A Report to the Legislature

Legislative Resolve No. 55

Use of Prototype Designs in Public School Construction Projects

April 1, 1998

Introduction

By concurrent resolution, the Alaska Legislature passed Legislative Resolve No. 55, relating to the use of prototype design in public school construction projects and requested that the Governor direct the Department of Education to undertake four primary tasks:

1. Develop prototype designs;

2. Identify components within prototype building designs that can be standardized and incorporated in school designs where prototypes may not be appropriate,

3. Consult with the Bond Reimbursement and Grant Review committee, formed under AS 14.11.014, to develop incentives for districts to use prototype school designs, and

4. Report to the legislature by April 1, 1998, suggested statutory changes necessary to implement incentives.

The following addresses the reporting requirements of Legislative Resolve Number 55.

Background

On February 19 and 20, 1998, the Bond Reimbursement and Grant Review Committee (BRGRC) met in Juneau. The primary agenda item addressed at this meeting was the subject of prototypes. The committee's discussions covered the full range of topics regarding prototypes, including: use of prototypes; prototypical components and their use; and, incentives to promote use of prototypes.

The committee also discussed the potential for direct benefits that may be realized by districts using prototypes. These potential benefits include:

- Shorter completion schedule since design is mostly complete,
- Lower startup and break-in costs to the district (an important savings since these costs are often funded from the operating budget,

- Lower life cycle costs, including the on-going costs for operations, maintenance and repair,
- Lower costs for maintenance staff training, parts stocks and repair times when standard components are used,
- Lower design fees resulting in lower project costs for both the district and the state, for example: in the case of a $10 million dollar new school construction project, typical design fees would run from 8% to 10%. A proven prototypical design, with few or no changes, could expect a design fee of approximately 6%.

This would result in potential savings as shown below:

Construction	$10,000,000	$10,000,000
Design @ 10%	$1,000,000	
Design @ 6%		$600,000
Total	$11,000,000	$10,600,000
District Share @ 30%	$3,300,000	$3,180,000
District Savings	**$120,000**	
State Savings	**$280,000**	

This illustrates the potential magnitude of immediate, direct savings based on design fee reductions to districts using prototypical designs. However, these savings are **only** realized after a prototypical design is developed and proven. The initial cost of developing a prototypical design may exceed the usual 8% to 10% range.

Requirements for Effective Use of Prototypes

The BRGRC found that to be effective, any program using or promoting the use of prototypes would need to do the following:

- Educate districts about the benefits of utilizing prototypical designs
- Educate community members and teachers about the benefits of using prototypical designs

- Use a prototypical design appropriate for the geographic region and site conditions
- Allow sufficient flexibility to meet the needs of a range of population sizes
- Integrate peer reviews and constructability reviews in the design process

- Mandate value engineering to assure low life cycle costs
- Use post-occupancy reviews as feedback for prototype improvement
- Control revisions to the design
- Collect actual costs for site, land, design, construction, equipment and administration of school construction and major maintenance projects

Limitations on the Use of Prototypes

The BRGRC also found that there were situations where the application of prototypical designs would probably not be successful or which would require several alternate design options. These constraints on the successful application of prototypes included:

- The project constrained to a site which would not support the prototypical design
- Inability of the design to adapt to different educational programs
- Inability to vary school size for different student population
- Varying requirements due to geographical differences: wind loads, seismic zones, snow loads/snow drifting, soil conditions, climate
- Access to the support required for on-going maintenance of technologically complex systems
- Existing and required infrastructure not met or addressed by the design
- Need to adapt to and keep current with codes and technologies
- Material requirements limited by transportation constraints

Reasons for Using Prototypes and Their Relationship to Incentives

Prototypes are most effectively used to achieve long-term economic savings and to meet a rapid growth in population. Savings commonly come from several areas, including:

Short-term advantages

- lower costs associated with design fee savings, *after* the first prototype;
- lower startup costs, *after* the first prototype;
- fewer costs associated with initial building break-in, *after* the first prototype;
- quicker completion of school construction through shortening of the project development process, *after* the first prototype;

Long-term advantages to districts

- lower operation and maintenance costs if standardized systems are used district-wide;
- lower life-cycle costs after the design is refined and proven.

While various short-term advantages accrue to districts from the use of prototypical designs, the only short-term advantage, which may accrue to the state, is a saving in design fees. In the long-term, the state will also benefit from lower life-cycle cost, including a longer time between building and component replacement.

One of the first criteria for the application of an incentive system is to decide which of the cost savings must occur, and to what degree they must occur, before a district should receive direct monetary rewards for having used a prototype design. Also, it should be determined that there was actually a saving which accrued to the project, not merely a positive variance which was the result of initial over-budgeting. Another consideration to review before statutory changes are contemplated is whether any portion of the state share of a saving should be shared with the local district.

If the state saving is to be shared, then a decision regarding how much of the state share of the savings should be given to districts must be made. A decision basis regarding the validity of savings claims must formulated. The decision basis will require criteria for evaluation of claimed savings. This on-going evaluation of costs will require districts to accurately report costs on a "total project" basis, as opposed to only accounting for the amount funded by an individual state grant or bond allocation on an "as funded" basis.

All of these factors should consider that there are initial costs for development of a prototypical design program which will delay the realization of any savings, and which may actually incur costs over what might be experienced on an individual school design. Savings would not be realized until the second or third implementation of the design, and then only if changes were minimal.

Incentives and the Requirement for Statutory Changes

The result of the BRGRC discussions of development of incentives for use of prototypical school designs produced the following suggestions:

Incentive #1: Reduction to required participating share - For districts using prototypes, reduce the participating share requirement.

To implement this would require a change to AS 14.11.008. Changes should include factors to be met before a reduction in participating share is made and the sliding scale for the reduction. Consideration should also be given to disincentives, which might be applied if a prototype is used and no savings are achieved. The primary statutory changes require definition of the factors to be considered before they can be drafted. A secondary change needed is an addition to AS 14.11.020. This could be phrased: "(e) if a municipality that is a school district, a school district or a regional educational attendance area accepts a grant or debt reimbursement from the state for a school construction or major maintenance project, the recipient shall report costs for the total project."

Incentive #2: Change to application scoring criteria - Provide scoring criteria changes that would benefit projects which use prototypes.

To implement this would require an addition to AS 14.11.013(b).

The addition would add a new section AS 14.11.013(b)(6) "whether the district used a prototypical design or prototypical design components which resulted in long or short-term cost savings."
The Bond Review and Grant Reimbursement Committee could craft actual application scoring criteria.

Incentive #3: Share savings with district - Provide for sharing the savings with the state by allowing an increase to the allowance for the equipment budget for the project.
Statutory change not required. This incentive can be implemented by regulation.

Incentive #4: Districts retain 100% of savings - Allow districts to keep all of the savings for use in funding additional facility maintenance, facility enhancements or additional technology.
Statutory change not required. Currently under the control of the legislature through the budget and reappropriation process

Incentive #5: Direct savings to other district facilities projects - Direct savings toward other district facility projects; either the entire savings or a portion of the savings.
Statutory change not required. Currently under the control of the legislature through the budget and reappropriation process

Incentive #6: Allow additional space as a variance to space guidelines - Allow additional space by providing for a variance to the space guidelines for schools using prototypes.
Statutory change not required. This incentive can be implemented by regulation.

Incentive #7: Provide block funding - Offer yearly block funding and a program to guarantee funding loans or bonds, to be paid back from the block funding allocation. This option would include a minimum mandated expenditure for maintenance and, renovation and renewal.

Statutory change required.