

**AGENDA – CONTINUED FROM MAY 7  
CRAVEN COUNTY BOARD OF COMMISSIONERS  
RECONVENED SESSION  
MONDAY, MAY 14, 2012  
12:30 P.M.**

CALL TO ORDER

ROLL CALL

1. EDC RESOLUTION
2. CONVENTION CENTER FLOOR SLAB RFP

Presenters: \_\_\_\_\_  
Agenda Item No. 1  
Board Action Required: Yes

## EDC RESOLUTION

In November 2011 the Board adopted a resolution in support of a request to the Department of Transportation for funding of road improvements within the Craven County Industrial Park. The DOT responded, asking that the resolution be restated in condensed form, according to the wording of Attachment # 1.

**Board Action:**        **The Board is being requested to adopt the version of the resolution which appears as Attachment #1.**



**Craven County  
Resolution to Support Upgrades for Industrial Drive SR 1369**

**WHEREAS**, road improvements are needed in the Craven County Industrial Park; and

**WHEREAS**, North Carolina Department of Transportation will be improving road upgrades on Industrial Drive SR 1369; and

**BE IT FINALLY RESOLVED**, that the Craven County Board of Commissioners strongly supports the addition of 0.17 miles of Industrial Drive to the State Highway System.

Adopted this 14<sup>th</sup> day of May, 2012.

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Lee Kyle Allen, Chairman  
Craven County Board of Commissioners

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Gwendolyn M. Bryan, Clerk to the Board

Presenters: Jack Veit  
Agenda Item No. 2  
Board Action Required: Yes

## CONVENTION CENTER FLOOR SLAB REPAIR RFP

At the May 7, 2012 regular meeting, the Board of Commissioners rejected all bids for the Floor Slab Repair RFP for the New Bern Riverfront Convention Center and instructed the County Manager to enter into the informal bid process with the two interested firms. After discussions with both firms, they submitted new bids for the project. The proposals were reviewed by Tom Admay with Engineered Foundation Solutions, and his recommendation was to accept the bid from Hayward Baker, Inc. (See Attachment #2) Their submitted base bid was \$285,900 for the repairs to the interior and exterior of the Convention Center. Additionally, there were two parts of the project that were bid as alternates. First, was the installation of underpinning piers to support the floor of the ballroom where the partitions meet the floor and second, to underpin and pressure grout the Riverfront Veranda. We recommend that these alternates be approved also. These alternate repairs will extend the life of the repair and create a more long term solution to the settling problems. These alternative repairs were bid at \$35,000 and \$60,000 respectively. Furthermore, we recommend negotiating with Hayward Baker to add additional piles at \$1,950 per pile to extend the pile support under the ballroom floor in a line perpendicular to the partition wall and extending to the wall that adjoins the service corridor. The total known cost of the repair as bid is \$380,900 plus the additional piles mentioned above.

**Board Action:**        **The Board is requested to accept the bid from Hayward Baker and authorize the County Manager to negotiate and execute a contract with this firm for the repairs.**

# ENGINEERED FOUNDATION SOLUTIONS, PLLC

May 11, 2012

Mr. Gene Hodges  
Assistant County Manager  
Craven County North Carolina  
Via email

**Reference: Review of Bids for the  
Floor Slab Pressure Grouting and Foundation Underpinning  
New Bern Riverfront Convention Center**

Dear Mr. Hodges,

As requested Engineered Foundation Solutions, PLLC, EFS, has reviewed the bids received for the floor leveling and foundation underpinning of the New Bern Riverfront Convention Center.

We recommend that Hayward Baker's bid be accepted, although Uretex's unit price bid might result in slightly lower costs to the County the risk that their costs would exceed Hayward Baker's lump sum costs in the Ballroom and Heritage Hallway are significant. We also recommend that you consider accepting Hayward Baker's bid for Alternative #3, underpinning the Ballroom floor where the partitions meet the floor.

## **Discussion of Bids and Recommendations**

In our opinion, both of the bidders are qualified to perform the work that they have bid on.

### ***Hayward Baker***

Hayward Baker has proposed using a combination of cement grout to do the bulk of the lifting in the Ballroom and Heritage Hallway with urethane grout used for "fine tuning" the lift in local areas, and urethane grout in the less accessible back areas of the building.

### ***Uretex***

Uretex has proposed using urethane grouting throughout the project. Uretex placed limitations in their bid that contradict the intention of the proposed method of determining the portion of the fee for the Ballroom and the Heritage Hallway that they would receive for their work. If their bid were accepted this would need to be negotiated.

## **Comparison of Urethane and Cement Grout**

The argument has been made that as urethane grout has a lower density than cement grout the injection of urethane grout will impose less load on the underlying soils, and therefore, cause less future settlement. This is strictly speaking true, but for practical purpose the difference in future settlement between using one product or the other is not, in our opinion, significant. As the following discussion demonstrates. Urethane grout has a density of about 4.5 pcf while the concrete grout has a density of about 140 pcf. At the area with the maximum settlement the

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Firm # P-0542

addition of 6 inches of grout would raise the effective stress by about 2.25 psf for urethan grout and 70 psf for cement grout. Across most of the building the added weight of material will be less than half of this. The fill that was previously placed to raise grades at the site approximately 4 feet and the 6 inch thick floor slab imposed new loads of about 555 psf on the soils, and the design live load for the ballroom would have imposed an additional 300 psf.

Settlement of compressible soils occurs when the effective stress in the soil is increased forcing fluids to be expelled from the soil matrix. The settlement is directly proportional to the logarithm of the sum of the initial effective stress and the increase in effective stress divided by the initial effective stress. For soil at a depth of 10 feet below the original ground surface, the top of the more highly compressible soil strata, assuming a water table at a depth of 2 feet and a unit weight of soil of 120 pcf the effective stress was approximately 700 psf. The construction of the Convention Center the increase in effective stress was approximately 555 psf from the dead load. The logarithm of  $(700+555)/700$  is 0.25. For a further increase in the effective stress of 70 psf. The logarithm of  $(1255+70)/1255$  is 0.024. Which is to say that the additional weight of the cement grout would have about  $1/10^{\text{th}}$  the impact that the original fill and floor slab had on the underlying soils. With increasing depth the influence of the additional load is further diminished.

Both products, Portland cement grout and urethane grout, have established track records of successful use and long term stability in similar applications.

**Comparison of Bids**

	<i>Hayward Baker</i>	<i>Uretek</i>	<i>Uretek (Unit Price)</i>
<b>Interior</b>			
Mobilization	\$65,500	\$57,000	\$25,000 a
Grouting of Ballroom	\$110,000	\$99,000	\$90,429 b
Grouting of Heritage Hallway	Included above	\$35,000	\$19,510 c
Grouting of Other Interior Areas	\$54,000*	\$64,000**	\$54,400 ***
<b>Sub-Total</b>	<b>\$229,500</b>	<b>\$255,000</b>	<b>\$209,339 d</b>
<b>Exterior</b>			
Mobilization for Underpinning Piers	Included in Mob. above	\$1,000	\$1,000
Install Underpinning Piers	\$42,900 d	\$54,142	\$54,142
Grouting Exterior	\$13,500†	\$16,000††	\$13,600†††
<b>Sub-Total</b>	<b>\$56,400</b>	<b>\$71,142</b>	<b>\$68,742</b>
<b>Total</b>	<b>\$285,900</b>	<b>\$326,142</b>	<b>\$278,081</b>

<b>Alternate #3</b> Installing Underpinning Piers to Support the Floor of the Ballroom Where the Partitions Meet the Floor	\$35,000 e	\$113,700	\$38,000 f
<b>Alternate #4</b> Underpinning and Pressure Grouting of Riverfront Veranda	\$60,000	\$90,000	\$90,000

\* Based on 8,000 lbs @ \$6.75 per pound

\*\* Based on 8,000 lbs @ \$8.00 per pound

\*\*\* Based on 8,000 lbs @ \$6.80 per pound

†Based on 2,000 lbs @ \$6.75 per pound

††Based on 2,000 lbs @ \$8.00 per pound

†††Based on 2,000 lbs @ \$8.00 per pound

a Does not include bonding, utility locating, or surveying based on information previously provided these are estimated these costs would be approximately \$20,000

b Based on 109.45 cubic yards (105% of the theoretical volume of 104.24 cubic yards) with the grout having an in-place density of 4.5 pcf for 13,298 pounds at \$6.80 per pound

c Based on 23.61 cubic yards (105% of the theoretical volume of 22.49 cubic yards) with grout having an in-place density of 4.5 pcf for 2,869 pounds at \$6.80 per pound

d Includes the estimated \$20,000 in footnote a

e Hayward Baker has proposed to use helical piers on the exterior. Our experience is that installing helical piers at the site will be difficult which is the reason the RFP called for drilled piers. However, it should be noted that the driven piers they are proposing to use in the interior have a lower unit cost than the exterior piers, therefore, it is our opinion that if Hayward Baker is unable to install helical piers to the required depth that they could switch to driven piers.

f Based on Uretek's estimate that the cost of grout injection below the partition walls would be one third of the cost of micropiles.

### Use of Local Firms and Suppliers

#### *Hayward Baker*

Hayward Baker has proposed using Carolina Foundation Repairs, Inc. of New Bern as a subcontractor and estimated their work will constitute 19% of HBI's contract. In follow-up communications Hayward Baker indicated that the cement used for the cement grout would be purchased from a local supplier, and that they intend to hire some labor locally.

### ***Uretek***

Uretek has proposed using Southeastern Locating Services, LLC and Atlantic Survey & Design, PA both of New Bern as subcontractors on the project. In follow-up communications Uretek estimated that the work contracted to these firms would be approximately \$9,800 and \$11,700, respectively, with the potential for additional work, if required. Uretek also indicated that they intend to hire one or two local laborers for the duration of the project.

### **Protection of Utilities**

Both Hayward Baker and Uretek are requiring that the County verify that the utilities at the Convention Center are currently in working order before they will agree to be responsible for repairing damage to the utilities during their work.

### **Alternate #3 Underpinning the Ballroom floor where the partitions meet the floor**

Installing underpinning piers to support the floor slab where the partitions meet the floor slab would prevent the problem of the partitions not being able to seal to the floor properly from occurring in the future. The floor slab will continue to experience settlement following the releveling, regardless of which type of grout is used.

The work being bid on in Alternate #3 is turn-key design-build underpinning of the floor slab in the Ballroom below the movable partitions with plans prepared by an Engineer registered in North Carolina. The County has the right to reject, in whole or in part, the plans and require redesign if in the opinion of the Owner's Engineer the plans submitted are not adequate to support the element of the facility in question. In our opinion, these provisions should adequately protect the County from an inadequate design for this work. Concern has been expressed that Hayward Baker's bid of \$35,000 for this work may be excessively low particularly when compared to Uretek's bid of \$113,700. Hayward Baker has indicated that they would install 20 underpinning micropiles, while Uretek proposed 30 micropiles. If Hayward Baker's calculations submitted with their design do not justify the use of only 20 micropiles we believe the contract would require them to redesign with additional piles or other structural elements and execute the work at no additional cost to the County. This type of underpinning work is the core of Hayward Baker's business while Uretek is more focused on grouting with urethane. Hayward Baker would have some potential economies in terms of equipment and experience for this type of work.

For the additional expenditure of \$35,000, using Hayward Baker's bid, the primary problem that the settlement has caused to the functioning of the Convention Center would be permanently resolved.

### **Alternate #4 Underpinning and re-leveling, to the extent practical, the Riverfront Veranda.**

Although some distress, cracks in the brick veneer at the transition point from the pile supported building to the Veranda supported on shallow footings, was noted the settlement of the Veranda

Review of Bids  
Floor Slab Pressure Grouting and Foundation Underpinning  
New Bern Riverfront Convention Center

does not appear to have interfered with the operations of the Convention Center. Based on the grades shown on the plans for the Veranda and the survey performed in February the river side of the Veranda appears to have experienced up to 3 inches of settlement. Performing these repairs in conjunction with the other work would provide some cost savings to the County. Alternatively the Veranda could continue to be monitored and repaired, if required, at some future date.

**Items to be Negotiated/Clarified**

***Hayward Baker***

Unit price for cement grout used in areas outside of the Ballroom and Heritage Hallway to see if any further economy could be obtained.

Please call if you have any questions, or if we can be of further assistance.

Respectfully,

**Engineered Foundation Solutions, PLLC**

Thomas V. Admay, P.E.

