



SPECIFICATION

Drawing No Vers.


Sheet 1 of 6

SPECIFICATION FOR DE-INSTALLATION – LA LIGO SITE

APPROVALS	DATE	REV	DCN NO.	BY	CHECK	DCC	DATE
AUTHOR:							
CHECKED:							
APPROVED:							
DCC RELEASE							

TABLE OF CONTENTS

- 1.0 Scope
- 2.0 Schedule
- 3.0 Commercial
- 4.0 Codes and Standards
- 5.0 General Requirements
- 6.0 Documentation Requirements
- 7.0 Materials
- 8.0 Detailed scope
- 9.0 Hand Tools/Rigging Equipment

	LASER INTERFEROMETER GRAVITATIONAL WAVE OBSERVATORY	C-1002079 -V1
	SPECIFICATION	Drawing No Vers.
		Sheet 2 of 6

SPECIFICATION FOR DE-INSTALLATION – LA LIGO SITE

1.0 GENERAL SCOPE

This specification covers the minimum requirements for the removal of equipment and utility systems not required for the LA Advanced LIGO Modification of the LIGO Observatories. All material must be removed while maintaining the strict Cleanliness of the research facility. The Buyer will train the Seller personnel in site cleanliness and safety requirements (See Section 8.0 for detailed requirements).

The California Institute of Technology (Caltech) is the Buyer for these components. The Seller is the successful bidder who is awarded this contract.

The Laser Interferometer Gravitational-Wave Observatory (LIGO) is operated by Caltech and the Massachusetts Institute of Technology (MIT) under a National Science Foundation grant and includes observatories located in the Hanford Reservation (near Richland, WA) and in Livingston, LA. This specification only covers the Livingston, LA facility.

It is the Seller responsibility to follow the requirements of this specification or to propose alternate procedures and specifications to meet the requirements. All alternate approaches must be approved by the Buyer before use.

Any attachments to this specification are incorporated herein by reference and made a part of this specification.

The Buyer will provide a full time representative to work with the Seller during the de-install activities. The Buyer's representative will work closely with the Seller to identify the items to be removed. The bulk of the work will consist of removal of machined aluminum and stainless steel parts from the LIGO vacuum systems. LIGO technicians will direct much of the sensitive work inside the vacuum chambers. As components are removed, the Seller will be asked to move these components to several locations – typically storage or waste. There are hundreds of individual components in the vacuum system totaling 20-30 tons of metal – most of which will be disposed of. To gain access to the vacuum system LIGO technicians will work with the Seller to remove large vacuum doors (dished heads) and replace them after a chamber has been emptied. This work requires careful handling of 1000 – 2000 lb doors using LIGO cranes and forklifts. Much of the above work takes place in clean room conditions so that workers will be garbed appropriately.

The Buyer reserves the right to refuse access to the LIGO facility to any of the Seller's personnel for failure to adhere to LIGO Site Safety Rules or for refusing to work in a Safe and Clean manner.

2.0 Schedule

The Buyer shall conduct a Kickoff Meeting at the Jobsite one week after project award. The Kickoff Meeting will be used to meet the Seller's key project personnel, to discuss project requirements in detail and to develop the near term project plan.

This work shall be accomplished between 11/1/10 to 7/1/11. The LIGO facility will be closed from 12/24/10 to 1/4/11 for the winter holidays and no labor will be required during this period.



SPECIFICATION

Drawing No Vers.

Sheet 3 of 6

SPECIFICATION FOR DE-INSTALLATION – LA LIGO SITE

3.0 Commercial

The Buyer requests a proposal to provide manpower on a Time and Material basis for each labor class requested below. The Man-hours requested will be required between 11/1/10 and 7/1/11.

The Bidder shall provide All-In rates for the following Crafts:

- Millwright Foreman (1) (with Rigger certification)
- Millwrights (with Rigger Certification)
- Pipefitters
- Electricians
- Laborers

Weekly labor requirements will be scheduled with the Seller ahead of time on a monthly basis. The Buyer estimates they need approximately 960 to 1920 hours per month (Avg. 1440 hours per month) over the 8 month work period.

The work will be approximately split as follows:

Millwright/Rigger	30%
Laborers	60%
Pipefitters	5%
Electricians	5%

The Buyer reserves the right to cancel or delay work as required by the overall LIGO project schedule.

All waste metal removed by the Seller is the property of LIGO and shall be stored at the site as directed by LIGO representatives


All bidders must have a proven track record in successfully working safely in Cleanroom Conditions.

The Bidders shall submit their Safety Rating as part of their proposal submittal.

All Riggers shall meet all LA state and OSHA requirements for Riggers and Crane Operators.

The Seller shall provide site Insurance as required by the LIGO site requirements.

The Bidders shall also submit a list of Daily/Monthly Rental Rates for material handling equipment (fork lifts, etc.) which might be required for moving materials outside the LIGO buildings.

	LASER INTERFEROMETER GRAVITATIONAL WAVE OBSERVATORY SPECIFICATION	C-1002079 -V1
		Drawing No Vers. Sheet 4 of 6

SPECIFICATION FOR DE-INSTALLATION – LA LIGO SITE

4.0 CODES / STANDARDS /PERMITS

The following codes and standards are requirements for the Demolition work covered by this specification:

- OSHA - Occupational Safety and Health Act – Latest edition
- Applicable Local Codes and Standards

Permits

Before starting work on this project, it shall be the responsibility of the Seller to make certain that all necessary permits, licenses and approvals are obtained for the work to be performed at the site. The Seller shall obtain such permits, license and approvals on a time and material basis and furnish copies to the Buyer.

5.0 SAFETY REQUIREMENTS

Note: The Seller is warned that part of the LIGO system will be operational during the removal activity (Piping pressurized and electrical wiring energized). The part of the system to be removed will be depressurized and electrically de-energized by the Buyer.

4.1 All work executed by the Seller shall comply with Federal OSHA regulations. The Seller is responsible for the Safety of their personnel.

4.2 The Seller shall also comply with the Buyer's on-site Construction Safety, Health and Environmental Management program.

4.3 The Seller shall be fully responsible for providing first aid equipment and other safety equipment required for his personnel.

4.4 The Seller's foreman shall be responsible for the safe execution of the work at the site. Seller shall conduct weekly safety meetings with their crew and send a representative to all site wide safety meetings.


4.5 All piping shall be verified to have no internal pressure before it is cut or the connection opened.

All electrical wiring shall be verified to have no voltage before cutting it or breaking an electrical connection.

4.6 When directed by LIGO, areas where removal is being done shall be roped off by construction tape, to warn other site personnel.

4.7 All Piping and Wiring shall be Assumed To Be Pressurized /Energized until proven safe.

4.8 The Bidders shall submit their Safety Rating as part of their bid submittal and update it quarterly during the contract.

 LASER INTERFEROMETER GRAVITATIONAL WAVE OBSERVATORY SPECIFICATION	C-1002079 -V1
	Drawing No Vers.
Sheet 5 of 6	

SPECIFICATION FOR DE-INSTALLATION – LA LIGO SITE

6.0 DOCUMENTATION /MARKING

The Buyer shall provide the following Documentation:

Piping Diagrams showing the locations and names of the major components.

.

7.0 MATERIALS

All materials and equipment removed shall be stored by the Seller at the site in an area designated by the Buyer.

The Seller shall take all precautions necessary to prevent damage to the remaining portion of the LIGO System. Any equipment or systems damaged by the Seller shall be repaired by the Seller at no cost to the Buyer.

8.0 DETAILED SCOPE

All work shall be accomplished while maintaining the Cleanliness of the LIGO research facility.

The Buyer will conduct training for the Seller's personnel relative to site cleanliness requirements and other special site requirements prior to the start of the work.

The following work shall be executed by the Seller as directed by the Buyer's representative:

- a) The bulk of the work will consist of removal of machined aluminum and stainless steel parts from the LIGO vacuum systems. LIGO technicians will perform much of the work inside the vacuum chambers. As components are removed the Seller will be asked to move these components to several locations – typically storage or waste. There are thousands of individual components in the vacuum system totaling 20-30 tons of material – most of which will be disposed of by LIGO. However, there are many high value components which must be preserved.
- b) To gain access to the vacuum system, LIGO technicians will work with the Seller to remove large vacuum doors (stainless steel dished heads with o-ring seals) and replace them after a chamber has been emptied. These doors are bolted with 7/8 inch fasteners which must be removed and replaced with hand tools. No impact wrenches are allowed. This work requires careful handling of 1000 – 4000 lb doors (which contain critical machined sealing surfaces) using LIGO cranes and forklifts. Much of the above work takes place in clean room conditions so that workers will be garbed appropriately.
- c) LIGO may require some assistance removing obsolete plumbing and wiring and associated trays and supports.
- d) LIGO will hold daily work meetings to determine priorities and assign work crews for the day. The Seller's personnel shall attend these meetings every morning if possible.



SPECIFICATION

Drawing No Vers.

Sheet 6 of 6

SPECIFICATION FOR DE-INSTALLATION – LA LIGO SITE

Note: All work must be executed while maintaining the LIGO Cleanliness Requirements. Some work will require clean room garb and practices. Seller's staff shall have new steel toed shoes dedicated to the LIGO work. These shoes should remain on site for the duration of the work so as not to bring contamination from elsewhere. The Seller's personnel must report for work in clean unscented clothing (i.e. no smoke, hydrocarbons, etc.) and be free of after-shave lotions or perfumes. The Buyer will provide all cleanroom clothing and gloves when needed.

Smoking is only allowed outside the LIGO buildings. Personnel shall be Smoke-Free for 10 minutes before re-entering the LIGO facilities.

9.0 HAND TOOLS / RIGGING EQUIPMENT

All rigging equipment (fork lifts, straps, crane, etc.) used inside the LIGO facility will be provided by LIGO.

All lifting / transport equipment required to move LIGO components from the building receiving air-lock to the outside storage or disposal areas shall be provided by the Seller on a Time and Material Basis.

All small hand tools (Wrenches, etc.) will be supplied by LIGO. The seller may bring tools to the job site but all usage inside LIGO clean areas must be have prior approval from LIGO.