ISTA Advocate Research & Value Delivery Program

Request For Proposal

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TITLE **LTL Hazard Data Collection**

Phase 1 – Build a partially instrumented (2 contiguous sides plus top) pallet that will record each of the highlighted hazard inputs. Validate the measurement device capabilities in a laboratory environment.

PROPOSED RESEARCH PROJECT

The International Safe Transit Association (ISTA) on behalf of the members of its Advocate Research & Value Delivery Program (ARVD) seeks proposals for the following research program. The objective of this research project is to measure, in conjunction with other ISTA Work Groups, the hazards encountered by LTL (less than truckload) freight in their standard handling, transport and delivery environment not adequately covered, or supported by field data, in the existing ISTA 3B standard.

This research will be conducted in three Phases:

Phase 1: Build a partially instrumented (2 contiguous sides plus top) pallet that will record each of the identified hazard inputs during Phase 2 as shown in Appendix I. Validate the measurement device capabilities in a laboratory environment.

Phase 2: Use the partially instrumented pallet to measure staged hazards during 5 shipment legs in a controlled LTL staging, loading and in-transit trailer environment. By subjecting it to known inputs, determine the range/scale of data to be measured before Phase 3 field measurement trips are conducted as well as the integrity of the data collection device.

Phase 3: Build complete (5-sided measurement surface) instrumented pallet and ship LTL to cooperating receiving locations. This will consist of 30 or more instrumented lading journeys trips (15 round trips) traveling at least 1200 miles and passing through at least three transfer terminals to/from differing geographic regions at a variety of times.

PROJECT PURPOSE AND DESCRIPTION

An Advocate Council technical workgroup was formed to identify both the hazards encountered in LTL freight as well as potential gaps in the existing ISTA 3B standard.

As shown in the table below several hazards that LTL freight can be subjected to are not currently covered in ISTA 3B. Specifically, they are the items this project would address, namely, Handling, Stacking/dynamic compression, contact with other freight, contact with containment tools, and contact with material handling equipment.

Description		LTL segment				
		Pickup/ delivery	Loading/ unloading/ transfer	Transit	Type of measurement	Data desired
Handling	Marshalling	x	x		Acceleration, Force	amplitude, duration, distribution
	forklift Side shift/ pushing	x	x		Force	
	Bump loading	x	x		Force	
	Multi Pallet sliding		x		Force	
Stacking/dynamic compression			x	x	Force- higher sample rate required	amplitude, duration, distribution
Contact with freight				x	Force	amplitude, duration, distribution
Contact with containment tools	Straps			x		
	Shoring beams			x		
	Airbags			x		
	Dunnage			x		
Contact with material handling equipment		x	x			

SCOPE OF WORK SOUGHT IN THIS REQUEST FOR PROPOSAL

THIS RFP PERTAINS TO ONLY PHASE 1 ONLY

The Scope of Work states requirements for the project, including the services and the tangible work products to be delivered, and the tasks the Advocate Council has identified as necessary to meet those requirements. **Proposals should be tailored specifically to only Phase 1.**

- Conduct a literature search to discover if prior art regarding data collection and methodology for the hazards within the scope of this research exists in this space.
- Design and validate a fixture, a proof of concept, which would answer the question “Can we measure the things we know are happening?” Make updates as necessary until reviewed and approved by the ARVD Team.

Key Requirements, Instrumented Pallet Load Structure:
Target Dimensions: 48x40x60
Target Pallet Weight: 1000-1500 Lbs.
Ability of measure along 3 surfaces and 3 edges
Maximum Anticipated Forces:
Surfaces - 10,000 pounds
Edge – 5,000 pounds
System needs to survive a 4” drop onto concrete while operating without damage.
Reconfigurable hardware / sensors for additional package shapes/sizes/weights
Ability to operate without external power for at least two weeks.

Sensors:

DC response

Minimum Frequency Response: 1000Hz

Minimum accuracy: +/- 25 Lbs. (0.25% of full scale)

Overload protection to prevent sensor damage is strongly preferred.

Measurement surfaces must extend within 4" from the floor to measure adjacent pallet contact.

Recording system:

Minimum Sample Rate - 1000 Hz per sensor/channel

Trigger threshold – provide recommendation.

Minimum Storage capacity – provide recommendation.

Minimum Required Output:

Force vs. time plots for each side and edge

Location of the center of force for each side and edge

Distribution of force on each measurement surface/edge to provide size and shape of object and defining the area and location of contact area the better.

> Note: All data collection should meet the ISTA Data Collection Standard's requirements.
>
> Appendix I shows some initial construction thoughts, but other creative concepts are encouraged.

DELIVERABLES

The deliverables, at a minimum, need to include a technical report which documents a validated method to collect LTL hazard data identified in the Common LTL Hazards Table above. The deliverables include but are not limited to the following:

1. The results of literature search
2. Construct a data collection device of sufficient structural integrity to be used in Phase 2 (see Appendix II for hazards) and submit:
   - Construction Drawings and Instructions
   - Description of Instrument(s) used and their detailed setup(s)
   - Cost estimate and Bill of Materials for device
   - Data recorder calibration information
3. Validate the measurement device capabilities in a laboratory environment.
4. Conduct a validation demonstration for Advocate Task Team representatives.
5. Turn the device over to ISTA for use in Phase 2 and subsequent data collection studies.
6. ISTA to be co-owner of any Intellectual Property created.

MINIMUM QUALIFICATIONS FOR PRINCIPAL CONSULTANT/S

Knowledge of LTL single parcel/unit load system components including transport systems, warehousing and handling systems is required as is experience in transport distribution environment measurement or observational study of supply chains.

FORM OF THE PROPOSAL

Proposals should be tailored specifically to the project at hand. The Applicant must provide in their proposal a detailed scope of work showing how they will meet the RFP **Phase 1** requirements. The Applicant's proposal should address both tasks from the Scope of Work specifically and describe in detail how the Applicant will achieve the objective, including a definition of your complete research methodology and expected outcome. In addition, please describe the instrumentation to be used*, anticipated setup, mounting information, format in which raw data will be delivered, and potential analysis techniques.

* It should include a list of projected instrumentation needs and their cost as ISTA may be able to source these items.

If you are interested in being considered for **Phase 2** of this project, "Use the partially instrumented pallet to measure staged hazards (as shown in Appendix II) during 5 shipment legs in a controlled LTL staging, loading and in-transit trailer environment", you should declare intent at this time and provide a cost estimate for personnel and project management portions assuming the vehicle, required lading and instrumented pallet would be handled by ISTA.

The Advocate Council reserves the right, however, to modify specific requirements, based on changed circumstances, the proposal selection process, and contract negotiations with the Applicant(s) selected for negotiations, and to do so with or without issuing a revised RFP. In all cases the final contract will be the governing document of the project.

Provide one electronic version of the proposal that must include the following sections:

1. Qualifications:

   - A brief description of the proposing firm /research organization/ individual.
   - A detailed description of the proposed individuals that would be assigned to this project, including role, title, experience, and education.
   - Examples of similar research projects conducted in the past 5 years.
   - At least three references, including the names of individual contacts and telephone numbers.
   - Any other qualifications deemed necessary to complete the work if contracted by ISTA.

2. Fees:

Give a total cost for time and materials within the scope and timeline you propose including payment terms and schedule. Progress payments can be considered provided the proposal identifies how project progress can be verified. (i.e., upon submission of completed literature search, initial draft, final report, etc.)

   - The proposal must include the total cost to complete the tasks described in the project scope for this project.
   - List any other fees applicable to the work requested by ISTA, acknowledging they must be approved in advance.

3. Project Timeline:

A detailed timeline should accompany the project plan.

4. Conflicts Analysis:

Assurance that the firm has conducted an initial conflicts analysis and has not uncovered any potential conflicts.

SELECTION PROCESS

The ISTA staff, its Research Council and the ARVD Council will evaluate all proposals and may conduct telephone conferences to clarify information such as approach, timing, and cost. Final selection will be made by the voting members of the ARVD.

All proposals will be evaluated based on the following criteria:

a. Overall proposal suitability: proposal must meet the purpose, scope, and define how the deliverables will be achieved and be presented in a clear and organized manner.

b. Technical expertise and experience: Potential contactors will be evaluated on their experience as it pertains to the scope of this project.

c. Previous work: Potential contractors will be evaluated on examples of their work pertaining to similar research projects as well as testimonials and references.

d. Value and cost: Potential contractors will be evaluated on the cost of their proposal based on the work to be performed in accordance with the scope of this project.

e. The ability of the potential contractors to complete the project according to the proposed timeline.

f. The willingness of the contractor to execute a services contract with ISTA (see **Attachment C**, and an NDA, (see **Attachment D)** like the drafts attached.

RFP TIMELINE

10-18-21 – Distribution of RFP
11-8-21 – Deadline for vendors to submit written questions and/or non-mandatory notice of intent.
11-19-21 – Questions with written answers provided to all interested researchers
12-6-21 – Deadline for submitting proposals
1-10-22 – Finalists notified & interviewed
1-31-22 – Researcher selected

SUBMISSIONS

All proposals must be received by 12-6-21. Address proposals to:

Brian O'Banion
ISTA
1400 Abbot Road, Suite 380
East Lansing, MI 48823

Or by email to bobanion@ista.org with a copy to dwight@consultschmidt.com.

Questions regarding this RFP or your proposal submission may be addressed to Dwight Schmidt, Advocate Program Manager by emailing dwight@consultschmidt.com or calling 317-753-1437.

Attachments:
Appendix I – Phase 1, Possible Pallet Construction Ideas
Appendix II – Phase 2 Staged Events Examples
ISTA Data Collection Standards
ISTA Advocate Project Status Report
ISTA Sample Contract
ISTA sample NDA