

External Quarterly Report

Date of Report: 2nd Quarterly Report – March 31, 2022

Contract Number: #693JK3211RA0001

Prepared for: PHMSA DOT

Project Title: Assessment of Nondestructive Examination (NDE) and Condition Monitoring Technologies for Defect Detection in Non-Metallic Pipe

Prepared by: EWI

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For quarterly period ending: March 31, 2022

1: Items Completed During this Quarterly Period:

The literature review and associated report and second quarterly update were completed during Quarter 2.

Item #	Task #	Activity/Deliverable	Title	Federal Cost	Cost Share
1	1	Task report summarizing findings of literature review	Literature review of recent research on NDE of polymers & composites - issue task report	\$40,311.30	0.00
3	10	Submit 2 nd Quarterly Report	2 nd Quarterly Status Report & Quarterly collaboration meeting	\$11,870.00	0.00

2: Items Not Completed During this Quarterly Period:

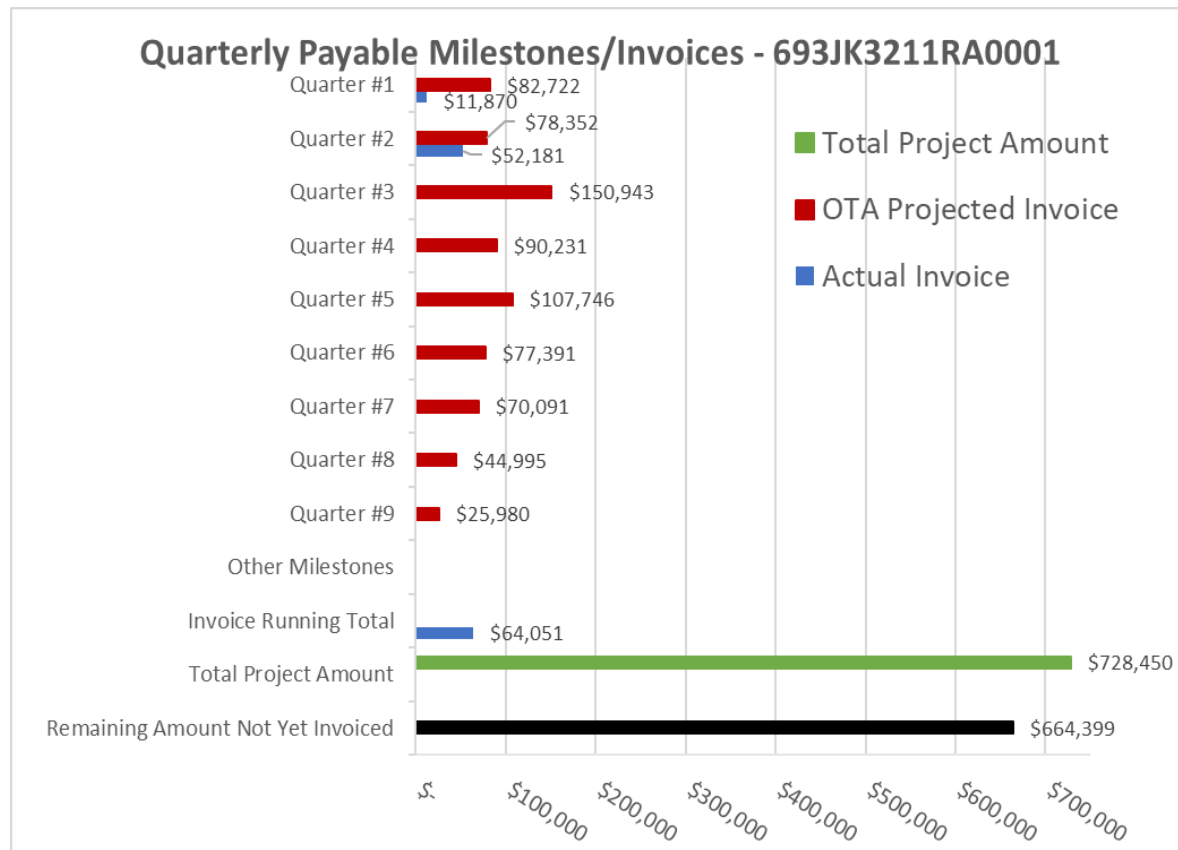
The NMP Sample matrix is in-process but not completed. The majority of pipe samples to be provided have been identified but details regarding shipping schedules and plans for inducing intentional damage remain unfinished for some pipe samples. EWI is awaiting input from our partners to finalize these details. EWI will be visiting pipe manufacturing partners in Houston in early April to address this item.

Item #	Task #	Activity/Deliverable	Title	Federal Cost	Cost Share
2*	2	NMP sample matrix detailing type of pipe and defects, anomalies or damage per sample	Prepare detailed matrix of NMP samples	\$30,540.73	\$66,782.84
4*	3	Develop NDE procedures for inspection of NMP samples using non-contact and 3 coupled UT methods, microwave inspection method and 2 thermography methods	Completion of written NDE procedures	\$49,331	\$20,310

3: Project Financial Tracking During this Quarterly Period:

The actual spend is behind planned.

- Task 1 – More time was spent during this reporting period due to holidays in the first quarter.
- Task 2 – EWI has requested input from our project partners, this information was requested at November's kickoff, 12/15/21 follow up email of action items, 1/31/2022 Monthly Update email, 3/23/22 Quarterly Update Meeting, 3/24/2022 follow up email, and will be further pursued in April. EWI is aware that delays associated with information and samples will impact EWI's ability to prepare pipe samples and is actively communicating with project partners.
- Task 3 – EWI has begun drafting the NDE procedures. Extending the literature review in Q2 and lack of physical pipe to confirm what samples are available for testing have delayed finalizing these procedures



4: Project Technical Status –

Item	Task	Activity/Deliverable	Title
1	1	Task report summarizing findings of literature review	Literature review of recent research on NDE of polymers & composites - issue task report
2*	2	NMP sample matrix detailing type of pipe and defects, anomalies, or damage per sample	Prepare detailed matrix of NMP samples
3	10	Submit 1st quarterly report	1st Quarterly Status Report & Quarterly collaboration meeting
4*	3	Develop NDE procedures for inspection of NMP samples using non-contact and 3 coupled UT methods, microwave inspection method and 2 thermography methods	Completion of written NDE procedures
6	6	Task 6 Test Procedures and Chamber Assembly	Prepare & Provide a Written Test Procedure for Erosion Tests
3	10	Submit 2 nd quarterly report	2 nd Quarterly Status Report & Quarterly collaboration meeting

Task 1 – Literature Review was completed by EWI and NDE4zero’s Mark Lozev. The report was supplied to the project team on 3/31/2022

Task 2 – NMP Sample Matrix. EWI has received information on numerous pipe samples to be provided but details regarding pipe condition, methods for inducement of damage and schedule for shipment to EWI remain uncertain. EWI has communicated to project partners the urgent need to finalize these details. EWI will be visiting 3 project partners in early April to help facilitate completion of this item.

Task 3 – The NDE procedures are in development. Progress has been delayed due to the literature review and final information on available pipe samples.

Task 6 – The cost share portion of this task began in December 2021. The first of six test cells have been built and tested. The other 5 test cells are ready to be built pending the April 7th discussion on test properties. The federally funded portion of this work will begin once pipe samples are received, anticipated April 2022

Task 10 – The 1st quarterly status report was provided on 1/4/22. The 2nd quarterly status report will be provided on 3/31/2022. The next collaborative meeting is anticipated to occur in June, please see upcoming Doodle calendar poll.

While not tied to a specific milestone during the first quarter, the following activities were undertaken:

(1) EWI followed up with GTI about NDA for both our collaboration and their role on the TAP

(2) EWI discussed TC Energy joining the project as an In-Kind partner 2/4/2022 and 3/29/2022, continued follow up with FlexSteel to join as an In-Kind partner and hope to have signed agreements soon.

(3) EWI followed up with TAP members, providing NDA documents to be completed. The current Tap includes:

- Rick Hill – Microalloying International
- Khalid Farrag – GTI
- Jim Mason – Mason Materials Development, LLC
- Dr. Randy Knapp – Plastic Pipe Institute
- Qing Tian – California Energy Commission

