Bond Reimbursement and Grant Review Committee Meeting Agenda

February 25, 2021
2:00 pm – 4:30 pm

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Chair: Heidi Teshner

Thursday, February 25, 2021

Agenda Topics

2:00 – 2:05 PM	Committee Preparation • Call-in, Roll Call, Introductions • Chair's Opening Remarks • Agenda Review/Approval • Past Meeting Minutes Review/Approval
2:05 – 2:15 PM	Public Comment (additional comments related to agenda topics may be solicited throughout the meeting)
2:15 – 2:55 PM	FY2023 CIP Guidelines for Raters • Preventive Maintenance Narratives (Sec. 9) • Life/Safety/Code Scoring (Sec. 4)
2:55 – 3:25 PM	Subcommittee Reports • Model School • School Space • Design Ratios
3:25 – 3:40 PM	Design Ratio Recommendations Volume : Exterior Surface Area
3:40 – 4:10 PM	Publications • *Construction Standards - Part 3 (final draft)* • *Alaska School Facilities Preventive Maintenance Handbook (progress)*
4:10 – 4:20	BR&GR Workplan Review & Update
4:20 – 4:30 PM	Committee Member Comments
4:30 PM	Adjourn

BOND REIMBURSEMENT & GRANT REVIEW COMMITTEE
Wednesday, December 2, 2020 - 1:00 p.m. – 4:16 p.m.

DRAFT MEETING MINUTES FOR APPROVAL

Committee Members Present	**Staff**	**Additional Participants**
Heidi Teshner, Chair	Wayne Marquis	Larry Morris, Anchorage SD
Rep. Dan Ortiz	Tim Mearig	Gary Eckenweiler, Bering Strait SD
Randy Williams	Sharol Roys	Kevin Lyon, Kenai Peninsula Boro SD
Dale Smythe	Lori Weed	Laura Stidolph
James Estes		Dr. Lisa Skiles Parady, AK Council of School Administrators
Don Hiley		
David Kingsland		John Bitney

December 2, 2020

CALL TO ORDER and ROLL CALL at 1:00 p.m.

Chair Heidi Teshner called the meeting to order at 1:00 p.m. Roll call and introduction of members present; Senator Cathy Giessel and William Glumac not present. Quorum of seven was established to conduct business.

CHAIR'S OPENING REMARKS

Chair Teshner thanked everyone for joining the meeting today and hoped everyone had a wonderful Thanksgiving.

AGENDA REVIEW/APPROVAL

Dale Smythe **MOVED** to approve the agenda, **SECONDED** by James Estes. Hearing no objection, the motion **PASSED.**

PAST MEETING MINUTES REVIEW/APPROVAL – June 16, 2020

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

PUBLIC COMMENT

A public comment period was offered, and no public testimony was provided.

DEPARTMENT BRIEFING

FY'22 CIP Report

Tim Mearig directed members of the committee to the initial priority list published in early November for the FY'22 CIP. He stated that after the initial list, there was a period of reconsideration that ran until November 30th, and three districts requested reconsideration for either the priority or point values the department assigned on a total of three projects. Tim stated that the department will be evaluating those requests, and the determination deadline is 15 workdays after November 30th.

Chair Teshner thanked department staff for all of their work on these efforts and directed committee members to the suggested motion in the packet. Dale Smythe noted that in looking at the list, he thought it was significant that there were zero ineligible applications.

Committee members asked to hold on the motion until they heard further information throughout the course of this meeting. Tim Mearig pointed out that the list is prepared under the guidance of statute, regulations, and this committee. He stated that the motion is an acknowledgement that the department followed the processes in place.

School Capital Project Funding Report

Tim Mearig noted that although the funding for REAA and Major Maintenance was vetoed by the Governor, the department was able to combine the remaining balances in those funds to allocate funding to the St. Paul K-12 school replacement project, which was the No. 1 project on the FY'21 CIP priority list.

Tim noted that there are some debt reimbursement project applications that are working their way through the approval process right now, three from Fairbanks, one from Kodiak, and one from Anchorage.

Tim Mearig explained that there are three funds available through statute to the department: School Construction Grant fund – current balance of $1,337,564; Major Maintenance – current balance of $0.20; REAA fund – current balance of $439,881.

Rep. Dan Ortiz asked if it was correct that there was no school bond debt reimbursement that went forward due to legislative appropriation because the Governor did veto what the legislature attempted to do in terms of appropriating for school bond debt reimbursement. Tim Mearig stated that yes, that is correct. Through the actions that happened in the legislative session and following at the Governor's office, none of those funds were distributed to the municipalities for debt reimbursement this past FY'21.

Preventative Maintenance (PM) Update

Wayne Marquis reported that districts not currently certified include:

- Aleutian Region – At first no interest, then some interest but it never got off the ground.
- Hydaburg – Spoke with the superintendent, and they may reach provisional status within the next six months.
- Lake & Peninsula – Coming back into provisional status.
- Skagway – Lack PM reports and had been placed on provisional. Facilities look great and have been taken care of, but the documentation needs to show the PM work.
- Yukon Flats – Will be reaching back out to the district to discuss their interest in being recertified.

Districts granted provisional certification and working with the department to develop a full year of evidence of plan adherence include:

- Bristol Bay Borough – working on energy monitoring
- Chatham – working on energy monitoring
- Kake City – working on energy monitoring
- Kuspuk – issues with the PM program, energy, and custodial care

- Lower Kuskokwim – energy consumption is still challenging for them
- Nenana City – working on energy
- Pelican City – working with Southeast Regional Resource Center (SERRC) and making good headway
- Yakutat – energy monitoring.

Tim Mearig noted that four of the provisional districts are also struggling with meeting the minimum requirements for a training program.

Wayne Marquis noted that site visits scheduled for the past year that were postponed due to disruption of travel caused by COVID-19 will be conducted for Kodiak Island Borough and Unalaska City. Pribilof Island will forgo an in-person visit this cycle. Virtual reports of all districts were completed this year, and Pribilof Island is doing remarkably well.

Wayne directed committee members to the list of site visits scheduled for this next year in their packet. He noted that he kept November and December of this year open for site visits as well as spending time one-on-one with districts for the launch of the retro-commissioning regulations and assisting in that process.

Based on a question from Rep. Ortiz, Wayne Marquis and Lori Weed confirmed that Wrangell had mistakenly been included in the list of districts not currently certified in the packet. Rep. Ortiz further asked what the real difference is for districts being not certified or provisionally certified. Wayne explained that when a district is provisionally certified, it can still submit for a capital improvement project. Tim Mearig added that the statute requires a district to demonstrate it has a plan and that it is adhering to the plan. What the department had found is that if a district had failed to produce a qualified plan, it could fix that relatively easily, but the district couldn't produce evidence that it had been adhering to the plan because it wouldn't yet have 12 months of data. This provisional status in regulation allows the districts time to collect the data to demonstrate it is adhering to the plan.

Rep. Ortiz further asked if in non-COVID times, does the move from provisional to fully certified require a site visit from the department? Wayne Marquis reported that it doesn't require an on-site visit. The department tries to operate within its budget, so they have to carefully consider the necessity to travel. He also noted that there probably wouldn't be much benefit to being on site if a district has managed to prove themselves over 12 months.

Regulations Updates

Wayne Marquis explained that in November a memorandum went to school districts across the state that stipulated there was a new update on the energy regulation requiring school districts that have qualifying facilities eligible for retro-commissioning to have in place a plan to demonstrate that to the department. The policy memorandum can be found in the packet. In the two weeks following distribution of the memorandum, Wayne personally contacted each school district and has been in touch with 90 percent of districts at the time of this meeting. He stated that districts will need to assess whether a facility meets six criteria to determine if it qualifies as requiring retro-commissioning energy monitoring. Wayne includes this information and tools the department developed in his e-mail communications with districts. He stated that districts

can develop their own energy unit index or they can use the department spreadsheet to determine an energy index unit through time. A third option is to use the EPA's Portfolio Manager.

Tim Mearig further explained that they are doing this to make sure the department is helping districts do everything they can to keep their buildings tuned up and operating well, and retro-commissioning can help with that. He has asked Wayne to keep a running spreadsheet of districts so the department can track it for the CIP process. Future committee meeting packets will include this status spreadsheet.

Dale Smythe stated that it sounds like the two main issues in districts not complying with PM is with staffing and energy monitoring. Wayne stated that those aren't the only issues. Training is also a big issue as is following up with and utilizing their preventative maintenance plan.

Dale Smythe appreciated how cooperative Wayne and the department are in communicating with districts and making sure they understand the importance and how to do all of the retro-commissioning things. As far as with this new regulation and the challenges of meeting the PM issues and the retro-commissioning, he wanted to get the department's perspective on how this will play out as they move forward. Wayne stated that it is not very difficult for districts that have a fully certified program right now to meet the retro-commissioning requirement. What they are looking at is mostly energy consumption, and that has been in place for about 20 years.

Dale Smythe also asked what resources were available for districts that want to get the preventative maintenance portion up but don't have the staff or money now to try to meet the requirements. Wayne stated that a little more than half of the districts use SERRC's help for their PM programs. He noted that Dude Solutions is also a software program that is being used by many districts. He thinks a lot of it has to do with the capability at the district for people wanting to use computer programs. Over the last ten years he has seen some progress being made, with younger people coming into the maintenance field and being more comfortable with computer systems.

Randy Williams was curious if there was a common theme for questions from districts regarding the retro-commissioning and if it was something the committee should start thinking about addressing. Wayne Marquis responded that the theme that comes up most is people don't quite understand the six parameters that are in place. He noted many people are pretty quick about wanting to input their data to see what the results are going to be. Overall, the feedback has been positive, and he believes the fact that districts were provided with pre-formatted spreadsheets, and the department making itself readily available for questions has helped.

Energy Efficiency Standard:
Tim Mearig noted that the updated version of ASHRAE 90.1 has been adopted and is officially through the Lt. Governor's office.

Cost Model Update
Tim Mearig stated that their five-year contract with HMS is over, and this committee will play an active role as they move into the annual update, which should be underway by the end of January.

Department Staffing Update
Tim Mearig noted that they have an empty position created by the departure of Larry Morris that they hope to fill in the summer of 2021.

Committee Member Update
Tim Mearig highlighted the list of committee members whose terms will be expiring at the end of February 2021. All are welcomed to apply for an additional four-year term during the open solicitation. Applications will be collected for the commissioner's review in January.

BRIEFING PAPERS
FY2022 CIP Issues and Clarifications
Tim Mearig reported that statistically, this was a reasonably good year for CIP; however, the number of participating districts regressed down to 30 from 34 last year. The districts that did participate wrote some great applications, and there were multiple applications from most districts. None of the districts or submitted projects were ineligible.

Tim remarked that every year the department collects six-year plans from districts as part of their statutory responsibility. Those are compiled into a document that is sent to the Office of Management and Budget (OMB). That document is included in the packet.

Tim stated that as far as specific rating issues, one big one was the ability to dial in the code and life safety points, especially as relating to weighted scores from projects that had both code and non-code issues. He referred to tabulations of high scores over the last 20 years in this category. He noted that in 2019 and 2020 a new scoring rubric was developed, which helped define things quite a bit more. Last year the department noticed a 9-point uptick in the average score so, with the committee's help, a new weighting formula was devised. It was a struggle in applying that this year because there were things happening with the weighting formula that were not anticipated. The net result was yet another small incremental change in higher points being given in this category than was expected. This issue will be coming back to the committee for further review.

Tim Mearig stated that emergency scoring continues to be a challenge, but there wasn't anything unique for this year. Under certain conditions each rater has the liberty to give emergency points or not, independent of the other raters. The department has tracked this occurance as an indicator of whether the criteria are clear, and found that the scoring remains within acceptable boundaries under that analysis.

Tim stated that district preventative maintenance and facility management have subjective scoring. The department has introduced opportunities to the committee for a scoring rubric to move that into more of a non-subjective scoring element.

Tim noted that the state's ranking process works very well When he attends conferences and describes our prioritization process to other state officials, it is always well received, and often noted as being significantly more than others are considering as they try to do a similar prioritization.

Lori Weed added that for the prior use of design and adopted building system standards, a couple more districts submitted to get evaluated under those criteria. The most common submittal was a statement saying that the designs anticipated being used for these projects are the same or similar to a previously used project design, and that is not the standard that the committee adopted when it put this scoring criteria into place. They are looking for a school board or municipal adoption of a building standard. Tim noted that the department has not awarded any points to districts in this new category. He also reminded committee members that a couple of years ago they approved additional energy consumption reports, and this year 25 districts were evaluated for this scoring, with 18 of them able to get points.

Rep. Dan Ortiz asked if all districts are ineligible until they meet their preventative maintenance energy management requirements; and by their ineligibility, does that mean they are ineligible for all school construction and maintenance grants? Tim Mearig stated that in a nutshell, that is correct. Lori Weed clarified that the eligibility being talked about is for the next application cycle -- FY'23, two capital budgets from now. Tim further noted that districts are still getting capital aid. If a district is in a grant right now, it still gets grant payments. Likewise, if there were to be an appropriation or some residual fund balance available for FY '22, any of the districts on the list would be able to receive the grant funds.

Rep. Ortiz asked if this requirement is hard to meet in many situations throughout the state for any reason, including COVID. Tim stated that when they established these minimum requirements, it was intended to be a relatively low bar. As Wayne Marquis explained earlier, the information that is needed in order to achieve compliance is 90 percent available in every district that is currently compliant. All of the districts can do it, but they will have to find the time and the person or consultant, if necessary, to help them actually make it happen. Rep. Ortiz appreciated the clarifications. What comes to mind for him is that rural districts with less students have less personnel to dedicate toward these kinds of tasks. He was thinking it would be a situation where rural and smaller districts in particular would have a harder time complying with this requirement than more centrally located and larger school districts. Tim added that this committee is spending a lot of time talking about this retro-commissioning requirement. The department recognizes it's a huge deal, but districts being not eligible for CIP is a significant problem. Districts need to be able to have access to at least getting their projects noticed, so they are going to spend a lot of time on this between now and June 1st.

Don Hiley strongly agrees with Rep. Ortiz's concerns. He feels they are increasingly moving to a situation where the larger urban districts are going to have an advantage over the smaller rural districts in this process, not only in the retro-commissioning facet, but in a number of places in the CIP application process. He felt it didn't used to be as concerning, because most of the larger districts were primarily funding projects through bonded debt reimbursement, so wasn't as high a participation on the grant list as the committee is seeing now. Obviously, the personnel issues for small, single-site districts with maybe one maintenance person will have a much bigger burden to keep the school running and do all this paperwork in order to meet the department requirements. There are a number of areas in the process that, as these requirements and expectations ramp up further and further, more is being heaped on these small districts in a sort of a corporate versus mom-and-pop way. This is a one-size-fits-all system, and it's much easier for the larger districts and more burdensome to the smaller ones. He added that at SERRC, he works with probably 30 to 35 school districts, most being on the smaller end of the spectrum. In

a year like this with the COVID situation where people and money are stretched thin, what typically gets hit hardest is the maintenance program. In summary, he believes that it does hit harder on these smaller districts than it does the larger districts. Those districts just don't have the economy of scale that the other districts have, so unfortunately that burden is larger.

Dale Smythe stated that his personal opinion is that there is much more risk in not implementing these things than there is in dismissing it. They are trying to build facilities that are more resilient to serve their communities, and if things like this aren't done, the state, the schools, and the facilities will be put in a more difficult position further down the road. He believes everyone recognizes that everything in the smaller districts is more difficult, but recognizing the importance of preventative maintenance and energy monitoring is a bigger deal. While it comes with some first pain, he thinks there is really no other choice; it will be interesting to see it evolve. Don doesn't disagree with that, but he is concerned with the reality of it. There are a number of problems in the schools, and there are a number of schools that need a lot of work. Projects have not been funded and issues are backing up. He knows a number of schools that could benefit from retro-commissioning, but money and time has to be there.

Dr. Lisa Skiles Parady concurred strongly with the concerns that Don Hiley and Rep. Ortiz shared. She recognized that there need to be appropriate processes, but she is not sure that this process has been done as openly or as robustly as it could have been. This is adding an additional barrier to school districts at a time where they are really trying to navigate a worldwide crisis and are concerned about their ability to respond. What this looks like is that those with capacity will comply and benefit, and those who don't have this capacity will struggle and be challenged to see CIP dollars that are desperately needed. She would love to see this revisited and will be following up after this meeting so that they can ensure that if this stays in place, the notice will be broadcasted far and wide through the Alaska Council of School Administrators to those that need to have their attention called to it.

FY'22 CIP Report, Continued

Given that additional discussion was held regarding this issue, Chair Teshner asked the committee to reconsider the motion as proposed on page 13 of the packet.

Dale Smythe **MOVED** that the Bond Reimbursement and Grant Review Committee recommend the State Board of Education and Early Development adopt the department's fiscal year 2022 list of projects available for funding under the School Construction Grant fund and the Major Maintenance Grant fund, **SECONDED** by David Kingsland. Hearing no objection or further discussion, the motion **PASSED.**

Cost Model as Cost Control

Tim Mearig reported that this is part of a process the committee started with the department in mid-2017. At the end of that calendar year, the department provided a report to the legislature from the committee identifying ways to ensure cost-effective school construction. One of the items considered was whether the state should have a resource allocation or a resource limitation tool that was based on a maximum cost per square foot for a school. In subsequent years, this issue has been revisited a few times, and today the department is presenting the committee with a recommendation from the department and the Model School Subcommittee as to the value of

establishing a cost per square foot limit for schools, the challenges with that, and whether or not there is a reasonable tool with which to achieve that if they think that is the right thing to do.

Tim Mearig stated that this is not an uncommon metric or resource benchmark for states to have, but it is generally a challenge to implement consistently and well. The summary in the briefing paper states that upon extensive review, the idea of developing a resource allocation based on a cost per square foot has more challenges and difficulties than it does positives. He reviewed the options as listed in the briefing paper and discussion was held.

Discussion

Dale Smythe was thankful the Model School Subcommittee came to the realization that option 1 would be a recommendation. He fully agrees the concept of a maximum square foot cost for Alaska schools is flawed, and he was glad the subcommittee took the energy to investigate it further. He believes option 1 is the only reasonable option.

Don Hiley agrees with Dale. He believes it would be very problematic to try to implement something like that as a cost control and is fully behind the recommendation for option 1.

Randy Williams agreed with both Don and Dale, as did Gary Eckenweiler.

Hearing no further comments or objection, Chair Teshner stated that the department can proceed forward with option 1: Close the Model School Subcommittee task (3.2.1) of evaluating using the Cost Model as a cost control tool. Continue pursuing updates to the Cost Model as they pertain to evaluating cost effective school construction.

SUBCOMMITTEE REPORTS

Model Schools

Don Hiley stated that the report for the Model Schools Subcommittee consists of the topic that was previously discussed regarding the cost per square foot recommendation as well as the School Construction Standards Manual.

Don stated that the department provided drafts for some of the sections of the School Construction Standards Manual that still need to be completed. They are hoping to have a working draft by the February goal they had established before committee members turn over. They are actively trying to recruit additional members from A4LE, but unfortunately with the COVID situation, that has kind of fallen by the wayside. He is still hoping to get some people involved as well as other BR&GR Committee members that have been freed up from other subcommittee work. They are continuing to work toward the goal of having something available by February that can potentially go out for public comment in the spring.

Tim Mearig added that they have a lot of work to do to get the section 3 portion of the draft document finalized before February. He is looking forward to the work with all of the additional people that are willing to chip in.

Design Ratios

Dale Smythe reported that design ratios has been a multiple-year effort. After the Opening to Exterior Wall area ratio was completed, the committee reconvened to study the remaining three

ratios, which all dealt with volume and the importance of compactness. After further analysis, it became fairly clear that it would be just as valuable to focus on one, the Volume to Gross Square Footage, V:GSF. The main points for Dale are that it was reinforced by the results of the modeling and what they perceived as the optimum range. They are hoping to get approval of the one ratio versus three. He stated that the proposed range is 16 to 20 with a target of 18.

Randy Williams stated that his concern was that the range was wide enough that pretty much every project was going to comply, so the net effect is that it becomes a ratio with no teeth. Dale noted that if they look at the existing schools, they did have a maximum of 21.5. He also added that there is a lot of good design in the state happening without being regulated, and he perceives this as one component to try and improve cost-effective school construction and recognize the impact of operations and maintenance. He stated that the intent of the range was to make sure they're controlling the extremes.

Tim Mearig asked for some clarification. He noted that early in the process in the original report to the legislature, they had identified four potential ratios. Somewhere along the way, because of some challenges of not seeing a lot of opportunity to move the needle positively on the footprint area to GSF (which was all about whether or not they should go to two-story schools and which situations does that make sense) that had sort of fallen off as a committee recommendation. Dale Smythe stated that in conversations, they did recognize some of the results of the modeling effort, and specifically to the two-story version, the modeling effort didn't point to the kind of savings they were anticipating. They couldn't find a way that would allow them to implement a ratio that could cover two story, one story, big, small, and everything else. They took No. 4 in the report and changed it from Volume to Net Square Footage to Volume to Gross Square Footage to align with the way that schools are already measured per statute, and then they made a recommendation based on that ratio.

Tim Mearig also asked if the discussion item bullet point 1 is a recommendation that the committee approve this subcommittee no long working on ratios 3 and 5. Dale Smythe confirmed that is correct. Tim finds that discontinuing work on 3 is relatively easy to support, but the differences between the volume to square footage and the volume to exterior surface are quite different in terms of what is being measured. One is measuring a compactness efficiency ratio on the the volume of the interior spaces of the building. The other one is measuring basically the efficiency of how the envelope of the building encloses the said volume. It's quite different for him, and he is a little unsure as to how it has left the field, so to speak. Randy Williams explained that the results don't actually bear that out. The exterior surface area actually tracks pretty closely to the net floor area, and therefore, the ratios track closely to each other. The main difference is if they have all spaces that are only one story, like gyms and other large areas like that. But for the data that was presented, there wasn't a lot of difference between the two ratios. Adopting one or the other of them captures both of them. He understands what Tim is saying, but that is not what they observed in the report. Tim noted that he will have to go back and look at the study.

Randy further explained that the exterior surface area contribution to the energy loss of the building is actually quite small as a percentage of the overall energy use of the building. They talked about this a little bit in the subcommittee, how the ventilation load is really what drives the energy use, and they were seeing that in the result on the energy analysis, that the surface

area changes had very little impact on the overall energy use because there are much more efficient construction assemblies than have been in the past. It doesn't mean they should allow crazy shaped buildings; it just means that the net effect is not large, and it's sufficiently captured by just looking at the overall compactness of the building. Gary Eckenweiler agreed and recommended sharing that report that was quite in-depth on the different shapes of buildings.

Tim Mearig guessed that a higher percentage of the efficiency cost in the ratio of exterior surface to volume is going to be related to construction costs versus energy when compared to the other ratio of volume to area versus volume to skin. He noted that the energy modeling study assessed construction costs along with energy costs, and what he has heard so far is that the energy costs don't change. That doesn't answer the question on construction costs.

Tim further commented that when they look at ratios associated with the volume to area, they have the opportunity to apply those to at least 11 current designs beyond the model design, and they found a lot of variety in those. Were they able to do the same analysis of exterior surface to volume on many or a few existing schools so they have not only the model study but also the reality? Dale agreed that was a great point. There were gaps in the information for all the ratios, and then some of the information was from cost estimates and some information was from old drawings or from the architect, so they took it with a grain of salt. He would love it if they could spend more time looking at existing schools in the different climate zones, because they could then compare cost, form, and actual operating costs to the results, and they didn't get to do that.

Chair Teshner directed members of the committee to the recommendation found in the packets. Tim Mearig asked if there is anything the subcommittee has with these recommendations, target, or range that needs additional study to validate them, or does Dale feel like it was well validated by today's discussion? Dale stated that he doesn't know that they need to continue studying it, but he might recommend that they bracket this, and then it needs to be tested and tracked. If it appears it's doing what it is intending to do, flagging projects that might be grossly inappropriate volume, then it could be implemented into regulation or another way.

Tim asked for other committee members' perspectives. He stated that when the department, on the recommendation of the BR&GR, publishes these standards and starts evaluating projects, if somebody wants to dispute that, they will need to have all the necessary and reasonable evidence needed to demonstrate that these are, in fact, appropriate targets and ranges. Randy Williams stated that this is the best target they could come up with using the information that they have. He would like to see more granularity, but he doesn't foresee that happening. He also wants to be wary of studying it to death, so this seems like a middle-ground solution. He is not sure that he can say it passes the defensibility test, but it definitely uses the information they have to adequately corral the designs into a bucket that is acceptable.

Tim Mearig asked about the difference in the target of 18 and 18.5. Why would one or the other be more appropriate? Dale Smythe stated that he chose the 18 to keep it straightforward and simple. The 18.5 matches more of what was identified as the optimum within the modeling efforts. Randy stated that with the 18.5, he was trying to match the guidance and have it be a little more defensible. Tim noted that 18 would allow less volume per square foot and would therefore be a more efficient building for both first costs and operating costs.

Tim Mearig and Chair Teshner thanked the subcommittee for all their work in progressing the ratios forward.

Dale Smythe **MOVED** to set a target of 18.5, **SECONDED** by Randy Williams. Hearing no objection, the motion **PASSED.**

Randy Williams **MOVED** to accept the range of 16 to 20, **SECONDED** by Dale Smythe. Hearing no objection, the motion **PASSED.**

Tim asked about the possibility of changing the range down to 17 to 19 if they wanted to make a future change for some reason. Lori Weed noted that they were originally thinking that the 16 to 20 encompassed all but some of the outliers, and the smaller schools would have a hard time reaching those lower numbers. It might be worth putting in the guidance a note to the department that larger schools should target a lower end of the range for consideration of the committee. Randy Williams thought that additional guidance would be a good idea. He doesn't think the information they currently have is sufficient to develop those guidelines yet though. He also noted that going from the 16 to 20 range to something tighter in the future is much easier than going the other way.

School Space

Dale Smythe stated that this subcommittee was put on hold to get the design ratios done. His intentions are to move directly into school space and reengage people who were interested in participating.

PUBLICATION UPDATES

Alaska School Facilities Preventative Maintenance Handbook

Tim Mearig stated that this update has been in progress for a couple of years and is being brought back before the committee with some minor updates. Tim reviewed the updates with committee members.

ASHRAE 90.1 – 2016 UPDATE

Tim Mearig stated that this update has been fully promulgated through regulation, and everybody is supposed to be measuring their energy standard according to ASHRAE 90.1-2016. A checklist was developed internally and is probably acceptable for use immediately, but there may be some value to having it reviewed by members of the design industry. The department asked for direction from the committee on moving this forward either immediately implementing or opening a public comment period.

Randy Williams asked what purpose the public comment would have. Tim stated that the purpose would be to help verify the checklist as being appropriately updated to the new standard. Randy noted that the previous version of the checklist went through a public review process, and he asked if the concern is only about the updates to that checklist that resulted from the change to the new version of 90.1. Tim stated that is correct. He knows that based on Larry Morris's work, the document is 99 percent there. Randy stated he trusts Larry's work, and the spot checks he has completed are all spot on. He didn't see a need to put this out for public comment. He asked how hard it would be to make a correction if an error or omission was found later. Chair Teshner noted that this is an internal process and is not in regulation, so an update could be

relatively easy. Tim added that the checklist gets modified to project specifics by the district's consultant, so if there seems to be something that didn't get caught, a discussion can happen at that point as well. The tool is more fluid than a lot of the department's other tools.

Randy Williams **MOVED** for no period of public comment and approve for department use, **SECONDED** by James Estes. Hearing no objection, the motion **PASSED.**

WORK PLAN REVIEW

Chair Teshner directed committee members to review the work plan, particularly the projected meeting dates and activities. The next meeting is scheduled for February 25 as a teleconference.

Tim Mearig advised that the Design Ratio Subcommittee not walk away from the volume to exterior surface ratio just yet. Dale Smythe stated that the intent wasn't to totally stop it, and they can continue with that work and can have that ratio by the March 18th meeting.

COMMITTEE MEMBER COMMENTS

Dale Smythe thanked everyone for all the work, particularly subcommittee members helping him.

David Kingsland thanked committee members and department staff for keeping small school districts in mind for their capacity to collect, record, and report data out for their CIP applications. It is very tough with some of the districts, and some of the places are just hard to provide or get accurate data.

Don Hiley agreed with everyone's comments and put in a plug for people who may be interested in getting involved with the Model School Subcommittee.

James Estes thanked everyone for their work.

Randy Williams thanked Wayne Marquis for his work on reaching out for the retro-commissioning aspect. It sounds like there is still some education needed based on some of the comments received. He also noted that he disagrees with the comment made that this was a surprise and a large impact. He believes they have all done a good job making this process smooth and well known, and they have followed through with the end users in trying to get them on board.

Chair Teshner thanked the committee members for their participation in the meeting as well as in their subcommittee work. She also thanked the staff for the CIP work and Wayne Marquis for the retro-commissioning work he has done. She wished everyone a happy and safe holiday season.

MEETING ADJOURNED

Randy Williams **MOVED** to adjourn, **SECONDED** by David Kingsland. Hearing no objection, the motion **PASSED**, and the meeting adjourned at 4:16 p.m.

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

Maintenance Narratives BRIEFING PAPER

By: Tim Mearig
Facilities Manager

Phone: 465-6906

For: Bond Reimbursement & Grant Review Committee

Date: February 11, 2021

File: G:\SF Facilities\BR_GRCom\Special Projects-Worksessions\FY23 PM Narrative Guidelines\FY23 Narratives_BP.docx

Subject: FY23 PM Narrative Matrices

Background

In March, 2020, The department proposed development and implementation of a matrix for scoring Section 9's 'maintenance narratives' submitted with district CIP applications. Of the eight evaluative scoring criteria, Effective Preventive Maintenance Program is the only criteria which has no such rubric in the *Guidelines for Raters*.

After several attempts to get appropriate feedback from interested parties using alternative sources, the Committee requested the department solicit public comment. The department did direct outreach to the CIP interested parties contact list as well as to school district facility directors. Comments were due on February 8th and were received from six individuals connected with school facilities work in Alaska.

Discussion

The comments received were generally supportive of implementing matrices for this last evaluative area. A summary worksheet of these comments with an initial department response is provided, along with a copy of the exact comments as submitted.

During the comment period, the department's Facilities staff also took a deeper dive into the matrix with the purpose of bringing additional clarity to the content of the narrative, and any listed supplementary information, at each point value. Along the way, especially in the areas of Custodial, Training, and Capital Planning, DEED went beyond clarification and did some adding and subtracting of required elements. As a result, the matrix as currently proposed has several substantive differences from the version that went out for comment in January. In order to help the committee evaluate these changes we have provided a side-by-side comparison of the original proposal and the current recommendation. Where possible in the current recommendation, we have identified changes or edits which were made in direct response to the public comment received by using SMALL CAPS.

Options

Option 1

Direct the department to prepare the FY23 CIP application materials to incorporate the 'maintenance narrative' matrices as currently revised.

Option 2

Seek additional comment on the revised matrices from the six individuals who provided comment under the initial request; bring a new recommended matrix to the BRGR in April for possible inclusion in the FY23 CIP application if approved.

Option 3

Open a new period of public comment.

Recommendation(s)

The department recommends Option 1 on the basis that comments received were generally supported and exhibited a trust in the committee to approve reasonable and effective scoring elements.

Version Comparison: Preventive Maintenance Narrative Matrices

The following tables provide a side-by-side view of the revised draft FY23 CIP application preventive maintenance narrative matrices to the draft version provided to the committee at its December 2020 meeting and issued for limited public comment in January 2021.

Maintenance Management Narrative (Q. 9a)

Q.9a	Current Proposed Draft Scoring Criteria (Feb 2021)	Previous Proposed Draft Scoring Criteria (Dec 2020)
	• Does the described program address preventive maintenance as well as routine? • How well does the program work for each individual school? • Does the program address all building components? Mechanical, electrical, structural, architectural, exterior/civil? (NOTE: 'COMPONENTS' AS USED HERE AND BELOW MAY ALSO BE REFERRED TO AS 'EQUIPMENT'.) • Is there evidence supplied which demonstrates that the program is effective? • Who participates in the program and how does it function?	• Does the described program address preventive maintenance as well as routine? • How well does the program work for each individual school? • Does the program address all building components? Mechanical, electrical, structural, architectural, exterior/civil? • Is there evidence supplied which demonstrates that the program is effective? • Who participates in the program and how does it function?
5 pts	Narrative fully describes the maintenance management (MM) program and all of the following: maintenance structure and staffing, the work order program and process including work order classification, scheduling, tracking, and completion or deferral; how work orders are initiated and by whom; how component work order history and trends are used, how work orders are scheduled, or deferred. Provides sample work order types showing PM, routine maintenance, and corrective work; includes cost of labor and materials. Provides sample component-based work orders (with component ID) that include component-specific checklist of preventive and routine maintenance. Provides sample routine or corrective work orders showing progression of scheduling from initial response to completion to deferral. Provides sample PM work orders showing progression from PM to routine or corrective work. Provides a component report for a minimum of 10% of main school facilities showing the date of installation and date of scheduled renewal or	Narrative fully describes the maintenance management (MM) program and all of the following: maintenance structure and staffing, the work order program and process including work order classification, tracking, and completion, how work orders are initiated and by whom. Sample work orders showing PM, routine maintenance, and corrective work; includes cost of labor and materials. Work orders are component based (with component ID) and include component-specific checklist of inspections, maintenance and includes method of reporting results into component records for future evaluation, including costs for component. PM work order directions include when minor repairs are made or when corrective work orders are generated. Work orders change type to a deferred status for summer work or into a future CIP project. Component report for a minimum of 10% of main school facilities showing the date of installation and date of scheduled retirement (report must include components from each major building system).

Q.9a	Current Proposed Draft Scoring Criteria (Feb 2021)	Previous Proposed Draft Scoring Criteria (Dec 2020)
	replacement; includes components from each building system listed in DEED's R&R schedule.	
4 pts	Narrative describes the MM program and all of the following: maintenance structure and staffing, the work order program and process including work order classification, scheduling, tracking, and completion or deferral; how work orders are initiated and by whom; how work orders are scheduled or deferred. Sample work order types showing PM, routine maintenance, and corrective work; includes cost of labor and materials. Sample component-based work orders (with component ID) that include component-specific checklist of preventive and routine maintenance.	Narrative fully describes the MM program and all of the following: work orders for PM, repairs, and minor renovations; how work orders are initiated and by whom. Details the process to conclusion including changing type for future CIP. Sample work orders showing PM, repairs, minor work and cost of work orders.
3 pts	Narrative describes the MM program and all of the following: the work order program and process including work order classification, tracking and completion; how work orders are initiated and by whom. Sample work order types showing PM, routine maintenance, and corrective work; includes cost of labor and materials.	Minimal narrative that partially describes the MM program but not all of the following; work orders for PM, repairs and minor renovations; how work orders are initiated and by whom. The process to conclusion including changing type for future CIP. Sample work orders minimally showing PM, repairs, minor work, and cost of work orders.
2 pts	Minimal narrative that partially describes the MM program but not all of the following: the work order program and process including work order classification; how work orders are initiated and by whom. Sample work order types showing some of PM, routine maintenance and corrective work; includes cost of labor and materials on corrective work samples.	Minimal narrative that partially describes the MM program but not all of the following; work orders for PM, repairs and minor renovations; how work orders are initiated and by whom. The process to conclusion including changing type for future CIP. Sample work orders minimally showing PM, repairs, minor work, and cost of work orders.
1 pt	Minimal narrative that partially describes the MM program but not all of the following: the work order program and process including work order classification; how work orders are initiated and by whom. No sample work orders.	Minimal narrative that partially describes the MM program but not all of the following; work orders for PM, repairs and minor renovations; how work orders are initiated and by whom. The process to conclusion including changing type for future CIP. No sample work orders showing PM, repairs, minor work, and cost of work orders.
0 pts	No narrative or an abbreviated narrative that provides no information of how the maintenance management program works. No sample work orders.	No narrative or an abbreviated narrative that provides no information of how the maintenance management program works.

Energy Management Narrative (Q. 9b)

Q.9b	Current Proposed Draft Scoring Criteria (Feb 2021)	Previous Proposed Draft Scoring Criteria (Dec 2020)
	• Does the described program address preventive maintenance as well as routine? • How well does the program work for each individual school? • Does the program address all building components? Mechanical, electrical, structural, architectural, exterior/civil? (Note: 'components' as used here and below may also be referred to as 'equipment'.) • Is there evidence supplied which demonstrates that the program is effective? • Who participates in the program and how does it function?	• Does the described program address preventive maintenance as well as routine? • How well does the program work for each individual school? • Does the program address all building components? Mechanical, electrical, structural, architectural, exterior/civil? • Is there evidence supplied which demonstrates that the program is effective? • Who participates in the program and how does it function?
5 pts	Narrative fully describes the Energy Management program including all of the following: energy policy, program structure including roles, and responsibilities, occupant comfort and safety standards, energy consumption monitoring, benchmarking, energy audits and assessments, and implementation/execution of energy efficiency measures (EEMs). Provides data showing that the program tracks energy usage by facility and calculates an energy use intensity (EUI) for each main school facility over the prior five years—by energy type. Further shows how this is used to prioritize energy efficiency projects. Provides an energy management guideline or manual issued/updated within the past five years covering the items above which is made available to district staff in electronic or print medium. Provides a report showing a five-year history of implemented EEMs. The report shows how much energy was saved or usage was avoided and provides records demonstrating the savings. Provides a complete set of energy consumption records (Application Q.9f).	Narrative provides complete description of program, including purpose/ mission, roles/responsibilities, occupant comfort and safety, scope of effort, and accountability/ incentives. Show that the program tracks energy usage by facility and calculates energy use—by type—per square foot by facility over the prior five years. Further shows how this is used to prioritize energy efficiency projects. Provides an energy management guideline or manual covering the items above which is made available to district staff in electronic or print medium. Narrative provides discussion of recent energy projects and shows how much energy usage is avoided; energy records prove savings. ~~AS SUPPORTED BY NARRATIVE, DISTRICT UTILIZES CMMS TO PROVIDE POWER MONITORING AND SUB-MONITORING WITH HISTORIES AND ALARMS THAT NOTIFY WHEN USAGE IS OUTSIDE OF SCHEDULED.~~
4 pts	Narrative describes the Energy Management program including all of the following: energy policy, program structure including roles, and responsibilities, occupant comfort and safety standards, energy consumption monitoring, energy audits and assessments, and implementation/execution of energy efficiency measures (EEMs). Provides data showing that the program tracks energy usage by facility and calculates an energy use intensity (EUI) for each main school facility requiring an RCx analysis over the prior five years—by energy type.	Narrative provides complete description of program, including purpose/ mission, roles/responsibilities, occupant comfort and safety, scope of effort, and accountability/incentives. Provides an energy management guideline or manual covering the items above. Also provides a description and examples of how energy use—by type—per square foot, is used to plan energy projects. Application includes the complete set of energy records was provided for Q.9x. District energy management program has a

Q.9b	Current Proposed Draft Scoring Criteria (Feb 2021)	Previous Proposed Draft Scoring Criteria (Dec 2020)
	Provides an energy management guideline or manual, issued/updated within the past five years, covering the items above which is made available to district staff in electronic or print medium. Provides a report showing a sample of implemented EEMs. Application includes the complete set of energy records that was provided for Q.9f.	calculated energy use—by type—per square foot for all facilities for prior five years.
3 pts	Narrative describes the Energy Management program including all of the following: energy policy, program structure including roles, and responsibilities, occupant comfort and safety standards, energy consumption monitoring. Shows that the program tracks energy usage by facility and calculates an energy use intensity (EUI) for each main school facility requiring an RCx analysis over the prior five years—by energy type.. Provides an energy management guideline or manual, issued/updated within the past five years, covering the items above. Provides a complete set of energy consumption records (Application Q.9f).	Narrative provides complete description of program including purpose/ mission, roles/responsibilities, occupant comfort and safety, scope of effort, and accountability/incentives. Application includes the complete set of energy records required for Q.9f.
2 pts	Narrative has useful description of the Energy Management program including some of the following: energy policy, program structure including roles, and responsibilities, occupant comfort and safety standards, energy consumption monitoring. Shows that the program tracks energy usage by facility and calculates an energy use intensity (EUI) for each facility requiring an RCx analysis over the prior five years—by energy type. A complete set of energy records is not provided (Application Q.9f)..	Narrative has some useful description of program but is not complete. Application includes the complete set of energy records required for Q.9f.
1 pt	Narrative has some useful description of the Energy Management program but is not complete; a complete set of energy records is not provided (Q.9f). OR No narrative, but complete set of energy records was provided (Q9.f).	Narrative with some useful description of program but is not complete; complete set of energy records not provided. OR No narrative, but complete set of energy records was provided.
0 pts	No narrative or an abbreviated narrative with no useful description of the Energy Management program. No energy records are provided (Q.9f).	No narrative or an abbreviated narrative with no useful description of program. No energy records.

Custodial Program Narrative (Q. 9f)

Q.9f	Current Proposed Draft Scoring Criteria (Feb 2021)	Previous Proposed Draft Scoring Criteria (Dec 2020)
--	• Is the district's custodial program complete? • Is custodial program based on quantities from building inventories and frequency of care based on industry practice? • Has the district customized its program to be specific to each facility? • Is the program districtwide in scope? • Is the program achieving results? • (NEW) Is the written custodial plan(s) attached	[No changes]
5 pts	Narrative fully describes the custodial program including all of the following: custodial policy and purpose, program structure including staffing, roles, and responsibilities, integration with district maintenance processes, worker and occupant safety, adopted custodial standards, performance verification/quality control, and implementation/execution of program enhancement and efficiency measures, Provides custodial program guideline or manual issued/updated within the past five years covering the items above which is made available to responsible district staff in electronic or print medium. Includes information or supplements that are specific to each main school facility and list types and quantities of surfaces and fixtures to be cleaned, and frequency of care for each based on industry practice. Lists staffing requirements for the facility based on these metrics and industry standards for productivity. Provides a report which tabulates the preceding information (types and quantities of information, etc.) for all main schools in the district, including staffing requirements. OR Provides no less than two facility examples each year of submission with no repeats within a five-year period. If the district operates fewer than 10 schools, provided one-third of all facilities each year. Provide at least 10 work orders generated by the custodial program in the previous 12 months.	Narrative with full description of program including purpose/mission, staffing, roles/responsibilities, worker and occupant safety, general duties, and inspection/verification. Written custodial plans that are specific to each facility and provides for tasks divided per individual custodial position. No less than two facility examples, unless district operates only one facility. The plan includes a designated person or position tasked with back check and inspection of quality of custodial performance no less than once a month ~~(PREFERABLY NOT SOMEONE FROM THE FACILITY)~~ and records findings for future training and quality assurance. Application includes sample copies of inspection reports including photographs.

Q.9f	Current Proposed Draft Scoring Criteria (Feb 2021)	Previous Proposed Draft Scoring Criteria (Dec 2020)
	Provides complete sets of quality control and inspection checklists and reports, with photographs, for no less than two facilities for the previous fiscal year period. Provides a report showing a sample of implemented program enhancements and efficiency measures in the previous five years.	
4 pts	Narrative describes the Custodial program including all of the following: custodial policy and purpose, program structure including staffing, roles, and responsibilities, integration with district maintenance processes, worker and occupant safety, adopted custodial standards, performance verification/quality control. Provides custodial program guideline or manual issued/updated within the past five years covering the items above. Includes information or supplements that are specific to each main school facility and list types and quantities of surfaces and fixtures to be cleaned, and frequency of care for each based on industry practice. Provides no less than two facility examples of the facility-specific information. Provide at least 5 work orders generated by the custodial program in the previous 12 months. Provides samples of quality control and inspection checklists.	Narrative with full description of program including purpose/mission, staffing, roles/responsibilities, worker and occupant safety, general duties, and inspection/verification. Written custodial plans that are specific to each facility and provides for tasks divided per individual custodial position. No less than two facility examples, unless district operates only one facility.
3 pts	Narrative describes the Custodial program including all of the following: custodial policy and purpose, program structure including staffing, roles, and responsibilities, worker and occupant safety, adopted custodial standards, and performance verification/quality control. Provides custodial program guideline or manual which includes information or supplements on how the guide is adapted to specific schools.	Narrative with full description of program. Written custodial plans that are specific to each facility. No less than two facility examples, unless district operates only one facility.
2 pts	Narrative has some useful description of the Custodial program but is not complete. Provides a written custodial program guideline or manual that is general in nature and not site specific.	Narrative with some useful description of program but is not complete. Written custodial plan that is general in nature and not site specific.
1 pt	Narrative has some useful description of the Custodial program but is not complete.	Narrative with some useful description of program but is not complete.

Q.9f	Current Proposed Draft Scoring Criteria (Feb 2021)	Previous Proposed Draft Scoring Criteria (Dec 2020)
	OR Provided a written custodial program guideline or manual that is general in nature and not site specific.	OR Written custodial plan that is general in nature and not site specific.
0 pts	No narrative or an abbreviated narrative with no useful description of the custodial program. No written custodial program guideline or manual.	No narrative or abbreviated narrative with no useful description of program. No written custodial plan.

Maintenance Training Narrative (Q. 9g)

Q.9g	Current Proposed Draft Scoring Criteria (Feb 2021)	Previous Proposed Draft Scoring Criteria (Dec 2020)
	• Does the program address training and on-going education of the maintenance staff? • Are maintenance personnel being trained in specific building systems? • Are training schedules attached? • How is training recorded? • How is effectiveness measured?	[No changes]
5 pts	Narrative fully describes the Training program including all of the following: training policy, program structure including roles and responsibilities, identification of training needs for custodians and maintenance personnel, training methods and types, training scheduling and tracking, and measurement of program effectiveness. Identifies training needs based on staff positions, job functions, and building systems supported, identifies training methods and types, and assigns training on an individual basis. Provides two sample position descriptions each from custodial and maintenance fields that identify knowledge, skills and abilities. Provides a list of job functions (e.g., driving, work order management, etc.) and required building system knowledge (e.g., boiler tuning, lock-out/tag-out, etc.) for each job classification. Provides a training plan, by individual, for training scheduled in the current school year, by training title and method or type. Provides a log of completed training (up to 5yrs), by individual. Provides an assessment of the effectiveness of the training program which, at a minimum includes data on scheduled versus completed training.	Narrative discusses entire training plan that includes: identification of training needs, training methods, and numbers of staff receiving building-system-specific training, annual training planning by individual, overall training plan that includes distinction between HR/OSHA training from maintenance/custodial, recording and planning of training is logged. Training is recorded both by individual and by course. Training logs show past and future individual training that shows compliance by individuals and separates custodial/maintenance from HR/OSHA training. Effectiveness of the training program is assessed, at a minimum, by which scheduled training actually occurred.

Q.9g	Current Proposed Draft Scoring Criteria (Feb 2021)	Previous Proposed Draft Scoring Criteria (Dec 2020)
4 pts	Narrative fully describes the Training program including all of the following: training policy, program structure including roles and responsibilities, identification of training needs for custodians and maintenance personnel, training methods and types, training scheduling and tracking, and measurement of program effectiveness. Identifies training needs based on staff positions, job functions, and building systems supported, identifies training methods and types, and assigns training on an individual basis. Provides a training plan, by individual, for training scheduled in the current school year, by training title and method or type. Provides a log of completed training (up to 5yrs), by individual.	Narrative provides complete description of maintenance training plan that includes: identification of training needs, training methods, and numbers of staff receiving building-system-specific training, annual training planning by individual, overall training plan. Narrative shows the district plans training in advance per individual for their training needs. Training logs show primary focus on maintenance and custodial training, reports separately from HR/OSHA training.
3 pts	Narrative describes the Training program including all of the following: training policy, identification of training needs for custodians and maintenance personnel, training methods and types, and training scheduling and tracking. Provides a training plan, by individual, for training scheduled in the current school year, by training title and method or type. Provides a log of completed training but not by individual.	Narrative describes the program completely. Training logs show primary focus on maintenance and custodial training, reports separately from HR/OSHA training.
2 pts	Narrative has some useful description of the Training program but is not complete. Provides training logs that show minimal maintenance or custodial training, primarily HR/OSHA training.	Narrative with some useful description of program but not complete. Training logs with minimal maintenance or custodial training, primarily HR/OSHA training. *Training Logs with only HR/OSHA training can never exceed 1 point.
1 pt	Narrative has some useful description of the Training program but is not complete. OR Training logs with no actual maintenance or custodial training. Only HR/OSHA training. *Training Logs with only HR/OSHA training can never exceed 1 point.	Narrative with some useful description of program but not complete. OR Training logs with no actual maintenance or custodial training. Only HR/OSHA training. *Training Logs with only HR/OSHA training can never exceed 1 point.
0 pts	No narrative or an abbreviated narrative with no useful description of the Training program. No training logs	No narrative or abbreviated narrative with no useful description of program. No training logs.

Capital Planning Narrative (Q. 9h)

Q.9h	Current Proposed Draft Scoring Criteria (Feb 2021)	Previous Proposed Draft Scoring Criteria (Dec 2020)
	• Does the district have a process for identifying capital renewal needs? • Are component/subsystem replacement cycles identified and used? • Does the system involve building occupants and users? • Are renewal schedules comprehensive and vetted for credibility? • Are systems up for renewal grouped into logical capital projects? • Does review of projects on six-year plan show evidence of use of capital planning process, including renewal and replacement scheduled.	[No changes]
5 pts	Narrative fully describes the Capital Planning program including all of the following: capital planning policy and procedure including structure, responsibilities and staffing, capital needs forecasting based on system renewal and program/population changes, forecast verification based on condition assessments, user input and maintenance work order history/trends, development of CIP projects and six-year plans, identification of capital project resources and funding, and measurement of program effectiveness. Provides capital planning report issued/updated within the past 12 months and six-year CIP plan with at least one project in every year of the plan and includes capital projects programmed from all fund sources, local, state, and federal. PROVIDES A FACILITY CONDITION INDEX (FCI) FOR EVERY MAIN SCHOOL BASED ON A FACILITY CONDITION ASSESSMENT NOT OLDER THAN FIVE YEARS WHERE FCI HAS THE FOLLOWING FORMULA. $FCI = \frac{\text{COST OF CURRENT AND DEFERRED RENEWAL}}{\text{CURRENT REPLACEMENT VALUE}}$ Provides a student population projection for a minimum of five years beyond the current fiscal year for every attendance area in the district. Provides a condition assessment for every project requesting state-aid in the first year of the six-year CIP plan. Provides an assessment of the effectiveness of the capital planning program which, at a minimum includes a districtwide trend for	Narrative completely discusses the program including: renewal and replacement (R&R) schedules, building user input, on-site condition assessments, and organizes the work into logical projects. R&R or Facility Condition Index (FCI) documents provided for all required facilities, are component based, and components of systems are used in planning for capital projects. Includes a process for selecting CIP projects, including: 1) component tracking of work orders and costing; 2) work orders coded to future projects and tracked; 3) annual review of work orders coded to projects and includes a review process to confirm need; 4) project review includes listing as in-house and CIP.

Q.9h	Current Proposed Draft Scoring Criteria (Feb 2021)	Previous Proposed Draft Scoring Criteria (Dec 2020)
	combined FCI for a minimum of five prior years and tracks districtwide capital expenditures for main schools for a minimum of five prior years.	
4 pts	Narrative describes the Capital Planning program including all of the following: capital planning policy and procedure including structure, responsibilities and staffing, capital needs forecasting based on system renewal and program/population changes, forecast verification based on condition assessments, development of CIP projects and six-year plans, identification of capital project resources and funding. Provides capital planning report issued/updated within the past 12 months and six-year CIP plan with at least one project in every year of the plan and includes capital projects programmed from all fund sources, local, state, and federal. PROVIDES A FACILITY CONDITION INDEX (FCI) FOR EVERY MAIN SCHOOL BASED ON A CURRENT DEED RENEWAL & REPLACEMENT SCHEDULE, WHERE FCI HAS THE FOLLOWING FORMULA. $FCI = \frac{\text{COST OF CURRENT AND DEFERRED RENEWAL}}{\text{CURRENT REPLACEMENT VALUE}}$ Provides a student population projection for a minimum of five years beyond the current fiscal year for every attendance area in the district. Provides a condition assessment for every project requesting state-aid in the first year of the six-year CIP plan.	Narrative completely describes the program and R&R/FCI documents provided for all required facilities, are component based, and components of systems are used in planning for capital projects.
3 pts	Narrative describes the Capital Planning program including all of the following: capital planning policy and procedure including structure, responsibilities and staffing, capital needs forecasting based on system renewal, forecast verification based on condition assessments, development of CIP projects and six-year plans, identification of capital project resources and funding. Provides capital planning report issued/updated within the past 12 months and six-year CIP plan with at least one project in every year of the plan.	Narrative completely describes the program and R&R/FCI documents provided for all required facilities.

Q.9h	Current Proposed Draft Scoring Criteria (Feb 2021)	Previous Proposed Draft Scoring Criteria (Dec 2020)
	PROVIDES R&R DOCUMENTS FOR ALL FACILITIES IN WHICH STATE-AID FOR CIP IS LISTED IN THE SIX-YEAR PLAN.	
2 pts	Narrative has some useful description of the Capital Planning program but is not complete. PROVIDES R&R DOCUMENTS FOR ALL FACILITIES IN WHICH STATE-AID FOR CIP IS LISTED IN THE SIX-YEAR PLAN.	Narrative with some useful description of program but is not complete. Provided R&R/FCI documents for all required facilities
1 pt	Narrative has some useful description of the Capital Planning program but is not complete; R&R documents not provided for all required facilities. OR NO NARRATIVE, BUT PROVIDES R&R DOCUMENTS FOR ALL FACILITIES IN WHICH STATE-AID FOR CIP IS LISTED IN THE FIRST YEAR OF THE SIX-YEAR PLAN.	Narrative with some useful description of program but is not complete; R&R/FCI documents not provided for all required facilities. OR No narrative, but provided R&R/FCI documents for all required facilities.
0 pts	No narrative or abbreviated narrative with no useful description of the Capital Planning program. LACKS R&R DOCUMENTS FOR ALL FACILITIES IN WHICH STATE-AID FOR CIP IS LISTED IN THE FIRST YEAR OF THE SIX-YEAR PLAN.	No narrative or abbreviated narrative with no useful description of program. Lacks R&R/FCI documents for all required facilities.

DEPARTMENT OF EDUCATION AND EARLY DEVELOPMENT

COMPILED COMMENTS AND DEPARTMENT RESPONSES

PROPOSED FY23 CIP PREVENTIVE MAINTENANCE NARRATIVE MATRICES

JANUARY 11, 2021 TO FEBRUARY 8, 2021

PUBLIC COMMENT RECEIVED	DEED RESPONSE
Good edits. *G.Eckenweiler 1-12-2021*	Thank you.
There really is a level difference between a MM system with components loaded in or not. Then to have components in the system and tying WO's to them with costs and trends. A good example of using this matrix is: BSSD has components loaded into our system with, serial #, PM schedules, date installed and some have PM schedules attached. We can show # of WO's per component but that is all. We have not been diligent at tying WO details, like costs or parts ordered for the components leaving us with no way to track trends to the component or costs over time. So with this matrix it would clearly put BSSD at a 4! *G.Eckenweiler 1-12-2021*	This scoring area covers from very weak to very, very strong programs. Minimally compliant districts would score at 2 or maybe 3. We concur that the integration you've discussed can be a challenge. Yes; part of the benefit of this matrix is the district's ability to self-assess.
Also with School Dude's language the word used is Equipment rather than Component so maybe a note somewhere that the two are synonymous. *G.Eckenweiler 1-12-2021*	Noted and included.
Prefer 0 to 5 so as to build from non-compliant (0) to full compliant and best practices (5). *L.Morris 2-8-2021*	Can be discussed at BRGR.
I studied the proposed changes to the rater's guide. I believe this is a positive development for school districts. At least we know the elements that are required to get 5 point scores. …I don't believe the proposed changes to the raters guide are going to impact our scores. I would expect them to be the same. However, we should be able to improve now that the criteria is better defined. It will just depend on how much time we are able to allocate toward improving the programs. *B.McFarlane 2-8-2021*	Thank you for the general support in spite of recognized challenges of rising to the 5-point level.

PUBLIC COMMENT RECEIVED	DEED RESPONSE
I concur with Ben that this will make it easier for Districts to know what is expected at each point level. *K.Christy 2-8-2021*	Yes, this is a primary purpose in introducing the matrix.
It unlikely that any but the largest urban Districts will be able to achieve maximum points due to the resources and reliability of systems necessary for full points. That is not necessarily a reason to lower standards, but to keep in mind reasonable expectations when looking at scores. *K.Christy 2-8-2021*	Generally concur, but the effort should be scalable. If there is an absolute impossibility written into the standard, it should be re-examined.
"More than just recording energy usage, it appears that the department is really wanting to see programs and incentives for the staff to actively conserve energy and discussion of recent energy projects." *B.McFarlane 2-8-2021* I think this is what you are going for. Might be worthwhile to clearly state that as an objective. *K.Christy 2-8-2021*	We typically see evidence that districts are actively engaged in this type of energy conservation already. What surprises all is when the recording of energy consumption fails. Thank you; will revisit.
Page 5 - are there standards for Districts to use to monitor comfort and safety? *K.Christy 2-8-2021*	Not at DEED; possibly OSHA? This is to encourage/recognize a district standard.
[Page 5] Is it necessary to use CMMS to monitor energy if it can be monitored accurately by other means to achieve 5 points – This is probably not cost effectively achievable by smaller districts. *K.Christy 2-8-2021*	No. This provision is proposed to be removed.
Page 9 - Clarify if all R&R schedules for a District need to be submitted with the application or just for the facility addressed in the application - waste of paper and time to submit them all with the application. Current R&R should be filed and updated with DEED by a specific date. *K.Christy 2-8-2021*	Added clarity to include a report that will demonstrate the presence of R&Rs for all facilities but require the full copy only on a subset.
[Page 9] There is not a link to a complying FCI (Index) – that would be very helpful. Is that the template in the Condition Survey Guideline? *K.Christy 2-8-2021*	A definition of FCI has been added.
[Page 9] What is definition of "All required Facilities"? Ones in the attendance area of the application or all owned buildings in District? *K.Christy 2-8-2021*	This is clarified to mean those facilities with projects in the six-year plan.

PUBLIC COMMENT RECEIVED	DEED RESPONSE
"These are not intended to be offered as 'new criteria' or to set out new requirements. The matrix is the best attempt of the evaluative raters to outline how scoring is already being accomplished." - Thanks for the information, this explains the scores we have received in the past. I felt like we explained our programs fairly well in the documents submitted, with 42 schools, we tried not to provide a lot of redundant information as the submittal that was already quite bulky, we did not know the department was looking for a minimum 10% component reports for our main facilities. The information described will assist us in submitting additional documentation. We utilize the tools, and put a bit of time into the submissions, but had no idea that such detail was desired by the department in the submissions. *K.Lyon 2-8-2021*	Though a generally true statement, there are one or two specific deliverables incorporated at each of the 5-point elements that may reflect a newly-defined, if not brand new standard.
9a Clarification of 10% of the main school facilities component report? *D.Hill 2-8-2021*	Will attempt to clarify.
9e How is the occupant comfort and safety, scope of effort quantified? *D.Hill 2-8-2021*	DEED does not define; possibly OSHA? This is to encourage/recognize a district standard.
9f Monthly inspection from someone outside the facility seems difficult with lack of resources in the communities. We wouldn't have a chance at 5 points, not a level playing field. Our internal controls should suffice. *D.Hill 2-8-2021*	Agreed. Standard has been modified.
9h Not familiar with the FCI used. *D.Hill 2-8-2021*	A definition of FCI has been added.

State of Alaska

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

Revised Guidelines for Raters: Preventive Maintenance Narrative Matrices

C O V E R M E M O

January 11, 2021

Invitation

The Bond Reimbursement and Grant Review Committee (BR&GR) seeks public review and comment of the proposed Preventive Maintenance Narrative Matrices. The committee is considering this matrix for inclusion in the *Guidelines for Raters of the CIP Application* for the FY23 CIP Application. The FY23 CIP Application will be finalized by the Bond Reimbursement and Grant Review Committee at their April 14-15, 2021 meeting.

Background

Over the past 10 years, the department—in a continued effort to provide clarity and transparency in evaluator scoring—has developed a series of scoring rubrics for seven of the eight evaluative criteria that are used to score CIP applications submitted for state aid. The eighth criteria, District Preventive Maintenance and Facilities Management (Sec. 9) narratives, currently has no such rubric but instead relies on a set of questions framed as bullet points for each of the five programs. These questions are meant to assist both applicants in preparing and evaluators in scoring each program's narrative on a scale of 0 to 5. Department staff believe that a rubric for scoring the Preventive Maintenance Program would increase scoring consistency and provide greater clarity to applicants. In support of that belief, staff has developed a matrix for these criteria.

Department Statement

These are not intended to be offered as 'new criteria' or to set out new requirements. The matrix is the best attempt of the evaluative raters to outline how scoring is already being accomplished.

Feedback and Comments

The department is accepting written comments on behalf of the BR&GR through 4:00 p.m. on Monday, February 8, 2021. Please send comments to Tim.Mearig@alaska.gov. Oral comments can be presented to the BR&GR Committee at its February 25, 2021 or April 14-15, 2021 meetings.

District Preventive Maintenance and Facility Management Matrix Drafts

Below is a proposed draft for discussion on the development of a matrix (scoring criteria tables) to incorporate into the *Guidelines for Raters of the CIP Application*. For ease of reference, all portions of the existing application and support materials have compiled relative to each question.

Sec. 9 District preventive maintenance and facility management (60 points possible)

Application

Ensure that documents related to the district's maintenance and facility management program have been provided with district CIP submittals. Include management reports, renewal and replacement schedules, work orders, energy reports, training schedules, custodial activities, and any other documentation that will enhance the requirements listed in the instructions. Include the following documents:

Instructions

AS 14.11.011(b)(1) and 4 AAC 31.011(b)(2) require each school district to include with its application submittals a description of its preventive maintenance program, as defined by AS 14.11.011(b)(4), AS 14.14.090(10), and 4 AAC 31.013. Refer to Appendix E for details.

The scoring criteria for this area reflect efforts beyond just preventive maintenance. For each element of a qualifying plan outlined in 4 AAC 31.013, documents, including reports, narratives, and schedules, have been identified for eight separate evaluations. These documents will establish the extent to which districts have moved beyond the minimum eligibility criteria and have tools in place for the active management of all aspects of their facility management. The documents necessary for each evaluation are listed below. They are grouped according to the five areas of effort established in statute and are annotated as to the type of evaluation (i.e., evaluative or formula-driven). Refer to the Guidelines for Raters of the CIP Application for additional information on scoring.

Up to 60 points possible for a clear and complete reporting of the district's maintenance program.

Only two sets, one of which may be an electronic copy, should be provided by the district, regardless of the number of submitted applications.

Rater's Guidelines

(Application Questions 9a, 9e-9h; Points possible: 25 evaluative)

Maintenance Management

Application

9a. Maintenance Management Narrative (Up to 5 Evaluative Points)

Instructions

9a. Maintenance management narrative (Evaluative) (up to 5 points available)

Provide a narrative description of the effectiveness of your work order based maintenance management system.

How *effective* is the district's work order-based maintenance management system? How does the district assess the program's effectiveness? Describe the formal system in place that tracks timing and costs as stated in regulation and attach documentation (sample work orders, etc.). Discuss the quality of the program as it is reflected in the submitted formula-driven reports for 9b (i.e., diversity in work types, hours available is accurate, there is a high percentage of reported hours).

Rater's Guidelines

Maintenance Management Narrative
(Application Question 9a; Points possible: 5)

- Does the described program address preventive maintenance as well as routine?
- How well does the program work for each individual school?
- Does the program address all building components? Mechanical, electrical, structural, architectural, exterior/civil?
- Is there evidence supplied which demonstrates that the program is effective?
- Who participates in the program and how does it function?

NEW DRAFT Scoring Criteria	Point Range
Narrative fully describes the maintenance management (MM) program and all of the following: maintenance structure and staffing, the work order program and process including work order classification, tracking, and completion, how work orders are initiated and by whom. Sample work orders showing PM, routine maintenance, and corrective work; includes cost of labor and materials. Work orders are component based (with component ID) and include component-specific checklist of inspections, maintenance and includes method of reporting results into component records for future evaluation, including costs for component. PM work order directions include when minor repairs are made or when corrective work orders are generated. Work orders change type to a deferred status for summer work or into a future CIP project. Component report for a minimum of 10% of main school facilities showing the date of installation and date of scheduled retirement (report must include components from each major building system).	5 points
Narrative fully describes the MM program and all of the following: work orders for PM, repairs, and minor renovations; how work orders are initiated and by whom. Details the process to conclusion including changing type for future CIP. Sample work orders showing PM, routine maintenance, and corrective work; includes cost of labor and materials. Additionally, work orders and records are component-based and includes component ID and can recall work orders by component.	4 points

NEW DRAFT Scoring Criteria	Point Range
Narrative fully describes the MM program and all of the following: work orders for PM, repairs, and minor renovations; how work orders are initiated and by whom. Details the process to conclusion including changing type for future CIP. Sample work orders showing PM, repairs, minor work and cost of work orders.	3 points
Minimal narrative that partially describes the MM program but not all of the following; work orders for PM, repairs and minor renovations; how work orders are initiated and by whom. The process to conclusion including changing type for future CIP. Sample work orders minimally showing PM, repairs, minor work, and cost of work orders.	2 points
Minimal narrative that partially describes the MM program but not all of the following; work orders for PM, repairs and minor renovations; how work orders are initiated and by whom. The process to conclusion including changing type for future CIP. No sample work orders showing PM, repairs, minor work, and cost of work orders.	1 point
No narrative or an abbreviated narrative that provides no information of how the maintenance management program works	0 points

Energy Management

Application

9e. Energy Management Narrative (Up to 5 Evaluative Points)

Instructions

9e. Energy management narrative (Evaluative) (5 points available)

Provide a narrative description of the district's energy management program and energy reduction plan.

Address how the district is engaged in reducing energy consumption in its facilities. Energy management should address energy utilization with the goal of reducing consumption. This objective can be achieved through a number of methods: some related to the building's systems (including regular evaluation of need for commissioning an existing building), some related to the way the facilities are being used. The results of the energy management program should also be discussed.

Rater's Guidelines

Energy Management Narrative
(Application Question 9e; Points possible: 5)

- Is the district engaged in reducing energy consumption in its facilities?
- Is a comprehensive set of methods being used?
- Is the program districtwide in scope?
- Is the program achieving results?
- Is there a method for reviewing and monitoring energy usage?
- Is there a method for evaluating existing facilities' need for commissioning?

NEW DRAFT Scoring Criteria	Point Range
Narrative provides complete description of program, including purpose/ mission, roles/responsibilities, occupant comfort and safety, scope of effort, and accountability/incentives. Show that the program tracks energy usage by facility and calculates energy use—by type—per square foot by facility over the prior five years. Further shows how this is used to prioritize energy efficiency projects. Provides an energy management guideline or manual covering the items above which is made available to district staff in electronic or print medium. Narrative provides discussion of recent energy projects and shows how much energy usage is avoided; energy records prove savings. As supported by narrative, district utilizes CMMS to provide power monitoring and sub-monitoring with histories and alarms that notify when usage is outside of scheduled.	5 points
Narrative provides complete description of program, including purpose/ mission, roles/responsibilities, occupant comfort and safety, scope of effort, and accountability/incentives. Provides an energy management guideline or manual covering the items above. Also provides a description and examples of how energy use—by type—per square foot, is used to plan energy projects. Application includes the complete set of energy records was provided for Q.9x. District energy management program has a calculated energy use—by type—per square foot for all facilities for prior five years.	4 points
Narrative provides complete description of program including purpose/ mission, roles/responsibilities, occupant comfort and safety, scope of effort, and accountability/incentives. Application includes the complete set of energy records required for Q.9x.	3 points
Narrative has some useful description of program but is not complete. Application includes the complete set of energy records required for Q.9x.	2 points
Narrative with some useful description of program but is not complete; complete set of energy records not provided. OR No narrative, but complete set of energy records was provided.	1 point
No narrative or an abbreviated narrative with no useful description of program. No energy records	0 points

Custodial Program

Application

9g. Custodial Narrative (Up to 5 Evaluative Points)

Instructions

Provide a narrative description of the district's custodial program and evidence to show it was developed using data related to inventories and frequency of care.

Minimal custodial programs do not have to be quantity-based nor time-based relative to the level of care. Quality custodial programs take both these factors into account and customize a custodial plan for a facility on the known quantities and industry standards for a given

activity (e.g., vacuuming carpet, dusting horizontal surfaces, etc.). Describe how the scope of custodial services is directly related to the type of surfaces and fixtures to be cleaned, the quantity of those items, and the frequency of the care for each. Describe how the district has customized its program to deal with different surfaces and care needs on a site-by-site basis.

Rater's Guidelines

Custodial Narrative

(Application Question 9f; Points possible: 5)

- Is the district's custodial program complete?
- Is custodial program based on quantities from building inventories and frequency of care based on industry practice?
- Has the district customized its program to be specific to each facility?
- Is the program districtwide in scope?
- Is the program achieving results?
- (NEW) Is the written custodial plan(s) attached?

NEW DRAFT Scoring Criteria	Point Range
Narrative with full description of program including purpose/mission, staffing, roles/responsibilities, worker and occupant safety, general duties, and inspection/verification. Written custodial plans that are specific to each facility and provides for tasks divided per individual custodial position. No less than two facility examples, unless district operates only one facility. The plan includes a designated person or position tasked with back check and inspection of quality of custodial performance no less than once a month (preferably not someone from the facility) and records findings for future training and quality assurance. Application includes sample copies of inspection reports including photographs.	5 points
Narrative with full description of program including purpose/mission, staffing, roles/responsibilities, worker and occupant safety, general duties, and inspection/verification. Written custodial plans that are specific to each facility and provides for tasks divided per individual custodial position. No less than two facility examples, unless district operates only one facility.	4 points
Narrative with full description of program. Written custodial plans that are specific to each facility. No less than two facility examples, unless district operates only one facility.	3 points
Narrative with some useful description of program but is not complete. Written custodial plan that is general in nature and not site specific.	2 points
Narrative with some useful description of program but is not complete. OR Written custodial plan that is general in nature and not site specific.	1 point
No narrative or abbreviated narrative with no useful description of program. No written custodial plan.	0 points

Maintenance Training

Application

9h. Maintenance Training Narrative (Up to 5 Evaluative Points)

Instructions

9h. Maintenance training narrative (Evaluative) (5 points available)

Provide a narrative description of the district's training program including, but not limited to: identification of training needs, training methods, and numbers of staff receiving building-system-specific training in the past 12 months. In addition to the narrative description, provide a copy of the district's training log for the past year. The training log should include the name of the person trained, the training received, and the date training was received. Districts utilizing a computerized maintenance management system can track training and job shadowing activities through work orders and labor hours.

Training may include on-the-job training of junior personnel by qualified technicians on staff. For systems or components that are scheduled for replacement, or have been replaced as part of a capital project, manufacturer or vendor training could be made available to the maintenance staff to attain these goals and objectives. In-service training as well as on-line training could be provided for the entire staff. Safety and equipment specific videos are also an inexpensive training resource.

Rater's Guidelines

Maintenance Training Narrative
(Application Question 9g; Points possible: 5)

- Does the program address training and on-going education of the maintenance staff?
- Are maintenance personnel being trained in specific building systems?
- Are training schedules attached?
- How is training recorded?
- How is effectiveness measured?

NEW DRAFT Scoring Criteria	Point Range
Narrative discusses entire training plan that includes: identification of training needs, training methods, and numbers of staff receiving building-system-specific training, annual training planning by individual, overall training plan that includes distinction between HR/OSHA training from maintenance/custodial, recording and planning of training is logged. Training is recorded both by individual and by course. Training logs show past and future individual training that shows compliance by individuals and separates custodial/maintenance from HR/OSHA training. Effectiveness of the training program is assessed, at a minimum, by which scheduled training actually occurred.	5 points

NEW DRAFT Scoring Criteria	Point Range
Narrative provides complete description of maintenance training plan that includes: identification of training needs, training methods, and numbers of staff receiving building-system-specific training, annual training planning by individual, overall training plan. Narrative shows the district plans training in advance per individual for their training needs. Training logs show primary focus on maintenance and custodial training, reports separately from HR/OSHA training.	4 points
Narrative describes the program completely. Training logs show primary focus on maintenance and custodial training, reports separately from HR/OSHA training.	3 points
Narrative with some useful description of program but not complete. Training logs with minimal maintenance or custodial training, primarily HR/OSHA training. *Training Logs with only HR/OSHA training can never exceed 1 point.	2 points
Narrative with some useful description of program but not complete. OR Training logs with no actual maintenance or custodial training. Only HR/OSHA training. *Training Logs with only HR/OSHA training can never exceed 1 point.	1 point
No narrative or abbreviated narrative with no useful description of program. No training logs	0 points

Capital Planning (Renewal & Replacement)

Application

9i. Capital Planning Narrative (Up to 5 Evaluative Points)

Instructions

9i. Capital planning narrative (Evaluative) (5 points available)

Provide a narrative giving evidence the district has a process for developing a long-range plan for capital renewal.

Discuss the district's process for identifying capital renewal needs. Renewal and replacement schedules can form the basis for this work, but building user input should also be considered. It is important to move the capital planning process from general data on renewal schedules to actual assessments of conditions on site. This helps to validate the process and allows the district to create capital projects that reflect actual needs. A final step would be to review the systems needing replacement and to organize the work into logical projects (e.g., if a fire alarm and roof are confirmed to be in need of renewal, they may need to be placed in separate projects versus renewal of a fire alarm and lighting which could be effectively grouped in a single project).

Rater's Guidelines

Capital Planning Narrative

(Application Question 9h; Points possible: 5)

- Does the district have a process for identifying capital renewal needs?
- Are component/subsystem replacement cycles identified and used?
- Does the system involve building occupants and users?
- Are renewal schedules comprehensive and vetted for credibility?
- Are systems up for renewal grouped into logical capital projects?
- Does review of projects on six-year plan show evidence of use of capital planning process, including renewal and replacement scheduled.

NEW DRAFT Scoring Criteria	Point Range
Narrative completely discusses the program including: renewal and replacement (R&R) schedules, building user input, on-site condition assessments, and organizes the work into logical projects. R&R or Facility Condition Index (FCI) documents provided for all required facilities, are component based, and components of systems are used in planning for capital projects. Includes a process for selecting CIP projects, including: 1) component tracking of work orders and costing; 2) work orders coded to future projects and tracked; 3) annual review of work orders coded to projects and includes a review process to confirm need; 4) project review includes listing as in-house and CIP.	5 points
Narrative completely describes the program and R&R/FCI documents provided for all required facilities, are component based, and components of systems are used in planning for capital projects.	4 points
Narrative completely describes the program and R&R/FCI documents provided for all required facilities.	3 points
Narrative with some useful description of program but is not complete. Provided R&R/FCI documents for all required facilities	2 points
Narrative with some useful description of program but is not complete; R&R/FCI documents not provided for all required facilities. OR No narrative, but provided R&R/FCI documents for all required facilities.	1 point
No narrative or abbreviated narrative with no useful description of program. Lacks R&R/FCI documents for all required facilities.	0 points

From: Mearig, Timothy C (EED)
To: Weed, Lori (EED)
Subject: FW: Comments on the CIP rating guide
Date: Tuesday, January 12, 2021 3:36:17 PM

FYI, comments from BSSD.

From: Gary Eckenweiler <geckenweiler@bssd.org>
Sent: Tuesday, January 12, 2021 3:34 PM
To: Mearig, Timothy C (EED) <tim.mearig@alaska.gov>
Subject: Re: Comments on the CIP rating guide

Hello Tim
Good edits,
There really is a level difference between a MM system with components loaded in or not. Then to have components in the system and tying WO's to them with costs and trends. A good example of using this matrix is: BSSD has components loaded into our system with, serial #, PM schedules, date installed and some have PM schedules attached. We can show # of WO's per component but that is all. We have not been diligent at tying WO details, like costs or parts ordered for the components leaving us with no way to track trends to the component or costs over time.
So with this matrix it would clearly put BSSD at a 4!
Also with School Dude's language the word used is Equipment rather than Component so maybe a note somewhere that the two are synonymous.

Thank You
Gary Eckenweiler
BSSD

On Tue, Jan 12, 2021 at 12:03 PM Mearig, Timothy C (EED) <tim.mearig@alaska.gov> wrote:

> Gary,
>
> Thanks for the feedback. I hate to burden you with any more review on this but these actually got sent out a little earlier than planned. I'm attaching a set of edits I worked up on the Maint Management section because I actually thought there was some confusion in that matrix as you stepped down the point scale. Information in narratives and information that would come through sample items seemed mashed together too.
>
> If you have time, I'm curious if you think these edits add more clarity on what is allowed to drop off at any stage of scoring . . .
>
> From 5 to 4 drop: component-based work order trends, component reports for 10% of schools
> From 4 to 3 drop: all work order scheduling elements, sample component-based work orders
> Etc.

Tim

Ps. When/if you have time

From: Gary Eckenweiler <geckenweiler@bssd.org>
Sent: Tuesday, January 12, 2021 10:43 AM
To: Mearig, Timothy C (EED) <tim.mearig@alaska.gov>
Subject: Comments on the CIP rating guide

Hello Tim,
My comments for these rating matrices:
Very good I didn't see any changes needed. They were clear enough that as I read through them BSSD's deficiencies were spelled out, which is good.

Thank you

Gary Eckenweiler
Director Facilities / Maintenance
Bering Strait School District
907 624-4249
geckenweiler@bssd.org

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Gary Eckenweiler
Director Facilities / Maintenance
Bering Strait School District
907 624-4249
geckenweiler@bssd.org

From: Morris_Larry
To: Mearig, Timothy C (EED); Weed, Lori (EED)
Subject: PM narrative matrix comments
Date: Monday, February 8, 2021 10:43:20 AM

I have the following comments:

First, the person who came up with this must be very intelligent.

1. Prefer 0 to 5 so as to build from non-compliant (0) to full compliant and best practices (5)
2. That's it

Larry Morris REFP, M Ed
Planning and Design Supervisor
Morris_larry@asdk12.org

From: christykj@gci.net
To: Mearig, Timothy C (EED)
Cc: Weed, Lori (EED)
Subject: CIP PM Narrative Comments
Date: Monday, February 8, 2021 11:17:12 AM

Thanks for the opportunity to comment on the proposed matrix. The comments below from Ben McFarlane, Maintenance Supervisor YKSD, summarizes things quite well.

"I studied the proposed changes to the rater's guide. I believe this is a positive development for school districts. At least we know the elements that are required to get 5 point scores. …I don't believe the proposed changes to the raters guide are going to impact our scores. I would expect them to be the same. However, we should be able to improve now that the criteria is better defined. It will just depend on how much time we are able to allocate toward improving the programs."

I concur with Ben that this will make it easier for Districts to know what is expected at each point level. It unlikely that any but the largest urban Districts will be able to achieve maximum points due to the resources and reliability of systems necessary for full points. That is not necessarily a reason to lower standards, but to keep in mind reasonable expectations when looking at scores. Ben's comment on energy management "More than just recording energy usage, it appears that the department is really wanting to see programs and incentives for the staff to actively conserve energy and discussion of recent energy projects." I think this is what you are going for. Might be worthwhile to clearly state that as an objective.

I do have some questions on descriptions for a few items

Page 5 - are there standards for Districts to use to monitor comfort and safety?
Is it necessary to use CMMS to monitor energy if it can be monitored accurately by other means to achieve 5 points – This is probably not cost effectively achievable by smaller districts.

Page 9 Clarify if all R&R schedules for a District need to be submitted with the application or just for the facility addressed in the application - waste of paper and time to submit them all with the application. Current R&R should be filed and updated with DEED by a specific date.
There is not a link to a complying FCI (Index) – that would be very helpful. Is that the template in the Condition Survey Guideline?
What is definition of "All required Facilities" ? Ones in the attendance area of the application or all owned buildings in District?

From: Kevin Lyon
To: Mearig, Timothy C (EED)
Subject: For Comment: Draft FY23 CIP PM Narrative Rating Guide
Date: Monday, February 8, 2021 10:52:07 AM

Good Morning Tim –

"These are not intended to be offered as 'new criteria' or to set out new requirements. The matrix is the best attempt of the evaluative raters to outline how scoring is already being accomplished." - Thanks for the information, this explains the scores we have received in the past. I felt like we explained our programs fairly well in the documents submitted, with 42 schools, we tried not to provide a lot of redundant information as the submittal that was already quite bulky, we did not know the department was looking for a minimum 10% component reports for our main facilities. The information described will assist us in submitting additional documentation. We utilize the tools, and put a bit of time into the submissions, but had no idea that such detail was desired by the department in the submissions.

Thanks,

Kevin Lyon
Kenai Peninsula Borough School District
Director of Planning and Operations
Office 907-714-8821
Mobile 907-406-0098
klyon@kpbsd.org

From: Weed, Lori (EED)
Sent: Monday, February 1, 2021 8:48 AM
To: school_facilities
Subject: Re: [school_facilities] For Comment: Draft FY23 CIP PM Narrative Rating Guide

Good Morning!

Reminder: Any comments you'd like to submit on potential changes to the CIP Guidelines for Raters that add scoring matrices for the five preventive maintenance narratives are due by 4pm on Monday, February 8. Please e-mail comments to Tim.Mearig@alaska.gov.

Your feedback is appreciated, thank you,
~ Lori

From: Weed, Lori (EED)
Sent: Monday, January 11, 2021 8:59 AM
To: school_facilities

Subject: [school_facilities] For Comment: Draft FY23 CIP PM Narrative Rating Guide

On behalf of the Bond Reimbursement and Grant Review Committee, the Department is seeking comment on the attached draft *Guidelines for Raters of the CIP Application* scoring criteria for the District Preventive Maintenance and Facilities Management narratives (Sec. 9 of the CIP application). Comments will be reviewed at the committee's upcoming meetings for potential adoption into the FY23 CIP application.

Written comments should be provided by 4pm, Monday, February 8, 2021; please e-mail comments to Tim.Mearig@alaska.gov. Oral comments can be presented to the BR&GR Committee at its February 25, 2021 or April 14-15, 2021 meetings.

Thank you for your assistance improving the CIP ranking process.

Lori Weed
FSS/Facilities, School Finance Specialist II
Department of Education and Early Development
(907) 465-2785 | lori.weed@alaska.gov

From: Damian Hill
To: Mearig, Timothy C (EED)
Subject: Comments on CIP Application scoring
Date: Monday, February 8, 2021 3:41:47 PM

Mr. Mearig,

9a Clarification of 10% of the main school facilities component report?

9e How is the occupant comfort and safety, scope of effort quantified?

9f Monthly inspection from someone outside the facility seems difficult with lack of resources in the communities. We wouldn't have a chance at 5 points, not a level playing field. Our internal controls should suffice.

9h Not familiar with the FCI used.

Thank you,

Damian Hill

--
Damian Hill | Safety and Compliance Officer
Lake and Peninsula School District | P.O. Box 498 | King Salmon, AK 99613
C: 907.201.9434 | T: 907.318.2914

THE STATE of ALASKA
GOVERNOR MIKE DUNLEAVY

Department of Education & Early Development
FINANCE & SUPPORT SERVICES
801 West 10th Street, Suite 200
PO Box 110500
Juneau, Alaska 99811-0500
Telephone: 907.465.6906

To: Bond Reimbursement & Grant Review Committee
From: School Facilities
Date: February 25, 2021

LIFE SAFETY MATRIX DISCUSSION PAPER

Background

Life Safety/Code Weighted Scoring FY21 CIP

FY21 was the second year of utilizing the "*Code Deficiency, Protection of Structure, Life Safety*" (LS) matrix. Over that period, the weighting of points on mixed scope projects surfaced as a concern. The method of weighting scores solely on the ratio of the cost of LS/Code work to the total construction costs was fine for most projects. However, if a project included a high point value item (e.g., Building Egress [25]) that could be resolved at a small cost, the effect was to over-inflate the importance of that work in the point value assigned. As shown in the table below, the net effect of this factor resulted in a significant increase in both the number of high-scoring projects and in the top scores being assigned. Prior to the LS/Code Matrix, the raters would have adjusted for this situation using the consensus process. However, in an effort to keep this scoring element as objective as possible, the department—based on extensive analysis—proposed a formula based weighting calculation. The committee approved that weighting formula for use in the FY22 CIP rating year.

Life Safety/Code Weighted Scoring FY22 CIP

After two cycles of utilizing the "*Code Deficiency, Protection of Structure, Life Safety*" (LS) matrix, for FY22, the Committee—on recommendation from the Facilities staff—did its first substantive overhaul of the matrix. The FY22 LS matrix introduced two additional condition and deleted one, added some flexibility in assigning condition points by raters, and implemented the new weighting calculation for projects with a mix of LS and non-LS conditions. As scores were calculated, the new weighting factor did not seem to achieve the desire results. It also returned some peculiar results on some projects by increasing an individual condition's weighting beyond the baseline of the cost of all LS/Code work to the total construction costs. As a result, the jump in scores from pre-matrix (FY19 and earlier) to post-matrix remains a concern. The table below shows the top 20 scores awarded (and reused) in the LS category over the past 10 CIP years. Of particular interest is the continued upward trend (4%) in the average of these scores in spite of the introduction of the new weighting factor. We anticipated the opposite result, that the FY22 weighting factor would moderate the scores and reduce this average in the 4% range.

	FY13	FY14	FY15	FY16	FY17 *	FY18	FY19	FY20 **	FY21	FY22 (Init)
High	23.33	21.00	20.00	23.33	35.00	30.67	30.67	39.50	50.00	50.00
2nd	20.33	20.67	19.67	21.33	31.33	29.67	29.33	39.41	42.00	50.00
3rd	20.33	20.00	18.00	19.67	30.67	29.33	29.00	29.64	40.64	50.00
4th	19.33	19.33	18.00	18.33	29.33	29.33	27.00	29.63	39.50	41.42
5th	18.67	18.00	17.33	18.00	28.33	29.00	24.33	27.48	37.51	39.33
6th	18.67	17.67	17.00	18.00	28.33	28.33	24.33	26.67	35.85	38.00
7th	18.00	17.33	16.67	17.33	28.33	27.00	22.67	23.21	34.91	37.51
8th	17.67	17.33	16.00	17.33	27.33	26.67	21.67	21.67	33.77	35.85
9th	17.33	16.67	15.33	17.00	27.33	26.67	21.00	21.28	31.91	33.77
10th	17.33	16.67	15.00	15.33	26.67	26.33	21.00	20.67	29.64	31.91
11th	16.33	16.67	15.00	15.00	26.33	26.33	20.67	19.67	29.63	29.16
12th	16.33	16.33	14.33	14.67	26.33	26.33	20.33	19.00	29.00	29.00
13th	16.00	16.00	14.00	14.00	26.33	26.00	20.00	18.18	27.67	28.40
14th	15.67	16.00	14.00	13.67	26.00	25.67	20.00	18.00	27.48	27.67
15th	15.67	15.67	14.00	13.67	25.67	25.33	20.00	17.33	27.00	27.00
16th	14.67	15.67	13.67	13.33	25.67	25.00	19.67	17.33	26.67	23.58
17th	14.67	15.67	13.67	13.33	25.67	24.67	19.67	17.13	24.00	21.87
18th	14.00	15.67	13.33	13.33	25.33	24.33	19.67	16.67	23.21	21.84
19th	14.00	15.67	13.33	13.33	25.00	24.33	19.67	15.58	21.59	21.00
20th	13.67	15.00	13.00	13.00	24.67	24.00	19.33	15.33	21.28	20.79
Average of above	17.10	17.15	15.57	16.15	27.48	26.75	22.50	22.67	31.66	32.91

Notes: * Application re-write completed in FY17 with a stated purpose of assigning higher scores to projects, utilizing a broader range in the LS scoring category.
** Introduction of the new LS matrix in FY20.

At the December 2, 2020 BRGR meeting, the department proposed another revision to the weighting of LS/Code and non-LS/Code work in a single project. This paper presents data for consideration of a final revision for use in the FY23 CIP application.

Discussion

In developing the weighting factor calculation for the FY22 CIP, the department selected a method based on a graphical analysis of a condition's point value and that same condition's dollar value (i.e., cost) compared to the total construction cost. In reviewing this graphical analysis on several projects, it appeared this correlation between points and cost percentage would yield the most useful weighting modifier. In retrospect, the decision to correlate point values and cost percentages was not sustainable across all projects. In the FY22 cohort, 12 of 75 projects exhibited unexpected anomalies that increased scores in one or more conditions beyond the baseline percentage of LS/Code work to all project work.

The department went back to the data and developed some more traditional correlations using 'percent' as the comparative metric. In the attached Analysis, all conditions are evaluated for whether cost ratio

for cost to correct to project cost is greater than twice the point ratio for the condition points to the total points. When not the case for a specific condition, the following options were explored:

Option 1 – Condition Points Modified by Condition Cost to Total Cost
- Option 1 Variations – set minimum weighted point values:
  - Opt. 1 with a minimum 1 point floor
  - Opt. 1 with a minimum score of 10% of a condition's assigned points

Option 2 – Condition Points Modified by Condition Points to Total Points
- Option 2 Variation – set minimum weighted point values:
  - Opt. 2 with a minimum 1 point floor

Option 3 – Condition Points Modified by Condition Cost to Total Cost with Additional Modifier of Condition Points to Total Points

It is the department's position that none of the options presented are ready for adoption for FY23.

Recommendation

The department recommends continued development of a final option for weighted scoring by increasing the cohort of comparative scores from FY22 to also include FY21 and FY20.

ProjectName	Raw Points	Current FY22 Weighting Pts	Opt 1 LS$/Total$	Opt 1 w 1pt min	Opt 1 w 10%pt min	Option 2	Opt 2 w 1pt min	Option 3	LS Construction Cost	Total Construction Cost	% LS Cost / Const Cost	# of Conditions
Chenega Bay K-12 School Renovation	118.00	59.04	30.46	36.45	33.95	36.85	41.00	53.10	$1,613,138	$2,697,018	60%	14
East High School Gym Improvements	112.00	29.78	19.11	23.71	23.81	29.12	31.07	26.72	$2,120,966	$4,524,782	47%	14
Tatitlek K-12 School Renovation	110.00	42.66	26.31	33.54	32.24	34.01	38.58	39.06	$2,074,436	$2,789,093	74%	16
Galena Interior Lighting Academy Composite Building Renovation	107.00	54.62	36.06	40.72	39.62	40.75	43.24	47.08	$1,444,022	$2,206,076	65%	16
Sandpoint K-12 School Major Maintenance	100.00	38.11	20.85	23.83	26.13	32.00	32.84	32.62	$1,658,165	$2,377,987	70%	11
Minto K-12 School Renovation/Addition	93.00	25.17	3.96	12.10	10.60	12.63	16.85	17.02	$1,117,211	$4,254,939	26%	13
Hollis K-12 School Replacement	87.00	16.78	2.36	11.04	9.14	13.95	19.05	12.53	$799,324	$4,598,821	17%	12
Craig Middle School Code and Security Improvements	78.00	39.27	30.70	35.26	33.16	32.99	35.54	35.36	$1,891,300	$3,062,930	62%	13
Eagle River Elementary School Improvements	76.00	28.89	16.77	20.36	18.96	23.93	25.85	22.91	$2,725,589	$5,214,921	52%	7
William N. Miller K-12 Memorial School Replacement, Napakiak	58.00	10.75	1.81	7.32	6.32	11.08	13.37	4.78	$3,078,522	$18,694,518	16%	8
Tri-Valley School Partial Roof Replacement	45.00	17.73	7.64	8.29	8.29	19.66	19.66	11.84	$101,147	$284,939	35%	3
Gruening Middle School Improvements	37.00	8.06	0.47	8.00	3.70	7.05	11.57	4.79	$1,902,686	$14,688,709	13%	8
Mears Middle School Roof Replacement	35.00	9.78	9.20	10.02	11.42	25.48	25.48	9.28	$4,514,206	$5,504,890	82%	3
Hooper Bay K-12 School Exterior Repairs	33.00	20.93	8.60	9.56	8.86	19.52	20.25	9.95	$2,179,699	$3,056,908	71%	4
Haines High School Locker Room Renovation	32.00	20.15	12.66	13.61	12.81	16.60	17.48	17.01	$235,507	$373,975	63%	7
Bear Valley Elementary Domestic Water Replacement	29.00	15.93	10.15	11.14	10.44	15.05	15.74	13.71	$598,861	$1,012,421	59%	3
Anderson Elementary Renovation	27.00	21.92	13.55	13.55	13.55	17.51	17.51	15.26	$1,513,008	$1,864,032	81%	2
Bayshore Elementary School Boiler Replacement	25.00	12.53	10.70	11.64	11.04	11.28	11.64	10.96	$313,537	$618,560	51%	2
West High School Utilidor	24.00	10.50	10.50	11.50	10.80	10.88	11.50	10.50	$484,148	$968,295	50%	3
Anne Wien Elementary Renovation	23.00	19.27	7.92	8.82	8.12	13.35	13.96	9.63	$2,021,533	$2,412,891	84%	3
Koyukuk K-12 School Boiler Replacement	23.00	20.52	20.52	20.52	20.52	20.52	20.52	20.52	$185,380	$207,755	89%	2
Tanana Middle School Classroom Upgrades	21.00	16.62	15.09	16.04	15.24	15.23	16.04	15.57	$3,111,587	$3,930,900	79%	6
Pearl Creek Elementary Classroom Upgrades	21.00	14.05	10.46	11.03	10.63	11.75	11.75	11.53	$1,500,468	$2,242,869	67%	4
Weller Elementary School Classroom Upgrades	21.00	15.20	11.28	11.86	11.46	12.57	12.57	12.35	$1,676,042	$2,315,588	72%	4
Water Storage And Treatment, Kongiganak	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	$1,313,004	$1,313,004	100%	2

ProjectName	Raw Points	Current FY22 Weighting Pts	Opt 1 LS$/Total$	Opt 1 w 1pt min	Opt 1 w 10%pt min	Option 2	Opt 2 w 1pt min	Option 3	LS Construction Cost	Total Construction Cost	% LS Cost / Const Cost	# of Conditions
Bethel Campus High School Boardwalk Replacement	20.00	15.92	13.13	13.74	13.14	13.54	13.74	14.70	$528,786	$664,164	80%	3
Jack Egnaty Sr. K-12 School Roof Repalcement, Sleetmute	19.00	13.00	6.37	7.96	7.26	11.69	12.22	6.76	$397,120	$399,930	99%	3
Keet Gooshi Heen Elementary Covered PE Structure Renovation	19.00	9.81	4.06	5.10	4.40	10.73	11.68	4.97	$128,100	$248,150	52%	3
Bristol Bay Elementary and Gym Roof Replacement	18.00	9.02	5.29	6.00	6.00	10.56	10.56	5.52	$810,424	$1,295,426	63%	7
Administrative Center Renovation, Phase 2	18.00	15.45	6.40	7.32	6.62	11.07	11.57	8.66	$854,110	$995,310	86%	3
Blackwell K-12 School Fire Alarm Upgrades, Anvik	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	$74,912	$74,912	100%	2
Gladys Jung Elementary School Heating Mains Replacement	16.00	12.80	12.80	12.80	12.80	12.80	12.80	12.80	$850,000	$1,062,500	80%	1
Butte And Snowshoe Elementary Schools Water System Replacement	16.00	13.31	13.31	13.31	13.31	13.31	13.31	13.31	$664,268	$798,572	83%	1
Marshall K-12 School Emergency Tank Farm Repair	15.00	9.60	9.60	9.60	9.60	9.60	9.60	9.60	$1,047,277	$1,636,371	64%	1
Generator Replacement, 3 Schools	14.00	8.86	4.07	4.73	4.73	10.87	10.87	4.20	$825,000	$885,000	93%	2
Exterior Upgrades- Main School Facilities	14.00	14.00	4.04	4.04	4.04	12.29	12.29	4.38	$120,816	$120,816	100%	2
Bethel Campus Transportation and Drainage Upgrades	13.00	12.35	8.75	9.55	8.95	9.78	9.78	9.20	$296,806	$312,427	95%	3
Big Lake Elementary School Water System Replacement #2	13.00	12.48	3.03	3.96	3.26	7.54	7.84	3.95	$362,774	$377,773	96%	3
Administrative Center Air Conditioning and Ventilation Replacement	12.00	10.68	3.35	4.04	3.84	8.37	8.37	3.51	$849,229	$1,117,748	76%	2
Playground Construction, 3 Schools	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	$344,627	$344,627	100%	1
Woodriver Elementary School Roof Replacement	11.00	9.87	9.87	9.87	9.87	9.87	9.87	9.87	$1,187,720	$1,324,307	90%	2
Tuluksak K-12 School Fuel Tank Replacement	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	$3,063,370	$3,063,370	100%	1
Ben Eielson Jr/Sr High School Roof Replacement	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	$2,975,300	$2,975,300	100%	1
Riverbend Elementary School Roof Replacement	8.00	6.56	6.56	6.56	6.56	6.56	6.56	6.56	$912,600	$1,112,800	82%	1
Kenai Middle School Security Remodel	8.00	2.19	0.85	2.27	0.97	3.40	3.40	1.57	$186,502	$681,147	27%	3

ProjectName	Raw Points	Current FY22 Weighting Pts	Opt 1 LS$/Total$	Opt 1 w 1pt min	Opt 1 w 10%pt min	Option 2	Opt 2 w 1pt min	Option 3	LS Construction Cost	Total Construction Cost	% LS Cost / Const Cost	# of Conditions
Seward Middle School Upgrades	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	$385,000	$385,000	100%	2
HVAC Control Upgrades #2, 6 Sites	8.00	5.60	5.60	5.60	5.60	5.60	5.60	5.60	$3,754,615	$5,363,735	70%	1
Nome Beltz Jr/Sr High School Boiler Replacement	8.00	7.34	7.34	7.34	7.34	7.34	7.34	7.34	$89,246	$97,246	92%	1
YKSD District Office Roof Repalcement	8.00	7.60	7.60	7.60	7.60	7.60	7.60	7.60	$147,559	$155,325	95%	1
Fire Alarm Upgrades, 3 Sites	7.00	7.00	6.03	7.00	6.10	6.14	7.00	6.20	$179,785	$179,785	100%	2
Kotlik And Pilot Station K-12 Schools Renewal and Repair	7.00	5.24	5.24	5.24	5.24	5.24	5.24	5.24	$818,540	$1,094,207	75%	2
Anderson K-12 School Partial Roof Replacement	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	$1,044,027	$1,044,027	100%	1
District Seismic Upgrades, 5 Sites	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	$9,779,369	$9,779,369	100%	1
Nome Elementary Fire Alarm Replacement	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	$257,599	$257,599	100%	1
District Elevators, 6 Sites	5.00	4.00	2.00	2.00	2.00	4.00	4.00	2.30	$558,160	$697,700	80%	2
Chugiak High School Track Improvements	4.00	2.00	2.00	2.00	2.00	4.00	4.00	2.00	$293,434	$586,868	50%	1
Anvil City Charter School Restroom Renovation	4.00	4.00	1.52	2.00	1.30	3.25	3.25	1.69	$320,693	$320,693	100%	2
Ceiling And Sprinkler Upgrades, 5 Sites	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	$1,882,751	$1,882,751	100%	1
Nome Schools DDC Control Upgrades	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	$1,324,895	$1,324,895	100%	1
Mechanical System Improvements, 3 Sites	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	$233,950	$233,950	100%	1
Scammon Bay K-12 School Siding	2.00	1.90	1.90	1.90	1.90	1.90	1.90	1.90	$925,327	$976,126	95%	1
Sheldon Point K-12 School Exterior	2.00	0.63	0.63	1.00	0.20	2.00	2.00	0.63	$313,658	$997,853	31%	1
Minimum	2.00	0.63	0.47	1.00	0.20	1.90	1.90	0.63				
Q1	8.00	7.09	4.05	5.70	5.33	6.68	7.09	5.04				
Average	27.85	14.39	9.54	10.89	10.46	12.84	13.52	11.73				
Median	17.00	11.38	7.78	8.56	8.21	10.97	11.61	9.24				
Q3	28.50	17.49	12.49	12.63	12.60	15.19	17.32	13.61				
Maximum	118.00	59.04	36.06	40.72	39.62	40.75	43.24	53.10				

Note: Any score that achieves greater than 50 points will be capped at 50 points in the ranking process.

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

February 25, 2021

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
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

The Subcommittee has discussed the idea of the Cost Model as a tool for regulating project costs for some time. While a maximum cost per square foot (and the Cost Model as a potential alternative), had been part of the discussion in the original senate bill (SB87) that started much of this process, this idea was not included in HB212, the legislation finally enacted. The Subcommittee has continued to have concerns about how something like this could be implemented, especially in light of some of the known limitations of the Cost Model in its current state, and the unique challenges that Alaska presents. Department staff has also since communicated with facilities officials in other areas of the country that have similar requirements, and found that such a process has been problematic in those locations, even with fewer geographic and other variables that Alaska would face. Given these issues, the Subcommittee and Department staff are recommending that the idea of the Cost Model as a project cost control be abandoned at this time, and that this task be closed. A briefing paper to this effect, prepared by Department staff, has been included in the December 2020 BRGR packet.

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.

The Subcommittee met briefly on October 20th, and again on November 10th to discuss the completion of the remaining sections of the School Construction Standards Manual. Department staff provided drafts of six sections in various stages of completion, using information transferred from previous Department work and other sources. These sections were:

- Section 1 - Site and Infrastructure
- Section 2 - Substructure
- Section 3 - Superstructure
- Section 7 - Conveying Systems
- Section 10 - Equipment and Furnishings
- Section 11 - Special Conditions

After reviewing the progress to date, and work still to be done, it was felt that it would be beneficial and create a stronger product to get other voices and professional experience involved to assist in drafting and refining the various manual sections, particularly with the time constraints and other current

circumstances. It was suggested again that we attempt to get members of the Association for Learning Environments (A4LE) involved. Other BRGR committee members and other design professionals were also suggested as possible contributors. Department staff has recently sent out an invitation to some of these people to contribute, and an overture will be made to A4LE to see if some work sessions can be implemented with that group**.**

On January 28th, Tim Mearig distributed drafts of three additional sections of the School Construction Standards Manual that had been developed by Department staff. These included:

- **Section 2 – Substructure**
- **Section 3 – Superstructure**
- **Section 7 - Conveying Systems**

The Subcommittee met again on February 8th to review and discuss these new sections, work still to be done, and some potential changes that had been suggested that might be incorporated into the overall document.

The subcommittee continues to grapple with the appropriate level of detail contained in the various sections of the manual, and how prescriptive they should be, at least initially. Essentially, this is whether it should be more general to start and add detail as it evolves over time and receives more public vetting, or to begin with more detail and potentially reduce some specificity if issues occur in use. This issue remains ongoing.

One of the new sections submitted, Section 3 – Superstructure, incorporated some new language included a system summary describing the systems covered in that section, and some language regarding design philosophy for that section. Both of these pieces were felt to be beneficial, and will likely be included in each of the sections moving forward. A third piece referencing the Model Alaskan School File was felt to be less useful, and likely not included in the final product. There was also discussion of DEED staff putting together a checklist for projects to assist districts in the use of this manual, similar to what has already been done in regards to the ASHRAE 90.1 requirements. This was also felt to be a very useful tool to help implement the new standards, and eliminate uncertainties as the manual is put into use, and the idea was very much encouraged.

An invitation to has been extended to the A4LE group to hold an online meeting to discuss and review the manual as it exists currently, and to provide comments (and hopefully contributions) from the members in completing the initial version before it goes out for general public comment. As has been discussed several times previously, the A4LE membership encompasses a variety of professional knowledge and backgrounds that would be beneficial in vetting and improving the content and usability of the construction standards manual. Given that a number of members will also

likely be impacted by implementation of the new standards manual, it is assumed that motivation for their participation would be high. However, the subcommittee has not heard back from A4LE at this time.

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

The next Subcommittee meeting is not currently scheduled. Department staff will continue with work on remaining sections including Site Work and Equipment and Furnishing. It is anticipated that the initial School Construction Standards Manual will be available for public comment by spring 2021.

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

February 11, 2021

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, ASD
William Glumac	Gary Eckenweiler, BSSD	Lori Weed, DEED
Randy Williams	Karen Zaccaro, ECI	Ezra Gutschow (post report)

Status Update

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).*

Ratio recommendations for O:EW (opening to exterior wall) and V:GSF (volume to gross square footage have previously been forwarded to the committee. A ratio recommendation for FPA:GSF (building footprint area to gross square footage) was previously determined to not be practicable to develop and recommended language be incorporated into the construction standards that required review of a two-story construction option for facilities over a to-be-determined GSF.

The minimal energy savings modeled in the study for V:ES and the specific shape components led the group to consider other compactness ratios as sufficient to incorporate this variable. The subcommittee is currently re-examining the option of proposing a Volume to Exterior Surface Area (V:ES) as a first-cost construction saving.

The subcommittee is currently reviewing new and previous studies focused on compactness with the general results matching the DEED study in that of all the shapes they considered, they are

only slightly less efficient than the theoretical optimum “semi-cube”. This may indicate that further research and modeling will be required to reach a conclusion on a target ratio and range.

The subcommittee will continue to review previous studies, compare results of the “DEED building energy modeling study”, and gather information on existing school ratios to provide a ratio option with savings potential.

Schedule

March 2021 – Review with DEED recommendations for all ratios (confirm language).
April 2021 – Assist DEED with completion of ratio recommendations.

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

Alaska School Design and Construction Standards

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

February 25, 2021

Issue

The department seeks committee feedback on the draft additions and revisions to Part 3 System Standards of the *Alaska School Design and Construction Standards* handbook.

Background

Last Updated/Current Edition
This is a new publication; no current edition is available.

Summary of Proposed Changes
The department has prepared revisions/additions to 4 systems in Part 3 System Standards of the publication: 01 Site and Infrastructure; 02 Substructure; 03 Superstructure; and 07 Conveying Systems. This supplements the work previously completed by BDS Architects (see additional information following). Two additional System Standard sections, 10 Equipment & Furnishings, and 11 Special Conditions are pending future work by the department and subcommittee.

Public Comment
No public comment period has occurred.
The handbook is not scheduled to be presented for public comment until the work on both Part 2 and Part 3 is completed. These are scheduled to be brought before the committee at its March meeting.

Version Summary & BRGR Review

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

September 8, 2020 – original BDS draft presented; committee directed DEED to develop incomplete sections.

That draft provided an overall structure to the publication and completed Part 1 describing its purpose and use. Part 2 Design Standards, and Part 3 System Standards were left incomplete due to limited funding for the consultant assistance.

BRGR Input and Discussion Items

- Section numbering indexed to DEED CostFormat and condition survey handbook.
- Building System Summary, Design Philosophy, and Model School preambles.
- Incorporation of macro and micro design/efficiency ratios.

Suggested Motion

"I move the Bond Reimbursement and Grant Review Committee direct continued development of the Alaska Design and Construction Standards – Part 3 using the enhancements listed in the above discussion items."

ALASKA SCHOOL DESIGN & CONSTRUCTION STANDARDS

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Part I. 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.

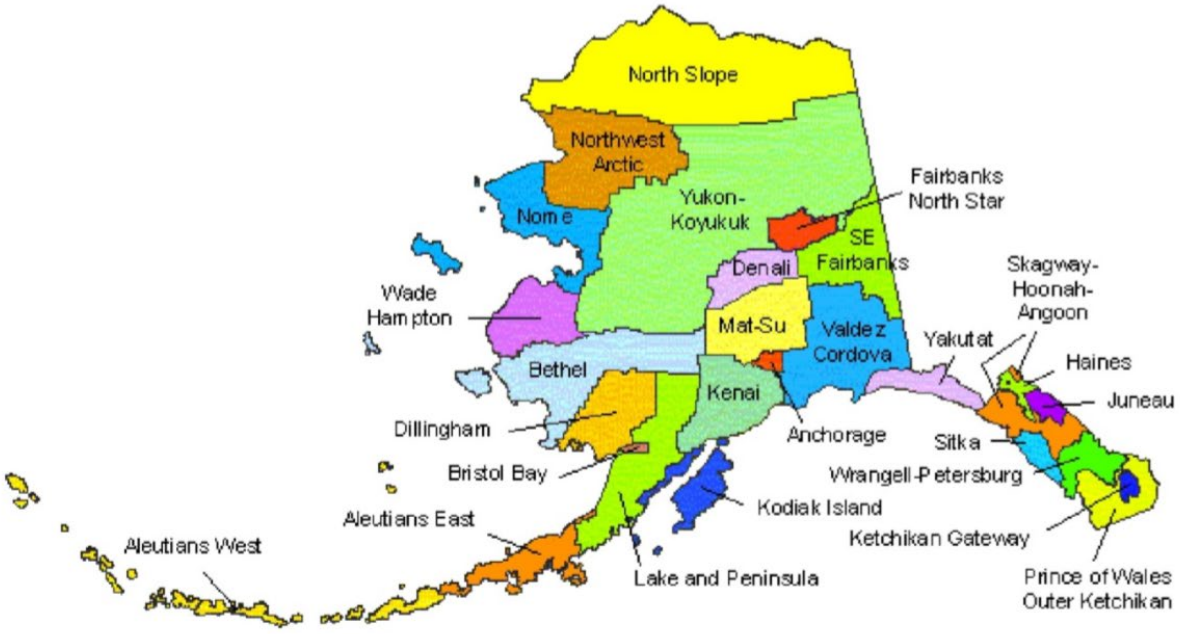

Table A301 Alaska Census Areas

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.

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.

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.

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.

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".

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

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

Category A – Instructional or Resource

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

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.

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

Bi-Cultural/Bilingual Spaces

Required:

1. TBD

Recommended:

25. X

Premium:

26. X

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

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

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

Computer Lab/Technology Resource

Required:

1. TBD

Recommended:

2. X

Premium:

3. X

Consumer Education Classroom

Required:

1. TBD

Recommended:

27. X

Premium:

28. X

Career and Technology Education

Required:

1. TBD

Recommended:

2. X

Premium:

3. X

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

Auditoriums + Stage

Required:

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

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

Recommended:

8. X

Premium:

9. 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)]
10. Additional seating
11. Additional theater curtains
12. Proscenium arches wider than 60'-0"
13. Fly galleries
14. Stage gridirons, pin rails, or catwalks over stages
15. Proscenium openings higher than 25'-0" or stage ceilings higher than 30'-0"
16. Under-stage storage
17. Orchestra pits
18. Professional theater lighting systems
19. Theater balconies or spectator boxes
20. Elevators dedicated to serving just the auditorium
21. Special curved plaster wall or ceiling assemblies designed for acoustic balancing
22. Decorative wood paneling, wallpaper, and murals
23. Spaces and systems for “black-box” theaters

Category B – Support Teaching

1) Counseling/Testing

Required:

1. TBD

Recommended:

2. X

Premium:

3. X

Teacher Workrooms/Offices

Required:

1. TBD

Recommended:

2. X

Premium:

3. X

Teacher Breakroom

Required:

1. TBD

Recommended:

2. X

Premium:

3. X

Educational Resource Storage

Required:

1. TBD

Recommended:

2. X

Premium:

3. X

Time-out Rooms

Required:

1. TBD

Recommended:

2. X

Premium:

3. X

Parent Resource Rooms

Required:

1. TBD

Recommended:

2. X

Premium:

3. X

Category C – General Support

1) Administrative Areas

Required:

1. TBD

Recommended:

2. X

Premium:

3. X

Health Clinic + Nurse Space

Required:

1. TBD

Recommended:

2. X

Premium:

3. X

Conference Rooms

Required:

1. TBD

Recommended:

2. X

Premium:

3. X

Commons/Lobby

Required:

1. TBD

Recommended:

2. X

Premium:

3. X

Cafeteria

Required:

1. TBD

Recommended:

2. X

Premium:

3. X

Kitchen

Required:

1. TBD

Recommended:

2. X

Premium:

3. X

Multipurpose Room

Required:

1. TBD

Recommended:

2. X

Premium:

3. X

Student Store

Required:

1. TBD

Recommended:

2. X

Premium:

3. X

Weight Room

Required:

1. TBD

Recommended:

2. X

Premium:

3. X

Locker Rooms

Required:

1. TBD

Recommended:

2. X

Premium:

3. X

Pool

Required:

1. TBD

Recommended:

2. X

Premium:

3. X

Category D – Supplementary

1) Corridors

Required:

1. TBD

Recommended:

2. X

Premium:

3. X

Stairwells/Elevators

Required:

1. TBD

Recommended:

2. X

Premium:

3. X

Mechanical

Required:

1. TBD

Recommended:

2. X

Premium:

3. X

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:

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

Premium:

31. Central UPS systems.
32. Air conditioning if temperatures are not excessive in-rack cooling systems.

Maintenance & Receiving

Required:

1. TBD

Recommended:

2. X

Premium:

3. X

Building Storage

Required:

1. TBD

Recommended:

2. X

Premium:

3. X

Restrooms

Required:

1. TBD

Recommended:

2. X

Premium:

3. X

Custodial

Required:

1. TBD

Recommended:

2. X

Premium:

3. X

Conditioned Food Storage

Required:

1. TBD

Recommended:

2. X

Premium:

3. X

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.

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.

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

01. SITE AND INFRASTRUCTURE

[The following Site and Infrastructure language has been added by department Facilities staff.]

011 Reserved

011X TBD

012 Reserved

012X TBD

013 Site Improvements

0131 Vehicular Surfaces

Required:

1. Parking areas, access drives, and vehicular circulation will have appropriate structural subbase, 4 inch basecourse, and 2 inch asphalt paving; increase cross-section at truck delivery and bus loops.
2. Provide parking spaces at a ratio of 1/20 K-6 students and 1/15 9-12 students for the projected student population.
3. Provide dedicated bus lanes/bus loops and dedicated parent pick-up/drop-off areas. Design vehicle circulation and parking areas to maximize site safety.
4. Minimize islands and other obstructions in parking areas, except where needed for circulation control, to accommodate snow removal and storage.
5. Provide parking lot lighting to IES standards. (Ref. Section *0163 Lighting & Equipment* for additional provisions.)
6. Provide accessible parking spaces in accordance with applicable codes.

Recommended:

7. Consider a top course of uniform gravel, crushed rock, or recycled asphalt in any community without access to a batch or drum-mix plant within an approximate 45min delivery radius.
8. In roadless communities, consider vehicular surfaces of the best available local fill.
9. Consider designing mitigations in vehicular pavement to prevent stormwater and snowmelt from flowing across pedestrian surfaces.
10. Consider speed control measures a long straightaways and high-pedestrian areas.
11. Consider designating parking spaces near the main entrance for carpool and low-emitting vehicles.
12. Consider providing headbolt heaters at staff parking areas in climate zones 8 and 9. (Ref. Section *0161 Electrical Services & Distribution* for additional provisions.)

Premium:

13. Paving plants as a project cost.

14. Additional parking and locally mandated parking over the above the standards.
15. Concrete pavement other than at loading dock aprons and dumpster approaches.
16. Asphalt concrete pavement more than 2in thick except at loading docks, bus loops, and dumpster approaches which may be 4in.
17. “Porous” drainage pavement.
18. Access controlled (e.g., magnetic cards, etc.) parking lots.
19. Colored pavement.
20. Radiant parking snow melt systems.
21. Headbolt heaters in climate zones 6 and 7, or those in zones 8 and 9 beyond 50% of the anticipated number of school staff.

0132 Pedestrian Surfaces

Required:

1. X

Recommended:

2. X

Premium:

3. Concrete or asphalt pavers.
4. Concrete walks other than at the main entrance.
5. Radiant sidewalk snow melt systems

0133 Elevated Decks & Ramps

Required:

Recommended:

Premium:

0134 Site Walls

Required:

Recommended:

Premium:

0135 Landscaping & Irrigation

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. Non-native plantings or trees.
10. Site irrigation systems for athletic fields.

0136 Fencing and Gates

Required:

1. X

Recommended:

2. X

Premium:

3. Chain link fence coatings and screen slats.

0137 Site Furnishings & Equipment

Required:

1. X

Recommended:

2. X

Premium:

3. Decorative benches and elements.
4. Stone benches or plazas.

0138 Playgrounds & Playfields

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

Recommended:

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

Premium:

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

0139 Other Site Improvements

Required:

Recommended:

Premium:

014 Site Structures

0141 Freestanding Shelters

Required:

Recommended:

Premium:

0142 Attached Shelters

Required:

Recommended:

Premium:

0143 Support Buildings

Required:

Recommended:

Premium:

015 Civil/Mechanical Utilities

0151 Water Systems

Required:

1. Select sites with public water available to the site.
2. Locate water utility connections away from main building entrance.
3. Coordinate water connections with wastewater, and fuel utility connections to enter building at mechanical utility spaces.
4. Where water piping is installed above ground outside of buildings, locate piping away from the main building entrance.
5. Locate water piping to allow access for pipe maintenance and building maintenance; locate piping away from pedestrian walkways and vehicle traffic to the greatest extent practicable.

Recommended:

6. Consider recirculating and/or heat trace on water supply mains as required by site climate conditions.

Premium:

7. Avoid depressed loading docks.

0152 Sanitary Sewer

Required:

1. Select sites with public wastewater available to the site.
2. Locate wastewater utility connections away from main building entrance.

3. Coordinate wastewater connections with water, and fuel utility connections to enter building at mechanical utility spaces.
4. Where wastewater piping is installed above ground outside of buildings, locate piping away from the main building entrance.
5. Locate wastewater piping to allow access for pipe maintenance and building maintenance; locate piping away from pedestrian walkways and vehicle traffic to the greatest extent practicable.
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.

Recommended:

9. Consider wastewater pretreatment systems at sites with septic systems.
10. 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.

Premium:

11. X.

0153 Storm Water

Required:

1. 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.
2. Design “open pond” stormwater storage systems. Avoid buried storage systems.
3. Enclose stormwater ponds and holding areas with 4'-0"-high galvanized chain link fencing. Provide gates for maintenance.
4. 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.

Recommended:

5. X

Premium:

6. Chain link fence coatings and screen slats.

0154 Fuel Systems

Required:

1. Locate fuel oil storage away from the building front entrance.

2. Enclose bulk fuel oil storage areas with 8'-0"-high galvanized chain link fencing. Provide gates for maintenance.
3. 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.
4. Provide containment for fuel oil piping installed below ground including double-wall fuel-rated piping, corrugated carrier pipe, pipe transition and containment sumps.

Recommended:

5. Consider installing a fuel leak detection system with alarms to monitor integrity of fuel storage tank and distribution piping.

Premium:

6. Do not bury ferrous fuel oil piping.
7. Fuel level monitoring system with digital outputs for remote viewing and connection to building energy management system/control system.

0155 Heating/Cooling Piping & Utilidors

Required:

1. X

Recommended:

2. X

Premium:

3. X.

016 Site Electrical

0161 Electrical Service & 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

0162 Data/Comm Service & 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

0163 Lighting & 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

0164 Security Systems

Required:

Recommended:

Premium:

017 Offsite Work

0171 Offsite Improvements

Required:

Recommended:

Premium:

0172 Offsite Utilities

Required:

Recommended:

Premium:

0173 Other Offsite Work

Required:

Recommended:

Premium:

02.**SUBSTRUCTURE**

[The following Site and Infrastructure language has been added by department Facilities staff.]

021 Standard Foundations & Basements

0211 Continuous & Column Footings

Required:

1. 4000psi concrete is the basis of design. Mixes for other strengths are subject to evaluation by life-cycle cost analysis.
2. Carbon steel reinforcing bar is the basis of design with ratios in the 30-80lbs range per cubic yard of concrete.
3. Design footings sized in accordance with building codes, soils and superimposed loads.
4. Soil bearing pressures below 2000psi require site selection justification and DEED approval.

Recommended:

5. All weather wood (AWW) footings consisting of timbers and strongbacks are acceptable where soils are appropriate (i.e., low moisture, non-permafrost). AWW foundations must be supported by appropriate life-cycle cost analysis.

Premium:

6. Coated reinforcing bar, including galvanized and epoxy, and stainless steel.

7. Reinforcing bar above 80lbs per cubic yard of concrete.

0212 Foundation Walls & Treatments

Required:

1. Extend foundation walls to frost depths per local conditions/codes.
2. 4000psi concrete is the basis of design. Mixes for other strengths are subject to evaluation by life-cycle cost analysis.
3. Carbon steel reinforcing bar is the basis of design with ratios in the 50-100lbs per cubic yard of concrete.
4. Design foundation walls sized in accordance with building codes, soils and superimposed loads.
5. Insulate foundations as required by DEED-adopted energy codes to eliminate or minimize heat loss.
6. Provide dampproofing treatment as required by local conditions/codes.
7. Provide durable (e.g. 10mil poly) vapor barrier on all exposed earth contained within foundation walls.

Recommended:

8. Concrete masonry units (CMU foundation walls, with reinforcing, are acceptable.
9. All weather wood (AWW) foundation walls consisting of framing and sheathing are acceptable where soils are appropriate (i.e., low moisture, non-permafrost). AWW foundations must be supported by appropriate life-cycle cost analysis.
10. Frost protected shallow foundations (FPSF) including perimeter insulation are acceptable when supported by appropriate life-cycle cost analysis.
11. Avoid below grade functional space enclosed by foundation walls whenever possible.
12. Exterior sheet waterproofing on foundation walls that enclose space below the finish grade level; includes below-grade mechanical and service spaces.

Premium:

13. Coated reinforcing bar, including galvanized and epoxy, and stainless steel.
14. Reinforcing bar above 100lbs per cubic yard of concrete.
15. Foundation walls enclosing below grade space classified under adopted codes as occupied space.

0213 Foundation Drainage

Required:

1. Install perimeter foundation drainage only where required by codes adopted by the state or a local jurisdiction with delegated authority.

Recommended:

2. When required by local conditions/code, perforated pipe footing drains bedded in drain rock with filter fabric are acceptable.
3. Run foundation drain systems to daylight where possible and appropriate (see *0153 Storm Water* for standards on site drainage collection).

4. Drainage mats and other water/moisture control measures are acceptable when required by site conditions and supported by appropriate life-cycle cost analysis.

Premium:

5. Sites requiring underslab drainage.

022 Slab on Grade

0221 Structural & Non-structural Slab

Required:

1. 4000psi concrete is the basis of design for interior slabs. 5000psi concrete is the basis of design for exterior, exposed slabs. Mixes for other strengths are subject to evaluation by life-cycle cost analysis.
2. Carbon steel reinforcing bar is the basis of design with ratios in the 20-50lbs range per cubic yard of concrete.
3. Structural slabs are not anticipated except at isolated point loads for installed equipment.
4. Non-structural slabs shall be 4" nominal thickness.
5. Provide standard compacted sub-base, welded wire fabric reinforcement, moisture control, and trowel finish.
6. Insulate slabs as required by DEED-adopted energy codes to eliminate or minimize heat loss.
7. See *0311 Lower and Main Floors* for wood and steel superstructures.

Recommended:

8. Consider reinforcing bar in non-structural slabs where required for slab openings, incidental loads, and perimeter durability.
9. Consider shrinkage and crack control using glass fiber reinforcing in-lieu of or in addition to welded wire fabric.
10. Integrate footings and slabs where part of an approved design assembly such as at FPSF.
11. Consider polished concrete finish where appropriate to be used in-lieu of applied floor coverings.
12. Consider providing full frost-depth wall foundations under entry slabs where necessary to prevent frost heaving.
13. including perimeter insulation are acceptable when supported by appropriate life-cycle cost analysis required by site conditions and supported by appropriate life-cycle cost analysis.

Premium:

14. Coated reinforcing bar, including galvanized and epoxy, and stainless steel.
15. Reinforcing bar above 50lbs per cubic yard of concrete.
16. Colored or decorative concrete slabs exceeding 40 percent of exposed concrete.

0222 Trench, Pit and Pad

Required:

1. 4000psi concrete is the basis of design for pits and pads. Mixes for other strengths are subject to evaluation by life-cycle cost analysis.

2. Carbon steel reinforcing bar is the basis of design with ratios in the 50-100lbs range per cubic yard of concrete.
3. Elevator pits shall be provided in the dimensions and depths required.
4. Pads to provide adequate securing of equipment will be provided where required for anchoring or other safety measures were required by codes adopted by the state or a local jurisdiction with delegated authority.

Recommended:

5. Consider non-seismic housekeeping pads for major HVAC and electrical equipment at nominal heights not to exceed 4in above the surrounding floor level.

Premium:

6. Trenches formed of concrete; slab block-outs and reinforcing for nominal trench drains in support of CTE are acceptable.

0223 Underslab Elements

Required:

1. None.

Recommended:

2. Consider underslab rigid insulation in support of FPSF and where otherwise supported by an energy life-cycle cost analysis of the proposed heating system.

Premium:

3. Sites requiring underslab drainage.

024 Special Foundations

0241 Piling & Pile Cap

Required:

1. Provide a steel H-pile foundation including steel or lumber pile caps and required lateral bracing where soil bearing pressures cannot support a standard foundation or where it is not cost effective to remove poor soils and replace with suitable fill.
2. Install thermistor tubes integral with pile.

Recommended:

3. Consider a treated wood piling foundation including timber or engineered lumber pile caps, and required lateral bracing for smaller education related facilities up to 5000gsf.
4. Consider steel pipe piles where supported over H-piles based on a life-cycle cost analysis.

Premium:

5. Sites where pile stick-up exceeds a total average of 6ft for all piles, or any pile stick-up exceeds 12ft.
6. Pile foundations exceeding 40#/FPA (does not include lateral bracing or pile caps).

0242 Caissons

Required:

1. None; caisson foundations not anticipated.

Recommended:

2. Consider caisson foundations where bedrock (+/- 15,000psi) occurs at shallow depths of up to 8ft below grade. If this foundation is proposed, it must be supported with an appropriate cost analysis of the full substructure.

Premium:

3. Caisson foundations where total estimated 02 Substructure cost exceeds other alternatives.

0243 Grade Beams

Required:

1. None; grade beam foundations not anticipated.

Recommended:

2. Consider grade beam foundations where adequate support for continuous footings is not available, subgrade point loads are available or can be created (i.e., piliing, etc.), and concrete is readily available and cost effective. If this foundation is proposed, it must be supported with an appropriate cost analysis of the full substructure.

Premium:

3. Grade beam foundations where total estimated 02 Substructure cost exceeds other alternatives.

0244 Arctic Foundation Systems

Required:

1. Provide an arctic foundation system consisting of thermopile (with or without helical ribs, pile extensions, steel or lumber pile caps and required lateral bracing where soils consist of continuous or discontinuous permafrost.
2. Install thermistor tubes adjacent to each pile.
3. Thermopile and thermosyphons will be included in a project's commissioning plan unless approved otherwise by DEED.

Recommended:

4. Consider passive thermosyphons in-lieu-of thermopile where suitable fill is available to support installation of standard foundations.
5. Consider underslab rigid insulation in support of FPSF and where otherwise supported by an energy life-cycle cost analysis of the proposed heating system.

Premium:

6. Arctic foundations with active refrigeration.
7. Gravel pads in conjunction with thermopile arctic foundations.

0245 Other Special Foundations

Required:

1. None; other special foundations such as sheet pile, raft, multi-point frame, etc. are not anticipated.

Recommended:

2. Consider other special foundations when building loads and soil conditions may exclude other substructure solutions. If a special foundation is proposed, it must be supported with an appropriate cost analysis of the full substructure.

Premium:

3. Other special foundations where total estimated 02 Substructure cost exceeds other alternatives.

A. Design Ratios

Standard Foundations & Basements

1. Total building deadload/GSF
2. Cubic feet of concrete/GSF
3. Pounds of rebar/CY concrete

Slab on Grade

4. Total building deadload/GSF
5. Cubic feet of concrete/GSF
6. Pounds of rebar/CY concrete

Special Foundations

7. Total building deadload/GSF
8. Pile weight (LB)/Footprint area (FPA).
9. Install

B. Design Criteria

Substructure is typically far more expensive in Alaska than in other parts of the country. Usually substructure system options are limited by the soil conditions of a particular site. As it affects the cost of site development, the soil conditions of the selected site also play a large part in the cost of the foundation system and determining the number of substructure system options that are acceptable on a given site. Thus, the quality of soils should be given significant weighting when evaluating site options. Building sites whose soil conditions allow the use of standard concrete foundations are preferable to sites that require piling foundations.

- Multi-story construction shall be considered and presented as a schematic design option for all school structures over 40,000 GSF
- Where appropriate for soil conditions, standard concrete foundations are almost always the preferred substructure system

- If any other substructure system is to be considered, a cost analysis will be performed. Cost analysis shall include cost of energy and maintenance.
- Where soils are of low moisture content, all weather wood foundations should be considered for facilities smaller than 20,000 GSF
- Where appropriate for soil conditions, substructure systems utilizing a heated crawlspace with perimeter closure are preferable to substructure systems that utilize an elevated building with an air space between the underside of the building and grade

03.SUPERSTRUCTURE

[The following Site and Infrastructure language has been added by department Facilities staff.]

A. Building System Summary

The ***Superstructure*** of a building consists of all gravity and lateral force resisting members above the substructure to and including the roof deck. The department recognizes three sub-categories in this building system: ***Floor Structure***, ***Roof Structure***, and ***Stairs***. Floor, roof, and stair structures normally include vertical members (columns, walls), horizontal members (beams, joists/rafters, trusses), decking (wood sheathing, concrete, etc.), and a variety of bracing elements. In some superstructure systems with bearing walls (e.g., masonry units, light-gauge steel, nominal wood framing, etc.) the superstructure blends with the Exterior Closure and Interiors systems. In ***Floor Structure*** using slab-on-grade, the system overlaps with ***Substructure***.

B. Design Philosophy

Alaskan schools must be provided with an adequate superstructure which responds efficiently, and effectively to building loads as prescribed in adopted building codes and to the conditions of the local environment and building's use. Structural efficiency measures include minimizing the deadload of the building, selecting high strength-to-weight and strength-to-cost materials, building simplicity, and structural member uniformity. A uniformly loaded floor system is typically the most cost-effective elevated floor system; concentrated point loads must be accommodated but should be minimized. It should be noted that concrete slab on grade floor systems is the least expensive floor system in areas where concrete is readily available For additional design parameters see the **Design Ratio** section of this system.

The same can be said for roof assemblies that are typically comprised of roof sheathing, roof rafters or trusses, beams, and columns carrying concentrated vertical loads to the foundation or a lower floor assembly. Structural roof assemblies that utilize load-bearing partitions are typically more cost-effective than assemblies that use post and beam systems to bear vertical loads. With the inclusion of the structural insulated panels in the roof assembly and its use to replace both the roof sheathing and roof rafters or trusses due to its large span and loading limits, roof assemblies have become more reliant on a post and beam assembly. While the use of structural insulated roof panels may reduce the time required to fully construct the structural roof assembly, its inherent inclusion of heavily loaded beams and columns adds to the overall cost of the superstructure.

The previous paragraphs deal with how the structural systems are designed to accommodate gravity loads. Consideration must also be given to how the structural system performs under lateral, seismic, and wind loading conditions. The best way to design a cost-effective structural system to handle wind loads is to limit them. The building's form and massing play a significant role in limiting the structure's exposure to wind loads and should be considered by the architect at the outset of design. Buildings that expose large areas of high bay space to lateral wind loads will not be conducive to cost-effective structural design.

C. Model Alaskan School

The Model Alaskan School includes a main floor structure of reinforced concrete slab on grade and includes a small portion of elevated floor with steel columns, beams, joists, metal decking and concrete. The roof structure uses a combination of wood frame bearing wall, steel columns, beams, joists, and metal decking. Steel angle bracing and light gauge steel shear walls provide lateral support. Acceptable alternatives are detailed in the construction standards that follow.

031 Floor Structure

0311 Lower & Main Floors

Required:

1. Structural frame floor assemblies of wood or metal consisting of posts, beams/frame walls, joists, and decking are required when slab on grade is not cost effective. Support frame floor assemblies with appropriate cost analysis (e.g., in geographic regions where the cost of concrete is high, or soils will not permit this standard).
2. Design frame floor assemblies (materials, size, spacing, etc.) for maximum efficiency in accordance with building codes and superimposed loads.
3. HHS shapes for columns/posts, W-shapes for beams/girders, open web trusses for joists and fluted sheet metal for decking form the basis of design.
4. Wood members functioning in the capacity of metal deck and concrete must be minimum 1-1/8" wood structural panel or wood decking.
5. Insulate frame floors as required by DEED-adopted energy codes to eliminate or minimize heat loss.
6. Provide protective coating on structural members as required by local conditions/codes.

Recommended:

7. Consider light-gauge steel, engineered wood, or lumber for any component listed in the basis of design. Support light gauge steel and wood members and assemblies with appropriate cost analysis and justification (e.g., building dimensions and configurations with small spans).
8. Consider, where pile foundations (0241, 0244) are accepted, a structural insulated panel (SIP), with or without embedded floor joists, as required to meet code-specified loading. If panels will not span between pile caps, consider intermediary engineered wood beams or steel wide flange beams. Support SIP assemblies with an appropriate cost analysis of the full substructure and 0311 floor structure.

Premium:

9. Framed floor assemblies where total estimated 02 Substructure + 0311 Lower and Main Floors cost exceeds other alternatives.

0312 Upper Floors

Required:

1. Provide structural frame floor assemblies of wood or metal consisting of columns, beams/frame walls, joists, and decking.
2. Design upper floor assemblies (materials, size, spacing, etc.) for maximum efficiency in accordance with building codes and superimposed loads.
3. HHS shapes for columns/posts, W-shapes for beams/girders, open web trusses for joists and fluted sheet metal for decking form the basis of design.
4. Wood members functioning in the capacity of metal deck and concrete must be minimum 1-1/8" wood structural panel or wood decking.
5. Insulate upper floor perimeters as required by DEED-adopted energy codes to eliminate or minimize heat loss.
6. Provide protective coating on structural members as required by local conditions/codes.

Recommended:

7. Consider light-gauge steel, engineered wood, or lumber for any component listed in the basis of design. Support light gauge steel and wood members and assemblies with appropriate cost analysis and justification (e.g., building dimensions and configurations with small spans).
8. Consider framed bearing walls in-lieu-of columns and beams/girders where cost effectiveness can be increased when considering the combination of systems in 0312 and 0411 Exterior Walls or 0312 and 0611 Fixed Partitions.
9. Consider, where pile foundations (0241, 0244) are accepted, a structural insulated panel (SIP), with or without embedded lumber, as required to meet code-specified loading. If panels will not span between pile caps, consider intermediary engineered wood beams or steel wide flange beams. Support SIP assemblies with an appropriate cost analysis of the full substructure and 0311 floor structure analysis.

Premium:

10. Framed floor assemblies where total estimated 02 Substructure + 0311 Lower and Main Floors cost exceeds other alternatives.
11. Exterior balconies and construction.

0313 Ramps

Required:

1. Ramps accepted with framing equal *to 0311 Lower and Main Floors* and alternative systems as required by building function and with approved cost analysis.

Recommended:

2. Consider light-gauge steel, engineered wood, or lumber for any component listed in the basis of design. Support light gauge steel and wood members and assemblies with appropriate cost analysis and justification (e.g., ramp dimensions and configurations).

3. See Section *0711 Passenger Elevators* for use of ramps in-lieu-of elevators.

Premium:

4. Framed ramp assemblies where total estimated 02 Substructure + 0311 Lower and Main Floors cost exceeds other alternatives.
5. Ramps wider than 10% of the minimum permitted under applicable codes.

032 Roof Structure

0321 Pitched Roofs

Required:

1. Provide structural frame roof assemblies of wood or metal consisting of columns, beams/frame walls, rafters, and decking.
2. Provide trusses where clear spans are required or possible (gymnasiums, multipurpose, library, etc.).
3. Design roof assemblies (materials, size, spacing, etc.) for maximum efficiency in accordance with building codes and superimposed loads.
4. HHS shapes for columns/posts, W or HSS steel for beams/girders, open web trusses or engineered wood for rafters, and fluted sheet metal for decking form the basis of design.
5. Wood members functioning in the capacity of metal deck may wood structural panel or wood decking with appropriate span ratings as required by applicable building codes.
6. Provide protective coating on structural members as required by local conditions/codes.

Recommended:

7. Consider light-gauge steel, engineered wood (including GLB) or lumber for any component listed in the basis of design. Support light gauge steel and wood members and assemblies with appropriate cost analysis and justification (e.g., building dimensions and configurations with small spans).
8. Consider framed bearing walls in-lieu-of columns and beams/girders where cost effectiveness can be increased when considering the combination of systems in 0321 and 0411 Exterior Walls or 0321 and 0611 Fixed Partitions.
9. Consider a structural insulated panel (SIP), with or without embedded lumber, as required to meet code-specified loading. Support SIP assemblies with an appropriate cost analysis of the full substructure and 0321 roof structure analysis.

Premium:

10. Framed roof assemblies where total estimated 02 Substructure + 0321 Pitched Roofs cost exceeds other alternatives.

0322 Flat Roofs

Required:

1. Provide structural frame roof assemblies of wood or metal consisting of columns, beams/frame walls, rafters, and decking.
2. Provide trusses where clear spans are required or possible (gymnasiums, multipurpose, library, etc.).

3. Design roof assemblies (materials, size, spacing, etc.) for maximum efficiency in accordance with building codes and superimposed loads.
4. HHS shapes for columns/posts, W or HSS steel for beams/girders, open web trusses or engineered wood for rafters, and fluted sheet metal for decking form the basis of design.
5. Wood members functioning in the capacity of metal deck may wood structural panel or wood decking with appropriate span ratings as required by applicable building codes.
6. Provide protective coating on structural members as required by local conditions/codes.

Recommended:

7. Consider light-gauge steel, engineered wood (including GLB) or lumber for any component listed in the basis of design. Support light gauge steel and wood members and assemblies with appropriate cost analysis and justification (e.g., building dimensions and configurations with small spans).
8. Consider framed bearing walls in-lieu-of columns and beams/girders where cost effectiveness can be increased when considering the combination of systems in *0322* and *0411 Exterior Walls* or *0322* and *0611 Fixed Partitions*.

Premium:

9. Exposed structural members where cost analysis demonstrates a cost increase above 2% for the *0321* and *0322* systems.
10. Framed roof assemblies where total estimated *02 Substructure* + *0322 Flat Roofs* cost exceeds other alternatives.

0323 Special Roofs

Required:

1. None; other special roof such as (occupied) roof decks, canopies, etc. are not anticipated.

Recommended:

2. Consider other special roofs when building loads, logistics, materials and construction may exclude other roof solutions. If a special roof is proposed, it must be supported with an appropriate cost analysis of the full superstructure.

Premium:

3. Other special roofs where total estimated 03 Superstructure cost exceeds other alternatives.

033 Stairs

0331 Stair Structure

Required:

1. Provide stair structure assemblies for stairs and landings, of wood or metal consisting of stringers, treads, risers, connectors, beams/joists. Treads and landings may include concrete decking.
2. Design stair assemblies (materials, size, spacing, etc.) for maximum efficiency in accordance with building codes and superimposed loads (example: plate steel stringers with stiffening provided by treads and risers).

3. Provide stairs in the quantity prescribed by code and with dimensions not greater than 10% of code minimums.
4. Provide protective coating on structural members as required by local conditions/codes.

Recommended:

5. Consider up to one stair associated with a primary common area or public space that has 'architectural features' such as: no stair enclosure, concealed structure, concealed connections, open risers, cantilevered treads, integrated enhanced finishes, etc.
6. Consider alternative stair types where permitted by code for limited access such as alternating tread stairs.

Premium:

7. Stairs with any dimension greater than 10% of the minimum permitted under applicable codes.
8. More than one stair with 'architectural features'.

0332 Stair Railings

Required:

1. Provide stair railing assemblies for stairs and landings, of wood or metal consisting of posts, rails, spindles/panels, shoes, and connectors.
2. Design railing assemblies (materials, size, spacing, etc.) for maximum efficiency in accordance with building codes and superimposed loads.
3. Provide railings in the quantity prescribed by code and with dimensions not greater than 10% of code minimums.
4. Provide protective coating on railing members as required by local conditions/codes.

Recommended:

5. Consider up to one stair railing associated with a primary common area or public space that has 'architectural features' such as: decorative posts, tempered glass panels, , concealed structure, concealed connections, open risers, cantilevered treads, integrated enhanced finishes, etc.
6. For stairs railings in high-visibility areas, consider stainless steel for all high-wear elements such as handrails and shoes to reduce long-term maintenance costs.
7. Where functionally and visually appropriate, consider stair railings with top rails at guardrail heights and separate handrails.

Premium:

8. Railings with any dimension greater than 10% of the minimum permitted under applicable codes except as noted.
9. More than one stair railing with 'architectural features'.

0333 Ladders & Steps

Required:

1. Provide ladder assemblies of wood or metal consisting of rails, rungs, cages, and connectors.
2. Provide structural step assemblies in conformance with applicable provisions of *0331 Stair Structure*.

3. Design ladder assemblies (materials, size, spacing, etc.) for maximum efficiency in accordance with building codes and superimposed loads.
4. Provide ladders in the quantity prescribed by code and with dimensions not greater than 10% of code minimums.
5. Provide protective coating on ladder members as required by local conditions/codes.

Recommended:

6. Consider alternating tread stairs and other alternatives to ladders to improve access.

Premium:

7. Ladder and step materials not commonly accepted as 'utilitarian'.

D. Design Criteria & Ratios

Criteria

- All single-story structures and smaller (60,000 GSF or less) two story structures should utilize uniform loading structural systems (i.e. load bearing walls) wherever feasible.
- Building massing should limit exterior wall area and exterior exposure of large high bay spaces to wind loads.

Ratios

04. EXTERIOR CLOSURE

[The following Exterior Closure language is from the BDS submittal]

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.

041 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

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:
4. Plywood bottom surface

5. Provide coverage of any exposed foam insulation with intumescent paint
6. Moisture Resistance: Provide vapor retarder to inside of insulation.
7. Thermal Resistance: Insulation and minimum R-values to accommodate regional climate.
8. 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:

9.

Premium:

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

042 Exterior Glazing

Required:

1. 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.
2. 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
3. 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.
4. 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.
5. Glazing in windows in high-traffic areas and vandal-prone areas should provide an appropriate level of impact resistance.
6. To simplify replacement of broken units, avoid individual glass pieces larger than 4 feet in width or 6’ in height.
7. Exterior windows constructed with thermally broken frames to reduce heat loss and prevent thermal conduction.
8. Provide thermally broken aluminum windows, aluminum clad wood windows or storefront systems for larger window installations. CF-4, LCCA-3
9. Provide commercial-grade windows. Provide prefinished exterior surfaces as opposed to field finished or painted options.
10. 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

11. Specify windows with sub-frame construction for efficiency and to resist water penetration.

Recommended:

12. 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
13. 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.
14. Consider polycarbonate covers at windows susceptible to vandalism and in remote areas where window replacement is not readily available.

Premium:

15. Stainless steel, mahogany, teak, or exotic hardwood windows, skylights, or doors.
16. Triple-glazed windows in climate zones 6 and 7 without an LCCA.
17. 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.
18. Any manufacturer's non-standard window sizes.
19. Any windows of special sizes requiring manufacturer's premium costs.
20. Silicone glazing systems, butt glazing systems, or double wall glazing systems.
21. Non-standard colors or finishes on windows that require manufacturer's premium costs.
22. Glazed channel glass wall systems.
23. Arched or complex windows and frames.

043 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.

044 Exterior Accessories

Required:

1. 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.
2. 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:

3. 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.
4. 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:

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

05.**ROOF SYSTEMS**

[The following Roof Systems language is from the BDS submittal]

051 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.

052 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

053 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.

06.INTERIORS

[The following Interiors language is from the BDS submittal]

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

Special Partitions

Required:

1. X

Recommended:

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

Premium:

3. Operable partitions or large sliding doors.

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*

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

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

Specialties

Required:

1. 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
2. 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

3. 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.
4. 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.
5. 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

6. 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
7. Fire extinguishers to be provided per code. All fire extinguisher cabinets to be recessed. Provide signage and stickers on cabinet for fire extinguisher visibility.
8. Stage curtains and backdrops in auditorium and performance spaces
9. 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.
10. Adjustable, retractable basketball backboards/hoops
    a. Recessed floor plates for volleyball posts
    b. Wall-hung hand sanitizer stations
11. Window treatments to be roller shades or miniblinds. Provide fascia on coverings to hide mounting brackets and mechanisms.
12. 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
13. Cork bulletin boards with aluminum frame in manufacturer standard sizes
14. Install retractable, recessed projection screens

Recommended:

15. X

Premium:

16. Signage: signage with changeable inserts, ADA signage on acrylic with standoffs or vinyl graphic signage
17. Toilet room premiums: motion-sensored soap dispensers, automatic hand dryers CF-4 LCCA-3
18. Antimicrobial lockers to help protect against bacteria, mold, yeast and mildew or hardwood or hardwood veneer lockers. CF-4 LCCA-3
19. Wood or metal framed mirrors of custom size, backlit
20. Stainless steel corner guards
21. Hardware pulls greater than 6" in length
22. Solid surface countertops and backsplash
23. Climbing walls
24. Magnetic glass whiteboards, electronic smartboards or other technology-based display boards
25. Dry-erase wallcovering surfaces that double as projection screen
26. Motor operated projection screen in any location other than auditoriums or presentation lecture areas
27. Solid surface counters and backsplashes, solid vinyl, recycled glass, or polycarbonate counters

28. Stainless steel lab storage & cabinetry
29. Solid wood cabinets or wood veneer cabinets
30. Casework or architectural woodwork such as picture rails, wainscoting, crown moldings, or paneling
31. Suspended acoustical felt baffles & wall panels
32. Lit display cases
33. Motorized roller shades
34. Built-in bleachers or built-in, retractable bleachers

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:

r. Provide built-in furniture, equipment and technology within teaching spaces to aid in a variety of teacher teaching and display methods
s. Teacher workstations: desk, ergonomic task chair, adult guest chair, file storage, phone and computer workstation
t. Two-pod combined space capability
u. Reconfigurable / combinable tables or student desks and chairs; maximize the use of these items
v. Low bookcases
w. Up to 6 computer stations with mobile tables
x. Lockable storage units/wardrobes
y. Provide analog clock in a visible location
z. Intercom system with speakers in all occupied spaces
aa. Provide two flag older brackets for the US and Alaska flags in each classroom
bb. Shelving with storage within classrooms
cc. Mobile screens / dividers with markerboard and tackable surface
dd. Casework/counter with handwashing sink and wall-mounted soap and paper towel dispensers
ee. Wall-hung hand sanitizer stations
ff. Bookshelves or open shelving in usable and easily accessible heights for each age group
gg. Storage cabinets for supplies
hh. Kitchen / cafeteria / kitchenette cabinetry
ii. 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
   g. Soap & paper dispensers and rubbish bins
   h. 1 teacher workstation table with single lab sink/station, 1 teacher desk & ergonomic chair
   i. Moveable lab tables with adjustable height chairs
   j. Kiln, clay mixer and clay reclamation bin
   k. Heavy-duty shelving in kiln area
   l. Lockable bins for clay storage and mobile carts for moving greenware into the kiln room
   m. Markerboard and tackable surfaces
   n. Analog clock
   o. Retractable projection screen
   p. Probe-ware: thermistors, acid probes, etc.
   q. Alcohol burners and/or hot plates for science use; gas only for high school use

r. Fume hood
s. Lockable flammable materials storage cabinet; secure to wall

9. Technology lab
t. 30 computer workstations with ergonomic, adjustable student height chairs
u. 1 teacher workstation with ergonomic chair
v. Production station with printer, supplies
w. Lockable storage cabinet
x. Markerboard and tackboards
y. Retractable projection screen
z. 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:
    m. Conference table & chairs
    n. Markerboards & tackboards
17. Achievements for rewarding good behavior to include, but not be limited to:

o. Comfortable lounge-type furniture
p. 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

07.**CONVEYING SYSTEMS**

[The following Site and Infrastructure language has been added by department Facilities staff.]

071 Passenger Conveyors

0711 Passenger Elevators

Required:

1. Install elevators only where required by codes adopted by the state or a local jurisdiction with delegated authority. (For multi-story schools meeting accessibility requirements with ramps in-lieu-of elevators, see 4 AAC 31.020 for a space variance.)
2. Install electric traction elevators when permitted for maximum energy efficiency.
3. Installations not within 100 road miles of an establish elevator service center at the time of construction are limited to hydraulic elevators excluding roped-hydraulic mechanisms.
4. In-ground hydraulic elevators must be supported by a geotechnical report showing suitable subsurface conditions.
5. Single piston hydraulic systems may not be eccentrically loaded.
6. Elevators will be supplied with backup power for lowering (only?).
7. Elevators will be included in a project's commissioning plan unless approved otherwise by DEED.

Recommended:

8. Elevators with machine rooms are preferred for maintenance simplicity. (For space variances associated with machine rooms, see 4 AAC 31.020).
9. Where a sump is required for an elevator pit, locate the sump pump outside the elevator shaft.
10. Education related facilities with three or more stories should consider in-ground hydraulic pistons where subsurface geotechnical consideration allow.
11. Cab flooring should match adjacent lobby/corridor flooring; doors and frames should be stainless steel.
12. Robust, durable controls, one per car (including both card access if a building standard and keyed controls), sensors, and connection to building automation.

Premium:

13. Educations related facilities with more than one passenger elevator. [CF-X, LCCA-X??]
14. Elevators with rated speeds above 200fpm and load capacities above 2500lbs.
15. Cab construction, features (lighting, etc.), and finishes above the manufacturer's standard base or that require manufacturer's premium costs except as noted above.

0712 Lifts & Other Conveyors

Required:

1. Passenger lifts or wheelchair lifts may be used where permitted by codes adopted by the state or a local jurisdiction with delegated authority. Primarily this will be at floor level changes that are less than a story height.
2. Inclined stair lifts are not permitted.

Recommended:

3. A lift's audio-visual alarm shall be operational at all times and shall activate when the lift is in operation except that a lift installed at a stage shall be free of a warning light or alarm.
4. Lifts shall have shielding devices to protect users from the machinery or other hazards and obstructions.
5. Cab flooring should match adjacent lobby/corridor flooring.

Premium:

6. Escalators or any type of moving walkway.

072 Material Handling Systems

0721 Elevators & Lifts

Required:

1. Dedicated freight elevators (or lifts where permitted by code) in education related facilities may be installed where the upper level(s) served by the conveyance total in excess of 100,000gsf.
2. If layouts permit, and as allowed by code, a required passenger elevator may be increased in size and capacity to function as a freight conveyance.
3. Vehicle lifts in the following quantities may be installed at any education related facility serving grades 9-12 whose approved educational specification includes an automotive Career Technology Education pathway:

<500 students grades 9-12	1
501 – 2000 students grades 9-12	2
>2000 students grades 9-12	3

Recommended:

4. Lifts shall have shielding devices to protect users from the machinery or other hazards and obstructions.
5. The maximum lifting height for vehicle lifts shall be 68 inches.
6. Two post lifts are limited to slab-on-grade construction; use four post lifts for elevated floors.
7. Where portable automotive lifts can meet curriculum requirements, such lifts shall be purchased and provided under School Equipment.

Premium:

8. Eligible educations related facilities with more than one freight elevator or lift.
9. Freight elevator dimensions exceeding 5ft x 8ft and load capacities above 5500lbs.
10. Vehicle lifts in excess of allowable quantities.
11. Vehicle lifts with load capacities above 3000lbs or with ancillary accessories or features such as alignment calibration.

0722 Hoists & Cranes

Required:

1. None.

Recommended:

2. None.

Premium:

3. Site constructed, permanent, overhead hoist or crane assemblies.

0723 Other Systems

Required:

1. None.

Recommended:

2. Dumbwaiters of any size permitted by code may be used when transfer of materials between floors is needed and freight elevators are not permitted. (Note: dimensions and capacity of dumbwaiters are restricted by code and are very modest.)

Premium:

3. Belt conveyors, pneumatic tube systems, linen/trash/mail chutes, or operable scaffolding.

08.**MECHANICAL**

[The following Mechanical language is from the BDS submittal]

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

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

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..

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

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

09.ELECTRICAL

[The following Electrical language is from the BDS submittal]

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.

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.

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:

33. X

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.

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

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.

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.

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

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.

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.

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.

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.

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.

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.

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.

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.

010. EQUIPMENT & FURNISHINGS

[The following Site and Infrastructure language has been added by department Facilities staff. BDS language from 06 Interiors “Built-in Furnishings, Equipment & Technology” will be incorporated into these sections.]

101 Equipment

1011 Food Service & Kitchen Equipment

Required:

34. X

Recommended:

35. X

Premium:

36. X

1012 Athletic Equipment

Required:

16. X

Recommended:

37. X

Premium:

38. X

1013 Career & Technology Equipment

Required:

17. X

Recommended:

39. X

Premium:

40. X

1014 Science Equipment

Required:

18. X

Recommended:

41. X

Premium:

42. X

1015 Library Equipment

Required:

19. X

Recommended:

43. X

Premium:

44. X

1016 Theater Equipment

Required:

20. X

Recommended:

45. X

Premium:

46. X

1017 Art Equipment

Required:

21. X

Recommended:

47. X

Premium:

48. X

1018 Loading Dock Equipment

Required:

22. X

Recommended:

23. X

Premium:

24. X

1019 Other Equipment

Required:

25. X

Recommended:

49. X

Premium:

50. X

102 Furnishings

1021 Fixed Furnishings

Required:
26. X

Recommended:
51. X

Premium:
52. X

1022 Mats

Required:
27. X

Recommended:
53. X

Premium:
54. X

1023 Other Furnishings

Required: Required:
28. X

Recommended:
55. X

Premium:
56. X

Premium:

011. SPECIAL CONDITIONS

[The following Site and Infrastructure language has been added by department Facilities staff.]

111 Special Construction

1111 Packaged Utility Modules

Required:

Recommended:

Premium:

1112 Swimming Pool

Required:

Recommended:

Premium:

1113 Greenhouse

Required:

Recommended:

Premium:

112 Special Demolition

1121 Structure Demolition

Required:

Recommended:

Premium:

1122 Building Selective Demolition

Required:

Recommended:

Premium:

1123 Site & Utility Demolition

Required:

Recommended:

Premium:

1124 Hazardous Material Removal

Required:

Recommended:

Premium:

1125 Building Relocation

Required:

Recommended:

Premium:

113 Special Site Conditions

1131 Site Shoring & Dewatering

Required:

Recommended:

Premium:

1132 Site Earthwork

Required:

Recommended:

Premium:

1133 Site Remediation

Required:

Recommended:

Premium:

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

Alaska School Facilities Preventive Maintenance & Facility Management Handbook

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

February 25, 2020

Issue

The department is providing a status update to the committee on the draft 3rd Edition *Alaskan Schools Preventive Maintenance &Facility Management Handbook*. The proposed BR&GR Work Plan shows this publication scheduled for a final draft review by the committee in February 2021 followed by a public comment period and approval of a final document in April 2021. The following summary of work will be updated as work progresses. For this update, the department is presenting the areas in **bold** below:

Summary of Work Remaining

The current draft, *PM&FM Handbook BRGR Draft_2-25-2021*, requires considerable additional development in the following areas:

- Examples and Lessons Learned for initial commissioning and retro-commissioning.
- Sustaining a maintenance management program by proper budgeting, staffing, software upgrades, performance metrics, and evaluations/inspections.
- **Implementing and Sustaining an energy management program.**
- Implementing and Sustaining a custodial program (intro and outline).
- District design and construction standards interface.
- Additional Considerations sections:
  - Managing contracted staff
  - Evaluating your maintenance program
  - Environmental safety
  - Portable devices in the maintenance workflow
  - Electronic O&M manuals
- Appendix A – PM components (aligned with DEED system structures)
- Appendix C – Facility funding formulas
- Appendix F – Bibliography of maintenance publications
- Appendix G – Standard for a clean classroom (now post-Covid 19?)
- **Appendix H – Master custodial schedules**

BRGR Input and Discussion Items

Below are questions and comments developed by DEED during the preparation of this draft for consideration by the BRGR Committee:

- Review the updated sections *Implementing an Energy Management Program* and *Sustaining an Energy Management Program*.
- Review the proposed Appendix H – Master Custodial Schedule

Recommended Action

None.

See supplement to be issued prior to meeting for PM&FM Handbook BRGR Draft_2-25-2021

Department of Education & Early Development
Division of Finance & Support Services/Facilities

Work Topics for the BR & GR Committee

As Of: December 2, 2020

BR&GR 2021 Work Items	Responsibility	Due Date
1. CIP Grant Priority Review – [(b)(1)]		
1.1. FY22 MM & SC Grant Fund Final Lists (4 AAC 31.022(a)(2)(B))	Committee	Apr 2021
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)		Annually, Jan-May
3.1.1.1. Solicit, Award, And Manage Model School Update	Dept	Annually, Jan
3.2. Cost Standards		
3.2.1. Cost/Benefit, Cost Effectiveness Guidelines	Dept	TBD
3.2.2. 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 (c)	Dept	Jun 2020
3.3.1.8. Review Partial Standards, Recommend Direction (complete)	Subcommittee	Aug 2020
3.3.1.9. Review Final Standards Development Recommendation (c)	Committee	Sep 2020
3.3.1.10. Complete [See 6.2 New Publications]	Dept	Jun 2021
3.3.1.11. Implement [See 6.3 Regulations]	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 ratios for BRGR (complete)	Subcommittee	Sep 2020
3.4.1.3. Amended/Corrected Final O:EW Ratios	Dept	Feb 2021
3.4.1.4. Final All Ratios, Release for Comment	Committee	Apr 2021
3.4.1.5. Evaluate Public Comment, Make Recommendations	Committee	TBD
3.4.1.6. Manage Regulation Development & Implementation	Dept	TBD
3.4.2. Development of Design Ratio V:GSF		
3.4.2.1. Compare Model & Existing School Ratios And Energy Use	Subcommittee	Feb 2020
3.4.2.2. Recommendation of ratios for BRGR (complete)	Subcommittee	Nov 2020
3.4.2.3. Evaluate Recommendations, Provide Guidance	Committee	Dec 2020
3.4.2.4. Final All Ratios, Release for Comment	Committee	April 2021
3.4.2.5. Evauate Public Comment, Make Recommendations	Committee	TBD
3.4.2.6. Manage Regulation Development & Implementation	Dept	TBD
3.4.3. Development of Design Ratio V:ES		
3.4.3.1. Compare Model & Existing School Ratios And Energy Use	Subcommittee	Oct 2020
3.4.3.2. Recommendation of V:ES Ratio	Subcommittee	Jan 2020
3.4.3.3. Evaluate Recommendations, Provide Guidance	Committee	Feb 2020
3.4.3.4. Final All Ratios, Release for Comment	Committee	April 2021
3.4.3.5. Evaluate Public Comment, Make Recommendations	Committee	TBD
3.4.3.6. Manage Regulation Development & Implementation	Dept	TBD
3.4.4. 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. FY23 CIP Draft Application & Instructions	Dept	Apr 2021
5.2.1. Life Safety/Code/POS Matrix Review	Cmte	Jan 2020
5.2.2. Preventive Maintenance Narratives Matrix (see 5.4.1)	Dept	Mar 2020
5.2.3. Priority Weighting Factors Review	Dept	TBD
5.3. FY23 CIP Final Application & Instructions	Committee	Apr 2021
5.4. FY22 CIP Carryover Items	Dept	
5.4.1. Preventive Maintenance Narratives Matrix		
5.4.1.1. Seek Comments/Peer Review	Dept	Jan 2021
5.4.1.2. Review Comments, Propose Edits to Matrix	Committee	Feb 2021
5.4.1.3. Draft Adjusted Matrix	Dept	Mar 2021
5.4.1.4. Approve with FY23 CIP	Committee	Apr 2021
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 – Public Comment	Committee	Feb 2021
6.1.2.10. Preventive Maintenance Handbook – Final	Committee	April 2021
6.1.3. Site Selection Criteria and Evaluation Handbook		
6.1.3.1. Site Selection Handbook – Initial	Dept	May 2021
6.1.3.2. Site Selection Handbook – Final	Committee	Sep 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
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

BR&GR 2020-2021 Work Items	Responsibility	Due Date
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 2021
6.2.1.13. Construction Standards Handbook – Final	Committee	Jun 2021
6.3. Regulations		
6.3.1. Baseline Design Ratios (see item 3.5.2)	Dept (w/Cmte)	
6.3.1.1. Draft Regulation	Dept (w/Cmte)	May 2021
6.3.1.2. SBOE Public Comment on Regulation	Dept	Sep 2021
6.3.1.3. Review Public Comments from SBOE Comment Period	Committee	Dec 2021
6.3.2. Reuse of School Plans and Systems (see item 4.2)	Dept (w/Cmte)	
6.3.2.1. Draft Regulation	Dept (w/Cmte)	Sep 2021
6.3.2.2. SBOE Public Comment on Regulation	Dept	Dec 2021
6.3.2.3. Review Public Comments from SBOE Comment Period	Committee	Jan 2022

7. Energy Efficiency Standards – [(b)(8)]

No current items.

Projected Meeting Dates

Feb 25, 2021 – Teleconference

- Construction Standards Part 3 (Systems) Final Draft
- Preventive Maintenance Handbook Final Draft
- FY23 CIP PM Narratives
- FY23 CIP Life/Safety Matrix Scoring
- Evaluate Subcommittee V:ES Ratio Recommendation

March 18, 2021 – Teleconference

- New Member Orientation
- Construction Standards Part 2 (Design Guidance) Final Draft
- 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
- Final All Ratios (O:EW, V:GSF, V:ES), Release for Comment
- Construction Standards – Final Draft for Public Comment