

Project Number: STIN-0194
Project Title: FRP Peel Testing, Phase III
Solicitation Date: 09 January 2023
Proposal Due Date: 20 February 2023

1 Summary

ASME Standards Technology, LLC (ASME ST-LLC) is soliciting proposals for the referenced project. The project results from the need to better understand the peel strength of Fiberglass Reinforced Pipe (FRP). It is best to avoid designs that create peel, but sometimes it is unavoidable. Under-design for peel conditions has led to the failure of lift lugs, hold down lugs, nozzle attachments, support clips, baffles, and many other attachments; causing harm to the FRP Industry as a whole. This project will be a continuation of work already completed in previous phases during ST-LLC projects 0142 (Phase I) and 0162 (Phase II).

This Request-for-Proposal (“RFP”) and all open RFPs are posted on the ASME ST-LLC webpage: (http://asmestllc.org/ST-LLC_RequestsProposals.html)

2 Background

When designing FRP vessels, one of the most significant differences from metal vessels is designing for peel conditions. Peel is when the load is perpendicular to the plane of the bonding area similar to peeling an adhesive bandage. It takes much less load to peel an adhesive bandage off than it would to pull it parallel to the plane of the bonding area. Metals do not have a significantly weaker peel strength like FRP does.

The best design is to avoid configurations that create peeling action, but there are many reasons why peeling cannot be always avoided, so a peel design method is needed to provide a conservative design. Presently, the only industry-available peel design information is the generally accepted 50 pounds per inch (lb/in.) that is documented in ASME Reinforced Thermoset Plastic RTP-1 standard. Peel strength would be affected by the attachment thickness and material properties, and experience shows that attachments can resist higher peel loads than the 50 lb/in. standard, so the design method should take these factors into consideration.

It is easy for an FRP designer to under-design for peel conditions, and this is especially easy for designers not familiar with FRP. It is believed that there are many engineering companies and metal designers that are designing FRP without being aware of this issue. Because the ASME RTP-1, Section X standard and the Non-Metallic Piping standard were written to help ensure the safe design of FRP vessels, peel is one of the most important issues that must be addressed and documented in these standards.

Poor peel design has led to the failure of lift lugs, hold down lugs, nozzle attachments, support clips, baffles, and many other attachments. In addition to the immediate consequences of such failures, the industry would also have to deal with the loss of confidence in FRP equipment compared to other materials. This can negatively affect all factions of the industry including material suppliers, engineering companies, FRP fabricators, inspectors, and end-users.

3 Scope of Work

3.1 Summary

This project is Phase III of the FRP Peeling Testing Project and is focused on implementing the new Welding and testing procedure developed in Phase II, and running the following tests again.

1. Test perpendicular double T-welds by having 3 different shops each make one sample (to be cut into 5 coupons) of each of the 3 weld thicknesses (3 samples total) to have more comparable data points and to make sure that there are no other fabricator differences to resolve.
2. Axial test of the nozzle welds. Have 3 different shops each make one sample of each of the 3 weld thicknesses of both 2" and 12" diameter nozzles to have more comparable data points and to make sure that there are no other significant fabricator differences to resolve.

During these tests the investigator will be evaluating a combination of the following parameters

- i. 3 different weld thicknesses
- ii. 3 different fabricators
- iii. perpendicular double T-welds
- iv. axial tests for 2" and 12" diameter nozzle welds

The complete Scope of Work is attached to this RFP as Attachment 1.

3.2 Deliverables

At the end of this project the Independent Consultant will produce a report that includes testing data, pictures, graphs, and a written analysis

The report shall be provided initially as a draft report and subsequently as a final report that incorporates the comments of ASME ST-LLC or applicable ASME review committees, such as an ASME Peer Review Group ("PRG").]

All written deliverables shall be provided as an MS Word file that is formatted in accordance with the ASME Style Guide. One peer review cycle is anticipated and modifications required to the draft, as a result of the review cycle, are the responsibility of the respondent awarded the contract.

3.3 Schedule

Is it expected the Independent Consultant shall complete the final deliverable no later than 9 months after project initiation. [01 November 2023].

3.4 Reporting

The Independent Consultant shall provide a brief status report on a monthly basis, via email, to the ASME ST-LLC project manager identified herein, and such progress reports shall be presented at ASME Committee meetings, as requested by ASME ST-LLC.

4 Respondent Eligibility Requirements

ASME ST-LLC is seeking proposals from all qualified organizations including, but not limited to, engineering firms, independent consultants, academic institutions, and federally funded research and development centers. In addition to relevant technical qualifications and experience, respondents must possess an understanding of relevant ASME codes and standards.

5 Basis for Selection and Award

ASME ST-LLC will select the winning proposal by evaluating and comparing the merits of each respondent's complete proposal. This process reflects ASME ST-LLC's desire to select application proposal based on its potential to achieve program objectives, rather than solely on evaluated technical merit or cost. Evaluation criteria include, but are not limited to, the following:

- Respondent's technical capabilities
- Respondent's applicable experience
- Proposal price
- Project schedule
- Any exceptions to the ASME ST-LLC standard agreement

ASME ST-LLC reserves the right to award, in whole or in part, any, all, or none of the proposals/respondents answering this solicitation.

6 Contract Terms and Conditions

The contract to perform the Scope of Work shall be fixed-price. A form of ASME ST-LLC's standard agreement applicable to this Scope of Work is attached as Attachment 2 to this RFP.

ASME ST-LLC will provide access to applicable codes, standards, and other technical references as needed to perform the Scope of Work.

7 Submission Requirements

7.1 Proposal Due Date

Respondents are encouraged to submit their questions, requests for extension, and proposals well before the deadlines indicated in Table 7.1.

Table 7.1 Key submission milestones	
RFP posting date	09 January 2023
Deadline for submitting questions to this RFP	23 January 2023
ASME ST-LLC response date to submitted questions	30 January 2023
Request for extension	06 February 2023
Bid due date	20 February 2023
Expected award date	13 March 2023

7.2 Proposal Preparation Costs

Proposal costs shall be borne by the respondent. This solicitation does not obligate ASME ST-LLC to pay any costs incurred in the preparation and submission of the proposal, in making necessary studies or designs for the preparation thereof, or to acquire, or contract for any services.

7.3 Proposal Clarification

ASME ST-LLC reserves the right to request clarification of the proposal and/or supplemental information. The award may be made after few or no exchanges, discussions, or negotiations. Therefore, all respondents are advised to submit its most favorable application to ASME ST-LLC. ASME ST-LLC reserves the right, without qualification, to reject any or all proposals received in response to this solicitation and to select any proposal, in whole or in part, as a basis for negotiation and/or award. ASME ST-LLC reserves the right to modify or cancel this solicitation. All questions relating to the solicitation must be submitted to the contact listed in Section 8 herein. Any amendments to the solicitation will be posted on the ASME ST-LLC website previously referenced.

7.4 Treatment of Proprietary Information

A proposal may include technical and/or other data, including trade secrets and/or privileged, confidential commercial or financial information, which the respondent does not want disclosed to the public or used by ASME ST-LLC for any purpose other than proposal evaluation. To protect such data, the respondent should specifically identify the data or information to be protected.

7.5 Proposal Preparation and Submittal Instructions

ASME ST-LLC may form a committee of subject matter experts to evaluate the technical qualifications of applicants. To help facilitate this evaluation, proposals should be separated into two separate documents: (1) a Technical Proposal; and (2) a Financial Proposal.

7.5.1 Technical Proposal contents must include:

- Provide organization name and contact information.
- Provide evidence of technical capabilities: credentials, qualifications, capabilities, and experience of individuals and the organization.
- Describe approach to accomplish the Scope of Work (refer to Section 3).
- Demonstrate agreement with the Scope of Work (refer to Section 3).

7.5.2 Financial Proposal contents must include:

- Provide a fixed-price quotation.
- Confirm agreement with the form of agreement attached herein, or state any requested exceptions to same.

7.5.3 The respondent shall submit the Technical and Financial Proposals files via e-mail to the ASME ST-LLC contact identified in Section 8 of this RFP. Responses must be received on or before the proposal due date identified in Section 7.1 of this RFP.

8 ASME Standards Technology, LLC Contact Information

All correspondence regarding this RFP is to be directed to the following person:

Mr. Michael McKenna
Project Manager
ASME Standards Technology, LLC
Two Park Avenue
New York, NY 10016
Telephone: 212-591-8838
E-mail: Mckennam@asme.org

Scope Of Work Summary

1. Review the attached information from Phase II of this project that has already been completed and submitted:
 - Peel Test Report dated 6/12/19
 - Sample preparation drawings 16-PEEL2-B1 through B9 dated 3/18/16 and B10 dated 3/21/16
 - Peel test results spreadsheet dated 5/20/19
 - Tee Weld, 2" Nozzle, and 12" Nozzle graphs
2. Review the attached information for Phase III of this project
 - Drawings 21-PEEL3-B1 through B10
 - Peel Testing Standard dated 5/20/19
 - Welding Standard dated 5/20/19
 - Cost chart for samples and testing dated 10/18/21
3. Implement and follow the Welding and Testing Procedures dated 5/20/19. This will hopefully eliminate any significant differences in the methods that fabricators have and reduce the number of variables to be tested.
4. Run the following tests again following the new procedures.
 - Test perpendicular double T-welds by having 3 different shops each make one sample (to be cut into 5 coupons) of each of the 3 weld thicknesses (3 samples total) to have more comparable data points and to make sure that there are no other fabricator differences to resolve.
 - Axial test of the nozzle welds. Have 3 different shops each make one sample of each of the 3 weld thicknesses of both 2" and 12" diameter nozzles to have more comparable data points and to make sure that there are no other significant fabricator differences to resolve.
5. Evaluate a combination of the following parameters
 - 3 different weld thicknesses
 - 3 different fabricators
 - perpendicular double T-welds
 - axial tests for 2" and 12" diameter nozzle welds
6. Purchase FRP samples for testing from fabricators who are RTP-1 or Section X, Class 2 stamp holders with one of them being the primary fabricator who will coordinate the work with the other 2 fabricators.
7. Use one testing laboratory near the primary fabricator. The laboratory will use the testing equipment per drawings 21-PEEL3-B8, B9 and B10 to test each sample. The T-welds will be cut into (5) coupons to create a larger sample size, and the nozzle weld samples will be tested in one piece since it will not be practical to cut them into smaller pieces. The tested samples would be returned to the primary fabricator so that they can be kept for 5 years in case the peer group would want to see them.

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8. The primary fabricator will witness the testing and provide a report to ASME. The peer group members could witness the testing if they are paid by ASME or are willing to donate their time and/or expenses to witness the testing.
9. ASME will send the Test Report to the peer review group who will evaluate the test results to determine the next step and organize the results into a table. Please see the conceptual Peel Strength Table included at the end of this request.
10. The Peel Strength Table will be given to RTP's Materials Quality Assurance Subcommittee followed by the Main Committee along with the Section X and Piping Committees to obtain the proper approvals from each of their groups. Assuming that Phase III starts and completes during 2022 and produces information that can be published, our goal would be to have the peel information in the following edition of the RTP-1 Standard. Section X and the Non-Metallic Piping Committees would be able to use the information in a similar manner.

ATTACHMENT 2: FORM OF AGREEMENT

ASME Standards Technology, LLC
Nonexclusive Independent Consultant Agreement
Standard Terms and Conditions
[Project Number: Title]

This Agreement, effective upon execution by both parties, is made between ASME Standards Technology, LLC (“STLLC”), a New York not-for-profit corporation with its principal office at Two Park Avenue, New York, New York 10016 and [Insert Consultant Name and Address, spelled out completely] (the “Independent Consultant”).

W I T N E S S E T H:

WHEREAS STLLC desires to engage the Independent Consultant to perform [insert scope description]; and

WHEREAS the Independent Consultant agrees to accept such engagement and to perform the services hereinafter specified;

NOW, THEREFORE, in consideration of the foregoing and the mutual agreements of the parties contained in this Agreement, it is agreed as follows:

1. Engagement. STLLC hereby engages the Independent Consultant, on an as needed and nonexclusive basis, to perform the services defined in Annex 1 to this Agreement (the “Work”).

2. Performance. The Independent Consultant agrees to perform the services set forth above. The Independent Consultant agrees to perform such services professionally and to the best of its ability, to provide the services in an ethical manner, and to avoid conflicts of interest and any appearance thereof. It is understood that the Independent Consultant may obtain other consulting work and, as a result, may be unavailable, from time to time, to perform consulting services for STLLC, but the Independent Consultant agrees to adhere to the ASME Policies on Conflicts of Interest and Ethics. STLLC will not set specific daily schedules. STLLC will not provide tools, materials, supplies or equipment necessary for the Independent

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Consultant to perform the Work except for the necessary codes, standards, and procedures. Neither will STLLC reimburse the Independent Consultant for the use of its tools, materials, supplies or equipment. The Independent Consultant shall not engage subcontractors to perform any portion of the Work without the written approval of STLLC. If Independent Consultant services require access to STLLC or ASME systems or their internal networks, that access must conform with ASME and STLLC use policies.

3. Fees. For all services to be rendered by the Independent Consultant to STLLC, as required by STLLC, the Independent Consultant will receive fees as specified in Annex 2 to this Agreement. It is understood and agreed that the Independent Consultant is performing services as an independent contractor. As a result, STLLC will not withhold any tax, of whatever nature, from payments made by STLLC to the Independent Consultant. The Independent Consultant is solely responsible for meeting federal, state, or local income tax liabilities. The total charges for all fees and expenses shall not exceed the contract value specified in Annex 2 to this Agreement.

4. Expenses. Expenses incurred by the Independent Consultant in connection with the Work shall be borne by the Independent Consultant as part of the total compensation for the Work.

5. Terms of Payment. The Independent Consultant shall submit associated invoices for acceptance by STLLC prior to payment. Invoices shall be submitted following achievement of milestones specified in Annex 2 to this Agreement. Payment shall be 100 percent net due 30 days after receipt of an acceptable invoice from the Independent Consultant. In the event of delay in project or milestone completion, the [performing party] shall pay liquidated damages to ASME ST-LLC in the amount of 10% per week for the milestone that is delayed unless it is pre-approved by ASME ST-LLC, not to exceed the total dollar amount of the milestone.

6. Benefits. The Independent Consultant is not eligible for, and will not receive, any benefits from STLLC based on services performed under this Agreement.

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7. Copyright and Ownership. The Independent Consultant agrees that STLLC specially ordered and commissioned the Work as “work made for hire” as that term is defined in the United States Copyright Act (17 U.S.C. §101), and that for purposes of the copyright laws, STLLC shall be deemed the “author” of the Work. If it is determined that the Work is not a work made for hire under the U.S. Copyright laws, then, as of the creation of the Work, the Independent Consultant hereby assigns exclusively and irrevocably to STLLC all worldwide, present and future right, title and interest in the Work, including the copyrights and other proprietary rights existing in the Work (including all United States and foreign copyrights, all copyrights under any treaties, conventions, proclamations, or the like, and all extensions of such copyrights; all artistic and literary property rights; all moral rights; all rights to apply for or obtain any registrations for copyright in the Independent Consultant’s name; and the right to sue and recover for any infringement of the Work). The Independent Consultant may not reproduce the Work in any form without STLLC’s prior written permission.

8. Indemnification and Hold Harmless.

a. Obligation of the Independent Consultant – The Independent Consultant shall indemnify, defend and hold harmless STLLC and its officers, directors, employees and agents and each of them from any and all claims, actions, causes of action, demands, liabilities of whatsoever kind and nature including judgments, interest, attorney's fees, and all other costs, fees, expenses and charges which STLLC, its officers, directors, employees, agents and each of them, may incur arising out of the negligence, gross negligence or willful or wanton misconduct of the Independent Consultant, its officers, directors, employees or agents.

b. Obligation of STLLC – STLLC shall indemnify, defend and hold harmless the Independent Consultant and its officers, directors, employees and agents and each of them from any and all claims, actions, causes of action, demands, liabilities of whatsoever kind and nature including judgments, interest, attorney's fees, and all other costs, fees, expenses and charges which the Independent Consultant, its officers, directors, employees, agents and each of them, may incur arising out of the negligence, gross negligence or willful or wanton misconduct of STLLC, its officers, directors, employees or agents.

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9. Term. It is mutually agreed that the Independent Consultant will commence work on this project immediately upon execution of this Agreement, and continue until completion, estimated as on or about [Contract End Date]. This termination date may be extended by mutual agreement, which must be confirmed in writing.

10. Termination. STLLC shall have the right to terminate this agreement upon 14 days notice in writing to the Independent Consultant at any time that STLLC shall in its judgment decide that such termination is in the best interests of STLLC. Conversely, the Independent Consultant shall have the right to terminate this agreement upon 14 days' notice in writing to STLLC at any time that the Independent Consultant shall in its judgment decide that such termination is in the best interests of the engineering profession. In the event of such termination, STLLC shall pay the Independent Consultant on a pro rata basis for percent of work completed as determined by mutual agreement subject to the provisions of Sections 3, 4, and 5 of this Agreement.

11. Force Majeure. The parties' performance under this contract is subject to acts of God, war, government regulation, terrorism, disaster, strikes, civil disorder, curtailment of transportation facilities, or any other emergency beyond the parties' control, making it inadvisable, illegal or which materially affects a party's ability to perform its obligations under this contract. Either party may terminate this contract for any one or more of such reasons upon written notice to the other party.

12. Trademark Usage. Independent Consultant may not use any of STLLC's trademarks or other identifiers (including the STLLC logo) in any manner without STLLC's prior written approval or consent. STLLC reserves the right to review any approved use of its trademarks and to require changes in any further use, and Independent Consultant agrees to comply with those requirements.

13. Publicity Release and Public Affairs. The Independent Consultant shall not make without prior review and approval of STLLC, any publicity release of any nature of general, non-technical information in connection with this Agreement. For purposes of this Agreement, general, non-technical information means any information concerning the existence

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of the Agreement, the identity of the parties, and the scope and general character of the research or technical activity.

14. Entire Agreement. This Agreement entirely supersedes, terminates, and replaces any and all prior agreements between the parties relating to the subject matter hereof and may not be amended except by an instrument in writing signed by both parties to this Agreement.

15. Notices. Any notices hereunder shall be given to the parties at their respective addresses set forth above by registered mail until a new and different address shall be established for either party on the basis of notice given to the other party.

16. Governing Law. This Agreement shall be subject to and governed by the substantive laws of the State of New York (without regard to its conflict of laws rules).

17. Travel. All travel has to be pre-approved by ASME STLLC for this project.

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IN WITNESS WHEREOF, STLLC has caused this Agreement to be executed on its behalf by its officer thereunto duly authorized and the Independent Consultant has executed this Agreement as of the day and year first above written.

ASME STANDARDS TECHNOLOGY, LLC

By: _____ Date: _____

Name: Steve Ferguson

Title: President

INDEPENDENT CONSULTANT

By: _____ Date: _____

Name:

Title:

[Federal Tax ID number] | [Social Security] | [Other]

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Annex 1 – Statement of Work

Background

Scope of Work

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Annex 2 – Financial Terms

Fees and Expenses

Contract Maximum: Fixed price of \$XX,000 including all expenses.

Invoicing & Payment

The Independent Consultant shall submit invoices for applicable milestone payments achieved to STLLC via email to AccountsPayable@asme.org with an email copy the STLLC Project Manager.