

**REQUEST FOR PROPOSAL
RFP# N00028398C**

Transportation of the LSST Camera and Hardware

On behalf of

VERA C. RUBIN OBSERVATORY (Rubin)

**INSTRUCTIONS TO OFFERORS
(Instructions or RFP Instructions)**

ASSOCIATION of UNIVERSITIES for RESEARCH in ASTRONOMY Inc. (AURA)

PROPOSALS MUST BE RECEIVED BY:

**May 24, 2023 AT 6:00 PM MST (Tucson, U.S.)
(CLOSING DATE)**

TABLE OF CONTENTS

I. INSTRUCTIONS TO OFFERORS

- Art. 1. Definitions
- Art. 2. Proposal Procedures
- Art. 3. Communications and Questions
- Art. 4. Review of Documents
- Art. 5. Representations
- Art. 6. Alternate Provisions
- Art. 7. Completion Time
- Art. 8. Evaluation of Proposal
- Art. 9. Costing
- Art. 10. Limitations on Liability
- Art. 11. Offeror's Contract
- Art. 12. Rejection of Proposal

II. OFFEROR'S PROPOSAL FOR CONTRACT (Document must be completed and returned to AURA with the Proposal)

III. REPRESENTATIONS AND CERTIFICATIONS

IV. STATEMENT OF WORK (SOW or LOGISTICS PLAN)

V. CONTRACT

SECTION I

ARTICLE 1. DEFINITIONS

1.1 All definitions set forth throughout as well as in any attachments and appendices are applicable to these Instructions to Offerors.

1.2 The “Request for Proposal Documents” (hereinafter RFP Documents) consist of the following:

- (a) Instructions to Offerors;
- (b) Amendments to the Instructions issued prior to Closing Date;
- (c) Statement of Work
- (d) Representations and Certifications

1.3 “Amendments” mean the written or graphic instruments issued prior to the Closing Date which modify or interpret the RFP Documents, including specifications, by additions, deletions, extensions, answers to Questions posted on the RFP Webpage, clarifications or corrections.

1.4 "Contract Documents" may include any, or all, of the following:

- (a) Contract between AURA and the Contractor;
- (b) Representations and Certifications;
- (c) Terms and Conditions;
- (d) Statement of Work;
- (e) Construction Drawings;
- (f) Construction Specifications;
- (g) Photos of Area of Work;
- (h) Amendments and all modifications incorporated in the documents before their execution.

1.5 “AURA” means the Association of Universities for Research in Astronomy, Inc., an Arizona non-profit corporation. The term "AURA" includes its authorized representatives. AURA operates the **Vera C. Rubin Observatory (Rubin)** and is engaged in managing, operating, and maintaining observatories and related activities for research in the field of astronomy. AURA desires to enter into a Contract to perform the **Transportation of the LSST Camera and Hardware** for the Rubin Observatory as described in the Statement of Work.

1.6 “Foundation” means the National Science Foundation, an agency of the United States of America created under the National Science Foundation Act of 1950. The term "Foundation" includes its authorized representatives.

1.7 “Offeror” or “Bidder” means the person, authorized representative(s), or organization submitting a proposal, and if awarded, shall perform the Work described in the Contract as the “Contractor.”

1.8 “Contractor” means the person, authorized representative(s) or organization responsible for the completion of the Work. If a proposal is submitted on behalf of multiple parties, the term “Contractor,” shall apply to the party or parties responsible for completion of the Work.

1.9 “Work” means those tasks, requirements, and obligations described in the Statement of Work as included in the Contract Documents.

1.10 “Subcontractor” means a person or organization, with a direct agreement with the Contractor to furnish labor, or labor and materials, in support of the Statement of Work. The term also includes lower tier contractors of a Subcontractor, but it does not include suppliers who furnish materials not worked to a special design according to the drawings and specifications. Nothing contained in the Contract Documents shall be deemed or construed to create any contractual relation between AURA and any Subcontractor as defined above.

1.11 "Closing Date" means the specified date and time by when all proposal documents must be received by AURA.

ARTICLE 2. PROPOSAL PROCEDURES

2.1 Proposals shall consist of the elements described in these RFP Instructions, including those described in Section II. Section II, Offeror’s Proposal Document, must be completed in its entirety and submitted to the address indicated in Paragraph 2.5 below. The Offeror’s price information shall be in accordance with the format indicated in Section II. The entirety of the proposal shall be in English. **Any proposal or part of a proposal not conforming to the specified formats shall be cause to reject the entire proposal.**

2.2

- a. Due to AURA’s tax exempt status, prices quoted shall not include federal, state, or local sales or excise taxes. Offerors subject to a mandatory value-added tax (VAT) may include VAT in the comprehensive price quote.
- b. Prices quoted in the proposal(s) shall include furnishing of all transportation, materials, equipment, tools, supplies, labor and services necessary or proper for performance and completion of the Work, except such as may be otherwise expressly provided for in the RFP documents.
- c. Offeror shall conform its price in accordance with the payment and milestone schedule. Prices shall be in U.S. Dollars (\$USD).

2.3 In the event of discrepancy between the prices quoted in the RFP in words and those quoted in figures, the words shall control.

2.4 Proposals shall be submitted in an electronic version using MS Office (2003 or later) or .pdf of the entire proposal, not later than the scheduled Closing Date.

2.5 A proposal may be deemed non-compliant if the entire submission package has not been received at the designated location by the Closing Date. Proposals may be delivered to:

Charles T. Maples, Contracts Officer
AURA

Email: cmaples@aura-astronomy.org

2.6 Offeror may withdraw its proposal, either personally or by written request, at any time prior to the Closing Date. If a qualified Offeror determines that it will not submit a proposal, notice of such is requested by AURA.

2.7 Offeror's proposal shall be valid for one hundred twenty (120) days beginning with the Closing Date.

ARTICLE 3. COMMUNICATION AND QUESTIONS

3.1 Any questions or requests for clarification of this proposal must be solely directed to cmaples@aura-astronomy.org. Questions must be submitted by email, and must be received at least three (3) business days before the Closing Date. All questions and responses from any Offeror will be provided to all parties via the [AURA procurement website](#). Responses will be anonymous as to the questioner/Offeror. Any question not conforming to this format will be disregarded. Offerors shall disregard references to any other contract, such as that found on the AURA procurement website. AURA will endeavor to respond to questions within three business days.

ARTICLE 4. REVIEW OF DOCUMENTS

4.1 AURA reserves the right to make additions, deletions, or modifications to the RFP Documents in writing by amendment at any time prior to the Closing Date. If, in the opinion of AURA, any such change causes an increase in the time required for submission of proposals, AURA may, at its sole discretion, adjust the Closing Date in the form of an Amendment posted on the AURA website.

4.2 Offerors shall examine the RFP Documents carefully. Any request for interpretation or correction of any ambiguity, inconsistency, or error that Offeror discovers must be made as per Article 3, not later than three (3) days prior to the Closing Date.

4.3 All interpretations and corrections to the RFP or to the Contract Documents will be issued in the form of an Amendment posted on the AURA website. Offerors shall not rely on any interpretation or correction to the RFP or Contract Documents given by any other method.

4.4 Prior to receipt of proposals, addenda, if required, will be posted on the AURA website.

4.5 The failure of Offeror to receive or examine any form, instrument, amendment or other document, or failure to acquaint itself with existing conditions shall not relieve Offeror from obligations and responsibilities with respect to its proposal or to the Contract. The submission of a proposal will be taken as prima facie evidence of agreement with this section.

ARTICLE 5. REPRESENTATIONS

5.1 Offeror, by submitting a proposal, represents that it is familiar with existing conditions under which the Work will be performed, including, but not limited to, environmental, cultural and operational requirements.

5.2 a. Offeror, by submitting its proposal, represents that it has read and understands all the RFP Documents and by submitting a proposal acknowledges acceptance of all of the Terms and Conditions of the RFP Documents as defined in Section 1.2 of these Instructions.

b. Any exceptions to the Contract Documents by Offeror shall be stated in writing on Offeror's letterhead and submitted with its proposal with clear and concise justification(s). Offeror shall provide alternative wording for consideration by AURA.

c. Offeror, by submitting a Proposal, certifies that the Contract Documents, including the Terms and Conditions and SOW, have been reviewed and accepted by the contracts representative of the Offeror, or similar binding authority, or has noted such exception with its Proposal.

5.3 Offeror shall be prepared to submit a resolution giving evidence of its qualification of corporate signature authority if requested.

5.4 Offeror shall complete, sign, and submit the Representations and Certifications of Section III with the Proposal.

ARTICLE 6. ALTERNATE PROVISIONS

6.1 Offeror represents that its Proposal is based upon the specifications, terms and conditions described in the RFP documents, unless alternative provisions are expressly permitted by an Amendment.

6.2 A proposal containing an alternate provision(s) shall be accompanied by full and complete justification and technical description of the alternate provisions(s) along with a detailed cost analysis of the differences between the alternate and original provisions. AURA reserves the right to request such other additional information as may be required for approval either before or after receipt of proposals.

6.3 Failure to provide justification or technical descriptions for approval purposes may be cause to reject the proposal.

ARTICLE 7. COMPLETION TIME

Offerors shall represent in the proposal that they can complete the Work within the timeline indicated by the SOW, or propose an alternative completion date with justification. The time of performance shall be dated from receipt of a Contract, and all costs included in the proposal shall be for the Work to be completed within that period.

ARTICLE 8. EVALUATION OF PROPOSAL

8.1 Proposals will be opened and evaluated privately by AURA after the Closing Date.

8.2 Proposals will be evaluated according to the following major factors, ranked or weighted in no particular order:

- * Demonstrated experience transporting high value cargo.
- * Demonstrated risk mitigation measures, including description of the handling and transport and offered liability coverage.
- * Identified technical qualifications, resources, and proposed logistics plan.
- * Price.

8.3 All proposal documents received will be considered confidential and will not be released.

8.4 The award of the Contract(s), if any, made by AURA, will be made to the Offeror(s) that presents the best value. AURA reserves the right to determine, at its sole and exclusive discretion, which proposal, if any, properly meets the “best value” requirement and whether it is in the best interests of AURA to accept the proposal. Therefore, Offeror shall ensure that all requested information is included in its proposal.

ARTICLE 9. COSTING

While firm fixed price (FFP) is the typical pricing scheme for most acquisitions, AURA is open to different types of costing models, including firm fixed price, cost, cost plus, etc. Offeror should identify and propose what it thinks is the best, or most appropriate model, explain its choice, and why it is superior to firm fixed price. AURA reserves the option to request a proposal redrafted in an alternative costing model.

ARTICLE 10. LIMITATIONS ON LIABILITY

Offeror’s proposal/contract should clearly describe its limitations of liability as well as that of its retained subcontractors, as applicable.

ARTICLE 11. OFFEROR'S CONTRACT

Given the specialty nature of the tasking herein, AURA requests that Offerors include their own form of contract conforming to the requirements of the SOW and these RFP Instructions.

ARTICLE 12. REJECTION OF PROPOSALS

9.1 AURA reserves the right to accept or reject any or all proposals or any combination thereof, to withhold an award for any reason it may determine, or to waive any irregularities or informalities in the proposals or in the submission of proposals.

9.2 All submitted proposals shall become the sole and exclusive property of AURA.

SECTION II

OFFEROR'S PROPOSAL for CONTRACT

DATE: _____

TO: AURA
 Attn: Charles T. Maples, Contracting Officer

FROM: _____
 (Legal Name of individual, firm or corporation bidding)

(Complete Business Address)

(Signature)

(Title)

1. By submitting this Proposal, the Offeror accepts all of the terms and conditions of the RFP Documents as described in Section 1.2 of the Instructions to Offerors, or has enclosed written exceptions to the terms of the Draft Contract. AURA will review the exceptions, but is not obligated to accept (any or all of) them in a final contract if awarded.
2. In compliance with AURA's Request for Proposal No. N00028398C, the Offeror hereby proposes to furnish all labor, materials, equipment and supplies to perform the Work for AURA's **Transportation of the LSST Camera and Hardware** in accordance with the Specifications, pertinent Contract Documents and Statement of Work.
3. Offeror's Proposal submittal shall include the following:
 - A. A Cover Sheet including: contracting General Information (RFP Number [if given], Proposal Title name/address of the firm, Technical and Administrative points of contact, DUNS/UEI number, Teamed Organizations, if any, and any other pertinent information);
 - B. An abstract summarizing the proposed effort, not to exceed 500 words;
 - C. The Technical Proposal, which shall address:
 - a. Relevant technical experience of Offerors;

- b. Relevant technical experience and role of any proposed subcontractors;
- c. Names, resumes, and role of key technical personnel;
- d. A minimum of 3 references on projects of a similar size, complexity and nature;
- e. Unique qualifications;
- f. Preliminary project plan, including project schedule and your proposed milestone or per task payments;
- g. **Description of the full scope of services offered and expressly any exclusions**;
- h. Proposed deviations from requirements with justifications and impact on price and schedule; and,

D. Any other relevant information.

- 4. The Offeror hereby specifies, in accordance with Article 7, Completion Time, of Instructions to Offerors that Work shall be completed within _____ calendar days after receipt of the Contract.
- 5. In accordance with the above completion schedule (Paragraph 4) and enclosed specifications, the Offeror hereby proposes to accomplish the work described above for the total of:

_____ DOLLARS (\$).

This proposal is submitted by Offeror and endorsed by its authorizing official by the signature below:

By: _____

Name: _____

Title: _____

SECTION III

SECTION III. ASSOCIATION OF UNIVERSITIES FOR RESEARCH IN ASTRONOMY, Inc. REPRESENTATIONS AND CERTIFICATIONS

(Must be completed and returned)

Date:

The Contractor, by checking the appropriate boxes, makes the following representations and certifications:

A. REGULAR DEALER-MANUFACTURER

It is a () regular dealer in, () manufacturer of, the items offered.

B. SMALL BUSINESS/SMALL DISADVANTAGED BUSINESS SUBCONTRACTING

Pursuant to the terms of our Agreement with the Government and applicable Federal Procurement Regulations 1-1.701, AURA is required to maintain a Small Business and Small Disadvantaged Business Subcontracting Program. You are therefore requested to check the appropriate blocks below:

Business Size (Check One)

- () Small A domestic concern that is independently owned and operated, is not dominant in the field of its operations, qualifies under the criteria covering annual receipts set forth in Section 3 of the Small Business Act and does not employ more than 500 employees.
- () Large A domestic concern which, including domestic and foreign divisions and affiliates, normally employs 500 or more persons, is independently or publicly owned or controlled and operated, and which may be a division of another domestic or foreign concern.

Business Classification (Check as many as are applicable)

- () Minority 51% of business or stock is owned by one or more socially and economically disadvantaged individuals and whose management and daily business operations are controlled by one more of such individuals.
- Socially and economically disadvantaged individuals including Black Americans, Hispanic Americans, Native Americans, Asian-Pacific Americans, Asian-Indian Americans and other minorities, or any other individual found to be disadvantaged pursuant to Section 8(a) of the Small Business Act.
- Native Americans include American Indians, Eskimos, Aleuts, and native Hawaiians. Asian-Pacific Americans includes U. S. citizens whose origins are Guam, the U. S. Trust Territories of the Pacific, Northern Marianas, Laos, Cambodia and Taiwan.
- For assistance in determining your business size and socially and economically disadvantaged status, contact the nearest office of the Small Business Administration.
- () Women-Owned A business that is at least 51% owned, controlled and operated by a

woman or women.

Note: Controlled is defined as exercising the power to make policy decisions. Operated is defined as actively involved in the day-to-day management.

- () Non-Profit A business or organization that has received non-profit status under IRS Regulation 501(c)(3).
- () Public An agency of the Federal or State Government Sector or a municipality.
- () Sheltered A sheltered workshop or other equivalent business basically employing the handicapped.
- () Handicapped A business that is owned, controlled and operated by a handicapped person(s).
- () Foreign A concern which is not incorporated in the United States or an unincorporated concern having its principal place of business outside the United States.

Business Status (Check One) - For IRS Reporting Requirements

- () Corporation A business entity that is registered with a state in the United States as a corporation, including non-profit corporations but excluding professional corporations.
- () Other An individual, or other business entity that is not a registered corporation. This includes corporations, independent contractors, partnerships, and the like.

Indicate Your:

Unique Entity Identifier (UEI)
[SAM] (replaces D-U-N-S No.):

Federal Empl. ID #:

SAM Registration (Yes or No)

WARNING: Failure to provide this information may require that we withhold 20% of your payments and may result in fines imposed by the IRS.

C. DEBARMENT/SUSPENSION STATUS

Contractor certifies to the best of its knowledge and belief that it and its principals:

- a) are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from a covered transaction by any Federal department or agency;
- b) have not within a three year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, state or local) transaction or contract under a public transaction; violation of Federal or state antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
- c) are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (federal, State or local) with commission of any of the offenses enumerated in paragraph b of this certification; and
- d) have not within a three-year period preceding this proposal for bid had one or more public transactions (Federal, state or local) terminated for cause or default.

The Contractor agrees to provide immediate notice to the AURA Contracting Officer in the event of being suspended, debarred, or declared ineligible by any department or Federal Agency, or upon receipt of a notice of proposed debarment that is received after the submission of the bid or offer, but prior to the award of the purchase order or contract.

D. MADE IN AMERICA/BUILD AMERICA, BUY AMERICA

The undersigned certifies that it understands and shall comply with the "Build America, Buy America" (BABA) requirements per the federal law of the United States as it pertains to this Request for Proposals. Furthermore, the undersigned understands that the Build America, Buy America requirements apply to any and all portions of the project that are considered "infrastructure" (as defined), including subcontracted portions.

Information on BABA may be found at the National Science Foundation's [BABA page](#) and NSF's [Implementation Plan](#) and the U.S. [Office of Management and Budget](#).

Considering the above, Contractor represents that the Proposal (check all that apply):

May involve developing "infrastructure" or developing a component to be incorporated into infrastructure in the United States

Does not involve "infrastructure" (for example, the work consists purely of services, such as consulting)

The work is entirely outside the United States and no work product is destined to reside in the United States

CERTIFICATION

The Contractor hereby certifies that it has read the above Debarment/Suspension Status requirements and that it understands and will comply with these requirements.

Please advise this facility as soon as possible when the status of your company changes from that indicated above.

Contractor's Name (printed or typed)

Address

Signature of Authorized Representative

Date

Title of Authorized Representative

SECTION IV
STATEMENT OF WORK



LOGISTICS PLAN

FOR THE TRANSPORTATION OF THE LSST CAMERA & HARDWARE

From: SLAC National Accelerator
Laboratory, Menlo Park, CA, USA.

To: Rubin Observatory, Cerro
Pachón, Chile.

Michael R. Logue, Margaux Lopez

LCPA 19.0

Date: 04/19/2023

Version: 9

Tucson central office
950 North Cherry Ave.
Tucson, AZ 85719.
USA.

La Serena office
Avenida Juan Cisternas 1500.
La Serena, Chile.





1 Overview

The Vera C. Rubin Observatory, in conjunction with its partners is seeking a logistics provider for the transport of the LSST Camera and related hardware from SLAC, Menlo Park, CA., to Cerro Pachón, Chile by road services and air charter service via San Francisco International Airport (SFO) directly to Santiago (SCL).

This document describes the overall scope of work for the loading, securing, transportation, and staging of the Rubin Observatory Legacy Survey of Space and Time (LSST) Camera (and other hardware) in its shipping container from Menlo Park, CA, to the Rubin Observatory on Cerro Pachón Summit outside of La Serena, Chile. This document provides a summary logistics plan and tasks, contact information, programmatic and technical background, and specific processes to be followed. The Rubin Observatory Commissioning Team based at La Serena, Chile is coordinating all logistics activities, the AURA office in Chile is coordinating all importation processes with customs and SLAC Facilities Office is supporting site coordination at Menlo Park.

Program Background

1.1 Rubin Observatory Project

The LSST Project Office (LSST PO) and Rubin Observatory is an independent Center within the Association of Universities for Research in Astronomy (AURA). AURA has Official International Organization Status in Chile and permissions for the importation of goods into Chile.

AURA has the Cooperative Support Agreement AST-1202910 with the National Science Foundation (NSF) for construction of the Rubin Observatory under the Major Research Equipment and Facilities Construction (MREFC) account. Rubin Observatory Project activities are supported in part by the National Science Foundation through Governing Cooperative Agreement 1258333 managed by AURA, and the Department of Energy under contract DE-AC02-76-SFO0515 with the SLAC National Accelerator Laboratory.

Tucson central office
950 North Cherry Ave.
Tucson, AZ 85719.
USA.

La Serena office
Avenida Juan Cisternas 1500.
La Serena, Chile.





All efforts associated with this statement of work are under the auspices of the Rubin Observatory Commissioning Team in conjunction with SLAC National Accelerator Laboratory. AURA will be the contracting and supporting agency for this effort acting on behalf of its Center, the LSST Project Office. References to the term, “LSST PO” made throughout this statement shall mean and refer to AURA.

1.2 LSSTCam Mass Simulator Shipping Container and Transportation Test

Previously, during September of 2021, the primary shipping container incorporating the LSSTCam Mass Simulator was shipped by airfreight to Chile (Cerro Pachón) and returned to SLAC by seafreight in order to test and validate the transportation dynamics and logistics for the upcoming delivery of the primary LSST Camera. This successful demonstration captured significant data for the test throughout the first stage to the summit observatory including monitoring at critical transfer points.

The results are captured in multiple documents, the conclusions of which are to be incorporated into the primary camera shipment procedure. Documents listed in Section 16 and referenced throughout are available for review upon request.

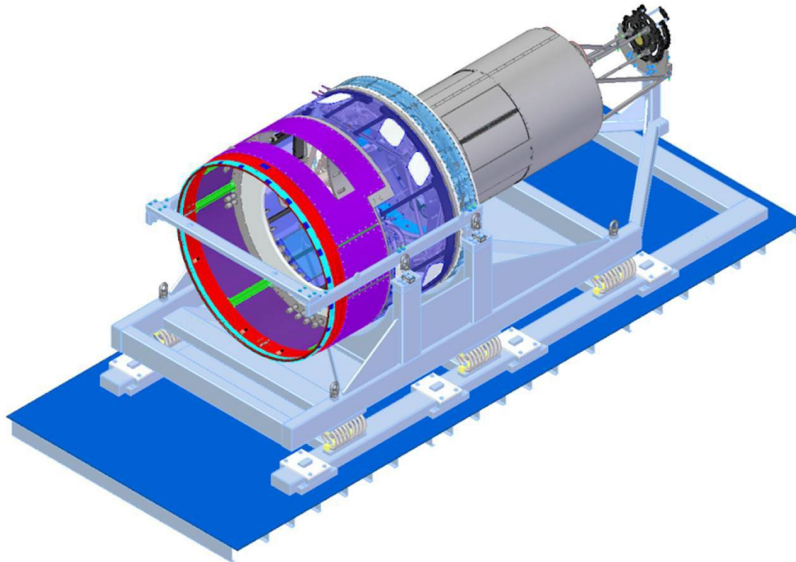
Tucson central office
950 North Cherry Ave.
Tucson, AZ 85719.
USA.

La Serena office
Avenida Juan Cisternas 1500.
La Serena, Chile.



2 Cargo

2.1 LSST Camera and Hardware



The LSST Camera is an engineered metal and glass fabrication incorporating highly technical, sensitive, and unique scientific instruments. The LSST Camera is mounted and secured on a metal shipping frame (with wire rope isolators) for handling and transportation.

The LSST Camera and shipping frame combined weigh approximately 10,360lbs / 4,700kgs. The LSST Camera mounted on its frame measures overall approximately 503 (L) x 204 (w) x 214 (h) cms. The LSST Camera and frame will be packaged by SLAC into a 20' ISO shipping container as defined below.

Added cargo includes a collection of Data Recorders and GPS Trackers (6 small instruments) weighing approximately 1lb / 2.2kgs in total. These sensors were previously approved for air transport and were used during the LSSTCam Mass Simulator test as described in Section 1.2. The Data Recorders (and Trackers) are majority powered by alkaline batteries with a small quantity powered lithium ion batteries.

Additional cargo items include hardware and LSST Camera specialized lifting and handling gear (and desiccant), contained in separate, similar shipping containers.

Non-specialized standard container lifting gear is to be offered at various locations by SLAC, the nominated Contractors, and Rubin Observatory as necessary.

The preferred transit environment conditions include undercover staging, an operating transit temperature range of between 0 and 40 degrees centigrade, and moisture control protocols. Tarpaulins may also be needed in transit.

2.2 Shipping Container(s)



The LSST Camera primary shipping container (CPWU 298401-9) is a shipper owned, bespoke modified 20' ISO unit. The container is a January 2019 manufacture, single trip used, CSC plated with a Lloyd's Register inspection decal.

The major modifications include;

A removable, lockable, steel plate 'open top' roof.

A steel floor on steel transverse joists.

Internal timber framed and fitted with foiled backed thermal insulation board, all internal sides including doors.

8 Capture Plate Assemblies in 2 parallel rows comprising steel locking cleats, capture plates, and bolts secured to the container floor.

The shipping container with modifications weights approximately 3,250kgs. The shipping container measures overall at **20 x 8 x 8.5ft / 610 x 245 x 261cms.**

Total cargo weight therefore (container and contents) is currently estimated at **17,530lbs / 7,950kgs.**

All shipping containers shall be sealed at SLAC before departure.

We anticipate all containers should be scaled before airfreighting.



It is anticipated that 2 additional similar constructed, shipper owned 20' ISO units plus additional break bulk of camera hardware shall complete the air charter cargo proposal (section 6).

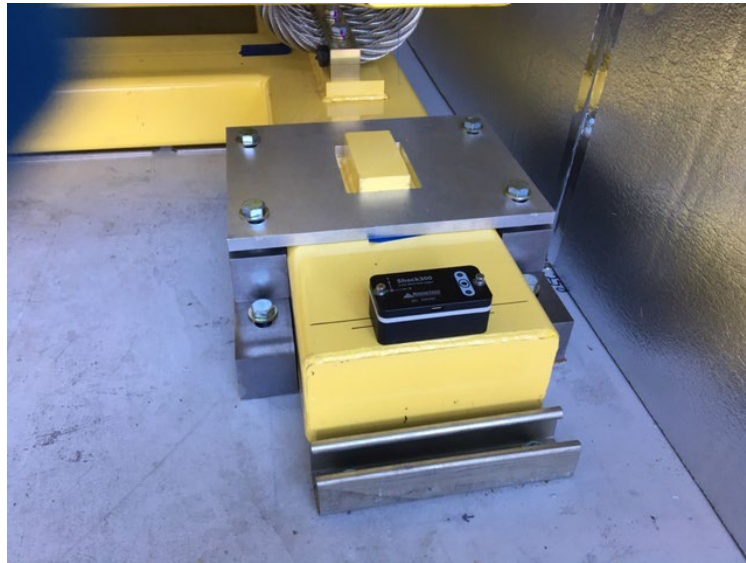
3 Packaging

The LSST Camera and frame are unpacked (i.e. uncrated), but covered by a foil poly ESD wrap for moisture and antistatic protection. Desiccant bags are also added to the container. The shipping container is vented.

3.1 Cargo Securing Within the Container

The LSST Camera and frame is stowed longitudinal between the steel cleats (located on the floor) and secured by locking plates and bolts across the lower shipping frame. The 'floating frame' cannot contact any part of the shipping container.

SLAC / AURA shall also employ a variety of standard load securing devices for the remaining additional hardware to achieve similar results.



Cargo Securing: Floor Cleats & Capture Plates with Data Recorder

4 Container Handling

The shipping container is lifted in transit by the nominated carrier (and/or Rubin personnel) by means of chain hooks, container twist locks, or shackles to the top corner modular post blocks according to LCA 18901 or similar specification. Use of forklifts trucks for container maneuvering is not permitted.

The shipping containers are initially lifted at SLAC (by SLAC personnel) by overhead indoor bridge crane located at Building 620 (IR2), Menlo Park, CA.

All containers incorporate standard tie down requirements for both road and air transport as described in Section 8. The shipping containers shall finally be lifted at destination (by SLAC / AURA personnel) by overhead indoor bridge crane located at the Rubin Summit Facility.

5 Cargo Summary

There follows a preliminary summary of the total cargo contained in the Bill of Materials (LCA18395A) accompanying this document and a work in progress.

Identifier	Cargo	Dimensions
1A – 20' ISO Unit	LSST Camera	7,950kgs / 17,530lbs. 20' x 8' x 8'6"
1B – 20' ISO Unit	Camera Hardware	20' x 8' x 8'6"
1C – 20' ISO Unit	Camera Hardware	20' x 8' x 8'6"
44 Packages	Camera Hardware	Break Bulk

Current estimated cargo footprint is 2,015 sq.ft.

Current estimated cargo volume is 11,633 cu.ft.

Cargo also includes a collection of Data Recorders and GPS Trackers (6 small instruments) weighing approximately 1lb / 2.2kgs in total, located within the Camera container. The Data Recorders (and Trackers) are majority powered by alkaline batteries with a small quantity powered lithium ion batteries. A Shipping Sensor Plan is available for review (LCA 18931C).

6 Transportation Scope

The nominated transportation contractor(s) in conjunction with SLAC shall supply all necessary labor, equipment, and permitting, required for safe legal transportation of the LSST Camera and additional hardware (upto 3 container units and break bulk) from SLAC to SFO airport facility & air cargo receiving center by air-ride truck(s). Initial shipping container loading and stowage will be performed by SLAC personnel.



Contractor(s) will be provided sufficient advance notice of the actual shipping date, with transport and delivery to occur when allowable by the local authorities having jurisdiction.

AURA shall coordinate export customs processing upon arrival at SFO. Local AURA authorities (Santiago) shall also coordinate import customs clearance at Santiago airport.

The cargo is to be airfreighted to Santiago International airport SCL.

The nominated transportation contractor(s) in conjunction with the Rubin Commissioning Team shall supply all necessary labor, equipment, and permitting required for safe legal transportation of the shipping containers from SCL (Santiago) to the Rubin Observatory construction site at Cerro Pachón by air-ride truck. Shipping container unloading, will be performed by Rubin personnel. Contractor(s) will be provided sufficient advance notice of the actual shipping date, with transport and delivery to occur when allowable by the local authorities having jurisdiction.

During the duration of this effort, AURA will provide insurance to cover to the value of the item, and according to the provisions of the insurance policy.

AURA shall apply 'Delivered at Place' (DAP) Cerro Pachón as the applicable 2020 Incoterm.

7 Transportation Plan and Tasks

This section provides the shipping plan details for transporting LSST Camera and additional hardware in their shipping containers from SLAC to Cerro Pachón. A general plan summary is provided in addition to detailed steps of each major task.

The transportation plan envisions the contractor disposition of an adequate and sufficient truck / trailer arrangement with air ride capability, team drivers, container securing devices and tie-downs both at SLAC & Santiago available to load the abovementioned containers.

The contractor shall provide advance nomination of the proposed equipment for review and inspection.



8.1 Test Loading & Transit at SLAC & Vicinity

In addition, AURA requires that a test loading and transit of the shipping container with the LSSTCam Mass Simulator be undertaken in advance of the primary LSST Camera shipment at SLAC and in the vicinity of SFO. These tests are independent of this request, and not included in this proposal.

8.2 Road Transit(s)

Over the road transits (OTRs), in both the USA and Chile, is by dedicated direct delivery on wheels by team drivers. The transit shall be monitored and accompanied by the Rubin Commissioning Team. We are also seeking proposals for independent security escorts from SCL to the AURA Summit entrance gate (aka Control Puerta). Tarpaulins have been purchased for transit and to be utilized (installed) at the discretion of the drivers & local parties.

The proposed US OTR equipment is a diesel tractor / air ride trailer combination with 20' shipping container compatible chassis, twistlocks and additional tie down points.

Additional proposed securing arrangements may include multiple rated tie down ratchet straps in combination with the twistlocks and in compliance with state and local cargo guidelines and regulation. The proposal includes 4 x 5,500lbs rated tie downs to prevent vertical uplift.

Top lifting via the top corner post modular interlock devices is required at all times. Forklift handling is not permitted. Lifting of the shipping containers shall not be conducted with wind speeds in excess of 20mph,



nor in conditions of heavy precipitation.

For contingency, undercover staging (or tarpaulins as above) is indicated both at SFO and SCL in case of early arrival, delay, etc., primarily to prevent moisture ingress

Over the Road Transit, SLAC to SFO				
Commence:	October	TBD		
Tasks:	Dedicated Direct Delivery on Wheels to SFO			
Complete:	Day of	2 hours		
Distance:	25 miles			

8.3 Intercontinental Air Cargo to SCL

The proposed air cargo transit is by dedicated and chartered B747 400F all cargo freighter or similar to be nominated by the lead contractor.

Handling of the shipping container(s) at SFO (and SCL) is by means of top lift by mobile crane (diagram attached) to appropriate oversize ULD PGA (a certified aircraft pallet, freighter main deck only). Handling is by roller bed scissor lift to aircraft side opening hatch.

Tucson central office
950 North Cherry Ave.
Tucson, AZ 85719.
USA.

La Serena office
Avenida Juan Cisternas 1500.
La Serena, Chile.





Container Handling Photographs

Securing of the ULD / container is by means of multiple tie down ratchet straps and chains from all 8 corner blocks and netting. A preliminary analysis of the securing specification is attached. The PGA is normally secured by means of aircraft installed twist locks to the floor.

Similar reverse handling procedures are indicated at Santiago Airport.



Contractor shall furnish AURA in advance with Aircraft Registration Number and copy FAA Airworthiness Certificate.

Intercontinental Air Cargo Charter to SCL				
Cut Off:	October	TBD		
Flight:	TBD			
Arrival:	TBD	TBD		
Distance:	6000 miles	14 hours		

The principal is also requesting a provision for jump seat accompaniment for 3 nominated Rubin Commissioning Team individuals from SFO to SCL.

8.4 Road Transit to Rubin Summit

As above, similar handling, securing, and transit procedures are indicated at SCL. Forklift handling is not permitted.

Over the Road Transit, SCL to Rubin Observatory				
Commence:	October	TBD		
Tasks:	Dedicated Direct Delivery on Wheels to Rubin Obs.			
Complete:	2 days	TBD		
Distance:	575 kms			



8.5 Shipper / Contractor Tasks

SLAC personnel will inspect and document the condition of the LSST Camera and additional hardware and provide any necessary work to prepare the LSST Camera and shipping container prior to loading onto the air ride truck. SLAC personnel will add several digital data recorders to the Shipping Container to record, and evaluate motions, impacts, shocks, temperature, etc.

SLAC personnel shall perform the loading and securing process of the LSST Camera in its shipping container at SLAC and close & seal the container prior to the arrival of the transportation contractor.

Road transportation will arrive at SLAC, giving enough time to stage and prepare for the mounting of the containers and cargo onto the truck(s). Contractor shall advise SLAC of their arrival time at SLAC. The transportation of the LSST Camera and hardware in begins from SLAC.

Upon arrival at SFO, the shipping containers in its shall be securely stored / staged undercover (as necessary) at the airport pending aircraft arrival.

AURA will coordinate the export customs clearance.

The contractor shall perform and provide sufficient equipment for the lifting, loading, stowage and securing aboard the nominated aircraft and ultimate transit to Santiago, Chile. The contractor shall provide in advance an aircraft nomination and copy certification, a predicated loading date & time, cargo lifting, stowage and securing plans.

Rubin personnel (and / or contractors) shall be deployed as necessary to monitor and validate the transit procedure throughout the inland transportation and aircraft loading processes. Rubin also requests access to the airport apron and aircraft for certain qualified personnel.

At this point, the United States portion of the inland transportation process has been completed.

Upon arrival at SCL (Santiago) AURA will coordinate import customs clearance.

The contractor(s) shall provide sufficient equipment and perform the lifting and unloading of the containers for staging pending clearance and



road transportation arrival. An inspection of the cargo at Santiago may be performed at the principal's discretion.

The contractor shall perform the lifting and loading of the shipping containers by mobile crane to air ride truck for ultimate delivery to Cerro Pachón. Similar procedures are envisioned at Santiago as outlined above during the loading and delivery process.

8.6 Transit Contingencies

Many detailed risks are outlined in the accompanying FMEA. However, ongoing, unprecedented, and severe supply chain events for multiple reasons highlight the potential for delay, diversion and detention. These contingencies include; seasonal weather events, infrastructure diversions, and local ordinances, etc.

To mitigate some of the contingencies as necessary in transit, the principal is also seeking proposals for modern construction undercover temporary staging with security features both at SFO and SCL.

Contractors shall provide details of any potential penalties that maybe incurred as a result of the abovementioned events.

Qualified Safety officers nominated by Rubin Commissioning Team both in the US and Chile shall validate our procedures throughout. Independent Marine Surveyors are appointed to monitor key transfers, validate procedures, and report events.

8.7 Data Analysis

The transportation of the LSST Camera is also informed by the data capture of the recording included in the LSSTCam Mass Simulator Test.

The data is analyzed is at least two documents, available upon request; MS Shipment Vibration Analysis and the proceedings of SPIE 2022.



9 Risk Management

AURA propose and intend to correspond with their regular insurance broker in order to seek a Marine Cargo Policy for a single trip transit covering the primary LSST Camera and related hardware.

10 Media & Communications

The shipment of the LSST Camera is likely to attract significant media attention. This is already evident in various recent past communication releases and outreach.

Rubin Observatory Commissioning Team and SLAC shall coordinate media activities and accesses through the relevant Communications Departments. The majority of this activity is likely conducted at Chile.

11 Safety & Security

AURA qualified Safety officers shall validate our procedures throughout. Independent Marine Cargo Surveyors are appointed to monitor key transfers, validate procedures, and report events. Access to secure and security designated is highly monitored by invitation only.



12 Proposals

Rubin Observatory / Aura are seeking cost proposals from interested parties / contractors on the abovementioned required services preferably on a door to door basis from those with the required engineering expertise.

13 Contact Information

13.1 Rubin Commissioning Team / AURA Contact Personnel

The Rubin Observatory Telescope and Site Group in Tucson, Arizona, and La Serena, Chile in conjunction with SLAC and AURA will coordinate all aspects of this effort.

13.2 Logistics Company Contact Personnel

The Contractor(s) shall nominate / provide a list of primary contacts;

Tucson central office
950 North Cherry Ave.
Tucson, AZ 85719.
USA.

La Serena office
Avenida Juan Cisternas 1500.
La Serena, Chile.



14 Details Shipping Container

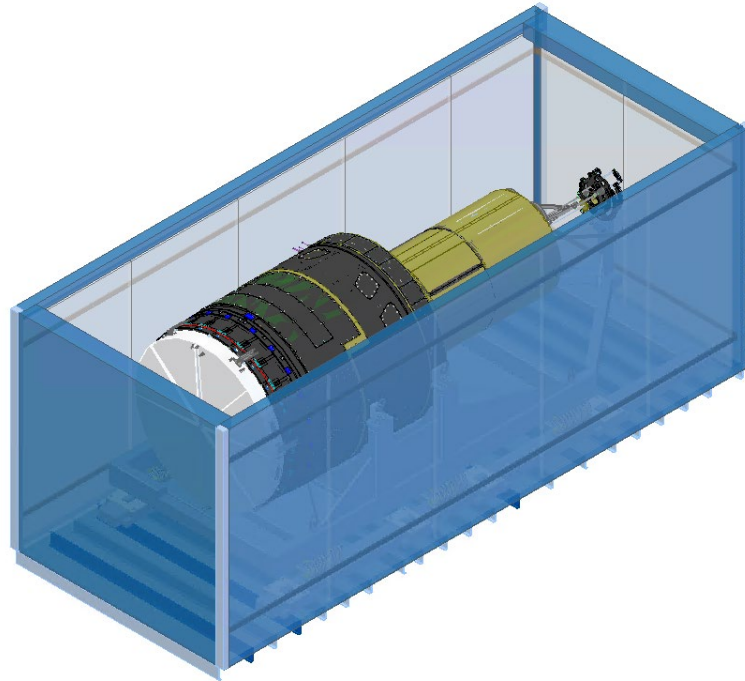


Figure 2: Cargo & Shipping Container Diagram.

15 Directions and Photos

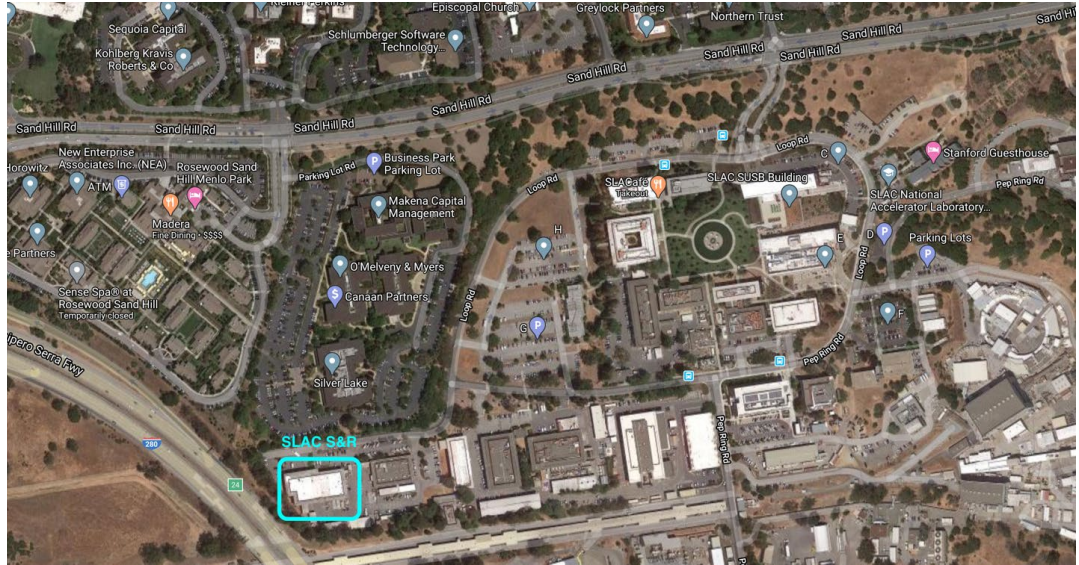


Figure 3: Overhead View of SLAC.

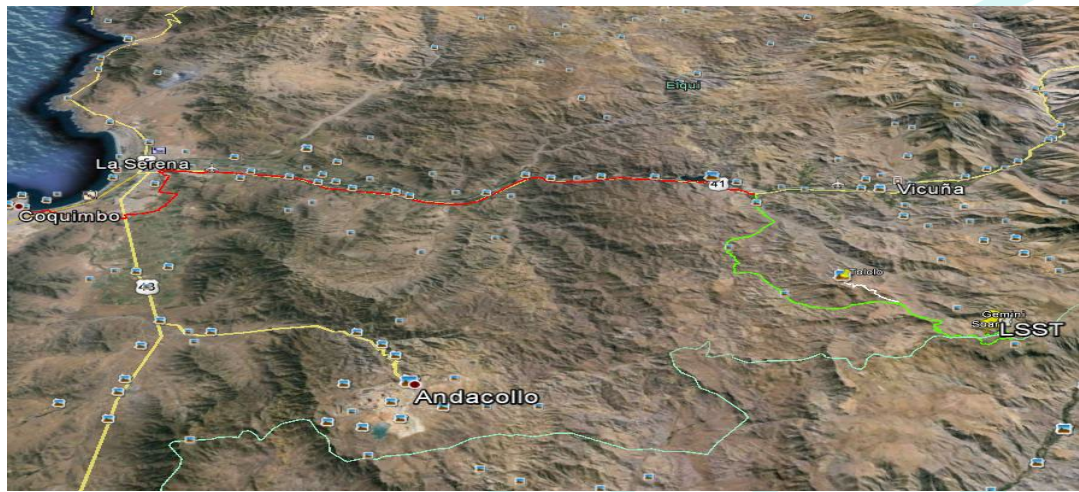


Figure 4: Map View of Cerro Pachón, Chile.

Tucson central office
950 North Cherry Ave.
Tucson, AZ 85719.
USA.

La Serena office
Avenida Juan Cisternas 1500.
La Serena, Chile.



16 Documents & Diagrams

Current list of documents to accompany this statement and others outstanding;

LCA 18312	Camera Shipping FMEA
LCA 18831	Mass Simulator Loading Into Container
LCA 18841	Mass Simulator Configuration
LCA 18842	Container Preparation
LCA 18901	Shipping Container Lift Plan (SLAC)
LCA 18853	Pre-Truck Loading Inspection Checklist.
LCA 18854	Post Truck Loading Inspection Checklist.
LCA18395A	Bill of Materials
LCA 18931C	Shipping Sensor Plan.
	Mass Simulator Shipment Vibration Analysis.
	Local Test Repot, Routing & Scaling.
	Packing List & Invoice (to add).
	MSDS - Data Recorders & GPS Trackers.
	Container Stowage & Securing Diagram (Preliminary).

**SECTION V
CONTRACT**

Provided by the Offeror