Department of Civil and Environmental Engineering
University of South Florida – Tampa, Florida 33620

Date: February 9, 2010

To: FDOT Research Center c/o Sandra Bell
From: A. Sagüés, Principal Investigator (PI) Project BDK84 977-08
cc.: Sastry Putcha, FDOT technical coordinator
Mario Paredes, FDOT State Materials Office

Subject: **Quarterly Progress Report – 2nd Quarter: 10/1/09 - 12/31/09**
Project BDK84 977-06: "Reinforced Concrete Pipe Cracks -Acceptance Criteria" (USF # 2104112600).

1) Activities performed this quarter:

Literature review:

Literature review was expanded to 43 sources and reached near completion. A draft report was in preparation for discussion with the project manager at the beginning of the next quarter.

The draft report contents are as follows:

- Summary of individual findings from sources on existing RC pipe specifications, autogenous healing and corrosion.
- FDOT SMO survey result for RC pipe cracks (received by USF on 11/09/2009)
- Discussion of literature findings
- Elements for preliminary pipe crack acceptance criteria
- Issues to be resolved by laboratory research
- Proposed laboratory work

Literature review findings:

The FDOT SMO survey result agreed with the previous observation that the Ohio DOT and the Caltrans/AASHTO specifications were the only readily identifiable existing State / User agency standards. Those specifications were reproduced in the First Quarterly Report.

The literature review also indicated that various national and international agencies and organizations specify different values for maximum allowable crack width for in-place RC drainage pipes. Some agencies adopted 0.01 inch, possibly influenced by the strength test limit ASTM C76, which is intended for that test but not as a criterion for a field performance. Other agencies and organizations however adopted specifications based on effect of cracks on long term pipe durability taking into account the role of reinforcement corrosion and/or autogenous healing. The maximum specified or recommended acceptable crack widths ranged from 0.02 inch to 0.1 inch.

Preliminary crack acceptance criteria proposed for discussion:

Examination of the sources surveyed suggests that in general in-place crack width of 0.02 inch may be considered to be acceptable. A preliminary FDOT pipe crack acceptance guideline could be formulated accordingly based on environmental conditions and RC pipe specifications applicable to FDOT.

2) Activities Planned for Next Quarter:

Complete and forward the Draft Summary of Literature Review to the project manager. Discuss the draft review findings and requirement for field survey with FDOT in a teleconference scheduled for 01/15/2010

Define issues to be resolved by laboratory research and discuss those issues with FDOT in order to propose and initiate a laboratory experimental work plan taking into account testing real RC pipe sections along with prismatic and cylindrical lab specimens.

3) Summary of Requested Modifications:

None at present

4) Progress Schedule:

See next page.

FLORIDA DEPARTMENT OF TRANSPORTATION
RESEARCH CENTER

PROJECT SCHEDULE

Project Title	Reinforced Concrete Pipe Cracks - Acceptance Criteria
FDOT Project No.	BDK84 977-06 FY 2008-9 Month 6
Research Agency	University of South Florida
Principal Investigator	Dr.Alberto A. Sagues

RESEARCH TASK	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	ESTIMATED % COMPLETION
Task 1 Lit. Rev.	33	66	100																			95%
Task 2 Final approach				100																		10%
Task 3 Conduct Rsch.					10	20	25	30	40	50	60	70	75	80	85	90	95	100				5%
Task 4 Maximum Width									25	50	75	100										0%
Task 5 Draft Specificaton															25	50	75	100				
Final Report																33	66	100				0%
																			33	66	100	0%
Overall % Complete Projected	4%	8%	10%	15%	20%	25%	30%	35%	40%	45%	50%	0.55	0.6	0.65	0.7	0.75	0.8	0.85	0.9	0.95	100	
Overall % Complete Actual			10%			18%																18%

FIG. A -- OVERALL PROJECT SCHEDULE

FIG. B -- CONTRACT FUNDS

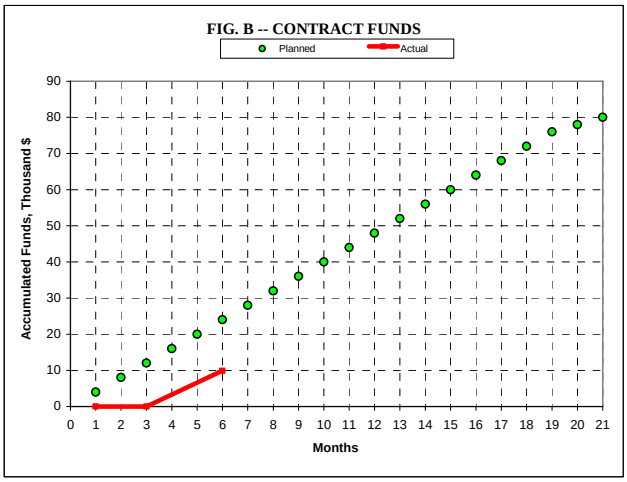
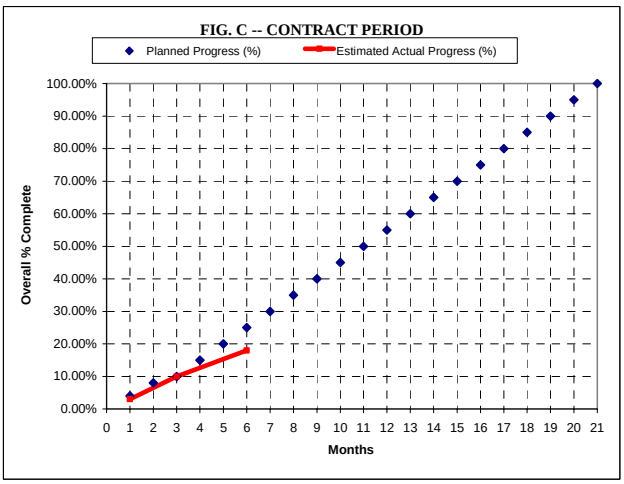


FIG. C -- CONTRACT PERIOD



Funds Expended	% 12%	
Contract Amount	$ 80,000	
Expended This Quarter	$ 9894.2	
Total Exp. to Date	$ 9894.2	
Balance	$ 70,106	

*Only direct costs are listed as expenses. Indirect cost is budgeted to reack $14,675 by the end of the contract. Listed balance does not include that eventual reduction.

Time expended	% 29%
Starting Date	07/01/09
Completion Date	3/31/2011