



Statement of Work Fabrication of Install Test Stands

The following documents are incorporated into and made a part this purchase order. Click on the following LIGO Document Control Center (DCC) links to access these documents or go on line to the LIGO Public DCC at <https://dcc.ligo.org/> to access the DCC#.

1.0 Terms:

| <u>DCC #</u> | <u>Description</u> |
|-----------------------------|---|
| C080185-v1 | Laser Interferometer Gravitational Wave Observatory (LIGO) Commercial Items or Services Contract General Provisions California Institute of Technology “Institute”, LIGO Rev 11/12/08 |
| F0810001-v4 | Technical Direction Memorandum. |

2.0 Quality Control:

| <u>DCC #</u> | <u>Description</u> | | |
|-------------------------------------|---|---|---|
| Q0900001-v4 | Advanced LIGO Supplier Quality Requirements, dated 2/10/10, describes following contractor/supplier QA/QC actions for this procurement: | | |
| | 3.1 Pre-Award Inspection | 3.9 Discrepant Material Storage | 4.4 Calibration Program |
| <input checked="" type="checkbox"/> | 3.2 Supplier In Process Quality Control | 3.10 Quality Records | 4.5 Critical Interface |
| <input checked="" type="checkbox"/> | 3.3 In Process Inspection | 3.11 Drawing and Specification Change Control | <input checked="" type="checkbox"/> 4.6 Cleanliness |
| <input checked="" type="checkbox"/> | 3.4 Pre-Ship Inspection | <input checked="" type="checkbox"/> 3.12 Welding Certification | <input checked="" type="checkbox"/> 4.7 Packaging |
| | 3.5 Receiving Inspection | <input checked="" type="checkbox"/> 3.13 End Item Data Package (including Certifications of Compliance) | 4.8 Storage |
| | 3.6 Discrepant Material | 4.1 Design Verification | <input checked="" type="checkbox"/> 4.9 Transport |
| | 3.7 Material Review Action | 4.2 Raw Material Procurement | 4.10 Customs |
| | 3.8 Material Review Actions at Contractor | 4.3 Traceability of Materials | |

For the above list the Supplier shall: 1) Identify the corresponding sections/paragraphs in their existing QA/QC system 2) meet or exceed the design requirements contained in the attached engineering documents for each area called out.

LIGO prefers to utilize the vendors existing QA/QC programs to the fullest extent possible consistent with the LIGO QA and QC requirements. All bidders are requested to submit a written description/plan of their existing QA/QC system with their quotes. The bidder must also submit QA/QC plans for managing subcontractor work and materials.

In the event that a prospective contractor lacks an existing quality system, the contractor/vendor shall develop and implement a quality assurance program in compliance with requirements negotiated at contract/PO award.

3.0 End Item Data Package:

At the time of delivery of the parts, the Supplier shall also provide the following data, as a minimum:

- Any as-built modifications (with approval of the LIGO Contracting Officer) as mark-ups to the drawings
- Dimensional & QC inspection reports—this shall include a report showing that parts have been inspected and fall within specified tolerances.
- Certificate or statement of compliance with all contract and drawing process restrictions.

4.0 Included Documents:

| LIGO DCC # | Description |
|-----------------------------|--|
| D1002124-v2 | General Assembly Drawing, SEI Test Stands, aLIGO |
| D1002125-v2 | Cross Brace, SEI Test Stands, aLIGO |
| D1002126-v2 | Right Leg, SEI Test Stands, aLIGO |
| D1002127-v2 | Support Tube, SEI Test Stands, aLIGO |
| D1002661-v1 | Foot, SEI Test Stands, aLIGO |
| D1002727-v2 | Left Leg, SEI Test Stands, aLIGO |
| D050263-v2 | Gusset |
| D050331-v2 | Test Stand Leveling Foot Thrubolt |
| D050332-v2 | Test Stand Anchor Nut |
| D0901041-v1 | HAM to BSC Test Stand Adapter |

5.0 Scope:

This SOW is for the fabrication of six sets of individual parts detailed in the nine (9) unique drawings included in this package. These parts will be assembled by LIGO to create D1002124 Test Stands for use in the aLIGO installation process.

| Bill of Materials for (1) D1002124 Assembly | | |
|---|--------------------------------------|----------|
| LIGO DCC # | Description | Quantity |
| D1002125 | Cross Brace, SEI Test Stands, aLIGO | 2 |
| D1002126 | Right Leg, SEI Test Stands, aLIGO | 2 |
| D1002127 | Support Tube, SEI Test Stands, aLIGO | 2 |
| D1002661 | Foot, SEI Test Stands, aLIGO | 4 |
| D1002727 | Left Leg, SEI Test Stands, aLIGO | 2 |
| D050263 | Gusset | 4 |
| D050331 | Test Stand Leveling Foot Thrubolt | 16 |
| D050332 | Test Stand Anchor Nut | 16 |
| D0901041 | HAM to BSC Test Stand Adapter | 2 |

6.0 Quantity Required and Delivery Schedule:

| Site | Quantity | First Delivery Date |
|-----------------------------|------------------|---------------------|
| LIGO Hanford Observatory | 4 ea D1002124-v2 | 15 Mar 2011 |
| LIGO Livingston Observatory | 2 ea D1002124-v2 | 01 July 2011 |

The first set of parts needed for assembly D1002124 shall be shipped so as to reach the LIGO Hanford Observatory prior to or on 15 Mar 2011. After approval by LIGO, subsequent sets should be shipped to LHO at one month intervals (15 Apr 2011, 15 May 2011, and 15 June 2011). LIGO Livingston Observatory's first set shall be shipped so as to reach LLO on 01 July 2011 with the second set following at a one month interval (01 August 2011).

7.0 Delivery Requirements:

The deliveries are FOB at these destinations, i.e. the contractor has responsibility for shipping title and control of goods until they are delivered and the transportation has been completed. The contractor selects the carrier and is responsible for the risk of transportation and for filing claims for loss or damage.

Shipping Location:

These items will be shipped to:

LIGO Hanford Observatory (LHO)
 Attn: Hugh Radkins and Jodi Fauver
 127124 North Route 10
 Richland, WA 99354

LIGO Livingston Observatory (LLO)
 Attn: Joe Hanson and Tom Gentry
 19100 LIGO Lane
 Livingston, LA 70754

Shipping Containers:

The contractor is responsible for providing robust shipping containers and transportation which protects these parts from damage from the transportation environment (weather, handling, accidents, etc.). The shipping crate should be:

- Larger than beam it is carrying (no overhang)
- Top of skid should have a sheet of 3/4" plywood with parts securely fastened to the skid.
- All surfaces (painted, machined/mating) on the part should be protected.
- Walls and top of crate to be constructed of 3/4" plywood and dimensioned lumber (no particle board).

8.0 Manufacturing:

8.1 Precedence

The Statement of Work (SOW) sections below regarding processing or fabrication of the parts are meant to convey the scope and nature of the requested work. If there is a conflict between the SOW and the drawing, the drawing has precedence.

8.2 Restrictions

- All machining and tapping fluids must be fully synthetic, water soluble (not simply water miscible) and free of sulfur, chlorine, and silicone.
- Thoroughly steam clean parts to remove all oil, grease, dirt, and chips. Alternatively, parts may be washed with soap and water. Pay close attention to tapped holes. All surfaces should be wiped down (dried) after cleaning.

8.3 Materials

Material is specified on the drawings. All materials specified by drawings or SOW have been approved for use in the cleanroom environment in LIGO. No materials may be substituted or added without prior knowledge and testing by LIGO.

8.4 Fit and Finish

Vendor shall be responsible for re-machining/repairing any parts not made according to provided drawings. Any required surface finish is defined in the drawings. All surfaces (in particular, machined/mating surfaces) shall be protected from scratches, digs, blemishes, etc.

8.5 Marking

Marking location is shown on the drawings.

All parts must be marked with a part number, revision code and serial number at the location indicated on the drawing. Marking is to be accomplished by mechanically scribing, stamping or engraving (no dyes or inks).

If not indicated in the drawing, mechanically scribe, stamp or engrave as follows:

<drawing number> - <revision code>-<type number if applicable>

-<unique 3 digit serial number starting at 001 for the first part and incrementing thereafter>

As an example:

D0900026-v1

- 001

The serial number must be a sequential 3-digit number, starting with 001, for each part.

Also where indicated, mechanically scribe, stamp, or engrave (no dyes or inks) any LABELS shown on drawing sheets.