



Engineering Law and Cooperative Purchasing for Roofing in North Carolina

Is the Fox Guarding the Henhouse?

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Background

The need to repair or replace roofing systems in the public sector is a hot debate. What is the best method for ensuring the owner receives a quality product for their investment while protecting the public at large?

In recent years there has been an increase in the use of cooperative purchasing to award roof construction projects in the public sector. This practice is advertised by the cooperative purchasing agencies to speed up the award of construction projects at an agreed upon (and allegedly lower) cost.

This paper will explore this practice in the roofing industry and identify financial, safety and legal pitfalls that may be overlooked.

The terms "Engineer" or "Engineering" used herein could be replaced with "Architect" or "Architecture" and not diminish the intent.

Cooperative Purchasing Project Delivery

Generally stated, cooperative purchasing is an agreement whereas public or private businesses or entities pool demand for purchasing products at previously agreed upon prices. Often times, these products are delivered at a reduction in cost due to the economy of scale.

Think, for instance, of a school system that wishes to purchase pencils in bulk. Currently, at a national retailer, a 24 pack of pencils costs \$6.39 (\$0.27/pencil) while a 72 pack from the same manufacturer costs \$11.00 (\$0.15/pencil). That is a whopping savings of 44% per pencil when purchased in bulk. The larger the quantity of items purchased, the lower the cost of the individual unit. The concept is the same as the idea behind cooperative purchasing. Multiple companies or public entities create the larger quantity need, therefore, the supplier can reduce the cost accordingly. Sounds great, right?

A nationwide lumber retailer lists an 8 foot long 2x4 for \$2.67 each in Charlotte, NC. That same retailer lists the same 2x4 for \$2.52 in Miami, FL and \$2.95 in Manhattan. If a group of companies or public entities decided to pool their interests to form a cooperative agreement for purchasing lumber with this retailer, what would be the agreed upon cost for a 2x4? This agreement could result in purchasers in Charlotte, NC paying 10.5% more for their lumber than they otherwise would, and purchasers in Miami, FL paying a 17% premium.

This analogy may overly simplify the concept, however it brings up an interesting consideration. Generally, the supplier will price the materials based on cost and profit; and therefore, regional differences that may provide a price advantage for some will be lost in the process.

For a roofing project under a cooperative purchasing agreement, a roof system manufacturer typically acts as the designer by working with the owner to create specifications with products purchased through the cooperative purchasing agency. This practice creates a conflict in that it is in the designer's (in this case the material manufacturer) best financial interest to specify products that will generate income for said manufacturer.

A brief internet search returns a long list of cooperative purchasing agencies. Most are private for profit corporations that offer products and services to K-12 School Districts and Higher Education Facilities throughout the United States. Although none of the agencies researched listed fees on their website, it has been widely reported that a 4% markup on sales is standard in the industry. Additionally, as explained later, cooperative purchasing agencies only list a few (in many instances, one) product manufacturers thereby removing one level of competition from the process.

This results in a minimum 4% premium being paid in addition to the costs associated with decreased competition and proprietary specifications.

Conventional Design-Bid-Build Project Delivery

The traditional method of Design-Bid-Build incorporates a designer (generally an Engineer or Architect) and a Contractor; both working directly for the Owner. The designer determines the Owner's needs and works within the budget limitations to prepare construction specifications and details (including specific products and/or material performance requirements) based on these factors. Generally, designer's fees are fixed, and negotiated on the front end of a project. The designer should not have a financial interest in the products being specified; if he or she does, then an unnecessary bias can be introduced. Contractors bid on the project based on the requirements outlined and the project is typically awarded to the lowest responsive bidder.

When the specifier lists multiple product manufacturers, each manufacturer submits price sheets to the contractors during the bid process. The contractors select the materials based on which product or manufacturer will give them the greatest advantage for securing the project. Since the manufacturers are aware of the competition from other vendors, they provide their pricing similarly (what gives me the best opportunity for securing this project?).

In this instance, bids are based on multiple levels of competition; material manufacturers, subcontractors and contractors all bidding on the same project.

In a cooperative purchasing project delivery, the

manufacturers are limited to those who have agreed to work with the agency. Upon searching several of the cooperative purchasing agencies websites (in most instances), one would find only one or two manufacturers listed for roofing products. The use of one of these cooperative agencies removes the level of competition between different manufacturers (on top of the 4% agency markup). In a public setting, this could result in a substantial increase in cost to the taxpayers compared to that realized by a Design-Bid-Build process.

State Laws

All states have laws regarding professional services for construction projects. For example, North Carolina General Statute (NCGS) 133 prohibits the employment of any design professional for services on public work who will "knowingly specify any building materials, equipment or other items which are manufactured, sold or distributed by any firm or corporation in which such designer or specifier has a financial interest by reason of being a partner, officer, employee, agent or substantial stockholder." The statute continues by saying "It shall be unlawful for any architect, engineer, designer or draftsman, employed on county, State, or city works, to employ or allow any manufacturer, his representatives or agents, to write, plan, draw, or make specifications for such works or any part thereof." These statutes are intended to eliminate the potential for a conflict of interest in specifying materials.

This same statute also states that all repair projects in excess of \$300,000 require the services of an Architect or Engineer. Many have interpreted this statute to mean that an Architect or Engineer is ONLY required when the project costs exceed \$300,000 however this interpretation is both incorrect and dangerous. Any time Engineering work is performed, it MUST be performed by a licensed engineer working for a licensed firm.

NCGS 89C states that it is "unlawful to practice engineering or land surveying without licensure". This requirement (with a few exceptions) is not dependent upon costs. If engineering services are performed, they MUST be rendered by a Licensed Engineer, regardless of construction costs.

For a replacement roofing system to be properly designed, one must determine the existing structure's ability to support the weight of the replace-

ment system as well as its ability to withstand the loads imparted on the structure due to other factors (wind, snow, etc.). The existing drainage characteristics of the building (primary and emergency overflow drainage) must be analyzed and compared to the requirements of the building code. Thermal resistance and dew point determinations are additional considerations. All of these analyses are engineering functions and in accordance with NCGS 89C, must be performed by a licensed engineer. Otherwise, at a minimum, a Class 2 misdemeanor has occurred and at worst, the public has been exposed to a potentially hazardous situation.

A roof system can catastrophically fail in several ways: collapse due to excessive loads (rain loads due to inadequate primary drainage; rain loads due to stopped up roof drains and inadequate emergency overflow drainage; excessive weight of the roofing system itself; excessive equipment or construction loads); blow off due to inadequately secured components to name a few. Each of these failure modes represents a risk to those in or around the facility, and for these reasons, the engineering laws were created.

Case Study of Recent Roofing Project Using Cooperative Purchasing

Recently, a school system in the southeast United States performed a roof replacement project utilizing a roof system manufacturer's representative as the designer with the products specified purchased through a national purchasing cooperative. REI contacted the School Board to express concern regarding the practice from both a fiduciary responsibility and a public safety standpoint. The school board responded by saying thanks for the concern and they would look into the process and correct accordingly. It is worth noting that the initial response was the only response received by the school.

Upon review of the available documents, several instances were noted where the specifications did not conform to the building code. Additionally, although multiple product manufacturers were included in the specifications, the performance requirements were so restrictive that they were limited to a single manufacturer (the company of the representative who prepared the specifica-

tions). The pre-bid meeting was attended by the school's maintenance director, the material manufacturer's representative and 4 roofing contractors. The material manufacturer's representative certified the bid tab and the project was awarded to the low bidder for approximately \$435,000.

Subsequent to this process, REI Engineers asked one of the bidding contractors to provide a price to replace the same roof utilizing a similar roofing system but with additional manufacturers allowed for consideration. Incidentally, this contractor initially bid \$500,000 for the work. Due to the systems being similar, the only variable in this exercise was the cost of the materials. After review, the contractor provided a revised cost of \$310,000 for the same work utilizing a different manufacturer's product. This is 38% less than his initial cost (which utilized the materials from the cooperative purchasing agency) and a 28% reduction from the contract awarded to the low bidder.

The school system paid a significant premium to have a replacement roofing system specified by a material manufacturer's representative who is not a licensed design professional. If this roof system fails and subsequently causes injury to someone, where does the liability lie? Although multiple parties will be exposed, the school itself will most likely carry a majority of the risk.

REI has reviewed multiple instances of roof replacement projects awarded through a cooperative purchasing agreement and in every instance, the Owner paid more than what should have been paid for a properly designed and installed system with equal (or greater) performance; even considering the addition of Engineering fees and modifications to conform to the building code.

Breakthroughs in the Public Awareness

Some public entities are catching on to the pitfalls associated with cooperative purchasing for construction projects. For example, earlier this year an audit was conducted of Baltimore County Public Schools (BCPS) and its practice of "piggy backing" off other governmental contracts rather than utilizing the design-bid-build process.

Following is an excerpt from the audit report:

"Our analysis of nine BCPS roofing projects completed from August 2011 through De-

ember 2013 disclosed that the average cost of their projects was \$22.76 per square foot whereas the largest school system in the state replaced two roofs during the summer of 2013 using competitive procurements for an average of \$13.70 per square foot. Another school system received bids for a roof replacement in April 2014 and the winning bidder's price was \$14.01 per square foot. BCPS paid this same Program vendor approximately \$31.4 million to replace 1.45 million square feet of roofing during the period from July 2010 through November 2013. We estimate that the amount paid was \$11 million greater than the recent more expensive square foot costs of approximately \$14 per square foot paid by one of the two aforementioned school systems."

The full audit report can be found at www.ola.state.md.us/reports/schools/bcps15.pdf

Earlier this week a news report was issued in Minnesota outlining excessive costs for roofing projects at St. Cloud Schools when awarded through a national purchasing cooperative. The sources quoted in the report estimate the school district overpaid approximately \$4 million to award roofing work through a purchasing cooperative than what they otherwise should have paid for a conventional design-bid-build delivery process. The report also noted that roofing is the only construction process that is available through this particular cooperative. As a result of the investigation, the Minnesota Office of State Auditor issued a letter outlining recommendations for preparing specifications and awarding contracts. Interestingly, the recommendations outlined by the Auditor are nearly identical to North Carolina General Statute 133. This report can be found [here \(alternate link\)](#).

Texas, California, Indiana and Pennsylvania have performed internal purchasing reviews with similar conclusions. Other states are following suit.

Within the last several months, we were contacted by the attorney representing the school system previously referenced in this report. The attorney advised that future construction projects for this school system will be secured under a design-bid-build process with both labor and materials

bid in a competitive environment. This is a great step forward for this particular school system. This process will save money, protect the public by addressing code deficiencies and meet the new standards for long term performance.

Further progress can be achieved through a continued information campaign. Once the stewards of our public institutions learn of the real cost associated with cooperative purchasing for construction projects, more entities will reconsider their approach. REI Engineers will continue to study this practice and provide information as it becomes available.



REI Engineers provides expert design and remediation consulting for building envelope (BE) systems including roofing, waterproofing, windows and exterior walls. Our clients are school systems, building owners, facility managers, design professionals and contractors throughout the Eastern United States.

Our highly trained team consists of Licensed Engineers and RCI, Inc. Registered Professionals including Registered Building Envelope Consultants (RBEC), Registered Waterproofing Consultants (RWC), Registered Roof Consultants (RRC), Registered Roof Observers (RRO), and Registered Exterior Wall Consultants (REWC). Since our inception we have grown to more than 50 full time professionals with 5 offices throughout the southeastern United States.

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