Bond Reimbursement and Grant Review Committee Meeting Agenda

June 16, 2020, Tuesday
1:30pm - 4:30pm

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

Audio Teleconference available through free online WebEx application.
Join via Computer -- Meeting Number: 289 051 592 Password: BRGR
Join via Phone – 1-650-479-3207 Call-in toll number (US/Canada) Meeting: 289 051 592 Password: 2747

Chair: Heidi Teshner

Tuesday, June 16, 2020

Agenda Topics

1:30 – 1:35 PM — Committee Preparation
- Call-in, Roll Call, Introductions
- Approval of Past Meeting Minutes
- Chair's Opening Remarks

1:35 – 1:45 PM — Department Briefing
- CIP Workshop Debrief

1:45 – 2:15 PM — Subcommittee Reports
- Design Ratios
- Model School
- Commissioning
- School Space

Action Item
- Design Ratio Approval (O:EW)

2:15 – 2:45 PM — Preventive Maintenance Regulation Implementation
- Proposed Tools & Metrics for Retro/Re-Commissioning

2:45 – 4:15 PM — Publications
- *Guide for Condition Surveys of School Facilities*
  - Action Item – Approve Publication
- *Cost Format*
  - Action Item – Acknowledge Comment Period
- *Alaska School Facilities Preventive Maintenance Handbook*
  - Action Item – Approve Draft for Comment Period

4:15 – 4:30 PM — Committee Member Comments

4:30 PM — Adjourn

BOND REIMBURSEMENT & GRANT REVIEW COMMITTEE
Tuesday, April 14, 2020 - 1:00 p.m. – 4:02 p.m.
Wednesday, April 15, 2020 - 1:00 p.m. – 2:32 p.m.

DRAFT MEETING MINUTES FOR APPROVAL

Committee Members Present	Staff	Additional Participants
Heidi Teshner, Chair	Tim Mearig	Rachel Molina Lodoen, Anchorage SD
Randy Williams	Elwin Blackwell	Kevin Lyon, Kenai Peninsula Borough SD
Dale Smythe	Wayne Marquis	Dana Menendez, Anchorage SD
James Estes	Larry Morris	Mark Nilson, Fairbanks North Star Borough SD
William Glumac	Sharol Roys	Kent Gamble, HMS
Don Hiley	Lori Weed	Aimee Smith, HMS
David Kingsland		

April 14, 2020

CALL TO ORDER and ROLL CALL at 1:05 p.m.

Acting Chair Elwin Blackwell called the meeting to order at 1:05 p.m. Roll call and introduction of members present; Senator Cathy Giessel excused. Quorum was established to conduct business.

CHAIR'S OPENING REMARKS

Acting Chair Blackwell noted that he is sitting in for Chair Heidi Teshner briefly, and he thanked committee members for their participation today.

NEW BUSINESS, ADDITIONS TO THE AGENDA

No new business was added to the meeting agenda.

AGENDA REVIEW/APPROVAL

William Glumac **MOVED** to approve the agenda, **SECONDED** by David Kingsland. Hearing no opposition, the motion **PASSED** by unanimous consent, and the agenda was approved as presented.

PAST MEETING MINUTES REVIEW/APPROVAL – 12/4/19, 1/23/20, 3/19/20

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

WELCOME AND INTRODUCTION

Acting Chair Blackwell again thanked members of the committee for their attendance today and tomorrow to work on the Capital Improvement Project (CIP) materials to make it better in the state of Alaska. Members of the public in attendance introduced themselves to the committee members.

PUBLIC COMMENT

Public members did not offer any comments at this time.

DEPARTMENT BRIEFING – FY 2022 CIP APPLICATION & SUPPORT MATERIALS

Tim Mearig introduced this topic by stating that in terms of the Department's perspective with the final applications through reconsideration and appeal, there was one appeal from the Mat-Su Borough School District, but it was filed after the deadline so the department did not take action.

Tim reviewed the highlights of the application changes, and he noted there is an opportunity to engage in further discussion about emergency. They made a few changes to the Guidelines for Raters on that area as well as preventative maintenance scoring. He directed the committee to page 35 of the packet that highlights the application changes and stated that it was a fairly light year of changes, with the exception of the scoring for the maintenance narratives. He believes the revisions were moderate, and there were no significant revisions that will result in a different scoring for the applications because no new scoring elements were added.

FY 2022 CIP APPLICATION REVIEW

Acting Chair Blackwell queried committee members to determine their preference for approving the changes either individually or as one approval of the application and instructions as a whole. Dale Smythe, James Estes, and Randy Williams agreed to vote once at the end, and to address individual concerns as they arise.

Tim Mearig stressed to committee members that the Department welcomes any verbiage amendments for clarity to the documents.

Tim Mearig and Lori Weed led the members of the committee through a review of the matrix of application and application instruction amendments on page 35 of the packet. He also referred the committee to pages 40 and 60 of the meeting packet to reference the application and the instructions for comparison purposes.

Randy Williams noted that he was unable to reference the addition to power issues. Lori Weed stated that it was missed in the application change and will need to be added. She referred the committee to the Guidelines for Raters on pages 88 and 89, and noted that the application changes for question 4a are meant to reflect any changes that were made to the rater's matrix.

Tim Mearig reminded committee members that the original discussion related to power issues took place at a previous meeting where they discussed that some school districts have had issues related to back-up generation and quality of power to the site. This change corrects the previous guide that allows points for significant issues with water, sewer, and so forth, but did not have a point value for lack of power at a site.

Committee members discussed whether or not it would be helpful for applicants to see the associated point values on the application. Tim Mearig reminded committee members that last year there was also a suggestion to put the matrix in the application, which was an enhancement from last year. Lori Weed interjected that raters can do incremental point adjustments from those conditions guidelines, so it might cause confusion if those points remain in the application but aren't the exact points being scored.

Don Hiley believes the points should stay in the application. He was reluctant to have the entire matrix put into the application because he thought it was a little cluttered; but if the matrix is going to be there, he thinks the points should be there with it. He stated that he continues to have serious reservations about some of the relevant point values, so he would like to see front and center what those points are, and he hopes they revise the matrix at some point. Kevin Lyon agreed that he would like the points to stay, because he believes they are helpful for people to understand what points are potentially available. William Glumac agreed that the points should remain, but the goal is to clean up the look of it. He suggested moving to a tabular format with check boxes so there are nice neat columns with the points similar to the Guideline for Raters. Chair Teshner summarized by stating that there is agreement to leave the numerical values on pages 41 through 43 of the packet.

Tim Mearig referred committee members to the Guidelines for Raters on pages 88 and 89 to view the minor changes that were made based on feedback received during committee meetings regarding the levels of flexibility, rigidity, and the assignment of points. He noted that those are relatively significant changes in how raters have addressed assigning points to code issues in the past two years. The language allows the raters to use some discretion in how they see an issue documented relative to allowing incremental age-related adjustments. Don Hiley questioned the definition of "incremental," to which Tim responded "small." William Glumac stated that under the code deficiencies section, the third bullet point talking about the age of the building system needs clarification because it could be read either when the application applies for the age of the system, or is it when the project is receiving funding for the age of the system? Lori Weed noted that the word "application" should be deleted in order to have this new language be correct. William further clarified by stating that the intent of the new language is that the age of the building system is based on when the project is funded, not when the application is submitted, to which Lori agreed.

William Glumac wondered if they wanted to look at pushing the system age all the way out to the anticipated construction start date. Tim Mearig noted that it's possible that that could create more confusion by the desire to specify at which point of construction. William understood and stated that he was comfortable with as it stands, with the deletion of the word "application."

Don Hiley wondered if "calendar year" should change to "fiscal year" since that is what these are based on. Tim stated that the fiscal year would be the reference year for the department, but the age of the system is a calendar year age. The department would consider the age of that system as the calendar year the building was brought online or the system was renewed, et cetera.

Don Hiley renewed his previous concerns regarding cutoffs of less than 25 years when the funding becomes available July 1st of the fiscal year. Tim stated that it is the committee's responsibility to assess what is fair and reasonable for assigning the condition points. The options are the year it was submitted for in the calendar year application; the year in which it's scheduled to be funded, which is mid-year of the following calendar year; or if it is some other number that more appropriately reflects the age of the component relative to its being replaced. Randy Williams believes that the way it's written now with "application" removed is as good as anything else, especially considering the criteria years are relatively arbitrary. This is giving

everybody another year of age to work with, and he thinks it's fine the way it is for now unless they start seeing issues with it or until they need to revisit the age question down the road.

Tim Mearig continued on in the review of the application. When discussing Table 7.1, Tim stated that this is the result of the recently adopted regulations that limit districts to certain levels of indirect administrative costs if not itemized. He reminded members of the committee of the extensive work previously done regarding the regulations. Don Hiley asked whether the regulation that talks about the district administrative costs was spelled out in the instructions anywhere. Lori Weed stated that it is important to note that the district admin that's referenced in the regulation is only on indirect prorate, it's not on all admin costs. If there are project-specific admin costs, it can easily go above the maximum percentages outlined in the regulation. Lori also referenced Appendix C on page 82 of the packet that provides cost estimate definitions. For district administrative overhead, similar language is included as a line for that definition.

Tim Mearig referred committee members to section 9, which is the section that pertains to the inclusion of the matrix in each of the five preventive maintenance narratives that are provided and in the relative five-point scale. The committee has discussed this at length, and there were some broad questions and concerns that this topic would benefit by an opportunity for additional public comment. Chair Teshner offered the public members present an opportunity to provide comment if so desired. Dale Smythe asked if this issue has formally gone out for public comment; and if so, were any comments received by the department? Tim stated that they typically do not put application elements out for public comment like is done with publications. Lori stated that these products were made available for review by posting the meeting packet on the BR&GR Committee's website, noticing the meeting through the Alaska Online Public Notice system, direct e-mail, and a posting on the new School Facilities listserv. Dale Smythe stated that he also remembered that some committee members were going to ask their constituents to respond to this topic specifically. Lori stated that no comments were received.

Don Hiley reiterated that this would benefit from being looked at at the maintenance conference in the fall where there are people together that can discuss this and see what's being talked about. He stated that right now is not a very good time for public comment, and he doesn't think it's a very good policy for public process. Given the current situation, this is obviously not going to rate high on everyone's list of priorities. He believes it makes sense to not try to ram this through, and instead get a little more feedback in the fall when things settle down and the maintenance conference brings together people from all around the state to be able to give their viewpoints. William Glumac agreed with Don about potentially pushing some of these discussion points and being a little more engaged in the community to get public feedback, especially with the current status of the state and the school districts being shut down. He feels it might be smart to push some of this off until the December meeting for approval.

Tim Mearig stated that it sounds as if a motion to approve the materials might need to be crafted to separate section 9 from the rest of the product if the committee members feel like there is a need to offer a different perspective.

Tim then referred committee members to page 54 of the packet to review the checklists associated with the application. Randy Williams suggested that the second check box under project description attachment that is being added related to both 3e and 3f be split into 3e and 3f

so people don't miss that they need to include the solicitation document. Lori noted that there is actually a question 3f box right below that that says, "Including solicitation documents."

Tim Mearig concluded with his review of the changes as noted in the packet.

Dale Smythe **MOVED** that the committee approve all changes as presented in the summary of changes for the fiscal year 2022 CIP application and instructions, page 35 of the packet, with the exception of section 9, **SECONDED** by David Kingsland. Lori Weed asked that the motion be **AMENDED** to include the changes as discussed in summary and as discussed throughout the walk through. The amendment was **ACCEPTED.** Hearing no objection, the motion **PASSED AS AMENDED**

Randy Williams had a question related to section 9. There were three line items in the summary relating to section 9, and he is not clear on which one of those involves the new matrices for the Guidelines for Raters under the maintenance management narrative. Lori stated that it could be a matter of specifically none of them address the rater's guide. For the rater's guide they say, "See the rater's guide," and this speaks mainly to the application and to the instructions. She might be of the opinion that the changes in the application and instructions could stand apart and be incorporated, even if they remove the rater's guideline matrices, because for the most part they are not requirements. She encouraged the committee to review that and make a determination. Randy clarified by asking if she is saying that the rater's guide is the only place that the criteria and matrices appear, to which Lori agreed. Randy noted that they could potentially approve changes to section 9 without the changes to the rater's guide. Tim suggested that for the sake of simplicity, he would recommend they just consider it all as one thing. He stated that if the inclusion of the rater's guide is somehow delayed, then he would say they maybe just disregard all the proposed changes. He felt it would be appropriate to take a motion on incorporating the new matrix and the rater's guide. If the rater's guide with the new scoring is approved, then the changes stay; if the rater's guide goes, then the changes go.

Don Hiley **MOVED** that the committee postpone the proposed changes to section 9 to be reevaluated at the December 2020 scheduled meeting and seek input from districts in the interim, **SECONDED** by William Glumac.

Tim Mearig stated that the scoring matrix that was developed was not primarily intended to change the way that the applications were being scored. They expect that for the most part, the scoring will stay very much the same as it has been. The purpose of the change was to assist the raters in how to assign points and for applicants to have a clearer understanding of how the raters were scoring.

Hearing no objection, the motion **PASSED**.

Tim Mearig stated that if there were some specific non-matrix changes to either the application or the instructions that provided better clarity about those elements, they could entertain looking at retaining some of that. He referred committee members to pages 73 through 76 of the instructions and page 53 of the application. Lori Weed concurred and stated that that information was driven by something outside of the matrix, so it could stand on its own. Randy Williams asked Chair Teshner if it is possible to make a blanket motion to approve changes to section 9 that do not

relate to the proposed matrix additions, and Lori noted that they are trying to determine which ones those are. Tim stated that if the committee entrusts he and Lori to make those determinations, they can do that. Randy noted that the alternative would be to go through each of the items one by one or have somebody come back later and say which ones they are proposing specifically. Lori recommended they keep the one on page 73 that changes the wording from "eight" to "nine." Tim noted that the other one that is a corrective item is two attachments instead of four in the instructions. Chair Teshner suggested they take a motion that approves the corrective changes as noted above.

Randy Williams **MOVED** that the committee approves the corrective changes to the one on page 73 and then changing it from two attachments from the four attachments and getting those corrections made before they address any of the other changes in section 9, **SECONDED** by Don Hiley and William Glumac. Hearing no objections, the motion **PASSED**.

DEPARTMENT BRIEFING

FY 2021 CIP Report – Reconsideration and Final Lists

Tim Mearig stated that the department received reconsideration requests from four districts on six projects. In the list issued December 19, 2019, the department reconsidered its determination on these projects and adjusted the project budget on two projects and the priority points on one project. No changes were made to the final lists, and those were issued on March 27 and were scheduled to be approved with the State Board of Education, but the State Board has not met.

Tim directed committee members to the packet for further information on the major maintenance and school construction grant fund lists. He noted that they have had a significant uptick in the numbers of projects submitted from their all-time low last year.

Preventative Maintenance Update

Wayne Marquis stated that there are currently have five school districts on provisional:

- Bristol Bay – issues with monitoring energy, oil, and waste heat.
- Galena – issues with energy, oil, and biomass – monthly consumption monitoring.
- Chatham – issues with waste heat.
- Lower Yukon – issues with energy, custodial, and training.
- Lower Kuskokwim – issues with preventative maintenance, energy, and training.

Wayne reported that DEED was able to complete quite a few site visits this year, but wasn't able to finish the last three before COVID-19 hit. The remaining site visits include Dutch Harbor/Unalaska, Kodiak, and Pribilof Islands.

Wayne noted that for three of the site visits conducted, issues were found that will need to be addressed:

- Nenana – stopped monitoring oil consumption and need to be brought back online.
- Kuspuk – preventative maintenance was weak. Half the schools were being monitored for energy consumption, and the other half weren't. Training has been absent for quite some time.
- Yakutat – not monitoring any of their waste heat, and training is absent as well.

Wayne stated that he has started compiling the schedule of site visits for next year. There will only be nine districts to visit. He and Tim Mearig will discuss how to finish up with the three districts from this year that were unable to be completed. Tim suggested that it might end up being a desktop review for this year.

School Capital Project Funding Under SB 237

Tim Mearig stated that statute requires an annual report on school construction and major maintenance funding. The 2019 legislative report was provided by the end of February.

REAA and Small Municipal Fund Report

Tim Mearig directed committee members to the report found on page 132 of their packet. He stated that the REAA fund is an indexed fund such that for every dollar the state offers in reimbursement of school debt to municipalities who have gotten approved a calculation is made for funding the REAA fund based on a multiplier. The table depicts the history of this funding through FY'20. The funding that was projected based on the governor's FY'21 budget would have been a 50 percent of the debt reimbursement amount and a 50 percent of the REAA calculation. Under that projection, they anticipated funding $9,473,000 for the construction phase of the Hollis school, and a $10 million carry-over balance for significant projects that are the next priorities on the list that need a reserve balance built up prior to funding.

Don Hiley noted that the briefing paper shows the words "if appropriated," in regards to the Hollis construction. He stated that it appears there is money for that in the fund, but it is still up in the air whether that will be disbursed or not. Tim stated that as of right now, the available fund balance not committed to projects is $1,162,000. The current operating budget that was passed and signed by the Governor has zero funds to add to that fund. Right now there is no money to fund the construction phase of the Hollis school in FY'21. Lori Weed noted the sheet was compiled and the packet was issued before the governor signed the bill with his vetoes.

Chair Teshner clarified the issue by directing Don Hiley to the FY 2020 column that shows the $1,162,000 that will be the available balance at the end of FY'20 as of right now. The Governor's original '21 budget was for $18.4 million. Currently, based on vetoes, there is zero in the FY'21 budget, so that's why the highlighted column for FY'21 is all zeros. There is not enough balance at the end of FY'20 to vest into funds to fund the construction phase of Hollis. Tim added that the department has no plans to change the current agreement it has with Hollis to complete design and to fund it. The governor has stated that funding for the REAA fund would be funded through the CARES Act funding the state is expecting to receive. The department is actively working with the governor's office on this possibility.

Legislative Action

Tim Mearig directed the committee to the briefing paper and the legislative items of interest that were compiled for the meeting packet, some of which have since been impacted by legislative action. Of particular interest is the passage of HB 106, which extends the moratorium on the school construction debt reimbursement program for another five years.

Randy Williams asked about SB 64, HB 66, and stated that he doesn't understand the part about the multipurpose community function. He wondered if anyone knows where that came from and what the intent was behind it. Tim Mearig and Chair Teshner were unaware of the intent. Tim

stated that there was some language left over from the original bill about co-located facilities that could be consolidated in state-leased facilities, but he is not sure that connection bridged over into this particular program. He also noted that the bill did not gain any traction this last session.

Regulations Update
Tim stated that they were hoping to have the update for the ASHRAE standard 90.1 in front of the State Board of Education to be put out for public comment, but that has been delayed with the delay of the board meeting. It is due to be heard when the board next convenes.

Cost Model Update
Tim Mearig reported that they were able to accomplish another annual update with sufficient funding to be able to do so. They hope to have that contract completed in time for use in the application cycle. The due date for HMS is around April 25, and then the document will be available for use in the upcoming application cycle with the updated geographic factors. The geographic factors create a more transparent and clear analysis that can be sustained, repeated, updated, and scaled appropriately between different regions and community sizes.

Commissioning Agent Credentialing Organization
Tim reported that the commissioning regulations were adopted last year, and those identified what the qualifications needed to be for a commissioning agent to be performing commissioning services on Alaskan school projects. They worked with seven different commissioning organizations and credentialing organizations and evaluated them through self-evaluation of Alaska's regulation requirements. They ended up with three whose commissioning credentialing would meet the regulations' definition of a credentialing agent, and those three are AABC, ASHRAE, and NEBB. Randy Williams shared his surprise that all of them didn't make it, and he was surprised to see that one is not ANCI accredited. Randy thanked the department for its efforts, noting that it went above and beyond what many states would do to accomplish this. The information is very illuminating.

Department Projects
Tim Mearig stated that Lori Weed has been instrumental in developing a listserv for its members to receive and request information. He stated that the listserv has been very helpful as they have been able to communicate with members during the coronavirus. Anyone who would like to be a member of the listserv can contact department staff to determine eligibility for participation.

PUBLICATION UPDATES
Guide for School Facility Condition Surveys
Tim Mearig thanked the committee members for their hard work in this area over the last four-and-a-half years since the department has started to scrub all of its publications. He referred committee members to page 133 in the packet. He reminded the committee that they recommended pursuing and updating this publication regarding how the condition survey process interfaces with CIP and the state's capital forecasting and capital program efforts. The format also changed into something that was a more narrative style, and for that they have included an appendix in the publication that can be a standalone Word document. The publication identifies for districts what the purpose of a condition survey is and how to break it down and accomplish that particular element of a capital project or program. Ultimately the

department is aligning the condition survey guide with the department's *Cost Format*, which is required to be used on all capital projects for organizing the project into cost elements.

Tim Mearig summarized the document for committee members and stated he would appreciate any feedback from the committee. The next step for this document will be to go out for public comment. Randy Williams stated that he has reviewed the document and thinks it's very good. He appreciates all the work that went into it, and feels it is much better than the '97 version.

Tim referred committee members to page 195 of the packet that contains a placeholder for Appendix B for the publication that he envisions could contain sample checklists, sample rating scale, sample listing of typical test equipment, and a list of suggested PPE. He welcomes committee member feedback to develop this appendix.

Don Hiley shares Randy's opinion that this is a huge improvement over the old publication. The format looks similar to recent materials he's gotten, and he really likes the checklist. The phrase that keeps going through his mind is "show your work" for some of it, because typically they are using this to try to do a CIP application, and he wants to ensure they are getting the information from the consultants that is needed to score the application right. Another thing that stood out to him, and is an area they continually have problems with, is in the template where it talks about recommendations and the verbiage that describes that. He feels that the template should try to make that more of an emphasis on options and recommendations so that not only do they go through the process, but that the entire process and how they reached their conclusion is explained. Tim understood and agreed, but he noted that on some of the more comprehensive condition surveys, it's not always possible to do an option analysis of every decision. He reframed the suggestion to be that they put in a statement to consider options. Don noted that when they are talking about things with consultants, it's usually for major pieces of work, and he believes there should some sort of demonstration of efforts taken to determine their recommendation. Tim agreed that that is a good point, and he noted that there is a section in the publication that talks about the template elements, and they deal with every one of the major systems. It might be that they can highlight which ones are particularly suitable to having some options analysis included. Tim also noted that something that might dovetail nicely with some of Don's suggestions was when they get to the point of the design construction standard, there will be a little bit more content about what systems are there and what systems are the standard. That will be able to dovetail in with this and could help with some of the options analysis and what standards the department is looking for.

Chair Teshner stated that they will revisit approval of the publication during tomorrow's session.

OTHER INFORMATION FOR THE GOOD OF THE ORDER

Tim Mearig stated that they are hoping to be under contract with BDS Architects soon to help the department launch a renewed effort on the design and construction standards.

RECESS

Dale Smythe **MOVED** to adjourn the meeting, **SECONDED** by Don Hiley. Hearing no objection, the motion **PASSED**, and the meeting recessed at 4:02 p.m.

April 15, 2020

CALL TO ORDER/ROLL CALL

Acting Chair Blackwell called the meeting to order at 1:00 p.m. Roll call and introduction of members and guests present; Senator Cathy Giessel excused. Quorum was established to conduct business.

PUBLIC COMMENT

No public members wished to provide comment at this time.

COST MODEL UPDATE

Tim Mearig stated an update happens every year to the department's cost model, and there is a particular file in that cost model that is intended to help the consultant identify any escalations that might be happening with costs in schools. The department in the past has asked for certain back ups with respect to material prices and the particulars of how those have gone up or down and why. This has been a dialogue between the department and the consultant only.

Tim stated that one of the other things that has worked into that particular cost model file is changes that have occurred in school construction and design features. This is the issue that is coming before the committee today, and he stated that HMS will give them a briefing.

Kent Gamble and Aimee Smith from HMS, Inc. appeared to present to the committee. Kent Gamble stated that this year's exercise was pretty simple and mostly includes material pricing updates. They came across a couple of labor rate changes to adjust either up or down, but the largest change was adjusting the exterior wall assembly to reflect what is being seen in the industry right now with school construction. Wood stud framing and wood siding have become antiquated, so the change is to go to a metal stud framing with a metal panel exterior finish. They have also incorporated about 20 percent of the area as having some type of a rain screen assembly with a phenolic resin panel for a visual accent to the exterior closure. Other changes included the provision of emergency lockdown gear in schools; and some inclusion of ballistic protection, to a relatively light degree, at reception areas. They also included flat panel monitors for visual display at the schools this year, which the committee may want to discuss further.

Committee members reviewed with Kent Gamble the details of the model school building escalation cost study. Tim Mearig noted that the exterior enclosure system went up to 65 percent. David Kingsland suggested that he thinks it's a good idea to start looking at the offices and putting the flat panels up like they had talked about.

Kent Gamble reviewed the differences between last year's cost model and this year's model denoting the differences in the metal materials versus the wooden materials. Tim Mearig asked for the unit price difference between wood stud framing and metal stud framing. Kent explained that the units are different, so they don't track. Metal studs are measured by square foot, and wood studs are measured by lineal foot. He stated that a comparison can be made to overall costs by noting that wood studs would be about $35,000 and metal stud framing would be about $44,000. Siding can be compared by unit cost, and beveled cedar siding is about $2.75 per square foot, and although metal siding can range, a good middle ground estimate is $7.50 per

square foot including all the trims and flashings. Kent also noted that the rain screen assembly system is an expensive system, but it is seeing pretty common use in contemporary construction.

Dale Smythe asked about the "adaptation of new assembly and lockdown provision" and if that was exterior lockdown. Kent stated that what they did there was they added emergency lockdown provisions and the appropriate hardware associated. He stated that it includes the lockdown of the exterior and certain corridor doors within the facility, but not the entire facility.

Dale Smythe asked about the two percent decrease in superstructure in the cost comparison and if that was a representation of what has been seen in the market, or if that was within the error limit. Kent believes that what is driving the decrease is that he dropped pricing on steel joist pricing from the previous year. Kent noted that there was also a slight reduction on the mechanical, primarily because of cost adjustments and productivity adjustments to labor.

Lori Weed noted that lockdown provisions have been added, and she asked if there had been security elements incorporated in the model school previously. Kent Gamble stated that there were some, but those have been enhanced in this updated model. He stated that if committee members are anticipating an enhancement of something more robust in the form of lockdown and school protection, that should be something they consider incorporating if appropriate. Tim Mearig stated that the department has had a lot of discussions about cameras, and has been unwilling to accept into projects cameras in every classroom; but if it looks like it's becoming a standard, there will be a need for additional justification and vetting.

Tim Mearig stated that the work of the committee on this particular project is to validate the conceptual changes for the model school. He stated that the department will continue to work with the consultant on the particulars of the model that they will then relay to the committee. He stated that this will eventually dovetail with the publication on model school standards or design construction standards that they will work on throughout the rest of this calendar year with a draft to the committee hopefully by December.

Dale Smythe **MOVED** that the Bond Reimbursement & Grant Review Committee approve the updates presented by HMS, Inc. to the cost model's escalation model school elements with reconsideration for further study of the exterior envelope increases, **SECONDED** by James Estes.

During further discussion, David Kingsland appreciates Tim Mearig digging into more detail on that 65 percent increase on the exterior wall assembly system. He believes that needs to be looked at closely.

Hearing no objection, the motion **PASSED**.

ACTION ITEM – APPROVE PUBLICATION FOR PUBLIC COMMENT PERIOD

Chair Teshner reminded committee members that the discussion on the Guide for School Facility Condition Surveys was discussed during yesterday's session. Tim Mearig asked that the committee entrust the department to include some Appendix B elements before putting the publication out for comment.

Randy Williams **MOVED** that the Bond Reimbursement & Grant Review Committee approve the department's proposed update of the *Guide for School Facility Condition Surveys* and recommend the Department open a period of public comment with the additional information provided by the department to fill in Appendix B, **SECONDED** by David Kingsland. Hearing no objection, the motion **PASSED**.

SUBCOMMITTEE REPORTS

Design Ratios

Dale Smyth stated that they made a major step in selecting a probable ratio number. There was quite a bit of effort since last December during the A4LE Conference to receive additional input. A special thank you to Gary Eckenweiler and Karen Zaccaro who offered a new perspective.

Dale stated that one of the more recent concerns was on student access to daylight and a concern that a suggested ratio might inadvertently limit student performance, so language will be included to add that. Their intent moving forward is to formalize that recommendation of the 15 to 17 percent O:EW ratio and get that in front of the committee when it is formalized.

Dale Smythe stated that in terms of the other three ratios that all have to do with compactness, the subcommittee is going to try to select or modify one ratio that would incorporate all three because it is an important indicator of energy use.

Model School

Don Hiley directed members of the committee to packet page 202 containing "Task 3, Review analysis and publish a handbook or regulations as recommended" regarding a DEED school design and construction standards building system template, and he stated that that is where the committee has been focusing their efforts. They had a meeting in mid-March to discuss and review an RFP for professional services with the $50,000 in funding that was made available to the department. An RFP was put out the first week of April, and the contract was supposed to be completed by the end of June. They received a proposal from BDS, and DEED is in the process of contracting with them. He is hoping their product will be available by June and then it will be available for review by the committee and others at that point.

Commissioning

Randy Williams stated that the main task this subcommittee worked on was identification of a tool for identifying candidates for recommissioning or retro commissioning. Most of the other tasks of this subcommittee have either been completed or are dormant at the moment.

Randy explained to the committee that re-commissioning is repeating commissioning that was already done; and retro-commissioning is performing commissioning that was supposed to have been done or that could have been that was not originally. He stated that he investigated how others are using the Energy Use Intensity (EUI), which is an annual energy use per square foot measurement and is used extensively by the EPA in their Energy Star program. There are online tools such as Portfolio Manager and Target Finder that are used to measure and track consumption data. It then compares data based on real data in the area, not nationwide.

Randy directed committee members to his report in the packet to view actual energy consumption for a few schools to see what their target EUIs might be. The schools chosen were

in Anchorage, Fairbanks, and Utqiagvik, and he noted that the targets are quite different, so schools are not held to the same standard statewide, although they may be held to the same target percentage. He stated that ultimately this could be used to identify schools that are not performing from an energy standpoint because those that are not performing well would quite obviously stand out on the chart.

Dale Smythe was curious if what Randy saw in this effort for the EUI matched what he saw as the result of some of the energy modeling that had been done in the ratio effort across the state. Randy stated that it does track on a gut level, but he did not dig into it. He stated that his modeling experience has shown that it's pretty hard to get an accurate prediction of energy use because of climate variation.

Tim Mearig thanked the committee for their work in this area. He reminded members of the committee of language added to the regulation that, as part of a district's PM assessment, districts would need to be able to establish how they were measuring the need for retro-commissioning in their schools. The department is hoping to be able to provide districts a tool that is the equivalent of the department's renewal and replacement schedule for capital renewal. The R&R tool was developed to be a bare bones way for districts to look at capital renewal across their buildings through entries into a spreadsheet. They are hoping to do something similar with a retro-commissioning tool.

School Space

Dale Smythe stated that the subject of school space continues to be an important topic for him. They have been doing a review of accuracy and adequacy related to the state space allocation guidelines. They have also received quite a bit of input from the industry as well as from Tim Mearig at DEED on intent. What is important to Dale right now is trying to identify early how they might influence this, and then determine what each of those changes would take. They are trying to find a road that's reasonable between impact, effort, and probability.

Dale stated that they will attempt their monthly meetings through September to determine those things they can have the greatest impact with. He will also continue to gather input from people in the industry.

BR&GR COMMITTEE CALENDAR AND WORK PLAN REVIEW AND UPDATE

Chair Teshner referred committee members to pages 209 through 212 of the packet. Tim Mearig stated that DEED staff have tried to clean the work plan up so people can see the major elements of work, and to project what would need to happen in the various meetings of the year. He referred members to the last page that summarizes the tasks to be accomplished at each meeting. He stated that the only task not identified in the work plan is the ASHRAE 90.1 checklist update as they are awaiting the next State Board of Education meeting to take place.

SET DATE FOR NEXT MEETING

Chair Teshner announced that the next meeting is scheduled for June 16th, 2020 as a three-hour teleconference.

DEED WRAP-UP
Tim Mearig opened up a discussion with the committee regarding questions the department has received about extending the date of the upcoming CIP cycle.

Randy Williams asked what the status was of the CIP workshop coming up in May. Tim stated that DEED still plans to have the workshop, and it will be led by Lori Weed and Larry Morris. Lori stated that due to travel restrictions, they are unable to hold the workshop in person, but she and Larry have been discussing how to break up the various pieces of information for presentation through online webinars over multiple days.

Randy wondered if any of the feedback Tim has been receiving about not being able to get the applications done was because of changes to the workshop and the availability and the format. Tim said that the inquiries they have received so far are that people are having trouble getting consultants involved in their project development if it required travel to school locations in order to properly document needs and get application data ready. Don Hiley had those same concerns himself, particularly given the demise of Ravn even after things open back up again. He doesn't believe the writing of the application will be impacted, but the ability to get information and people to where they need to be is certainly going to be impacted. Committee members discussed their perspectives on whether a few week's delay would help. Don noted that so much is unknown at this point, but he didn't want to see the submittal date pushed back. Dale Smythe agreed and suggested they consider offering accommodations with how the materials are accepted, such as instead of having an engineer visit the site, have the engineer involved on the team viewing photos of particular circumstances in coordination with the school district. He thinks allowing flexibility in elements for now that can be proven later would be an option, because he doesn't believe they can count on travel to some of the rural sites being an option regardless of a month delay on the CIP applications. William Glumac agreed to the suggestion of providing some ability to loosen up requirements, at least on a temporary basis on certain criteria. Don Hiley further commented that they may also want to think about electronic CIP submittals with a follow up of the paper copy once it arrives in light of mail and freight being hampered at this point.

Tim Mearig stated that it sounds as if they will need to reevaluate this as they get closer to the date, and they can work on vetting options in the meantime. He stated that it may be reasonable to just offer a couple days of relaxing the drop-dead date of when something has to be received by the department. He asked the committee about the idea of doing some kind of an emergency policy with the regulations regarding an additional time period for reusing past applications. Dale Smythe stated that people would love that, and any kind of flexibility like that could help. Chair Teshner stated that the department has the ability to make a case to the Governor about any statutes or regulations that might need to be waived during this emergency crisis. She suggested they put something on the listserv to elicit feedback and then see about getting some things waived to provide flexibility to districts through the CIP process.

Tim stated that they will keep the lines of communication open as districts inform the department of what kind of impacts they are running into over the summer.

Wayne Marquis thanked everyone on the committee for all of their work. He also thanked those public members from the districts that participated during the meeting because hearing from them is very helpful for the department.

COMMITTEE MEMBER COMMENTS

Committee members shared their final comments. Highlights included:

- Randy Williams appreciated everyone's involvement.
- Dale Smythe thanked everyone for the work. He commented on the challenges on working from home during the pandemic.
- Don Hiley thanked everyone for their time, and appreciated Tim and Larry and others that may have contributed to the new condition survey workbook, which he thinks will be very useful.
- David Kingsland thanked Dale, Don, and Randy for the work they do on subcommittees. He thanked Don for including the hardening off of the school offices and the outdoor locking under the model school report.
- James Estes appreciated the effort, and noted he has spent the meeting digesting all of the good work everyone is doing.

Chair Teshner appreciated all of the committee members for their participation and thanked Elwin Blackwell for stepping in as acting chair in her absences. She complimented the DEED staff by stating that they continue to do amazing work.

Tim Mearig added that Larry Morris has put in his resignation with DEED and will be leaving mid-June to take a position with the Anchorage School District.

MEETING ADJOURNED

Dale Smythe **MOVED** to adjourn, **SECONDED** by Don Hiley. Hearing no objection, the motion **PASSED**, and the meeting adjourned at 2:32 p.m.

THE STATE of ALASKA
GOVERNOR MIKE DUNLEAVY

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

To: Bond Reimbursement & Grant Review Committee
From: School Facilities
Date: June 16, 2020

DEPARTMENT BRIEFING

FY 2022 CIP Workshop

Once the new fiscal year application is approved by the BRGR Committee, the department hosts an informational workshop for districts and other interested parties on the application for the upcoming review cycle. The department typically presents the application questions, provides instructions and tips on how best to provide informative answers for best project scoring, and highlights changes from year to year. Ample opportunity is provided for attendees to ask both general process and project-specific questions.

This year, to accommodate the unusual circumstances of social distancing and travel restrictions caused by the Covid-19 pandemic, the department presented the CIP workshop topics in an online format, along with expanded offerings. Six independent presentations were scheduled over three days (May 7, 8 and 11), for a total of 13 hours:

- CIP Program Overview
- General CIP Application Walkthrough
- How to Build a New School Construction Project Application
- How to Build a Renovation Project Application
- How to Build a Component Replacement Project Application
- Project Funded, Now What?

Webinar attendance was similar to that of prior years' in-person workshop attendance, with between 40 to 25 attending the various presentations. Most attendees were consistent in attending the majority of the webinars. There was a typical mix of stakeholders represented: small district, large district, grant writers, and A/E firm personnel. Over a third were attending a CIP workshop for the first time.

The presentations themselves were not recorded, but the slide shows for the 'CIP Program Overiew', 'General CIP Application Walkthrough', and 'Project Funded, Now What?' are available on the department's CIP Application and Support webpage.

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

June 5, 2020

Mission Statement

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

Current Members

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

Status Update

Recommendations from 2017 Report to the Legislature:

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

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

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

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

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

   The effort included gathering existing ratios and energy use metrics where available. The information has not yet been completely analyzed yet seems to

support all the previous conclusions. The collection of the data also has been helpful to inform the measurement effort as a "test run" of how to request and receive the measurements from architectural elevation drawings.

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

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

Schedule

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

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

Model School

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

June 5, 2020

Mission Statement

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

Current Members

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

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.

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.

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

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

Status: Completed January 2018.

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

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

Schedule

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

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

Bond Reimbursement & Grant Review Committee

Commissioning

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

June 3, 2020

Mission Statement

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

Current Members

Randall Williams PE, PDC Engineers, Chair
William Glumac
Wayne Marquis, DEED

Industry Partners

Craig Fredeen, Cold Climate Engineering
JaDee Moncur, Support Services of Alaska

Status Update

Development of a tool for identifying schools that are candidates for Re-commissioning (Re-Cx) or Retro-Commissioning (RCx):

DEED facilities staff planned to meet in May 2020. In preparation for that meeting, BRGR Cx Chair was asked to provide ideas for how to implement regulatory tools. Chair supplied some thoughts to help guide discussions at the meeting as follows.

- Establish baseline annual energy use by location
  - Establish an EPA Portfolio Manager account for DEED / BRGR (free)
  - Enter DEED Model School info into EPA Portfolio Manager, once for each representative community in AK.
- Establish recommended Targets for designs, relative to baseline above
  - At discretion of each community?
  - Can DEED provide guidelines based on green building or other sources?
  - EPA Target Finder online tool is used for this, dovetails with baseline info above
- Establish thresholds for recommending RCx
  - For new designs, use Target above
  - For existing buildings, use % of baseline? Needs discussion.
- Determine how to implement above in a tool form
  - Each school district can easily track their specific building energy use using their own Portfolio Manager account, and compare to the above Targets

Schedule

No subcommittee meetings currently scheduled.

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

School Space

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

June 5, 2020

Mission Statement

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

Current Members

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

Status Update

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

From April -
Accuracy issues include:

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

Adequacy issues include, among others:

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

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

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

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

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

Schedule

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

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

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

By: Tim Mearig
Facilities Manager

Phone: 465-6906

Date: June 5, 2020

File: G:\SF Facilities\BR_GRCom\Papers\PM\Retro-Cx Tools BP.docx

For: Bond Reimbursement & Grant Review Committee

Subject: Retro-commissioning Assessment Tools

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

Background

Commissioning Requirements for Existing Buildings

In order to remain eligible to request state-aid for school capital projects under AS 14.11, as implemented in regulation 4 AAC 31.013, Alaska school districts must have:

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

This requirement was codified in regulation on November 29, 2019 and it is the intent of the Department of Education & Early Development to assess district compliance with the regulation during the period November 1, 2020 to June 1, 2021. As part of compliance assessment, the department intends to establish its criteria for measurement and to publish that criteria for public comment. The department also intends to develop and make tool(s) available to district to assist them in meeting the established criteria.

Definitions

Retro-commissioning (RCx): RCx is the inspection and adjustment of systems to return the facility to operate as it was designed to operate. Generally, it is assumed to apply to facilities that were never commissioned at start-up. The parallel term "re-commissioning" is sometimes applied to commissioning activity that follows an original (prior) commissioning event.

Energy Use Intensity (EUI): Sometimes also referred to as Energy Utilization Index, the EUI provides a snapshot of the quantity of energy actually used by a building on a square foot and time period basis (e.g. month, year). The calculation converts the total energy usage for a determined time period from all sources in the building, (e.g. heating fuel, electrical) into British Thermal Units (BTUs). The total usage is then divided by the number of square feet (sf) of the building. EUI units are kBTUs/sf for any measured time period. As stand-alone metric, EUIs are not adjusted for climate variations.

British Thermal Unit (BTU): A BTU is the amount of heat required to raise the temperature of one pound of liquid water by one degree Fahrenheit at a constant pressure of one atmosphere.

Heating Degree Day (HDD): HDDs are a measure of how much (in degrees), and for how long (in days), the outside air temperature falls below 65 degrees Fahrenheit. It is commonly used in calculations relating to the energy consumption required to heat buildings. Essentially, the colder the outside air temperature, the more energy it takes to heat a building. The idea is that the amount of energy needed to heat a building in any day/week/month/year is directly proportional to the number of heating degree days in that day/week/month/year.

Site Energy: The amount of primary (e.g. oil, natural gas) and secondary energy (e.g. heat and electricity) consumed by a building as reflected in utility bills and other on-site measurements. Site energy is calculated by converting each fuel source into BTUs, then adding them altogether. Site energy is useful in monitoring how the energy use for an individual building has changed over time; however, it is not a good metric to compare two different buildings.

Discussion

The regulation language requires three actionable steps of school districts:

1) Districts must evaluate the need for commissioning of existing buildings;
2) Districts must evaluate the effectiveness of commissioning existing buildings;
3) The evaluation must be regular.

Retro-commissioning Need

The department proposes that districts evaluate the need for retro-commissioning by measuring the EUI for each facility designated as 'main school' in the DEED Facilities Database, along with any other support facility greater than 5000gsf. The calculated EUI would then be adjusted for climate variations using Degree Days, and finally, compared against a statewide minimum EUI benchmark established by the department and updated as needed as part of the CIP application process.

Retro-commissioning Effectiveness

The department proposes that districts evaluate the effectiveness of implementing retro-commissioning on a school facility by calculating an anticipated Return on Investment (ROI) for the retro-commissioning effort. This ROI would be a simple payback calculation comparing the anticipated cost of the RCx and its recommendations, to the estimated cost savings resulting from implementing the RCx recommendations. Any ROI showing a simple payback within four years would be considered effective.

Regular Evaluation

The department proposes that a regular evaluation would be an annual evaluation. At a consistent date, established in the district's energy plan, each qualifying school facility would be evaluated for RCx a consumption-based EUI analysis, and RCx effectiveness based on a cost-based ROI analysis.

Responses and Tools

Each district will need to update its energy management plan to include details about the effectiveness and the need analyses for retro-commissioning. Districts will need to implement the measurements and calculations using tools that they have developed, using commercially available tools, or using tools supplied by DEED. Proposed DEED tools are attached to this briefing paper. An equally viable tool option would be to use the US Environmental Protection Agency's Energy Star Portfolio Manager. This tool takes utility consumption data and calculates an EUI for the facility. One benefit of tracking and evaluating using the EPA tool is the access it provides to comparative data from other K-12 school facilities.

Options

Option 1 – District Tools/District Metrics

Under this option, a district would demonstrate compliance with the regulation requirements by asserting its own retro-commissioning needs evaluation (EUI-based), effectiveness assessment and regularity with an annual minimum. (Note: this could include independent use of the EPA Portfolio Manager identified in Option 3 below.)

Option 2 – Department Tools/Department Metrics

Under this option, a district would demonstrate compliance with the regulation by using the DEED-supplied retro-commissioning needs evaluation, and effectiveness assessment tools on an annual basis. (See attached template and sample tool.)

Option 3 – Department/District Collaboration Using EPA's Portfolio Manager

Under this option, districts and the department would collaborate and adopt the EPA Energy Star platform as the process for demonstrating compliance with the regulation in the area of retro-commissioning needs evaluation, and effectiveness assessment. An integrated process would look something like the following:

- Establish baseline annual energy use by location
    - Establish an EPA Portfolio Manager account for DEED / BRGR (free)
    - Enter DEED Model School info into EPA Portfolio Manager, once for each representative community in AK.
- Establish recommended Targets for designs, relative to baseline above
    - At discretion of each community?
    - Can DEED provide guidelines based on green building or other sources?
    - EPA Target Finder online tool is used for this, dovetails with baseline info above
- Establish thresholds for recommending RCx
    - For new designs, use Target above
    - For existing buildings, use % of baseline?
- Each school district would track their specific building energy use using their own Portfolio Manager account, and compare to the above Targets

Recommendation(s)

Approve each option above as being acceptable for DEED implementation on November 1 following a period of public comment.

Suggested Motion

"I move that the Bond Reimbursement and Grant Review Committee approve the options [as presented / as amended] and recommend that the department open a period of public comment."

Retro-Commissioning (RCx) Analysis Worksheet

[Enter Facility Name From DEED Database]

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

School Year	Total (BTU)	EUI (kBTU/SqFt)	Degree Days	Adjusted EUI
2020	0	#DIV/0!		#DIV/0!
2019	0	#DIV/0!		#DIV/0!
2018	0	#DIV/0!		#DIV/0!
2017	0	#DIV/0!		#DIV/0!
2016	0	#DIV/0!		#DIV/0!

Baseline EUI:	% Over/Under
150	#DIV/0!
150	#DIV/0!
150	#DIV/0!
150	#DIV/0!
150	#DIV/0!

Total BTU Worksheet

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

Electrical Usage (KWH)

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

Heating Fuel (GAL)

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

Natural Gas (CCF)

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

Biomass (CHD)

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

Recovered Heat (BTU)

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

Steam (BTU)

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

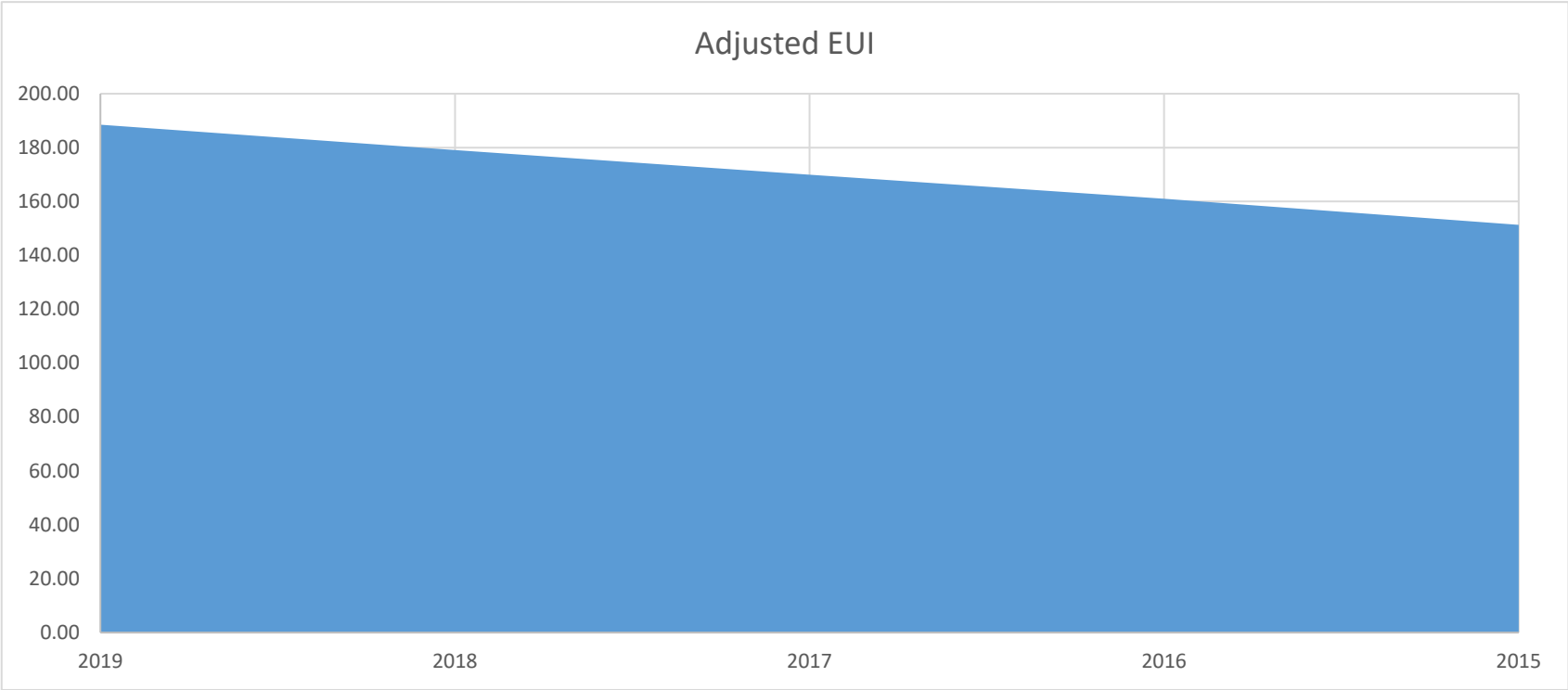
Retro-Commissioning (RCx) Analysis Worksheet

Diomede K-12 School

Analysis Year:	2020	**DEED Facility Number:**	070050-01	**District Facility Number:**		**Gross Square Footage:**	17,526
Degree Days:	Minimum:	13,985	Average:	14,285	Maximum:	14,585	10350

School Year	Total (BTU)	EUI (kBTU/SqFt)	Degree Days	Adjusted EUI
2019	4464017600	255	13985	188.50
2018	4301523200	245	14185	179.08
2017	4139028800	236	14385	169.92
2016	3976534400	227	14585	161.01
2015	3814040000	218	14885	151.32
2014				

Baseline EUI:	% Over/Under
150	25.67%
150	19.39%
150	13.28%
150	7.34%
150	0.88%



Total BTU Worksheet

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

Electrical Usage (KWH)

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

Heating Fuel (GAL)

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

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

Guide for School Facility Condition Surveys

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

June 16, 2020

Issue

The department seeks committee approval to finalize and publish the revised *Guide for School Facility Condition Surveys*.

Background

Publication last updated in 1997. Current edition is not available on the departments website due to accessibility pending a new version.

Public Comment
The department issued the publication for public comment from May 8 – June 1. See document that identifies the comments received with department responses.

Summary of Proposed Changes

- All elements of the template structure were reviewed and were conformed to the structure of the DEED CostFormat 2020 Ed. Approximately 15 systems/subsystems were added/subtracted or had title changes.
- Minor revisions were made based on public comment. These revisions are tracked in the current document.

Version Summary & BRGR Review

Position papers were presented to the committee at the August 2019 and December 2019 meetings.

April 2020 – draft publication presented. BRGR recommended department open public comment period

June 2020 – final publication presented following public comment.

BRGR Input and Discussion Items

TBD

Options

Approve publication.
Amend publication and approve.
Seek additional information.

Suggested Motion

"I move that the Bond Reimbursement and Grant Review Committee approve the department's proposed revision of the *Guide for School Facility Condition Surveys* for publication."

DEPARTMENT OF EDUCATION AND EARLY DEVELOPMENT

COMPILED PUBLIC COMMENT AND DEPARTMENT RESPONSES

GUIDE FOR SCHOOL FACILITY CONDITION SURVEYS

MAY 8, 2020 TO JUNE 1, 2020

PUBLIC COMMENT RECEIVED	DEED RESPONSE
Pre-Inspection (Page 6) might include a suggestion to communicate with onsite user groups to survey for complaints or known deficiencies to investigate before arriving on-site. It is also recommended to understand the site infrastructure and utilities for a comprehensive survey. *ECI 6-1-2020*	Agreed. Change made to section.
Regulatory Data paragraph (page 9) uses the word survey multiple times with apparent different intended meanings. Perhaps clarify what type of survey is reference in each occurrence – for example a property survey or ADA survey vs the general building survey (main topic). *ECI 6-1-2020*	Will consider. Thank you for your input.
Interiors (Page 10) should also include acoustics, lighting efficacy for the intended use (natural and artificial) and perceived air quality (stuffy/smelly). *ECI 6-1-2020*	Agreed. Additional items added.
Add a section – Passive & Active Security - This section should address overall interior flow of people and passive/active security assessment, for example Crime Prevention Through Environmental Design (CPTED) principals. *ECI 6-1-2020*	See response on Interiors. Thank you for responding.
Roof Systems (Page 10) should reference Site and Infrastructure for roof drainage / stormwater management. *ECI 6-1-2020*	Covered under “collection and drainage”
Mechanical (page 11) – include an evaluation of HVAC acoustics (noise). *ECI 6-1-2020*	See response on Interiors. Thank you for responding.

PUBLIC COMMENT RECEIVED	DEED RESPONSE
Recommendations (page 12) timelines for recommendations should be included to assist school districts in long term planning. An example would be to use a 1/5/10 year to help assess the condition timeline and the remaining expected lifespan of various building systems. If item is routine maintenance or major maintenance should also be identified to help in planning of any DEED applications. *ECI 6-1-2020*	Thank you for responding; no changes planned.
Adequacy of space should be recommended as a component for assessment in any condition survey with an interior assessment. *ECI 6-1-2020*	Included in "Interiors"
It was unclear where casework might fall in the summaries, but we determined it would be within interiors based on the templates. *ECI 6-1-2020*	Yes, it is. Thank you for your input.
Code Deficiencies (page 12). Indication should be made whether the deficiency is a life/safety issue that should have immediate priority or something that is out of compliance and should be addressed as part of the next major maintenance effort. *ECI 6-1-2020*	Will consider. Thank you for your input.
Page 61 AJH should probably be AHJ. *ECI 6-1-2020*	Agreed. Change made.
The rating guide reliability and visual condition charts are very helpful and will contribute to greater consistency across reviewers. Recommend removing the ½ steps in the Reliability Basis Raters Guide to increase consistency across projects. *ECI 6-1-2020*	Agreed, will consider. Thank you for your input.
No mention is made of energy efficiency reports, though this could be under engineers. Could mention it as a possible additional reference report. *ECI 6-1-2020*	Will consider. Thank you for your input.

PUBLIC COMMENT RECEIVED	DEED RESPONSE
Appendix B – during a survey, many building systems cannot be assessed without destructive observation. It is helpful to identify what was observed and what is anticipated, but not observed. For example, an exterior wall assembly may be known based on access to existing construction drawings, but only the interior and exterior surface visible. This is especially important when planning for repairs or major system upgrades. *ECI 6-1-2020*	Yes; this is part of the Pre-inspection phase.
Recommend including IR images for surveys. A guideline would be required to maximize the information gained from the IR images though. v	Will consider adding to Appendix D tools list.

Guide for School Facility Condition Surveys

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ACKNOWLEDGEMENTS

Thanks to the Bond Reimbursement and Grant Review Committee members who reviewed the original publication in its draft form and a special thank-you to Harley Hightower for his contribution of the original format and his creation of the specific building system checklists.

Originally published in a limited quantity in June, 1995 by the State of Alaska, Department of Education as *Educational Facility Condition Survey*. Updated in 1997 as the *Guide for School Facility Condition Surveys.*

Table of Contents

The Condition Survey

Background

Immediately after being constructed and put into use, school facilities begin to age. Their moving parts begin to wear. Their more static elements are impacted by loads and stresses, by environmental conditions, and by building users. In order to mitigate this degradation, facility owners implement maintenance and custodial measures. Eventually, inevitably, replacement or renewal becomes necessary. Capital renewal schedules can form the basis for identifying and forecasting this work, but they lack detail regarding specific conditions. The move from capital planning to capital projects—from general data on renewal schedules to actual assessments of conditions on site—is the realm of the condition survey.

A properly performed condition assessment is the initial step for any well-defined capital improvement project. The assessment can be expansive in scope to include an entire facility and all of its systems (i.e. civil, structural, architectural, mechanical, electrical, and hazardous-materials) or small and specifically directed (e.g., assessing the heating plant portion of the HVAC system). Department of Education & Early Development (DEED) documents describe the ends of these ranges with the nomenclature "Facility Condition Surveys" and" Component Condition Surveys".

Regardless of the scope of a condition assessment, which is determined by the targeted needs of a capital renewal program, the facility/component survey is a comprehensive product that informs and supports the project. It documents the conditions justifying the project and should include the following elements based on need:

- A basic description of existing systems including the components making up the system, their function, and their age;
- The current condition of the system(s) based on function/operation, visual observation/ inspection, and testing;
- A listing of the code deficiencies found, with citations;
- Recommendations for corrective action related to all deficiencies described;
- Costs associated with each deficiency's corrective action; and
- Supporting data such as cost/benefit analyses and life cycle cost analyses, special inspections, engineering calculations, photographs, and drawings related to any of the prior elements.

Depending on the scope and complexity of the condition survey, and its intended audience, it is also common to provide executive summaries, tabulations, and other organizational elements as part of the overall product.

The Survey

The condition survey process has three basic elements: pre-inspection review, on-site condition assessment, and report preparation.

Pre-Inspection

Best practices in the pre-inspection phase include reviewing available record documents for both buildings and infrastructure (e.g., building information models (BIM), drawings, and operations and maintenance manuals) for an understanding of the existing systems, gathering available maintenance and operations data such as work order histories, and completing a code review. Much of the information gathering process will involve communication with district personnel. At a minimum this will involve conversations with district facilities personnel; at a most-robust level, surveys would be conducted with user groups and responses indexed for further review. One objective of the code review is to ground the survey in the realities of the codes in force at the time of construction. Code awareness helps inform the on-site assessment and report phases—especially when differentiating between code deficiencies and code upgrades. The pre-inspection phase is also the time when various logistical elements are considered and planned. When conducting facility condition surveys with a broad scope, many logistical elements are integrated with the consultant solicitation, proposal, and award process.

On-site Condition Assessment

Particulars of the on-site condition assessment phase are driven by the scope of the condition survey. For facility condition surveys it is anticipated that the on-site condition assessment will be accomplished by a team of professionals with the necessary expertise to inspect the various building systems being included. A common team makeup would include an architect as the team lead with representation from civil, structural, mechanical, and electrical engineering disciplines. One challenge for design professionals is suitable equipment and tools for accessing areas of the facility or to accomplish testing, whether non-destructive or destructive. Often, the most robust condition assessments include an appropriate collaboration of design professionals and tradespersons or owner facilities personnel. The team makeup for a component condition survey could be significantly different from that of a facility condition survey. At this scale, condition assessment is often handled by tradespersons, contractors, or facilities personnel. Regardless of the team composition and complexity, there are some key procedures that are followed in performing an efficient and effective on-site assessment. These include the use of:

- Inspection Checklists: Inspection checklists can be prepared for each building system in the template. Use of checklist increases both the efficiency and the effectiveness of the on-site assessment and can help guard against inadvertently missing critical components. Appendix B provides some basic sample checklists.
- Condition Rating Scales: The template provided suggests a primarily narrative style report. However, this does not mean that indexing conditions should not occur. A solid best-practice is to develop a simple, well-crafted rating scale for the conditions observed. Generally, a 5-point numeric rating scale is sufficient to differentiate between various conditions. Appendix C provides an example of typical rating scale.
- Recording and Testing Equipment: Essential equipment to enhance the recording of conditions beyond the checklists and rating scales include a digital camera and measuring devices. For the latter, each building system establishes its own needs. In addition, the scope and complexity of the survey help determine the need for specific test equipment. Appendix D provides a list of typical test equipment and each of their uses.

- Personal Protective Equipment (PPE): Safety is the procedure; PPE is the means to that end. Condition assessments can be hazardous. They often involve accessing areas of facilities and infrastructure that are not meant to be inhabited or exposed—even temporarily. On-site assessments are often required to be conducted in compressed time frames, sometimes resulting in long work hours. In addition to protective equipment, personal care cannot be overlooked. Proper hydration, nutrition, and breaks require conscious preparation and personal awareness. Appendix D provides a list of typical PPE and personal care items.

Report Preparation

After the on-site inspection is complete, a report—the condition survey product—is prepared. Key elements of this document were previously identified in the Background section as: Description of Existing Systems, Current Conditions, Code Deficiencies, Recommendations, and Estimates. The report sections describing the existing systems should draw from the pre-inspection review phase while those documenting current condition and code deficiencies will be based on the on-site assessment phase. Though the data in these three elements form the core of the condition survey report, the usefulness of the report depends on the information found in the recommendations and costing elements. The recommended corrective actions should be able to assist the school district in developing a cost-effective plan for restoration of the facility or component, or to establish the need for replacement. In addition to this content-related structure, it is important for the report as a whole to be organized in relation to the building systems that make up the school facility and its related infrastructure. Utilizing the *DEED Cost Format* or similar or equal building systems structure is highly recommended for all other forms of condition surveys for schools in Alaska. Finally, the survey should assist the district in communicating those needs to the public and government agencies. These stakeholders are often those being asked to provide support for corrective work in the way of funding.

When performing a condition survey, a wide spectrum of conditions will likely be observed. A correspondingly range of recommendations for corrective action will be needed in the report. An important factor to consider when producing condition surveys on school facility projects is a distinction that may be needed between corrective actions that require capital expenditures and those that should be part of normal maintenance and repairs. Both categories should be documented in the report.

DEED Provisions

Because of a condition survey's value in defining a project, the department's *Application for Funding Capital Improvement Project by Grant or State Aid for Debt Reimbursement* incentivizes completion of a survey by assigning points and making it a requirement in order for certain projects to receive points for planning and design.

Under the department's capital improvement project (CIP) application process, a facility condition survey is required for major rehabilitation projects to receive any planning and design points, including Phase 1 - Planning/Concept Design. A condition survey may also be required for other projects if determined to be necessary to adequately support the scope of the proposed work. Instances of this have included projects where capital forecasting tools such as Facility Condition

Index or Renewal & Replacement Schedule indicated a scheduled renewal need but no evidence of an on-site assessment was included. Also, project scopes that warrant identification of in-depth examination of deteriorated systems may require a scope-specific facility or component condition survey. For project scopes that are component or system renovations, a condition survey of the component or system is acceptable. Condition surveys should be clearly identified and establish a specific date or date range when the survey occurred or was produced.

The department does not consider submittal of a Spill Prevention, Control, and Countermeasures (SPCC) Plan as a condition survey for fuel tank or fuel facility projects. In addition, an energy audit, although useful and informative, does not meet criteria to be a condition survey if the project's scope warrants additional facility condition survey data. Similarly, a condition statement found in a project scope narrative of a CIP application would not constitute a facility/component condition survey. Always refer to the department's latest application information for the most current instructions in this area.

Life Safety/Code scoring in the CIP application will be assessed based on the severity of the conditions and upon the documentation provided to support the reported severity. Documentation, such as a condition survey, can provide quantitative information to support the building or component condition. The primary purpose of this documentation is to present objective, primary, specific, and verifiable data.

Generally, the department does not have specific guidelines on what entities can perform and produce condition surveys. Portions of the condition survey, such as that information pertaining to building codes and analysis of structural and engineered systems during on-site assessments may need to be completed by an architect, engineer, or specialists with documented expertise in a building system. Surveys of this type can easily surpass the $50,000 threshold where competitive selection is required under DEED regulations. However, it might be possible for a district to complete the on-site investigation work and send the documentation to a corresponding professional to review for code issues. School district personnel, or their municipal counterparts, may also be able to produce in-house facility/component surveys depending on their particular expertise and knowledge.

Another area where special knowledge and skills may be needed is in the preparation of the cost estimate associated with proposed corrective actions. There are a variety of estimating tools available for use in this aspect of the condition survey process. Over the years, an increased level of detail for renovation work has been added to the DEED *Program Demand Cost Model for Alaskan Schools*. This enhances its use for estimating the cost of facility deficiencies in the context of condition surveys. However, this and other similar tools have their limitations, and often there is no substitute for a professional cost estimator.

The Template

Introduction

The condition survey template included in this publication is provided for convenience to establish a baseline recommendation for evaluating the condition of school facility systems and their components. The use of this template is not mandatory. Other forms and documents providing this information are acceptable.

Template Structure

This condition survey template is designed to provide a basic, consistent structure to all phases of the condition survey process, and to all levels of condition survey scope. It accomplishes this by using a building system structure, and establishing within that structure a minimum level of detail. For the template provided in this publication, a building system structure conforming to the *DEED Cost Format* is used. When using the template, the first task is to norm the included sections to the scope of the survey. A full-scope facility condition survey would utilize every first-tier element and all applicable sub-elements. The smallest component condition survey could isolate any second-tier sub-element (e.g., Flat Roofs, or Dust Collection System). Within any of these scope elements, the five key process and product elements (description, existing condition, code deficiencies, recommendations, cost estimate) remain standardized. It should be noted that the format of any information presented in the five process elements can vary widely from straight narrative, to bulleted lists, to tables and can include photographs, figures, test results, and other supporting information. To illustrate, an example has been provided of a Mechanical System Condition Survey. While it is possible to embed supporting data within the main condition survey report, placement of supporting data, such as inspection checklist results, in respective appendices can also be helpful in organizing the report.

While there is great latitude in the means of presenting a condition survey, the building system/component structure should remain in place, as should the process of gathering and reporting the data in the five key elements. A condition survey without a description of existing systems or an estimated cost of recommendations would be incomplete.

Template Elements

Cover Page. The cover page is not limited to one page and should include: facility name and location, school district, dates of inspections, dates of building constructions and any additions including gross square footages, history of any renovations, and the survey team performing the survey. There should also be a discussion of the survey including its scope, purpose of the conditional survey, and some background on the facility. This is also where, if the condition survey is being performed by a non-licensed professional working within their expertise, the qualifications of the person performing the survey are provided.

Regulatory Data: Codes used for evaluating the facilities shall be referenced either in this section or in the relevant component sections. Any code discrepancies noted should be included in each component section and list the code references including title, edition, chapter, section, paragraph, and sub-paragraph. This section may also include code analysis of the facility for allowable area

and fire, life, and safety. Survey, reports, and other documentation such as ADA Surveys, AHERA Surveys, Fire Marshal Inspection Reports, and similar documentation shall be referenced under this section of the condition survey and attached as an appendix if available. Results of these surveys and studies shall be considered in the recommendations and cost summary.

Site and Infrastructure: This section consists of Site Improvements, Site Structures, Civil/Mechanical Utilities, Site Electrical, and Offsite Work. The subsystems under these categories provide for detailed assessments of general site conditions as well as utilities and equipment that supports athletics and play. The latter portion addresses the civil engineering and utility requirements of the building. Site issues not related to improvements and infrastructure are assessed and reported under Special Construction. Examples would be site drainage and remediation of hazards.

Substructure: This section consists of Standard Foundations & Basements, Slabs on Grade, and Special Foundations. The subsystems under these categories provide for detailed assessments of all types of building foundations and supporting elements such as waterproofing and drainage systems. Many of these systems are below grade or covered with finish materials and can be difficult to assess directly. Best practice in determining conditions in these components is to look for the impacts of compromise or failure in related and connected systems.

Superstructure: This section consists of Floor Structure, Roof Structure, and Stair. The subsystems under these categories provide for detailed assessments of the structural elements of the building; those carrying dead loads and live loads associated with building use. Similarly to Substructure, these systems are often obscured or covered with finish materials and can be difficult to assess directly. Best practice in determining conditions in these components is to look for the impacts of compromise or failure in related and connected systems. The decision on whether or not to include destructive testing in the scope of a condition survey is often tied to the conditions being observed in these ancillary systems.

Exterior Enclosure: This section consists of Exterior Walls and Soffits, Exterior Glazing, Exterior Doors, and Exterior Accessories. The subsystems under these categories provide for detailed assessments of building components that form the building envelope. In complex buildings, the building should be broken down into discrete areas (e.g. wings, etc.) and separate information obtained for each area. In addition, changes in materials or structural systems will require separate assessment in the report.

Roof Systems: This section consists of Pitched Roofs, Flat Roofs, and Roof Accessories. The subsystems under these categories provide for detailed assessments of the components associates with each roofing system including the roofing material, and collection and drainage features. Roof accessory components such as hatches and skylights, and curbs for mechanical equipment are also in this section. Roofs which also serve as walkable/usable decks and components associated with vegetative roofs would be assessed in this section.

Interiors: This section consists of Interior Partitions, Special Partitions, Interior Openings, Interior Finishes, and Specialties. It is intended to capture all interior information and can be

presented in a room-by-room format or on a system component basis. If reviewing room-by-room, it can be helpful to group rooms into basic types based on typical use and systems: 1) general spaces with standard amenities (e.g. classrooms, administrative offices, etc., 2) spaces with additional plumbing elements (e.g. science labs, administrative offices, etc.), 3) individual spaces with special uses (Corridors, Kitchens, Shops, Locker Rooms/Restrooms, Gymnasiums). . This area of the survey could also discuss functional considerations such as adequacy of space, passive and active security measures, acoustics—including mechanical system noise, lighting, and indoor air quality (IAQ). ADA deficiencies could also be referenced.

Conveying Equipment: This section consists of Passenger Conveyors, and Materials Handling Systems. The subsystems under these categories provide for detailed assessments of elevators, lifts, and building-mounted hoists. These are uncommon in most Alaskan schools and may require assessment by specialists in these types of devices.

Mechanical: This section consists of Plumbing, HVAC, Integrated Automation, and Fire Protection. The subsystems under these categories provide for detailed assessments of the mechanical systems found in various areas of a building, including heating, cooling, and ventilation as well as plumbing piping, plumbing fixtures, building controls, and sprinkler systems. For room-based assessment, a form for Mechanical Rooms to gather significant information on the heating, cooling, and ventilation systems supplying the building's spaces is recommended. As such, information gathered in Interiors will augment the information in this section. However, the basic principle is that Interiors is limited to the visual aspects of the appurtenances of the mechanical systems whereas Mechanical will address the functionality and support for the appurtenance. For example, if mechanical system noise was documented in Interiors, this section would examine the sources and solutions to that functional issue. This section also deals with some specific regulatory data that may not be part of a standard code analysis.

Electrical: This section consists of Service and Distribution, Lighting, Power, Special Electrical, and Other Electrical. The subsystems under these categories provide for detailed assessments of MDPs, transformers, lighting fixtures, lighting controls, distribution panels, power devices, and the host of special electrical systems that make up 21st century schools. This include fire alarms, data and communications, intercoms, and clocks. Power generation and special grounding systems are examples of Other Electrical components. Information gathered in Interiors will augment the information in this section. Again, the basic principle is that Interiors is limited to the visual aspects of the appurtenances of the electrical systems whereas Electrical will address the functionality and support for the appurtenance. This section also deals with some specific regulatory data that may not be part of a standard code analysis.

Equipment and Furnishings: This section consists, unsurprisingly, of Equipment and Furnishings. The subsystems under these categories provide for detailed assessments of career technology, art, athletic, and other built-in school equipment. In the furnishings area, only those furnishings that are affixed to the building would be assessed. Examples would be special entry and walk-off mats, and window coverings.

Special Construction: This section consists of Site Conditions and Special Construction. The subsystems under these categories provide for detailed assessments of site features such as grading, drainage, and site remediation. Special Construction subsystems sometimes associates with schools include, packaged utility modules (e.g., water treatment, biomass boilers, etc.), swimming pools and greenhouses.

Although the preceding template elements are designed to capture all types of building systems and components, some hybrid systems can be difficult to locate within the recommended structure. These instances can be described and noted in the report's introductory information. There are also some types of inspections and assessments that are unique to a specific law or certification and that touch on several building systems. Examples of these are ADA assessments, Indoor Air Quality testing, and certifications for overall building performance such as LEED. If these specialty surveys are included in the scope of a facility condition survey, there could also be the recommendation would be to include these as an appendix to the report.

Template Element Content

Description of Existing Systems: The description should include all components; for instance, in describing the heating system, the boilers, pumps, piping, valves and all terminal units. It should also discuss the original design intent of the system, any modifications made to the system, and any operational deviations that have made changes to the original design and operation. Age of the individual components will be listed, including whether each is an original or a replacement. Ascertaining the age may require research into original drawings, renovations, and component work orders. There can also be a discussion of the component condition that is observed during the inspection.

Existing Conditions: Documentation of the system should be noted in narrative or bulleted write-ups and should include photographs wherever possible. Photographs should depict overall condition, as well as, any specific issues that will be included in the deficiency section of the report. Deficiencies types can be a failure, near to failure, does not meet the requirements of the facility, or a code issue. When referring to age as a reason for deficiency there are some guidelines; using the term "at the end/near end of its useful life" is not meaningful unless information is provided on the age of the component as well as the minimum expected life for a properly maintained system or component. The description of the deficiency should also describe any operational or maintenance issues, backed up by work orders or comments from operators. Noting whether there were no reported issues is important. For components that have failed or are near failure, the survey should review preventive maintenance schedules and work orders to determine if failure is due to age or lack of proper maintenance. This would also be the place to evaluate deviations from original design intent and the possible benefit of retro- or re-commissioning the system.

Code Deficiencies: If here is a code violation, as mentioned above, a citation of the code must be included.

Recommendations: Upon completion of the condition survey, recommendations shall be provided for all discrepancies and upgrades described. Each recommendation should reference the corresponding item contained in the Condition Survey by section, paragraph, and sub-paragraph

designations. Recommendations can be a significant responsibility. Sometimes recommendations are obvious, such as those based on like-for-like replacement. At other times, recommendations can be a challenge. The best recommendations are made under a consideration of available options and an analysis that supports the option selected. Tools such as life-cycle cost analysis can assist in making well-supported recommendations. The survey team should include discussion of department-approved construction standards and how the standards may affect the design of any deficiencies and corrective actions. Consideration of district construction and building system standards is also appropriate.

Estimates: Cost associated with each discrepancy and upgrade shall be provided. The cost of corrections should be entered in this section and estimating details for each cost should be included in the appendix. Recommendations for developing costs have been covered in the Introduction section and include professional estimates, use of the *DEED Cost Model*, contractor quotes, and vendor quotes. A condition survey submitted without costs associated with each discrepancy is considered incomplete.

Executive Summary

This section could include a general review of the survey findings. It could also include possible project strategies to accomplish the needed repairs, including: suggested bundling of items into distinct projects for efficiency, small capital projects being performed by the district, maintenance and repair work, and possible long range planning for items that may need attention in the future.

Supplements and Appendices

Supplements may be included in an Appendix to the Condition Survey report. Appendices may include subjects such as special inspections, checklists, engineering calculations, photographs, drawings, estimate worksheets, etc. Floor plans, with building area designations, room identification and door numbers used in the survey should be included.

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Example

An example School Condition Survey Mechanical system narrative excerpt is attached on the following pages to show an example of the evaluation and summary forms.

ABC ELEMENTARY MECHANICAL CONDITION SURVEY

The site was visited on Friday, August 9th, 2019 to inspect the mechanical systems for the facility. The building was inspected for conformance of the following adopted codes and standards:

2013	International Building Code (IBC)
2012	International Fire Code (IFC)
2012	International Mechanical Code (IMC)
2015	Uniform Plumbing Code (UPC)
2012	International Fuel Gas Code (IFGC)
2012	International Energy Conservation Code (IECC)
2005	Americans with Disabilities Act Guidelines (ADA)
2016	ASHRAE 62.1-2016 Ventilation for Acceptable Indoor Air Quality
2016	ASHRAE 90.1-2016 Energy Standard for Buildings Except Low-rise Residential

Mechanical

Synopsis

The mechanical systems in the school varied in age and condition. The original school was constructed in 1981; there have been numerous renovation and addition projects since. Many of the mechanical systems are nearing the end of their useful life expectancy and should be scheduled for replacement. Ventilation to the school is not provided in accordance with ASHRAE 62.1-2010. The following is a summary of recommendations to address mechanical deficiencies in the school:

1. Replace plumbing fixtures and piping throughout the building.
2. Replace heating piping and heating equipment throughout the building.
3. Upgrade boiler system; replace existing boilers with high efficiency condensing boilers.
4. Replace heating pump system with variable speed pumping system.
5. Replace ventilation systems throughout the building.
6. Replace all pneumatic controls with DDC controls.

Plumbing Overview

Synopsis

Domestic water and sanitary sewer service is provided to the school by the municipal system. The storm drainage system is connected to the municipal system in the road right of way on the east side of the school.

Plumbing Fixtures

Description of Existing Systems

There are two toilet room groups, one each wing consisting of a male and female toilet rooms. Plumbing fixtures in these rooms are commercial quality, vitreous china and are configured for minimal ADA

requirements following a project in 2002. Toilets are wall mounted; urinals are wall mounted; lavatories are counter-set, self-rimming with single-handle faucets. Toilets and urinals are provided with commercial quality manual flush valves. Three individual toilet rooms are also present. Rooms 134A & B off the staff work room and 102A in the kindergarten classroom. Individual toilet room fixtures include vitreous china floor mounted toilets and wall mounted sinks with standard valves and faucets. There is a residential quality double bowl stainless steel kitchen sink in room 135 with a single level faucet and a single bowl stainless steel sink in room 105 with a double handle gooseneck faucet. Additionally, there is single bowl stainless steel sink in room 138 with a two-handle faucet and an integral vacuum breaker. There is a floor sink and a wall mounted faucet with an integral vacuum breaker in Janitor room 111. Dual height drinking fountains are installed in two locations in the main corridor, along with a hand-held emergency eye wash that is plumbed in room 138.

Existing Conditions

The plumbing fixtures vary in condition from fair to poor. With the exceptions of the fixtures or valves that have been replaced in the 2002 project, the fixtures are from the original construction or additions to the school. The fixtures vary in age from 30 to 39 years old and are at the end of their useful life expectancy. ADA Accessibility is limited to gang restrooms. Additionally, the fixtures are not water conserving fixtures; water usage at the school could be significantly reduced with the replacement of the fixtures. The dual-fixture drinking fountains are marginally functioning. Water pressure is low indicating chemical buildup in piping. These should be replaced as scheduled.

Code Deficiencies

Fixtures at the staff workroom are not ADA compliant under Americans with Disabilities Act of 1990, 42 U.S.C.

Recommendations

Replace plumbing piping and fixtures building wide. Typical life expectancy for plumbing fixtures is 30 years; the fixtures have met or are near the end of their useful life. Install new water conserving plumbing fixtures and provide upgrades for ADA compliance. Some architectural modifications will be required to provide for more ADA compliant bathrooms. Inspect underground plumbing with camera and repair or replace piping as required. Plumbing piping and fixture replacement in the north wing would be the first priority as this is the oldest piping in the building. The floor sink and associated wall tile are heavily stained and probably cannot be restored. If visual condition is objection-able, these should be replaced.

Estimate

$62,450 (see Appendix C for Cost Model)

Domestic Water Supply

Description of Existing Systems

The facility is provided with domestic cold water from two sources. A 2in underground water main enters the facility through the floor in Mechanical room 101 and feeds the entire facility. A second, 3/4in cold water line enters the building through the floor in Janitor room 111 and ties into the cold water distribution system through an isolation valve to stop the flow for maintenance and safety purposes. Both lines are fed from the same underground 8" water main. The 3/4in line connects to the main at the south side of the building. There is no water meter or backflow protection device on either incoming cold water line. There are four exterior flush mounted key-type non-freeze hose bibbs with

integral vacuum breakers distributed around the perimeter of the facility. Hot water is distributed via a 3/4in copper branch and 1/2in supply lines directly from the water heater. Hot water distribution piping has fiberglass pipe insulation. There is no hot water recirculation system.

Existing Conditions
Water distribution piping was not generally visible for inspection with the exception of short runs within the mechanical room. The exterior non-freeze hose bibs were operated and found to be functioning with no issues. Domestic hot water is distributed directly from the water heater to the restrooms without an ASSE-1070 device to limit the maximum temperature to 120 degrees F. There is no hot water recirculation system. Lack of a hot water recirculation system will result in increased domestic water usage and may result in user complaints. The condition of the plumbing piping is fair to poor. The piping varies in age, it is our understanding that only small sections of the original piping have been replaced. Most of the piping has met or exceeded the typical life expectancy of the domestic water piping.

Code Deficiencies
There was no tempering valve provided on hot water equipment.

Recommendations
Install appropriate tempering valve on hot water generating equipment.

Estimates
$400

Plumbing Equipment

Description of Existing Systems
A 1/4hp circulation pumps is located in room 140 Mechanical and provides recirculation to approximately 65ft of domestic water line that runs in the interstitial floor space. Domestic hot water is generated in a single, 120 gallon atmospheric natural gas fuel-fired water heater located in Mechanical room 140.

Existing Conditions
All plumbing equipment was in good serviceable condition. The water heater was replaced in the 2002 project and is reaching its 20-year expected life.

Code Deficiencies
The water heater was not equipped with a pressure relief valve.

Recommendations
Replace water heater in the next five years. Install an PRV as summer maintenance.

Estimates
$300 O&M costs;
$3000 construction cost.

Waste & Vent Piping

Description of Existing Systems

The facility is served by a gravity sanitary sewer system. Sanitary waste and vent piping within the building is copper DWV except for a 4in cast iron vent through roof (VTR) above Fan Room 201. A 4in sanitary sewer cast iron main exits the facility to the west. Vent piping collects from plumbing fixtures to a 4in VTR on the north roof slope in Fan Room 201. Separate 3in VTRs serves the science lab and the main outfall line. Floor drains are provided at wet areas and tie to 2in waste piping. VTRs are insulated to 3 ft. below the roof deck.

Existing Conditions

The sanitary waste piping and venting was not generally visible for inspection with the exception of short runs within the mechanical room. However, there was no ancillary evidence that the waste and vent piping was not performing adequately except as noted below. There are two plumbing vent through roof (VTR) extensions on the north sloped roof that have been bent over by sliding snow.

The waste piping is buried and was not available for inspection. The underground piping could be flushed and inspected with a camera to review the condition of the piping.

Code Deficiencies

None

Recommendations

Consider repair of VTRs as O&M work.

Estimates

Special Systems

Description of Existing Systems

Two inch acid resistant waste and vent piping (ARW) serves sinks and floor drains in rooms 135 Science.

Existing Conditions

The acid resistant waste and vent piping system was not visible for inspection with the exception a small portion under the sink area of room 135. However, there was no ancillary evidence that the waste and vent piping was not performing adequately as installed. Note; equipment and fixtures tied to this system

have been revised from original construction; only one sink remains in 135 and waste piping is now standard ABS.

Code Deficiencies
None noted.

Recommendations
None.

Estimates

HVAC Overview

Synopsis
The HVAC system consists of hot water boilers feeding a piped hydronic heat loop. Ventilation is provided by ducted supply system fed by air handling units to a majority of the school. A three-classroom addition is served by individual cabinet unit ventilators. A dedicated exhaust system feeds toilet rooms and science rooms.

Heating Equipment

Description of Existing Systems
There are two boiler systems in the school. One boiler system is located in the 1999 addition and serves the gymnasium, kitchen, MPR and 1985 classroom addition. The second boiler system is located in the original 1981 boiler room on the east side of the building near the IMC and serves the areas of the school.

The boiler system in the 1999 addition consists of two fuel-fired cast iron boilers. The boilers are Burnham PF-505 boilers rated at 786,000 BTU/hr gross output each. The boilers were installed in 1999 during the school addition. The boilers are in fair condition for their age but are nearing the end of their useful life expectancy. The boilers are directly piped to the primary heating system pumps, with a three-way valve on the supply header that operates to temper heating supply water to the building. The piping as configured does not provide for even flow to each boiler and does not provide minimum return water protection or minimum flow to the boilers. The piping configuration can lead to condensation of flue gases due low temperature, and uneven system heating as each boiler receives part of the flow regardless of boiler operation.

The boiler system in the 1981 boiler room consists of two fuel-fired cast iron boilers. The boilers are Burnham PF-510 boilers rated at 1,612,000 BTU/hr gross output each.
Each boiler is independently vented through the north wall of Mechanical 140. Snow guards have been installed up-slope of the vent stacks. Hydronic heating system make-up water is fed into the system through a 3/4in reverse principle backflow preventer (RPBP).

Existing Conditions
The boilers are approximately 39 years old. The boilers are in fair condition for their age but are nearing the end of their useful life expectancy. Boiler circulation pumps were installed on the boilers in 2003 to provide minimum flow through the boilers.

Both of the boiler systems utilize compression tanks for the heating system that do not have external bladders. These tanks have a tendency to become water logged and do not provide as good of expansion compensation as current bladder style tanks.

Code Deficiencies
None

Recommendations
Both of the boiler systems, main system heating pumps and associated piping should be scheduled for replacement. The boilers are nearing the end of their typical life expectancy. The boilers should be scheduled for replacement with high efficiency boilers as they are near the end of their useful life expectancy. The boilers should be consolidated to a single location with only one boiler room and two boilers, to reduce maintenance requirements. Upgrading the boilers to high efficiency condensing boilers with variable speed pumping system would provide significant energy savings over the existing boiler system. Additionally, the existing boiler systems are prone to thermal shock issues, high efficient boilers are designed to operate with low water temperatures eliminating concerns with thermal shock.

Estimates
$457,950 (see Appendix C for Cost Model)

Heating Distribution Systems

Description of Existing Systems
The hydronic piping in the building consists of steel and copper piping. The piping in the 1999 additions had signs of leakage but appeared to be in fair condition.

Heating for the school is provided by a combination of in-floor heating, cabinet unit ventilators, perimeter fin tube and heating coils in the air handling units. Miscellaneous unit heaters and cabinet unit heaters are located throughout the school to provide heating to utility areas and vestibules. Hydronic hot water heating fluid (100% water) is circulated to terminal units throughout the facility via copper piping. There are two inline constant volume supply pumps located downstream of the boilers in Mechanical room 140.

Existing Conditions
The distribution piping in the 1981 areas of the school have exceeded its useful life expectancy. The piping insulation in the fan rooms has been damaged and should be repaired/replaced.

Code Deficiencies
The heating system equipment and piping is not seismically restrained in accordance with the IBC. Seismic restraint requirements have increased since the installation of the heating system.

Recommendations
The heating system pumps, air separator and compression tanks should be replaced with the boilers as they are also near the end of their life expectancy of 30 years.

The heating piping and terminal heating equipment has exceeded its typical life expectancy and should be replaced. The distribution piping and terminal units are approximately 28 years old.

Seismic restraint for the heating piping and equipment throughout the building should be installed in accordance with the 2009 edition of the IBC. Repair or replace the damaged piping insulation in the fan rooms.

Estimates
See above.

Ventilation Equipment

Description of Existing Systems
Ventilation for the school is provided by air handling units and cabinet unit ventilators. The ventilation systems in the school are not capable of providing the current ASHRAE 62.1-2007 ventilation rates. The classroom and office areas in the 1981 areas are ventilated by a central air handling unit located in a fan room adjacent to the boiler room. The air handling unit is a constant volume, built up unit with mixing box and filters. The unit has exceeded its useful life expectancy and does not meet current building codes. The classrooms in the 1999 addition are ventilated by cabinet unit ventilators. The ventilators draw fresh outside air in low to the ground. The multi-purpose room and gymnasium are ventilated by constant volume air handling units. The air handling units that serves the MPR is from the 1999 addition. Two air handling units serve the gym, the units were installed in the 1981 building.

Ventilation for bathrooms is provided by a combination of central and local exhaust fans. The kitchen in the elementary wing does not have a hood above the convection oven. The kitchen is ventilated by a roof mounted exhaust fan.

Existing Conditions
The air handling unit utilizes the corridor as a return air path which is no longer allowed by the IMC. The MPR unit has exceeded it useful life expectancy. The gymnasium air handling units are nearing the end of their useful life expectancy and should be scheduled for replacement. The intakes for the CUH are subject to blockage from snow, and there is the potential for intake of fumes from vehicles in the parking lots depending on wind direction. The path for the relief/exhaust air for classrooms is through the corridor to central relief air fans. Utilizing the corridor as the relief air path is a code violation. The unit ventilators are in fair to poor condition and have exceed their useful life expectancy.

Code Deficiencies
The ventilation system equipment and ductwork is not seismically restrained in accordance with the 2009 edition of the IBC. Seismic restraint requirements have increased since the installation of the ventilation systems. The exhaust airflow rates for the bathrooms are below current code requirements. Most of the exhaust fans have met or are exceeding their useful life expectancy. The kitchen ventilation system does not comply with ventilation codes. The combustion air systems for the boilers are engineered systems with boiler room ventilation fans and relief air/combustion air opening.

Recommendations
The insulation tape on the ductwork insulation in the fan rooms is failing off and should be replaced.

Estimates
$8,000 (accessible portions could be O&M)

Ventilation Distribution Systems

Description of Existing Systems
Supply air ductwork is routed above the ceilings to ceiling diffusers in the MPR and gym. The MPR return air is by ceiling return air plenum open to the fan room. The gym return air is ducted back to the two air handling units. Air returns back to the AHU through light fixture perimeter slots to a plenum above the ceiling where it is transferred to the mezzanine level fan room through a bank of silencers. Local exhausts are provided through three exhaust fans and galvanized steel ducting. EF-1 serves the toilet rooms. EF-2 serves the science lab. EF-3 serves the office areas. All exhausts terminate at exterior wall louvers with automatic shutoff dampers on the north side of the facility.

Existing Conditions

Code Deficiencies
The ventilation system equipment and ductwork is not seismically restrained in accordance with the 2009 edition of the IBC. Seismic restraint requirements have increased since the installation of the ventilation systems.

Recommendations
Perform a building wide ventilation upgrade to replace ventilation equipment that is at or beyond its useful life expectancy. Install new ventilation equipment to comply with ASHRAE 62.1-2007. Install new Type 2 hood for the kitchen with exhaust fan sized for the equipment served. Install seismic restraint for the ventilation equipment and ductwork in accordance with the 2006 edition of the IBC.

Estimate
$988,950 (see Appendix C for Cost Model)

Cooling Equipment

Description of Existing Systems
There is no refrigerant based mechanical space cooling system. Economizer-only space cooling is provided by the single 20,500 CFM air handling unit (AHU) located in Fan Room 201. All of the equipment associated with the computer room cooling system shown on the original construction plans has been removed.

Existing Conditions
N/A

Code Deficiencies
N/A

Recommendations
None.

Estimates

Cooling Distribution Systems

Description of Existing Systems
N/A

Integrated Automation Overview

Synopsis
See below.

Control Systems

Description of Existing Systems
HVAC control is provided by a Siebe pneumatic control panel in Mechanical Room 130, and a control panel in Fan Room 201, and pneumatic control sensors located throughout the facility. Fin tube control valves are also pneumatic. There is a control air compressor storage tank in Mechanical room 140 but the compressor has been removed.

Existing Conditions
Mechanical controls installed in the original construction (a pneumatic system) are in disrepair, all are non-functional due to the absence of head end equipment (i.e., the compressor). The operating system and main controllers of this system are suspect even if the system was charged and pressurized and should be replaced or upgraded. In addition, approximately 40% of the room temperature sensors on the west side of the facility are missing. The remaining room temperature sensors indicated a reasonably accurate room temperature. The control air compressor storage tank in Mechanical room was not in working condition; only the tank remains.

Code Deficiencies

Recommendations
Remove all elements of the non-functioning pneumatic control system and install a DDC control system.

Estimates
$165,888 (see Appendix C for Cost Model)

Fire Protection Overview

Synopsis
Originally, fire protection is provided via portable fire extinguishers. Extinguishers are placed in recessed wall cabinets throughout the interior. The current fire protection system is a wet sprinkler system installed during the summer of 2009.

Sprinklers & Piping

Description of Existing Systems
Black iron schedule 40 pipe with threaded fittings. Standard 180 degree heads.
Existing Conditions
The system is in good condition.

Code Deficiencies
None.

Recommendations
No fire protection upgrades are recommended at this time. Routine testing and inspections in accordance with NFPA 25 should be performed to ensure reliable operation of the sprinkler system.

Estimate
$500/yr in O&M

Special Mechanical Systems Overview

Synopsis

Fuel Supply (Gas & Oil)

Description of Existing Systems
There is a 3000 gallon above ground fuel oil storage tank secured to a concrete pad located behind a concrete retaining wall approximately 35 feet from the northwest corner of the facility. A 3/4in threaded steel pipe delivers fuel oil to Mechanical Room 140 where it is distributed directly to the four heating boilers; there is no day tank. A 3/4in threaded steel pipe returns fuel oil from the boilers to the exterior storage tank. Both pipes run above ground from the storage tank to the north wall of Mechanical room 140.

Existing Conditions
The 3000gal above-ground storage tank is in good condition according to its approximate 20-year age. Piping has minor corrosion typical of steel piping. Tank fixtures and appurtenances appeared to be functioning. Tank finish was in good condition; tank was free of significant corrosion. Fuel distribution and return piping was in good serviceable condition. No evidence of leaks was observed.

Appendix A – Condition Survey Template

Facility Overview

School District:	
Facility:	
Inspection Date(s):	

Dates of Construction and Additions

	Date	GSF
Original Construction:		
Addition:		
Addition:		
Addition:		
	Total:	

*Confirm dates and GSF with DEED Facility Database

Renovations and System Replacement

Date	Description (including renovations as part of above additions)

Survey Team

Name	Firm

Notes

Site and Infrastructure

Synopsis

Site Improvements Overview

Synopsis

Vehicular Surfaces

Description of Existing Systems

Existing Conditions

Code Deficiencies

Recommendations

Estimates

Pedestrian Surfaces

Description of Existing Systems

Existing Conditions

Code Deficiencies

Recommendations

Estimates

Elevated Decks, Stairs & Ramps

Description of Existing Systems

Existing Conditions

Code Deficiencies

Recommendations

Estimates

Site Walls

Description of Existing Systems

Existing Conditions

Code Deficiencies

Recommendations

Estimates

Landscaping & Irrigation

Description of Existing Systems

Existing Conditions

Code Deficiencies

Recommendations

Estimates

Fencing and Gates

Description of Existing Systems

Existing Conditions

Code Deficiencies

Recommendations

Estimates

Site Furnishing & Equipment

Description of Existing Systems

Existing Conditions

Code Deficiencies

Recommendations

Estimates

Playgrounds

Description of Existing Systems

Existing Conditions

Code Deficiencies

Recommendations

Estimates

Other Site Improvements

Description of Existing Systems

Existing Conditions

Code Deficiencies

Recommendations

Estimates

Site Structures Overview

Synopsis

Freestanding Shelters

[Note: For brevity, the five-part narrative categories is not repeated at each subsystem throughout the remaining listing of the template structure.]

Attached Shelters

Support Buildings

Civil/Mechanical Utilities Overview

Synopsis

Water System

Sanitary Sewer

Storm Water

Fuel Systems

Heating/Cooling Piping & Utilidors

Site Electrical Overview

Synopsis

Supply & Distribution

Data/Comm Service & Distribution

Lighting & Equipment

Security Systems

Offsite Work Overview

Synopsis

Offsite Improvements

Offsite Utilities

Other Offsite Work

Substructure

Synopsis

Standard Foundations & Basements Overview

Synopsis

Continuous & Column Footings

Foundation Walls & Treatment

Foundation Drainage

Slab on Grade Overview

Synopsis

Structural & Non-structural Slabs

Trench, Pit, and Pad

Underslab Elements

Special Foundations Overview

Synopsis

Piling & Pile Cap

Caissons

Grade Beams

Arctic Foundation Systems

Other Special Foundations

Superstructure

Synopsis

Floor Structure Overview

Synopsis

Lower & Main Floors

Upper Floors

Ramps

Special Floors

Roof Structure Overview

Synopsis

Pitched Roofs

Flat Roofs

Special Roofs

Stairs Overview

Synopsis

Stair Structure

Stair Railings

Ladders and Steps

Exterior Enclosure

Synopsis

Exterior Walls & Soffits Overview

Synopsis

Exterior Walls

Fascias & Soffits

Curtainwalls & Non-bearing Walls

Exterior Glazing Overview

Synopsis

Windows

Storefronts

Structural Window Walls

Translucent Panels

Exterior Doors Overview

Synopsis

Personnel Doors

Special Doors

Exterior Accessories Overview

Synopsis

Louvers, Screens & Shading Devices

Balcony Elements

Other Exterior Accessories

Roof Systems

Synopsis

Pitched Roof Overview

Synopsis

Pitched Roofing

Gutters & Downspouts

Flat Roof Overview

Synopsis

Flat Roofing

Roof Drains & Piping

Roof Accessories Overview

Synopsis

Skylights

Roof Hatches

Roof Decks, Walls & Railings

Other Roof Accessories

Interiors

Synopsis

Partitions/Soffits Overview

Synopsis

Fixed Partitions

Soffits & Ceilings

Special Partitions Overview

Synopsis

Operable Partitions

Demountable Partitions

Glazed Partitions

Railings & Screens

Interior Openings Overview

Synopsis

Personnel Doors

Special Doors

Windows & Sidelites

Interior Finishes Overview

Synopsis

Floor Finishes

Wall Finishes

Ceiling Finishes

Other Finishes

Specialties Overview

Synopsis

Interior Specialties

Casework/Millwork

Seating

Window Coverings

Conveying Systems

Synopsis

Passenger Conveyors Overview

Synopsis

Passenger Elevators

Lifts & Other Conveyors

Material Handling Systems Overview

Synopsis

Elevators & Lifts

Hoists & Cranes

Other Systems

Mechanical

Synopsis

Plumbing Overview

Synopsis

Plumbing Fixtures

Plumbing Piping

Plumbing Equipment

Waste & Vent Piping

Special Systems

HVAC Overview

Synopsis

Heating Equipment

Heating Distribution Systems

Ventilation Equipment

Ventilation Distribution Systems

Cooling Equipment

Cooling Distribution Systems

Heat Recovery System

Integrated Automation Overview

Synopsis

Control Systems

Other Automation

Fire Protection Overview

Synopsis

Riser & Equipment

Sprinklers & Piping

Special Suppression Systems

Special Mechanical Systems Overview

Synopsis

Fuel Supply (Gas & Oil)

Dust Collection Systems

Compressed Air & Vacuum Systems

Other Special Mechanical Systems

Electrical

Synopsis

Service & Distribution Overview

Synopsis

Main Distribution Panels & Switchgear

Panels & Motor Control Centers

Transformers

Conduit & Feeders

Lighting Overview

Synopsis

Light Fixtures

Lighting Controls

Conduit & Wiring

Power Overview

Synopsis

Devices & Connections

Conduit & Wiring

Special Systems Overview

Synopsis

Fire Alarm

Data & Communications

Security Systems

Clock Systems

Intercom Systems

Other Special Systems

Other Electrical Systems Overview

Synopsis

Power Generation & Distribution

Electrical Heating Systems

Grounding Systems

Equipment and Furnishings

Synopsis

Equipment Overview

Synopsis

Food Service & Kitchen Equipment

Athletic Equipment

Career & Technology Equipment

Science Equipment

Library Equipment

Theater Equipment

Art Equipment

Loading Dock Equipment

Other Equipment

Furnishings Overview

Synopsis

Fixed Furnishings

Mats

Other Furnishings

Special Conditions

Synopsis

Special Construction Overview

Synopsis

Packaged Utility Modules

Swimming Pool

Greenhouse

Special Demolition

Synopsis

Structural Demolition

Building Selective Demolition

Site and Utility Demolition

Hazardous Material Removal

Building Relocation

Special Site Conditions

Synopsis

Site Shoring & Dewatering

Site Earthwork

Site Remediation

Appendix B – Sample Inspection Checklists

See the below example checklists for an example of how to structure a component inspection checklist. Additional checklists may be available from the department.

Site Structures – Inspection Checklist

Description of Existing Systems
[enter basic description from building system data]

Existing Conditions

Subsystem – Freestanding Shelters

Component(s)	Checklist	Photos	Condition
Foundation	Inspect for: • Proper drainage • Corrosion • Deterioration • Plumb/Level		
Superstructure	Inspect for: • Deformation • Cracks/Damage • Plumb/Level		
Enclosure	Inspect for: • Siding integrity • Roof integrity • Opening integrity • Sealant/caulk		
Accessories	Inspect for: • Damage • Corrosion • Missing pieces • Excessive wear		
Lighting	Inspect for: • Function • Corrosion • Damage • Excessive wear		

Subsystem – Attached Shelters

Component(s)	Checklist	Photos	Condition
Foundation	Inspect for: • Proper drainage • Corrosion • Deterioration • Plumb/Level		

Superstructure	Inspect for: • Deformation • Cracks/Damage • Plumb/Level		
Enclosure	Inspect for: • Siding integrity • Roof integrity • Opening integrity • Sealant/caulk		
Accessories	Inspect for: • Damage • Corrosion • Missing pieces • Excessive wear		
Lighting	Inspect for: • Function • Corrosion • Damage • Excessive wear		

Subsystem – Support Buildings

Component(s)	Checklist	Photos	Condition
Foundation	Inspect for: • Proper drainage • Corrosion • Deterioration • Plumb/Level		
Superstructure	Inspect for: • Deformation • Cracks/Damage • Plumb/Level		
Enclosure	Inspect for: • Siding integrity • Roof integrity • Opening integrity • Sealant/caulk		
Accessories	Inspect for: • Damage • Corrosion • Missing pieces • Excessive wear		

Component(s)	Checklist	Photos	Condition
Plumbing	Inspect for: • Function • Leaks • Corrosion • Damage • Excessive wear		
HVAC	Inspect for: • Function • Leaks • Corrosion • Damage • Excessive wear		
Power	Inspect for: • Function • Corrosion • Damage		
Lighting	Inspect for: • Light levels • Corrosion • Damage • Excessive wear		

Code Deficiencies

[Citations are from the IBC (unless noted otherwise) – check with the AJH for amendments or for other applicable codes]

Code Section	Subsection	Potential/Observed Issue
Section 1607 Structural Design	(1607.12 Awnings and canopies)	
Section 3105 Awnings and Canopies	(3105.5 Special construction, loads)	
Chapters 1 - 12, 14 - 28, and 30 - 35	(Elements related buildings, and structures)	
NFPA 70, National Electrical Code	(Elements related to electrical systems)	
IAMPO Uniform Plumbing Code	(Elements related to plumbing systems)	
International Mechanical Code	(Elements related to non-plumbing mechanical systems)	

Appendix B

Flat Roofing – Inspection Checklist

Description of Existing Systems
[enter basic description from building system data]

Existing Conditions

Subsystem - Roofing

Component(s)	Checklist	Photos	Condition
Membranes	Inspect for: • Proper drainage • Seam separation • Hole/tears • Plant growth		
Insulation	Inspect for: • Water intrusion • [consider IR imaging]		
Flashings/ Copings	Inspect for: • Damage • Seam separation • Corrosion • Missing sections • Excessive wear		

Subsystem – Roof Drains &Piping

Component(s)	Checklist	Photos	Condition
Roof Drains	Inspect for: • Loose pieces • Corrosion • Dirt/debris		
Piping	Inspect for: • Leaks • Corrosion • Insulation cond. • [consider video-scoping]		
Heat Trace	Inspect for: • Operation • Wear/damage • Attachment		

Code Deficiencies
[Citations are from the IBC (unless noted otherwise) – check with the AJH for amendments or for other applicable codes]

Appendix B

Code Section	Subsection	Potential/Observed Issue
Section 720 Thermal- And Sound-Insulating Materials	(720.5 Roof insulation)	
Section 1202 Ventilation	(1202.2 Roof ventilation)	
	(1202.2.1 Ventilated attics and rafter spaces)	
	(1202.3 Unvented attic and unvented enclosed rafter assemblies)	
Section 1502 Roof Drainage		
Section 1503 Weather Protection		
Section 1504 Performance Requirements		
Section 1505 Fire Classification		
Section 1506 Materials		
Section 1507 Requirements for Roof Coverings	(1507.1.1 Underlayment)	
	(1507.10 Built-up roofs)	
	(1507.11 Modified bitumen roofing)	
	(1507.12 Thermoset single-ply roofing)	
	(1507.13 Thermoplastic single-ply roofing)	

Appendix B

Code Section	Subsection	Potential/Observed Issue
Section 1508 Roof Insulation		
Section 1509 Radiant Barriers Installed Above Deck		
Section 1510 Rooftop Structures		
Section 2603 Foam Plastic Insulation	(2603.6 Roofing)	

Appendix B

Fire Protection – Inspection Checklist

Description of Existing Systems
[enter basic description from building system data]

Existing Conditions

Subsystem – Riser and Equipment

Component(s)	Checklist	Photos	Condition
Entrance and Tree	Inspect for: • Backflow prevention • Pressure Gauges • Relief Valves • Corrosion or leaks • Valving is locked open and tamperproof		
Bracing	Inspect for: • Presence of bracing • Damage • Corrosion • Secure connections		
Water Flow Alarm Devices	Inspect for: • Presence of devices • Check operation		

Subsystem – Sprinklers & Piping

Component(s)	Checklist	Photos	Condition
Heads	Inspect for: • Spacing • Obstructions • Damage		
Piping	Inspect for: • Leaks • Corrosion • Bracing		
Accessories	Inspect for: • Escutcheons/trims • Air vent condition • Tags/labels		

Subsystem – Special Fire Protection Systems

Component(s)	Checklist	Photos	Condition
Water Storage	Inspect for: • Leaks • Corrosion • Piping		
Pumps	Inspect for: • Operation • Pressure and flow		
Compressed air systems	Inspect for: • Operation • Pipe connections • Leaks		

Code Deficiencies

[Citations are from the NFPA 13 – check with the AHJ for amendments or for other applicable codes]

Code Section	Subsection	Potential/Observed Issue
Backflow prevention	Local code from utility	
Chapter 6 System components and Hardware	6.2 Sprinklers	
	6.7 Valves	
	6.9 Water Flow Alarm Devices	
Chapter 7 System Requirements	7.1 Wet Pipe Systems	
	7.2 Dry Pipe Systems	
Chapter 8 Installation Requirements	8.5 Position, location, spacing and use of sprinklers	
	8.7 Sidewall sprinklers	
Chapter 9 Hanging, Bracing and Restraint of System Piping	9.1 Hangers	

	9.3 Protection of Piping against Damage Where Subject to Earthquakes	
Chapter 12 General Requirements of Storage	12.9 Restrictions	

Appendix B

Other Electrical Systems – Inspection Checklist

Description of Existing Systems
[enter basic description from building system data]

Existing Conditions

Subsystem – Power Generation & Distribution

Component(s)	Checklist	Photos	Condition
Generator	Inspect for: • Damage • Corrosion • Excessive hours • Trickle charger • Fluid levels • Operational pressures • Power delivery • Functionality		
Switchgear Panel	Inspect for: • Damage • Corrosion • Excessive wear • Water intrusion • Review reports ○ Arc flash, etc. • Functionality		
Conduit	Inspect for: • Damage • Corrosion		
Feeder	Inspect for: • Damage • Corrosion • Excessive wear • [consider IR imaging] • Functionality		

Subsystem – Heating Systems

Component(s)	Checklist	Photos	Condition
Baseboard	Inspect for: • Damage • Excessive wear • Functionality		
Unit Heater	Inspect for: • Damage • Excessive wear • Functionality		
Radiator / Heat Exchanger	Inspect for: • Damage • Excessive wear • Functionality		
Radiant Heat	Inspect for: • Damage • Excessive wear • Functionality		

Subsystem – Grounding System

Component(s)	Checklist	Photos	Condition
Special Grounding	Inspect for: • Connections • Insulation condition • Corrosion • Damage		
Lightning Protection	Inspect for: • Connections • Continuity • Insulation condition • Corrosion • Damage		

Code Deficiencies

[Citations are from the NEC (unless noted otherwise) – check with the AJHJ for amendments or for other applicable codes]

Code Section	Subsection	Potential/Observed Issue
Section 430.14 Generator location factors	(445.10 Adequate ventilation and adequate room for maintenance)	
445.12 and 445.13(A) Overcurrent protection requirements		
445.18(B) Generator Mechanical reset		
110.12(C) Broken or damaged parts and contamination by foreign materials		
110.13 Secure mounting and adequate ventilation space for equipment		
110.26(B) Working space and dedicated space are not used for storage.		
110.22 Identification of disconnect means and circuit directories for panelboards, switchboards, switchgear and similar equipment		
300.3(C)(1) and (2) Insulation where conductors of different systems share common enclosures		
300.11 and applicable Chapter 3 article(s) Wiring methods are securely fastened in place, supported independently of suspended ceilings, and not used as supports		
404.9(B), 404.12 Grounding of metal switch boxes, switches, and any metal faceplates		

Appendix C – Sample Rating Guides

Appendix C

Rating Guide – Reliability Basis

This rating is based on how close an asset or component is to replacement or major overhaul. Scores will not have a greater granularity than a half point. An asset is in a State of Good Repair if the score is greater than 2.5.

Score	Photos	Condition
5	New or like new	The inspector is 95% to 100% confident in reliability; no visible defects, no damage, cosmetically looks new. Note: An asset is only new once, after rebuild some old parts are not new and therefore the highest score after rebuild is {4.5).
4.5		The inspector is 90% to 95% confident in the reliability of the component/ asset.
4	Cosmetic defects/minor wear.	The inspector is 80% to 90% confident in the reliability of the component/ asset. Shows minimal signs of wear, no major defects, and some minor defects with only minimal signs of deterioration.
3.5		The inspector is 70% to 80% confident in the reliability of the component/ asset.
3	Small repairs or minor refurbishment.	The inspector is 60% to 70% confident in the reliability of the component/ asset. Some moderately defective or deteriorated components; expected maintenance needs. Cosmetically "fair" but all devices are functioning as designed.
2.5		The inspector is 50% to 60% confident in the reliability of the component/ asset.
2	Significant or multiple repairs needed.	The inspector is 40% to 50% confident in the reliability of the component/ asset. Asset near overhaul or retirement, but in serviceable condition. Asset has increasing number of defects or deteriorated component(s).
1.5		The inspector is 30% to 40% confident in the reliability of the component/ asset.
1	Critical deterioration, overhaul or replacement needed.	The inspector is less than 30% confident in the reliability of the component/ asset. Asset is in need of major repair or refurbishment, multiple minor and major defects. Possible structural issues.
0		Not safe to use, multiple major repairs or Asset set for disposal/retirement.

Rating Guide – Visual Condition

This rating is based on a general visual observation of the component or system. It can incorporate empirical data. An asset is in a State of Good Repair if the score is 3 or above

Score	Photos	Condition
5	Excellent	No visible defects, new or near new condition, may still be under warranty if applicable.
4	Good	Good condition, but no longer new, may have some slightly defective or deteriorated component(s), but is overall functional.
3	Adequate	Moderately deteriorated or defective components; but has not exceeded useful life.
2	Marginal	Defective or deteriorated component(s) in need of replacement; exceeded useful life.
1	Poor	Critically damaged component(s) or in need of immediate repair; well past useful life.

Appendix D – Sample Equipment Lists

Appendix D

Recommended Inspection Equipment

Inspection equipment as required is often needed to access areas of the facility, to measure features, and building operations, and to record observations. This is not a complete list. Specific review of local job conditions, available local support, and general logistics is also important. Guidance on the proper use of inspection equipment should also be provided to condition assessment inspection personnel. Specialized professionals maybe required to perform specific condition assessments.

Item	Use	On site
Transportation	Transport of personnel and equipment to/from locations	Y
Storage Totes/Bins	Gear transport while traveling	Y
Carry Bag	Equipment transport while making condition assessments	Y
Mobile Phone	Primarily communications for logistics *(also see note below table)*	Y
Laptop or Tablet	Repository of data, files, and records related to the survey	Opt.
Portable Hard Drive	Repository of project information for use on other's computers	Opt.
Thumb Drive (8 GB min.)	Alt. repository of project information for use on other's computers	Opt.
Notepad/Clipboard/Binder	To hold checklists; location for written notes and observations	Y
Inspection Checklist(s)	Inspection scope and content; location for notes and observations	Y
Electronic Voice Recorder	Alternative tool to written notes and observations	Y
Calculator, Construction	Assists with basic analysis of measurements and capacities	Y
Digital Camera	Primary means of recording actual conditions	Y
Step Ladder, 6ft	Access to items above head/hand height; primarily interior	Opt
Extension Ladder, 24ft	Access to elevated items and surfaces; primarily exterior	Opt
UAV/Drone w/camera	Alternative for documenting less accessible building/site elements	Opt
Measuring Wheel	Measurements, typically exterior, of large surfaces and distances	Opt
Measuring Tape, 100ft	Measurements of longer dimensions of any type	Y
Measuring Tape, 25ft	Measurements of shorter dimensions of any type	Y
Electronic Tape Measure	Alternative, primarily, to 25ft tape measures	Opt
Penlite/tactical (400lm)	Illumination and inspection of objects and materials in close range	Y
Flashlight (2000 lm)	Illumination and inspection of objects and materials at a distance	Y
Multi-tip screwdriver	Accessing and re-securing covered component; adjusting elements	Y
Bits: Flat, Philips, Star, Square	For use with multi-bit screwdriver	Y
Awl or probe	Testing wood for decay	Y
Torpedo Level	Measuring and assessing vertical and horizontal alignments	Y
Mechanic's Grabber	General retrieval in confined locations	Y
Receptacle GFCI Tester	Measuring and assessing grounding and polarity of receptacles	Y
Line Voltage Tester	Assessing the presence of voltage in electrical wiring/systems	Y
Multimeter	Measuring and assessing various electrical conditions	Y
Light Meter	Measuring and assessing required light levels in spaces	Y
Magnet	For determining types of metal (ferrous/non-ferrrous)	Y
Accessibility Guidelines for Buildings and Facilities ISBN-13: 9781557014993	Provides knowledge and information related to universal design and accessibility	Opt
OSHA 29 CFR-1910 General Industry Regs ISBN 159959385-8	Provides knowledge and information related to operations and maintenance requirements for personnel safety	Opt

Appendix D

Item	Use	On site
An Illustrated Guide to Building, Plumbing, Mech., and Electrical Codes ISBN 978-1-56158-911-1	Provides knowledge and information related to building systems and subsystems	Opt
Other		

Note: Items in italics might be adequately covered with a suitable smartphone with appropriate apps downloaded.

Appendix D

Recommended Personal Protective Equipment

Safety equipment should be provided to inspection personnel as required. This is not a complete list. Specific review of local and industry standard safety requirements should be reviewed to provide individual safety. Guidance on the proper use of safety equipment should also be provided to condition assessment inspection personnel. Assessment teams comprised of two employees should be standard practice when inspecting electrical, steam, dynamic systems, or other systems where there is a higher safety risk.

Item	Comments	On site
First Aid Kit	Treatment of minor injuries that might occur during activity	Y
Head Protection (hard/soft)	Soft for general protection; hard hat where warranted	Y
Safety Shoes/Boots	General precaution; use reasonable discretion	Opt
Wet Weather Gear	Poncho or full suit; don't overlook foot wear	Opt
Cold Weather Gear	Seasonal protective gear; consider layers	Opt
Reflective Vest	Helpful in busy or crowded conditions	Y
Safety Glasses	When scope involves observing flying/loose material	Y
Sunglasses	Control of glare and excess solar exposure	Y
Gloves	Hand protection when scope includes lift/carry/adjust	Y
Coveralls	Extra protection when needed from areas with contaminants	Opt
Knee Pads	Protection when crawling is required for assessments	Opt
Bug Spray	Seasonal protection from insects	Y
Ear Plugs/Protection	When scope involves loud noises	Y

State of Alaska

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

By: Tim Mearig
Facilities Manager

Phone: 465-6906

For: Bond Reimbursement & Grant Review Committee

Date: June 5, 2020

File: G:\SF Facilities\BR_GRCom\Papers\Publications\Cost Format\Cost Format BP_2020-Jun.docx

Subject: DEED Cost Format

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

Background

In December 2019, the department prepared a briefing paper presenting background information on the *DEED Cost Format* and making recommendations regarding its updating (reference *Cost Format BP_2019-Dec* for additional information). In that paper, the following was recommended:

The Facilities Section proposes moving through each of these options, as needed, in the following sequence:

Option 1 – Evaluate this option as part of this December 4 meeting. If Option 1 is not recommended by the Committee, move to Option 3.

Option 3 – Evaluate the need for a revised/updated elemental classification structure. This will include a future Briefing Paper with recommendations regarding an appropriate elemental classification for use not only in the Cost Format but in other department guidance and standards. If after further analysis, a customized structure remains most beneficial, move to Option 2.

Option 2 – Prepare an updated publication, seek committee and public comment, finalize document and publish.

Moving under the sequence of that recommendation, the department and the committee acknowledged the continued usefulness of having a defined format for project cost estimates, and began research on how best to update the current Cost Format. The initial analysis asked the basic question, "Would the needs of the state be better served by using an industry-standard elemental classification system, or would a customized classification system continue to be most effective?" Although envisioned, a follow-on paper describing that analysis was not prepared. However, in a variety of group and individual conversations involving department staff, Committee and subcommittee members, as well as industry partners, a consensus developed around the thought that the complexity of a comprehensive industry-standard classification would be overkill. In addition, it was anticipated there would be ongoing licensing and trademark issues created that the department was not prepared to address.

Following that conclusion, in an effort to enhance the effectiveness of its custom classification, the department prepared a compendium of current elemental classification structures in use by the following DEED publications: *Program Demand Cost Model for Alaskan Schools*, *Guide to School Facility Conditions Surveys*, Renewal & Replacement (R&R) Schedule, *Life Cycle*

Cost Analysis Handbook, and all versions of the Cost Format. This compendium showed that while there was close alignment between the structures used in these documents, there were also many small gaps—none of which appeared to be needed or purposeful. The department will use this analysis to enhance the integration between department publications.

2020 Update Summary

Working through the question of an appropriate elemental classification structure brought the purpose of the Cost Format update into better clarity. Three purposes are addressed:

Classification Structure: Specifically, the analysis supported an update to the publication which clarified costs related to site work and also to special conditions such as demolition and hazmat work. An opportunity also became apparent for a one-to-one alignment of structure with the Guide to Facility Condition Surveys which would strengthen both publications.

Publication Format: A second factor in the Cost Format update was the presentation and content of the document itself. The 2000 Cost Format focused on classification structure and definitions of units of measure. It did not include an estimate format or an estimating tool (although it did introduce a required estimate summary). The 2008 Cost Format, while continuing to address a classification structure, wrapped that structure in a presentation tool including a defined cover page, estimate notes page, and detail worksheet pages. After review with industry partners on these two approaches (see attached), it was relatively clear that a presentation template was not necessary. As a result, the proposed 2020 Cost Format returns to its more singular purpose of providing a required cost estimate structure and is not presented as a cost estimate template.

Comparative Data: A final factor in the update involves the possible use of the cost information for any/all projects when that cost information is standardized. One of the benefits of a cost estimate structure, whether building system oriented (elemental) or building trades oriented (work breakdown) is the ability to aggregate detailed data into summary data—(i.e., to condense 500 pages of detail into two pages of summary information). Both prior editions of the Cost Format included summary pages (see attached). The 2000 edition required both $/unit, and $/GSF for each Level 3 element while the 2008 edition only indexed to $/GSF for every element. These comparative analyses are easily incorporated into cost estimates and are routinely used. However, due to the one-to-many nature of their units (i.e., one-to-all for the 2008's GSF, one-to-several for the 2000's items like $/SF, $/EA, or $/CY), they cannot be used to database unique comparatives. An unpublished version of an edit to the 2000 Cost Format attempted to solve this by defining a unique nomenclature for each measured unit. That nomenclature is reflected in the 2020 Cost Format in the section titled Legend. This Legend section identifies a unique alpha-character set for 56 different cost elements the state might which to compare among different school capital projects. In this 2020 edition, those units would be codified and would be required to be reported on in an estimate summary.

Recommendation(s)

The Facilities Section recommends the BR&GR Committee acknowledge the draft 2020 Cost Format, 2020 Ed. update and provide comments and feedback together in this meeting or individually during the upcoming public comment period.

Attachments

1 – DEED-HMS E-mail Correspondence, May 2020
2 - 2000 Cost Format Summary Worksheet
3 – 2008 Cost Format Summary and Check Worksheets

From: Mearig, Timothy C (EED)
To: Kent Gamble
Subject: RE: DEED CostFormat Update
Date: Friday, May 22, 2020 7:43:00 AM

Kent,
Thanks for the perspective. I'm going to move ahead with the project on the basis that the original format wasn't a tool-based effort and that the second edition (2008), though formatted toward tool-based use, didn't achieve that or establish a pattern (or purpose) of accomplishing that. So many times I've wished I could snap my fingers and have at everyone's disposal, the database of school capital project estimates over the past 20 years that the original CostFormat was created to produce—all using a common elemental framework. Maybe this third time will be the charm.

R/
Tim

From: Kent Gamble
Sent: Thursday, May 21, 2020 3:38 PM
To: Mearig, Timothy C (EED); Aimee Smith
Subject: RE: DEED CostFormat Update

Tim,

I'm inclined to agree with you on this one. The only exception I can think of is if it is ever used by DEED or state folks in assistance in creating a strawman estimate to assist in budgeting/organizing cost.

Kent Gamble
Principal
HMS Inc.
907.743.4407 Direct
907.561.1653 Office
907.223.0050 Mobile

From: Mearig, Timothy C (EED)
Sent: Wednesday, May 13, 2020 3:48 PM
To: Kent Gamble; Aimee Smith
Subject: FW: DEED CostFormat Update

Kent/Aimee,

Bumping this one back up in your inbox. Share your thoughts when you can.

Tim

From: Mearig, Timothy C (EED)
Sent: Monday, May 4, 2020 12:00 PM
To: Kent Gamble; Aimee Smith
Subject: DEED CostFormat Update

Kent/Aimee,

I'm back to work on the update of the DEED CostFormat and wanted to double check one assumption I have. The current document (file) includes about 55 worksheet tabs for the various building systems and GCs. The worksheets offer this header, a 'page' of blank lines, and a summary line at the bottom:

02 - SUBSTRUCTURE			*MATERIAL*		*LABOR*		*TOTAL UNIT*	*TOTAL*
023 - Basements	*QUANTITY*	*UNIT*	*RATE* *$*	*TOTAL* *$*	*RATE* *$*	*TOTAL* *$*	*RATE* *$*	*MATERIAL/LABOR* *$*
TOTAL ESTIMATED COST:								

My assumption is that no estimating firm actually uses the DEED file and populates these worksheets with estimated quantity data, unit costs, or rates but rather, uses their own template files which correspond to the DEED format. If true, my thought is that our 'publication' doesn't really need to provide a "to be used" tool but simply the structure and groupings of the systems to be included (as applicable) in any estimate on a DEED project.

Thanks for your feedback,

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Cost Format 2000 Construction Estimate Summary

School District:
Project Name:
Design Phase:
EED Project #: Project GSF:

Code	Building System	Quantity	Unit	Labor	Material	Total	$/Unit	$/GSF	%
01	**SITE**		**AC**	**$0**	**$0**	**$0**			
011	Site Preparation		SF			$0			
012	Earthwork		CY			$0			
013	Site Improvements		SF			$0			
014	Site Structures		SF			$0			
015	Civil/Mechanical Utilities		SF			$0			
016	Site Electrical		SF			$0			
017	Off-Site Work		LS			$0			
02	**SUBSTRUCTURE**		**FPA**	**$0**	**$0**	**$0**			
021	Standard Foundations		SF			$0			
022	Slab on Grade		SF			$0			
023	Basements		SF			$0			
024	Special Foundations		SF			$0			
03	**SUPERSTRUCTURE**		**SF**	**$0**	**$0**	**$0**			
031	Floor Structure		SF			$0			
032	Roof Structure		SF			$0			
033	Stairs		FLT			$0			
04	**EXTERIOR CLOSURE**		**SF**	**$0**	**$0**	**$0**			
041	Exterior Walls		SF			$0			
042	Exterior Glazing		SF			$0			
043	Exterior Doors		EA			$0			
044	Exterior Accessories		SF			$0			
05	**ROOF SYSTEMS**		**FPA**	**$0**	**$0**	**$0**			
051	Pitched Roof		SF			$0			
052	Flat Roof		SF			$0			
053	Roof Accessories		SF			$0			

Construction Estimate Summary

School District:
Project Name:
Design Phase:
EED Project #: Project GSF:

Code	Building System	Quantity	Unit	Labor	Material	Total	$/Unit	$/GSF	%
06	**INTERIORS**		**GSF**	**$0**	**$0**	**$0**			
061	Partitions/Soffits		SF			$0			
062	Special Partitions		SF			$0			
063	Interior Doors		EA			$0			
064	Interior Finishes		GSF			$0			
065	Interior Fixed Furnishings		GSF			$0			
07	**CONVEYORS**		**GSF**	**$0**	**$0**	**$0**			
071	Passenger Conveyors		EA			$0			
072	Material Handling Systems		EA			$0			
08	**MECHANICAL**		**GSF**	**$0**	**$0**	**$0**			
081	Plumbing		FXT			$0			
082	HVAC		GSF			$0			
083	Fire Protection		GSF			$0			
084	Special Mechanical Systems		GSF			$0			
09	**ELECTRICAL**		**AMP**	**$0**	**$0**	**$0**			
091	Service and Distribution		AMP			$0			
092	Lighting		FXT			$0			
093	Power		EA			$0			
094	Special Systems		GSF			$0			
095	Other Electrical Systems		GSF			$0			
10	**EQUIPMENT AND FURNISHINGS**		**GSF**	**$0**	**$0**	**$0**			
101	Equipment		GSF			$0			
102	Furnishings		GSF			$0			

Construction Estimate Summary

School District:
Project Name:
Design Phase:
EED Project #: Project GSF:

Code	Building System	Quantity	Unit	Labor	Material	Total	$/Unit	$/GSF	%
11	**SPECIAL CONDITIONS**		**GSF**	**$0**	**$0**	**$0**			
111	Special Construction		SF			$0			
112	Building Selected Demolition		SF			$0			
SUBTOTAL DIRECT CONST. COST			**GSF**	**$0**	**$0**	**$0**			
12	**GENERAL CONDITIONS**		**MO**	**$0**	**$0**	**$0**			
121	Mobilization and Demobilization		LS			$0			
122	Site Staff		MO			$0			
123	Temporary Construction		MO			$0			
124	Equipment and Tools		MO			$0			
125	Miscellaneous		MO			$0			
126	Labor Employment Costs		MO			$0			
127	Mark-Ups		%			$0			
SUBTOTAL PROJECT COSTS			**MO**	**$0**	**$0**	**$0**			
13	**CONTINGENCIES**		**%**	**$0**	**$0**	**$0**			
131	Estimate Contingency		%			$0			
132	Escalation Continency		%			$0			
TOTAL CONSTRUCTION COST			**GSF**	**$0**	**$0**	**$0**			

NAME OF PROJECT
LOCATION OF PROJECT
LEVEL OF PROJECT

DATE: 6/3/2020

COST FORMAT 2008 COST SUMMARY

	TOTAL	*Rate $/SF Floor Area*
01 - EXISTING CONDITIONS	$ 0	#DIV/0!
02 - SUBSTRUCTURE	0	#DIV/0!
03 - SUPERSTRUCTURE	0	#DIV/0!
04 - EXTERIOR CLOSURE	0	#DIV/0!
05 - ROOF SYSTEMS	0	#DIV/0!
06 - INTERIORS	0	#DIV/0!
07 - CONVEYING EQUIPMENT	0	#DIV/0!
08 - MECHANICAL	0	#DIV/0!
09 - ELECTRICAL	0	#DIV/0!
10 - EQUIPMENT AND FURNISHINGS	0	#DIV/0!
11 - SPECIAL CONDITION	0	#DIV/0!
SUBTOTAL:	*$ 0*	
12 - GENERAL CONDITIONS AND PROFIT	0	
SUBTOTAL:	*$ 0*	
13 - SITE AND INFRASTRUCTURE	*0*	
SUBTOTAL:	*$ 0*	
14 - CONTINGENCIES	0	
TOTAL ESTIMATED CONSTRUCTION COST:	***$ 0***	
COST PER SQUARE FOOT:	#DIV/0! /SF	
GROSS FLOOR AREA:	$ 0 SF	

NAME OF PROJECT
LOCATION OF PROJECT
LEVEL OF PROJECT

DATE: 6/3/2020

ELEMENT	*Material*	*Labor*	*Total Mat/Labor*	*TOTAL COST*	*Rate $/SF Floor Area*
01 - EXISTING CONDITIONS				**$ 0**	**#DIV/0!**
011 - Selective Site Demolition	0	0	0		#DIV/0!
012 - Structure Demolition	0	0	0		#DIV/0!
013 - Selective Building Demolition	0	0	0		#DIV/0!
014 - Site Electrical Demolition	0	0	0		#DIV/0!
015 - Site Remediation	0	0	0		#DIV/0!
016 - Hazardous Material Removal	0	0	0		#DIV/0!
02 - SUBSTRUCTURE				**0**	**#DIV/0!**
021 - Standard Foundations	0	0	0		#DIV/0!
022 - Slab on Grade	0	0	0		#DIV/0!
023 - Basements	0	0	0		#DIV/0!
024 - Special Foundations	0	0	0		#DIV/0!
03 - SUPERSTRUCTURE				**0**	**#DIV/0!**
031 - Floor Structure	0	0	0		#DIV/0!
032 - Roof Structure	0	0	0		#DIV/0!
033 - Stair Construction	0	0	0		#DIV/0!
04 - EXTERIOR CLOSURE				**0**	**#DIV/0!**
041 - Exterior Walls and Soffits	0	0	0		#DIV/0!
042 - Exterior Curtain Walls	0	0	0		#DIV/0!
043 - Exterior Openings	0	0	0		#DIV/0!
05 - ROOF SYSTEMS				**0**	**#DIV/0!**
051 - Roofing	0	0	0		#DIV/0!
052 - Skylights	0	0	0		#DIV/0!

NAME OF PROJECT
LOCATION OF PROJECT
LEVEL OF PROJECT

DATE: 6/3/2020

ELEMENT	*Material*	*Labor*	*Total Mat/Labor*	*TOTAL COST*	*Rate $/SF Floor Area*
06 - INTERIORS				**0**	**#DIV/0!**
061 - Partitions/Soffits	0	0	0		#DIV/0!
062 - Special Partitions	0	0	0		#DIV/0!
063 - Interior Openings	0	0	0		#DIV/0!
064 - Interior Finishes	0	0	0		#DIV/0!
065 - Specialties	0	0	0		#DIV/0!
07 - CONVEYING EQUIPMENT				**0**	**#DIV/0!**
071 - Passenger Conveyors	0	0	0		#DIV/0!
072 - Material Handling Systems	0	0	0		#DIV/0!
08 - MECHANICAL				**0**	**#DIV/0!**
081 - Plumbing	0	0	0		#DIV/0!
082 - HVAC	0	0	0		#DIV/0!
083 - Integrated Automation	0	0	0		#DIV/0!
084 - Fire Suppression	0	0	0		#DIV/0!
085 - Special Mechanical Systems	0	0	0		#DIV/0!
09 - ELECTRICAL				**0**	**#DIV/0!**
091 - Service and Distribution	0	0	0		#DIV/0!
092 - Lighting and Power	0	0	0		#DIV/0!
093 - Communications	0	0	0		#DIV/0!
094 - Safety and Security	0	0	0		#DIV/0!
095 - Other Electrical Systems	0	0	0		#DIV/0!
10 - EQUIPMENT AND FURNISHINGS				**0**	**#DIV/0!**
101 - Fixed and Movable Equipment	0	0	0		#DIV/0!
102 - Furnishings	0	0	0		#DIV/0!

NAME OF PROJECT
LOCATION OF PROJECT
LEVEL OF PROJECT

DATE: 6/3/2020

ELEMENT	*Material*	*Labor*	*Total Mat/Labor*	*TOTAL COST*	*Rate $/SF Floor Area*
11 - SPECIAL CONDITION				**0**	**#DIV/0!**
111 - Special Construction	0	0	0		#DIV/0!
SUBTOTAL:	**$ 0**	**$ 0**	**$ 0**	**$ 0**	
12 - GENERAL CONDITIONS AND PROFIT				**0**	**#DIV/0!**
121 - Mobilization and Demobilization			0		#DIV/0!
122 - Site Staff			0		#DIV/0!
123 - Temporary Construction			0		#DIV/0!
124 - Equipment and Tools			0		#DIV/0!
125 - Miscellaneous			0		#DIV/0!
126 - Labor Employment Costs			0		#DIV/0!
127 - Mark-Ups			0		#DIV/0!
SUBTOTAL:				**$ 0**	
13 - SITE AND INFRASTRUCTURE				**0**	**#DIV/0!**
131 - Site Preparation and Earthwork	0	0	0		#DIV/0!
132 - Site Improvements	0	0	0		#DIV/0!
133 - Site Structures	0	0	0		#DIV/0!
134 - Civil/Mechanical Utilities	0	0	0		#DIV/0!
135 - Site Electrical	0	0	0		#DIV/0!
136 - Off-Site Work	0	0	0		#DIV/0!
SUBTOTAL:				**$ 0**	
14 - CONTINGENCIES				**0**	**#DIV/0!**
141 - Estimate Contingency			0		#DIV/0!
142 - Escalation Contingency			0		#DIV/0!
TOTAL CONSTRUCTION COST:				**$ 0**	
Cost Per Square Foot:					#DIV/0! /SF
Gross Floor Area:					0 SF

CostFormat

DEED Standard Construction

Cost Estimate

Format

Contributors

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Acknowledgements

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

LEVELS 1, 2 AND 3

CostFormat
Levels 1-3

Level 1 Code	Level 1 Description	Level 2 Code	Level 2 Description	Unit	Level 3 Code	Level 3 Description	Unit
01	SITE WORK	01	SITE & INFRASTRUCTURE	AC	011	*(Reserved)*	*(Reserved)*
					012	*(Reserved)*	*(Reserved)*
					013	Site Improvements	SF
					014	Site Structures	SF
					015	Civil/Mechanical Utilities	SF
					016	Site Electrical	SF
					017	Offsite Work	LS
02-05	BUILDING SHELL	02	SUBSTRUCTURE	FPA	021	Standard Foundations & Basements	SF
					022	Slab on Grade	SF
					023	*(Reserved)*	SF
					024	Special Foundations	SF
		03	SUPERSTRUCTURE	SF	031	Floor Structure	SF
					032	Roof Structure	SF
					033	Stairs	FLT
		04	EXTERIOR CLOSURE	SF	041	Exterior Walls & Soffits	SF
					042	Exterior Glazing	SF
					043	Exterior Doors	EA
					044	Exterior Accessories	SF
		05	ROOF SYSTEMS	FPA	051	Pitched Roof	SF
					052	Flat Roof	SF
					053	Roof Accessories	SF
06-07	INTERIOR CONSTRUCTION	06	INTERIORS	GSF	061	Partitions/Soffits	SF
					062	Special Partitions	SF
					063	Interior Openings	EA
					064	Interior Finishes	GSF
					065	Specialties	GSF
		07	CONVEYORS	GSF	071	Passenger Conveyors	EA
					072	Material Handling Systems	EA
08-09	MECHANICAL AND ELECTRICAL	08	MECHANICAL	GSF	081	Plumbing	FXT
					082	HVAC	GSF
					083	Integrated Automation	GSF
					084	Fire Protection	GSF
					085	Special Mechanical Systems	GSF

CostFormat
Levels 1-3

Level 1 Code	Level 1 Description	Level 2 Code	Level 2 Description	Unit	Level 3 Code	Level 3 Description	Unit
		09	ELECTRICAL	AMP	091	Service & Distribution	AMP
					092	Lighting	FXT
					093	Power	EA
					094	Special Systems	GSF
					095	Other Electrical Systems	GSF
10-11	SUPPORT ELEMENTS	10	EQUIPMENT AND FURNISHINGS	GSF	101	Equipment	GSF
					102	Furnishings	GSF
		11	SPECIAL CONDITIONS	GSF	111	Special Construction	SF
					112	Special Demolition	SF
					113	Special Site Conditions	AC
12-13	BUILDING OVERHEAD SUPPORT	12	GENERAL CONDITIONS	MO	121	Mobilization and Demobilization	LS
					122	Site Staff	MO
					123	Temporary Construction	MO
					124	Equipment and Tools	MO
					125	Miscellaneous	MO
					126	Labor Employment Costs	MO
					127	Mark-Ups	%
		13	CONTINGENCIES	%	131	Estimate Contingency	%
					132	Escalation Continency	%

LEVELS 2, 3 AND 4

CostFormat
Levels 2-4

Level 2	Level 3	Level 4 Code & Description	Unit	Definition	Components
01 SITE & INFRASTRUCTURE			**AC**		**ACRES OF SITE IMPROVED**
	011 (Reserved)				
	012 (Reserved)				
	013 Site Improvements		**SF**		**AREA OF SITE IMPROVED**
		0131 Vehicular Surfaces	SF	Vehicular circulation SF	Basecourse|Geotextile|Paving/surfacing|Curbs/gutters|Signage
		0132 Pedestrian Surfaces	SF	At-grade surfaces SF	Basecourse|Geotextile|Paving/surfacing|Boardwalks|Edging
		0133 Elevated Decks, Stairs & Ramps	SF	Elevated circulation SF	Foundations|Structure|Decking|Railings
		0134 Site Walls	SF	Vertical wall surface SF	Foundations|Wall system|Excavation|Backfill|Drainage
		0135 Landscaping & Irrigation	MSF	Landscaped surface MSF	Trenching|Topsoil|Plantings|Mulch|Boulders|Irrigation&controls
		0136 Fencing & Gates	SF	All Fencing SF	Foundations|Posts|Fencing|Gates|Vehicle gates|Bollards/staples
		0137 Site Furnishing & Equipment	EA	Feature EA	Benches|Tables|Signs|Flagpoles|Planters|Waste recep.|Bike racks
		0138 Playgrounds & Playfields	SF	Play area SF	Base prep|Drainage|Playstructures|Surfacing/seeding|Markings/signs
		0139 Other Improvements	SF	Improvement SF	Sledding hills|Ice rinks|Snowmelt systems|Water features|Etc.
	014 Site Structures		**SF**		**AREA OF STRUCTURES**
		0141 Freestanding Shelters	SF	Sheltered SF	Foundation|Superstructure|Enclosure|Electrical [Exclude surfacing]
		0142 Attached Shelters	SF	Sheltered SF	Foundation|Superstructure|Enclosure|Electrical [Exclude surfacing]
		0143 Support Buildings	SF	Building SF	Foundation|Superstructure|Enclosure|Mechanical|Electrical [See *111 Special Construction* for certain exclusions]
	015 Civil/Mechanical Utilities		**SF**		**AREA OF SITE IMPROVED**
		0151 Water Systems	LF	Water pipe LF	Ex/backfill|Wells|Tanks|Piping|Valves|Pumps|Treatment Sys.
		0152 Sanitary Sewer	LF	Sewer pipe LF	Ex/backfill|Lift Stations/pumps|Piping|Valves|Treatment Sys.
		0153 Storm Water	SF	Improved Site SF	Ex/backfill|Piping|Culverts|Swales|Catchments|Treatment
		0154 Fuel Systems	GAL	Tank capacity GAL	Ex/backfill|Foundation|Tanks|Piping|Valves|Containment|Fencing
		0155 Heating/Cooling Piping & Utilidors	LF	Total pipe LF	Ex/backfill|Piping|Valves|Insulation|Utilidors|Appurtenances
	016 Site Electrical		**SF**		**AREA OF SITE IMPROVED**
		0161 Electrical Service & Distribution	LF	Conduit LF	Trenching|Poles|Transformers|Switchgear|Conduit|Feeders
		0162 Data/Comm Service & Distribution	LF	Conduit LF	Trenching|Conduit|Cable|Satellite dishes|Foundation|Equip
		0163 Lighting & Equipment	EA	Total fixtures EA	Trenching|Poles|Fixtures|Devices|Panels|Conduit|Feeders
		0164 Security Systems	EA	Total sensors EA	Trenching|Poles|Devices|Conduit|Cable

CostFormat
Levels 2-4

Level 2	Level 3	Level 4 Code & Description	Unit	Definition	Components
	017 Offsite Work		**LS**		**LUMP SUM**
		0171 Offsite Improvements	SF	Improved SF	Any *013 Site Improvements* beyond property lines
		0172 Offsite Utility	LF	Utility LF	Extension and connections of utilities to the site
		0173 Other Offsite Work	LS	Work LS	Structures, etc.
02 SUBSTRUCTURE			**FPA**		**BUILDING FOOTPRINT AREA**
	021 Standard Foundations & Basements		**SF**		**BUILDING FOOTPRINT AREA OF STANDARD FOUNDATION**
		0211 Continuous & Column Footings	CY	Concrete CY	Ex/backfill|Base|Forms|Rebar|Concrete|Insulation. .
		0212 Foundation Walls & Treatments	SF	Wall SF	Ex/backfill|Forms|Rebar|Concrete|Dampproofing|Insulation
		0213 Foundation Drainage	LF	Foundation drain LF	Ex/backfill|Pipe|Geotextile
	022 Slab on Grade		**SF**		**BUILDING FOOTPRINT AREA OF SLAB ON GRADE**
		0221 Structural & Nonstructural Slab	SF	Slab SF	Base|Vapor barrier|Forms|Reinforcement|Concrete|Joints|Finish
		0222 Trench, Pit, and Pad	SF	Exposed SF	Base|Vapor barrier|Forms|Reinforcement|Concrete|Embedments
		0223 Underslab Elements	SF	Slab SF	Ex/backfill|Vapor barrier|Insulation|Pipe|Geotextile
	023 (Reserved)				
	024 Special Foundations		**SF**		**BUILDING FOOTPRINT AREA OF SPECIAL FOUNDATION**
		0241 Piling & Pile Cap	LF	Piling LF	Drilling/backfill|Driving|Pile|Thermopile|Pile caps|Layout|Etc.
		0242 Caissons	LF	Piling LF	Drilling/backfill|Driving|Pile|Pile caps|Layout|Etc.
		0243 Grade Beams	CY	Concrete CY	Ex/backfill|Base|Forms|Rebar|Concrete|Insulation. .
		0244 Arctic Foundation System	SF	Foundation system SF	Trenching/backfill|Thermosyphons|Refrigeration|Insulation
		0245 Other Special Foundations	SF	Foundation system SF	Underpinning|Vibroreplacement|Etc. .
03 SUPERSTRUCTURE			**SF**		**AREA OF FLOOR AND ROOF STRUCTURE**
	031 Floor Structure		**SF**		**AREA OF FLOOR STRUCTURE**
		0311 Lower & Main Floors	SF	Lower & main floor SF	Beams|Joists|Decking|Topping|Soffit|Insulation|Coatings .
		0312 Upper Floors	SF	Upper floor SF	Columns|Beams|Joists|Decking|Topping|Coatings .
		0313 Ramp	SF	Ramp SF	Columns|Beams|Joists|Decking|Topping|Coatings .
	032 Roof Structure		**SF**		**AREA OF ROOF STRUCTURE**
		0321 Pitched Roof	SF	Pitched roof SF	Columns|Beams|Rafters|Trusses|Decking|Bracing
		0322 Flat Roof	SF	Flat roof SF	Columns|Beams|Rafters|Trusses|Decking|Bracing
		0323 Special Roof	SF	Special roof SF	Pneumatic structures|Domes|Etc. .

CostFormat
Levels 2-4

Level 2	Level 3	Level 4 Code & Description	Unit	Definition	Components
	033 Stairs		**FLT**		
		0331 Stair Structure	FLT	Stair FLT	Columns|Landings|Stringers|Treads|Risers|Toppings
		0332 Stair Railings	LF	Railing LF	Guardrail|Railing|Ballusters|Supports|Coatings
		0333 Ladders & Steps	EA	Ladders/Steps EA	Ladders|Steps|Coatings
04 EXTERIOR CLOSURE			**SF**		**AREA OF EXTERIOR CLOSURE**
	041 Exterior Walls		**SF**		**AREA OF EXTERIOR WALL SURFACE**
		0411 Exterior Walls	SF	Exterior wall SF	Framing|Sheathing|Insulation|Siding|Vapor/Air barriers|Int. substrate
		0412 Fascias & Soffits	SF	Fascia and soffit SF	Framing|Sheathing|Insulation|Siding|Vapor/Air barriers|Vents
		0413 Curtainwalls & Non-bearing Walls	SF	Curtainwall SF	Supports|Connectors|Insulation|Siding|Barriers|Int. substrate
	042 Exterior Glazing		**SF**		**AREA OF GLAZING**
		0421 Windows	SF	Window SF	Fixed/operable windows|Ext. sills|Flashings|Vandal-proofing
		0422 Storefronts	SF	Storefront SF	Framing|Glazing|Flashings
		0423 Structural Window Walls	SF	Window wall SF	Columns|Framing|Glazing|Ext. sills|Flashings
		0424 Translucent Panels	SF	Translucent Panel SF	Panel assembly|Ext. Sills|Flashings
	043 Exterior Doors		**EA**		**TOTAL NUMBER OF DOOR LEAFS & SPECIAL DOORS**
		0431 Personnel Doors	EA	Door LEAF	Frames|Doors|Lites|Hardware|Openers|Thresholds|Flashing|Finish
		0432 Special Doors	EA	Special Door EA	Frames|Doors|Openers|Locks|Flashing|Finish [OH doors, etc.]
	044 Exterior Accessories		**SF**		**AREA OF EXTERIOR CLOSURE**
		0441 Louvers, Screens, Shades	SF	Louver and screen SF	Louvers|Screens|Trellis|Shades/shelfs|Etc.
		0442 Balcony Elements	SF	Balcony SF	Walls|Grills|Guardrails|Handrails||Etc.
		0443 Other Exterior Accessories	SF	Exterior closure SF	[Excludes floor framing, decking (0312) and waterproofing (0521)] Signage|Decorations|Etc.
05 ROOF SYSTEMS			**FPA**		**BUILDING FOOTPRINT AREA**
	051 Pitched Roof		**SF**		**AREA OF PITCHED ROOF**
		0511 Pitched Roofing	SF	Pitched roof SF	Underlayment/barriers|Roofing|Flashing|VTRs|Insulation|Fascia
		0512 Gutters & Downspouts	LF	Gutter & downspout LF	Gutters|Membranes|Downspouts|Hangars|Etc.
	052 Flat Roof		**SF**		**AREA OF FLAT ROOF**
		0521 Flat Roofing	SF	Flat roof SF	Underlayment/barriers|Roofing|Flashing|VTRs|Insulation|Copings
		0522 Roof Drains & Piping	EA	Roof Drains EA	Drains|Scuppers|Leaders|Insulation|Etc.

CostFormat
Levels 2-4

Level 2	Level 3	Level 4 Code & Description	Unit	Definition	Components
	053 Roof Accessories		**SF**		**AREA OF ROOF ACCESSORIES**
		0531 Skylights	SF	Skylight SF	Fixed/operable skylights|Curbs|Flashings
		0532 Roof Hatches	EA	Roof hatches EA	Hatches|Curbs|Flashing|Hardware
		0533 Roof Decking & Paving	SF	Roof deck SF	Decking/paving|Protection|Supports|Etc.
		0534 Roof Deck Wall & Railing	LF	Railing LF	Walls|Grills|Guardrails|Handrails||Etc.
		0535 Other Roof Accessories	SF	Impacted roof SF	Snow guards|Tie-offs|Pipe supports|Etc.
06 INTERIORS			**GSF**		**GROSS FLOOR AREA**
	061 Partitions/Soffits		**SF**		**AREA OF STANDARD PARTITIONS**
		0611 Fixed Partitions	SF	Partition SF	Framing|Substrates/sheathing|Blocking|Insulation
		0612 Soffits & Ceilings	SF	Soffit SF	Framing|Substrates/sheathing|Blocking|Insulation
	062 Special Partitions		**SF**		**AREA OF SPECIAL PARTITIONS**
		0621 Operable Partitions	SF	Operable partition SF	Partition|Support structure|Factory finishes
		0622 Demountable Partitions	SF	Demountable partition SF	Partition|Support structure|Factory finishes
		0623 Glazed Partitions	SF	Glazing SF	Frames|Glazing|Glass block|Trims
		0624 Railing & Screen	SF	Railing and screen SF	|Railing assemblies|Visual screens|Etc.
	063 Interior Doors		**EA**		**TOTAL NUMBER OF DOOR LEAFS & SPECIAL DOORS**
		0631 Personnel Doors	EA	Door LEAF	Frames|Doors|Integral lites|Hardware|Trims|Finish
		0632 Special Doors	EA	Special Door EA	Frames|Doors|Hardware|Finish [OH doors, grills, fire doors, etc.]
	064 Special Floors		**SF**		**AREA OF SPECIAL FLOORS**
		0631 Access Floors	SF	Access floor SF	Framing/stands|Floor panels|Fact. finishes
		0632 Platforms & Stages	SF	Platform/stage SF	Framing|Sheathing/panels|Accessories
	065 Interior Finishes		**GSF**		**GROSS FLOOR AREA**
		0641 Floor Finishes	SF	Floor finish SF	Prep|Finish Material|Trims|Wall base|Transitions
		0642 Wall Finishes	SF	Wall finish SF	Prep|Finish Material|Trims
		0643 Ceiling Finishes	SF	Ceiling finish SF	Prep|Framing/Supports|Finish Material|Trims.
		0644 Other Finishes	SF	Other finish SF	Prep|Finish Material|Transitions [Primarily misc. protective coatings]
	066 Interior Fixed Furnishings		**GSF**		**GROSS FLOOR AREA**
		0651 Interior Specialties	GSF	Specialties by GSF	Toilet partitions/acces.|Lockers|Boards|Prot. guards|Signage|Etc.
		0652 Casework/Millwork	LF	Casework/Millwork LF	Cabinets|Cubbies|Wardrobes|Counters|Display case|Trim|Etc.
		0653 Seating	EA	Seating units EA	Framing|Finish|Accessories [Fixed seating and benches]
		0654 Window Coverings	SF	Coverings SF	Drapes|Blinds|Blackout shades|Etc.

CostFormat
Levels 2-4

Level 2	Level 3	Level 4 Code & Description	Unit	Definition	Components
07 CONVEYORS			**GSF**		**GROSS FLOOR AREA**
	071 Passenger Conveyor		**EA**		**TOTAL CONVEYORS**
		0711 Passenger Elevators	STOP	Elevator STOP	Cab|Rails|Machinery|Appurtenances
		0712 Lifts & Other Conveyors	EA	Lifts/conveyors EA	Cab/enclosure|Rails|Machinery|Appurtenances
	072 Material Handling Systems		**EA**		**TOTAL SYSTEMS**
		0721 Elevator & Lifts	STOP	Lifts STOP	Cab/enclosure|Rails|Machinery|Appurtenances
		0722 Hoists & Cranes	TON	Hoist/crane TON	Structure/rails|Hoist/crane|Appurtenances.
		0725 Other System	EA	Other system EA	Structure/rails|Enclosure|Appurtenances [Files storage, etc.]
08 MECHANICAL			**GSF**		**GROSS FLOOR AREA**
	081 Plumbing		**FXT**		**TOTAL PLUMBING FIXTURE QUANTITY**
		0811 Plumbing Fixtures	FXT	Fixtures EA	Fixture|Rough-in|Valves/stops|Mounts|Trims [Roof drains at *0522*]
		0812 Plumbing Piping	LF	Piping LF	Pipe|Fittings|Hangers|Insulation
		0813 Plumbing Equipment	EA	Equipment EA	Pumps|Tanks|Traps|HW generator|Treatment
		0814 Waste & Vent Piping	FXT	Piping LF	Pipe|Fittings|Cleanouts|Supports|Insulation
		0815 Domestic Water Supply	FXT	Fixtures EA	Pipe|Fittings|Valves|Insulation|Etc.
		0816 Special Systems	EA	Special System EA	Equipment|Piping|Fittings. [Stormwater, graywater, comp. air, etc.]
	082 HVAC		**GSF**		**GROSS FLOOR AREA**
		0821 Heating Equipment	GSF	Equipment per GSF	Boilers|Furnace|Burners|Flue|Exp Tank|Media
		0822 Heating Distribution Systems	LF	Pipe LF	Pipe|Fittings|Valves|Pumps|Insulation|Strainers|Etc.
		0823 Ventilation Equipment	GSF	Equipment per GSF	AHUs|S/R Fans|Exhaust fans|Coils|VAVs|Terminals|Etc.
		0824 Ventilation Distribution Systems	GSF	System per GSF	Ducting|Insulation|Diffusers|Dampers\Silencers [Louvers at *0441*]
		0825 Cooling Equipment	GSF	Equipment per GSF	ACU|Make-up|Coils|Refrigerant
		0826 Cooling Distribution Systems	LF	Pipe LF	Pipe|Fittings|Valves|Gauges|Insulation|Etc.
		0827 Heat Recovery System	EA	System EA	HRUs|Fans|Etc.
	083 Integrated Automation		**GSF**		**GROSS FLOOR AREA**
		0831 Digital Control Systems	EA	Control Points EA	Head end|DDC points|Wiring|Sensors|Gauges
		0832 Other Automation	EA	Control Points EA	Thermostats|Wiring|Sensors|Gauges [Stand-alone, wireless, etc.]

CostFormat
Levels 2-4

Level 2	Level 3	Level 4 Code & Description	Unit	Definition	Components
	084 Fire Protection		**GSF**		**GROSS FLOOR AREA**
		0841 Riser & Equipment	EA	Equipment EA	Riser|Backflow device|Headers|Valves|Etc.
		0842 Sprinkler Systems	SF	Sprinkled SF	Pipe|Fittings|Heads|Hangars/bracing|Etc.
		0843 Special Fire Protection Systems	EA	Systems EA	Tanks|Valves|Piping|Controls
	085 Special Mechanical Systems		**GSF**		**GROSS FLOOR AREA**
		0851 Fuel Supply	LF	Pipe LF	Pipe|Fittings|Tanks|Pumps|Valves|Etc.
		0852 Dust Collection System	EA	Connections EA	Tank|Stand|Fans|Ducting|Controls|Etc.
		0853 Compressed Air & Vacuum System	EA	Outlets EA	Tank|Mounts|Fans|Ducting|Controls|Oulets|Etc.
		0854 Other Mechanical Systems	EA	Systems EA	Equipment [humidifier, special exhaust, etc.]|Piping\ducting|Grills
09 ELECTRICAL			**GSF**		**GROSS FLOOR AREA**
	091 Service and Distribution		**AMP**		**TOTAL AMPERES OF ELECTRICAL SYSTEM**
		0911 MDPs & Switchgear	AMP	System AMP	MDP enclosure|Disconnect|CT enclosure|Bus|Fuses|Etc.
		0912 Panels & Motor Control Centers	AMP	System AMP	Switchboards|Panelboards|Motor-control centers
		0913 Transformers	KVA	Transformers KVA	Transformers [commonly Utility-provided]
		0914 Conduit & Feeders	LF	Conduit LF	Conduit|Fittings|Wires
	092 Lighting		**FXT**		**TOTAL LIGHTING FIXTURE QUANTITY**
		0921 Light Fixtures	FXT	Fixtures EA	Int. fixtures|Bldg mounted fixtures|Exit/emergency|Trims|Etc..
		0922 Lighting Controls	FXT	Controls EA	Control panel|Switches|Occ. Sensors|Etc.
		0923 Conduit & Wiring	FXT	Conduit LF	Conduit|Fittings|Wiring
	093 Power		**EA**		**TOTAL DEVICES AND CONNECTIONS QUANTITY**
		0931 Devices & Connections	EA	Devices EA	Outlets|Disconnects|Sensors/timers|Motor connections|Etc.
		0932 Conduit & Wiring	LF	Conduit LF	Conduit|Fittings|Wiring
	094 Special Systems		**GSF**		**GROSS FLOOR AREA**
		0941 Fire Alarm	EA	Devises EA	Devices|Panels|Conduit|Wiring
		0942 Data & Communications	EA	Outlets EA	Equipment|Devices\connections|Conduit/tray|Wiring
		0943 Security Systems	EA	Devises EA	Headend|Detectors|CCTV|Access contol|Conduit/tray|Wiring
		0944 Clock System	EA	Clocks EA	Clocks|Controls|Conduit/tray|Wiring
		0945 Intercom System	EA	Speakers EA	Headend|Interties|Speakers|Wiring
		0946 Other Special Systems	GSF	System per GSF	Equipment|Devices|Conduit|Wiring [other low voltage systems]

CostFormat
Levels 2-4

Level 2	Level 3	Level 4 Code & Description	Unit	Definition	Components
	095 Other Electrical Systems		**GSF**		**GROSS FLOOR AREA**
		0951 Power Generation & Distribution	KVA	Generation KVA	Generators|Switchgear|Panels|Conduit|Feeders
		0952 Heating Systems	SF	Area Served SF	BaseboardS|Unit heaters|Radiator|Radiant heat|Controls
		0953 Grounding Systems	EA	Grounding System EA	Grounding|Lightning protection|Etc.
10 EQUIPMENT AND FURNISHING			**GSF**		**GROSS FLOOR AREA**
	101 Equipment		**GSF**		**GROSS FLOOR AREA**
		1011 Food Service/Kitchen Equipment	SF	Kitchen SF	Cooking Eq.|Refer/Freezer|Tables/counters|Etc. [Hoods/Sinks at 08]
		1012 Athletic Equipment	SF	Athletic SF	Basketball goals|Inserts|Ropes|Bars|Mat hoists|Etc.
		1013 Career & Technology Equipment	SF	Technology SF	Woodworking|Metal/welding|Small engine|Robotics|Etc.
		1014 Science Equipment	SF	Science SF	Casework|Equipment|Etc.
		1015 Library Equipment	SF	Library SF	Stacks|Shelves|Desks|Etc.
		1016 Theatre Equipment	SF	Theatre SF	Lighting|Sound|Curtains|Etc.
		1017 Art Equipment	SF	Art SF	Kilns|Snks|Etc.
		1018 Loading Dock Equipment	SF	Loading Dock SF	Bumpers|Levelers|Etc.
		1019 Other Equipment	SF	Other SF	Fixed OTPT|Etc.
	102 Furnishings		**GSF**		**GROSS FLOOR AREA**
		1021 Furniture	EA	Furnishings EA	Classroom|Administation|Workrooms|Assembly|Etc.
		1022 Mats	SF	Mats SF	Mats|Grates
		1024 Other Furnishings	EA	Furnishings EA	Window shades|Etc.
11 SPECIAL CONDITIONS			**GSF**		**GROSS FLOOR AREA**
	111 Special Construction		**SF**		**AREA OF SPECIAL CONSTRUCTION**
		1111 Packaged Utility Modules	SF	Module SF	Foundation|Superstructure|Enclosure|Mechanical|Electrical [Utility treatment, Mechanical, Generator, other modules]
		1112 Swimming Pool	SF	Pool tank SF	Foundation|Superstructure|Enclosure|Mechanical|Electrical [Tank, gutters, piping, pumps, treatment, etc.]
		1113 Greenhouse	SF	Greenhouse SF	Foundation|Framing|Panels|Mech|Electrical
	112 Special Demolition		**SF**		**SITE AREA REQUIRING SPECIAL PREPARATION**
		1121 Structure Demolition	SF	Demolition SF	Demolition|Equipment|Transport|Disposal|Restoration
		1122 Selective Building Demolition	SF	Selective Demo SF	Protection|Demolition|Equipment|Transport|Disposal|Cleanup
		1123 Site & Utility Demolition	SF	Site & Utility SF	Ex/backfill|Demolition|Equipment|Transport|Disposal|Restoration
		1124 Hazardous Waste Remediation	SF	Remediation SF	Protection|Demolition|Equipment|Transport|Disposal|Cleanup
		1125 Building Relocation	SF	Relocated Stuctures SF	Disconnect/reconnect|Equipment|Transport|Restoration

CostFormat
Levels 2-4

Level 2	Level 3	Level 4 Code & Description	Unit	Definition	Components
	113 Special Site Conditions		**CY**		**TOTAL CY MOVED**
		1131 Site Shoring & Dewatering	SF	Shoring & Dewatering SF	Barriers/structure|Equipment||Etc.
		1132 Site Earthwork	CY	Earthwork CY	Excavation/backfill|Geotextile|Etc.
		1133 Site Remediation	CY	Earthwork CY	Excavation|Transport|Disposal/treatment|Backfill
12 GENERAL CONDITIONS			**MO**		**PROJECT DURATION**
	121 Mobilization and Demobilization		**LS**		**LUMP SUMP**
		1211 Freight Material	TON	Material TON	Freight cost of materials to job site (air, barge, truck, etc.).
		1212 Freight Construction Equipment	TON	Equipment TON	Freight cost of construction equipment to and from job site.
		1213 Labor Travel	RT	Travel RT	Cost of travel for construction personnel to and from job site.
	122 Site Staff		**MO**		**PROJECT DURATION**
		1221 Supervision	MO	Supervision MO	Project manager, superintendent, foreman.
		1222 Engineering	MO	Engineering MO	Engineering personnel.
		1223 Quality Control	MO	QC Personnel MO	Quality Control Personnel.
		1224 Scheduling/Estimating	MO	Sched/Estimating MO	Estimating personnel.
		1225 Surveying	MO	Surveying MO	Crew to set out features of project.
		1226 Expediting	MO	Expediting MO	Persons arranging deliveries.
		1227 Clerical	MO	Clerical MO	Payroll, invoices, etc.
		Other1228	MO	Other MO	All other site staff costs
	123 Temporary Construction		**MO**		**PROJECT DURATION**
		1231 Temporary Facilities	MO	Project duration MO	Offices, storage, signs, staging, partitions/protection, installation/use.
		1232 Fences & Barriers	LF	Fencing LF	Perimeter fence, security.
		1233 Scaffolding	MO	Scaffold Rental MO	Installation and rental.
		1234 Utilities	MO	Project duration MO	Water, sewer, electrical, gas, oil, installation and use..
		1235 Communications	MO	Project duration MO	Telephone, fax, email, installation and use.
	124 Equipment and Tools		**MO**		**PROJECT DURATION**
		1241 Equipment	MO	Project Duration MO	Vertical and horizontal transportation, pumps, etc.
		1242 Tools	MO	Project Duration MO	Hand tools, manlifts, ladders, etc.
		1243 Consumables	MO	Project Duration MO	Fuel, cleaning products, safety needs.

CostFormat
Levels 2-4

Level 2	Level 3	Level 4 Code & Description	Unit	Definition	Components
	125 Miscellaneous		**MO**		**PROJECT DURATION**
		1251 Submittals/As-Builts	LS	Total LS	Project records/printing costs/manuals.
		1252 Testing	LS	Total LS	Material tests.
		1253 Cleaning	MO	Project Duration MO	Includes snow removal and final clean-up.
		1254 Security	MO	Project Duration MO	Badges, security service, night watchman.
		1255 Permits	LS	Total LS	Local building permits, street-use permits, etc.
	126 Labor Employment Costs		**MO**		**PROJECT DURATION**
		1261 Camp	MO	Camp Operations MO	Mancamp, lodging/dining.
		1262 Per-Diem	MDAY	Personnel MDAY	Remote site needs imported labor.
		1263 Premium Time	HRS	Overtime HRS	Payment for overtime.
	127 Mark-Ups		**%**		**PERCENTAGE OF DIRECT CONSTRUCTION COST**
		1271 Home Office Overhead	%	Direct const. cost %	Headquarters costs.
		1272 Profit	%	Direct const. cost %	Mark-up for investment and risk and market conditions.
		1273 Bond	%	Direct const. cost %	Performance, pay and bid bonds.
		1274 Insurance	%	Direct const. cost %	General liability.
13 CONTINGENCIES			**%**		**PERCENTAGE OF TOTAL CONSTRUCTION COST**
	131 Estimate Contingency				
		1311 Estimator's	%	Total project cost %	Allowance for unknown aspects of the project that may become necessary.
		1312 Escalation	%	Total project cost %	Allowance for changes in costs of labor and materials from the date of the estimate to date of construction project.

LEGEND

LEGEND

Unit	Definition
ACRE	TOTAL SITE ACREAGE
BSF	BASEMENT FOOTPRINT AREA
CEA	NUMBER OF CONVEYORS
CFM	AIR HANDLING EQUIPMENT CAPACITY
CMLF	LENGTH OF CIVIL/MECHANICAL PIPING
DAYS	PER DIEM DAYS
DC$	DIRECT CONSTRUCTION COST
EAMP	MPERES OF EMERGENCY POWER SYSTEM
EASF	AREA OF EXTERIOR ACCESSORIES
ECSF	AREA OF EXTERIOR CLOSURE
EDLF	TOTAL NUMBER OF DOOR LEAFS & SPECIAL DOORS
EFEA	TOTAL PIECES OF EQUIPMENT & FURNISHINGS
EGSF	AREA OF GLAZING
EQEA	PIECES OF EQUIPMENT
EWCY	TOTAL CY MOVED
EWSF	AREA OF EXTERIOR WALL SURFACE
FLT	NUMBER OF FLIGHTS
FPSF	AREA OF FIRE PROTECTION
FRSF	AREA OF FLAT ROOF
FSF	BUILDING FOOTPRINT AREA OF STANDARD FOUNDATION
FSF	AREA OF FURNISHINGS
FSSF	AREA OF FLOOR STRUCTURE
GSF	GROSS FLOOR AREA
IAEA	TOTAL NUMBER OF INTEGRATED AUTOMATION DEVICES
IOEA	TOTAL NUMBER OF INTERIOR OPENINGS
IFSF	TOTAL AREA OF INTERIOR FINISHES
LFXT	NUMBER OF LIGHTING FIXTURE
MHEA	NUMBER OF MATERIAL HANDLING SYSTEMS
MOS	MONTHS OF PROJECT DURATION
MPLF	LENGTH OF MECHANICAL PIPING
OWLS	OFFSITE WORK LUMP SUM
PDEA	NUMBER OF DEVICES AND CONNECTIONS
PFXT	NUMBER OF PLUMBING FIXTURE
PRSF	AREA OF PITCHED ROOF
PSF	AREA OF STANDARD & SPECIAL PARTITIONS

LEGEND

Unit	Definition
PSSF	AREA OF STANDARD PARTITIONS
RASF	AREA OF ROOF ACCESSORIES
RSF	AREA OF PITCHED AND FLAT ROOFS
RSSF	AREA OF ROOF STRUCTURE
SAMP	AMPERES OF ELECTRICAL SERVICE
SCSF	AREA OF SPECIAL CONSTRUCTION
SDSF	AREA OF BUILDING DEMOLITION
SELF	LINEAR FEET OF ELECTRICAL WIRE
SEPT	NUMBER OF SPECIAL ELECTRICAL SYSTEM POINTS
SFSF	BUILDING FOOTPRINT AREA OF SPECIAL FOUNDATION
SISF	AREA OF SITE IMPROVED
SLSF	BUILDING FOOTPRINT AREA OF SLAB ON GRADE
SMPT	NUMBER OF SPECIAL MECHANICAL SYSTEM POINTS
SPSF	AREA OF SPECIAL PARTITIONS
SSF	AREA OF FLOOR AND ROOF STRUCTURE
SSF	TOTAL AREA OF SPECIAL CONSTRUCTION & DEMOLITION
SSSF	AREA OF SITE REQUIRING SPECIAL PREPARATION
STOP	NUMBER OF STOPS
STSF	AREA OF SITE STRUCTURES
TAMP	TOTAL AMPERES OF SERVICE & EMERGENCY POWER
TC$	TOTAL CONSTRUCTION COST
TFSF	TOTAL AREA OF FOUNDATION SYSTEMS (FPA)
TONS	TOTAL MATERIAL SHIPPING WEIGHT

ESTIMATE SUMMARY

Construction Estimate Summary

School District:
Project Name:
Design Phase:
DEED Project #:
Project GSF:

Code	Building System	Quantity	Unit	Labor	Material	Total	$/Unit	$/GSF	%
01	**SITE**		**AC**	**$0**	**$0**	**$0**			
013	Site Improvements		SISF			$0			
014	Site Structures		STSF			$0			
015	Civil/Mechanical Utilities		CMLF			$0			
016	Site Electrical		SELF			$0			
017	Off-Site Work		OWLS			$0			
02	**SUBSTRUCTURE**		**TFSF**	**$0**	**$0**	**$0**			
021	Standard Foundations		FSF			$0			
022	Slab on Grade		SLSF			$0			
024	Special Foundations		SFSF			$0			
03	**SUPERSTRUCTURE**		**SSF**	**$0**	**$0**	**$0**			
031	Floor Structure		FSSF			$0			
032	Roof Structure		RSSF			$0			
033	Stairs		FLT			$0			
04	**EXTERIOR CLOSURE**		**ECSF**	**$0**	**$0**	**$0**			
041	Exterior Walls		EWSF			$0			
042	Exterior Glazing		EGSF			$0			
043	Exterior Doors		EDLF			$0			
044	Exterior Accessories		EASF			$0			
05	**ROOF SYSTEMS**		**RSF**	**$0**	**$0**	**$0**			
051	Pitched Roof		PSSF			$0			
052	Flat Roof		FRSF			$0			
053	Roof Accessories		RASF			$0			
06	**INTERIORS**		**PSF**	**$0**	**$0**	**$0**			
061	Partitions/Soffits		PSSF			$0			
062	Special Partitions		SPSF			$0			
063	Interior Openings		IOEA			$0			
064	Interior Finishes		IFSF			$0			
065	Specialties		GSF			$0			

Construction Estimate Summary

School District:
Project Name:
Design Phase:
DEED Project #:
Project GSF:

Code	Building System	Quantity	Unit	Labor	Material	Total	$/Unit	$/GSF	%
07	**CONVEYORS**		**CEA**	**$0**	**$0**	**$0**			
071	Passenger Conveyors		STOP			$0			
072	Material Handling Systems		MHEA			$0			
08	**MECHANICAL**		**MPLF**	**$0**	**$0**	**$0**			
081	Plumbing		PFXT			$0			
082	HVAC		CFM			$0			
083	Integrated Automation		IAEA			$0			
084	Fire Protection		FPSF			$0			
085	Special Mechanical Systems		SMPT			$0			
09	**ELECTRICAL**		**TAMP**	**$0**	**$0**	**$0**			
091	Service and Distribution		SAMP			$0			
092	Lighting		LFXT			$0			
093	Power		PDEA			$0			
094	Special Systems		SEPT			$0			
095	Other Electrical Systems		EAMP			$0			
10	**EQUIPMENT AND FURNISHINGS**		**EFEA**	**$0**	**$0**	**$0**			
101	Equipment		EQEA			$0			
102	Furnishings		FEA			$0			
11	**SPECIAL CONDITIONS**		**SSF**	**$0**	**$0**	**$0**			
111	Special Construction		SCSF			$0			
112	Special Demolition		SDSF			$0			
113	Special Site Conditions		EWCY			$0			
SUBTOTAL DIRECT CONST. COST			**GSF**	**$0**	**$0**	**$0**			
12	**GENERAL CONDITIONS**		**MO**	**$0**	**$0**	**$0**			
121	Mobilization and Demobilization		TONS			$0			
122	Site Staff		MO			$0			
123	Temporary Construction		MO			$0			
124	Equipment and Tools		MO			$0			

Construction Estimate Summary

School District:
Project Name:
Design Phase:
DEED Project #:
Project GSF:

Code	Building System	Quantity	Unit	Labor	Material	Total	$/Unit	$/GSF	%
125	Miscellaneous		MO			$0			
126	Labor Employment Costs		DAYS			$0			
127	Mark-Ups		$DC			$0			
SUBTOTAL PROJECT COSTS			**MO**	**$0**	**$0**	**$0**			
13	**CONTINGENCIES**		**$TPC**	**$0**	**$0**	**$0**			
131	Estimate Contingency		$TPC			$0			
132	Escalation Continency		$TPC			$0			
TOTAL CONSTRUCTION COST			**GSF**	**$0**	**$0**	**$0**			

Construction Estimate Summary

School District: Lower Yukon
Project Name: Kotlik K-12
Design Phase: 100% Construction Document
DEED Project #: 01-004
Project GSF: 39,807 SF

Code	Building System	Quantity	Unit	Labor	Material	Total	$/Unit	$/GSF	%
01	**SITE**	**7**	**ACRE**	**$0**	**$0**	**$1,896,870**	**$270,209**	**$47.65**	**11.58%**
013	Site Improvements	38,823	SISF	$0	$0	$640,846	$16.51	$16.10	3.91%
014	Site Structures	2,464	STSF	$0	$0	$94,427	$38.32	$2.37	0.58%
015	Civil/Mechanical Utilities	4,903	CMLF	$0	$0	$460,761	$93.98	$11.57	2.81%
016	Site Electrical	15,200	SELF	$0	$0	$133,332	$8.77	$3.35	0.81%
017	Off-Site Work	0	OWLS	$0	$0	$0			
02	**SUBSTRUCTURE**	**38,059**	**TFSF**	**$0**	**$0**	**$662,055**	**$17.40**	**$16.63**	**4.04%**
021	Standard Foundations		FSF	$0	$0	$0			
022	Slab on Grade		SLSF	$0	$0	$0			
024	Special Foundations	38,059	SFSF	$0	$0	$662,055	$17.40	$16.63	4.04%
03	**SUPERSTRUCTURE**	**79,053**	**SSF**	**$0**	**$0**	**$1,288,489**	**$16.30**	**$32.37**	**7.86%**
031	Floor Structure	39,807	FSSF	$0	$0	$479,305	$12.04	$12.04	2.93%
032	Roof Structure	39,246	RSSF	$0	$0	$798,890	$20.36	$20.07	4.88%
033	Stairs	2	FLT	$0	$0	$10,294	$5,147	$0.26	0.06%
04	**EXTERIOR CLOSURE**	**33,352**	**ECSF**	**$0**	**$0**	**$1,012,681**	**$30.36**	**$25.44**	**6.18%**
041	Exterior Walls	31,585	EWSF	$0	$0	$909,376	$28.79	$22.84	5.55%
042	Exterior Glazing	1,473	EGSF	$0	$0	$78,129	$53.04	$1.96	0.48%
043	Exterior Doors	14	EDLF	$0	$0	$25,176	$1,798	$0.63	0.15%
044	Exterior Accessories	0	EASF	$0	$0	$0			
05	**ROOF SYSTEMS**	**39,246**	**RSF**	**$0**	**$0**	**$136,748**	**$3.48**	**$3.44**	**0.83%**
051	Pitched Roof	39,246	PSSF	$0	$0	$136,748	$3.48	$3.44	0.83%
052	Flat Roof	0	FRSF	$0	$0	$0			
053	Roof Accessories	0	RASF	$0	$0	$0			
06	**INTERIORS**	**52,614**	**PSF**	**$0**	**$0**	**$1,353,017**	**$25.72**	**$33.99**	**8.26%**
061	Partitions/Soffits	52,171	PSSF	$0	$0	$389,872	$7.47	$9.79	2.38%
062	Special Partitions	443	SPSF	$0	$0	$14,301	$32.28	$0.36	0.09%
063	Interior Openings	93	IDLF	$0	$0	$141,686	$1,524	$3.56	0.86%
064	Interior Finishes	161,611	IFSF	$0	$0	$488,131	$3.02	$12.26	2.98%
065	Interior Fixed Furnishings	39,807	GSF	$0	$0	$319,027	$8.01	$8.01	1.95%

Construction Estimate Summary

School District: Lower Yukon
Project Name: Kotlik K-12
Design Phase: 100% Construction Document
DEED Project #: 01-004
Project GSF: 39,807 SF

Code	Building System	Quantity	Unit	Labor	Material	Total	$/Unit	$/GSF	%
07	**CONVEYORS**	**0**	**CEA**	**$0**	**$0**	**$0**			
071	Passenger Conveyors	0	STOP	$0	$0	$0			
072	Material Handling Systems	0	MHEA	$0	$0	$0			
08	**MECHANICAL**	**12,830**	**MPLF**	**$0**	**$0**	**$1,506,251**	**$117.40**	**$37.84**	**9.19%**
081	Plumbing	92	PFXT	$0	$0	$326,714	$3,551	$8.21	1.99%
082	HVAC	55,595	CFM	$0	$0	$959,554	$17.26	$24.11	5.86%
083	Integrated Automation	27	EA	$0	$0	$2,908	$107.70	$0.07	0.02%
084	Fire Protection	39,267	FPSF	$0	$0	$206,705	$5.26	$5.19	1.26%
085	Special Mechanical Systems	5	SMPT	$0	$0	$10,370	$2,074.00	$0.26	0.06%
09	**ELECTRICAL**	**950**	**TAMP**	**$0**	**$0**	**$884,671**	**$931.23**	**$22.22**	**5.40%**
091	Service and Distribution	800	SAMP	$0	$0	$169,364	$212	$4.25	1.03%
092	Lighting	602	LFXT	$0	$0	$241,718	$402	$6.07	1.48%
093	Power	778	PDEA	$0	$0	$186,035	$239.12	$4.67	1.14%
094	Special Systems	450	SEPT	$0	$0	$205,067	$455.70	$5.15	1.25%
095	Other Electrical Systems	150	EAMP	$0	$0	$82,487	$549.91	$2.07	0.50%
10	**EQUIPMENT AND FURNISHINGS**	**684**	**EFEA**	**$0**	**$0**	**$230,285**	**$336.67**	**$5.79**	**1.41%**
101	Equipment	350	EQEA	$0	$0	$221,384	$632.53	$5.56	1.35%
102	Furnishings	334	FEA	$0	$0	$8,901	$26.65	$0.22	0.05%
11	**SPECIAL CONDITIONS**	**3,850**	**SSF**	**$0**	**$0**	**$567,504**	**$147.40**	**$14.26**	**3.46%**
111	Special Construction	0	SCSF	$0	$0	$0			
112	Special Demolition	3,850	SCSF	$0	$0	$23,210	$6.03	$0.58	0.14%
113	Special Site Conditions	3,350	EWCY	$0	$0	$567,504	$169.40	$14.26	3.46%
SUBTOTAL	**DIRECT CONST. COST**	**39,807**	**GSF**	**$0**	**$0**	**$9,550,176**	**$239.91**	**$239.91**	**58.28%**
12	**GENERAL CONDITIONS**	**21**	**MO**	**$0**	**$0**	**$6,538,932**	**$311,378**	**$164.27**	**39.91%**
121	Mobilization and Demobilization	3,255	TONS	$0	$0	$2,410,305	$740	$60.55	14.71%
122	Site Staff	21	MO	$0	$0	$527,000	$25,095	$13.24	3.22%
123	Temporary Construction	21	MO	$0	$0	$156,900	$7,471	$3.94	0.96%

Construction Estimate Summary

School District: Lower Yukon
Project Name: Kotlik K-12
Design Phase: 100% Construction Document
DEED Project #: 01-004
Project GSF: 39,807 SF

Code	Building System	Quantity	Unit	Labor	Material	Total	$/Unit	$/GSF	%
124	Equipment and Tools	21	MO	$0	$0	$166,350	$7,921	$4.18	1.02%
125	Miscellaneous	21	MO	$0	$0	$47,605	$2,267	$1.20	0.29%
126	Labor Employment Costs	8,175	DAYS	$0	$0	$1,408,420	$172	$35.38	8.60%
127	Mark-Ups	$9,550,176	$DC	$0	$0	$1,822,352	19.08%	$45.78	11.12%
SUBTOTAL PROJECT COSTS			**MO**	**$0**	**$0**	**$6,538,932**	**#DIV/0!**	**$164.27**	**39.91%**
13	**CONTINGENCIES**	**$16,089,108**	**$TPC**	**$0**	**$0**	**$296,366**	**$0**	**$7.45**	**1.81%**
131	Estimate Contingency	$16,089,108	$TPC	$0	$0	$100,000	$0	$2.51	0.61%
132	Escalation Continency	$16,089,108	$TPC	$0	$0	$196,366	$0	$4.93	1.20%
TOTAL CONSTRUCTION COST		**39,807**	**GSF**	**$0**	**$0**	**$16,385,474**	**$411.62**	**$411.62**	**100.00%**

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

Work Topics for the BR & GR Committee

As Of: January 23, 2020

BR&GR 2020-2021 Work Items	Responsibility	Due Date
1. CIP Grant Priority Review – [(b)(1)]		
1.1. FY21 MM & SC Grant Fund Final Lists (4 AAC 31.022(a)(2)(B))	Committee	Apr 2020
1.2. FY22 MM & SC Grant Fund Initial List	Committee	Dec 2020
2. Grant & Debt Reimbursement Project Recommendations – [(b)(2)]		
2.1. Six-year Capital Plan (14.11.013(a)(1); 4 AAC 31.022(2))	Dept	Annually, Nov
3. Construction Standards for Cost-effective Construction – [(b)(3)]		
3.1. Model School Costs (DEED Cost Model)		
3.1.1. Model School Analysis & Updates (Allowable Elements)		Apr 18-May 21
3.1.1.1. Establish Procedures For Updating The Model School	Subcommittee	Jun 2020
3.1.1.2. Implement Model School Updates W/Committee Resource	Committee	Apr 2020
3.1.1.3. Evaluate Success Of Committee-Driven Updates	Subcommittee	Aug 2020
3.1.1.4. Develop Statement Of Services For Consultant Update	Subcommittee	Dec 2020
3.1.1.5. Solicit, Award, And Manage Model School Update	Dept	Feb 2021
3.2. Cost Standards		
3.2.1. Cost Model As Cost Control Tool		May 18-Dec 21
3.2.1.1. Analyze, Recommend Cost Model As Cost Control	Dept	Dec 2020
3.2.1.2. Draft Regulation Language For Cost Control Use	Dept	Jan 2021
3.2.1.3. Review Draft Reg Language, Recommend To State Board	Commmittee	Apr 2021
3.2.1.4. Manage Regulation Development And Implementation	Dept	Dec 2021
3.2.2. Cost/Benefit, Cost Effectiveness Guidelines	Dept	TBD
3.2.3. Life Cycle Cost Guidelines	Dept	TBD
3.3. Commissioning	Committee	2018
3.3.1. Commissioning Agent Qualifications	Committee	Jul 2018
3.3.1.1. SBOE Action on Regulation	Dept	Feb 2019
3.3.1.2. Recommend Approved Credentialing Organizations	Subcommittee	Oct 2019
3.3.1.3. Provide List of Approved Credential Organizations	Dept	Apr 2020
3.4. Model School Building Systems Standards		
3.4.1. State Building Systems Standards		Mar 19- Dec 20
3.4.1.1. Cost Format Outline of System Standards (complete)	Dept	May 2019
3.4.1.2. Review Outline Model School System Standards (complete)	Committee	May 2019
3.4.1.3. Develop Services For Feasibility Analysis (complete)	Subcommittee	May 2019
3.4.1.4. Solicit, Award, Manage Feasibility & Cost/Benefit Analysis	Dept	Jun 2019
3.4.1.5. Review Feasibility Report On Comprehensive Standards	Subcommittee	Jul 19-Sep 19
3.4.1.6. Recommendation on Standards Development	Subcommittee	Sep 2019
3.4.1.7. Solicit, Award, Manage Final Standards Development	Dept	Jun 2020
3.4.1.8. Implement System Standards Via Regulation As Needed	Dept	Feb 2021
3.4.1.9. Coordinate with A4LE to maintain model school standards	Biennially	
3.4.2. School District Building Systems	Dept	TBD
3.5. Design Ratios		
3.5.1. Development of Design Ratio O:EW		
3.5.1.1. Compare Model & Existing School Ratios And Energy Use	Subcommittee	Feb 2020
3.5.1.2. Recommendation of O:EW Ratio for BRGR	Subcommittee	Mar 2020
3.5.1.3. Evauate and Seek Public Comment	Committee	Apr 2020
3.5.1.4. Evaluate Public Comment, Make Recommendations	Committee	Jun 2020
3.5.1.5. Manage Regulation Development & Implementation	Dept	TBD
3.5.2. Development of Design Ratios V:NSF & V:ES		
3.5.2.1. Compare Model & Existing School Ratios And Energy Use	Subcommittee	May 2020
3.5.2.2. Recommendation of V:NSF & V:ES Ratio	Subcommittee	Jun 2020
3.5.2.3. Evauate and Seek Public Comment	Committee	Jun 2020
3.5.2.4. Evaluate Public Comment, Make Recommendations	Committee	Sep 2020
3.5.2.5. Manage Regulation Development & Implementation	Dept	TBD

BR&GR 2020 Work Items	Responsibility	Due Date
3.5.3. Develop Test Method for Ratios	Subcommittee	Jul 2020
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. FY21 CIP Briefing – Issues and Clarifications	Dept	Dec 2019
5.2. FY22 CIP Draft Application & Instructions	Dept	Apr 2020
5.2.1. Facility Condition Survey Minimum Standards	Dept	Dec 2019
5.2.2. Life Safety/Protection of Structure/Code Deficiency Matrix Review	Cmte	Jan 2020
5.2.3. Emergency Rater Scoring Matrix	Dept	Mar 2020
5.2.4. Priority Weighting Factors Review	Dept	TBD
5.3. FY22 CIP Final Application & Instructions	Committee	Apr 2020
5.4. Space Allocation Issues	Subcommittee	Dec 2020
5.4.1. Analyze and Make Recommendation to Committee	Subcommittee	Dec 2020
5.4.2. Manage Regulation Development and Implementation	Dept	Jun 2021
5.5. Projected Unhoused (erosion/environmental factors)	Subcommittee	TBD
5.6. Life Safety/Code Matrix Premature Failure Scoring		
5.6.1. Prepare Briefing Paper/Analysis	Dept	Mar 2020
5.6.2. Review, Discussion, Seek Comment	Committee	Apr 2020
5.6.3. Draft Adjusted Matrix	Dept	Dec 2021
5.6.4. Approve with FY23 CIP	Committee	Apr 2021
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 – Initial	Dept	May 2020
Alaska School Facilities PM Handbook – Initial	Committee	Jun 2020
Alaska School Facilities PM Handbook Final	Dept	Aug 2020
Alaska School Facilities PM Handbook Final	Committee	Sep 2020
6.1.3. Guide for School Facility Condition Surveys - Initial	Dept	Sep 2019
Guide for School Facility Condition Surveys – Initial (rev 1)	Dept	Mar 2020
Guide for School Facility Condition Surveys – Initial (rev 1)	Committee	Apr 2020
Guide for School Facility Condition Surveys – Final	Dept	May 2020
Guide for School Facility Condition Surveys - Final	Committee	Jun 2020
6.1.4. Cost Format - Initial	Dept	Dec 2019
Cost Format – Initial (rev 1)	Dept	May 2020
Cost Format – Initial (rev 1)	Committee	June 2020
Cost Format – Final	Dept	Aug 2020
Cost Format – Final	Committee	Sep 2020
6.1.5. Site Selection Criteria and Evaluation Handbook – Initial	Dept	Jan 2021
Site Selection Criteria and Evaluation Handbook – Final	Committee	May 2021
6.2. New Publications		
6.2.1. School Construction Standards Handbook (see 3.4.1)		
6.2.1.1. Construction Standards Handbook – Draft	Dept	Aug 2020
6.2.1.2. Construction Standards Handbook – Draft	Committee	Sep 2020
6.2.1.3. Construction Standards Handbook – Final	Dept	Nov 2020
6.2.1.4. Construction Standards Handbook – Final	Committee	Dec 2020
6.3. Regulations		
6.3.1. LPSD PM Compliance Reg Proposal		
6.3.1.1. Prepare Briefing Paper	Dept	Jun 2020
6.3.1.2. Committee Consideration and Recommendation	Committee	Sep 2020
6.3.1.3. Draft Regulation (if recommended)	Dept	Nov 2020
6.3.1.4. SBOE Review and Public Comment	Dept	Dec 2020

BR&GR 2020 Work Items	Responsibility	Due Date
6.3.1.5. SBOE Comment Review & Approval/Disapproval	Dept	Mar 2021
6.3.2. Cost Model as Cost Control Tool (see item 3.1.3)	Dept (w/Cmte)	
6.3.2.1. Draft Regulation	Dept (w/Cmte)	Mar 2021
6.3.2.2. SBOE Public Comment on Regulation	Dept	Sep 2021
6.3.2.3. Review Public Comments from SBOE Comment Period	Committee	Nov 2021
6.3.3. Baseline Design Ratios (see item 3.5.2)	Dept (w/Cmte)	
6.3.3.1. Draft Regulation	Dept (w/Cmte)	Sep 2020
6.3.3.2. SBOE Public Comment on Regulation	Dept	Dec 2020
6.3.3.3. Review Public Comments from SBOE Comment Period	Committee	Jan 2021
6.3.4. Reuse of School Plans and Systems (see item 4.2)	Dept (w/Cmte)	
6.3.4.1. Draft Regulation	Dept (w/Cmte)	Sep 2021
6.3.4.2. SBOE Public Comment on Regulation	Dept	Dec 2021
6.3.4.3. Review Public Comments from SBOE Comment Period	Committee	Jan 2022
7. Energy Efficiency Standards – [(b)(8)]		
7.1. ASHRAE 90.1		
7.1.1. DEED Checklist		Jan – Jun 20
7.1.1.1. Update DEED Specific Review Checklist to 2016 Ed.	Dept	Sep 2020
7.1.1.2. Review Checklist for Public Comment	Committee	Sep 2020
7.1.1.3. Review Public Comment/Finalize Checklist	Dept (w/Cmte)	Dec 2020
7.1.1.4. Implement Revised Checklist in New Project Agreements	Dept	Aug 2021
7.1.1.5. Add Appendix to *Project Admin Handbook*?	Dept	Sep 2022
7.1.2. Standards Updates		
7.1.2.1. Evaluate ASHRAE 90.1-2016 for adoption (complete)	Dept	Sep 2019
7.1.2.2. Draft Regulations, if warranted (complete)	Dept (w/Cmte)	Dec 2019
7.1.2.3. Review Public Comment from SBOE Comment Period	Committee	May 2020
7.2. Retro-Commissioning Evaluation Tool (for PM Certification)		
7.2.1. Develop Tools to Evaluate Retro-Commissioning Need	Subcommittee	Mar 2020
7.2.2. Develop C/B Tool and RCx Template	Dept	Apr 2020
7.2.3. Review Proposed RCx Tools & Metrics	Committee	Jun 2020
7.2.4. Public Comment Period	Dept	July 2020
7.2.5. Implementation – All Districts FY23 CIP Eligibility	Dept	Aug 2020

Projected Meeting Dates

March 19, 2020 (Teleconference) (2 hours) –
- PM Narratives Matrix – 2nd Look
- Emergency Scoring for Imminent Danger (environmental)
- Briefing Paper on Pre-mature Failure LS/Code Points

April 14-15, 2020 (Juneau), Full day +
- Final CIP Lists
- Review O:EW Ratio Recommendation
- Review of Escalation Model School elements
- Review list of Cx Credentialing Orgainzations
- FY22 Draft CIP Application and Instructions
- Guide for School Condition Surveys – Initial

June 16, 2020 (Teleconference) – (3 hours)
- Review V:NSF and V:ES Ratio Recommendation
- Recommend Final O:EW Ratios
- Alaska PM Handbook – Initial
- Cost Format - Initial
- Guide for School Condition Surveys – Final
- Review Proposed RCx Tools & Metrics

September 8, 2020 (Teleconference) – (3 hours)
- Recommend Final V:NSF and V:ES Ratios
- Alaska PM Handbook – Final
- Cost Format – Final
- Construction Standards Handbook – Initial

BR&GR 2020 Work Items **Responsibility** **Due Date**

- Briefing Paper on Proposed LPSD Regulations
- Draft Regulations for Baseline Ratios
- Review ASHRAE 90.1 Checklist Update

December 2, 2020 (Anchorage) – Full day

- Construction Standards Handbook – Final
- Approve FY22 Initial Lists
- Space Guideline Subcommittee Recommendations