From: Jon Creighton
To: Matt Stone; Bob Haynes
Subject: Fwd: 5844 Buncombe County - floor slab replacement - HCC Reply 3/15/2016
Date: Tuesday, March 15, 2016 3:41:50 PM
Attachments: image001.png

Sent from my iPhone

Begin forwarded message:

From: Mike Merrell <MMerrell@hickory-construction.com>
Date: March 15, 2016 at 9:49:23 AM EDT
To: "John C. Shields" <jshields@ClarkNexsen.com>
Cc: "Jon Creighton (jon.creighton@buncombecounty.org)" <jon.creighton@buncombecounty.org>, "Marcus B. Whitaker" <mwhitaker@ClarkNexsen.com>, "Matt S. Hickey" <mhickey@ClarkNexsen.com>, Robert Cummings <bcummings@clarknexsen.com>, Patrick Ward <pward@ClarkNexsen.com>, "Bill Stafford (Bill.Stafford@buncombecounty.org)" <Bill.Stafford@buncombecounty.org>, "Greg Isreal (greg.isreal@buncombecounty.org)" <greg.isreal@buncombecounty.org>, "Eric Rogers (Eric.Rogers@buncombecounty.org)" <Eric.Rogers@buncombecounty.org>, Christopher D'Angelo <CDangelo@hickory-construction.com>, Chuck Moss <CMoss@hickory-construction.com>, Aaron Beam <ABeam@hickory-construction.com>, Mark Baucom <MBaucom@hickory-construction.com>, "solutionsbyepro@aol.com" <solutionsbyepro@aol.com>, "chad.h@cardinalconcretecorp.com" <chad.h@cardinalconcretecorp.com>, "Mike Leslie (mleslie@dhgriffin.com)" <mleslie@dhgriffin.com>
Subject: RE: 5844 Buncombe County - floor slab replacement - HCC Reply 3/15/2016

John,

Thanks for your response to the GPR testing report that was provided to you for review on 2/29/2016.

I have outlined the following corrective items that have been scheduled to date for the existing concrete slab replacement for the BC Firearms Range Project #5844.

- <!--[if !supportLists]--><!--[endif]-->Additional GPR slab testing for the balance of the Range 100, Trap 109 floor slab areas and the Mech. Rm. 102 floor slab area between the two (2) overhead coiling doors is scheduled for the coming Friday 3/18/2016.

- <!--[if !supportLists]--><!--[endif]-->Core drilling of the existing GPR floor slab tested areas to confirm that the actual thickness of the in place concrete floor slabs, starting with the areas that are shown within the blue colors to see if the indicated testing report does indeed match the actual removed concrete slab core sample. If for some reason that we find that the actual floor slab thickness is greater than the floor slab thickness that were shown in the GPR test report we will proceed to core drill other floor slab areas within the current tested green areas to see if these areas also have an actual floor slab thickness that is greater than the floor slab thickness that were also shown on the current GPR test report. If we conclude that the overall existing floor slab areas thicknesses are greater that were shown on the original GPR test report, then we would request a meet to see if they are any existing floor slab areas that could remain in place and that would meet the design requirements for vehicle traffic. Also if we find that the upcoming core drill floor samples match the current GPR testing report findings that we will plan to procced with the existing floor slab removal within the Range 100 and the Bullet Trap Maintenance 109 areas as stated in your below e-mail.

- <!--[if !supportLists]--><!--[endif]-->After all of the new GPR testing is completed and reviewed for the balance of the Range 100, the Bullet Trap Maintenance 109 areas and the Mechanical 102 between doors 100E and 102B, we will provide an updated construction schedule that will show the impact of the methane barrier and concrete floor slab replacements.

- <!--[if !supportLists]--><!--[endif]-->We have contacted the original methane barrier installer to put together a written description of measures to be taken to maintain the continuity of the existing methane barrier at locations where the replacement slab will butt into the remaining existing concrete slabs.

- <!--[if !supportLists]--><!--[endif]-->We have contacted a demo subcontractor for the removal of the existing concrete floor slab areas and the door opening areas.

- <!--[if !supportLists]--><!--[endif]-->We have contracted the original concrete floor slab finisher about the required subgrade fine grading, under slab wash stone replacement and the 6” concrete floor slab replacement.

As soon as we have all of the above items completed we will confirm our plans for the concrete floor slab replacement items with a revised project schedule attached for your review.

Again please let me apologize to everyone for this inconvenient, at no time was it the intend of HCC to provide less that the 6” designed concrete floor slab thickness for this project.

If you have any additional questions, please feel free to give me a call at 828-310-2100.

Thanks,
Mike Merrell
Hickory Construction Co.

From: John C. Shields [mailto:jshields@ClarkNexsen.com]
Sent: Monday, March 14, 2016 8:45 PM
To: Mike Merrell
Cc: Jon Creighton (jon.creighton@buncombecounty.org); Marcus B. Whitaker; Matt S. Hickey; Robert Cummings; Patrick Ward
Subject: 5844 Buncombe County - floor slab replacement

Mike:

Clark Nexsen has reviewed the GPR test results provided by S&ME dated February 29, 2016. The results indicate that the tested area of the slab-on-grade has significant portions that are less than 6 inches thick. The predominant color (per the color gradient provided in the results report) displayed on the "Concrete Slab Thickness Plot" ranges between light green and dark green, which corresponds to 4 to 5 inches of concrete thickness. Visually, this 'green' portion of the slab is approximately 85% of the area tested. The majority of the green area shown appears as a medium to dark green, which corresponds to a thickness of 4 to 4 ½ inches.

About half of the 15% remaining tested slab area appears dark yellow on the "Concrete Slab Thickness Plot", which corresponds to concrete thickness between 5 and 5 ¾ inches. The balance of the remaining tested area is shown as medium blue to light blue, which corresponds to 3 ½ to 4 inches of concrete thickness.

S&ME has previously stated that GPR results are within ½ inch accuracy. Respecting the tolerances and limitations of the equipment and the testing method, the majority of the tested area could be, most favorably, 5 to 5 ½ inches thick, or less favorably, 4 inches thick.

ACI 117-10 Specification for Tolerances for Concrete Construction and Materials states that the measured thickness of any individual sample of slabs-on-ground shall deviate not more than 3/4" from specified cross-sectional dimension, and the average of all samples shall deviate not more than 3/8 inch from the specified cross-sectional dimension. Thus a single sample (such as a single slab core) of a slab-on-ground specified to be 6 inches may measure to be, at most 6-3/4 inches, and at least 5-1/4 inches thick. The average of multiple samples may measure to be, at most 6-3/8 inches, and at least 5-5/8 inches thick.

The test report indicates that the thickness measurements have a tolerance of plus-or-minus ½ inch. Even if one assumes that the tolerance error is to the high side (in other words, that a given slab area is actually up to ½ inch thicker than indicated in the test

report), the GPR test results indicate that the majority of the tested portion of the slab does not meet the specified thickness requirements. We believe that it's reasonable to assume that the untested area of the floor slab is also deficient. We have discussed these results with Buncombe County, and after reviewing various options, the County is directing that the concrete floor slab in Range 100, in Bullet Trap Maintenance 109, and the slab under the bullet trap itself shall be replaced.

Prior to beginning the replacement of the floor slab, please provide the following:

- A project schedule incorporating the slab replacement.
- A written description of measures to be taken to maintain the continuity of the methane barrier at locations where the replacement slab will butt into the remaining existing concrete slabs.

Because the floor slab in Mechanical 102 between doors 100E and 102B carries vehicle traffic, the County desires that the floor slab between these doors also be tested with ground penetrating radar to verify the slab thickness.

Please let us know if you have any questions.

Thanks,

John Shields AIA, CCS
Senior Architect | Associate

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