IN THE UNITED STATES DISTRICT COURT
FOR THE MIDDLE DISTRICT OF NORTH CAROLINA

FLATIRON-LANE, a Joint Venture, Plaintiff, v. CASE ATLANTIC COMPANY and FIDELITY & DEPOSIT COMPANY OF MARYLAND, Defendants.	)	
CASE ATLANTIC COMPANY, Counter-Plaintiff, v. FLATIRON-LANE, a Joint Venture; TRAVELERS CASUALTY AND SURETY COMPANY OF AMERICA; FEDERAL INSURANCE COMPANY; FIDELITY AND DEPOSIT COMPANY OF MARYLAND; ZURICH AMERICA INSURANCE COMPANY; LIBERTY MUTUAL INSURANCE COMPANY; FROEHLING AND ROBERTSON, INC.; and STV/RALPH WHITEHEAD ASSOCIATES, INC., Counter-Defendants.	)	1:12cv1234

MEMORANDUM OPINION AND ORDER

THOMAS D. SCHROEDER, District Judge.

This case arises out of a dispute between the general contractor, Flatiron-Lane, a Joint Venture ("FLJV"), and Case Atlantic Company ("Case"), its subcontractor, over the construction of the foundation for a highway bridge. The

subcontractor's work took significantly longer than initially expected, and the parties dispute who is to blame for the delay.

A bench trial on the merits of all claims and counterclaims was conducted from April 6, 2015, through May 5, 2015. FLJV presented nine witnesses; Case presented five. At the close of FLJV's case-in-chief, Case moved for judgment pursuant to Rule 52(c) of the Federal Rules of Civil Procedure, though the court declined to enter judgment at that time. Following trial, the parties submitted proposed findings of fact and conclusions of law. (Docs. 135, 136.) The case is ready for resolution.

I. FINDINGS OF FACT

Pursuant to Rule 52(a) of the Federal Rules of Civil Procedure, the court enters the following findings of fact based upon an evaluation of the evidence, including the credibility of witnesses, and the inferences that the court has found reasonable to be drawn therefrom. To the extent any factual statement is contained in the conclusions of law, it is deemed a finding of fact as well.

FLJV's Pursuit

1. In 2009, the North Carolina Department of Transportation ("NCDOT") began formally soliciting design-build proposals to replace two bridges spanning the Yadkin River near the border of Davidson and Rowan Counties (the "Yadkin Project" or "Project"). The longer bridge, referred to as Bridge 2, comprised part of

Interstate 85; the relatively shorter bridge, referred to as Bridge 3, was part of United States Highways 29 and 70.

2. A design-build project is one in which the owner, here NCDOT, hires a general contractor both to design and construct the project. By contrast, some construction projects are bid-build projects (or design-bid-build projects), where the design is already complete when the owner hires a contractor to construct the project. Both Bridges 2 and 3 were part of a larger design-build project.

3. Flatiron Construction and Lane Construction pursued the Yadkin Project as a joint venture, with 60% and 40% stakes, respectively. As noted, the joint venture is collectively referred to as "FLJV."

4. FLJV's pursuit team was composed of FLJV's employees, as well as several entities with whom it subcontracted. STV/Ralph Whitehead Associates, Inc. ("STV"), a professional engineering firm, was part of the pursuit team, serving as the Project's head designer. Froehling and Robertson, Inc. ("F&R"), a geotechnical firm, was also part of the pursuit team, assisting with the design of the bridges as well as inspections and geotechnical engineering work. Preliminary design decisions began being made during the pursuit phase.

5. The Yadkin Project contemplated the drilling of shafts into the ground — known as "drilled shafts," "drilled piers," and

"caissons" — into which concrete would be poured. These drilled shafts would serve as the foundations for Bridges 2 and 3. Very generally, the shafts are excavated by drilling with large drill rigs inside of cylindrical steel casing, either permanent or temporary, to protect the shaft from cave-ins during excavation. Once excavation is complete, the void is filled with rebar cages, and concrete is poured into the shaft up to a few feet above the surface level. Once this concrete cures, concrete vertical columns are formed on top of the piers. Each set of four drilled piers is known as a "bent." Horizontal concrete caps are built on top of the columns for each bent of shafts. Girders are placed on top of the caps, connecting bent-to-bent, upon which a concrete driving surface is eventually poured.

6. FLJV originally planned to do much of the drilled shaft work itself. While pursuing the prime contract, it sought estimates from drilled shaft companies for the cost of the excavation work only.

7. In design-build projects, the design is often not finalized when contracts are awarded or even when construction commences, and the design is subject to change throughout the construction phase. For this reason, FLJV sought estimates based on "unit prices." As relevant here, for example, FLJV sought estimates on how much a drilled shaft contractor would charge per linear foot of drilling, with the final "units" or "quantities" —

i.e., the number of linear feet each shaft is drilled into the ground — to be determined once the drilled shaft is constructed.

8. In March 2010, FLJV sought and received an estimate from Case, a drilled shaft company, operating primarily in the southeastern United States. Case is a wholly owned subsidiary of Case Foundation, which is itself owned by the international Keller Group of companies. Nigel Osborn, who has served as its president since the late 1990s, led a group of Case employees from the bidding of the Yadkin Project through Case's ultimate execution of a subcontract with FLJV.

9. In April 2010, NCDOT awarded the Yadkin Project to FLJV, and the two executed the prime contract on May 24, 2010. (Ex. 201.[1])

Subcontract Negotiations

10. Theodore "Ted" Kirk participated in FLJV's pursuit of the Yadkin Project, serving as its design build project manager. Once FLJV was awarded the prime contract, Kirk solicited several prospective drilled shaft contractors, including Case, to provide FLJV with an estimate for a fuller scope of work; that is, not just drilling the shafts, but also providing and setting the casing and pouring the concrete. In general, drilled shaft contractors like Case prefer to do this expanded scope of shaft and pier work

[1] Trial exhibits numbered below 1000 were introduced by FLJV, and those labelled above 1000 were introduced by Case.

themselves.

11. Case began submitting several proposals to FLJV, providing updated unit price schedules for the fuller scope of work. On June 16, 2010, Case submitted a proposal offering to do the work in fourteen weeks, excluding holidays. (Ex. 227.)

12. FLJV and Case met to discuss this proposal on June 17, 2010, in FLJV's Morrisville, North Carolina office. Kirk and another employee represented FLJV; and Andy Buck, Case's estimator and later project manager, attended with Larry Blough, Case's vice president of operations. The men discussed the details of what Case had included and excluded from its scope in the most recent proposal.

13. They also discussed Case's experience performing drilled shaft work in North Carolina. Buck and Blough represented that Case was experienced with the type of subsurface conditions at the Project site and that Case was familiar with NCDOT's specifications and requirements for drilled shaft contractors, as well as the standard practices and procedures employed in the Piedmont area of North Carolina in which the Project was located. In particular, Kirk gave Buck part of NCDOT's Drilled Pier Inspection Manual, a publicly available document, which explains the standards and specifications NCDOT's drilled shaft inspectors apply when approving drilled shafts. Buck represented that he was already aware of the manual through Case's other projects in North

Carolina, including a recent project in Boone, North Carolina.

14. Also, Kirk was concerned whether Case could realistically complete the job in fourteen weeks, as Buck had proposed. Buck explained to Kirk how he expected Case would reach its anticipated production levels. Buck convinced Kirk that Case could do the work in fourteen to sixteen weeks.

15. FLJV had similar meetings with other potential drilled shaft contractors. Case continued submitting revised proposals. In its proposals to and discussions with FLJV, Case indicated its intended means and methods of constructing the drilled shafts. Those intended means and methods had two basic components.

16. First, Case intended to push oversized temporary steel casing into the ground for each drilled shaft. Case would excavate the soil inside the casing to the lowest point on the designs — also known as the "tip elevation." Then Case would install a permanent inner steel casing into the shaft until rock or "competent material" (usually weathered rock or very dense soils) was reached. The permanent casing would then be filled with rebar and concrete. The outer temporary casing could then be removed. Because the outer casing was several inches wider in diameter than the inner casing, its removal would result in a slight void — termed an "annular space" — between the permanent inner casing and the soils previously resting against the outer casing.

17. Second, Case also intended, as part of its means and

methods, to push its permanent casing down to rock or material competent enough to support the use of air tools.[2] This method benefits from the force of the rock at the bottom of the shaft pushing up on the bridge, a force known as axial or end-bearing resistance. Yet, before the time Case signed the Subcontract, it had received preliminary designs from FLJV indicating that some of the shafts would not, in fact, reach all the way down to rock.[3] (See, e.g., Exs. 384, 1012.) That is, the designs showed shafts that had an uncased zone and a tip elevation that did not reach all the way to rock.[4]

18. Case's use of outer temporary casing and pushing permanent casing down to rock or competent material reflects appropriate methods to be employed in the Piedmont region of North Carolina, but are not typical, certainly not in dry shafts (i.e., not drilled into water).[5] Rather, designers tend to employ a temporary inner casing method. When constructing shafts in this way, drillers typically use permanent casing that is larger in

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[2] High powered air tools are normally used in hard rock but not in soft rock or soil. (See Doc. 133 at 140.)

[3] At no point in time was Case ever responsible for the design of the drilled shafts.

[4] To be clear, either steel casing (whether left in the ground permanently or temporarily) or a mineral "slurry" is necessary to keep a hole from caving in during excavation. Mineral slurry was not permitted on the Yadkin Project according to the design plans.

[5] Bridge 2 had shafts both over water (wet shafts) and not over water (dry shafts).

diameter than the shaft design. Temporary casing is then telescoped inside this permanent casing and twisted into the ground until the desired elevation is reached. Then, as the wet concrete is poured into the shaft, the temporary casing is slowly raised up and out of the shaft. This ultimately results in a concrete shaft that is surrounded by steel casing on the upper part, and a lower part where the concrete comes into direct contact with the surrounding soils.[6] This method uses much less permanent steel casing (thereby decreasing costs) and has the benefit of creating an extra force supporting the bridge structure — the "skin friction" between the uncased soil and surface of the concrete column, which permits an overall shorter (and cheaper) shaft. This method has the potential drawback, however, of allowing boulders and other materials to infiltrate the wet concrete column as the temporary casing is removed, which can result in a compromised shaft (as identified by negative test results on the quality of the shaft) and possibly necessitating a costly repair. The method can also potentially cause some difficulty extracting the temporary casing from the shaft, though some risk of extraction problems occurs with the use of both inner and outer temporary casing. Despite this risk, this method fully conforms to NCDOT

[6] In some cases, no permanent casing is used at all, so that the concrete makes contact with the soils from the top of the ground to the bottom of the shaft. The use of at least some permanent casing on every shaft, however, was always contemplated by all parties on the Yadkin Project.

specifications, is the method that NCDOT employees ordinarily expect drillers to use, and could have been used on this Project.

19. However, Case's means and methods — the use of temporary outer casing and taking permanent casing to rock or competent material — is permitted by NCDOT and its specifications so long as the annular space is filled with grout or some other material sufficient to provide lateral resistance in the drilled pier and the end-bearing resistance is sufficient to support the bridge.

20. Case's bid for the drilled shaft work was the lowest that FLJV received. On July 16, 2010, Kirk sent a letter of intent (Ex. 245) notifying Case that it was being awarded the drilled shaft subcontract for the Yadkin Project and accepting Case's described scope of work in its most recent proposal (Ex. 229). The letter authorized Case to begin planning its work and procuring materials, noting that a formal subcontract would be executed shortly thereafter. Case was awarded the work in large part because it proposed drilling the shafts at the lowest price and in the quickest time.

21. Thereafter, negotiations on a formal agreement lingered for about five months because Case had many provisions it sought to have included in the subcontract. Case also did not want to begin ordering materials or mobilizing to the job site until a formal subcontract was executed.

22. Throughout these negotiations (and certainly by the time

the subcontract was signed), FLJV knew that Case intended to use oversized temporary casing and intended to accommodate it. (See, e.g., Ex. 1407 (showing FLJV template designs accommodating Case's use of outer temporary casing); Ex. 1059 (Drilled Shaft Construction Sequence Plan, jointly prepared by Case and FLJV, showing use of outer temporary casing).) FLJV also knew or had reason to know that Case desired to construct the shafts by twisting permanent casing down to rock or material competent enough to support the use of air tools. (See, e.g., Ex. 200 at 37 (Attachment C).)

23. At no point before Case actually began drilling on the Project site does it appear that FLJV's designers knew of either of these two means and methods by which Case intended to construct the drilled shafts. FLJV never communicated this information to the designers, and Case was not permitted to communicate with the designers directly. The designers designed the drilled shafts to accommodate construction methods that are typical in the Piedmont region, not to accommodate Case's atypical methods.

24. To accommodate Case's means and methods, no design change would have been needed concerning Case's use of outer temporary casing, so long as the annular space was properly filled. However, in order for Case to take permanent casing down to rock or competent material, the designers would have needed to know about this construction method in order to properly design the

shafts. With advance notice, the designers could have accommodated this construction method.

25. During the subcontract negotiations, Kirk and Osborn met at the Yadkin Project job site in early December 2010. Kirk showed awareness that Case intended to take permanent casing down to rock or hard subsurface material.

26. On December 8, 2010, FLJV and Case executed a formal subcontract (the "Subcontract"), which bore an effective date of November 11, 2010. (Ex. 200.) Subject to various inclusions and exclusions, the Subcontract stated that Case would "[p]rovide all supervision, labor, tools, equipment and material to perform drilled shafts" on the Yadkin Project. (Id. at 2.)

27. Case's payment for the work would be at the unit prices set out on Attachment C of the Subcontract. (Id. at 2, 37.) Attachment C contains estimated quantities for the work, with the actual pay quantities[7] to be determined once the work is complete.

28. Attachment A of the Subcontract contains various provisions specifically negotiated by Case. The negotiation of these provisions is what, in part, caused the negotiations to linger for so long.

29. Paragraph 5 of Attachment A provides, "Subcontractor

[7] "Pay quantities" refer to the actually installed quantities, for which Case would be paid, as opposed to the estimated or design quantities, which would not necessarily be the actual quantities of work performed.

excludes caisson design, the determination of bearing capacity of soil or rock strata, or any other soil evaluation services." (Id. at 7.)

30. Paragraph 11 of Attachment A provides, "Personnel work platforms, templates for water locations, and all water support is by Contractor." (Id.)

31. Paragraph 12 of Attachment A provides, "Subcontractor methods are based upon drilling inside seated steel casings (into rock or competent material that will support the use of air core barrels, chisels and/or air down hole hammers) using water slurry, (all water provided by Contractor)." (Id.)

32. Paragraph 13 of Attachment A provides, in part, "Subcontractor not responsible for adverse CSL results due to action that is outside of his control. Subcontractor is responsible for adverse CSL results that are caused by Subcontractor[']s negligent workmanship." (Id.)

33. The parties agreed that Case's work would be insured by performance and payment bonds. (Id. ¶ 15; id. at 28.)

34. Paragraph 20 of Attachment A provides, in part, "Subcontractor good faith schedule includes sixteen (16) production weeks for the complete bid scope of work excluding holidays." (Id. at 7.)

35. Attachment A contains various inclusions to Case's scope of work, including the following:

a. "Supply labor and drilling equipment to install all caissons [drilled shafts] for bridge structures." (Id. at 8.)

b. "Place full length reinforcing steel cages, CSL tubes and spacers supplied, tied, adequately braced, rigged for lifting and delivered to each hole by others." (Id.)

36. Attachment A also contains various exclusions from Case's scope of work, including the following:

a. "Provide, tie and deliver to each hole full length steel reinforcing cages . . . adequately braced and rigged for lifting. (Subcontractor will place cages.)" (Id. at 9.)

b. "Any chipping of caisson concrete for cap preparation, removal of permanent casing from shaft if required and any demolition/removal of Trial or Load Test Shafts." (Id.)

c. "Any geotechnical testing (e.g. SPT) performed prior to, during or after Subcontractor's site operations." (Id.)

d. "Support Crane: Contractor to provide Subcontractor with an insured, operated, maintained, fueled and suitably sized and configured service crane to handle casing, rebar and any other materials, and

to assist Subcontractor's operations as and when needed." (Id. at 10.)

37. Attachment B contains FLJV's standard terms and provisions, such as FLJV's procedure for changing Case's scope of work or terminating Case. In the event of a conflict between provisions of Attachments A and B, Attachment A prevails. (Id. at 6.)

38. Article 1 of Attachment B contains a "flow-down" clause, incorporating at least some parts of the prime contract into the Subcontract: "Subcontractor assumes toward Contractor all obligations that Contractor assumes toward Owner, insofar as applicable to the Work to be performed under this Subcontract." (Id. at 14 ¶ 1.6.)

39. Attachment B also includes several provisions for making changes to Case's scope of work, including the following:

a. "Contractor may at any time by written order of Contractor's authorized representative, and without notice to Subcontractor's sureties, make changes in, additions to and deletions from the Work, and Subcontractor shall promptly proceed with the Work so changed. The Subcontract Price shall be equitably adjusted on account of any changes in the Work, subject to any applicable provision of the Contract." (Id. at 17 ¶ 3.1.)

b. "Any claim for an adjustment in the Subcontract Price or Time must be made in writing within (5) calendar days from the date changes are ordered or from the date Subcontractor has knowledge of facts giving rise to the event for which claim is being made; otherwise, Subcontractor releases and waives any rights to assert a claim against Contractor." (Id. ¶ 3.2.)

40. Article 6 of Attachment B designates that time is of the essence in the drilled-shaft work: "Time is of the essence in this Subcontract. Subcontractor agrees to perform the Work within the time specified on Contractor's Schedule, or within such time extensions as may be granted, and Subcontractor shall be liable for any damages to Contractor caused by the Subcontractor's failure to perform the Work within such time." (Id. at 18.)

41. Article 21 of Attachment B provides a mechanism for FLJV to terminate Case for its convenience:

a. "Contractor, upon two (2) days written notice, may terminate this Subcontract, in whole or in part, if Contractor considers termination to be in its best interest." (Id. at 27 ¶ 21.1.)

b. "Subcontractor shall be compensated for costs of all Work it has performed, including a reasonable profit thereon, in accordance with the terms and

> conditions for termination for convenience in the Contract. Under no circumstances is Subcontractor entitled to anticipatory, unearned profits or consequential or other damages as a result of a termination or partial termination for convenience. Payment to Subcontractor, as determined in accordance with the provisions of the Contract, shall constitute Subcontractor's exclusive remedy for termination under this Article." (Id. ¶ 21.2.)

42. Attachment B designated that the Subcontract would be governed by North Carolina law. (Id. at 35 ¶ 39.4 ("This Subcontract shall be governed by and construed in accordance with the substantive law of the State where the Project is located without regard to the conflict of law rules of such State.").)

Construction of the Drilled Shafts

43. In January 2011, Case mobilized to the Yadkin Project work site to begin construction on Bridge 2.

44. Bridge 2, although referred to as such, is structurally two separate bridges, one each for northbound and southbound traffic. FLJV originally prioritized completing the northbound bridge before the southbound bridge, which would allow NCDOT to close the old bridge being replaced and to divert traffic going both directions over the new northbound bridge. Once the northbound bridge was built, FLJV and its subcontractors would

finish the southbound bridge, and then Bridge 3.

45. FLJV directed Case to prioritize the northbound part of Bridge 2. The plan was for Case to construct the drilled shafts moving from south to north. FLJV first had to construct the trestle — a temporary work bridge across the Yadkin River running between and parallel to the two bridges (or what would become the two bridges) comprising Bridge 2. The trestle would support the construction teams and their equipment. Once trestle construction began, which was initially delayed, Case was able to start on the drilled shafts.[8] Once Case completed each bent of piers, FLJV intended to start setting the columns and caps on top, followed by the girders running from bent to bent.

46. FLJV's employee in charge of the actual project construction was Adam Mathews, the construction project manager. He was aided by several others, including Adrian Price, who was FLJV's field engineer over the drilled shafts, and Jim Barton, FLJV's construction manager responsible for overall construction of structures on the Project.

47. For Case, the employee in charge was Andy Buck, who had helped estimate and pursue the drilled shaft work. However, Buck was stationed at Case's headquarters in Florida, rather than on the work site. Buck got most of his information about the goings-

[8] Some construction of the trestle and drilled shafts occurred simultaneously.

on of the Project from Terry Miller, Case's head superintendent who oversaw Case's day-to-day operations at the work site. Miller was instrumental in forming Case's construction plans for the Project. When he did so, however, he did not consult any of NCDOT's drilled shaft specifications, despite their incorporation into the Subcontract.

Outer Temporary Casing & Vibro Hammer

48. On the first day of Case's construction of the drilled shafts, on or about February 1, 2011, an NCDOT employee shut down the drilling operations because Case was twisting outer temporary casing below the "scour line" — a theoretical line above which the designers assume all soils could wash away (e.g., from rain or flooding) and thus fail to provide skin friction. The scour line is normally not important when using inner temporary casing. But it is critical when using outer temporary casing because engineers must assume that any unfilled annular space created by the removal of the outer temporary casing will provide little or no lateral resistance.[9] If outer temporary casing is pushed beyond the scour line, the drilled shaft will lack the lateral resistance the designer had assumed would help support the bridge.

49. NCDOT told Case that it would not be permitted to push

[9] The scour line was less important for shafts constructed in the river because the scour line was basically at the very bottom of the shaft, with permanent casing originally designed to go down to rock. (Doc. 126 at 109.)

outer temporary casing beneath the scour line unless it filled the annular space with grout or similar material.

50. In fact, Dean Hardister, the western regional operations engineer for NCDOT, and the NCDOT employee primarily in charge of the Yadkin Project, had previously warned Miller about the design complications of using outer temporary casing. (Doc. 126 at 109–10.) That earlier warning occurred in a previous project Case had done in Boone, North Carolina.

51. Rather than to continue using its intended method by filling the annular space, Case considered the cost of using a vibratory (or "vibro") hammer that would vibrate the permanent casing into the ground without the use of any temporary casing at all. Case decided that using a vibro hammer would be cheaper than filling the annular space.

52. Case had proposed letting the "cuttings" or "spoils" from the drilling, which happen to fall into the annular space, to suffice for filling the annular space. This proposal was rejected by NCDOT and FLJV's engineers as unsound. No credible evidence rebutted this conclusion.

53. Case did not bring a vibro hammer to the job site, though FLJV did have one available. Buck told FLJV that Case could either use FLJV's vibro hammer or rent one for $3,738 per week. (Ex. 204 at D00790.) By contrast, grouting the annular space would have cost Case around $120,000. (Doc. 128 at 27.) FLJV permitted Case

to use its vibro hammer. (See, e.g., Ex. 253.) The vibro hammer helped Case complete its work and appears to have ultimately been less expensive than filling the annular space that would have resulted from the use of outer temporary casing. (See, e.g., id. at 1–2; Ex. 726 (noting that Buck and Miller believed the vibro hammer "will probably benefit [Case] bottom line, since more casing will be used which will mean extra depth").)

54. Case was ultimately able to use outer temporary casing on 26 of the 140 shafts for Bridge 2 where the casing was not twisted beyond the scour line.

55. The relationship between the two parties became adversarial at least as early as this first day of construction, when Case ran into obstacles to performing the work with its intended means and methods. The relationship grew even more rancorous as the Project progressed, with the companies clearly preparing for litigation while construction of the drilled shafts was still ongoing.

Change in Shaft Diameter for Bents 15 Through 18

56. In February 2011, FLJV informed Case that it was changing the diameter of the shafts on bents 15 through 18 from 54 inches to 60 inches. At the time the parties executed the Subcontract, it was anticipated that Bridge 2 would have 54-inch permanent casing, and Bridge 3 would have 60-inch permanent casing.

57. This was an evolved position. Earlier in March 2010,

before the Subcontract was executed, FLJV's preliminary plans had reflected that some bents on Bridge 2 would have 60-inch shafts. (See Ex. 384.) Based on these plans, Case submitted proposals in April, June, and July 2010 reflecting these plans, acknowledging that 60-inch permanent casing was called for on both Bridges 2 and 3, but quoting the same unit price for the work regardless of the bridge incorporating the 60-inch casing. (See Exs. 1026, 227, 229.) At some point after July, the preliminary designs changed, calling for only 54-inch shafts on Bridge 2.

58. However, by November 16, 2010, the designers were considering using 60-inch shafts for bents 15 through 18 on Bridge 2. (Ex. 448.) FLJV's Jim Barton told Buck about this possible change and asked him what the price impact would be. (Id.) Buck did not respond until February 9, 2011, when he said the price impact would be just the price for 60-inch shafts noted in Attachment C of the Subcontract (as contemplated for use on Bridge 3). (Ex. 475.) On February 18, 2011, Mathews sent Buck an email showing the "current thinking" on shaft details, highlighting that the shaft diameters for bents 15 through 18 would be 60 inches. (Ex. 478.) On February 22, 2011, Mathews confirmed to Buck that he should proceed to order 60-inch casing for these bents. (Ex. 479.) On March 28, 2011, FLJV released to Case detailed design plans for bent 15, calling for 60-inch casing. (Ex. 489.1.) On April 19, 2011, Case told its casing fabricator to begin producing

60-inch casings (Ex. 715), which are made by rolling sheets of steel into cylindrical columns of the desired diameter.

59. On May 13, 2011, Case objected (for the first time) to the change in shaft diameter on bents 15 through 18, claiming that this change warranted a price increase because the unit prices for 60-inch shafts on Bridge 3 could not be substituted for shafts on Bridge 2. (Ex. 262.) FLJV refused to pay more for the work than called for at unit prices. Case objected, but constructed 60-inch shafts on bents 15 through 18, tracking its total costs on those shafts on a force account basis.[10] Based on its force account records, Case seeks $1,931,671.35 for this change in shaft sizes.

Support Crane

60. Several other disputes arose between FLJV and Case during the Project. One prolonged dispute involved FLJV's support crane. Under the Subcontract, FLJV was obligated to provide a large crane to support Case's operations.

61. Miller directed FLJV to move relatively small equipment with FLJV's smaller transportation equipment, like forklifts. Miller threatened FLJV that, unless FLJV helped move Case's equipment with its smaller equipment, he would order that the

[10] Force accounts are used when a contractor and a subcontractor cannot agree on the price of the work. Case purportedly began keeping records of its costs of doing the 60-inch shaft work by the method for force account work required by NCDOT. The court need not determine whether Case adequately complied with NCDOT's method of recording the force account work.

support crane be used to pick up this equipment. The support crane was a far larger piece of machinery than necessary to move small equipment and materials. The movement of the support crane is also highly disruptive to all other work on the trestle.

62. FLJV complied with the threat, using its forklifts and like machinery to move things for Case when the support crane was unnecessarily large and disruptive for the job.

63. As the drilled shaft work began to take longer than FLJV anticipated, the cost to FLJV of providing the support crane was greater than expected.

Template Disputes

64. Under the Subcontract, FLJV had an obligation to provide Case "templates for water locations." (Ex. 200 at 7 ¶ 11.) Templates are forms to allow the driller to identify the correct location for each drilled shaft and to maintain the proper placement of casing and drilling equipment during operations. Templates help guide the driller on where the shafts should go, and ensure that the shafts are properly spaced out.

65. Templates are unnecessary for drilled shafts on land because simpler tools, like stakes and offsets, can be placed to clearly show the driller where to drill the shafts. Templates are necessary, or at least very helpful, for shafts in water because they are anchored at the correct locations.

66. Each template was for an entire bent of four shafts, is

identical, and is capable of being used on any bent for Bridge 2. Once a bent is complete, Case would use the support crane to move the template for that bent to the next bent. FLJV created four templates for Case's use, meaning that at any given time Case had sixteen possible shafts on which it could be working. Because Case only had two drill rigs, it could only work on two shafts at any given time.

67. Miller directed FLJV to provide templates for the land shafts in addition to those for the river shafts. FLJV provided templates for the land shafts as requested.

68. FLJV was also responsible for moving the templates from bent to bent with its support crane. Case complained that the templates were not being moved in a timely manner. However, the credible evidence showed that FLJV did move the templates in a timely manner, without causing Case any unreasonable delay. (See, e.g., Ex. 543.) This conclusion is bolstered by the testimony of Price, who the court finds to be a credible and reliable witness. Moreover, Case could have built templates for itself but chose not to do so. (Doc. 131 at 193–95.)

Chipping Concrete

69. When Case's employees poured the concrete into the drilled shafts, they would sometimes pour it slightly above the elevation specified by the plans. This created a slight excess of concrete that had to be removed before FLJV could install the

columns on top of the drilled shafts. Thus, FLJV had to "chip" the concrete down to the correct level before it could begin its work.

Case's Unauthorized Work

70. Anytime anyone wished to construct the Project differently from the design reflected in the plan, a change in the plan had to be requested of the designers through a "request for information" ("RFI"). An unusually large number of RFIs were issued on the Project. Most of the RFIs requested information for multiple shafts. In total, 90 RFIs were issued on the Project, covering 138 of the 140 shafts. (Ex. 751.)

71. Case desired and intended to put its permanent casing down to rock or material competent enough to support the use of air tools. Case insisted that its method was best from a structural and engineering standpoint to ensure proper support for the bridge and to avoid the possibility of a collapse. The designers originally designed the piers so that 75% of them tipped in rock competent enough for the use of air tools.[11] (Ex. 751.)

72. Because Case insisted on using its method, many shafts had to be redesigned to accommodate the deeper elevation of the permanent casing. Forty-five of 90 RFIs were issued because of Case's decision to lower the permanent casing. Miller insisted on

[11] And ultimately 90% of the shafts were redesigned to tip in weathered rock or hard rock. (Ex. 751.)

taking the permanent casing to a depth that he was "comfortable" with, regardless of the elevation shown on the plans. (Doc. 128 at 17, 27–31; Doc. 134 at 9–10.) No employee or subcontractor of FLJV, or of NCDOT, ever told Case not to continue drilling past the permanent casing design elevations. (See, e.g., Doc. 134 at 56.) These redesigns contributed to delaying the drilled shaft work past the 16-week "good faith schedule" in the Subcontract. Case contends that the delay in getting approval of RFIs delayed its ability to perform timely. However, Case has exaggerated the impact of the RFIs because, despite Miller's contentions, Case would continue drilling on a shaft even while an RFI for the shaft had been sent to the engineers and was awaiting their response. (See, e.g., Ex. 541.2.)

73. Initially in the Project, FLJV accommodated Case's method, approving the redesign and paying Case for the extra permanent casing lengths. Under the Subcontract, Case charged one rate per linear foot of drilling and another rate per linear foot of permanent casing installed. Case's method resulted in it being paid more than it would have had it not insisted on taking permanent casing to rock or competent material; Case preferred this method at least in part for that reason. (See, e.g., Ex. 726 (noting that Buck and Miller preferred methods that "will probably benefit [Case's] bottom line, since more casing will be used which will mean extra depth").) The designers, however, designed Bridge

2 in keeping with typical Piedmont practices, which seek to minimize permanent casing and maximize temporary casing. (See, e.g., Ex. 687 at 4.)

74. Later in the Project, on August 15, 2012, FLJV advised Case that it had decided to stop paying for extending the length of the shafts beyond those shown on the plans; specifically, FLJV refused to pay Case for extra linear feet of drilling and permanent casing. (Ex. 1752.)

75. NCDOT does not typically pay contractors for lowering the shaft depth beyond that shown on the design plans when done only to accommodate the driller's preferred methods. (Doc. 126 at 111.) In contrast, NCDOT does pay for extra units of drilling and casing when the necessary subsurface condition is lower than expected by the designers. (Id. at 112.)

76. Case continued to require that the shafts be redesigned, lowering the elevation to rock or competent material. For these shafts, FLJV paid Case only for the quantities reflected on the plans, rather than for the as-built quantities.

77. Had FLJV paid Case for the unauthorized work, it would have paid $388,223.31 based on the unit prices.

Additional Rebar

78. Rebar, or reinforcing steel cages, were inserted into the fully drilled shafts before the concrete was poured in.

79. Because Case increased the shaft lengths to accommodate

its chosen means and methods, this, in turn, required more rebar to fill the shaft and stabilize the concrete. FLJV seeks $257,544 for the additional rebar it had to provide as a result.

Variable Subsurface Conditions

80. The subsurface conditions at the Yadkin Project were highly variable. However, they were not significantly more variable than in other areas of the Piedmont region.

81. When FLJV was pursuing the Project, it was provided soil borings from NCDOT. These borings showed the subsurface materials to be highly variable.

82. After being awarded the Project, FLJV employed F&R to perform additional borings at the Project site. FLJV performed the minimum required number of borings to meet NCDOT specifications. These additional borings confirmed that the subsurface materials were highly variable over short distances.

83. FLJV considered performing borings at every single drilled shaft location. The borings were only a couple inches in diameter, as opposed to the drilled shafts, which were 54 and 60 inches in diameter. Thus, there was no assurance that the borings would be representative of the entire area of the drilled shaft, even if taken from every shaft location. FLJV ultimately determined that the known costs of such an extensive number of borings outweighed any potential benefits.

84. By the time Case signed the Subcontract, Case knew or

had reason to know that the subsurface conditions were highly variable because FLJV had shared all of its, F&R's, and NCDOT's borings.

85. When Case was excavating the shafts, the materials it encountered at the design tip elevation would sometimes differ from what the designers had originally expected. This was because the designer designed the shafts based on their best judgment and sometimes relied on a boring many feet away as the best representation of the material in the shaft area.

86. When this occurred, Case would sometimes stop drilling while the designers determined whether this difference would affect the design; if so, the designers would proceed to redesign the shaft.

87. This redesign process contributed to the overall delay of Case's performance of its work under the Subcontract. Because the designers knew that the subsurface conditions were highly variable, they could have developed a set of acceptance criteria, allowing the field engineer to determine in the field whether Case should continue drilling until it hit a certain kind of subsurface material or some other elevation. The designers did not create such a contingency plan. The failure to do so contributed to the delay in the Project.

88. This failure was exacerbated by the fact that the drilled shafts were designed in pairs, so that if one shaft required a

possible redesign, so did its twin. Designing shafts in pairs is not common.

89. Ultimately, about 11% of the drilled piers had to be redesigned due to the conditions encountered at the plan depths. (Ex. 751.)

90. Later in the Project, Case hired another company, S&ME, Inc., to conduct borings at every drilled shaft location. Case sent the results to FLJV, which passed them along to the designers. Case seeks reimbursement of $144,380.25 for this work.

91. On average, the S&ME borings were not more accurate than the borings upon which FLJV had relied when originally designing the shafts. (See Exs. 1841, 1842.) These additional borings were not necessary for the construction or design of the drilled shafts. (Doc. 126 at 131.)

92. Case complained when doing the work that it was encountering unexpectedly large numbers of boulders. Boulders are typically considered large pieces of rock, more than a foot in diameter, which can exacerbate excavation. The credible evidence at trial, however, based on the testimony and demeanor of the witnesses and the exhibits admitted into evidence, was that Case did not in fact encounter an unexpectedly large number of boulders on Bridge 2 sufficient to account for any material delay in the drilled shaft work or any reasonably unexpected costs to Case.

Problems with Bent 11

93. Case drilled the shaft and poured the concrete for shaft 1 on northbound bent 11 ("11NB1"). When the quality of the concrete was tested as contemplated by the Subcontract using crosshole sonic logging ("CSL") in July 2011, by Case's CSL subcontractor GRL Engineers, Inc., the results presented two significant potential problems — known as "anomalies." (See Ex. 747.) Although the anomalies improved somewhat at the second testing of the shaft on August 5, no further improvement was found at the third testing on August 15.

94. Case tried to avoid repairing the shaft for several months but ultimately repaired it in November 2011. Case argued that delay was appropriate because anomalies sometimes resolve themselves when the concrete cures, but it had no credible evidence excusing the length of the delay here. Miller also conceded that it was possible that Case caused the anomaly on the shaft. (See Doc. 131 at 147.) The repair was necessary because significant evidence showed serious, potential problems with the shaft that Case had constructed.

95. The credible evidence, considered with Case's problems in constructing the other shafts and in the absence of any reasonable alternative explanation, leads the court to find that 11NB1's CSL results were most likely anomalous due to Case's negligent workmanship, stemming from actions within Case's

control. Case's delayed refusal to repair 11NB1 lacked a reasonable basis.

Dr. Dan Brown

96. During the summer of 2011, Case's president Osborne hired Dan Brown, Ph.D., and his company, Dan Brown & Associates, P.C., to evaluate Case's means and methods, as well as other areas of contention between Case and FLJV.

97. Brown is a recognized expert in the construction of drilled shafts. He made two trips to the work site itself, observing the drilled shaft construction and speaking with Miller. It appears that Brown relied largely or exclusively on Case for the facts necessary to give his opinions.

98. During construction, Brown authored multiple letters to FLJV, giving his opinions on Case's means and methods, as well as the shaft designs. Brown was also the one to recommend that Case hire S&ME to take additional borings at every drilled shaft location. Case seeks reimbursement of $43,699.63 for Brown's consulting work.

Miscellaneous Delays & Expenses

99. Case caused various other small delays and additional expenses on the Project. First, it was discovered early in the Project that one of Case's drills was not the appropriate diameter. NCDOT discovered the problem when it was measuring one of Case's tools, which was labeled as 54 inches but turned out to be 53

inches. Because of this, the designers had to review the designs on all of the remaining shafts to determine whether the design needed to change to accommodate Case's tool. Not every shaft ultimately had to be redesigned, but the designers had to review the plans for every shaft to determine whether a redesign was necessary. Any delay caused by this appears to have been minimal.

100. Second, Case caused cave-ins on some shafts. In some instances, this was caused by Case's air cluster drill, which was a risky and inefficient tool for highly variable geology; for this reason, it is not normally used in the Piedmont and was not necessary on this Project. (See, e.g., Ex. 221.3 at 3.) In other instances, Case failed to properly seal the bottom of the shaft with steel casing. When Case was drilling on hard rock at the bottom of the shaft, the high-powered air tools pushed air through the improperly sealed shaft, causing turbidity in the river. On several occasions, NCDOT shut down the entire drilling operation because the turbidity stirred up silt at prohibited environmental levels. Thirty-four of the 90 RFIs on the drilled shaft work were due to cave-ins. Overall, Case caused cave-ins that contributed to the delay.

101. Third and finally, Case's own equipment downtimes and breakdowns delayed the Project. On more than one occasion, a diver was called to retrieve a drill bit that Case had dropped into an open shaft, shutting down work on that shaft. (See Ex. 642.)

Sometimes Case's equipment broke down, slowing production; at one point, both drill rigs were broken, halting Case's production. (See, e.g., Ex. 623; Ex. 542.)

102. Buck directed Case's employees to omit the extent of the equipment breakdowns from the daily records Case was obligated to submit to FLJV under the Subcontract (Ex. 200 at 7 ¶ 8). Buck feared that the extent of the breakdowns would make it appear "that things were broken down all the time." (Ex. 614.) Buck, who was not present at the job site, also frequently edited the daily reports to FLJV to claim that Case was encountering delays due to FLJV's failure to provide templates, which was factually inaccurate. (See id.) In sum, Case's employees, including but not limited to Buck, manipulated the daily reports to make it appear that FLJV was causing delays and that Case was not causing delays.

Completion of Bridge 2

103. The construction of the drilled shafts ultimately took three times as long as originally expected. Case's "good faith schedule" that it could complete the drilled shafts for both bridges in 16 weeks in reality turned into 44 weeks to finish the shafts on Bridge 2 alone, with Case reaching completion of its Bridge 2 work in December 2011. In April 2011, FLJV and Case had discussed waiving the 16-week requirement in the Subcontract, and, while they reached a tentative oral agreement on this and other

matters intended to be memorialized in writing, they were never able to work out the details of the arrangement, and thus the 16-week requirement was never waived by FLJV.

104. Most of the delay on the Project is attributable to Case rather than FLJV. However, some of the delay was caused by FLJV's failure to coordinate the design and construction of the drilled shafts, as well as the failure of FLJV's designers to create acceptance criteria for the highly variable geology.

105. Case claims that, had it been able to fully implement its intended means and methods, it would have been able to complete the Project in a timely manner. However, Case was in fact able to fully implement its methods on bent 8, which Miller described as "going beautiful" to him. (Doc. 131 at 196.) Case's production rate on the bent 8 shafts was around three times as low as Case had estimated the job. (See, e.g., Ex. 671). Therefore, Case's actual per shaft production rate on Bridge 2 and the average rate at which it took Case to complete the bent 8 shafts were basically equal. Consequently, any limitations on Case's means and methods had little or no effect on Case's productivity.

106. Only tasks on a critical path are the ones actually delaying the final completion of a project; thus, a one-day delay to a task on the critical path becomes a one-day delay to the entire project's completion. (Doc. 133 at 66.) Despite the delays on the job attributable to both Case and FLJV, Case's drilled shaft

work was never on the critical path of the overall Project. For example, in July 2011, FLJV submitted a status update on the entire Yadkin Project to NCDOT. Based on Case's 16-week estimate, the drilled shafts should have been completed at this point, but Case would not complete Bridge 2 until December 2011. Yet FLJV's status update reflects that the drilled shaft work was still not on the critical path. (See Ex. 1174.) It is possible for an item of work to fall so far behind schedule that it is placed on the critical path, but FLJV never presented any evidence that Case's work was ever put on the critical path. Therefore, although there was delay in completing Bridge 2, this did not delay the overall Project, including Bridge 3 and other road work; FLJV in fact timely completed its contract with NCDOT.

107. Although FLJV periodically made payments to Case for the units it had completed on the drilled shaft work, FLJV withheld Case's final payment for Bridge 2 relating to authorized work, totaling $306,717.34. (Ex. 1932.) FLJV claimed the amount as an offset for its damages due to Case's alleged breaches of the Subcontract.

108. FLJV was ultimately satisfied with the quality of Case's drilled shafts. However, by the time Case completed its Bridge 2 work, the relationship between the two companies had grown acrimonious, with each side preparing for litigation.

Bridge 3

109. After Case completed Bridge 2, NCDOT had not cleared up access problems to the Bridge 3 work site. Case, therefore, demobilized its workforce and left the site.

110. Bridge 3 was a relatively small part of Case's scope of work. It was only planned to have 12 drilled shafts, compared to the 140 shafts Case drilled for Bridge 2.

111. When FLJV began sending Case the preliminary design plans for Bridge 3, Case refused to do the work at the unit prices in Attachment C of the Subcontract. (Ex. 691.) Whereas the Subcontract priced the 60-inch permanent casing for Bridge 3 at $278 per linear foot, Case now demanded $2,500 per linear foot; whereas the Subcontract priced the in soil excavation at $241 per linear foot, Case demanded $2,500 per linear foot. The Subcontract also set a price of $256,185 for Case's mobilization, which presumably included the cost to Case of mobilizing to Bridge 2 and then moving its operation to Bridge 3. Although Case had never mobilized to Bridge 3, it was now demanding $1,000,000 for doing so. Case's new estimated total for Bridge 3, therefore, was $3,450,000, a nearly tenfold increase from the original Subcontract.

112. FLJV balked at this pricing and refused to pay it unless Case could explain how it reached such figures. Case merely responded by complaining about the problems it believed it had

encountered on the Bridge 2 work. (Id.) In particular, Case refused to justify the $1,000,000 mobilization price tag.

113. On March 15, 2012, Mathews sent a letter to Buck terminating Bridge 3 from the scope of Case's work, characterizing this act as a change order reducing the scope of Case's work. (Id.) This termination left no work for Case to do on the Project.

114. Case responded that the change in scope was in fact a termination for convenience and continued preparing a claim against FLJV. (Ex. 1202; Ex. 1203.)

115. More likely than not, Case purposely quoted the new unit prices at unreasonably high rates because it wanted to recoup its costs or be terminated from the job for convenience, so it could argue that the Subcontract's termination for convenience clause would permit it to recoup its losses.

116. At no time before filing this lawsuit did FLJV ever declare that Case was in default and give notice of the default to Case's surety, Fidelity & Deposit Company of Maryland ("F&D").

117. In the meantime, FLJV sought quotes from other drillers to complete Bridge 3. Coastal Caisson Corporation proposed to do the work for an estimated $471,255 (the price being based on preliminary quantities and unit prices), with only $60,000 of that total being for mobilization. (Ex. 691.) FLJV ultimately paid Coastal Caisson $542,542.48 for the drilled shaft work on Bridge 3. (Ex. 375.)

118. FLJV completed the overall Project, including Bridges 2 and 3, on time and within NCDOT's budget.[12] (Doc. 121 at 62–63.)

II. CONCLUSIONS OF LAW

This court has diversity and supplemental jurisdiction pursuant to 28 U.S.C. §§ 1332, 1367. The substantive law of North Carolina applies to the claims in this case.

Under North Carolina law, to prevail on a breach of contract claim, the "plaintiff's evidence must show a valid contract existed between the parties, the defendant breached the terms of the contract, the facts constituting the breach, and damages resulted from the breach." Lee Cycle Ctr., Inc. v. Wilson Cycle Ctr., Inc., 545 S.E.2d 745, 751 (N.C. Ct. App. 2001), aff'd, 556 S.E.2d 293 (N.C. 2001). The damages must be "the natural and probable result of the acts complained," "must show loss with a reasonable certainty," and not "be based upon mere speculation or conjecture." Pike v. Wachovia Bank & Trust Co., 161 S.E.2d 453, 466 (N.C. 1968). The parties do not dispute the validity of the Subcontract in this case; rather, they focus on whether there has been breach of the Subcontract and whether the opposing party can prove damages with reasonable certainty.

In large part, the outcome of this case depends on two questions: (1) What were FLJV's contractual obligations, if any,

[12] FLJV's overall scope of work also included some work on roadways.

to accommodate Case's preferred means and methods? (2) Who, if anyone, is responsible for the delay in the drilled shaft construction?

A. Accommodation of Case's Means and Methods

Case argues that the Subcontract obligated FLJV to ensure that the drilled shafts were designed in a way that accommodated Case's planned means and methods. (Doc. 96 at 6.) FLJV argues that it had no duty to design the shafts in a way that accommodated Case's preferred means and methods; rather, it was Case that had the burden under the Subcontract to employ means and methods accommodating the design plans. (Doc. 97 at 19.) The issue came to a head because the final plans for some of the shafts precluded Case's preferred means and methods.

It is worth noting that FLJV is not responsible for Case's decision not to use outer temporary casing. No one prevented Case from using outer temporary casing — indeed, Case used it on about 20% of the piers. Rather, Case was merely required to fill the annular space to make the method sound from an engineering perspective. All the credible evidence confirmed this conclusion, including Case's own expert, Dr. Brown. (See, e.g., Doc. 133 at 188–90.) Even if FLJV had been required to accommodate this construction method, FLJV did nothing to preclude the use of outer temporary casing beyond enforcing the requirements of NCDOT and the judgment of the engineers.

The real dispute is over the depth to which Case desired to take the permanent casing. This conflict centers on the proper construction of one paragraph of the Subcontract. In Attachment A, the "Special Terms & Conditions," paragraph 12 refers to Case's means and methods: "Subcontractor methods are based upon drilling inside seated steel casings (into rock or competent material that will support the use of air core barrels, chisels and/or air down hole hammers) using water slurry, (all water provided by Contractor)." (Ex. 200 at 7.)

This paragraph is ambiguous. Register v. White, 599 S.E.2d 549, 553 (N.C. 2004) ("An ambiguity exists in a contract when either the meaning of words or the effect of provisions is uncertain or capable of several reasonable interpretations. An ambiguity can exist when, even though the words themselves appear clear, the specific facts of the case create more than one reasonable interpretation of the contractual provisions." (citations omitted)). The parties dispute whether the "steel casings" referred to here should be read as permanent casing (Case's preferred reading) or temporary casing for the inner temporary casing method (FLJV's preferred reading). When this paragraph is read in conjunction with the Unit Price Schedule, Attachment C and the other credible evidence at trial, the methods referred to in paragraph 12 show that Case's "methods" were to drill *permanent* casing into rock or other material competent enough

to support the use of air tools. This is because, as Attachment C shows, the expected linear feet of permanent casing equals the expected linear feet of drilling for that casing. Thus, every foot of the shaft was meant to be permanently cased. This is Case's proposed interpretation of the "methods" referred to in paragraph 12, and the court accepts this interpretation as the only one supported by the credible extrinsic evidence. See Holshouser v. Shaner Hotel Grp. Props. One Ltd. P'ship, 518 S.E.2d 17, 23 (N.C. Ct. App. 1999) ("[I]f the terms of the contract are ambiguous then resort to extrinsic evidence is necessary and the question is one for the jury." (quoting Whirlpool Corp. v. Dailey Construction, Inc., 429 S.E.2d 748, 751 (N.C. Ct. App. 1993)), aff'd, 524 S.E.2d 568 (N.C. 2000).

The problem for Case, however, is that, in paragraph 12, FLJV has promised to do very little with regard to what Case's "methods are based upon." The only language of obligation is FLJV's promise to provide the water for Case's "water slurry." Nowhere in paragraph 12 has FLJV promised to design the drilled shafts in a way that will accommodate Case's methods of taking permanent casing all the way down to rock or other competent material. FLJV only promised that, if Case executed that method, FLJV would provide the water for the water slurry.

The Subcontract has no provision expressing FLJV's direct control over Case's means and methods. Per the terms of the

Subcontract preceding the attachments, Case agreed to "[p]rovide all supervision, labor, tools, equipment and materials to perform drilled shaft items, as noted in Attachment C, per the plans and 2006 NCDOT standard specifications." (Ex. 200 at 2.) Unless otherwise noted in a construction agreement, "It is axiomatic that a contractor [rather than the owner] is the party responsible for determining the best way to construct the improvements. This is often expressed in terms of construction 'means and methods.'" 5 Philip L. Bruner and Patrick J. O'Connor, Jr., Bruner and O'Connor on Construction Law § 15:63 (2002 & Supp. 2015).[13] As noted at trial, general contractors generally avoid directing a subcontractor's means and methods because doing so exposes the general contractor to expenses arising from those directives. See also id. ("Where the owner interferes with a contractor's means and methods [by] giving direction as to how to accomplish the work, it is exposing itself to liability for any delays and extra costs that ensue from its directives."). The Subcontract left to FLJV's discretion the ability to create any plans for the drilled shafts it wanted (in compliance with NCDOT specifications), and allocated the burden of constructing those shafts, by any means or methods, to Case.

[13] The principle is just as applicable to the relationship in this case, between a contractor and its subcontractor. The contractor generally hires the subcontractor because of the latter's expertise in performing the subcontract work; the subcontractor, as the party performing the work, determines the best means and methods for getting the job done.

Paragraph 12 did not give Case a right to insist on the shafts being designed to suit its preferred construction needs. The parties could have contracted for that, but did not do so. Indeed, although Case maintained at the outset of the trial that the Subcontract was a "means and methods" or "time and materials" contract, its witnesses conceded that it was not, but was rather a unit price contract. (See, e.g., Doc. 129 at 147; id. at 175–76; Doc. 130 at 103–04.)

Case argues that FLJV should have drawn up plans to accommodate taking permanent casing down to rock or competent material. FLJV could have done that, but it was not contractually required to do so. The Subcontract, like most, put the burden on the subcontractor to use means and methods consistent with the final plans drawn up by FLJV. Once paragraph 12 is explained through extrinsic evidence, Case's preferred methods become clear. However, even after the intended method is understood, it is plain that FLJV had no contractual obligation to design the drilled shafts to accommodate Case's express desire to take permanent casing down to rock or competent material.

B. Fault for the Delay

The other fundamental dispute in this case is factual. The drilled shafts that were expected to take 16 weeks to complete in fact took 44 weeks. Which party, if either, is responsible for the delay? The answer is that both share responsibility for it.

FLJV is partly to blame because it knew, or should have known, that its designers were designing Bridge 2 in a manner inconsistent with the construction methods Case intended to employ. Although FLJV was not contractually bound to accommodate Case's preferred construction methods, FLJV failed to coordinate between Case and the designers, to whom FLJV (not Case) had exclusive contractual access. Then, instead of insisting that Case build Bridge 2 according to the designs, FLJV, through its designers, began redesigning the Project to accommodate Case's construction methods. These redesigns (initiated through RFIs) increased costs and delayed the drilled shaft work. The delay in the redesigns was compounded because Bridge 2's shafts had been designed in pairs, so that a redesign on one shaft required a corresponding redesign of its twin. Given the known variability in the subsurface conditions, such a design practice invited potential delay. However, the extent to which the redesigns caused delay has been exaggerated by Case, which continued drilling on shafts for which RFIs had been issued but not resolved.

Case's other allegations of delay are not credible, however. There was no evidence that the change in shaft size on bents 15 to 18 caused delay, which is unsurprising given that these bents would be the last ones constructed and FLJV gave notice of the change relatively early during (and before) construction. There was also no credible evidence that Case needed more templates (or the

templates to be moved more quickly) to complete the Project. Case further claims that FLJV's borings were inadequate. There was no credible evidence that this was so. The borings Case ultimately took, through S&ME, at each shaft site were not materially more accurate than the original borings. (See, e.g., Ex. 1841; Ex. 1842.)

So, FLJV was partly at fault for the delays on the Project. Significant fault for delay also rests with Case, however. Case created delay in part, and in part Case accepted risk for delay under the Subcontract.

Case created some initial delay when, on the first day of construction, it sought to push the outer temporary casing below the scour line. This was unsound from an engineering perspective unless the annular space was filled; and this would not have been a surprise had Case been as familiar with NCDOT practices and customary techniques in the Piedmont region as it had represented to FLJV.

Case further delayed the Project (though the extent of the delay was likely small) because it used a drill with an incorrect size label. All, or nearly all, of the shafts had to be considered for redesign based on the mislabeled tool. There was also persuasive evidence that Case's equipment suffered abnormal breakdowns and maintenance issues. There were some breakdowns, for example, arising from broken drill bits, which fell into the

shafts and required divers to be called in, clearly delaying completion. This conclusion is bolstered by a fair inference from the fact that Case sought to hide these breakdowns from FLJV.

Case also delayed completion of Bridge 2 through its own workmanship. There were numerous cave-ins on the Project caused by Case's workmanship that initiated RFIs. And, as noted, Case refused to repair 11NB1 for over two months, delaying FLJV's follow-on work.[14]

The Subcontract allocated some risk to Case for completing the work within the agreed-to time. Case has sought to excuse its untimely performance, in part, by claiming that the subsurface conditions were so variable that a change order should have been issued to give it more time to complete the job.[15]

This argument falls flat, however, because the original borings showed that the subsurface conditions were highly variable, just as they turned out to be. Case knew it was taking a risk when it promised to complete both bridges within sixteen weeks. Case's position throughout the litigation has been that it

[14] FLJV argues that the delay to the follow-on work totaled some twenty-seven days (Doc. 135 ¶ 88), but no credible witness with personal knowledge testified to this figure (see, e.g., Doc. 128 at 140 (Price testifying that he did not know the total delay or how it was calculated); Doc. 125 at 195 (Linda Brumfield testifying that she did not know what the twenty-seven days represented)).

[15] Case has also argued that it should have been given more time due to an unexpected number of boulders on the job. The credible evidence, however, is that there were not a significant number of boulders on the job sufficient to account for any material quantum of delay.

encountered different subsurface conditions than expected. In a sense, that may be true: The designers were forced to make some assumption about the type of subsurface materials at the shaft tips based on the original borings. There were occasions when, during drilling, Case discovered that the conditions differed from those the designers had expected at the shaft tip. But these differences were reasonably foreseeable based on the borings. Case knew when it executed the Subcontract that the conditions would be highly variable, such that redesign might be necessary based on conditions encountered; Case even promised that it had "fully inspected the site and all its conditions . . . having formed its own independent evaluation of them, not relying on any representation by [FLJV]." (Ex. 200 at 2.) Case accepted this risk when it agreed to a good-faith estimated completion date in the Subcontract. FLJV did not insist on a definite timeframe in the Subcontract, but Case's promise to perform within sixteen weeks undoubtedly helped it secure the work. When this promise turned out to be unrealistic, especially as demonstrated by Case's production rate on bent 8, the fault rested with Case.

Based on all of these findings, the court finds that both parties contributed to the delay in Bridge 2's completion.

C. FLJV's Claims

FLJV presented evidence on nineteen different items of damages, grouped together in four broad categories. (Exs. 204,

204.1.) Each category is considered in turn.

1. Damages "Directly Tied to Case's Duration"

At trial, FLJV maintained that Case had 18 weeks to complete the work, due to holidays added to the 16 week schedule; by the time FLJV submitted post-trial briefing, it argued that Case contractually had up to 22 weeks to complete the work, due to holidays and 4 weeks of "float" built into the Project's schedule (Doc. 135 ¶ 82). FLJV's damage items 1, 3, 7, and 10 relate to the amount of time Case was working on the job.

In calculating its delay damages, FLJV thus credited Case with 22 weeks to complete the work. Since the drilled shafts took 44 weeks to complete, FLJV is seeking delay damages for 22 weeks of work. North Carolina law permits such damages. Bolton Corp. v. T.A. Loving Co., 380 S.E.2d 796, 805 (N.C. Ct. App. 1989) ("Damages for duration-related economic injury, that is, 'maintaining required personnel, equipment and services at the project site . . . after the originally scheduled completion date' have been recognized by our Supreme Court." (quoting Davidson and Jones, Inc. v. N.C. Dep't of Admin., 337 S.E.2d 463, 467 (N.C. 1985))). To show delay damages in a construction case, "[t]he method of proof must be as specific as the circumstances will allow. [The plaintiff] must present whatever evidence is available to tie the loss to the period of 'undue delay' attributable to [the defendant], and, 'must also demonstrate why better or more

certain evidence is not obtainable.'" Id. (citations omitted).

For Item 1 of its damages, FLJV seeks the cost of providing a support crane beyond 22 weeks. Under the Subcontract, FLJV was obliged to provide a crane and crane operator to support Case's operations. (Ex. 200 at 10.) The equipment costs are estimated based on the rental rates from an equipment blue book, rather than FLJV's internal rates. Linda Brumfield testified that she calculated the costs using blue book rental rates because FLJV's internal rates fail to capture many of FLJV's actual costs, such as standby time and maintenance.[16] (Doc. 125 at 148.) (During the Yadkin Project, Brumfield was FLJV's on-site business manager, handling FLJV's financial, accounting, and administrative work for the entire Project.) Courts have found equipment rate manuals to be reasonable estimates of actual costs when internal rates are shown to be inadequate. See 6 Bruner and O'Connor, supra, § 19:104 ("Even when use of rate manuals are not mandated by regulation or contract clauses, both federal and state courts have been willing to accept established equipment rate manuals as legal evidence supporting claim presentations of reasonable estimates of 'actual cost' for contractor owner equipment cost reimbursement. This has been particularly true where proof of 'actual booked equipment

[16] Kevin Lugo, Case's expert, sought to reduce FLJV's damages claim to FLJV's own internal rates, but he seemed unaware that FLJV's internal rates fail to capture actual costs. Therefore, the court does not credit his opinion on the adequacy of FLJV's internal rates.

costs' is inadequate, incomplete, or not representative of full costs attributable to equipment ownership and operation."). Moreover, NCDOT's Standard Specification for Roads and Structures, incorporated into the subcontract to some degree, specifically approves of the use of blue book rental rates. (Ex. 201.1 § 109-3(D).) Regardless of whether this particular provision is incorporated into the Subcontract, it is persuasive evidence of industry custom. Case has failed to persuasively rebut FLJV's evidence that the use of an equipment rate manual was reasonable in this case.

For Item 3 of its damages, FLJV seeks the cost of removing drilled spoils (i.e., excavated material) for the extra 22 weeks beyond what it expected based on Case's promise in the Subcontract. Under the Subcontract, FLJV was responsible for removing the spoils from the work site. (See Ex. 200 at 9–10.) Items 7 and 10 represent the costs of field engineers due to Case's extended duration, both F&R's and FLJV's own, respectively.

Under North Carolina law, "where both parties contribute to the delay, neither can recover damages, unless there is proof of clear apportionment of the delay and expense attributable to each party." Biemann & Rowell Co. v. Donohoe Cos., Inc., 556 S.E.2d 1, 5 (N.C. Ct. App. 2001); accord Cleveland Const., Inc. v. Ellis-Don Const. Inc., 709 S.E.2d 512, 525 (N.C. Ct. App. 2011) ("Under the construction law principle of 'concurrent delay,' where two or

more parties proximately contribute to the delay of the completion of the project, none of the parties may recover damages from the other delaying parties, 'unless there is proof of clear apportionment of the delay and expense attributable to each party.'"); cf. L.A. Reynolds Co. v. State Highway Comm'n, 155 S.E.2d 473, 482 (N.C. 1967) ("Although there is authority to the contrary, the majority rule is that where a contract contains a provision for liquidated damages, and delays in its completion are occasioned by mutual defaults, the courts will not attempt to apportion the damages, and the obligation for liquidated damages is annulled in the absence of a contract provision for apportionment . . . .").

Throughout this case, each party has devoted its efforts to blaming the other for delay — an "all or nothing" approach; neither party has given the court any way to apportion the delay. The court agrees with FLJV that Case's delay breached the Subcontract, but FLJV has not put the court in a position to say, with reasonable certainty, what measure of damages it is entitled to recover. Therefore, given that Items 1, 3, 7, and 10 all depend on the duration of Case's work, and given that there was a concurrent, unapportioned delay in this work, the court declines to award FLJV these damages.

2. Other Work Disrupted and Delayed

FLJV damage Items 16 through 18 seek further delay damages,

including extra overtime and acceleration for labor costs, extended equipment costs, and extended field supervision and engineering costs. For the reasons given above, in Part II.C.1, FLJV has failed to establish a way for the court to apportion responsibility for the delay with any reasonable certainty. Therefore, FLJV is not entitled to these additional delay damages.

3. FLJV's Productivity Losses

At trial, for FLJV's damage Items 12 through 15 (Exs. 204, 204.1), FLJV sought to prove that Case's delay on the Project damaged FLJV's productivity rates. FLJV aims to calculate the productivity loss through the "measured mile" method. This method is "viewed judicially as [the] most acceptable for proving loss of productivity damages." 5 Bruner and O'Connor, supra, § 15:116. The technique requires a computation of efficiency during a time period in which there has been no delay or disruption (the "unimpacted" period), and then a computation of efficiency during the period in which a delay or disruption has occurred (the "impacted" period). The difference in these two levels of efficiency gives a figure for determining the loss of productivity during the entire impacted period.[17]

[17] One authority on construction law offers a helpful example of how this process works:

> Assume that a contractor is pouring concrete for 10 identical pads (Group A), under good conditions, and uses 500 labor hours to do so, or 50 hours per pad. The same contractor, on the same project, with the same supervision and crews pours

Before trial, Case moved in limine to exclude any expert testimony by FLJV on its measured mile claim. (Docs. 103, 104.) Case argued that a measured mile analysis necessarily calls for expert opinion under Rule 702 of the Federal Rules of Evidence. Case noted that FLJV never disclosed any expert witnesses on damages as required by Rule 26(a)(2) of the Federal Rules of Civil Procedure. FLJV conceded that it had not made such a disclosure, but argued that (1) it intended only to offer lay opinion on damages, as permitted by Rule 701, and (2) even if the testimony constituted expert opinion, the court should not exclude it.

The court reserved ruling on Case's motion, preferring to hear the witness' testimony before determining whether it constituted expert opinion. At trial, FLJV offered the testimony of Brumfield, who computed FLJV's measured mile analysis and served to introduce the measured mile exhibits. She testified as to a measured mile analysis she had performed, tracking FLJV's

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> 10 more pads (Group B) which are identical to Group A, except that this time the contractor uses 800 hours for the same work due to disruption by other parties (80 hours per pad). Employing the measured mile technique, the contractor's efficiency loss due to the disruption can be calculated as: 80 hours/pad in Group B minus 50 hours/pad in Group A, or 30 hours per pad incurred due to disruption for each pad in Group B. The contractor's lost efficiency damage is thus 30 hours X 10 pads in Group B = 300 hours X the applicable labor rate (assume $25/hr) equals $7,500.

Lee Davis, Laura Stipanowich, & Walter Bauer, Does the "Measured Mile" Measure Up? When It Has, When It Hasn't, and What May Happen Under Daubert/Kumho, Construction Briefings (April 2007).

productivity while Case was working on the job. Brumfield was not familiar with the measured mile terminology, instead referring to the figures as simply FLJV's "productivities." For different portions of FLJV's allegedly impacted work, Brumfield determined FLJV's "unimpacted" productivity rates by averaging the productivity rates of the most productive three-week period out of all weeks that FLJV was working on particular tasks.

Under Rule 701, lay opinion testimony cannot be "based on scientific, technical, or other specialized knowledge within the scope of Rule 702." Although the line between Rule 701 lay opinion and Rule 702 expert opinion can be a "fine" one, United States v. Perkins, 470 F.3d 150, 155 (4th Cir. 2006), the Fourth Circuit and the Rules themselves provide guidance on the distinction. As the advisory committee notes explain, "[T]he distinction between lay and expert witness testimony is that lay testimony 'results from a process of reasoning familiar in everyday life,' while expert testimony 'results from a process of reasoning which can be mastered only by specialists in the field.'" Fed. R. Evid. 701 advisory committee notes (citation omitted); accord Certain Underwriters at Lloyd's, London v. Sinkovich, 232 F.3d 200, 203 (4th Cir. 2000) ("A critical distinction between Rule 701 and Rule 702 testimony is that an expert witness 'must possess some specialized knowledge or skill or education that is not in the possession of the jurors.'" (quoting Kenneth Redden & Stephen

Saltzburg, Federal Rules of Evidence Manual 225 (1975))). Moreover, when a witness gives his testimony in response to a hypothetical question, this indicates that he is giving an expert opinion within Rule 702. Sinkovich, 232 F.3d at 203 ("Unlike a lay witness under Rule 701, an expert can answer hypothetical questions and offer opinions not based on first-hand knowledge because his opinions presumably 'will have a reliable basis in the knowledge and experience of his discipline.'" (quoting Daubert v. Merrell Dow Pharm., Inc., 509 U.S. 579, 592 (1993))).

Claims for lost productivity damages, based on the measured mile method or any other method, normally require expert opinion testimony under Rule 702:

> Loss of productivity claims can be difficult to prove. Experts are generally relied on to develop and document such claim[s]. According to the United States Court of Claims:
>
> > It is a rare case where loss of productivity can be proven by books and records; almost always it has to be proven by the opinions of expert witnesses. However, the mere expression of an estimate as to the amount of productivity loss by an expert witness with nothing to support it will not establish the fundamental fact of resultant injury nor provide a sufficient basis for making a reasonably correct approximation of damages.

S. Comfort Builders, Inc. v. United States, 67 Fed. Cl. 124, 144 (2005) (quoting Luria Bros. & Co. v. United States, 369 F.2d 701, 713 (Ct. Cl. 1966)). And courts generally require that expert

opinion be offered to support the measured mile method specifically. See, e.g., Daewoo Eng'g & Const. Co. v. United States, 73 Fed. Cl. 547, 580–81 (2006) ("The measured mile approach to damages is a form of total cost calculations that requires subjective judgment calls *by the expert*, who estimates damages by comparing periods of production that are unaffected by the contractor's alleged government-caused delay, with periods during which delays affected its production adversely. . . . We assume that a finder of fact faced with such a method of estimating damages would want to have confidence in the *experts'* ability and objectivity. A court would be particularly concerned to know how *the experts* picked periods of productive and non-productive construction for comparison." (emphasis added)), aff'd, 557 F.3d 1332 (Fed. Cir. 2009).

Indeed, in every case the court has reviewed involving the measured mile method, an expert was required to apply the method. This court has not found, nor has FLJV cited, any case approving lay opinion for a measured mile analysis. This method, like virtually every method of measuring lost productivity, appears to require the opinion of an expert. This is unsurprising. The point of the method is to compare what actually happened to a *hypothetical* universe where the defendant did not disrupt productivity. The construction of hypothetical production rates, using mathematical methods, is the hallmark of expert opinion

testimony under Rule 702. See Sinkovich, 232 F.3d at 203.

FLJV suggests that Brumfield's testimony is not expert opinion but lay opinion because she is an employee rather than "an outside expert retained by [FLJV] specifically for the purpose of providing expert testimony." (Doc. 107 at 6.) This distinction seems to import the analysis from Federal Rule of Civil Procedure 26(a)(2)(B), which addresses whether FLJV was required to disclose a written expert report from Brumfield. But such a distinction does not address whether Brumfield's application of the measured mile method calls for expert opinion under Rule 702.[18] FLJV offers no authority in support of its argument. Under the plain language of Rules 701 and 702, the relationship of the witness to the party does not answer whether the witness is applying "scientific, technical, or other specialized knowledge" in reaching his opinion.

Therefore, Brumfield's testimony regarding FLJV's productivity damages, as computed with the measured mile method, qualifies as expert opinion testimony under Rule 702.

The remaining question is whether Brumfield's testimony should have been excluded because she was not disclosed as an

[18] Nor does the distinction have any bearing on the question of whether FLJV had a duty to disclose the identity of any expert witness who may testify at trial. See Fed. R. Civ. P. 26(a)(2)(A) ("[A] party must disclose to the other parties the identity of any witness it may use at trial to present evidence under Federal Rule of Evidence 702, 703, or 705.").

expert as required by Rule 26(a)(2).

Under Federal Rule of Civil Procedure 37(c)(1), when a party proposes to introduce evidence that it failed to disclose under Rule 26(a), the court shall automatically exclude such evidence from trial "unless the failure was substantially justified or is harmless." The nondisclosing party bears the burden of excusing its failure to disclose. S. States Rack & Fixture, Inc. v. Sherwin-Williams Co., 318 F.3d 592, 595–96 (4th Cir. 2003). In evaluating a party's excuse, the court balances five factors:

> (1) the surprise to the party against whom the evidence would be offered; (2) the ability of that party to cure the surprise; (3) the extent to which allowing the evidence would disrupt the trial; (4) the importance of the evidence; and (5) the nondisclosing party's explanation for its failure to disclose the evidence.

Id. at 597.

The balance of these factors weighs against FLJV. There is no evidence that Case ever knew that Brumfield would express an expert opinion. Nor did FLJV show how Case could have cured the surprise on the eve of trial. Importantly, FLJV makes no attempt to explain its failure to disclose Brumfield as an expert. Therefore, FLJV has not carried its burden, and Brumfield's testimony will not be considered.

Moreover, and alternatively, the court finds Brumfield's testimony completely rebutted by FLJV's damages expert, Kevin Lugo. Lugo opined that a proper measured mile analysis showed

that Case did not harm FLJV's production rates, nor had Brumfield's analysis considered known causes of delay in the overall Project besides Case. Further, Lugo testified that, by applying a customary measured mile analysis, FLJV's production rates for certain jobs were sometimes better when Case was on the job than off the job. Clearly, Brumfield's methodology was designed to make FLJV's production rates seem as bad as possible for certain periods, regardless of whether Case harmed FLJV's production rates.

Therefore, for all these reasons, the court rejects FLJV's alleged productivity losses based on a measured mile analysis.

4. Additional Support Costs

For its damage Items 2, 4, 5, 6, 8, 9, and 11 (Exs. 204, 204.1), FLJV seeks recovery of miscellaneous costs incurred to support Case's operation that FLJV contends it was not contractually required to provide.

a. Land Templates

Item 2 seeks $110,088 in damages for FLJV's labor and equipment costs for setting up templates for shafts over land (as opposed to those in the Yadkin River). Under the Subcontract, FLJV was obligated to provide "templates for water locations." (Ex. 200 at 7 ¶ 11.) The Subcontract makes no mention of FLJV's obligation to provide templates for land locations. The principle *expressio unius est exlcusio alterius* suggests that the expression

of "water locations," and the absence of "land locations," is an implied exclusion of the latter. The evidence at trial also confirmed that the templates are not normally needed for land locations. Although some of the land locations were in areas of the flood plain, there was no indication that the areas were wet at the time of construction. Therefore, there was no express agreement that FLJV would provide land templates.

Since the Subcontract did not oblige FLJV to provide templates for land locations, FLJV cannot proceed under a theory of breach of express contract — the only theory FLJV has alleged in its complaint and has presented throughout the litigation. It is unclear, based on the evidence at trial, why FLJV provided the templates at these locations, besides attempting to appease Case and move the Project along. If FLJV's theory is that the parties agreed to modify the Subcontract, so that FLJV would provide this additional template support, FLJV has failed to introduce evidence of that modification. If FLJV's theory is one of quantum meruit — breach of an implied contract — it failed to plead the claim in the complaint and never mentioned it in its post-trial briefing.[19]

[19] Nevertheless, the scant evidence on this issue at trial cannot meet FLJV's burden of production or persuasion on the issue. A prima facie case of quantum meruit requires a plaintiff to show that "(1) services were rendered to defendants; (2) the services were knowingly and voluntarily accepted; and (3) the services were not given gratuitously." Envtl. Landscape Design Specialist v. Shields, 330 S.E.2d 627, 628 (N.C. Ct. App. 1985). There was no evidence that the land templates were anything but a gratuitous effort by FLJV to move the work along. Though the law sometimes "presumes that valuable services are rendered with the

Therefore, FLJV has failed to demonstrate a viable theory of recovery for the cost of the land templates.

b. Drilled Shaft Equipment Moves

Item 4 of FLJV's damages claim seeks to recover the cost of moving Case's equipment and materials with machinery other than the support crane, such as a forklift. Under the Subcontract, FLJV was obliged to provide Case "with an insured, operated, maintained, fueled and suitably sized and configured service crane to handle casing, rebar and any other materials, and to assist [Case's] operations as and when needed." (Ex. 200 at 10.)

During construction of the drilled shafts, Miller ordered FLJV to retrieve equipment and materials for Case's operations with FLJV's smaller machinery. When FLJV refused, claiming that it had no such duty, Miller threatened that he would order the support crane to pick up the equipment instead. The crane was much larger than necessary to transport the equipment. Even more importantly, the large support crane's movement up and down the trestle interfered with all other work, including FLJV's and that of other subcontractors. To avoid this impact, FLJV retrieved

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expectation of payment," Scott v. United Carolina Bank, 503 S.E.2d 149, 152 (N.C. Ct. App. 1998), that presumption is not warranted here because FLJV's witnesses consistently testified that FLJV made efforts "to partner" with Case to avoid the parties building claims against one another. FLJV never expected Case to pay for the land templates until after the services were rendered, when FLJV was preparing claims for litigation. See id. ("Quantum meruit claims require a showing that both parties understood that services were rendered with the expectation of payment.").

Case's equipment and materials with its forklifts and other lower-impact machinery. FLJV now seeks to recover for the cost of using its other equipment.

The support crane provision of the Subcontract is quite broad, permitting Case to use the crane to transport "any . . . materials" and to assist Case's "operations as and when needed" with the support crane. (Id.) Therefore, when Miller threatened to use the crane to move small materials, he was making a demand within Case's contractual rights. That FLJV found it more efficient and less disruptive to retrieve the items with smaller equipment was nothing but a reasonable way for FLJV to perform its contractual obligation. Therefore, FLJV has failed to show that Case's demand breached the Subcontract.

c. Additional Support

Item 5 of FLJV's damages claim is actually four different costs.

First, FLJV seeks the cost of chipping the concrete at the top of some shafts to a level appropriate for it to install the columns. On some shafts, Case had poured the concrete too high, above the level shown on the plans. Although this was clearly Case's fault, the Subcontract expressly excluded such chipping costs from Case's scope of work. (Ex. 200 at 9 ("Exclusions[:] . . . Any chipping of caisson concrete for cap preparation . . . .").) Therefore, FLJV is not entitled to the cost of chipping

down the concrete.

Second, Item 5 includes the cost of repairing the trestle, apparently due to damage by Case. However, FLJV failed to submit any evidence by anyone with personal knowledge that the trestle had been damaged or that Case was the cause. Therefore, FLJV cannot recover for this cost.

Finally, the balance of the costs contained in Item 5 is for "extended CSL tubes," and payments to the designer, STV, for "additional RFI charges, redesigns, [and] corrections." (Doc. 125 at 169, 202–03.) However, FLJV did not present any witness with personal knowledge of how the costs were incurred with any reasonable certainty. The evidence presented at trial makes it impossible for the court to understand with any confidence what these numbers represent. Thus, the court is unpersuaded that FLJV is entitled to these costs.

d. Additional Rebar Costs

Item 6 seeks to recover the cost of extra rebar installed because Case extended the shaft lengths to accommodate its means and methods. The Subcontract, however, clearly excludes the provision of rebar from Case's scope of work. (Ex. 200 at 9 ("Exclusions[:] . . . Provide, tie and deliver to each hole full length steel reinforcing cages [rebar] (including CSL tubes and spacers) adequately braced and rigged for lifting. (Subcontractor will place cages.)").)

FLJV appears to argue that, despite this provision, it should be permitted to recover these costs because Case breached the Subcontract by extending the shaft lengths beyond the elevation shown on the plans to accommodate its preferred means and methods. Case argues that FLJV's engineers redesigned the shafts based on Case lowering the elevation and accepted Case's ultimate construction, so that there was not, in fact, any breach.

Until August 15, 2011, FLJV had decided to pay Case for extra drilling and casing quantities that went beyond those required by the design, in accommodation of Case's preferred means and methods. However, on August 15, FLJV advised Case that it would no longer pay for quantities beyond those required for the design, though FLJV would permit a redesign of the shafts in accommodation of Case's preferred means and methods. (See Ex. 1752.) This letter said nothing about the costs of additional rebar, which would obviously be needed if the shaft lengths were increased. Therefore, it appears that FLJV did in fact approve the design and construction of increased shaft lengths, even if not the payment for additional casing and excavation after August 15.

FLJV has not pointed to any specific provision of the Subcontract that Case has breached. Therefore, FLJV is not entitled to recover these costs.[20]

[20] FLJV's hand is worsened by the fact that the damages calculation does not segregate the additional rebar costs incurred before and after the

e. Additional Geotechnical Engineering & Foundation Design Costs

Items 8 and 9 are the total costs that FLJV paid F&R and STV for redesigning the drilled shafts, minus a 20% redesign allowance FLJV had with these subcontractors.[21] (Doc. 125 at 207–08.) The redesigns each correspond to an RFI, of which there were 90 on the Project. As FLJV admits, 3 of the 90 RFIs were not Case's fault. (See Ex. 751.) Forty-five of the RFIs were initiated primarily because Case sought to lower the shaft tip elevation by pushing permanent casing beyond the elevation shown on the plans. (Id.) The remaining 42 RFIs were due to various issues, with the responsibility of these falling primarily on Case. (Id.)

Under the Subcontract, shaft design and other geotechnical engineering was outside the scope of Case's work: "Subcontractor excludes caisson design, the determination of bearing capacity of soil or rock strata, or any other soil evaluation services." (Ex. 200 at 7 ¶ 5; see also id. at 9 ("Exclusions[:]. . . . Any geotechnical testing (e.g. SPT) performed prior to, during or after Subcontractor's site operations.").) These provisions do not have

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August 15 letter, or what additional rebar was necessary for redesign rather than in accommodation of Case's construction methods.

[21] Case's damages expert, Kevin Lugo, recommended reducing both Items 8 and 9. However, his justification for this opinion (Doc. 133 at 76) was so cursory that the court does not credit it. See Gen. Elec. Co. v. Joiner, 522 U.S. 136, 146 (1997) ("But nothing in either Daubert or the Federal Rules of Evidence requires a district court to admit opinion evidence that is connected to existing data only by the *ipse dixit* of the expert." (citations omitted)).

any exception for redesign that is necessary due to negligent workmanship. FLJV has not proposed any legal theory of recovery for these costs or given any explanation for why the quoted provisions do not preclude recovery. Thus, FLJV has not shown that it is entitled to recovery on Items 8 and 9.

f. Vibro Hammer Rental

Item 11 seeks $62,000 for FLJV's purported cost of letting Case use its vibro hammer to push permanent casing into the ground when the use of outer temporary casing was prohibited on some of the shafts.

FLJV calculated its costs based on a weekly rental rate of $3,738 for sixteen weeks. However, neither the rental rate nor the weeks of use is reasonably supported by the evidence. The rental rate was based on a figure provided by Case's Andy Buck, who had said that Case could either use FLJV's vibro hammer or rent one for $3,738 per week. (Ex. 204 at D00790.) FLJV did not provide an equipment manual rental rate for the vibro hammer or an internal rate; FLJV did not explain why it was relying on Buck's figure, nor whether that number reasonably approximated FLJV's actual costs of letting Case use the tool.

The rental period is just as mysterious. FLJV had no records for how long Case actually used the tool; its staff failed to record the use. (Doc. 125 at 172, 204.) The vibro hammer was not used for the first bent of piers or the piers in the river. No

one with personal knowledge testified as to how long Case used the vibro hammer.[22] Therefore, regardless of whether FLJV was entitled to be paid for Case's use of this tool, FLJV did not establish damages with reasonable certainty.

5. Job Site General Conditions

FLJV's final damages claim is Item 19 for $418,611 in job site general conditions costs. This figure seeks to calculate FLJV's costs to support Case's work. It includes costs like salaries of administrative staff (e.g., Brumfield), job trailers and offices, computers and other office equipment, and job site sanitation and security. These costs are for the entire period Case was on the job. FLJV sought to approximate these costs by adding the damages from Items 1 through 17, and then multiplying the total by 10.92%, which is the usual administrative markup factor FLJV uses.

Despite this calculation, there was no evidence that Case actually caused FLJV to incur any additional administrative costs. Most of the costs for this item were fixed rather than variable. The costs were going to be incurred during the entire Project, regardless of who was drilling the shafts. FLJV did not present evidence showing that it could have avoided these costs if Case

[22] On direct examination, Brumfield was asked, "And so someone else would have to testify about how much time [Case] used the vibro hammer?" (Doc. 125 at 172.) To which she responded, "Correct." (Id.) This promise for further testimony went unfulfilled.

had completed the drilled shafts within 22 weeks. Moreover, assuming the costs depended on the length of time it took Case to finish the drilled shafts, FLJV is partly at fault for the concurrent delay on the drilled shafts, as noted above. The evidence was also that the drilled shafts were not on the critical path, showing that Case did not extend the overall Project. Therefore, FLJV has failed to show to what extent, if any, Case caused FLJV to incur these administrative costs.

For all of the above reasons, FLJV has failed to establish that it is entitled to any relief under Count I of the Complaint.

6. FLJV'S Bond Claims

In Count II of its complaint, FLJV brought two bond claims, each against Case and Case's surety, F&D. FLJV had required Case to take out both performance and payment bonds for its drilled shaft work. At the close of FLJV's case-in-chief, Case orally moved to dismiss all of FLJV's claims, including FLJV's bond claims. Case filed a brief in support of its motion to dismiss the bond claims (Doc. 115), to which FLJV orally responded. The court reserved ruling on the motion at that time.

In light of the court's conclusions denying FLJV's claims on the merits, its claims against the bonds necessarily fail, and FLJV is not entitled to any relief on Count II of its complaint.[23]

[23] The same outcome would result even on the merits of the bond claims. Under a performance bond, a surety promises the obligee to remedy the

inadequate performance of the principal, should the principal default on the underlying agreement. In this case, F&D stood as the surety to FLJV, the obligee, for the performance of Case, the principal.

Case and F&D argue that FLJV gave inadequate notice of default under the performance bond, barring recovery. Because no party has argued that delay damages are not covered by a performance bond, the court assumes, without deciding, that this performance bond covers delay damages. But see Am. Home Assur. Co. v. Larkin Gen. Hosp., Ltd., 593 So. 2d 195, 198 (Fla. 1992) (holding that delay damages did not come under the terms of the performance bond).

Under the performance bond, there are several conditions precedent to F&D incurring liability: default by Case under the Subcontract; a declaration by FLJV that Case was in default; and performance of FLJV's own obligations under the Subcontract. (Ex. 206 at 1.) Importantly, FLJV was required to provide "reasonable notice" of default to F&D in part because F&D had the option of arranging for the performance of Case's defaulted obligation. (Id.)

At trial, FLJV's witnesses admitted that they had never given notice of default to F&D before filing suit. FLJV argues, instead, that the complaint itself, which alleges that Case defaulted on its contractual obligations, sufficed for notice to F&D. But this is unpersuasive. Whatever notice is contained in the complaint cannot have been "reasonable notice" sufficient for F&D to remedy any delay Case caused on the Yadkin Project. FLJV knew long before that Case was behind on its 16 week schedule, and by the time the complaint was filed on October 10, 2012, Case had already delayed Bridge 2 and left the work site. True, FLJV did communicate Case's dilatoriness to F&D during the Project (see, e.g., Ex. 283), but FLJV does not, and cannot, argue that this constituted a "clear, direct, and unequivocal" declaration of default. L & A Contracting Co. v. S. Concrete Servs., Inc., 17 F.3d 106, 111 (5th Cir. 1994). Without such a declaration, F&D was powerless to intervene. See id. ("Before a declaration of default, sureties face possible tort liability for meddling in the affairs of their principals.").

This conclusion accords with the determination of courts from several jurisdictions that have considered the same bond language involved in this case. See Elm Haven Const. Ltd. P'ship v. Neri Const. LLC, 376 F.3d 96, 101 (2d Cir. 2004) (holding that reasonable notice was not given to surety where replacement subcontractor was hired five weeks before default declared); Hunt Const. Grp., Inc. v. Nat'l Wrecking Corp., 542 F. Supp. 2d 87, 96 (D.D.C. 2008) ("Where the obligee fails to notify a surety of an obligor's default in a timely fashion, so that the surety can exercise its options under the controlling performance bond, the obligee renders the bond null and void."), aff'd, 587 F.3d 1119 (D.C. Cir. 2009) ("Even if Hunt had declared a default in a timely fashion, the bond makes clear that the obligee may arrange to complete unfinished work only 'after reasonable notice to Surety.' In other words, even after declaring a default, Hunt could proceed to remedy the default on its own only after it gave 'reasonable notice' to the sureties that it intended to do so. It gave no such notice." (citation omitted)); St.

7. FLJV's Declaratory Judgment Claim

FLJV's third and final count of the complaint seeks declaratory relief. FLJV points to Case's claims for money damages and asks the court to declare the rights of the parties. Because Case responded to the complaint with counterclaims, it is sufficient for the court to declare the parties' rights by

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Paul Fire & Marine Ins. Co. v. City of Green River, Wyo., 93 F. Supp. 2d 1170, 1178 (D. Wyo. 2000) ("Courts have consistently held that an obligee's action that deprives a surety of its ability to protect itself pursuant to performance options granted under a performance bond constitutes a material breach, which renders the bond null and void."), aff'd, St. Paul Fire & Marine Ins. Co. v. City of Green River, Wyo., 6 F. App'x 828 (10th Cir. 2001); Sch. Bd. of Escambia Cnty., Fla. v. TIG Premier Ins. Co., 110 F. Supp. 2d 1351, 1354 (N.D. Fla. 2000) (same); Balfour Beatty Const., Inc. v. Colonial Ornamental Iron Works, Inc., 986 F. Supp. 82, 86 (D. Conn. 1997) ("Further, the language of the performance bond required: 1) that the principal be in default; and 2) that the obligee declare the principal to be in default so as to allow the surety to step in and take over the principal's obligations under the contract. The plaintiff in the present case allowed Colonial to complete the project, thereby denying the defendant the opportunity to exercise any of its options under the performance bond.").

Further, under a payment bond, the surety promises the obligee to pay the principal's suppliers if the principal fails to do so. Whereas only FLJV as obligee can sue on the performance bond, only "claimants" can sue on the payment bond. (Ex. 206 at 2.) As Case and F&D argue, FLJV does not qualify as a claimant on the payment bond, prohibiting recovery. The payment bond defines a claimant "as one having a direct contract with the Principal for labor, material, or both, used or reasonably required for use in the performance of the contract." (Id.) Courts generally refuse to consider obligees as claimants and prohibit obligees from recovering on payment bonds. See Fed. Ins. Co. v. Me. Yankee Atomic Power Co., 183 F. Supp. 2d 76, 81 (D. Me. 2001) (collecting cases). FLJV argues that, under the Subcontract, it was required to provide labor, equipment, and material to Case for Case's drilled shaft work. But the complaint clearly seeks recovery on the payment bond for costs that FLJV incurred "to supplement Case's otherwise inadequate labor force, inadequate equipment and also supplied materials to Case that were all used to perform the Subcontract Work." (Doc. 5 ¶ 24.) In other words, FLJV wants to recover for having to provide labor and material to supplement Case's "inadequate" performance under the subcontract rather than Case's failure to pay its bills. This is a performance bond claim masquerading as a payment bond claim.

evaluating Case's specific claims to relief.

D. Case's Counterclaims

Case brings two main counterclaims against FLJV. In the first, Case seeks damages under the Subcontract's termination for convenience clause. In the second, Case seeks damages for various alleged breaches of the Subcontract by FLJV. Case has also brought a payment bond claim similar to FLJV's, which is less contested. Each of these claims is addressed below.

1. Timeliness & Flow-Down Clause

As a preliminary matter, FLJV raises an affirmative defense to all of Case's claims, arguing that none is timely under the notice provisions of NCDOT's Standard Specifications for Roads and Structures ("SSRS") (Ex. 201.1.). (Doc. 117 at 10–13.) Case argues that not all of the SSRS provisions have been incorporated into the Subcontract, and particularly not the notice provisions. (Doc. 116 at 3–9.)

The SSRS was incorporated by reference into the prime contract between FLJV and NCDOT. (Ex. 201 at 4.) The SSRS is referenced by the Subcontract in two ways. First, the Subcontract incorporates the SSRS by reference, at least in part, by incorporation of the prime contract:

> Subcontractor . . . agrees to furnish all management, supervision, labor, tools, equipment, materials and supplies necessary to perform all Work, as set forth under Scope of Work above, in accordance with the terms and provisions of this Subcontract and the Contract

> between Owner [NCDOT] and Contractor ("Contract") including any amendments, general and/or special conditions, drawings, specifications or other documents forming or by reference made a part of the Contract (hereinafter collectively called the "Subcontract Documents").

(Ex. 200 at 2.) Second, the Subcontract also contained what is known as a flow-down clause: "Subcontractor assumes toward Contractor all obligations that Contractor assumes toward Owner, insofar as applicable to the Work to be performed under this Subcontract." (Id. at 14 ¶ 1.6.)

No extrinsic evidence on the meaning of these contract terms was presented during trial, so the plain language of these provisions must support FLJV for FLJV to prevail on its affirmative defense. But the plain language does not do so. As shown above, the terms of both the incorporation provision and the flow-down clause are qualified, limiting the application of the SSRS to Case's "Work." Case's "Work," capitalized in both of these provisions, is itself a contractually defined term:

> **SCOPE OF WORK:** The Subcontractor agrees to perform the following described work (the "Work"):
>
> Provide all supervision, labor, tools, equipment and materials to perform drilled shafts, as noted in Attachment C, per the plans and 2006 NCDOT standard specifications.

(Id. at 2.)

Read together, these provisions show that the SSRS applies to Case's drilled shaft work. The provisions, however, say nothing

about the application of the SSRS to the procedures and notice requirements between FLJV and Case. Such procedures seem separable from the physical "Work" of constructing drilled piers. In fact, the Subcontract has numerous procedural and notice provisions of its own that are dissimilar to those found in the SSRS, make no reference to the SSRS at all, and are not entirely consistent with the SSRS procedures. (See, e.g., id. at 17 ¶ 3.2 ("Any claim for an adjustment in the Subcontract Price or Time must be made in writing within (5) calendar days from the date changes are ordered or from the date Subcontractor has knowledge of facts giving rise to the event for which claim is being made; otherwise, Subcontractor releases and waives any rights to assert a claim against Contractor.").) The most reasonable interpretation is not that these notice provisions of the Subcontract were intended to be in addition to the notice provisions of the SSRS, but that they take the place of the very different notice provisions of the SSRS.

Therefore, FLJV has not shown that Case's claims have been waived due to failure to follow the notice provisions of the SSRS.

2. Termination for Convenience

In Count I of its counterclaim, Case alleges that FLJV terminated Case for convenience after Case had completed its work on Bridge 2. (Doc. 10 ¶¶ 17–23.) Case argues that the Subcontract's termination for convenience clause obligates FLJV to pay Case for Case's actual costs, as well as a reasonable profit

thereon, for the work Case performed prior to termination. The parties dispute (1) whether FLJV terminated Case for convenience under the Subcontract, and, (2) assuming such termination occurred, whether Case is entitled to its actual costs and a reasonable profit thereon for the work it performed on Bridge 2, as opposed to the agreed-to unit prices.

FLJV maintains that Case was not terminated for convenience under Article 21 of the Subcontract. Rather, FLJV argues that it simply deleted Bridge 3 from the scope of Case's work through a deductive change order under Article 3 of the Subcontract. This is how FLJV characterized the action it took when Case was terminated, and FLJV argues that its contemporaneous characterization is dispositive. Case argues that FLJV's contemporaneous characterization of the change in Case's scope of work is simply irrelevant.

In determining which provision applies to the termination, FLJV's characterization is not dispositive or particularly probative. See J.W. Bateson Co. v. United States, 308 F.2d 510, 513 (5th Cir. 1962) ("The use of a change order form by the Government cannot be decisive as to the legal nature of the modifications . . . ."); Praecomm, Inc. v. United States, 78 Fed. Cl. 5, 11 (2007), aff'd, 296 F. App'x 929 (Fed. Cir. 2008); 5 Bruner and O'Connor, supra, § 18:48 & n.5 ("The label placed on the deletion by one party or the other is of no significance, and

the characterization of the deletion is evaluated on the basis of its materiality to the contract."). The court thus gives no weight to FLJV's characterization of the deletion of Bridge 3 from Case's scope of work.

The critical factor in appropriately labeling the deletion is the materiality of the deleted work to the scope of the entire subcontracted work. Such is the rule that Case has urged this court to apply. (See Doc. 75 at 8–11 ("The trier of fact should be allowed to decide whether 'the magnitude, nature, and scope of the change,' as phrased by Bateson, was a justifiable change, or a termination of the subcontract.").) The question is whether the deletion of Bridge 3 from Case's scope of work was a major or minor change in Case's scope of work. A major, material change implicates the termination for convenience provision, while a minor change implicates only the change order provision. See J.W. Bateson Co., 308 F.2d at 513 ("The long and short of it is that the proper yardstick in judging between a change and a termination in projects of this magnitude would best be found by thinking in terms of major and minor variations in the plans." (quoting and adopting the reasoning of the district court)); 5 Bruner and O'Connor, supra, § 18:48 & n.5 ("The distinction between 'major' and 'minor' variations rests on the materiality of the variations in relation to the scope of the contract. Changes can be authorized only within the scope of the contract and, if

substantially altering the scope, may be classed as cardinal changes and breaches of contract. For such material alterations, the partial termination provisions of the termination for convenience clause rather than the changes clause should be invoked." (footnotes omitted)).

Ultimately, all of Case's arguments distinguishing between deductive change orders and partial terminations for convenience are a bridge to nowhere because FLJV deleted only a minor portion of Case's scope of work. True enough, Case was hired to set the foundation for two bridges, and FLJV cancelled Case's work for one of them. At that level of generality, FLJV deleted half of the work, which would seem to be a material change.

But when the issue is considered more specifically, the cancellation of Bridge 3 was minor. Case did not contract to build two bridges; it merely subcontracted to drill and construct 186 shafts. Of these, 174 supported Bridge 2, and only 12 supported Bridge 3.[24] (See Ex. 200 at 37 (estimating 174 piers for Bridge 2 but only 12 piers for Bridge 3).) Clearly, the scope of work anticipated for Bridge 3 was significantly less than the scope of Case's work for Bridge 2. As a unit price contract, Bridge 3 represented only about 6.5% of the planned units.

[24] Because of design changes, Bridge 2 ended up having only 140 piers. Based on the as-built numbers, Bridge 2 ended up with 9.2% of the drilled piers, which still constitutes a minor change.

Even more specifically, Case's work on Bridge 3 constituted less than 5% of its total estimated work at the time the Subcontract was executed. Attachment C of the Subcontract reveals that Case was to drill a total of 9,358 linear feet for Bridge 2 (combining drilling in both soil and rock or other competent material), and only 486 linear feet for Bridge 3. Based on these figures, Case's drilling on Bridge 3 represented only 4.9% of Case's total scope of work.[25]

By analyzing the scope of the work using a percent change method, the court does not suggest that only such percentages should be used to determine the magnitude of Bridge 3 to the rest of Case's original work. If the planned shafts for Bridge 3 were significantly more complicated than those for Bridge 2, then these figures would underrepresent the materiality of the Bridge 3 work. However, there is no material difference in the unit prices for the drilled shafts on each bridge, nor was any credible evidence admitted that the drilled shafts for Bridge 2 were significantly less complicated than those for Bridge 3. Therefore, Bridge 3 is fairly characterized as representing only 4.9% to 6.5% of Case's scope of work.

This change was a minor one from the original agreement, and

[25] The fact that there was no separate mobilization charge for Bridge 3 supports this conclusion.

one that seems quite severable based on the unit-price schedule. The work Case agreed to perform on Bridge 3 was not so material or of such a major magnitude that its deletion constituted a termination for convenience. Because Case was not terminated for convenience, Case is not entitled to relief on Count I of its Counterclaim.[26]

3. Change in Shaft Diameter

Case brings Count II against FLJV for various breaches of the Subcontract. One of those breaches is for FLJV's failure to pay Case its costs for the change in some of the shaft diameters. At the time the Subcontract was executed, all of the shafts on Bridge 2 were designed to be 54 inches in diameter, and all of the shafts on Bridge 3 were designed to be 60 inches in diameter. Before the Subcontract was executed, some preliminary plans had shown that Bridge 2 would incorporate some 60-inch shafts. When asked how much 60-inch shafts on Bridge 2 would cost, Case's Andy Buck suggested that the unit prices for Bridge 3 were also good for

[26] Even if the cancellation of Bridge 3 were deemed a termination for convenience, the court would still reject Case's proposed remedy. Case argues that, if it was terminated for convenience, then it is entitled to its actual costs on Bridge 2 and a reasonable profit thereon, rather than the unit prices to which the parties had agreed. This is an unreasonable reading of the Subcontract. Case offers no reason why the parties would have agreed that a termination for FLJV's convenience converts a unit-price contract into a cost-plus contract. Rather, the parties clearly agreed that the unit prices fully capture Case's actual costs and the profits to which Case is entitled. (See Ex. 200 at 2 ("Unless stated otherwise elsewhere in this agreement[,] the Subcontract Unit Price(s) are inclusive of all costs, overhead and profit relating to completion of the work to be performed.").)

Bridge 2. (See Ex. 475.) Through February and March of 2011, FLJV made clear that it was going to change the shaft diameters on bents 15 to 18 from 54 inches to 60 inches. On April 19, 2011, Case told its casing fabricator to begin producing 60-inch shafts. (Ex. 715.) Case did not begin objecting to the change until May 13, 2011, when it first claimed that it was entitled to a unit-price increase for these shafts. FLJV only paid Case for these shafts at the 60-inch rates from the Subcontract.

At trial, based on its force account records, Case sought $1,931,671.35 for the change in shaft sizes. However, Case presented no credible evidence to explain why 60-inch shafts on Bridge 2 were more expensive than on Bridge 3. Even if, as Case suggests, it was required by the change to mobilize new equipment to the work site, Case was fully paid for its mobilization, as set out in Attachment C, which included the full mobilization for both Bridges 2 and 3. Therefore, Case was in fact paid for the cost of mobilizing equipment to construct 60-inch diameter shafts. For this reason alone, Case has failed to establish any right to relief for the change in shaft size.

Moreover, under the terms of the Subcontract, Case failed to give timely notice of its objection to this change to preserve its claim. Under the change order provision of the Subcontract,

> Any claim for an adjustment in the Subcontract Price or Time must be made in writing within (5) calendar days from the date changes are ordered or from the date

> Subcontractor has knowledge of facts giving rise to the event for which claim is being made; otherwise, Subcontractor releases and waives any rights to assert a claim against Contractor.

(Ex. 200 at 17 ¶ 3.2.) Case first objected on May 13, 2011. FLJV gave notice of the change by no later than March 28, 2011, when it released preliminary design plans to Case showing changes in shaft diameter. (Ex. 489.1.) And Case had actual knowledge of this change by no later than April 19, 2011, when Case ordered its casing fabricator to begin producing 60-inch casing. (Ex. 715.)

In its pre-trial brief, Case concedes that its notice was untimely. (Doc. 116 at 9–10.) It argues, instead, that FLJV was not prejudiced by its tardy objection. Case offers no controlling authority for such a prejudice rule. By the plain language of the Subcontract, strict compliance with the notice provision is required.

Therefore, Case is not entitled to any relief for the change in shaft diameter.

4. Unpaid Work

Case seeks to recover for two types of work that it completed but for which it was not paid. The first is work that FLJV clearly authorized. FLJV withheld its final payment to Case, totaling $306,717.34, on the grounds that it had claims against Case for breaches of the Subcontract. FLJV concedes that Case is owed this money as an offset to any of FLJV's claims. (See, e.g., Doc. 135

¶ 111.)

Second, and more disputed, is Case's claim to $388,223.31 for work performed after FLJV refused to pay for such work. On August 15, 2011, Mathews sent Buck a letter noting,

> In an effort to partner with Case and to move the project forward, FLJV has previously allowed Case to install permanent casing a few feet beyond that shown on the plans in an effort to accommodate Case's chosen means and methods of using the permanent casing to help with the drilling of the shaft.

(Ex. 1752 at 1.) Mathews then revoked Case's authority to continue drilling beyond design tip elevations: "FLJV is no longer going to pay for such variances . . . . Case should, therefore, install permanent casings on all future shafts to those shown on the plans." (Id. at 2.) FLJV permitted Case to extend the shafts, but on an unpaid basis:

> If Case desires to install the permanent casings deeper than those shown on the plans for its convenience and its own cost savings by not having to utilize other means to stabilize its excavation, then we will request that the designers sign off on that change. FLJV will not, however, pay for any permanent casing beyond that shown in the plans or any additional length of shaft resulting from the casing length change.

(Id.)

Moreover, one of the incorporated Subcontract documents limited the driller when drilling below design depths:

> Extend the permanent casings from the top of pier elevation or top of permanent casing elevation, if shown on the plans, to a depth no deeper than the permanent casing tip elevation shown on the plans or the revised permanent casing tip elevation approved by the Engineer.

> Do not extend permanent casings below the permanent casting tip elevation shown on the plans without prior approval from the Engineer. Additional drilled pier length and reinforcement may be required if permanent casings are extended below the permanent casing tip elevation shown on the plans. No payment will be made for the resulting additional drilled pier length, reinforcement and permanent casing unless the Engineer [FLJV] approves the revised permanent casing tip elevation.

(Ex. 1058 at 54.) At no point during the drilled shaft construction, either before or after the August 15 letter, did any employee or subcontractor of FLJV, or of NCDOT, ever direct Case to stop drilling or pushing permanent casing past the design elevations. (See, e.g., Doc. 134 at 56.)

It is unclear under what theory Case seeks to recover the costs of extending the shaft lengths. Case has not pointed to any breach of an express provision of the Subcontract. The Subcontract provided that FLJV would pay Case for quantities of drilled shaft work performed "per the plans." (Ex. 200 at 2.) FLJV made clear in the August 15 letter that it was giving only limited approval going forward: It would redesign the shafts to accommodate Case's means and methods, but it would not pay for drilling and permanent casing quantities beyond what was necessary.[27] And it is industry custom that contractors do not pay for drillers' more expensive methods of construction exceeding that necessitated by the design.

[27] And the persuasive evidence in this case is that the shafts were constructible as designed, so a change in the design plans was unnecessary.

(See, e.g., Doc. 126 at 126–27.) Thus, when Case drilled below design depth after FLJV advised that it would no longer pay for the associated costs, Case did so with the knowledge that that it would carry those expenses on its own.[28]

Case has presented no valid legal theory of recovery for these costs, and, therefore, they are denied.

5. Consultants

Case's engagement of Dan Brown & Associates as engineering consultants occurred about midway through the Project and cost $43,699.63. At Brown's suggestion, Case also hired S&ME to drill borings at each remaining drilled shaft location for a total of $144,380.25. There was no credible evidence that either of these consultants helped decrease any cost of or delay to the Project that was not already attributable to Case. As such, they cannot even be considered reasonable costs of mitigation. Case has therefore failed to show breach of the Subcontract by FLJV for which these compensatory damages are a "natural and probable result." Pike, 161 S.E.2d at 466.

6. Repairs to 11NB1

Case seeks damages of $77,842.00 for repairs it ultimately made to 11NB1. Case's CSL subcontractor, GRL, found two major

[28] Case has not made an argument based on quantum meruit, presumably because Case did not provide the extra lengths with a reasonable "expectation of payment." Scott, 503 S.E.2d at 152.

anomalies on 11NB1 that eventually required the shaft be repaired. Attachment A of the Subcontract provides, "Subcontractor not responsible for adverse CSL results due to action that is outside of his control. Subcontractor is responsible for adverse CSL results that are caused by Subcontractor[']s negligent workmanship." (Ex. 200 at 7 ¶ 13.) Attachment B, which does not take precedence in the event of a conflict with Attachment A, provided that Case did the following:

- warranted that its work would be "free of defects and of good quality" (id. at 24 ¶ 16.1);
- agreed that it was "solely responsible for the quality of its Work" (id. at 31 ¶ 30.1);
- agreed that it would "provide all testing, certifications, procedures and inspections pertaining to its Work" (id.);
- promised that it would perform its work "in a good and workmanlike manner" (id. ¶ 30.2); and
- agreed that "[a]ny Work not in compliance shall be promptly replaced by Subcontractor to the satisfaction of Contractor and Owner. No additional cost or time of performance shall be allowed for remedial work" (id.).

The credible evidence presented at trial was that, more likely than not, these adverse CSL results were caused by Case's negligent

workmanship. No other reason was offered for why Case's work would fail the CSL results for such an extended period of time. Even Case's superintendent, Terry Miller, conceded that he could not rule it out. (See Doc. 131 at 147.)

Case has not carried its burden of showing that the CSL anomalies on this shaft were outside of its control; rather, more likely than not, Case's negligent workmanship caused them. Therefore, Case is not entitled to the costs of repairing 11NB1.

7. Modified Total Cost

Case argues that various changes FLJV made throughout the Project changed the nature of its work so substantially as to justify an equitable adjustment in the Subcontract price. Case claims that it was so thoroughly prevented from undertaking the work in the way it contracted that it has no way of proving actual losses directly tied to every change or breach of the Subcontract, so that it should be allowed to recover all reasonable costs exceeding its original bid.

FLJV's alleged changes and breaches appear to include at least the following: a design that precluded Case from seating permanent casing in rock or competent material; a design change raising the scour line and thus restricting Case's use of outer temporary casing; a change in design tip elevation to suit encountered subsurface material; the presence of boulders and unexpectedly different subsurface conditions; insufficient template support

from FLJV; an inefficient redesign process with regard to the RFI procedure; and the lack of acceptance criteria by the designers. Case claims that these items breached the Subcontract by preventing Case from completing its work "in one continuous uninterrupted efficient sequence of operation" (Ex. 200 at 7 ¶ 16), and thus seeks to compute the damages arising from these breaches through the modified total cost method.

An initial problem with Case's theory of recovery is that many of these allegations are factually untrue or exaggerated. FLJV did not provide inadequate template support in derogation of its contractual obligations, there were not unexpectedly different subsurface conditions, and there were not a meaningful number of boulders on the job. And although the redesign process was inefficient, the evidence was that Case kept drilling on shafts with outstanding RFIs. Case was also not prejudiced by the rise in the scour line because it began using the vibro hammer in lieu of outer temporary casing, which was both cheaper and at least as capable, according to Case's own witnesses. And, as the court has noted, FLJV was not contractually obligated to design Bridge 2 to accommodate Case's preferred means and methods. Despite this lack of obligation, Case in fact used outer temporary casing on 26 of 140 piers on Bridge 2 and, even more importantly, took permanent casing down to rock or weathered rock on 125 of 140 piers. (Ex. 751.)

Those fatal problems aside, Case cannot show that it is entitled to rely on the modified total cost method. No North Carolina court has affirmatively approved the method, although the North Carolina Court of Appeals once considered the method and found it inappropriate on the facts of that case. See Biemann & Rowell Co. v. Donohoe Cos., Inc., 556 S.E.2d 1, 5–6 (N.C. Ct. App. 2001). Other jurisdictions have approved its use.

The modified total cost method should be contrasted with the total cost method. Under the general total cost method, a contractor seeks to recover "the difference between its total costs incurred in performance of the contract and its bid price." Cavalier Clothes, Inc. v. United States, 51 Fed. Cl. 399, 417 (2001). The total cost method is "highly disfavored," however, because it "blandly assumes . . . that every penney [sic] of the plaintiff's costs are prima facie reasonable, that the bid was accurately and reasonably computed, and that the plaintiff is not responsible for any increases in cost." Youngdale & Sons Const. Co. v. United States, 27 Fed. Cl. 516, 541 (1993). To permit contractors a recovery, but without rewarding them for unreasonable bids and defective performance, some courts have employed a more nuanced computation of damages referred to as the modified total cost method. The modified total cost method takes a party's total costs as a starting point rather than an end, and then reduces the damages from there based on three factors: the

reasonableness of the contractor's bid, the reasonableness of the contractor's actual costs, and the contractor's lack of responsibility for the added costs. Biemann & Rowell Co., 556 S.E.2d at 5.

However, before the court begins reducing the total costs, the party seeking damages must first demonstrate "the impracticability of proving actual losses directly."[29] Id. Where a party simply fails to preserve records that with diligence it could have kept, impracticability cannot be shown. Propellex Corp. v. Brownlee, 342 F.3d 1335, 1342 (Fed. Cir. 2003) ("Where it is impractical for a contractor to prove its actual costs because it failed to keep accurate records, when such records could have been kept, and where the contractor does not provide a legitimate reason for its failure to keep the records, the total cost method of recovery is not available to the contractor."). Here, Case must show that tracking its actual losses was "either impossible or highly impracticable" so that it is not relying on a "method based on a bed of its own making." Cavalier Clothes, 51 Fed. Cl. at 418–19.

Case has failed to make this prerequisite showing. Case

[29] This prerequisite is not a factor for reducing the total cost, but a gateway to relying on the method altogether. See Cavalier Clothes, 51 Fed. Cl. at 418 ("The latter conclusion, of course, proceeds logically, as this first prong of the criteria for applying the total cost method is an 'either/or' proposition not suitable for adjustment to conform to deficiencies in a contractor's proof.").

relies on the testimony of its expert, Lugo, who opined that Case could not identify direct costs associated with each alleged change because "the problem is that all the issues are intertwined, and as such, you are unable to capture the most important impact, which is a loss of productivity." (Doc. 133 at 16.) Lugo testified further that there was no other method of calculating costs, besides the modified total cost method, that was practicable. (Id. at 17.) He further opined that Case could not have employed the measured mile approach to determine loss of productivity because that method requires there to be an unimpacted period, that is, a period during which Case's productivity was not meaningfully impacted by the changes Case complains of. (Id. at 14 ("I believe it would be unreasonable to attempt to use a measured-mile approach because the issues are so intertwined that you cannot segregate or separate out the loss of productivity during the drilling operations. As such, there is nothing to base a measured mile on because you end up using either a bid productivity or a judgment on productivity that will not be able to be established because we were never able to achieve that. So there is never a period on the project where there isn't an impact to the productivity.").) To establish impracticability, Case's counsel at closing argument relied entirely on Lugo's opinion. (See Doc. 134 at 140.)

This conclusion would be persuasive were it not built on false premises. As Case's own fact witness admitted, there was a

virtually unimpacted period of productivity. According to the testimony of Case's head superintendent Terry Miller, both at trial and during his deposition, the construction of bent 8's shafts "went beautiful." (Doc. 131 at 195–96.) On these shafts, Miller placed permanent casing wherever he wanted, regardless of the designs; he used outer temporary casing; and he experienced no cave-ins. (See, e.g., id.; Ex. 545.) Miller tried to backtrack on his deposition testimony by claiming that Case "hit a lot of boulders" on bent 8, and there was one RFI on bent 8. (Doc. 131 at 195.) The court does not credit Miller's contentions that Case encountered unexpected numbers of boulders on the job. And the RFI was likely only issued on bent 8 because Miller had put the permanent casing at his preferred elevation without seeking approval from the engineers (id. at 188); yet, even if it were issued for other reasons, Miller typically continued drilling on shafts with outstanding RFIs at his convenience. Case did not satisfactorily clarify these statements on Miller's redirect.

It appears that the actual reason that it was "impracticable" for Case to use the measured mile method is that it would show Case's low production rates were its own fault. Case had bid the Project by estimating that it would take about 11 hours to complete each shaft. (Doc. 128 at 47–51; Ex. 671; Ex. 1916; Ex. 1917.) It took Case, on average, about 44 hours to complete each of the northbound shafts on bent 8. (Ex. 671.) Extrapolating Case's

production rate on bent 8, which "went beautiful," it would be expected that Case would take about 45 weeks just to complete Bridge 2. (Id.) In fact, it took almost that long: Case finished Bridge 2 in 44 weeks. This evidence strongly suggests that Case likely could have used a measured mile analysis to determine its productivity losses — the only problem is that such an analysis would have precluded recovery. That is not the kind of "impracticability" contemplated by the modified total cost method.

Case's failure to show impracticability is altogether fatal to Case's reliance on the method, since impracticability must be met before the three reduction factors are considered. But even if the court were to reach those factors, Case would not be entitled to recovery. Combined, the factors cut against Case so strongly that the difference between Case's actual costs and Case's bid would be reduced to zero. The comparison of Case's actual production rates on bent 8, compared to the rates Case assumed in its bid, shows that Case's bid, which was the lowest FLJV received, was unreasonable. The deadline Case negotiated was also unreasonable and clearly designed to win the Subcontract. Moreover, Case was the party primarily responsible for the added delay, and thus the party responsible for the added costs on Bridge 2. Many of the reasons Case has given for the delay are either not credible or exaggerated. Lugo's opinion on the reasonableness of the added costs is not persuasive, since Case did not provide

him with its logs of equipment downtimes and breakdowns. (Doc. 133 at 113–16.) Lugo instead reviewed Case's daily reports provided to FLJV, from which Buck had scrubbed references to equipment problems. (Id.) Lugo further relied on Osborne's self-serving assertion that the production rates assumed in Case's bid were reasonable. (Id. at 116–17.)

For all these reasons, Case is not entitled to any recovery under the modified total cost method.

8. Case's Bond Claims

In Count V of its Counterclaim, Case seeks to recover on several payment bonds. FLJV is the principal on payment bonds given by the sureties F&D; Travelers Casualty and Surety Company of America; Federal Insurance Company; Zurich America Insurance Company; and Liberty Mutual Insurance Company. The parties have stipulated that Case has counterclaimed against these sureties based solely upon their roles as sureties on FLJV's payment bonds. (Doc. 110 ¶ 7.) Based on the stipulation, the sureties are bound to stand by their obligations in the payment bonds to the extent that FLJV is liable as principal on those bonds.

III. CONCLUSION

For the reasons stated,

IT IS ORDERED that Case shall recover $306,717.34 from FLJV; F&D; Travelers Casualty and Surety Company of America; Federal Insurance Company; Zurich America Insurance Company; and Liberty

Mutual Insurance Company, each of which is jointly and severally liable.

Any motion for recovery of costs, interest, or attorney's fees on this award shall be filed within fourteen days of entry of Judgment, in accordance with the Local Rules. Further briefing by the parties is permitted pursuant to Local Rules 7.2 and 7.3.

A Judgment in conformance with this Order will be entered simultaneously.

/s/ Thomas D. Schroeder
United States District Judge

August 4, 2015