, Chair
Jim Estes
Don Hiley
David Kingsland
Larry Morris, Jr., DEED

Status Update

Status is unchanged since April. Committee is going to hold until Design Ratios effort is complete.

From April -
Accuracy issues include:

1) Possible formula anomaly in mid-population K-12 scenarios.
2) Precedent and interpretation variations based on terminology and practice.

Adequacy issues include, among others:

1) Net vs gross space.
2) Electrical/mechanical space.
3) Storage in remote areas.
4) Identify unintended consequences/cost of current regulation.

The group discussed these subjects:
-The potentially unintended impacts of the current space guidelines as it relates to wall thickness, energy use, and the measurements to the exterior face of the wall.
-The designation and formula for allowable mechanical space may make required energy efficient equipment more difficult to maintain and or limit space available to include equipment.
-Design teams are forced to create "bump-ins" on floor plans to meet space guideline limits while inadvertently increasing the cost of construction with reentrant corners.
-With budgets ultimately limiting the available funds for school construction what is the true purpose of space guidelines for spaces that are storage or mechanical in nature. Should some space types not be included in the space guideline at all? Would the space guideline serve its purpose more accurately to only include educational spaces?

-Area limitations related to food storage require shorter durations between shipments, in areas with only summer barge access this forces districts to fly food to school sites with more frequency increasing food transportation costs.

The Alaska Chapter A4LE included a space workshop in its Annual Alaska Chapter Conference in December 2019. This hourlong workshop was open to all conference attendees and increase the amount of input, participation, and did gain one active volunteer available to assist.
The workshop helped vet issues for the continued process of developing recommendations and researching cost benefits. Topic presented were the basics and history of the inception of the space subcommittee was introduced to the group. Industry professionals were also in attendance and shared current working issues with the space guidelines.

The proposed schedule will be to present formal recommendations and cost implications in 12 months using the A4LE annual conference as an event for presentation and industry participation.

Schedule

Committee is on hold until Design ratio effort is complete. Restart expected October 2020 and will include these tasks:

1. Monthly meeting for team attendance and research assignments, determine type of recommendation
2. Define specific area and type of recommendation with potential cost savings
3. BRGR presentation and Language refinement and backup
4. Release for public comment
5. Review status and present public comment and ideas at A4LE conference (Tentative Dec. 2020)

State of Alaska **Department of Education & Early Development**
Bond Reimbursement & Grant Review Committee

By: Tim Mearig
Facilities Manager

Phone: 465-6906

Date: August 25, 2020

File: G:\SF Facilities\BR_GRCom\Papers\PM\Retro-Cx Implementation Update.docx

For: Bond Reimbursement & Grant Review Committee

Subject: Retro-commissioning Implementation Update

B R I E F I N G P A P E R

Background

Commissioning Requirements for Existing Buildings

In order to remain eligible to request state-aid for school capital projects under AS 14.11, 4 AAC 31.013(a) requires Alaska school districts have:

> (2) an energy management plan that includes . . .
> **(B) regular evaluation of the effectiveness of and need for commissioning existing buildings.**

This new requirement must be applied to all districts, not just those due for their 5-year site visit. Accordingly, the department has been working toward a communication to all districts, not later than November 1, 2020, which will provide the assessment parameters that will be used in establishing compliance prior to June 1, 2021.

Timeline

April 4, 2018 – Committee reviewed and discussed draft regulation changes proposed by the department.

June 14, 2018 – Committee reviewed the revised draft regulation changes proposed by the department. Subcommittee met to suggest final edits to present to the State Board of Education and Early Development (SBOE).

September 14, 2018 – SBOE heard the department presentation on the proposed regulations and approved a period of public comment.

October 17, 2018 – Committee reviewed proposed regulation package that SBOE sent out for public comment.

December 12, 2018 – Committee reviewed department responses to comments received during public comment period; no public comments were received on the commissioning regulation proposal.

February 4, 2019 – Following a period of public comment, SBOE approved regulations proposed by the department relating to the commissioning of school facilities.

September 18, 2019 – State Board of Education and Early Development (SBOE) approved an additional period of public comment to meet technical process deficiencies identified by the Department of Law.

November 29, 2019 – Promulgated by Lt. Governor and effective date established.

December 4, 2019 – Implementation briefing paper prepared by DEED Facilities (November 18, 2019) is reviewed by the BR&GR. Recommendation is to base a need for retro-commissioning on a facility's Energy Use Intensity (EUI) benchmark and its effectiveness on a cost-based return on investment.

June 16, 2020 – Retro-commissioning tools and metrics briefing paper prepared by DEED Facilities (June 5, 2020) is reviewed by the BR&GR. Recommendations related to EUI-based need and ROI-based effectiveness were reinforced. Factors related to a facility's age and size were recommended to be analyzed to see if an exclusion could be developed for school's outside a projected high-yield target group.

Discussion

On August 7, 2020, following input received during the June 16 BR&GR Committee meeting, the department prepared a position paper (August 5, 2020) and updated tools advancing the RCx implementation and issued these online and direct to the facilities-listsrv for public comment. A companion 14 question survey was also provided via Survey Monkey. Key developments in this iteration included:

1) Identifying the concept of 'targeted facilities' to increase the likelihood of a successful RCx impact.
2) Establishing a square-footage based metric and cost savings threshold, based on industry research, for ROI measurement;

These developments are reiterated from the Position Paper, below.

RCx Target Facilities

Retro-commissioning is an operating budget cost aimed at creating an operational cost savings. The purpose of RCx is not to identify capital renewal needs related to operational costs—that work falls to the more expansive Energy Audit. A retro-commissioning event, therefore, should only be implemented when a reasonably quick return on investment from operating funds can be anticipated.

Regular evaluation of the need for, and effectiveness of retro-commissioning may not be necessary for every building. In determining the target facility for retro-commissioning, several factors should be considered as follows: 1) the use type of the facility, 2) the total annual energy consumed (correlated as a building's size), 3) the age of its primary energy-influenced building systems (ref. DEED Renewal & Replacement (R&R) Schedule categories listed below), and

4) the presence of an integrated building automation system. Using these four factors the department is proposing the following facilities be included as "existing buildings" under the requirements of 4 AAC 31.013(a)(2)(B).

***Each facility designated as a 'main school' in the DEED Facilities Database, along with any other support facility greater than 5000gsf, which meet <u>each</u> of the following building system criteria**:*

a.	*Exterior Walls System*	*Installation or renewal within 25 years*
b.	*Roof Systems*	*Installation or renewal within 25 years*
c.	*HVAC Distribution*	*Installation or renewal within 40 years*
d.	*HVAC Equipment*	*Installation or renewal within 30 years*
e.	*HVAC Controls*	*Installation or renewal within 20 years*
f.	*Electrical Lighting*	*Installation or renewal within 25 years*

Retro-commissioning Effectiveness

The department proposes that districts evaluate the effectiveness of implementing retro-commissioning on a school facility by calculating an anticipated Return on Investment (ROI) for the retro-commissioning effort. This ROI would be a simple payback calculation comparing the anticipated cost of the RCx and its recommendations, to the estimated cost savings resulting from implementing the RCx recommendations. Any ROI showing a simple payback within four years would be considered effective. Information from industry sources indicate a cost range for a full RCx—planning, implementation, and verification—of $0.13/sf to $2.00/sf with the planning phase requiring $0.05/sf to $0.50 of those costs. (Lawrence Berkeley National Laboratory). Many areas of Alaska would have to add approximately $2000 additional in base costs for travel and per-diem.

Industry indicators suggest energy savings from recommissioning to be between 5 and 20 percent. A published study of 224 buildings in 21 states found the average energy savings to be 15 percent. Absent a more sophisticated analysis, the department proposes evaluating the effectiveness of RCx on any building by using the following calculation:

Planning cost (PC) = $0.50/sf + $2000
*Implementation cost (IC) = $0.50/sf * Cost Model geographic cost factor*
Anticipated annual savings (AAS) = 7 percent of electricity and fuel costs.

RCx Effectiveness Calculation: $PC + IC < AAS$

Tools

A revised DEED RCx Need & Effectiveness Worksheet was developed implementing these metrics (see screenshot below). Options to use a district tool or EPA tool(s) remain.

Retro-Commissioning (RCx) Need & Effectiveness Worksheet

Diomede K-12 School

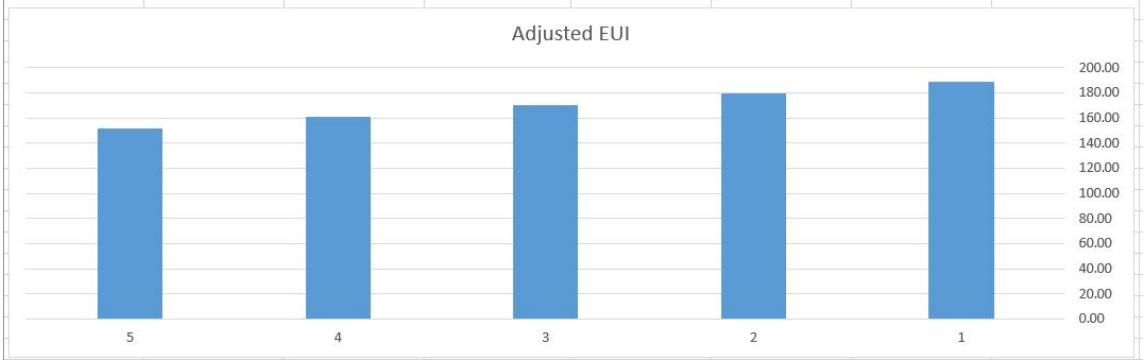
Analysis Year:	2020	DEED Facility Number:	070050-01	District Facility Number:		Gross Square Footage:	17,526
Degree Days:	Minimum:	13,985	Average:	14,405	Maximum:	14,885	10350

School Year	Total (BTU)	EUI (kBTU/SqFt)	Degree Days	Adjusted EUI	Baseline EUI:	% Over/Under
2019	4464017600	254.7082962	13985	188.50	150	25.67%
2018	4301523200	245.4366769	14185	179.08	150	19.39%
2017	4139028800	236.1650576	14385	169.92	150	13.28%
2016	3976534400	226.8934383	14585	161.01	150	7.34%
2015	3814040000	217.621819	14885	151.32	150	0.88%

RCx Effectiveness Calculation

Travel/Per-diem	$2,000	Geograpic Cost Factor	156.78	Pecent Savings	7%	Estimated Payback:	1.84 yrs

School Year	Annual Fuel $	Annual Electrical $	Annual Other Util $	Total Energy $	Est Planning $	Est Implement $	Est Annual Savings
2019	$76,180	$113,620	$0	$ 189,800	$10,763	$13,739	$13,286
2018	$73,060	$112,840	$0	$ 185,900	$10,763	$13,739	$13,013
2017	$69,940	$112,060	$0	$ 182,000	$10,763	$13,739	$12,740
2016	$66,820	$111,280	$0	$ 178,100	$10,763	$13,739	$12,467
2015	$63,700	$110,500	$0	$ 174,200	$10,763	$13,739	$12,194



Response

Response during the public comment period (originally scheduled to end on August 31st) has been minimal (see attached). The department intends to extend the comment period for an additional 30 days and to schedule one or more online Q&A sessions to assist districts in their understanding of the regulation implementation considerations.

Recommendation(s)

This update does not propose any specific Committee recommendations; however, Committee input is always welcome. We would also encourage participation in the department's public comment survey (surveymonkey.com/r/DEED-PubCmt-RCx).

Retro-Commissioning (RCx) Need & Effectiveness Worksheet

[Enter Facility Name From DEED Database]

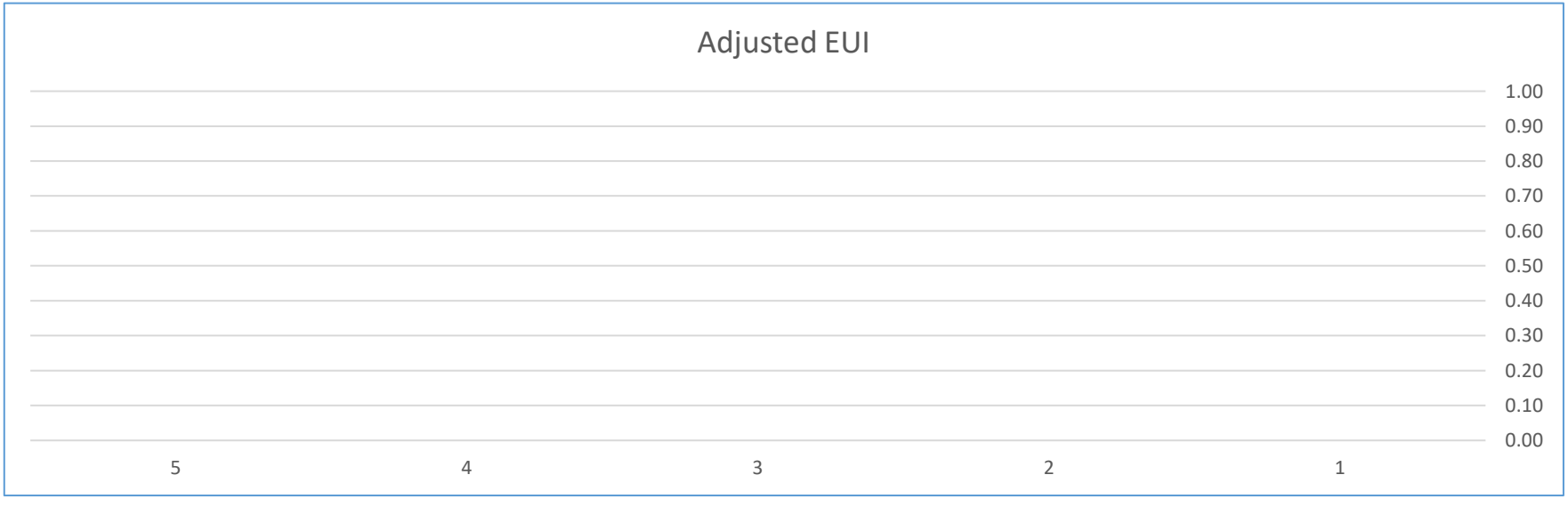
Analysis Year:	2020	**DEED Facility Number:**		**District Facility Number:**		**Gross Square Footage:**	
Degree Days:	Minimum:	0	Average:	#DIV/0!	Maximum:	0	10350

School Year	Total (BTU)	EUI (kBTU/SqFt)	Degree Days	Adjusted EUI	Baseline EUI:	% Over/Under
2019	0	#DIV/0!		#DIV/0!	150	#DIV/0!
2018	0	#DIV/0!		#DIV/0!	150	#DIV/0!
2017	0	#DIV/0!		#DIV/0!	150	#DIV/0!
2016	0	#DIV/0!		#DIV/0!	150	#DIV/0!
2015	0	#DIV/0!		#DIV/0!	150	#DIV/0!

RCx Effectiveness Calculation

Travel/Per-diem	$2,000	**Geograpic Cost Factor**		**Pecent Savings**	7%	**Estimated Payback:**	#DIV/0!

School Year	Annual Fuel $	Annual Electrical $	Annual Other Util $	Total Energy $	Est Planning $	Est Implement $	Est Annual Savings
2019				$ -	2000	0	$0
2018				$ -	2000	0	$0
2017				$ -	2000	0	$0
2016				$ -	2000	0	$0
2015				$ -	2000	0	$0



Total BTU Worksheet

	Minimum:	0	Average:	0	Maximum:	0	
School Year	**Electric (KWH)**	**Heating Fuel (GAL)**	**Natural Gas (CCF)**	**Biomass (CHD)**	**Recoverd Heat (BTU)**	**Steam (BTU)**	**Total (BTU)**
2010-2011	0	0	0	0	0	0	0
2011-2012	0	0	0	0	0	0	0
2012-2013	0	0	0	0	0	0	0
2013-2014	0	0	0	0	0	0	0
2014-2015	0	0	0	0	0	0	0
2015-2016	0	0	0	0	0	0	0
2016-2017	0	0	0	0	0	0	0
2017-2018	0	0	0	0	0	0	0
2018-2019	0	0	0	0	0	0	0
2019-2020	0	0	0	0	0	0	0
2020-2021	0	0	0	0	0	0	0
2021-2022	0	0	0	0	0	0	0
2022-2023	0	0	0	0	0	0	0
2023-2024	0	0	0	0	0	0	0

Electrical Usage (KWH)

Lowest Usage	0	0	0	0	0	0	0	0	0	0	0	0	
School Year	**July**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**June**	**Total**
2010-2011													0
2011-2012													0
2012-2013													0
2013-2014													0
2014-2015													0
2015-2016													0
2016-2017													0
2017-2018													0
2018-2019													0
2019-2020													0
2020-2021													0
2021-2022													0
2022-2023													0
2023-2024													0

Heating Fuel (GAL)

Lowest usage	0	0	0	0	0	0	0	0	0	0	0	0	
School Year	**July**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**June**	**Total**
2010-2011													0
2011-2012													0
2012-2013													0
2013-2014													0
2014-2015													0
2015-2016													0
2016-2017													0
2017-2018													0
2018-2019													0
2019-2020													0
2020-2021													0
2021-2022													0
2022-2023													0
2023-2024													0

Natural Gas (CCF)

Lowest usage	0	0	0	0	0	0	0	0	0	0	0	0	
School Year	**July**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**June**	**Total**
2010-2011													0
2011-2012													0
2012-2013													0
2013-2014													0
2014-2015													0
2015-2016													0
2016-2017													0
2017-2018													0
2018-2019													0
2019-2020													0
2020-2021													0
2021-2022													0
2022-2023													0
2023-2024													0

Biomass (CHD)

Lowest usage	0	0	0	0	0	0	0	0	0	0	0	0	
School Year	**July**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**June**	**Total**
2010-2011													0
2011-2012													0
2012-2013													0
2013-2014													0
2014-2015													0
2015-2016													0
2016-2017													0
2017-2018													0
2018-2019													0
2019-2020													0
2020-2021													0
2021-2022													0
2022-2023													0
2023-2024													0

Recovered Heat (BTU)

Lowest usage	0	0	0	0	0	0	0	0	0	0	0	0	
School Year	**July**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**June**	**Total**
2010-2011													0
2011-2012													0
2012-2013													0
2013-2014													0
2014-2015													0
2015-2016													0
2016-2017													0
2017-2018													0
2018-2019													0
2019-2020													0
2020-2021													0
2021-2022													0
2022-2023													0
2023-2024													0

Steam (BTU)

Lowest usage	0	0	0	0	0	0	0	0	0	0	0	0	
School Year	**July**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**June**	**Total**
2010-2011													0
2011-2012													0
2012-2013													0
2013-2014													0
2014-2015													0
2015-2016													0
2016-2017													0
2017-2018													0
2018-2019													0
2019-2020													0
2020-2021													0
2021-2022													0
2022-2023													0
2023-2024													0

Retro-Commissioning (RCx) Need & Effectiveness Worksheet

Diomede K-12 School

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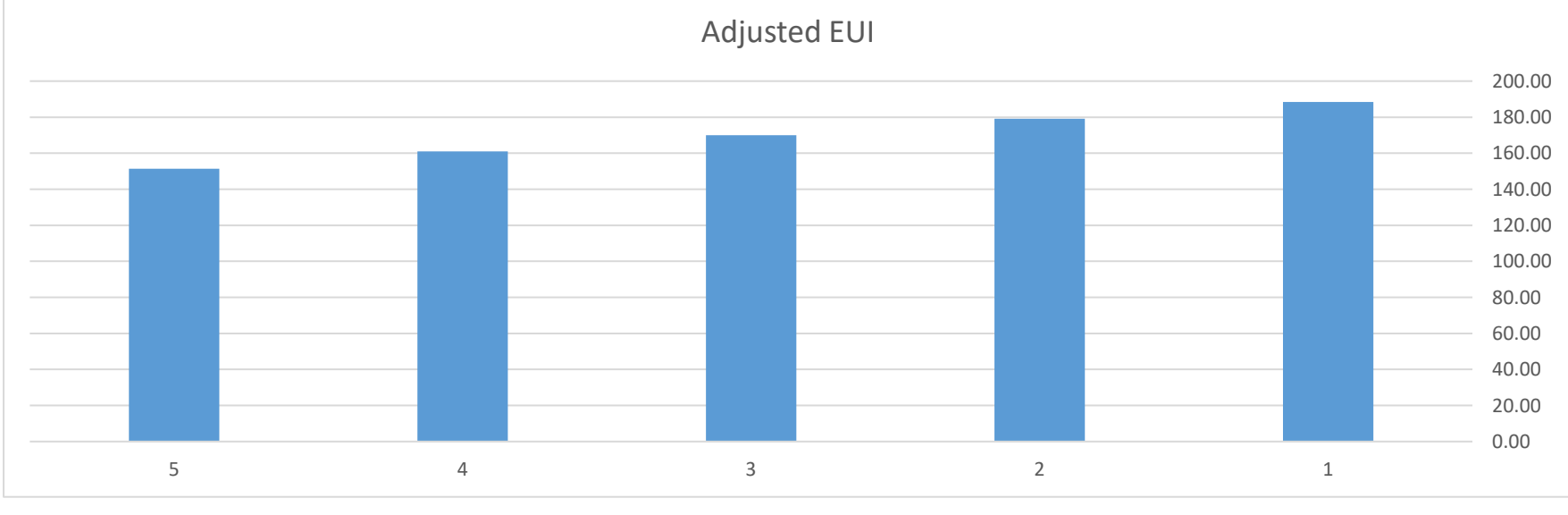
2015	$63,700	$110,500	$0	$ 174,200	$10,763	$13,739	$12,194



Total BTU Worksheet

	Minimum:	0	Average:	1478224571	Maximum:	4464017600	
School Year	**Electric (KWH)**	**Heating Fuel (GAL)**	**Natural Gas (CCF)**	**Biomass (CHD)**	**Recoverd Heat (BTU)**	**Steam (BTU)**	**Total (BTU)**
2010-2011	0	0	0	0	0	0	0
2011-2012	0	0	0	0	0	0	0
2012-2013	0	0	0	0	0	0	0
2013-2014	0	0	0	0	0	0	0
2014-2015	0	0	0	0	0	0	0
2015-2016	170000	24500	0	0	0	0	3814040000
2016-2017	171200	25700	0	0	0	0	3976534400
2017-2018	172400	26900	0	0	0	0	4139028800
2018-2019	173600	28100	0	0	0	0	4301523200
2019-2020	174800	29300	0	0	0	0	4464017600
2020-2021	0	0	0	0	0	0	0
2021-2022	0	0	0	0	0	0	0
2022-2023	0	0	0	0	0	0	0
2023-2024	0	0	0	0	0	0	0

Electrical Usage (KWH)

Lowest Usage	11000	13000	15000	15000	15000	15000	15000	15000	15000	14000	14000	13000	
School Year	**July**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**June**	**Total**
2010-2011													0
2011-2012													0
2012-2013													0
2013-2014													0
2014-2015													0
2015-2016	11000	13000	15000	15000	15000	15000	15000	15000	15000	14000	14000	13000	170000
2016-2017	11100	13100	15100	15100	15100	15100	15100	15100	15100	14100	14100	13100	171200
2017-2018	11200	13200	15200	15200	15200	15200	15200	15200	15200	14200	14200	13200	172400
2018-2019	11300	13300	15300	15300	15300	15300	15300	15300	15300	14300	14300	13300	173600
2019-2020	11400	13400	15400	15400	15400	15400	15400	15400	15400	14400	14400	13400	174800
2020-2021													0
2021-2022													0
2022-2023													0
2023-2024													0

Heating Fuel (GAL)

Lowest usage	1000	1000	1500	2000	2500	3000	3000	3000	2500	2000	2000	1000	
School Year	**July**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**June**	**Total**
2010-2011													0
2011-2012													0
2012-2013													0
2013-2014													0
2014-2015													0
2015-2016	1000	1000	1500	2000	2500	3000	3000	3000	2500	2000	2000	1000	24500
2016-2017	1100	1100	1600	2100	2600	3100	3100	3100	2600	2100	2100	1100	25700
2017-2018	1200	1200	1700	2200	2700	3200	3200	3200	2700	2200	2200	1200	26900
2018-2019	1300	1300	1800	2300	2800	3300	3300	3300	2800	2300	2300	1300	28100
2019-2020	1400	1400	1900	2400	2900	3400	3400	3400	2900	2400	2400	1400	29300
2020-2021													0
2021-2022													0
2022-2023													0
2023-2024													0

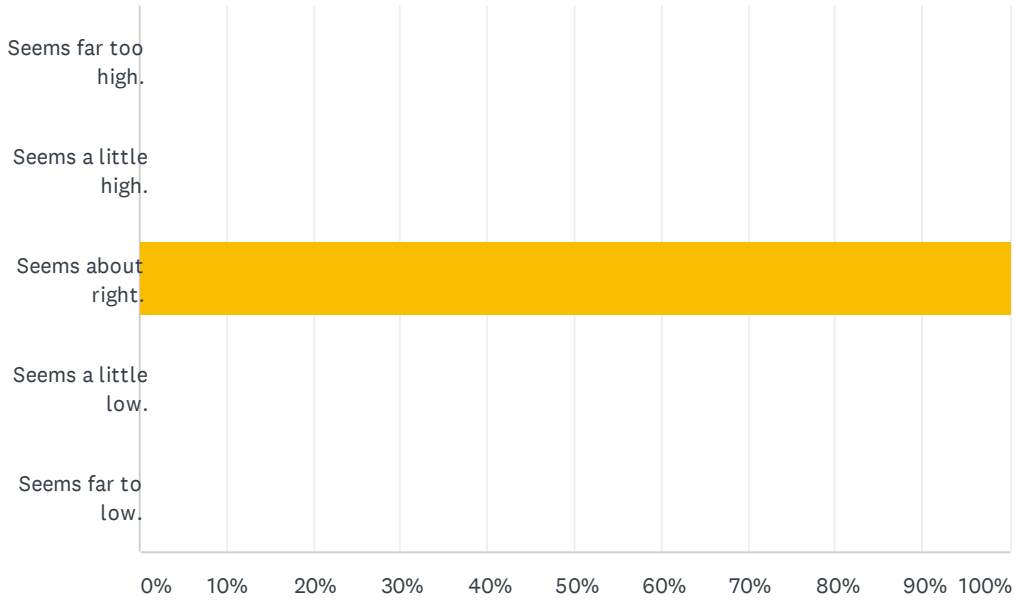
Q1 To help us better add value and context to your survey answers, please identify your organization (if any).

Answered: 1 Skipped: 0

#	RESPONSES	DATE
1	LKSD	8/10/2020 10:08 AM

Q2 What is your general assessment of the proposed RCx planning cost (PC) basis of $0.50/sf plus $2000?

Answered: 1 Skipped: 0

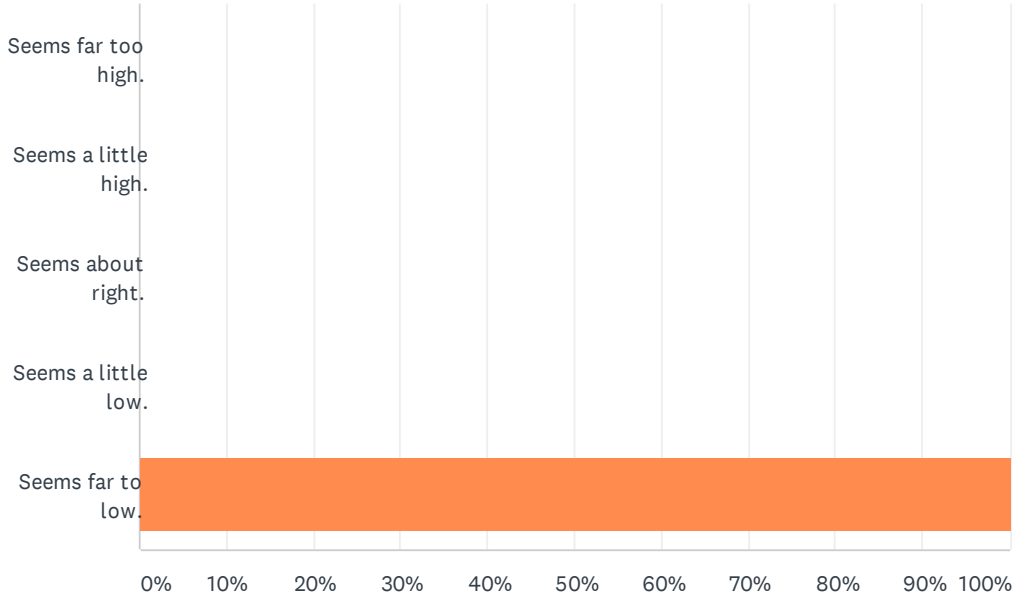


ANSWER CHOICES	RESPONSES	
Seems far too high.	0.00%	0
Seems a little high.	0.00%	0
Seems about right.	100.00%	1
Seems a little low.	0.00%	0
Seems far to low.	0.00%	0
TOTAL		1

#	OTHER (PLEASE SPECIFY)	DATE
	There are no responses.	

Q3 What is your general assessment of the proposed RCx implementation cost (IC) basis of $0.50/sf times the Cost Model geographic cost factor?

Answered: 1 Skipped: 0

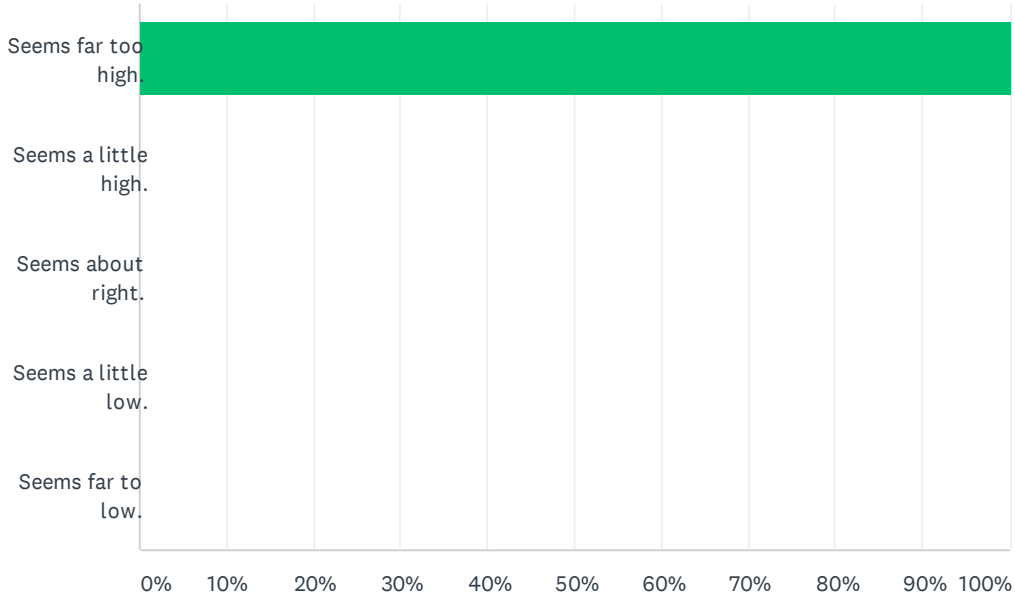


ANSWER CHOICES	RESPONSES	
Seems far too high.	0.00%	0
Seems a little high.	0.00%	0
Seems about right.	0.00%	0
Seems a little low.	0.00%	0
Seems far to low.	100.00%	1
TOTAL		1

#	OTHER (PLEASE SPECIFY)	DATE
	There are no responses.	

Q4 What is your general assessment of the proposed RCx anticipated annual savings (AAS) basis of 7 percent of electricity and fuel costs?

Answered: 1 Skipped: 0



ANSWER CHOICES	RESPONSES	
Seems far too high.	100.00%	1
Seems a little high.	0.00%	0
Seems about right.	0.00%	0
Seems a little low.	0.00%	0
Seems far to low.	0.00%	0
TOTAL		1

#	OTHER (PLEASE SPECIFY)	DATE
1	LKSD Site Administrators have no responsibility in operation and maintenance of electrical and mechanical systems. The SAs are the site maintenance position supervisors.	8/10/2020 10:15 AM

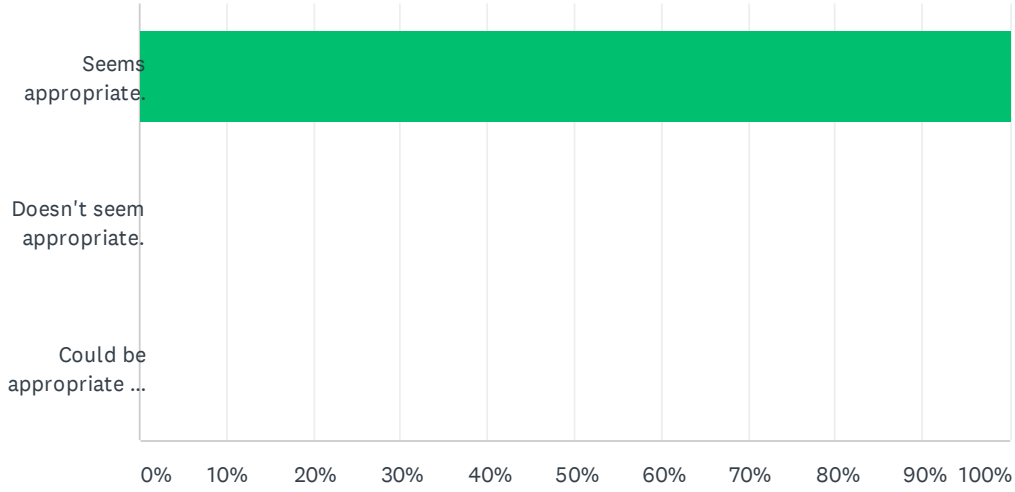
Q5 Other comments on the proposed RCx effectiveness calculation?

Answered: 1 Skipped: 0

#	RESPONSES	DATE
1	The calculation does not account for the lack of supervision at the site level to implement this plan to achieve the intended results. You can't manage what you don't measure.	8/10/2020 10:15 AM

Q6 DEED is proposing that all buildings classified as "main schools" be initially considered regardless of size. Does this seem appropriate or should there be a size cut-off similar to that proposed for education-related facilities?

Answered: 1 Skipped: 0

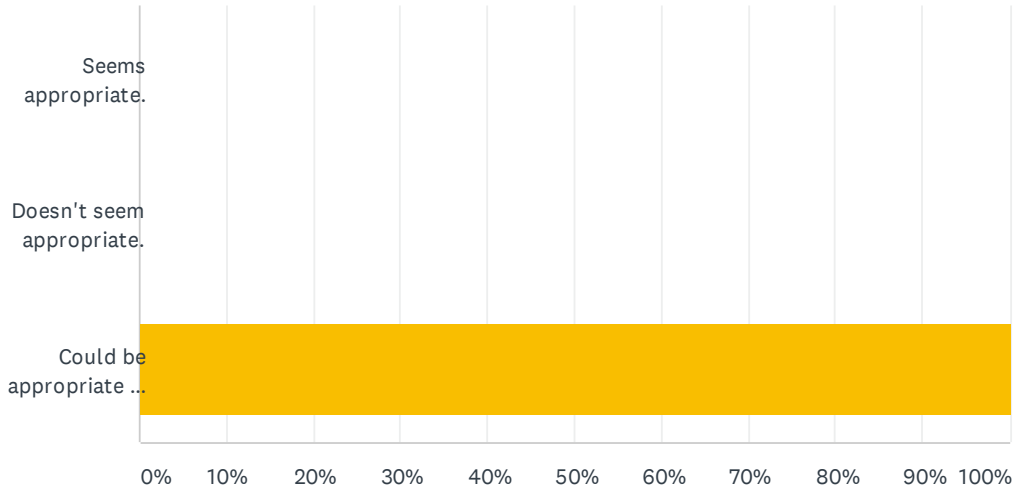


ANSWER CHOICES		
Seems appropriate.	100.00%	1
Doesn't seem appropriate.	0.00%	0
Could be appropriate if . . . (please specify)	0.00%	0

	There are no responses.	

Q7 DEED is proposing that other education-related facilities over 5,000sf be initially considered. Does this seem appropriate or should a different facility size be use to ensure an appropriate level of complexity and energy payback potential?

Answered: 1 Skipped: 0

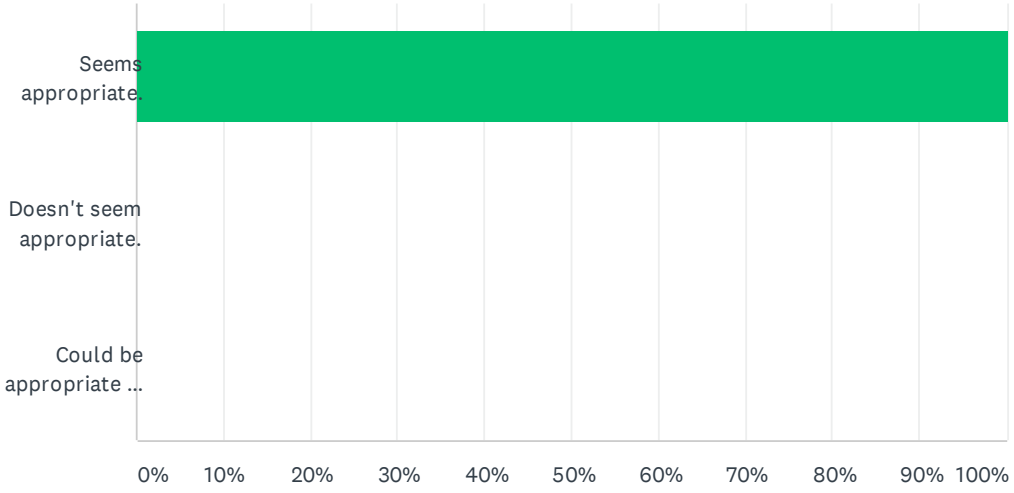


ANSWER CHOICES		
Seems appropriate.	0.00%	0
Doesn't seem appropriate.	0.00%	0
Could be appropriate if . . . (please specify)	100.00%	1

1	Any building listed in the DEED database, permanent or temporary, should be included as they all consume energy in support of schools. Also need to include the floor if including walls and roof.	8/10/2020 11:34 AM

Q8 DEED is proposing that the above-identified facilities be screened to ensure their primary energy-use systems are within the range of the anticipated useful life of those systems. Is this screening appropriate?

Answered: 1 Skipped: 0

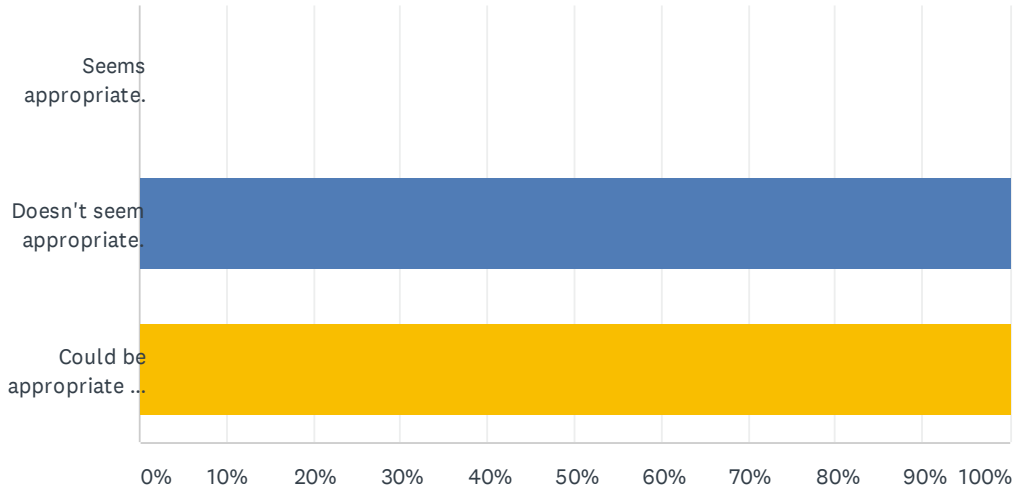


ANSWER CHOICES		
Seems appropriate.	100.00%	1
Doesn't seem appropriate.	0.00%	0
Could be appropriate if . . . (please specify)	0.00%	0

There are no responses.

Q9 DEED is proposing that the above-identified facilities be screened to ensure they include an integrated building automation system that was installed or renovated within the past 20 years. Is this screening appropriate?

Answered: 1 Skipped: 0



ANSWER CHOICES		
Seems appropriate.	0.00%	0
Doesn't seem appropriate.	100.00%	1
Could be appropriate if . . . (please specify)	100.00%	1

1	Smaller support facilities consume energy, but may not economical to install building automation controls.	8/10/2020 11:34 AM

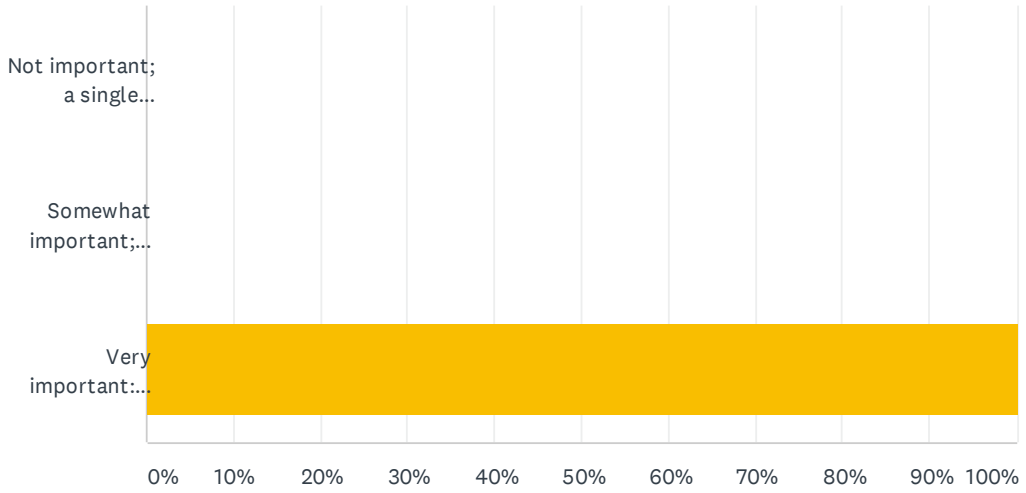
Q10 How clear are these options and the tools that would be used to implement them?

Answered: 1 Skipped: 0

#	RESPONSES	DATE
1	I would recommend DEED. However, DEED needs to recognize that the educators run LKSD facilities, not facilities staff. DEED needs to require school Administrations (and their school boards) to participate in this process. Otherwise you will get NO buy-in from REAAs. My $0.02.	8/10/2020 11:40 AM

Q11 How important is it to have all of these options available for compliance?

Answered: 1 Skipped: 0

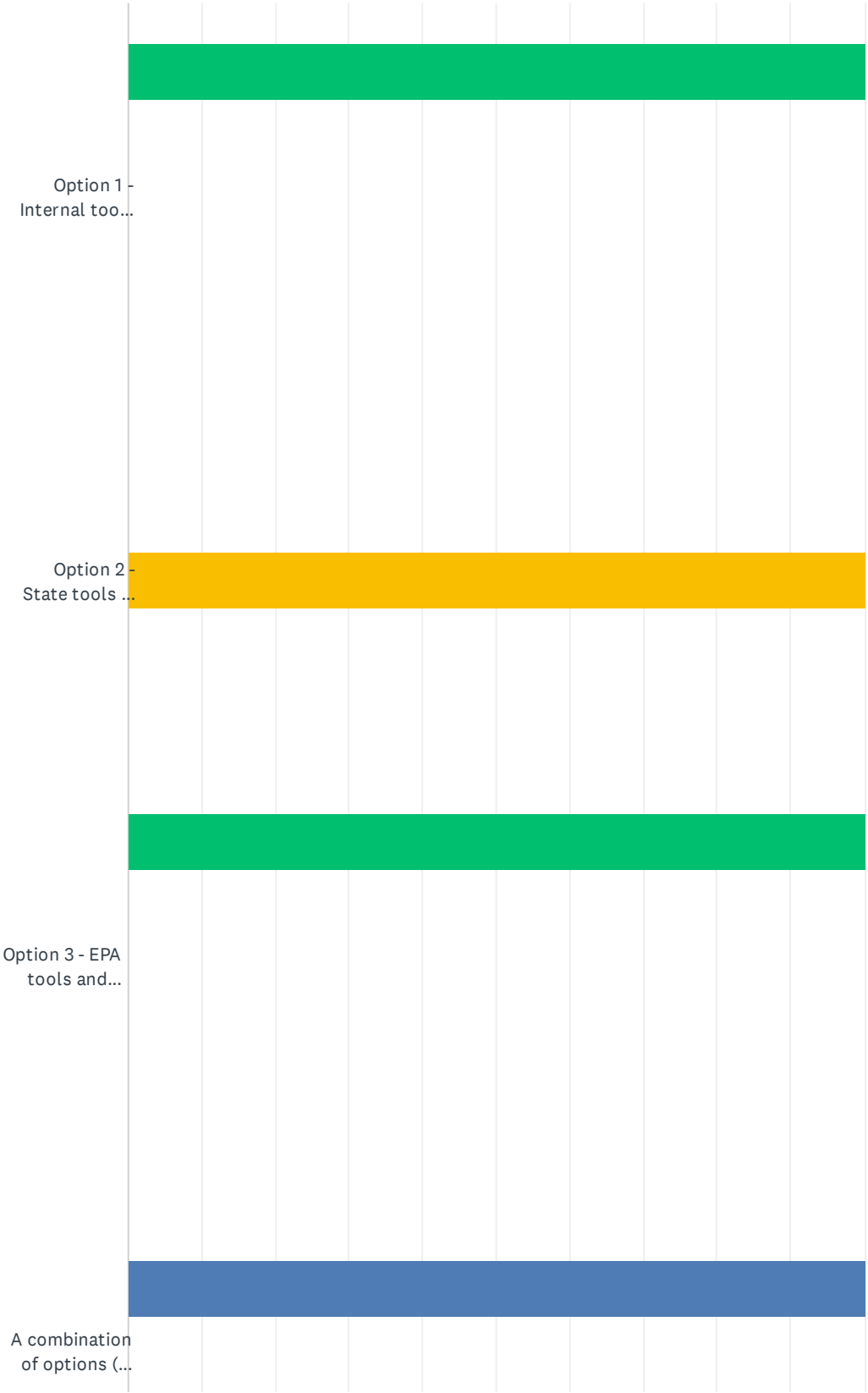


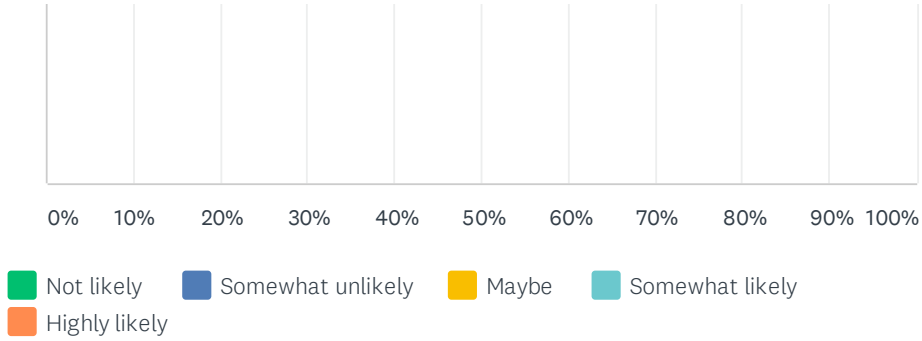
ANSWER CHOICES	RESPONSES	
Not important; a single compliance tool could be established.	0.00%	0
Somewhat important; options for compliance may be helpful.	0.00%	0
Very important: options for compliance is vital.	100.00%	1
TOTAL		1

#	OTHER (PLEASE SPECIFY)	DATE
1	Every District is different, every school in a District is different, some Districts have separate climatic considerations within their district schools.	8/10/2020 11:40 AM

Q12 If you are a district facility manager or superintendent, which option are you most likely to use?

Answered: 1 Skipped: 0





	NOT LIKELY	SOMEWHAT UNLIKELY	MAYBE	SOMEWHAT LIKELY	HIGHLY LIKELY	TOTAL	WEIGHTED AVERAGE
Option 1 - Internal tools and assessments.	100.00% 1	0.00% 0	0.00% 0	0.00% 0	0.00% 0	1	1.00
Option 2 - State tools and assessments.	0.00% 0	0.00% 0	100.00% 1	0.00% 0	0.00% 0	1	3.00
Option 3 - EPA tools and EPA/State assessments.	100.00% 1	0.00% 0	0.00% 0	0.00% 0	0.00% 0	1	1.00
A combination of options (see comments).	0.00% 0	100.00% 1	0.00% 0	0.00% 0	0.00% 0	1	2.00

#	COMMENTS	DATE
1	If the Superintendent is a part of this discussion, I apparently don't need to know. I am only responsible for managing the construction of the school, nothing further.	8/10/2020 11:40 AM

Q13 Do you have any final thoughts or comments on the implementation of this regulation?

Answered: 1 Skipped: 0

#	RESPONSES	DATE
1	The implementation will fail. DEED needs to work with the teaching staff if you want anything implemented.	8/10/2020 11:41 AM

Q14 If you would like to receive a response to your survey answers please provide the following:

Answered: 0 Skipped: 1

ANSWER CHOICES	RESPONSES	
Name	0.00%	0
Email	0.00%	0

#	NAME	DATE
	There are no responses.	
	There are no responses.	

State of Alaska **Department of Education & Early Development**
Bond Reimbursement & Grant Review Committee

Energy Management PM Certification BRIEFING PAPER

By: Wayne Marquis
Building Maintenance Specialist

Phone: 465-6928

For: Bond Reimbursement & Grant Review Committee

Date: August 25, 2020

File: G:\SF Facilities\BR_GRCom\Papers\PM\Recovered Heat Issue LPSD_Draft.docx

Subject: Tracking Waste (Recovered) Heat as a Utility under 4 AAC 31.013(a)(2)

Background

In January 2019, the department conducted a site visit to the Lake and Peninsula School District to assess their maintenance and facility management operations as required under AS 14.11.011(b)(4) and 4 AAC 31.013(a)(2). In the assessment report, dated February 11, 2019, the department determined that the district energy management program was not in compliance with regulation. The district's deficiencies were summarized in the report as follows:

Therefore, following our review, and in order to meet the energy regulation, the district needs to:

- *Formalize its energy management plan*
- *Present monthly electric consumption data for each school site*
- *Present monthly fuel (oil) consumption data for each school site*
- *Present monthly waste heat (BTU or KW) consumption data for each school site*

During the spring of 2019, the department and district corresponded back and forth to address these deficiencies in an effort to move the district to provisional compliance in time for the FY21 CIP application cycle. The deficiency in the fourth bullet, waste (recovered) heat consumption data, became the Achilles heel for the district and they were not able to provide a plan for compliance.

On December 10, 2019, the district superintendent communicated with the Commissioner regarding this issue (letter attached). The letter contained a request for relief from having to monitor recovered heat as a utility and offered a wording change to 4 AAC 31.013(a)(2) as follows (additional language in bold caps):

> (2) an energy management plan that includes recording energy consumption, **WHICH INCURS COST**, for all utilities on a monthly basis for each building; for facilities constructed before December 15, 2004, a district may record energy consumption for utilities on a monthly basis when multiple buildings are served by one utility plant.

Discussion

In the department's response to the district, the Commissioner noted that he was referring the district's request for a regulation change to the BR&GR Committee for consideration and recommendation.

The department's guidelines have never factored cost-tracking into an energy management baseline—only consumption tracking. Under this approach, it was determined that even no-cost utilities needed to be tracked in order to provide baseline data for use in a district's energy management program. In the FY17 inspection year, the department included assessment of recovered heat monitoring as part of the requirements for a qualified energy management program. This year, FY21, will complete a full 5-yr cycle of inspections that include the application of recovered heat assessment. By May 2021, all 53 districts will have been through this assessment metric. To date, six districts have had some direct impact from the recovered-heat assessment: Hoonah, Chatham, Galena, Lake & Peninsula, Bristol Bay, and Yakutat. Of these six, all but Lake & Peninsula have been able to implement a plan to correct the deficiency and to receive provisional certification while they were working on implementing their plan. The solution in each case has been to invest in either strap on or in-line BTU monitors and implement data collection and conversion processes. Generally, the lowest investment cost has been $5000 per instance/site—this is the strap-on monitor solution. At the top end of the spectrum, expenditure was approximately $15,000. This solution included more accurate, in-line meters and automated reporting and conversion.

In the Lake & Peninsula School District, the issue was magnified somewhat by a more extensive number of locations (nine of 15 school sites), but also by a management aversion to taking on the responsibility of recovered heat measurement. A main contention was that such measurement is only and always a utility's responsibility. In working with the district in the spring and summer of 2019, the district provided a plan showing that of their nine recovered heat sites, three currently had measurement capability, three had current projects in which the capability could be added, two were interested but had no immediate plans, and one had no capability or plans but was at a currently closed school. After some additional documentation regarding timelines for the possible upgrades, it was determined that the district plan could not result in provisional compliance. Provisional status is predicated on the fact that a corrective plan has been implemented but lacks the record of 12 months of evidence that the plan has been adhered to.

> 4 AAC 31.013
> (h) Notwithstanding (e) and (f) of this section, the department may make a determination of provisional compliance for a district that provides evidence of a plan that meets all required elements identified in (a) of this section but does not provide documentation of adherence to that plan. A determination of provisional compliance will allow a district to be eligible for state aid until a final determination of compliance or noncompliance is provided.

Options

Option 1: Continue to interpret the regulation as requiring consumption tracking for recovered heat as a utility.

Option 2: Revise interpretation of regulations to not require consumption tracking of recovered heat as a utility.

Option 3: Clarify regulations as not requiring consumption tracking of recovered heat as a utility by revising the language as proposed or as altered.

Recommendation(s)

To allow for unrestricted committee input to the department and Commissioner, no recommendation is being provided.

State of Alaska

Department of Education & Early Development
Bond Reimbursement & Grant Review Committee

DEED Cost Format

P U B L I C A T I O N C O V E R

August 25, 2020

Issue

The department seeks committee review prior to department publication of the *CostFormat*.

Background

Last Updated/Current Edition
Publication last updated in 2008. Current edition is available on the department's website: (education.alaska.gov/facilities/docs/CostFormat2008.xls).

Summary of Proposed Changes
The department has prepared this update to the publication based on input from the committee and key stakeholders. Key revisions/additions to the publication address the following:

- Re-establishes the publication as an estimate structure vs. an estimating template/tool;
- Re-establishes a defined Level 3 Elemental Cost structure;
- Fully aligns the Elemental Cost structure with the *DEED Guide to School Facility Condition Surveys*, 2020 Ed.
- Moves the publication's platform from a spreadsheet to a word processing file, in keeping with the change from a template tool to an estimating structure.

Version Summary & BRGR Review

Drafts of the publication were presented to the committee at the following meetings:

December 4, 2019 – Department sought Committee input on direction for upcoming update.

June 5, 2020 – Department presented draft publication update to the Committee for acknowledgement and feedback prior to department issuing for public comment.

Public Comment

Public comment period open July 17, 2020 through August 11, 2020. See attached document with compiled public comments and department responses.

Options

Acknowledge final document for publication.
Recommended edits to final document for publication.

Suggested Motion

"I move that the Bond Reimbursement and Grant Review Committee acknowledge the department has updated the *CostFormat* and will prepare the document for publication."

DEPARTMENT OF EDUCATION AND EARLY DEVELOPMENT

COMPILED PUBLIC COMMENT AND DEPARTMENT RESPONSES

COSTFORMAT: DEED STANDARD CONSTRUCTION PROJECT COST ESTIMATE FORMAT

JULY 17, 2020 TO AUGUST 11, 2020

PUBLIC COMMENT RECEIVED	DEED RESPONSE
The section CostFormat Component Levels. A little more description may be needed in this cell. As written, I'm not sure the difference between the levels and the levels relevance to this tool. *G.Eckenweiler 7-21-2020*	Agreed. Additional explanation will be added.
Thanks for the information. I have reviewed the estimate structure and feel it is an improvement from the current outline. *J.Lavoie 7-27-2020*	Thank you.
I appreciate the overhead and contingency sections being moved to the end of the structure. *J.Lavoie 7-27-2020*	Thank you.
I feel the level of detail is sufficient. *J.Lavoie 7-27-2020*	Thank you.
If I had one wish it would be to find a place in division 01 Site for sections 1123 Site & Utility Demolition and section 113 Special Site Condition. It would then be straight forward to see total site cost. *J.Lavoie 7-27-2020*	The basis for which elements of site work were captured in 01 Site Work was those for which ongoing capital renewal would likely be needed. This 'definition' helps us align the CostFormat with other department guidelines.

PUBLIC COMMENT RECEIVED	DEED RESPONSE
The estimating format you have adopted was designed by the R S Means Company. It is an engineering approach that looks at a job in sections that align with the structure of their (extensive) data base. It is the method used, not coincidently, by HMS. My training came from the contracting industry. We use the standard divisional format because the estimate converts into a budget that becomes the schedule of values that support the ("loaded") critical path schedule. It is a seamless way of performing a quantity survey and leaves little room for omission. Since most of my work is for architects working as the owner's representative, and my data base is completely geared to divisional estimates, I would have a lot of time in converting to the R S Means format. *K.Castner 8-7-2020*	Thank you for your review and comments. We understand how a 'divisional' or work breakdown structure often better aligns with estimating and cost control for construction contractors. The Construction Specifications Insitute (CSI) publishes an integration table between their Uniformat (elemental) and MasterFormat (divisional) formats. If you decide to invest the time to create a cross-link between your estimating structure and the DEED CostFormat, you may find this publication helpful.
I know this is past the comment period but just wanted to reach back to our previous conversation confirming that I think it is appropriate to move the site section to 01 in keeping with standardized industry methodology. *K.Gamble 8-14-2020*	Thank you.
I am not clear on what "re-establishes the publication as an estimate structure vs. an estimating template/tool" refers to or what is intended here. *K.Gamble 8-14-2020*	The 2nd Edition CostFormat was published as an MS Excel file with 53 worksheets for the Level 3 structure in which quantity and cost data could be entered. This 3rd edition provides no such 'tool' but only defines the required structure.

PUBLIC COMMENT RECEIVED	DEED RESPONSE
To take the defined level of the document to elemental level 3 would probably be beneficial though it will require some reorganization of the document and will drive toward a level of detail that is probably excessive in some areas for what is essentially a programming document. What are you finding from the users that is driving this solution? Why do this? *K.Gamble 8-14-2020*	If I understand, you are actually referring to a decision to include a Level 4 detail in the 3rd Edition. This is a return to the original vision of the standard. This estimate standard is intended to support estimates from conceptual design to bid documents. Defining a required Level 4 provides a level of granularity that meshes with other department tools and standards such as the *Guide to School Facility Condition Surveys* and the upcoming *Alaska School Design & Construction Standards*.
Aligning the Elemental Cost structure with the DEED guide to school condition surveys concerns me in that in practice the level of detail in condition survey estimates can vary greatly from project to project. Here again what are you hoping to gain here? Is this simply an effort to normalize formats? The use of the elemental cost structure at the condition survey level of design is not appropriate in most cases and would render the condition survey process slow and unwieldy. *K.Gamble 8-14-2020*	The department has established that a condition survey is an essential backbone of CIP development. The updated DEED condition survey guide assists in providing a clear standard for what constitutes a component condition survey. The alignment of the CostFormat to that same level by reintroducing a Level 4 will assist in providing better support for component condition survey costs.

CostFormat

DEED Standard Construction Cost Estimate Format

CONTRIBUTORS

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Alaska Department of Education & Early Development

ACKNOWLEDGEMENTS

1. Essential work on the first edition (2000) was provided by Nathan Coffee, Architect Assistant 1999 – 2004
2. The second edition was prepared under the leadership of Sam Kito, Facilities Manager 2006-2012.
3. Staff at HMS, Inc. also collaborated on the first and second editions. Their cooperation, flexibility, and professional advice was essential.
4. Staff at both Estimations, Inc., and HMS, Inc. provided helpful input to this 3rd Edition.

Table of Contents

Legend

Units used in the CostFormat.

Unit	Definition
%	Percent
AC	Acreage
AMP	Ampere
CY	Cubic Yard
EA	Each
FLT	Number of Stair Flights
FPA	Footprint Area; Foundation Area
FXT	Fixture
GAL	Gallons
GSF	Gross Floor Area; Gross Square Foot
HRS	Hours
KVA	Kilo-volt-Ampere
LEAF	Individual Door Leaf
LF	Linear Foot
LS	Lump Sum (Cost)
DAY	Day
MO	Month
MSF	Thousand Square Feet
RT	Roundtrip Travel
SF	Square Foot
STOP	Number of Elevator Stops
TON	Total Material Shipping Weight

Additional units used by DEED when databasing project costs.

Unit	Definition
ACRE	Total Site Acreage
CEA	Number of Conveyors
CFM	Air Handling Equipment Cubic Feet per Minute
CMLF	Length of Civil/Mechanical Piping in Linear Feet
DAYS	Per Diem Days
DC$	Direct Construction Cost
EAMP	Amperes of Emergency Power System
EASF	Area of Exterior Accessories in Square Feet
ECSF	Area of Exterior Closure in Square Feet
EDLF	Number of Door Leafs & Special Doors
EFEA	Pieces of Equipment & Furnishings
EGSF	Area of Glazing in Square Feet
EQEA	Pieces of Equipment
ESC%	Construction Escalation Contingency Percentage
EST%	Construction Estimating Contingency Percentage

Legend

Unit	Definition
EWCY	Cubic Yards of Earthwork Moved
EWSF	Area of Exterior Wall Surface in Square Feet
FLT	Number of Stair Flights
FPSF	Area of Fire Protection in Square Feet
FRSF	Area of Flat Roof in Square Feet
FASF	Building Footprint Area of Standard Foundation in Square Feet
FSSF	Area of Floor Structure in Square Feet
FUEA	Number of Furnishing Items
IAEA	Number of Integrated Automation Devices
IOEA	Number of Interior Openings (Door Leafs, Special Doors, Windows)
IFSF	Area of Interior Finishes in Square Feet
LFXT	Number of Lighting Fixtures
MHEA	Number of Material Handling Systems
MOS	Months (of Project Duration)
MPLF	Length of Mechanical Piping in Linear Feet
MU%	Mark-up Percentage (of Direct Construction)
OWLS	Offsite Work Lump Sum
PDEA	Number of Devices and Connections
PFXT	Number of Plumbing Fixtures
PRSF	Area of Pitched Roof in Square Feet
PSF	Area of Standard & Special Partitions in Square Feet
PSSF	Area of Standard Partitions in Square Feet
RASF	Area of Roof Accessories in Square Feet
RFSF	Area of Special Floor in Square Feet
RSF	Area of Pitched and Flat Roofs in Square Feet
RSSF	Area of Roof Structure in Square Feet
SAMP	Amperes of Electrical Service
SCA	Area of Special Construction & Demolition in Square Feet
SCSF	Area of Special Construction in Square Feet
SDSF	Area of Building Demolition in Square Feet
SELF	Linear Feet of Electrical Wire
SEPT	Number of Special Electrical System Points
SFSF	Building Footprint Area of Special Foundation in Square Feet
SGSF	Specialties Gross Floor Area in Square Feet
SISF	Area of Site Improved in Square Feet
SLSF	Building Footprint Area of Slab on Grade
SMPT	Number of Special Mechanical System Points (Connections)
SPSF	Area of Special Partitions in Square Feet
SSF	Area of Floor and Roof Structure in Square Feet
SSSF	Area of Site Requiring Special Preparation in Square Feet
STOP	Number of Elevator Stops
STSF	Area of Site Structures in Square Feet
TAMP	Total Amperes of Service & Emergency Power

Legend

Unit	Definition
TC$	Total Construction Cost
TC%	Total Construction Contingency
TFSF	Total Area of Foundation Systems (FPA) in Square Feet
TON	Total Material Shipping Weight

Introduction

This CostFormat was developed by the Department of Education and Early Development (DEED) to ensure consistent cost estimate formats for school construction projects submitted to the department. All cost estimates submitted to DEED as part of a grant of debt reimbursement project under AS 14.11 must conform to this standard.

CostFormat Component Levels

The CostFormat is considered an Elemental Costs structure. Elemental Costs structures are organized around building systems where Work Breakdown Cost structures are organized around building trades and materials. To allow a variety of analyses, the structure is organized by levels with each level offering additional specificity regarding subsystems and components. The CostFormat includes 13 elements at Level 1. At its most detailed level, Level 4, 183 elements are defined. The following layout is used to describe the CostFormat levels:

Level 1 Code and Description

Level 2 Code and Description (Unit)

Level 3 Code and Description

Unit; Unit Description

Level 4 Code and Description

Unit; Unit Description

Component element list

01 Site Work

01 Site & Infrastructure (AC)

011 (Reserved)

012 (Reserved)

013 Site Improvements

Unit: SF Unit Description: SF Area of Site Improved

0131 Vehicular Surfaces

Unit: SF Unit Description: Vehicular Circulation SF

Components: Basecourse, Geotextile, Paving, Surfacing, Curbs/gutters, Signage

0132 Pedestrian Surfaces

Unit: SF Unit Description: At-grade Surfaces SF

Components: Basecourse, Geotextile, Paving/surfacing, Boardwalks, Edging

0133 Elevated Decks, Stairs, & Ramps

Unit: SF Unit Description: Elevated Circulation SF

Components: Foundations, Structure, Decking, Railings

0134 Site Walls
Unit: SF Unit Description: Vertical Wall Surface SF
Components: Foundations, Wall system, Excavation, Backfill, Drainage

0135 Landscaping & Irrigation
Unit: MSF Unit Description: Landscaped Surface MSF
Components: Trenching, Topsoil, Plantings, Mulch, Boulders, Irrigation ~~&~~and controls

0136 Fencing ~~&~~ and Gates
Unit: SF Unit Description: All Fencing SF
Components: Foundations, Posts, Fencing, Gates, Vehicle gates, Bollards/staples

0137 Site Furnishing & Equipment
Unit: EA Unit Description: Feature EA
Components: Benches, Tables, Signs, Flagpoles, Planters, Waste receptacle~~.~~, Bike racks

0138 Playgrounds & Playfields
Unit: SF Unit Description: Play Area SF
Components: Base prep, Drainage, Play structures, Surfacing/seeding, Markings/signs

0139 Other Site Improvements
Unit: SF Unit Description: Improvement SF
Components: Sledding hills, Ice rinks, Snowmelt systems, Water features, Etc.

014 Site Structures
Unit: SF Unit Description: SF Area of Structures

0141 Freestanding Shelters
Unit: SF Unit Description: Sheltered SF
Components: Foundation, Superstructure, Enclosure, Electrical [Exclude surfacing]

0142 Attached Shelters
Unit: SF Unit Description: Sheltered SF
Components: Foundation, Superstructure, Enclosure, Electrical [Exclude surfacing]

0143 Support Buildings
Unit: SF Unit Description: Building SF
Components: Foundation, Superstructure, Enclosure, Mechanical, Electrical [See 111 Special Construction for certain exclusions]

015 Civil/Mechanical Utilities
Unit: SF Unit Description: SF Area of Site Improved

0151 Water Systems
Unit: LF Unit Description: Water pipe LF
Components: Excavation/backfill, Wells, Tanks, Piping, Valves, Pumps, Treatment System.

0152 Sanitary Sewer
Unit: LF Unit Description: Water Pipe LF
Components: Excavation/backfill, Lift Stations/pumps, Piping, Valves, Treatment System.

0153 Storm Water
Unit: SF Unit Description: Improved Site SF
Components: Excavation/backfill, Piping, Culverts, Swales, Catchments, Treatment

0154 Fuel Systems
Unit: GAL Unit Description: Tank Capacity GAL
Components: Excavation/backfill, Foundation, Tanks, Piping, Valves, Containment, Fencing

0155 Heating/Cooling Piping & Utilidors
Unit: LF Unit Description: Total pipe LF
Components: Excavation/backfill, Piping, Valves, Insulation, Utilidors, Appurtenances

016 Site Electrical
Unit: SF Unit Description: SF Area of Site Improved

0161 Electrical Service & Distribution
Unit: LF Unit Description: Conduit LF
Components: Trenching, Poles, Transformers, Switchgear, Conduit, Feeders

0162 Data/Comm Service & Distribution
Unit: LF Unit Description: Conduit LF
Components: Trenching, Conduit, Cable, Satellite dishes, Foundation, Equip

0163 Lighting & Equipment
Unit: EA Unit Description: Total fixtures EA
Components: Trenching, Poles, Fixtures, Devices, Panels, Conduit, Feeders

0164 Security Systems
Unit: EA Unit Description: Total sensors EA
Components: Trenching, Poles, Devices, Conduit, Cable

017 Offsite Work
Unit: LS Unit Description: Lump Sum

0171 Offsite Improvements
Unit: SF Unit Description: Improved SF
Components: Any 013 Site Improvements beyond property lines

0172 Offsite Utility~~y~~ies
Unit: LF Unit Description: Utility LF
Components: Extension and connections of utilities to the site

0173 Other Offsite Work
Unit: LS Unit Description: Work LS
Components: Structures, ~~e~~Etc.

02-05 Building Shell

02 Substructure (FPA)

021 Standard Foundations & Basements
Unit: SF Unit Description: SF Building Footprint Area of Standard Foundation

0211 Continuous & Column Footings
Unit: CY Unit Description: Concrete CY
Components: Excavation/backfill, Base, Forms, Rebar, Concrete, Insulation

0212 Foundation Walls & Treatment
Unit: SF Unit Description: Wall SF
Components: Excavation/backfill, Forms, Rebar, Concrete, Dampproofing, Insulation

0213 Foundation Drainage
Unit: LF Unit Description: Foundation drain LF
Components: Excavation/backfill, Pipe, Geotextile

022 Slab on Grade
Unit: SF Unit Description: SF Building Footprint Area of Slab On Grade

0221 Structural & Nonstructural Slab
Unit: SF Unit Description: Slab SF
Components: Base, Vapor barrier, Forms, Reinforcement, Concrete, Joints, Finish

0222 Trench, Pit, and Pad
Unit: SF Unit Description: Exposed SF
Components: Base, Vapor barrier, Forms, Reinforcement, Concrete, Embedments

0223 Underslab Elements
Unit: SF Unit Description: Slab SF
Components: Ex/backfill, Vapor barrier, Insulation, Pipe, Geotextile

023 (Reserved)

024 Special Foundations

Unit: SF Unit Description: SF Building Footprint Area of Special Foundation

0241 Piling & Pile Cap

Unit: LF Unit Description: Piling LF
Components: Drilling/backfill, Driving, Pile, Thermopile, Pile caps, Layout, Etc.

0242 Caissons

Unit: LF Unit Description: Piling LF
Components: Drilling/backfill, Driving, Pile, Pile caps, Layout, Etc.

0243 Grade Beams

Unit: CY Unit Description: Concrete CY
Components: Ex/backfill, Base, Forms, Rebar, Concrete, Insulation.

0244 Arctic Foundation Systems

Unit: SF Unit Description: Foundation system SF
Components: Trenching/backfill, Thermosyphons, Refrigeration, Insulation

0245 Other Special Foundations

Unit: SF Unit Description: Foundation System SF
Components: Underpinning, Vibroreplacement, Etc.

03 Superstructure (SF)

031 Floor Structure

Unit: SF Unit Description: SF Area of Floor Structure

0311 Lower & Main Floors

Unit: SF Unit Description: Lower & Main Floor SF
Components: Beams, Joists, Decking, Topping, Soffit, Insulation, Coatings

0312 Upper Floors

Unit: SF Unit Description: Upper Floor SF
Components: Columns, Beams, Joists, Decking, Topping, Coatings

0313 Ramps

Unit: SF Unit Description: Ramp SF
Components: Columns, Beams, Joists, Decking, Topping, Coatings

032 Roof Structure (SF)

Unit: SF Unit Description: SF Area of Roof Structure

0321 Pitched Roofs
Unit: SF Unit Description: Pitched Roof SF
Components: Columns, Beams, Rafters, Trusses, Decking, Bracing

0322 Flat Roofs
Unit: SF Unit Description: Flat Roof SF
Components: Columns, Beams, Rafters, Trusses, Decking, Bracing

0323 Special Roofs
Unit: SF Unit Description: Special Roof SF
Components: Pneumatic structures, Domes, Etc.

033 Stairs
Unit: FLT Unit Description: Number of Stair Flights

0331 Stair Structure
Unit: FLT Unit Description: Stair FLT
Components: Columns, Landings, Stringers, Treads, Risers, Toppings

0332 Stair Railings
Unit: LF Unit Description: Railing LF
Components: Guardrail, Railing, Balusters, Supports, Coatings

0333 Ladders & Steps
Unit: EA Unit Description: Ladders/Steps EA
Components: Ladders, Steps, Coatings

04 Exterior Closure (SF)

041 Exterior Walls & Soffits
Unit: SF Unit Description: SF Area of Exterior Wall Surface

0411 Exterior Walls
Unit: SF Unit Description: Exterior Wall SF
Components: Framing, Sheathing, Insulation, Siding, Vapor/Air barriers, Interior substrate.

0412 Fascias & Soffits
Unit: SF Unit Description: Fascia and Soffit SF
Components: Framing, Sheathing, Insulation, Siding, Vapor/Air barriers, Vents

0413 Curtainwalls & Non-bearing Walls
Unit: SF Unit Description: Curtainwall SF
Components: Supports, Connectors, Insulation, Siding, Barriers, Interior substrate

042 Exterior Glazing
Unit: SF Unit Description: SF Area of Glazing

0421 Windows
Unit: SF Unit Description: Window SF
Components: Fixed/operable windows, Exterior. sills, Flashings, Vandal-proofing

0422 Storefronts
Unit: SF Unit Description: Storefront SF
Components: Framing, Glazing, Flashings

0423 Structural Window Walls
Unit: SF Unit Description: Window Wall SF
Components: Columns, Framing, Glazing, Exterior. sills, Flashings

0424 Translucent Panels
Unit: SF Unit Description: Translucent Panel SF
Components: Panel assembly, Exterior. Sills, Flashings

043 Exterior Doors
Unit: EA Unit Description: Total Number of Door LEAF & Special Doors

0431 Personnel Doors
Unit: EA Unit Description: Door LEAF
Components: Frames, Doors, Lites, Hardware, Openers, Thresholds, Flashing, Finish

0432 Special Doors
Unit: EA Unit Description: Special Door EA
Components: Frames, Doors, Openers, Locks, Flashing, Finish [Overhead~~OH~~ doors, etc.]

044 Exterior Accessories
Unit: SF Unit Description: SF Area of Exterior Closure

0441 Louvers, Screens~~,~~& Shading Devices
Unit: SF Unit Description: Louver and Screen SF
Components: Louvers, Screens, Trellis, Shades/shelfs, Etc.

0442 Balcony Elements
Unit: SF Unit Description: Balcony SF
Components: Walls, Grills, Guardrails, Handrails, Etc. [Excludes floor framing, decking (0312) and waterproofing (0521)]

0443 Other Exterior Accessories
Unit: SF Unit Description: Exterior Closure SF
Components: Signage, Decorations, Etc.

05 Roof Systems (FPA)

051 Pitched Roofing

Unit: SF Unit Description: SF Area of Pitched Roof

0511 Pitched Roofing

Unit: SF Unit Description: Pitched Roof SF

Components: Underlayment/barriers, Roofing, Flashing, Vent-through-roof (VTRs) assembly, Insulation, Fascia

0512 Gutters & Downspouts

Unit: LF Unit Description: Gutter and Downspout LF

Components: Gutters, Membranes, Downspouts, Hangers, Etc.

052 Flat Roof

Unit: SF Unit Description: SF Area of Flat Roof

0521 Flat Roofing

Unit: SF Unit Description: Flat Roof SF

Components: Underlayment/barriers, Roofing, Flashing, Vent-through-roof (VTRs) assembly, Insulation, Copings

0522 Roof Drains & Piping

Unit: EA Unit Description: Roof Drains EA

Components: Drains, Scuppers, Leaders, Insulation, Etc.

053 Roof Accessories

Unit: SF Unit Description: SF Area of Roof Accessories

0531 Skylights

Unit: SF Unit Description: Skylight SF

Components: Fixed/operable Skylights, Curbs, Flashing, Hardware

0532 Roof Hatches

Unit: EA Unit Description: Roof Hatches EA

Components: Hatches, Curbs, Flashing, Hardware

0533 Roof Decks, Walls, & Railing

Unit: SF Unit Description: Roof Deck SF

Components: Decking/paving, Protection, Supports, Walls, Railings, Etc.

0534 Other Roof Accessories

Unit: SF Unit Description: Impacted Roof SF

Components: Snow guards, Tie-offs, Pipe supports, Etc.

06-07 Interior Construction

06 Interiors (GSF)

061 Partitions/Soffits

Unit: SF Unit Description: SF Area of Standard Partitions

0611 Fixed Partitions

Unit: SF Unit Description: Partition SF
Components: Framing, Substrates/sheathing, Blocking, Insulation

0612 Soffits & Ceilings

Unit: SF Unit Description: Soffit SF
Components: Framing, Substrates/sheathing, Blocking, Insulation

062 Special Partitions

Unit: SF Unit Description: SF Area of Special Partitions

0621 Operable Partitions

Unit: SF Unit Description: Operable Partition SF
Components: Partition, Support Structure, Factory Finishes

0622 Demountable Partitions

Unit: SF Unit Description: Demountable Partition SF
Components: Partition, Support Structure, Factory Finishes

0623 Glazed Partitions

Unit: SF Unit Description: Glazing SF
Components: Frames, Glazing, Glass Block, Trims

0624 Railing & Screens

Unit: SF Unit Description: Railing and screen SF
Components: Railing assemblies, Visual screens, Etc.

063 Interior Openings

Unit: EA Unit Description: Total Number of Door LEAF & Special Doors

0631 Personnel Doors

Unit: EA Unit Description: Door LEAF
Components: Frames, Doors, Integral Lites, Hardware, Trims, Finish

0632 Special Doors

Unit: EA Unit Description: Special Door EA
Components: Frames, Doors, Hardware, Finish [Overhead~~OH~~ doors, grills, fire doors, etc.]

0633 Windows & Sidelites
Unit: SF Unit Description: Window/Sidelite SF
Components: Glazing, Frame, Stops, Etc.

064 Special Floors
Unit: SF Unit Description: SF Area of Special Floors

0631 Access Floors
Unit: SF Unit Description: Access Floor SF
Components: Framing/stands, Floor panels, Factory~~,~~ finishes

0632 Platforms & Stages
Unit: SF Unit Description: Platform/stage SF
Components: Framing, Sheathing/panels, Accessories

065 Interior Finishes
Unit: GSF Unit Description: Gross SF Floor Area

0641 Floor Finishes
Unit: SF Unit Description: Floor Finish SF
Components: Prep, Finish Material, Trims, Wall base, Transitions

0642 Wall Finishes
Unit: SF Unit Description: Wall Finish SF
Components: Prep, Finish Material, Trims

0643 Ceiling Finishes
Unit: SF Unit Description: Ceiling Finish SF
Components: Prep, Framing/Supports, Finish Material, Trims

0644 Other Finishes
Unit: SF Unit Description: Other Finish SF
Components: Prep, Finish Material, Transitions [Primarily misc. protective coatings]

066 Specialties
Unit: GSF Unit Description: Gross SF Floor Area

0651 Interior Specialties
Unit: GSF Unit Description: Specialties by GSF
Components: Toilet partitions/accessories~~,~~, Lockers, Boards, Protective~~,~~ Guards, Signage, Etc.

0652 Casework/Millwork
Unit: LF Unit Description: Casework/Millwork LF
Components: Cabinets, Cubbies, Wardrobes, Counters, Display Case, Trim, Etc.

0653 Seating
Unit: EA Unit Description: Seating Units EA
Components: Framing, Finish, Accessories [Fixed seating and benches]

0654 Window Coverings
Unit: SF Unit Description: Coverings SF
Components: Drapes, Blinds, Blackout Shades, Etc.

07 Conveyors (GSF)

071 Passenger Conveyors
Unit: EA Unit Description: Number of Conveyors EA

0711 Passenger Elevators
Unit: STOP Unit Description: Elevator STOP
Components: Cab, Rails, Machinery, Appurtenances

0712 Lifts & Other Conveyors
Unit: EA Unit Description: Lifts/conveyors EA
Components: Cab/enclosure, Rails, Machinery, Appurtenances

072 Material Handling Systems
Unit: EA Unit Description: Number of Systems EA

0721 Elevators & Lifts
Unit: STOP Unit Description: Lifts STOP
Components: Cab/enclosure, Rails, Machinery, Appurtenances

0722 Hoists & Cranes
Unit: TON Unit Description: Hoist/crane TON
Components: Structure/rails, Hoist/crane, Appurtenances

0725 Other Systems
Unit: EA Unit Description: Number of Other System EA
Components: Structure/rails, Enclosure, Appurtenances [Files storage, etc.]

08-09 Mechanical & Electrical

08 Mechanical (GSF)

081 Plumbing
Unit: FXT Unit Description: Total Plumbing Fixture Quantity

0811 Plumbing Fixtures
Unit: EA Unit Description: Fixtures EA
Components: Fixture, Rough-in, Valves/stops, Mounts, Trims [Roof drains at 0522]

0812 Plumbing Piping
Unit: LF Unit Description: Piping LF
Components: Pipe, Fittings, Hangers, Insulation

0813 Plumbing Equipment
Unit: EA Unit Description: Equipment EA
Components: Pumps, Tanks, Traps, Hot ~~W~~water generator, Treatment

0814 Waste & Vent Piping
Unit: LF Unit Description: Piping LF
Components: Pipe, Fittings, Cleanouts, Supports, Insulation

0815 Special Systems
Unit: EA Unit Description: Special System EA
Components: Equipment, Piping, Fittings. [Stormwater, graywater, compressed~~.~~ air, etc.]

082 HVAC
Unit: GSF Unit Description: Gross SF Floor Area

0821 Heating Equipment
Unit: GSF Unit Description: Equipment per GSF
Components: Boilers, Furnace, Burners, Flue, Expansion Tank, Media

0822 Heating Distribution Systems
Unit: LF Unit Description: Pipe LF
Components: Pipe, Fittings, Valves, Pumps, Insulation, Strainers, Etc.

0823 Ventilation Equipment
Unit: GSF Unit Description: Equipment per GSF
Components: Air handling units (AHU)~~s~~, Supply/Return Fans, Exhaust Fans, Coils, VAVs, Terminals, Etc.

0824 Ventilation Distribution Systems
Unit: GSF Unit Description: System per GSF
Components: Ducting, Insulation, Diffusers, Dampers/Silencers [Louvers at 0441]

0825 Cooling Equipment
Unit: GSF Unit Description: Equipment per GSF
Components: Air conditioning unit (ACU), Make-up, Coils, Refrigerant

0826 Cooling Distribution Systems
Unit: LF Unit Description: Pipe LF
Components: Pipe, Fittings, Valves, Gauges, Insulation, Etc.

0827 Heat Recovery System
Unit: EA Unit Description: Number of Systems EA
Components: Heat recovery units (HRU)~~s~~, Fans, Etc.

083 Integrated Automation
Unit: GSF Unit Description: Gross SF Floor Area

0831 Control Systems
Unit: EA Unit Description: Control Points EA
Components: Head End, Direct digital control (DDC) points, Wiring, Sensors, Gauges

0832 Other Automation
Unit: EA Unit Description: Control Points EA
Components: Thermostats, Wiring, Sensors, Gauges [Stand-alone, wireless, etc.]

084 Fire Protection
Unit: GSF Unit Description: Gross Floor Area

0841 Riser & Equipment
Unit: EA Unit Description: Equipment EA
Components: Riser, Backflow Device, Headers, Valves, Etc.

0842 Sprinklers & Piping
Unit: SF Unit Description: Sprinkled SF
Components: Pipe, Fittings, Heads, Hangars/bracing, Etc.

0843 Special ~~Fire Protection~~ Suppression Systems
Unit: EA Unit Description: Number of Systems EA
Components: Tanks, Valves, Piping, Controls

085 Special Mechanical Systems
Unit: GSF Unit Description: Gross SF Floor Area

0851 Fuel Supply (Gas & Oil)
Unit: LF Unit Description: Pipe LF
Components: Pipe, Fittings, Tanks, Pumps, Valves, Etc.

0852 Dust Collection Systems
Unit: EA Unit Description: Connections EA
Components: Tank, Stand, Fans, Ducting, Controls, Etc.

0853 Compressed Air & Vacuum Systems
Unit: EA Unit Description: Outlets EA
Components: Tank, Mounts, Fans, Ducting, Controls, Outlets, Etc.

0854 Other Special Mechanical Systems
Unit: EA Unit Description: Number of Systems EA
Components: Equipment [humidifier, special exhaust, etc.], Piping\ducting, Grills

09 Electrical (GSF)

091 Service & Distribution
Unit: AMP Unit Description: Total amperes of electrical system

0911 Main Distribution Panels & Switchgear
Unit: AMP Unit Description: System AMP
Components: Main distribution panel (MDP) ~~E~~enclosure, Disconnect, CT Enclosure, Bus, Fuses, Etc.

0912 Panels & Motor Control Centers
Unit: AMP Unit Description: System AMP
Components: Switchboards, Panelboards, Motor-control Centers

0913 Transformers
Unit: KVA Unit Description: Transformers KVA
Components: Transformers [commonly Utility-provided]

0914 Conduit & Feeders
Unit: LF Unit Description: Conduit LF
Components: Conduit, Fittings, Wires

092 Lighting
Unit: FXT Unit Description: Total lighting fixture quantity

0921 Light Fixtures
Unit: FXT Unit Description: Fixtures EA
Components: Interior Fixtures, Building Mounted Fixtures, Exit/emergency, Trims, Etc.

0922 Lighting Controls
Unit: EA Unit Description: Devices EA
Components: Control panel, Switches, Occupancy Sensors, Etc.

0923 Conduit & Wiring
Unit: LF Unit Description: Conduit LF
Components: Conduit, Fittings, Wiring

093 Power
Unit: EA Unit Description: Total Devices and Connections Quantity

0931 Devices & Connections
Unit: EA Unit Description: Controls EA
Components: Outlets, Disconnects, Sensors/timers, Motor connections, Etc.

0932 Conduit & Wiring
Unit: LF Unit Description: Condiut LF
Components: Conduit, Fittings, Wiring

094 Special Systems
Unit: GSF Unit Description: Gross SF Floor Area

0941 Fire Alarm
Unit: EA Unit Description: Devices EA
Components: Devices, Panels, Conduit, Wiring

0942 Data & Communications
Unit: EA Unit Description: Outlets EA
Components: Equipment, Devices\connections, Conduit/tray, Wiring

0943 Security Systems
Unit: EA Unit Description: Grounding System EA
Components: Headend, Detectors, Closed-circuit television (CCTV), Access control, Conduit/tray, Wiring

0944 Clock Systems
Unit: EA Unit Description: Clocks EA
Components: Clocks, Controls, Conduit/tray, Wiring

0945 Intercom Systems
Unit: EA Unit Description: Speakers EA
Components: Headend, Interties, Speakers, Wiring

0946 Other Special Systems
Unit: EA Unit Description: Grounding System EA
Components: Equipment, Devices, Conduit, Wiring [other low voltage systems]

095 Other Electrical Systems
Unit: GSF Unit Description: Gross SF Floor Area

0951 Power Generation & Distribution
Unit: KVA Unit Description: Generation KVA
Components: Generators, Switchgear, Panels, Conduit, Feeders

0952 Electrical Heating Systems
Unit: SF Unit Description: Area Served SF
Components: Baseboards, Unit Heaters, Radiator, Radiant Heat, Controls

0953 Grounding Systems
Unit: EA Unit Description: Grounding System EA
Components: Grounding, Lightning Protection, Etc.

10-11 Support Elements

10 Equipment & Furnishings (GSF)

101 Equipment
Unit: GSF Unit Description: Gross SF Floor Area

1011 Food Service~~/~~ and Kitchen Equipment
Unit: SF Unit Description: Kitchen SF
Components: Cooking Equipment~~.~~, Refer/Freezer, Tables/counters, Etc.
[Hoods/Sinks at 08]

1012 Athletic Equipment
Unit: SF Unit Description: Athletic SF
Components: Basketball Goals, Inserts, Ropes, Bars, Mat hoists, Etc.

1013 Career & Technology Equipment
Unit: SF Unit Description: Technology SF
Components: Woodworking, Metal/welding, Small engine, Robotics, Etc.

1014 Science Equipment
Unit: SF Unit Description: Science SF
Components: Casework, Equipment, Etc.

1015 Library Equipment
Unit: SF Unit Description: Library SF
Components: Stacks, Shelves, Desks, Etc.

1016 Theater Equipment
Unit: SF Unit Description: Theater SF
Components: Lighting, Sound, Curtains, Etc.

1017 Art Equipment
Unit: SF Unit Description: Art SF
Components: Kilns, Sinks, Etc.

1018 Loading Dock Equipment
Unit: SF Unit Description: Loading Dock SF
Components: Bumpers, Levelers, Etc.

1019 Other Equipment
Unit: SF Unit Description: Other SF
Components: Fixed Occupational Therapy/Physical Therapy~~OTPT~~, Etc.

102 Furnishings
Unit: GSF Unit Description: Gross SF Floor Area

1021 Fixed Furnishings
Unit: EA Unit Description: Furnishings EA
Components: Classroom, Administration, Workrooms, Assembly, Etc.

1022 Mats
Unit: SF Unit Description: Mats SF
Components: Mats, Grates

1024 Other Furnishings
Unit: EA Unit Description: Furnishings EA
Components: Window Shades, Etc.

11 Special Conditions (GSF)

111 Special Construction
Unit: GSF Unit Description: SF Area of Special Construction

1111 Packaged Utility Modules
Unit: SF Unit Description: Module SF
Components: Foundation, Superstructure, Enclosure, Mechanical, Electrical
[Utility treatment, Mechanical, Generator, other modules]

1112 Swimming Pool
Unit: SF Unit Description: Pool Tank SF
Components: Foundation, Superstructure, Enclosure, Mechanical, Electrical
[Tank, gutters, piping, pumps, treatment, etc.]

1113 Greenhouse
Unit: SF Unit Description: Greenhouse SF
Components: Foundation, Framing, Panels, Mech, Electrical

112 Special Demolition
Unit: SF Unit Description: Site area requiring special preparation

1121 Structural Demolition
Unit: SF Unit Description: Demolition SF
Components: Demolition, Equipment, Transport, Disposal, Restoration

1122 Building Selective Demolition
Unit: SF Unit Description: Selective Demolition SF
Components: Protection, Demolition, Equipment, Transport, Disposal, Cleanup

1123 Site ~~&~~and Utility Demolition
Unit: SF Unit Description: Site & Utility SF
Components: Excavation/Backfill, Demolition, Equipment, Transport, Disposal, Restoration

1124 Hazardous Material Removal
Unit: SF Unit Description: Remediation SF
Components: Protection, Demolition, Equipment, Transport, Disposal, Cleanup

1125 Building Relocation
Unit: SF Unit Description: Relocated Structures SF
Components: Disconnect/Reconnect, Equipment, Transport, Restoration

113 Special Site Conditions
Unit: CY Unit Description: Total CY moved

1131 Site Shoring & Dewatering
Unit: SF Unit Description: Shoring & Dewatering SF
Components: Barriers/structure, Equipment, Etc.

1132 Site Earthwork
Unit: CY Unit Description: Earthwork CY
Components: Excavation/backfill, Geotextile, Etc.

1133 Site Remediation
Unit: CY Unit Description: Earthwork CY
Components: Excavation, Transport, Disposal/treatment, Backfill

12-13 Building Overhead Support

12 General Conditions (MO)

Unit: MO Unit Description: Project Duration MO

121 Mobilization and Demobilization
Unit: LS Unit Description: Lump Sum

1211 Freight Material
Unit: TON Unit Description: Material TON
Components: Freight cost of materials to job site (air, barge, truck, etc.).

1212 Freight Construction Equipment
Unit TON Unit Description: Equipment TON
Components: Freight cost of construction equipment to and from job site.

1213 Labor Travel
Unit: RT Unit Description: Travel RT
Components: Cost of travel for construction personnel to and from job site.

122 Site Staff
Unit: MO Unit Description: Project duration MO

1221 Supervision
Unit: MO Unit Description: Supervision MO
Components: Project Manager, Superintendent, Foreman.

1222 Engineering
Unit: MO Unit Description: Engineering MO
Components: Engineering Personnel.

1223 Quality Control
Unit: MO Unit Description: QC Personnel MO
Components: Quality Control Personnel.

1224 Scheduling/Estimating
Unit: MO Unit Description: Sched/Estimating MO
Components: Estimating Personnel.

1225 Surveying
Unit: MO Description: Surveying MO
Components: Crew to set out features of project.

1226 Expediting
Unit: MO Unit Description: Expediting MO
Components: Persons arranging deliveries.

1227 Clerical
Unit: MO Unit Description: Clerical MO
Components: Payroll, Invoices, etc.

1228 Other
Unit: MO Unit Description: Other MO
Components: All other site staff costs

123 Temporary Construction
Unit: MO Unit Description: Project Duration MO

1231 Temporary Facilities
Unit: MO Unit Description: Project Duration MO
Components: Offices, Storage, Signs, Staging, Partitions/protection, Installation/use.

1232 Fences & Barriers
Unit: LF Unit Description: Fencing LF
Components: Perimeter Fence, Security.

1233 Scaffolding
Unit: MO Unit Description: Scaffold Rental MO
Components: Installation and rental.

1234 Utilities
Unit: MO Unit Description: Project Duration MO
Components: Water, Sewer, Electrical, Gas, Oil, Installation and use.

1235 Communications
Unit: MO Unit Description: Project Duration MO
Components: Telephone, Fax, E-mail, Installation and use.

124 Equipment and Tools
Unit: MO Unit Description: Project Duration MO

1241 Equipment
Unit: MO Unit Description: Project Duration MO
Components: Vertical and horizontal transportation, pumps, etc.

1242 Tools
Unit: MO Unit Description: Project Duration MO
Components: Hand Tools, Manlifts, Ladders, etc.

1243 Consumables
Unit: MO Unit Description: Project Duration MO
Components: Fuel, Cleaning Products, Safety Needs

125 Miscellaneous
Unit: MO Unit Description: Project Duration MO

1251 Submittals/As-Builts
Unit: LS Unit Description: Total LS
Components: Project records/printing costs/manuals.

1252 Testing
Unit: LS Unit Description: Total LS
Components: Material tests.

1253 Cleaning
Unit: MO Unit Description: Project Duration MO
Components: Includes snow removal and final clean-up.

1254 Security
Unit: MO Unit Description: Project Duration MO
Components: Badges, Security Service, Night Watchman.

1255 Permits
Unit: LS Unit Description: Total LS
Components: Local Building Permits, Street-use Permits, etc.

126 Labor Employment Costs
Unit: MO Unit Description: Project Duration MO

1261 Camp (MO)
Unit: MO Unit Description: Camp Operations MO
Components: Mancamp, Lodging/dining.

1262 Per-Diem (DAY)
Unit: DAY Unit Description: Personnel DAY
Components: Remote site needs imported labor.

1263 Premium Time (HRS)
Unit: HRS Unit Description: Overtime HRS
Components: Payment for overtime.

127 Mark-Ups
Unit: % Unit Description: Percentage of Direct Construction Cost

1271 Home Office Overhead
Unit: % Unit Description: Direct Const. Cost Percentage
Components: Headquarters costs.

1272 Profit
Unit: % Unit Description: Direct Const. Cost Percentage
Components: Mark-up for investment and risk and market conditions.

1273 Bond
Unit: % Unit Description: Direct Const. Cost Percentage
Components: Performance, Pay and Bid Bonds.

1274 Insurance
Unit: % Unit Description: Direct const. cost percentage
Components: General liability.

13 Contingencies (%)

Unit: % Unit Description: Percentage of Total Construction Cost

131 Estimate Contingency

1311 Estimator's

Unit: % Unit Description: Total Project Cost Percentage

Components: Allowance for unknown aspects of the project that may become necessary.

132 Escalation Continency

1321 Escalation

Unit: % Unit Description: Total Project Cost Percentage

Components: Allowance for changes in costs of labor and materials from the date of the estimate to date of construction project.

Sample Estimate Summary

School District: Mid-Alaska
Project Name: ABC K-12 School
Design Phase: 100% Construction Document
DEED Project #: 00-014
Project GSF: 39,807 SF

Code	Building System	Quantity	Unit	Labor	Material	Total	$/Unit	$/GSF	%
01	**SITE**	**7**	**ACRE**	**$0**	**$0**	**$1,896,870**	**$270,209**	**$47.65**	**11.58%**
013	Site Improvements	38,823	SISF	$0	$0	$640,846	$16.51	$16.10	3.91%
014	Site Structures	2,464	STSF	$0	$0	$94,427	$38.32	$2.37	0.58%
015	Civil/Mechanical Utilities	4,903	CMLF	$0	$0	$460,761	$93.98	$11.57	2.81%
016	Site Electrical	15,200	SELF	$0	$0	$133,332	$8.77	$3.35	0.81%
017	Offsite Work	0	OWLS	$0	$0	$0			
02	**SUBSTRUCTURE**	**38,059**	**TFSF**	**$0**	**$0**	**$662,055**	**$17.40**	**$16.63**	**4.04%**
021	Standard Foundations & Basements		FASF	$0	$0	$0			
022	Slab on Grade		SLSF	$0	$0	$0			
024	Special Foundations	38,059	SFSF	$0	$0	$662,055	$17.40	$16.63	4.04%
03	**SUPERSTRUCTURE**	**79,053**	**SSF**	**$0**	**$0**	**$1,288,489**	**$16.30**	**$32.37**	**7.86%**
031	Floor Structure	39,807	FSSF	$0	$0	$479,305	$12.04	$12.04	2.93%
032	Roof Structure	39,246	RSSF	$0	$0	$798,890	$20.36	$20.07	4.88%
033	Stairs	2	FLT	$0	$0	$10,294	$5,147	$0.26	0.06%
04	**EXTERIOR CLOSURE**	**33,352**	**ECSF**	**$0**	**$0**	**$1,012,681**	**$30.36**	**$25.44**	**6.18%**
041	Exterior Walls & Soffits	31,585	EWSF	$0	$0	$909,376	$28.79	$22.84	5.55%
042	Exterior Glazing	1,473	EGSF	$0	$0	$78,129	$53.04	$1.96	0.48%
043	Exterior Doors	14	EDLF	$0	$0	$25,176	$1,798	$0.63	0.15%
044	Exterior Accessories	0	EASF	$0	$0	$0			

Sample Estimate Summary

Code	Building System	Quantity	Unit	Labor	Material	Total	$/Unit	$/GSF	%
05	**ROOF SYSTEMS**	**39,246**	**RSF**	**$0**	**$0**	**$136,748**	**$3.48**	**$3.44**	**0.83%**
051	Pitched Roof	39,246	PRSF	$0	$0	$136,748	$3.48	$3.44	0.83%
052	Flat Roof	0	FRSF	$0	$0	$0			
053	Roof Accessories	0	RASF	$0	$0	$0			
06	**INTERIORS**	**52,614**	**PSF**	**$0**	**$0**	**$1,353,017**	**$25.72**	**$33.99**	**8.26%**
061	Partitions/Soffits	52,171	PSSF	$0	$0	$389,872	$7.47	$9.79	2.38%
062	Special Partitions	443	SPSF	$0	$0	$14,301	$32.28	$0.36	0.09%
063	Interior Openings	93	IOEA	$0	$0	$141,686	$1,524	$3.56	0.86%
064	Special Floors	0	RFSF	$0	$0	$0			
065	Interior Finishes	161,611	IFSF	$0	$0	$488,131	$3.02	$12.26	2.98%
066	Specialties	39,807	SGSF	$0	$0	$319,027	$8.01	$8.01	1.95%
07	**CONVEYORS**	**0**	**CEA**	**$0**	**$0**	**$0**			
071	Passenger Conveyors	0	STOP	$0	$0	$0			
072	Material Handling Systems	0	MHEA	$0	$0	$0			
08	**MECHANICAL**	**12,830**	**MPLF**	**$0**	**$0**	**$1,506,251**	**$117.40**	**$37.84**	**9.19%**
081	Plumbing	92	PFXT	$0	$0	$326,714	$3,551	$8.21	1.99%
082	HVAC	55,595	CFM	$0	$0	$959,554	$17.26	$24.11	5.86%
083	Integrated Automation	27	IAEA	$0	$0	$2,908	$107.70	$0.07	0.02%
084	Fire Protection	39,267	FPSF	$0	$0	$206,705	$5.26	$5.19	1.26%
085	Special Mechanical Systems	5	SMPT	$0	$0	$10,370	$2,074.00	$0.26	0.06%
09	**ELECTRICAL**	**950**	**TAMP**	**$0**	**$0**	**$884,671**	**$931.23**	**$22.22**	**5.40%**
091	Service and Distribution	800	SAMP	$0	$0	$169,364	$212	$4.25	1.03%
092	Lighting	602	LFXT	$0	$0	$241,718	$402	$6.07	1.48%
093	Power	778	PDEA	$0	$0	$186,035	$239.12	$4.67	1.14%
094	Special Systems	450	SEPT	$0	$0	$205,067	$455.70	$5.15	1.25%
095	Other Electrical Systems	150	EAMP	$0	$0	$82,487	$549.91	$2.07	0.50%
10	**EQUIPMENT & FURNISHINGS**	**684**	**EFEA**	**$0**	**$0**	**$230,285**	**$336.67**	**$5.79**	**1.41%**

Sample Estimate Summary

Code	Building System	Quantity	Unit	Labor	Material	Total	$/Unit	$/GSF	%
101	Equipment	350	EQEA	$0	$0	$221,384	$632.53	$5.56	1.35%
102	Furnishings	334	FUEA	$0	$0	$8,901	$26.65	$0.22	0.05%
11	**SPECIAL CONDITIONS**	**3,850**	**SSF**	**$0**	**$0**	**$567,504**	**$147.40**	**$14.26**	**3.46%**
111	Special Construction	0	SCSF	$0	$0	$0			
112	Special Demolition	3,850	SCSF	$0	$0	$23,210	$6.03	$0.58	0.14%
113	Special Site Conditions	3,350	EWCY	$0	$0	$567,504	$169.40	$14.26	3.46%
	SUBTOTAL DIRECT CONST. COST	**39,807**	**GSF**	**$0**	**$0**	**$9,550,176**	**$239.91**	**$239.91**	**58.28%**
12	**GENERAL CONDITIONS**	**21**	**MO**	**$0**	**$0**	**$6,538,932**	**$311,378**	**$164.27**	**39.91%**
121	Mobilization and Demobilization	3,255	TONS	$0	$0	$2,410,305	$740	$60.55	14.71%
122	Site Staff	21	MO	$0	$0	$527,000	$25,095	$13.24	3.22%
123	Temporary Construction	21	MO	$0	$0	$156,900	$7,471	$3.94	0.96%
124	Equipment and Tools	21	MO	$0	$0	$166,350	$7,921	$4.18	1.02%
125	Miscellaneous	21	MO	$0	$0	$47,605	$2,267	$1.20	0.29%
126	Labor Employment Costs	8,175	DAYS	$0	$0	$1,408,420	$172	$35.38	8.60%
127	Mark-Ups	19.08	MU%	$0	$0	$1,822,352	$95,511	$45.78	11.12%
	SUBTOTAL PROJECT COSTS	**21**	**MO**	**$0**	**$0**	**$6,538,932**	**$311,378**	**$164.27**	**39.91%**
13	**CONTINGENCIES**	**$16,089,108**	**TC%**	**$0**	**$0**	**$296,366**	**1.84%**	**$7.45**	**1.81%**
131	Estimate Contingency	$16,089,108	EST%	$0	$0	$100,000	0.62%	$2.51	0.61%
132	Escalation Continency	$16,089,108	ESC%	$0	$0	$196,366	1.22%	$4.93	1.20%
	TOTAL CONSTRUCTION COST	**39,807**	**GSF**	**$0**	**$0**	**$16,385,474**	**$411.62**	**$411.62**	**100.00%**

State of Alaska **Department of Education & Early Development**
Bond Reimbursement & Grant Review Committee

ASHRAE 90.1-2016 Update

R E G U L A T I O N U P D A T E

August 27, 2020

Issue

Informational item to update the committee on the status of the energy efficiency standard recommendation. No action needed by the BRGR Committee.

Background

Last Updated/Current Edition
Based on a recommendation by the BRGR Committee, the department amended 4 AAC 31.014 (codes and regulation for school facilities) in 2013 to include "(7) energy efficiency code, consisting of the American Association of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE) Standard 90.1, Energy Standard for Buildings Except Low-Rise Residential Buildings, (2010 Edition), and adopted by reference."

Summary of Proposed Changes
The BRGR Committee made a motion at the September 5, 2019 meeting to recommend that department amend the regulation to update the energy standard to the ASHRAE Standard 90.1 2016 Edition.

Timeline

The department was to present the proposed regulation change to the State Board of Education and Early Development (SBOE) in its regular quarterly meeting on March 25-26, 2020; this meeting was delayed due to the covid-19 pandemic. SBOE took up the regulation at the next quarterly meeting on June 10-11, 2020. A period of public written comment was issued July 21 through August 25; the department response to the received written comments follows this cover. SBOE will consider have the public comments and a motion to adopt the regulations at the next regular quarterly meeting on September 16, 2020. An opportunity for public oral comment is available at that meeting.

DEPARTMENT OF EDUCATION AND EARLY DEVELOPMENT

COMPILED PUBLIC COMMENT AND DEPARTMENT RESPONSES

ENERGY EFFICIENCY (ASHRAE 90.1-2016) REGULATION UPDATE

JULY 21, 2020 TO AUGUST 25, 2020

PUBLIC COMMENT RECEIVED	DEED RESPONSE
It's about time!!! Should have been long ago. All updates have to show a savings in energy compared to the cost of implementation. Going three cycles down is not appropriate.. *L.Morris 8-3-2020*	Thank you for your support.

4 AAC 31.014(a) is amended to read:

(a) The chief school administrator shall assure that a new school facility, addition, or major renovation complies with applicable facility codes and regulations of the state and with those of the municipality in which the facility is located. The chief school administrator may meet the obligation by providing documentation from the appropriate state or municipal official that the facility, addition, or renovation complies with an applicable code or regulation. For purposes of this subsection, the applicable codes and regulations of the state with which facilities, additions, or renovations must comply are the

(1) building code, adopted by 13 AAC 50.020;

(2) electrical code, adopted by 8 AAC 70.025;

(3) plumbing code, adopted by AS 18.60.705(a);

(4) mechanical code, adopted by 13 AAC 50.023;

(5) ASME Boiler and Pressure Vessel Code, adopted by 8 AAC 80.010;

(6) fire code, adopted by 13 AAC 50.025; and

(7) energy efficiency code, consisting of the American Association of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE) Standard 90.1, Energy Standard for Buildings Except Low-Rise Residential Buildings **(2016 Edition)** [(2010 EDITION)] and adopted by reference.

(Eff. 4/17/98, Register 146; am 6/17/2010, Register 194; am 6/14/2013, Register 206; am __/__/___, Register ___)

Authority: AS 14.07.020

Department of Education & Early Development
Division of Finance & Support Services/Facilities

Work Topics for the BR & GR Committee

As Of: September 8, 2020 - Proposed

BR&GR 2020-2021 Work Items	Responsibility	Due Date
1. CIP Grant Priority Review – [(b)(1)]		
1.1. FY21 MM & SC Grant Fund Final Lists (4 AAC 31.022(a)(2)(B))	Committee	Apr 2020
1.2. FY22 MM & SC Grant Fund Initial List	Committee	Dec 2020
2. Grant & Debt Reimbursement Project Recommendations – [(b)(2)]		
2.1. Six-year Capital Plan (14.11.013(a)(1); 4 AAC 31.022(2))	Dept	Annually, Nov
3. Construction Standards for Cost-effective Construction – [(b)(3)]		
3.1. Model School Costs (DEED Cost Model)		
3.1.1. Model School Analysis & Updates (Allowable Elements)		Apr 18-May 21
3.1.1.1. Establish Procedures for Model School File Update (comp.)	Dept	Dec 2019
3.1.1.2. Implement Model School Updates w/Committee Resource	Committee	Annually, Apr
3.1.1.3. Evaluate Success Of Committee-Driven Updates	Subcommittee	Aug 2020
3.1.1.4. Recommend Strategy for Committee-Driven Updates	Committee	Sep 2020
3.1.1.5. Solicit, Award, And Manage Model School Update	Dept	Annualy, Jan
3.2. Cost Standards		
3.2.1. Cost Model As Cost Control Tool		May 18-Dec 21
3.2.1.1. Analyze, Recommend Cost Model As Cost Control	Dept	Dec 2020
3.2.1.2. Draft Regulation Language For Cost Control Use	Dept	Mar 2021
3.2.1.3. Review Draft Reg Language, Recommend To State Board	Commmittee	Jun 2021
3.2.1.4. Manage Regulation Development And Implementation	Dept	Dec 2021
3.2.2. Cost/Benefit, Cost Effectiveness Guidelines	Dept	TBD
3.2.3. Life Cycle Cost Guidelines	Dept	TBD
3.3. Model School Building Systems Standards		
3.3.1. State Building Systems Standards		Mar 19- Feb 22
3.3.1.1. Cost Format Outline of System Standards (complete)	Dept	May 2019
3.3.1.2. Review Outline Model School System Standards (complete)	Committee	May 2019
3.3.1.3. Develop Services For Feasibility Analysis (complete)	Subcommittee	May 2019
3.3.1.4. Solicit, Award, Manage Feasibility & Cost/Benefit Analysis (c)	Dept	Jun 2019
3.3.1.5. Review Feasibility Report On Comprehensive Standards (c)	Subcommittee	Jul 19-Sep 19
3.3.1.6. Recommendation on Standards Development (complete)	Subcommittee	Dec 2019
3.3.1.7. Solicit, Award, Manage Partial Standards Development	Dept	Jun 2020
3.3.1.8. Review Partial Standards, Recommend Direction	Subcommittee	Aug 2020
3.3.1.9. Review Final Standards Development Recommendation	Committee	Sep 2020
3.3.1.10. Complete [See 6.2 New Publications]	Dept	Jun 2021
3.3.1.11. Implement [See 6.3 Regualations]	Dept	Feb 2022
3.3.1.12. Coordinate with A4LE to maintain model school standards	Biennially	
3.3.2. School District Building Systems	Dept	TBD
3.4. Design Ratios		
3.4.1. Development of Design Ratio O:EW		
3.4.1.1. Compare Model & Existing School Ratios And Energy Use	Subcommittee	Feb 2020
3.4.1.2. Recommendation of O:EW Ratio for BRGR	Subcommittee	Sep 2020
3.4.1.3. Evauate and Seek Public Comment	Committee	Dec 2020
3.4.1.4. Evaluate Public Comment, Make Recommendations	Committee	Feb 2021
3.4.1.5. Manage Regulation Development & Implementation	Dept	TBD
3.4.2. Development of Design Ratios V:NSF & V:ES		
3.4.2.1. Compare Model & Existing School Ratios And Energy Use	Subcommittee	Oct 2020
3.4.2.2. Recommendation of V:NSF & V:ES Ratio	Subcommittee	Dec 2020
3.4.2.3. Evauate and Seek Public Comment	Committee	Dec 2020
3.4.2.4. Evaluate Public Comment, Make Recommendations	Committee	Feb 2021
3.4.2.5. Manage Regulation Development & Implementation	Dept	TBD
3.4.3. Develop Test Method for Ratios	Subcommittee	Jul 2020

BR&GR 2020-2021 Work Items	Responsibility	Due Date
4. Prototypical Design Analysis – [(b)(4)]		
4.1. Seek Peer Consensus on Reuse of School Plans and Systems		
4.1.1. Develop and Schedule AEC Peer Workshop on Reuse	Committee	TBD
4.1.2. Update Aug 4, 2004 Committee Position Paper	Committee	TBD
4.2. Codify Regulations As Needed for Reuse of Plans/Systems Policy		
4.2.1. Make Recommendations to State Board on Prototypes	Committee	July 2021
4.2.2. Manage Regulation Development and Implementation	Dept	Sep 2021
5. CIP Grant Application & Ranking – [(b)(5) & (6)]		
5.1. FYXX CIP Briefing – Issues and Clarifications	Dept, Annually	Dec 20XX
5.2. FY22 CIP Draft Application & Instructions (complete)	Dept	Apr 2020
5.2.1. Facility Condition Survey Minimum Standards (complete)	Dept	Dec 2019
5.2.2. Life Safety/Code/POS Matrix Review	Cmte	Jan 2020
5.2.3. Emergency Rater Scoring Matrix (complete)	Dept	Mar 2020
5.2.4. Preventive Maintenance Narratives Matrix	Dept	Mar 2020
5.2.5. Priority Weighting Factors Review	Dept	TBD
5.3. FY22 CIP Final Application & Instructions (complete)	Committee	Apr 2020
5.4. FY22 CIP Carryover Items	Dept	
5.4.1. Preventive Maintenance Narratives Matrix		
5.4.1.1. Seek Comments/Peer Review	Dept	Oct 2020
5.4.1.2. Review Comments, Propose Edits to Matrix	Committee	Dec 2020
5.4.2. Life Safety/Code Matrix Scoring		
5.4.2.1. Prepare Briefing Paper/Analysis	Dept	Jan 2021
5.4.2.2. Review, Discussion, Seek Comment	Committee	Feb 2021
5.4.2.3. Draft Adjusted Matrix	Dept	Mar 2021
5.4.2.4. Approve with FY23 CIP	Committee	Apr 2021
5.5. Future CIP Application Issues		TBD
5.5.1. Space Allocation Issues	Subcommittee	TBD
5.5.1.1. Analyze and Make Recommendation to Committee	Subcommittee	TBD
5.5.1.2. Manage Regulation Development and Implementation	Dept	TBD
5.5.2. Projected Unhoused (erosion/environmental factors)	Subcommittee	TBD
6. CIP Approval Process Recommendations – [(b)(7)]		
6.1. Publication Updates		
6.1.1. Program Demand Cost Model for Alaskan Schools	Dept	Annually, May
6.1.2. Alaska School Facilities PM Handbook		Dec 17–Apr 21
6.1.2.1. Preventive Maintenance Handbook – Validation (complete)	Dept	Feb 2018
6.1.2.2. Preventive Maintenance Handbook – Public Comment (c)	Committee	Mar 2018
6.1.2.3. Preventive Maintenance Handbook - Progress	Dept	May 2018
6.1.2.4. Preventive Maintenance Handbook - Progress	Dept	Dec 2018
6.1.2.5. Preventive Maintenance Handbook – Progress	Dept	Jun 2020
6.1.2.6. Preventive Maintenance Handbook – Progress	Dept	Sept 2020
6.1.2.7. Preventive Maintenance Handbook – Progress	Dept	Dec 2020
6.1.2.8. Preventive Maintenance Handbook – Final Draft	Dept	Feb 2021
6.1.2.9. Preventive Maintenance Handbook – Publlic Comment	Committee	Feb 2021
6.1.2.10. Preventive Maintenance Handbook – Final	Committee	April 2021
6.1.3. DEED Cost Format		
6.1.3.1. Cost Format – Initial	Dept	Dec 2019
6.1.3.2. Cost Format – Initial (rev 1)	Dept	May 2020
6.1.3.3. Cost Format – Initial (rev 1)	Committee	June 2020
6.1.3.4. Cost Format – Final	Dept	Aug 2020
6.1.3.5. Cost Format – Final	Committee	Sep 2020
6.1.4. Site Selection Criteria and Evaluation Handbook		
6.1.4.1. Site Selection Handbook – Initial	Dept	Jan 2021
6.1.4.2. Site Selection Handbook – Final	Committee	Apr 2021
6.2. New Publications		
6.2.1. School Construction Standards Handbook (see 3.4.1)		May 17-Apr 21
6.2.1.1. Construction Standards Handbook – Outline	Dept	Sep 2018
6.2.1.2. Construction Standards Handbook – Validation	Committee	Oct 2018

BR&GR 2020-2021 Work Items	Responsibility	Due Date
6.2.1.3. Construction Standards Handbook – Feasibility	Dept/Subcmte	Jun 2019
6.2.1.4. Construction Standards Handbook – Feasiblity	Committee	Jul 2019
6.2.1.5. Construction Standards Handbook – Revalidation	Subcommittee	Dec 2019
6.2.1.6. Construction Standards Handbook – Partial Draft	Dept	Aug 2020
6.2.1.7. Construction Standards Handbook – Recommendation	Subcommittee	Aug 2020
6.2.1.8. Construction Standards Handbook – Partial Draft Review	Committee	Sep 2020
6.2.1.9. Construction Standards Handbook – Final Draft (Part 3)	Dept/Subcmte	Feb 2021
6.2.1.10. Construction Standards Handbook – Final Draft (Part 2)	Dept/Subcmte	Mar 2021
6.2.1.11. Construction Standards Handbook – Final Draft (pub cmt)	Committee	Apr 2021
6.2.1.12. Construction Standards Handbook – Final	Dept	May 2020
6.2.1.13. Construction Standards Handbook – Final	Committee	Jun 2021
6.3. Regulations		
6.3.1. LPSD PM Compliance Reg Proposal		
6.3.1.1. Prepare Briefing Paper	Dept	Aug 2020
6.3.1.2. Committee Consideration and Recommendation	Committee	Sep 2020
6.3.1.3. Draft Regulation (if recommended)	Dept	Nov 2020
6.3.1.4. SBOE Review and Public Comment	Dept	Dec 2020
6.3.1.5. SBOE Comment Review & Approval/Disapproval	Dept	Mar 2021
6.3.2. Cost Model as Cost Control Tool (see item 3.2.1)	Dept (w/Cmte)	
6.3.2.1. Draft Regulation	Dept (w/Cmte)	Mar 2021
6.3.2.2. SBOE Public Comment on Regulation	Dept	Sep 2021
6.3.2.3. Review Public Comments from SBOE Comment Period	Committee	Nov 2021
6.3.3. Baseline Design Ratios (see item 3.5.2)	Dept (w/Cmte)	
6.3.3.1. Draft Regulation	Dept (w/Cmte)	Feb 2021
6.3.3.2. SBOE Public Comment on Regulation	Dept	Mar 2021
6.3.3.3. Review Public Comments from SBOE Comment Period	Committee	Jun 2021
6.3.4. Reuse of School Plans and Systems (see item 4.2)	Dept (w/Cmte)	
6.3.4.1. Draft Regulation	Dept (w/Cmte)	Sep 2021
6.3.4.2. SBOE Public Comment on Regulation	Dept	Dec 2021
6.3.4.3. Review Public Comments from SBOE Comment Period	Committee	Jan 2022
7. Energy Efficiency Standards – [(b)(8)]		
7.1. ASHRAE 90.1		
7.1.1. DEED Checklist		Jan – Jun 20
7.1.1.1. Update DEED Specific Review Checklist to 2016 Ed.	Dept	Nov 2020
7.1.1.2. Review Checklist for Public Comment	Committee	Dec 2020
7.1.1.3. Review Public Comment/Finalize Checklist	Dept (w/Cmte)	Feb 2021
7.1.1.4. Implement Revised Checklist in New Project Agreements	Dept	Aug 2021
7.1.1.5. Add Appendix to *Project Admin Handbook*?	Dept	Sep 2022
7.1.2. Standards Updates		
7.1.2.1. Evaluate ASHRAE 90.1-2016 for adoption (complete)	Dept	Sep 2019
7.1.2.2. Draft Regulations, if warranted (complete)	Dept (w/Cmte)	Dec 2019
7.1.2.3. Review Public Comment from SBOE Comment Period	Committee	Sep 2020
7.2. Retro-Commissioning Evaluation Tool (for PM Certification)		
7.2.1. Develop Tools to Evaluate Retro-Commissioning Need (complete)	Subcommittee	Mar 2020
7.2.2. Develop C/B Tool and RCx Template (complete)	Dept	Apr 2020
7.2.3. Review Proposed RCx Tools & Metrics (complete)	Committee	Jun 2020
7.2.4. Public Comment Period	Dept	Aug 2020
7.2.5. Finalize RCx Tools and Metrics	Dept	Oct 2020
7.2.6. Implementation – All Districts FY23 CIP Eligibility	Dept	Nov 2020

BR&GR 2020-2021 Work Items **Responsibility** **Due Date**

Projected Meeting Dates

April 14-15, 2020 (Juneau), Full day +
- Final CIP Lists (complete)
- Review O:EW Ratio Recommendation (delayed)
- Review of Escalation Model School elements (complete)
- Review list of Cx Credentialing Organizations (complete)
- FY22 Draft CIP Application and Instructions (complete)
- Guide for School Condition Surveys – Initial (complete)

June 16, 2020 (Teleconference) – (3 hours)
- Review V:NSF and V:ES Ratio Recommendation (delayed)
- Recommend Final O:EW Ratios (delayed)
- Alaska PM Handbook – Progress Review (complete)
- Cost Format – Initial (complete)
- Guide for School Condition Surveys – Final (complete)
- Review Proposed RCx Tools & Metrics (reviewed)

September 8, 2020 (Teleconference) – (3 hours)
- Evaluation of Committee Model School Cost Updates – Briefing Paper
- Review O:EW Ratio Recommendation
- Alaska PM Handbook – Progress Review
- Cost Format – Final
- Construction Standards Handbook – Partial Draft
- Briefing Paper on Proposed LPSD Regulations

December 2, 2020 (Teleconference) – (4 hours)
- Approve FY22 Initial Lists
- Cost Model as Cost Control – Briefing Paper
- Statement of Services for Consultant Model School Update
- Alaska PM Handbook – Progress Review
- Construction Standards Handbook – Final
- Review V:NSF and V:ES Ratio Recommendation
- All Ratios to Public Comment or to Subcommittee
- Review ASHRAE 90.1 Checklist Update

2021

Feb 25, 2021 – Teleconference
- Evaluate Public Comment, Establish V:NSF & V:ES Ratios
- Construction Standards Part 3 (Systems) Final Draft
- FY23 CIP PM Narratives

March 18, 2021 – Teleconference
- New Member Orientation
- Construction Standards Part 2 (Design Guidance) Final Draft
- Draft Reg Language for Cost Model as Cost Control
- Recommend Final V:NSF and V:ES Ratios
- Space Guideline Subcommittee Recommendations

April 14-15, 2021 (Juneau), Full day +
- Final CIP Lists
- Consutant Review of Escalation Model School Elements
- FY23 Draft CIP Application and Instructions
- Construction Standards – Final Draft for Public Comment
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Bond Reimbursement and Grant Review Committee

As of: January 27, 2020

Member	Appointed	Re-appointed	Term Expires
Heidi Teshner — Chair Commissioner or Commissioner's Designee	Commissioner's Designee	--	--
Vacant House of Representatives Member	Appointed by Speaker	--	--
Sen. Cathy Giessel Senate Member	Appointed by President	--	--
Randy Williams Professional Degrees & Experience in School Construction	03/01/2019		02/28/2023
Dale Smythe Professional Degrees & Experience in School Construction	03/01/2017		02/28/2021
James Estes Experience in Urban or Rural School Facilities Management	03/01/2019		02/28/2023
William Glumac, appointed to fill vacancy Experience in Urban or Rural School Facilities Management	02/06/2019		02/28/2021
David Kingsland Public Representative	03/01/2019		02/28/2023
Don Hiley Public Representative	03/01/2017		02/28/2021

Members appointed by commissioner unless noted. See AS 14.11.014 and 4 AAC 31.087.