

DISPUTE REVIEW BOARD RECOMMENDATION

February 27, 2002

Mr. Al Moyle, P.E.
FDOT District 2
P.O. Box 6669
Mail Station 2803
Jacksonville, FL 32236-6669

Mr. Tommy McClelland, V.P.
Hubbard Construction Company
P.O. Box 60429
Jacksonville, FL 32236-0429

Re: SR10 / Atlantic Blvd. Widening
FDOT Project 209269-1-52-01 / 72100-3504
FAP No: N/A
Contract No. 19550
County Section 72-100 Duval

Subject: Claim Issue – Leaking Joints RCP

Dear Sirs,

The Department of Transportation along with Hubbard Construction Company and Southern Culvert requested the Regional Dispute Review Board to hear a dispute involving storm sewer installation problems on the Atlantic Boulevard project. The hearing was held February 20, 2002 in the Jacksonville Department of Transportation urban office. The parties were at an impasse in their attempt to resolve the dispute and asked the board to hear the issue in the morning and allow each party to state their position on quantum in the afternoon. Pertinent issues, correspondence and other information relating to the department and contractors positions were sent to the board for review and discussion prior to the hearing.

Contractors Position

- 1) We were incorrectly held to the standard of water tight joints;
- 2) That the NPC internal bands would have provided an acceptable (even superior) joint at a dramatically lower cost than that of replacement pipe;
- 3) That Southern Culvert and Hubbard Construction Company absorbed \$640,249.08 of unnecessary expenses as a direct result of actions by Fredrick R. Harris and the Florida Department of Transportation.

During testimony Southern Culvert stated they were held to water tight joints rather than soil tight. Their base concept was if all elements are within spec, then joints were okay; all three elements were in spec, yet we were getting leakage. In an effort to address the

contractors schedule concern they brought in experts to solve the problem. Also, pipe was secured from Plant City with high rejection rates. Pipe was also purchased from other suppliers with high rejection rates. Hubbard started wrapping the joints on their own which seemed to help.

Southern Culvert offered three methods to fix the leaking joints and on June 25, 1997 the NPC internal bands were approved and installed in the 644 foot run at Pond 3. The seal was successful.

The same internal seal procedure was proposed for the remaining pipe run on the left roadway for Pond 2 and Pond 3 drainage systems. The Department rejected the proposed repair procedure September 24, 1997 and required removal and replacement. Southern Culvert filed a claim, which was denied by the Department. The claim was resubmitted and again denied by the Department. See Southern Culvert Letter (Attachment A)

Departments Position

The Department furnished an outline of their oral presentation. The topics were covered by Ken Fusch, Eddie Green, & Jack Cushman followed by a summary of the FDOT position by Al Moyle.

Eddie Green stated that he discovered water flowing through the 644' of 36" pipe while walking across the area. His first thought was that the line had been activated. This was not the case; water was entering the pipe and flowing out. He examined the joints and found water intrusion through the joints that was carrying fine sand. Field inspection confirmed the problem was wide spread. Problem found to be a material defect and not an installation problem. Jack Cushman, District Materials Engineer reported FDOT technicians witnessed failing test at the plant and repeated test by Southern Culvert confirmed leakage problem. Southern Culvert proposed changes in o-ring gasket sizes to mitigate the leakage problem. Mr. Cushman stated the FDOT approval stamp includes concrete quality, strength, rebar placement, random diameter checks, overall visual appearance. The stamp does not include test for acceptability of joint fit. Southern Culvert acknowledged problems at the plant; (a) depth of o-ring grooves were inconsistent and irregular (b) Suppliers changeover to profile gasket RCP was in progress, and repairs to plant equipment not being made (c) QC plan not being followed (d) Cast test of acceptability of manufacturing was done prior to 1984.

Ken Fusch stated pipe-leaking joints were prevalent. The big concern was accepting a repaired product in lieu of a new product. He was concerned that if they had accepted a repaired product it would have spread to one mile of leaking pipe. The job was partnered throughout; experts were brought in from Gainesville and Lake City in effort to solve the problem. The proposed internal seal for the 644' 36" line was allowed. They also worked with Southern Culvert to find size of o-ring that would work. They tried rotation of the pipe to facilitate placement of the pipe and joint match up.

Al Moyle presented a written summary of the Departments position, shown as attachment "B".

Dispute Review Board Recommendation

The Board has reviewed the documents submitted by Hubbard Construction / Southern Culvert and Florida Department of Transportation. We heard oral presentations from all parties and each board member asked questions of the parties as we gathered an understanding of the issues brought to the Board.

Facts:

- 644' of pipe was repaired with internal bands
- 1800'+ of previously installed pipe was removed and replaced
- The combined quantity is less than 10% of the total pipe required
- Southern Culvert pipe was not used for the balance of the job
- Hubbard did incur extra costs
- Hubbard and Southern Culvert reached an agreement in their dispute between the two parties
- The Department allowed a repair to the 36" RCP line from S-43 through S-49. The remaining installed pipe was not allowed a repair procedure.
- The Department relied on Specification Section 5-3 and Section 430-7.2 as supporting contractual language for their position.

The board took into account the manufacturing problems encountered by Southern Culvert in making the RCP, such as varying groove depths that required selective diameter gaskets, out-of-round pipe, and the testimony that joints would appear snug and still display daylight. Part of the recovery cost sought by Hubbard were for field delays encountered while trying to lay the pipe furnished by Southern Culvert.

The Board agrees that rigid interpretation of the Specifications supports the Departments position, however, the Board noted the economic impact resulting from the removal and replacement position taken when a successful internal sealing mechanism had been allowed and utilized on 644' of 36" RCP. In our deliberations we took note of the amount of pipe previously installed that was replaced due solely to faulty joints.

The Board recommends the Contractor be compensated \$132,342 for cost associated with removal and replacement of pipe due to faulty leaking joints.

The Board appreciates the cooperation of all parties and the information presented for its review in making this recommendation.

Please remember that a Boards recommendation requires acceptance or rejection within 15 days. Failure to respond to the DRB and other parties within the time frame constitutes an acceptance by both parties.

I certify that I have been participated in all meetings and discussions regarding the issue and concur with the findings and recommendation.

Respectfully Submitted
Regional Disputes Review Board

Robert D. Buser - Chairman
William O. Downs – Member
Peter Markham – Member

Signed for all with the concurrence of all members

Robert D. Buser
Chairman

Attachment “A”

Southern Culvert Letter

This letter is in response to the January 24,2001 letter by Mr. Al Moyle, in which our claim was denied. There are two principle points that I wish to address. First the issue of soil tight vs. water tight joints. The second issue is that of economic waste.

Soil Tight vs. Water Tight

Supplemental Specification 430-4.1 is very clear regarding minimum joint performance standards. For storm sewers, cross drains and side drains, the standard specified is “soil tight.” Therefore, the standard for this project is soil tight.

The balance of this section will address Mr. Moyle’s three references on this subject in detail.

As mentioned above, Supplemental Specification 430-4.1 does indeed specify minimum joint performance standards. For storm sewers, cross drains and side drains, the standard specified is “soil tight.”

The 1991 FDOT Standard Specifications for Road and Bridge Construction, Section 942-1, incorrectly references Article 5.9 ASTM C361. In fact, this article is nonexistent. This error was corrected in the 1994 Supplemental Specifications to the 1991 Standard Specifications for Road and Bridge Construction, Section 942-1, when the reference was changed to Article 6.9 of ASTM C361. It should be noted that ASTM C361 is entitled “Standard Specification for Lohed Pressure Pipe.” Article 6.9 refers to the rubber gaskets themselves, specifically chemical and physical properties, as well as storage requirements for the gaskets. There is no reference to joint design or performance. Joint performance is discussed in Article 8.4.1. However, this article is not included in the reference in the 1991 FDOT Standard Specifications for Road and Bridge Construction, or 1994 Supplemental Specifications to the 1991 Standard Specifications for Road and Bridge Construction, Section 942-1, and is therefore not applicable.

Section 941-1.6 of the 1994 Supplemental Specifications to the 1991 Standard Specifications for Road and Bridge Construction requires the joint to meet the requirements of Article 7 of ASTM C443.

Article 7.1.6 of ASTM C443 specifies “a flexible watertight seal.”

To summarize, Supplemental Specification 430-4.1 specifies soil tight. Article 6.9 of ASTM C361 is referenced by the 1994 Supplemental Specifications to the 1991 Standard Specifications for Road and Bridge Construction, but there is no discussion of joint performance or design. ASTM C443, Article 7.1.6, referenced by Section 941-1.6 of the 1994 Supplemental Specifications to the 1991 Standard Specifications for Road and Bridge Construction specifies a flexible watertight seal. This is an apparent contradiction.

In such a case, the governing order of documents has been specified by the 1991 FDOT Standard Specifications for Road and Bridge Construction, Section 5-2. It clearly specifies that Supplemental Specifications govern over Standard Specifications, and, by inference, other specifications referenced by Standard Specifications. Clearly then, Supplemental Specification 430-4.1 takes precedence over ASTM C443, Article 7.1.6, referenced by Section 941-1.6 of the 1994 Supplemental Specifications to the 1991 Standard Specifications for Road and Bridge Construction. Supplemental Specification 430-4.1 specifies soil tight. Therefore, the standard for this project is soil tight.

Economic Waste

The issue of economic waste addresses the cost of removal and replacement of approximately 1850 lineal feet of RCP as opposed to the cost of installing NPC Internal Joint Seals as was done on S-49 to S-46 to S-43.

The value of the original claim is adjusted as follows: Item 1, lost profit on purchase order, and Item 12, claims defense and preparation costs, have been deleted. It was recognized that these items, while legitimate, may not be compensable. Thus, the subtotal becomes \$624,827.33. As in the original claim, estimated interest was calculated at 6% simple for approximately 2 years, the assumed mid-point between the start of the costs in mid-1997 and the anticipated settlement in mid-2001. Based on the subtotal above, the estimated interest becomes:

$$\$624,827.33 \times (.06/12) \times 24 \text{ months} = \$74,979.28$$

The adjusted gross amount of the claim is then:

$$\$624,827.33 + \$74,979.28 = \$699,806.61$$

The cost of NPC Internal Joint Seals was calculated using the seal cost as quoted in 1997. These numbers were net prices fob Milford, NH. Therefore, estimated shipping costs of 7% were added. Costs including shipping are shown in tables 1 and 2. Installation was calculated using prices supplied by Spencer Contracting. Spencer did the installation on the two runs on Pond # 3, and therefore had knowledge as to the sufficiency of their numbers. In fact, Spencer reduced their quotation for pipe 30" and larger as a result of their experience on the Pond # 3 runs. The Spencer quotation includes all costs associated with the installation including cleaning and dewatering and excluding only the seals themselves.

The cost using NPC internal Joint Seals was calculated two ways: First, the cost of installing seals on the joints that Frederic R. Harris and the Florida Department of Transportation identified as non-conforming with reference to plans and specifications. Then, to use the most extreme condition, the cost of installing seals on all joints (including all the joints which are already meeting soil-tight and water-tight criteria) was considered.

pond	run	size	total lin ft	total joints	joints leaking	band cost each	installation cost each	tot material cost leaking	tot labor cost leaking
3 (complete)	S-49 to S-46	36	326	41	19	\$178.69	\$150.00	\$3,395.11	\$2,850.00
3 (complete)	S-46 to S-43	36	318	40	14	\$178.69	\$150.00	\$2,501.66	\$2,100.00
3	S-43 to S-39	36	286	36	2	\$178.69	\$50.00	\$357.38	\$100.00
3	S-39 to S-38	30	255	32	3	\$155.15	\$50.00	\$465.45	\$150.00
2	S-25 to S-28	30	221	28	7	\$155.15	\$50.00	\$1,086.05	\$350.00
2	S-28 to S-30	24	213	27	6	\$132.68	\$150.00	\$796.08	\$900.00
2	S-25 to S-24	42	295	37	1	\$201.16	\$50.00	\$201.16	\$50.00
2	S-24 to S-22	36	126	16	6	\$178.69	\$50.00	\$1,072.14	\$300.00
2	S-22 to S-20	36	268	34	12	\$178.69	\$50.00	\$2,144.28	\$600.00
2	S-20 to S-19	18	179	23	22	\$123.05	\$170.00	\$2,707.10	\$3,740.00
			2483					\$14,726.41	\$11,140.00

Table 1 – Cost Supply and Install NPC Internal Joint Seals on Leaking Joints

As shown above in table 1, the estimated cost to seal the leaking joints came to \$14,726.41 for material and \$11,140.00 for installation. With the allowable markup of 17.5%, the material becomes:

$$\$14,726.41 \times 1.175 = \$17,303.53$$

The allowable markup of 10% for subcontractors under \$50,000.00 brings the installation to:

$$\$11,140.00 \times 1.10 = \$12,254.00$$

Thus, the total cost to seal all the leaking joints on Ponds 2 and 3 (including those already installed on Pond 3) is:

$$\$17,303.53 + \$12,254.00 = \$29,557.53$$

pond	run	size	total lin ft	total joints	joints leaking	band cost each	existing	future	tot material cost leaking	tot labor cost leaking	
							installation cost each	installation cost each			
3 (complete)	S-49 to S-46	36	326	41	19	\$178.69	\$150.00	\$50.00	\$7,326.29	\$3,950.00	
3 (complete)	S-46 to S-43	36	318	40	14	\$178.69	\$150.00	\$50.00	\$7,147.60	\$3,400.00	
3	S-43 to S-39	36	286	36	2	\$178.69		\$50.00	\$6,432.84	\$1,800.00	
3	S-39 to S-38	30	255	32	3	\$155.15		\$50.00	\$4,964.80	\$1,600.00	
2	S-25 to S-28	30	221	28	7	\$155.15		\$50.00	\$4,344.20	\$1,400.00	
2	S-28 to S-30	24	213	27	6	\$132.68		\$150.00	\$3,582.36	\$4,050.00	
2	S-25 to S-24	42	295	37	1	\$201.16		\$50.00	\$7,442.92	\$1,850.00	
2	S-24 to S-22	36	126	16	6	\$178.69		\$50.00	\$2,859.04	\$800.00	
2	S-22 to S-20	36	268	34	12	\$178.69		\$50.00	\$6,075.46	\$1,700.00	
2	S-20 to S-19	18	179	23	22	\$123.05		\$170.00	\$2,830.15	\$3,910.00	
									2483	\$53,005.66	\$24,460.00

Table 2 – Cost Supply and Install NPC Internal Joints Seals on All (see text) Joints

When calculating the cost to install seals and joints, it was assumed that the joints not previously completed on runs S-49 to S-46 to S-43 in Pond # 3 would have seals installed. This is reflected in Table 2. Because of the reduction in installation costs by Spencer Contracting, two installation rates were used for these two runs; one for previously completed installations and one for future installations.

The estimated cost to install seals on all joints totaled \$53,005.66 for material and \$24,460.00 for installation. With allowable markup of 17.5%, the material becomes:

$$\$53,005.66 \times 1.175 = \$62,281.65$$

The allowable markup of 10% for subcontractors is under \$50,000.00 brings the installation to:

$$\$24,460.00 \times 1.10 = \$26,906.00$$

Thus, the total cost to install seals on all joints is:

$$\$62,281.65 + \$26,906.00 = \$89,187.65$$

The cost to install seals on only the leaking joints is only 4.4 percent of the revised claim total.

$$(\$29,557.53 / \$669,806.61 = 0.0441)$$

Even more astounding is the estimated cost to install seals on all the joints. This way only 12.4% of the revised claim total.

$$(\$89,187.65 / \$669,806.61 = 0.1332)$$

Thus the excess spent over the cost of installing seals on the leaking joints

$$\$669,806.61 - \$29,557.53 = \$640,249.08$$

or, at the very least, the excess spent over the cost of installing seals on all the joints

$$\$669,806.61 - \$89,187.65 = \$580,618.96$$

appears to be an economic waste.

What then, could have been legitimate reason for replacing all of the pipe? Before this question can be answered, we must first address concerns of whether or not the NPC Internal Joint Seals were technically equal to the standard o-ring profile gaskets. This question is answered in two ways: First, NPC's design criteria for their product, and second, the actual performance of NPC Internal Joint Seals on the Pond 3 system of this project. Regarding NPC's design criteria, the Internal Joint Seals were designed to withstand external head pressure of 34 feet (15 psi) and internal head pressure of 70 feet (30 psi). This is clearly specified in the attached NPC Internal Joint Seal brochure and technical specifications. Thus far exceeds the FDOT proof-of-design test for joint design acceptance, which is for 30 feet of internal head pressure (13 psi). The actual performance of the Internal Joint Seals on the Pond 3 system on this project is a matter of record. After a few adjustments, the joints were found to be both soil and water tight. It has already been shown that the design intent of the system is soil tight, not water tight. Thus, there should be no question that a joint with the NPC Internal Joint Seal installed far exceeds the design intent of RCP joints on this project. Further, the seals remain flexible, insuring leak tight capability of the joint will not change with differential settling. This is accomplished with the pliable neoprene gasket clamped in place by the stainless steel bands.

The requirement of ASTM C443, Section 7.1.6, that the gasket be the sole element of sealing and remain flexible is accomplished if one considers the NPC Internal Joint Seals be the means of sealing the joint. Therefore, the NPC Internal Joint Seals have met the design intent of the system. Having established the NPC Internal Joint Seals exceed the performance of the original gaskets, we must now return to the question of why it was required that \$669,806.61 to be spent as opposed to \$29,557.53, which would have returned the system to it's original design intent. Installing NPC Internal Joint Seals on all the joints would itself be an economic waste since installing the bands only on the leaking joints would have returned the system to it's original design intent. We are unaware of the reasons for the decision to replace all of the pipe.

The excess spent

$$\$669,806.61 - \$29,557.53 = \$640,249.08$$

is, in fact, economic waste.

Conclusion

There is now no confusion regarding the system performance requirements. It is soil tight and directives requiring water tight are incorrect.

The economic waste of \$640,249.08 was an unnecessary expense to Hubbard Construction Company and Southern Culvert. This unnecessary expense was directly caused by two factors. First, incorrect interpretation of the specifications regarding the soil tight vs. water tight issue by both Frederic R. Harris and the Florida Department of Transportation. Second, the costly decision by Frederic R. Harris and the Florida Department of Transportation to remove and replace approximately 1850 lineal square feet of RCP, when a much lower cost alternative was available.

Thus, the economic waste of \$640,249.08 was directly caused by Frederic R. Harris and the Florida Department of Transportation.

Southern Culvert hereby reaffirms its claim for the reduced amount of \$640,249.08.

Attachment “B”

Disputes Review Board: Claim by Hubbard Construction / Southern Culvert

Summary of FDOT Position

The Department rejected the initially installed storm drainage segments as the joints were not soil tight.

Please refer to Contractor’s claim chronology, (Exhibit 1-7):

Joint problems were noted in early April 1997, dates 4/4/97 to 4/9/97. Other key items to note in the chronology include: The 5/28/97 meeting of all parties in Jacksonville, when FDOT again emphasized the “soil tight” requirement and indicated that the repair with NPC flexible seals may be acceptable for portion of the pipe in a location adjacent to critical utility systems. Note also the time period of 8/28/97 through 3/16/98. These are disputes, or disagreements, between the prime contractor and pipe supplier, many of which are related to contractor installation methods.

FR Harris letter of May 2, 1997 to Hubbard Construction Company (HCC), (Exhibit 1-12) clearly indicates upon removal of the dewatering system several joints were leaking allowing water and sand to enter the drainage system and referenced the minimum soil tight standard.

HCC letter dated May 6, 1997 (Exhibit 1-16) to Southern Culvert reveals approximately 2,783 LF of installed pipe is leaking water and sand; indicated HCC met with Southern Culvert on site on April 23, 1997 and received Southern Culvert’s assurance to initiate corrective action to prevent further problems; and emphasized the urgency to resolve the problem.

Southern Culvert letter of May 7, 1997 (Exhibit 1-17) refuted HCC. HCC letter of May 8, 1997, to Southern Culvert (Exhibit 1-18), indicated they do not agree with Southern Culvert and in the second paragraph, HCC indicated that Southern Culvert had failed to “address, identify and correct the source or root of the problem with leaking joints”.

HCC letter of May 22, 1997 (Exhibit 1-23) from Mr. Ernest J. Wolf to Southern Culvert reiterates the urgency for resolving the leaking joint problem and continues our offer of “partnering” to expedite resolution of problems of that nature.

Southern Culvert letter dated June 5, 1997 to HCC (Exhibit 1-29), second to last paragraph, acknowledges they had a manufacturing problem that affected the o-ring on 30” and 36” pipe.

Southern Culvert letter dated September 11, 1997 to HCC (Exhibit 1-41) addressed their proposal for pipe greater than 18 inches utilizing the NPC Internal Seal, the same type of repair allowed on the 644 feet of pipe in the critical utility conflict area. Note their

statement that “If more than 30% of the joints in a run are leaking, the run would be considered for this repair procedure.”

FR Harris letter dated September 24, 1997 to HCC, (Exhibit 1-43) fourth paragraph, details the results of visual and video inspection of the joints. Note that 40% of the joints were leaking. Only two pipe runs had less than 30% leaking joints, one at 27% and the other run included a broken section of pipe. Therefore, the Department rejected the Contractor’s repair proposal.

I refer you to FDOT Standard Specifications for Road & Bridge Construction, 1991, with the 1994 Supplemental Specifications that include:

Section 5-3 *Conformity of Work with Plans*

Third paragraph states “In the event the Engineer finds the materials, or the work performed, are not in close conformity with the plans and specifications and have resulted in an inferior or unsatisfactory product, the work or materials shall be removed and replaced, or otherwise corrected, by and at the expense of the Contractor.”

Section 430-7.2 *Laying Requirement for Concrete Pipe with Rubber Gasket Joints*

This section addresses gaps and tolerances and indicates the requirements for relaying pipe outside of tolerance without additional compensation. The paragraph further states, “No mortar, joint component, or other filler which would tend to restrict the flexibility of the gasket joint shall be applied to the gap.”

The Department’s actions were appropriate and timely in rejecting the installation of sections of defective storm sewer system on the basis the joints were not soil tight. The Department allowed the contractor to repair 644 feet of the new storm sewer system, in an area in close proximity to utility systems with no reduction in payment for a potentially shortened life of a repaired vs. new system. Our position remains as stated in our January 24, 2001 letter, denying the claim in its entirety, a copy of which was provided to the Board.