Statement of Work

For the transportation of the LSST Camera & Hardware

From: SLAC National Accelerator Laboratory,
2575 Sand Hill Rd, Menlo Park, CA, USA

To: Rubin Observatory, Cerro Pachón, Chile

Margaux Lopez, Michael R. Logue

RTD-1051 (rel 1.0)

Latest Revision Date: 7/28/2023

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Change Record

Release	Date	Description	Owner Name
1.0	7/28/2023	Initial release via RCN-131	Margaux Lopez

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2 Overview

Vera C. Rubin Observatory, which is in the final stages of construction, is located on the Cerro Pachón ridge in north-central Chile. The observatory's first objective is to conduct the Legacy Survey of Space and Time (LSST), an unprecedentedly wide and deep 10-year survey of the entire southern hemisphere sky.

The detector for this observatory, the 3.2 gigapixel LSST Camera, is under construction at SLAC National Accelerator Laboratory (SLAC) in Menlo Park, California. After assembly and initial testing at SLAC, the Camera must be shipped to Chile and installed on the telescope. The nominated contractor will provide transport of the LSST Camera and related hardware from SLAC, Menlo Park, CA., to Rubin Observatory, 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 and responsibilities of each party for the loading, securing, transportation, and staging of the LSST Camera and several crates of associated hardware from SLAC to the Rubin Observatory.

2.1 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.

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 (LSST PO).

3 Cargo and Packaging

The primary critical cargo for this shipment is the LSST Camera, a highly technical, sensitive, and unique scientific instrument. Additional support equipment will be shipped with the Camera such as testing instruments, handling and support structures, and lift fixtures.

The full list of crates and containers for this shipment including dimensions and weights can be found in document LCA-18395. Included in this shipment are three 20’ ISO shipping containers (one of which will contain the Camera itself) and an estimated 35 crates and pallets (to be confirmed at least 30 days before ship date). All three shipping containers are shipper-owned, and will remain in Chile at the Rubin Observatory after shipment.

All containers and crates will be packed and scaled by SLAC; the contractor is not involved in the packaging process. This section of the Statement of Work is intended to give background information on what exactly is being shipped.

3.1 Shipping Container 1A: LSST Camera

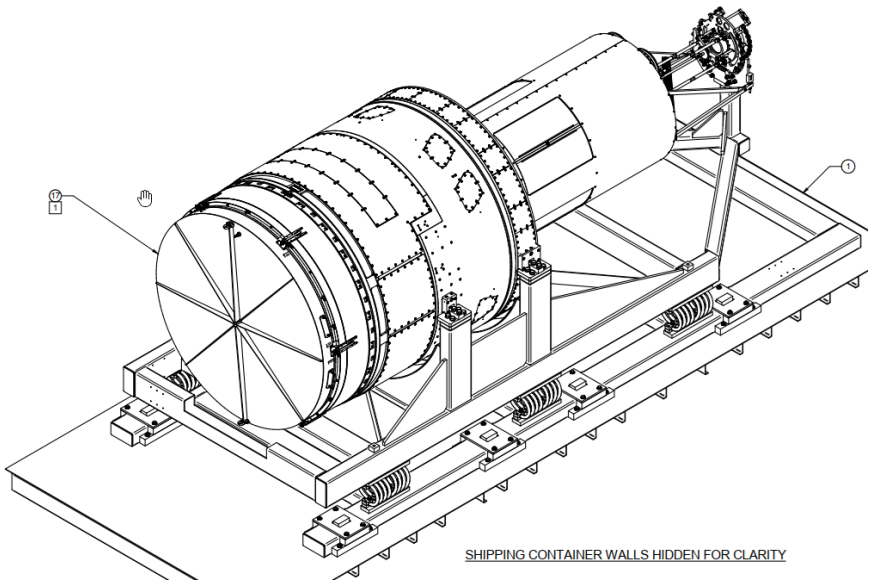

Figure 1. CAD drawing of the LSST Camera assembly installed on shipping frame, mounted to the shipping container floor.

The LSST Camera is mounted and secured on a metal shipping frame with wire rope isolators for handling and transportation. The LSST Camera and frame will be packaged by SLAC into a 20' ISO shipping container and sealed with serialized container seals.

Added cargo inside the LSST Camera container includes four data loggers and two GPS Trackers. These sensors were previously approved for air transport and were used during a test shipment. The four data loggers are Shinyei G-MEN DR20[1] units powered by alkaline batteries while the two GPS trackers are 7P GD100[2] disposable tracker units that have small lithium ion batteries and have been pre-approved by a number of airlines.[3]

[1] https://www.shinyei-tm.com/pdf/G-MEN_eng_new2.pdf
[2] https://www.7pgps.com/GD100.pdf
[3] https://7pgps.com/airlines.html

Figure 2. Camera Shipping Container (Container 1A). Inside view on the right shows the insulation on the walls, securing hardware on the floor, and open top for a test lift of a mass simulator for the Camera.

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 roof and a steel floor on steel transverse joists. The container is internally framed with timber and fitted with foiled backed thermal insulation board on all internal sides including doors. Steel locking cleats, capture plates, and bolts secure the shipping frame to the container floor.

3.2 Shipping Containers 1B and 1C: Auxiliary Equipment

Two additional 20' ISO shipping containers will be part of this shipment, packed and sealed with container seals at SLAC by LSST Camera personnel. Each container will have one 7P GPS unit (same unit used in Container 1A) for tracking.

Container 1B has double doors on one end and a single smaller door along the side. It is project-owned and does not have ISO plates. Container 1C, manufactured in October 2021, has double doors on both ends and ISO plates with label CXWU 400623 22G1. It is also project-owned.

Both containers will be scaled before the shipment once they are fully packed.

Figure 3. Container 1B (left) and Container 1C (right).

One crate loaded in container 1C will have six additional data loggers for shock and acceleration. These are Aspion G-Log 2[4] data logger units and they were used successfully in a previous airfreight shipment.

3.3 Additional Crates

An estimated 35 crates and pallets will accompany the three shipping containers. With the exception of one large aluminum bell jar, the remaining crates and pallets are all made from export-certified stamped lumber and/or plywood.

Dimensions and weights for these break bulk items can be found in LCA-18395, with calculations for total floor space and total volume of the shipment. LCA-18395 also notes whether each crate is stackable or not.

Every crate in the shipment will have one 7P GPS unit (same as used in Container 1A) for tracking. No additional electronic data loggers will be used in any of the break bulk crates. When fully packed, all crates will be scaled before shipment.

3.4 Hazardous Materials

AURA will generate the dangerous goods declaration (DGD) necessary for shipping. The contractor is responsible for communicating dangerous goods information to all carriers and ensuring that all carriers accept the dangerous goods in advance of shipment.

[4] https://www.aspion.de/en/transport-data-logger-aspion-g-log-2/

3.4.1 Refrigerant

Two of the crates in the break bulk cargo will contain refrigerant. These are two identical refrigeration chillers, and each one has 19.1 lbs of refrigerant separated into two different chambers. The first chamber of the refrigeration chiller is filled with 15 lbs of R507A and has a pressure of 148 psig at 20 C.

The second chamber of the chiller is filled with 4.1 lbs of a mixture of four refrigerants and has a pressure of 215 psig at 20 C. The second stage refrigerant mixture is nonflammable, but contains flammable species. Refrigerants R290 and R1150 in the mixture are flammable. Refrigerants R116 and R23 in the mixture are nonflammable. For MSDS purposes, refrigerant R508B is an azeotropic mixture of R116 and R23 and is the source of these two refrigerants.

The MSDS for each of these refrigerants will be made available to the contractor. The US DOT ID numbers are as follows:

R290: UN 1978
R507A: UN 3163
R508B: UN 1078
R1150: UN 1962

3.4.2 Lithium Ion Batteries

A small number of lithium ion batteries will be part of this shipment. The shipment has a total of ~40 of the 7P GD100[5] disposable GPS units that have small lithium ion batteries and have been pre-approved by a number of airlines.[6] These units have a SecureFlight™ mode and are certified under CE/FCC guidelines.

This shipment also has a total of 6 of the Aspion G-Log 2[7] data logger units that are powered by lithium ion batteries. These units are suitable for air freight with no battery labeling required.

3.4.3 Inert Gas

The LSST Camera in Container 1A has some small volumes that will be backfilled with inert nitrogen gas for shipment. These volumes adhere to the limits of dangerous goods special provision A69: articles packaged such that there is less than 1 gram of inert gas per package are not restricted when carried as cargo.

[5] https://www.7pgps.com/GD100.pdf
[6] https://7pgps.com/airlines.html
[7] https://www.aspion.de/en/transport-data-logger-aspion-g-log-2/

4 Container and Crate Handling

The Camera Shipping Container (1A) may **only** be handled via overhead lift. It is lifted in transit by the nominated carrier by means of shackles to the top corner modular post blocks according to lift plan LCA-20291. Use of forklifts for Container 1A is **not** permitted.

The rigging gear used to lift Container 1A at the airports must be proof-tested with certifications available. The full gear list with minimum ratings and sling lengths is available in LCA-20291. The Rubin team prefers to supply this rigging for use by the crane operators at the airport, and the rigging will travel with Rubin personnel on the chartered aircraft. The crane operator is permitted to use vendor-supplied rigging gear provided that it follows the lift plan LCA-20291 and that proof-test certifications are available onsite. Lifting of Container 1A may not be conducted with wind speeds in excess of 20mph, nor in conditions of heavy precipitation.

Container 1A is initially lifted onto a truck at SLAC (by SLAC personnel) via an overhead indoor bridge crane located in Building 620 (IR2). Upon arrival at the final destination (Rubin Observatory), Container 1A will be lifted off of its trailer by Rubin personnel via overhead indoor bridge crane located in the level 3 high bay receiving area of the observatory. Thus the contractor is only responsible for the lifts in transit, which occur at the SFO and SCL airports.

Containers 1B and 1C may be handled by forklift or by crane, whichever is more efficient for each stage of transit. All of the break bulk crates and pallets shall be handled by forklift during all stages of transit. Some of the crates may not be stacked. This is noted on the crates themselves as well as on the master BOM, LCA-18395.

All containers incorporate standard tie down connectors for both road and air transport. International guidelines for cargo stowage and securing are adhered to, including blocking and bracing with ISPM15 certified dunnage.

At SLAC, SLAC personnel will be responsible for lifting and handling all containers, crates and pallets. Placement and securing of all equipment on trucks shall be the responsibility of the contractor. On the summit, AURA/Rubin personnel will be responsible for lifting and handling all containers, crates, and pallets, to offload trucks/trailers as they arrive.

5 Transportation Scope

The contractor shall supply all necessary labor, equipment, and permitting required for safe legal transportation of the LSST Camera and additional hardware from SLAC to the Rubin Observatory. AURA shall apply 'Delivered at Place' (DAP) Rubin Observatory/Cerro Pachón as the applicable 2020 Incoterm.

Throughout transit, the preferred environmental conditions for the three containers as well as the break bulk crates include undercover staging, an operating transit temperature range of between 0 and 40 degrees centigrade, and moisture control protocols.

SLAC personnel shall perform the loading and securing process of all crates and containers prior to the arrival of the contractor onsite for loading.

5.1 Road Transit SLAC to SFO

Road transit in the USA is a short distance from SLAC National Lab (2575 Sand Hill Rd, Menlo Park, CA) to the San Francisco International Airport. Total distance is 25 miles (40 km). Trucking must be dedicated direct delivery service from SLAC to SFO, and **all** trucks/trailers must be air-ride vehicles. Maintenance records must be available for the truck transporting Container 1A.

For Container 1A (Camera container), the air ride capacity of the trailer must not exceed 70,000 lbs. A successful test drive was performed with the GN2040S9A Container Chassis[8] from Pratt Industries Inc, so contracting the same type of trailer and even the same exact trailer used would be preferred. A safety and maintenance inspection will be conducted by SLAC personnel upon the trailer's arrival at SLAC, before loading. In the case of inclement weather, the container must be covered with a tarp during transit. Container 1A must have pilot and tail cars during transit from SLAC to SFO. SLAC personnel can provide a chase vehicle, but SLAC personnel will not have access to the airport cargo area, so the contractor must provide a pilot vehicle.

For Containers 1B and 1C, flatbed trailers or twistlock container chassis are both allowable, as long as they are air ride. The break bulk crates should all travel on air ride trailers. In the case of inclement weather, the containers and crates must be covered with tarps.

[8] https://prattinc.com/products/tank-and-container-chassis/gn2040s9a-container-chassis/

All items will be ready for pickup a minimum of four business days before shipment. Container 1A must be the last item to be trucked from SLAC to the airport, and it must not spend the night in storage. All other hardware will be transported to the airport over a period of three or four business days ahead of the ship date and stored. Containers 1B and 1C can be transported to the airport and stored ahead of time with the break bulk crates, or they can be transported to the airport the morning of the flight with Container 1A.

The contractor will coordinate road transportation to 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.

5.2 Staging at SFO Airport

As noted, Container 1A must be the last item to be trucked to the airport, and it must not spend the night in storage. Break bulk crates will be trucked to the airport over a period of three or four days ahead of the ship date and not all on the same day to alleviate schedule pressure and loading constraints at SLAC. Thus the storage time at the SFO airport is a total of four or five days.

At the airport, staging of the break bulk crates must be indoors. Containers 1B and 1C may be staged outside if needed, covered by tarps in the case of inclement weather. All of the break bulk items must be at the airport the day before the shipment. Containers 1B and 1C can go to the airport ahead of time with the break bulk crates, or can stay at SLAC until the morning of the ship date with Container 1A.

Container 1A may not be staged overnight at SFO as part of the nominal plan, but in the case of an unforeseen delay that makes the staging of Container 1A at the airport necessary, every effort must be made to store Container 1A indoors, and if that is not possible, it must be covered with a tarp.

Storage must be in a secured area. Staging and handling facilities as well as storage areas shall be inspected by Rubin personnel in advance of the shipment. Break bulk crates must be segregated in the storage facility and easily identifiable. Contractor arranges for TSA screening of all cargo.

5.3 Chartered Flight SFO to SCL

The cargo will be airfreighted from San Francisco International Airport (SFO) to Arturo Merino Benítez International Airport (SCL) by dedicated and chartered B747-400F all-cargo freighter or similar to be nominated by the contractor.

Contractor shall furnish AURA in advance with Aircraft Registration Number and copy FAA Airworthiness Certificate. 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. Additionally, the contractor shall provide in advance a loading date & time as well as cargo lifting, stowage and securing plans for review. Rubin also requests a provision for jump seat accompaniment for 4 nominated Rubin Commissioning Team individuals from SFO to SCL, which includes access to the airport apron and aircraft for these personnel in order to monitor and validate the loading and unloading processes. These personnel shall validate procedures and safety throughout the shipment.

Handling of Container 1A at SFO and SCL is by means of top lift by vendor-provided mobile crane to appropriate oversize ULD PGA (a certified aircraft pallet, freighter main deck only). The crane maintenance records must be available. Only proof-tested and certified rigging gear may be used for this lift. SLAC-provided rigging gear is preferred but vendor gear is acceptable as long as certs are available. Aircraft loading is by roller bed scissor lift to aircraft side opening hatch.

Figure 4. Container 1A being loaded at the airport during a test shipment.

Securing of the container to the ULD PGA is by means of multiple tie down ratchet straps and chains from all 8 corner blocks, and netting over the top. The ULD PGA is normally secured by means of aircraft installed twist locks to the floor. Similar reverse handling procedures are indicated at Santiago Airport.

The two additional containers as well as the break bulk crates may be handled by forklift. All items must be appropriately palletized for airfreight by the contractor before loading. While a draft will be available ahead of time, the final weights and dimensions of each crate and container will be available 30 days before ship date for the load master to plan the loading of the aircraft.

Upon arrival in Chile, the contractor shall provide sufficient equipment and perform the lifting and unloading of the containers and crates for staging pending customs clearance and road transportation arrival. Container 1A must be lifted using certified rigging gear and a vendor-provided mobile crane. An inspection of the cargo at Santiago will be performed by the Rubin personnel that traveled with the cargo on the aircraft.

AURA will coordinate both export and import customs clearance. All three 20' containers are shipper-owned and AURA is aware that we must prepare special customs declarations for these units.

5.4 Staging at SCL Airport

Ideally no cargo will need to be staged at SCL, but in the case that trucks are unavailable or customs clearance does not go smoothly, a contingency plan must be in place. Secure undercover staging for all of the break bulk crates as well as secure staging for the three containers must be available and provided by the contractor if needed, including cost estimates.

5.5 Road Transit SCL to Summit Road Gate (Control Puerta)

As in the USA, road transit in Chile is by dedicated direct delivery using air ride trucks. In Chile, the distance from Santiago to the Rubin Observatory is quite far, a total of 330 miles (530 km) from the SCL airport to the summit road gate and an additional 22 miles (35 km) up the summit road from the gate to the observatory building.

Unless there are extenuating circumstances, all of the cargo should travel in a convoy together from SCL to the summit road gate inland of La Serena, Chile (see section 10 of this statement of work for a map of the exact location). Given the distance, this transit from SCL to the summit road gate may need to be accomplished by team drivers. We request that an additional smaller vehicle from the trucking company travel with the truck caravan to provide support if needed. Container 1A must have pilot and tail vehicles at all times during this stage of transit, provided by the contractor. An independent security escort is also requested from SCL to the AURA summit road gate.

For this stage of transit, all three containers as well as the break bulk crates should be covered with tarps (or loaded inside a tarped trailer) in order to protect them from the elements during transit as well as eventually from dust on the summit road.

For Container 1A (Camera container), the air ride capacity of the trailer/chassis must not exceed 70,000 lbs.

For Containers 1B and 1C, flatbed trailers or twistlock container chassis are both allowable, as long as they are air ride. The break bulk crates should also all travel on air ride trailers. The desired type of trailer for transport of the break bulk crates in Chile is a curtain sided air ride trailer as shown in the figure below, because it provides extra security and protection from dust. Other trailer models are also acceptable as long as they are air ride and the crates can be covered.

Figure 5. Side load trailer for break bulk cargo with rolling tarps on the side.

The chartered aircraft is expected to fly overnight from SFO to SCL and thus the cargo will arrive at SCL in the morning. Customs processing is expected to be quick and will be handled by AURA. After processing, the cargo will be loaded immediately onto trailers and driven to the summit road gate.

The daily time cutoff for a truck to leave the gate area (control puerta) and drive up to the observatory building is 14:00 (2pm). Since the expected arrival time of this caravan of trucks/trailers is later than 14:00, cargo will be staged overnight just inside the gate, on private AURA land. There is space for up to ten 40' trucks/trailers, more than sufficient for this shipment.

When loading the trailers with break bulk crates at SCL, the crates must be sorted into groups according to the BOM (LCA-18395). Each of the three containers gets its own truck, and the break bulk crates are sorted onto an estimated 4 additional trucks based on where they will be unloaded at the observatory. The grouping for the crates is available in LCA-18395 based on the 'truck number' column. The crates will be color-coded when packed at SLAC in order to help with this process.

5.6 Road Transit Summit Road Gate to Rubin Observatory

The summit road is a private AURA-controlled 35 kilometer dirt road that leads from the summit road main gate up to the Rubin Observatory building. Cargo trucks can only travel on this road at certain times in order to avoid conflicts with personnel buses that also drive up and down each day, and movement at night is not permitted.

As noted in the previous section, after arrival at the summit road gate, the seven trucks will be staged overnight in a big flat dirt area just inside the gate. None of the trucks will be unloaded on the same day as arrival.

The trucks will be driven up to the observatory over a period of three days: three trucks on the first day (including Container 1A which will require pilot and tail vehicles that will be provided by Rubin), two trucks on the second day, and the last two trucks on the third day. The staggering of the unloading schedule is based on road constraints to get to the observatory as well as personnel and space constraints at the observatory for unloading. Thus some of the trucks will need to wait up to three days before being unloaded, which must be coordinated with the trucking company.

The truck containing Container 1A has a maximum speed limit of 10 km/hr on the dirt road from the gate up to the Rubin Observatory, and is expected to take a full 4-5 hours to reach the observatory building. Pilot and tail vehicles are required for Container 1A, and will be provided by Rubin personnel. Some stops will be planned during this trip for resting and to let other vehicles pass as needed. The remaining trucks have a maximum speed limit of 30 km/hr when driving uphill with cargo, and are expected to take 1.5-2 hours to drive up to the observatory. Trucks must obey posted speed limits on the way back down the road.

For the four trucks containing break bulk cargo, as noted at the end of section 5.5, these trucks are packed with carefully color-coded crates based on the BOM since some items get delivered to the observatory building level 1, some go to level 3, some go directly to level 5, and some go to outdoor storage. Each truck will only get unloaded in a single place (i.e. all items that go to level 5 will be on the same truck), so the presorting at the SCL airport during truck loading is extremely important.

Rubin personnel will be responsible for the unloading of all trucks onsite and will provide the equipment and space needed to do that work. The contractor is responsible for coordinating the trucks themselves as well as the drivers.

6 Summary of Contractor Responsibilities

To summarize, the contractor is responsible for all of the following items for this shipment:

- Arrange charter flight from SFO to SCL
    - Have a representative onsite at the SFO and SCL airports to coordinate with SLAC personnel and subcontractors
    - Provide jumpseats on the plane for 4 Rubin personnel
    - Provide aircraft and airport apron access during loading and unloading by the same 4 Rubin personnel for validation and compliance of the loading/unloading process (Rubin personnel acting as surveyors)
    - Arrange for TSA screening of all cargo
    - Stow and secure cargo to ULDs, and provide plans to AURA in advance for review
    - Load cargo onto plane at SFO and then unload at SCL, handling Container 1A only via overhead lift
        - Use only proof-tested and certified rigging hardware for Container 1A
            - Use of Rubin-provided rigging is preferred
            - Contractor should offer alternative lifting gear as a contingency, per LCA-20291
        - Load plan provided by contractor (or charter company)
        - Mobile crane maintenance records must be available
    - Exact plane and certificate to be provided to Rubin ahead of time
    - Flexible shipping window, with final exact date to be confirmed 3-4 weeks before the ship date
        - Current estimated ship date is November 9, 2023
    - Clear and explicit demurrage penalties
- Arrange trucking from SLAC to SFO and from SCL to the summit road gate and then up to the Rubin Observatory
    - Placement and securing of all equipment on trucks
        - At SLAC, SLAC personnel are responsible for lifting all containers, crates, and pallets onto the trucks, while the contractor is responsible for defining where they are placed and how they are secured on the truck/trailer
        - Contractor is responsible for offloading from trucks at the SFO airport and loading onto trucks at the SCL airport
        - At the Rubin Observatory, Rubin personnel are

responsible for offloading all containers, crates, and pallets from the trucks
    - Coordinate pilot vehicle for Container 1A from SLAC to SFO
    - Hire security detail for the Chile portion of the road transit
        - Security detail is only needed from SCL to the summit road gate, and is not needed after the trucks enter private AURA/Rubin land
    - Coordinate sorting crates by color when loading them onto trucks at SCL so that delivery to Rubin Observatory is as smooth as possible
    - This effort includes accounting for extra idle time in Chile at the summit road gate since the trucks cannot all be unloaded on the same day
        - Trucks arrive at night on day 0, and all 7 trucks are staged overnight just inside the summit road gate
        - 3 trucks drive up to the observatory to be unloaded on day 1, including Container 1A with 10 km/hr speed limit
        - 2 trucks drive up to the observatory to be unloaded on day 2 (after spending two nights staged just inside the summit road gate)
        - Last 2 trucks drive up to the observatory to be unloaded on day 3 (after spending a total of three nights staged just inside the summit road gate)
        - Drivers are not required to stay with the staged trucks at all times since the trucks will be in a secure area; drivers can leave the premises and then return when it is time to drive the trucks up to the observatory
    - Exact trucks intended to be used for this transit to be provided to Rubin ahead of time
- Coordinate secure, covered storage at SFO for break bulk crates for a minimum of 4-5 days prior to ship date
    - Cargo must be segregated and secure
    - Staging and handling facilities shall be surveyed and validated in advance by Rubin personnel
- Coordinate secure, covered storage at SCL if necessary, as a contingency
    - Staging and handling facilities shall be surveyed and validated in advance by Rubin personnel
- Provide full scheduling details to the Rubin team in advance
- Provide subcontractor details to the Rubin team in advance

- Ensure in advance that all carriers will accept the dangerous goods declaration produced by AURA
- Clearly detail cost penalties based on delays during various parts of transit (loading, storage, delayed customs processing, etc.) and restate this information in a standalone section of the proposal
- Facilitate compliance surveys by Rubin personnel or nominated representatives in advance of shipment
- Enable Rubin team to monitor and validate processes at each stage of shipment for compliance, with compliance intervention authority if something is deemed unsafe or out of compliance

7 Customs and Insurance

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

During the duration of this effort, AURA will provide insurance to cover to the value of the item, or will self-insure. This information will be available at least 60 days before the ship date. The preferred jurisdiction for dispute resolution is New York.

8 Media and Communications

The shipment of the LSST Camera is likely to attract significant media attention. This has been 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. This shipment will not be announced ahead of time or reported in real time due to security concerns. The shipment will only be publicized once the LSST Camera has been safely and successfully delivered to the Rubin Observatory.

We request that the contractor refrain from discussing the shipment including the date, timing, locations, subcontractor information, and contents of the cargo with external entities until the shipment is complete.

9 Directions and Maps

Pickup location: SLAC National Accelerator Laboratory

Building 620 (IR2), 2575 Sand Hill Rd, Menlo Park, CA, 94025, USA

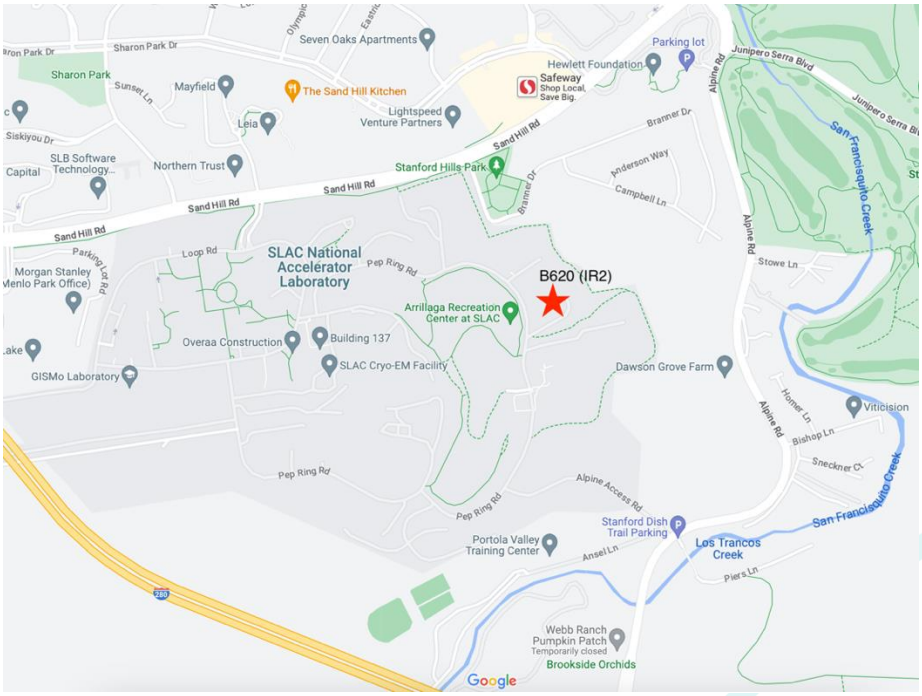

Figure 6. Map of SLAC with pickup location Building 620 marked with a red star.

Dropoff location: Rubin Observatory, Cerro Pachón, Vicuña, Chile

Intermediate staging location: Summit Road Gate, Ruta D-317, Vicuña, Chile

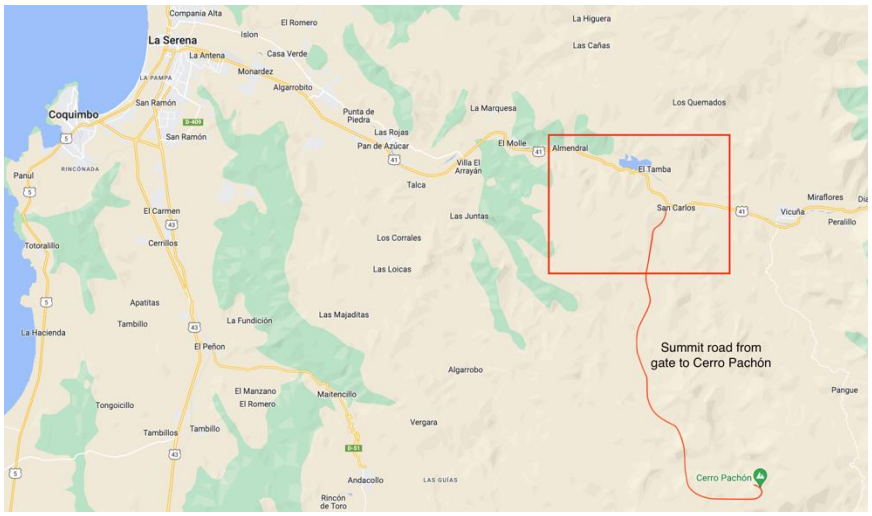

Figure 7. Map showing the relative location of Cerro Pachón and La Serena, with the summit road sketched as a red line for reference. The figure below is a zoomed in view of the red rectangle.

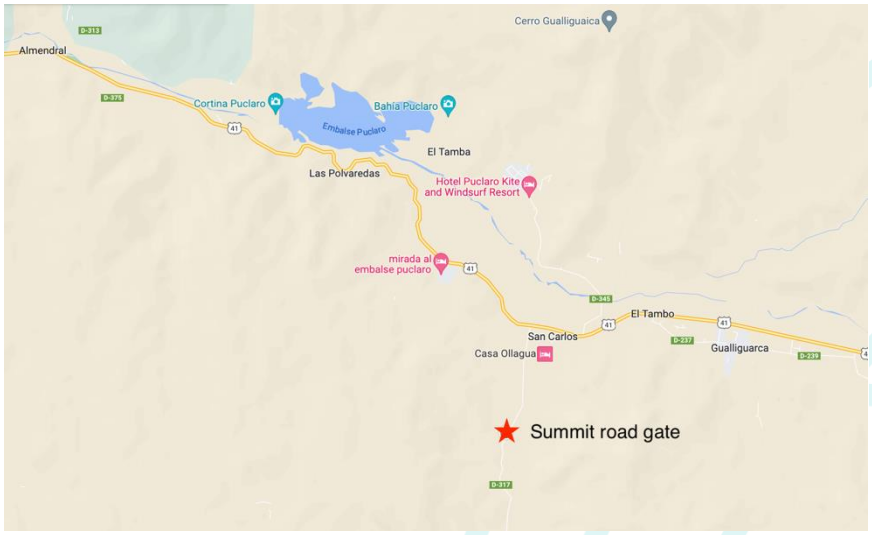

Figure 8. Zoomed in map view of the summit road gate on Ruta D-317, just off of Ruta 41.