Moolin Seminar: Alternative Project Delivery Systems for Governments in Alaska

Are there legal alternatives to low-bid construction contracting by governments in Alaska? The default project delivery system for governments in Alaska (and nationwide) is Design-Bid-Build (DBB), which awards the construction contract to the lowest bidder that can obtain bonding. Faced with complex projects and tight schedules, governments often see an advantage in alternative systems such as Design-Build (DB) and Construction Manager at Risk (CMAR, also called General Contractor/Construction Manager). Often smaller projects, special projects, and projects in rural Alaska benefit from other project delivery systems such as Job Order Contracting, Force Account, Emergency Contracting, or novel project systems based on local needs and resources. State of Alaska and Federal procurement codes allow alternatives to DBB under some circumstances and most of these alternative methods have been used in Alaska. So, how are they working?

On November 18th, UAF Civil and Environmental Engineering, in partnership with the Fairbanks Branch of the ASCE, and with help from the AGC of Alaska, held a Moolin Seminar to learn first-hand from governmental project managers how these alternate systems work in Alaska. Frank P. Moolin, Jr., served as Senior Project Manager for the pipeline portion of the Trans-Alaska Oil Pipeline project from 1973 to 1977. Frank Moolin had a dream to become a teacher so as to share his insights into management, and especially the management of very large “mega” projects, with the next generation of engineers and project managers. Unfortunately, that dream was not to be fulfilled, as he died of leukemia in 1982. Following his death, Mr. Moolin’s family generously contributed funds in his memory to support engineering management education at the University of Alaska Fairbanks.

What is an alternate delivery system? Let’s start with the *project delivery system*. Projects go through stages: Needs and Planning, Design, Construction, O&M, and Demolition. The project delivery system defines the relationships, roles, and responsibilities of the project team and sequence of activities required to build the project. The delivery system is usually chosen in the planning stage of the project. Likewise in the planning stage, the procurement method and contract type are often decided. While project owners from private industry have discretion about the project delivery system, governmental owners are tightly bound by procurement laws and regulations that are designed to insure the public confidence by demonstrating procurement accountability, transparency, equity and fair dealing. For over a century, selection of the low-bidder via competitive sealed bids has been the gold standard of public procurement. However QBS (qualifications-based selection) was permitted for A/E and other professional services, where the vendor was expected to represent the best interest of the government. For construction this meant that the owner would hire an A/E based on QBS, the A/E would produce plans, specs and bidding documents, the project would be publicly advertised, and the construction contract would be awarded to lowest bidder that could produce the requisite bonding. While this method, DBB, usually gives the owner the lowest initial price, it has many disadvantages: 1. it is slow, since there are two procurements, one for the A/E and one for the contactor, plus the bidding time, 2. It does not allow for the contractor’s expertise in construction to be included in the design, 3. The owner does not know the price until the bids are opened, and 4. Complex project will have changes, often many changes, and the negotiations regarding changes are quite asymmetrical since the contractor is the expert on the contractor’s costs. Most importantly, in the author’s mind, there is no incentive to develop goodwill between the contractor and the owner or A/E, for example, each changed condition will put the owner and the contractor on opposite sides of a cost discussion rather than on the same side trying determine the best method of solving the problem.

At the 2015 Moolin Seminar the participants learned about job order contracting, especially the Air Force SABER contracting system, from Captain Chris Edlund of the 354 Civil Engineering Squadron at Eielson AFB. SABER, which stands for simplified acquisition of base engineering requirements, selects a contractor for up to 5 years based on a “best value” procurement, which includes matters other than price. That contractor can be used for smaller projects up to $750,000. The price of each job is determined by applying a “coefficient” which the contractor included in his proposal, to a unit price that is contained in a UPG (Unit Price Guide) that was supplied before the bid. Some special items not in the UPG can be negotiated. The impression was that SABER works very well for project of this type. Design by a consultant A/E is not usually part of a SABER contract. Using SABER, the time from “idea” to contract is typically 7 to 14 days, compared with 4 months to a year for typical DBB contracts.

Design-Build (DB) may be the oldest project delivery system, a “master builder” did the design and construction of the entire project. For modern DB, the owner contracts with one business entity, the builder, that supplies both the design and the construction. In order to use DB for competitive proposals, some design specification of the owner’s requirements must be included in the RFP. These could be a very basic description of the owner’s needs, or more prescriptive up to about a 35% design. In any case, DB leaves many or all details of the design to the builder.

At the Moolin seminar, Paul Schneider, PE, and Mike Gaulke, PE, of the Alaska District Corps of Engineers described their DB process. Their RFP contains the project functional requirements, design & engineering criteria, and technical performance specifications, but does not contain detailed plans and specifications. The contract is awarded on the basis of not only initial construction cost, but also technical quality, offeror qualifications, management expertise, life-cycle costs, esthetics, and other factors identified in the RFP. Since the technical proposal is very expensive to prepare, there are two main options to enhance competition. One is to use a two phase process, or pre-qualification, where only the proposers most likely to be competitive will be asked to submit technical proposals. The second method, which does not exclude the first, is to award stipends to the second and third best proposals to partially cover their costs of proposal preparation.

Schneider and Gaulke mentioned several advantages of DB. Besides the fact the DB is usually faster, another advantage is that there is a potential for better design and construction coordination. Since the builder is responsible for errors and omissions in design documents, there is less administrative burden on the owner and the owner does not have to arbitrate disputes. A possible disadvantage is that the owner has less control of design process and there is a potential for reduced quality. Also, since there are fewer qualified DB contractors, there is less competition. Also, the selection process is costly for the owner, since a technical proposal must be evaluated.

CMAR stands for Construction Manager at Risk although sometimes that delivery system is termed Construction Manager/ General Contractor (GM/GC). While that method is common for large private projects, its use for governmental contracts is less common. In CMAR the owner uses QBS to select an A/E to design the project. Shortly after the A/E is hired, the owner issues an RFP for a CMAR. Selection of the CMAR is heavily weighted towards qualifications. Often the RFP asks for a price. If so, the price is in a separate envelop and not considered until the qualifications are evaluated. The weight of the price versus the qualifications is stated in the RFP. Most CMAR contracts have two phases, preconstruction services and construction. During the preconstruction, the CMAR advises the owner of the estimated costs of the project, as well as constructability, schedule, special materials, and other issues. Typically the CMAR and the A/E do independent cost estimates at various design stages and the owner, A/E, and CMAR work together to reconcile the estimates. After the project design is about 95% complete, the CMAR is asked for a GMP, guaranteed maximum price. After that is accepted by the owner, the contractor is issued the construction contract. One advantage of the CMAR system is the CMAR can be given a work order to do preliminary work or order long-lead time materials during the during the preconstruction stage – fast track. If the CMAR and the owner can’t agree on a GMP, since the owner paid the CMAR for his advice during the preconstruction phase, the owner can terminate the CMAR contract or simply not proceed with the construction phase, and then issue a standard RFP for open bidding. The integrity of the GMP is supported during construction, when sub-contractors are asked for competitive bids. For vertical construction, most of the work is subcontracted, so most of the contract is indeed competitive. Sometimes it is advisable for the CMAR to self-perform some of the work. This is usually done on cost plus fee basis, where the fee percentage is often requested in the original RFP.

At the Moolin seminar attendees heard about CMAR on the William Jack Hernandez Sport Fish Hatchery from Dave Kemp, PE, from DOT Public Facilities and Scott Davis of Kiewit Building Group. Cameron Wohlford, PE, and Mike Ruckhaus, PE, of UAF spoke about a number of UAF projects that used CMAR. The four were overwhelming supportive of CMAR for complex vertical construction. The DOT&PF built the hatchery for Alaska Fish and Game and it was a complex project involving the existing hatchery; UAF buildings are complicated because they have operating facilities intertwined and a schedule fixed by the academic calendar. Of course issues do arise. One important issue is the portion of the project that the contractor is allowed to self-perform. Some states’ procurement systems specify minimum and maximum amounts of self-performance; although Alaska statues do not. Another issue is the bidding of the subs. For example if the project had very complicated mechanical system, it would make sense to have a QBS selection of the mechanical sub, or better, have the most qualified mechanical sub participate in the preconstruction phase. On the other hand, the general contractor who is the CMAR should have a good grasp of all the trades.

An interesting variant of CMAR regards it use for horizontal construction, heavy construction like highways. Unlike vertical construction, horizontal construction contractors traditionally subcontract very little work. How does a governmental owner of a project like a bridge or highway prevent the appearance that CMAR is just a negotiated cost plus contract? Mike Lund, PE, and Lauren Little, PE, of the DOT outlined two methods they used in the Parks Hwy MP 237 Riley Creek Bridge Replacement project. A fundamental element of horizontal CMGC is the use of an ICE, Independent Cost Estimator, who provides independent estimates, along with the design engineer. The ICE is involved in meetings, teleconferences, site visits and will prepare a confidential bid just like a competing contractor. The ICE will solicit sub-bids for what work is to be sub-contracted. Another risk management tool is the use of bid schedules rather than a GMP. Once a building is above the foundation, there are few unknown risks, while for dirt work there are risks from hidden unknowns below the surface of the entire highway project as well in material sources. The bid schedule is a blend of lump sum, contingent sum, and unit price items as way to allocate risk between the two contract parties. Alternatively, the bid schedule may be used partly and the GMP for the rest of the project.

Risk registers and innovation lists are developed during the preconstruction phase. Here might be the key advantage of CMAR, the contractor can help the owner and the designer identify risks and possible innovations early in the project design stage, where the cost of changing the design is feasible. Both risks and innovations can then be tracked during the pre-construction. Unlike DBB, use of CMAR by governments requires some specific approvals, DOT by the Commissioner and Alaska Attorney General’s Office and UAF by the Regents. The proponents must demonstrate that CMAR will yield the best value to the state. The legal aspects of CMAR were discussed by Mike Kramer of Kramer Associates. Because the use of CMAR by governments is somewhat novel in Alaska, there have not been any Alaska Supreme Court cases that define CMAR issues.

While DB and CMAR are the most common alternative methods, emergency construction is often needed – often in remote regions of Alaska’s highway system. Clark Milne, PE, of DOWL gave a presentation on emergency contracting by the DOT – Clark had been the DOT Northern Region’s maintenance engineer for the last decade. Clark noted that for a situation to be deemed an “emergency,” in the official sense, it must be defined as such with a detailed Emergency Declaration by the Governor in order to get State assistance, and also by the President if the state endeavors to receive Federal financial assistance. For the DOT, the initial stage of the emergency response is usually accomplished by the DOT’s own maintenance crews. However these efforts are limited since the equipment and personnel on hand are limited and they still have their routine maintenance operations to execute, some of which cannot be deferred. Also, working long hours quickly becomes a safety hazard. Thus external contractors are called in. The hiring of these contactors is governed by FHWA and FEMA requirements, both of whom have extensive manuals and procedures for emergency hires of contractors and work execution. The formal, detailed process of cost accounting is mandatory for the state to succeed with getting reimbursed for the emergency response costs, although it is generally understood that “betterments” are not eligible for reimbursement.

Regarding construction, the notion of “government” might be extended in some sense to other entities, like utilities and hospitals, while not subject to state or federal procurement regulations nonetheless have their operations subject to public scrutiny. Paul Perreault, PE, who is completing his PhD in Arctic Engineering at UAF, had formerly worked in 35 years in the northern Alaska bush and had worked in at least 50 villages and Katrina Monta, a UAF engineering management student from Ketchikan, discussed contacting forms and especially quality control in remote projects. Paul presented three projects, one built by local volunteer labor, one built by labor-contract with the tribal council, and one using professional contractors. Paul touched on contracting problems following the transportation problems as well as addressing changed conditions. Quality control varied as well, typically using periodic overview or some on site monitoring. Clearly, from Paul and Katrina’s talks, it’s clear that “one size does not fit all” when working in the bush. That is, besides the various owners’ needs and designs developed, in order to have successful construction, local conditions: labor, climate, transportation details such as runway condition and river stage, and contracting method must be considered.

After the speakers, the participants broke into three groups and discussed: quality control, rural issues, and claims. All in all, the seminar evaluations indicated that the seminar participants learned about alternative project delivery systems and felt their time was spent. There was general agreement among the speakers that alternative project delivery systems have worked very well for some governmental projects in Alaska.