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October 21, 2003

Mr. Kenneth E. Redfoot, AIA
Vice President
Corley Redfoot Zack
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Re: Town Operations Center
Conventional Construction vs. Pre-Engineered Building

Dear Ken:

The development of the Preliminary Concept Plan for the Town Operations Center included identifying the most appropriate materials and building systems to be incorporated into the project. One key system is the use of conventional construction versus pre-engineered buildings. Economies are available when using pre-engineered buildings in certain applications, typically simple forms that accommodate functions that do not require special considerations. Conventional construction includes steel structure with tilt wall or masonry exterior as well as load bearing tilt wall. Pre-engineered buildings typically include a pre-engineered steel structure with tapered columns, simple spans and building profiles, standing seam metal roof, and metal exterior siding. Modifications to the standard pre-engineered building have a direct impact on construction cost and may impact the construction schedule.

The Town Operations Center includes a variety of functions, most of which are maintenance or shop related with significant vehicle interface. These functions have the following special considerations that significantly reduce the difference in cost between conventional and pre-engineered construction.

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| Durability | Material selection (interior and exterior) has a significant impact on life cycle cost. Materials should be durable and easily maintained. Metal siding on standard pre-engineered buildings should be replaced with masonry or tilt-up concrete panels at least to 8'-0" above finished floor. |
| Insulation | Walls and ceilings should be insulated to reduce heat loss in the winter and heat gain in the summer. Insulation is applied at an extra cost in pre-engineered buildings. |
| Liner Panels | Vinyl backed insulation is the standard used in pre-engineered buildings, however, in maintenance facilities, this insulation is difficult to keep clean and can sag over time. Liner panels must be added to give a more finished look and to make the ceiling easier to clean. Note that the liner panel can also be upgraded to a perforated panel with acoustical insulation above the panel to reduce noise in the space. |
| Cranes | Support for bridge cranes can be easily incorporated in conventional construction. Pre-engineered buildings typically require significant special engineering or an independent structure to support bridge cranes. |
| Misc. Metal | Maintenance facilities have special lighting, exhaust reels, lubricant reels, and other equipment that must be supported by the structure above. These require special engineered modifications to the pre-engineered building structure. |
| Daylighting | The use of natural light is ideal in a maintenance facility. The preferred method for introducing natural light is through the use of clerestories instead of simple skylights in the roof. This requires building profiles that are not standard for pre-engineered buildings. |



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- Schedule** Conventional construction integrates various materials to create the building envelop. These materials typically come from multiple sources, which provides a degree of flexibility during construction. When pre-engineered buildings are used, the entire structure and building envelope comes from a single source. This can have significant impacts on the design and construction schedule with no flexibility to consider alternate approaches.
- Flexibility** Conventional construction is typically more flexible in accommodating changing needs in maintenance facilities. Any changes or modifications that are made after move-in will require that the manufacturer be involved for redesign and approval of changes. Based on our experience with over 200 maintenance and operations facilities across the country in the past 25 years, these types of facilities will be modified to respond to changing technology. Flexibility to easily make these changes will be critical for the Town Operations Center.
- Quality Control** Conventional construction is an integrated package that is the responsibility of the design team and contractor. A pre-engineered building introduces an additional party that is responsible only for the building envelope. Quality control for design is no longer a single source of responsibility with the design team and quality control during construction is no longer a single source of responsibility with the contractor.

In summary, pre-engineered buildings require multiple add-ons in order to provide the same quality normally provided with conventional construction. This results in facilities and building systems that are not fully integrated. This can negatively impact both construction cost, schedule, and energy efficiency.

The Town Operations Center design has been developed based on the guiding principals of Sustainable Development, Environmental Sensitivity, and Fiscal Prudence. When evaluated with these principals in mind and based on our experience with this building type, conventional construction will provide the Town of Chapel Hill with the best value over the life of the facility.

If you have any questions, please do not hesitate to call.

Sincerely,

Parsons Brinckerhoff Quade & Douglas, Inc.

Mark J. Probst
Vice President