



## Statement of Work

### CO-112 End Test Mass Replacements

#### 1.0 End Test Mass Polishing Scope

The contractor shall provide polishing services for the Substrates for the Advanced LIGO project shown in section 5.0. Caltech will supply ground glass per the blank specifications referenced on the polishing specification. A specification and a drawing describe the optic.

The polisher will provide all facilities, tooling, services, materials and staff to take the raw glass, provided by Caltech, from the ground form to polished substrate according to the polishing specifications and drawings. The polisher will provide inspection and certification data as called out in the polishing specifications.

#### 2.0 Document Access

Many supplemental documents and specifications are incorporated into and made a part this Statement of Work. Click on the document links to access these documents from the LIGO Document Control Center (DCC) or go on line to the LIGO Public DCC at <https://dcc.ligo.org/cgi-bin/DocDB/DocumentDatabase/> to access the DCC#.

#### 3.0 Commercial Terms and Applicable LIGO Specifications:

**Note: The documents listed below are invoked for this Statement of Work and comprise additional requirements which are integral to this Statement of Work.**

- [LIGO-C080185-v1](#) LIGO Commercial Items or Services Contract General Provisions
- [LIGO-Q0900001-v5](#) Advanced LIGO Supplier Quality Requirements
- [LIGO-Q1100003-v1](#) Acceptable Quality Level (AQL) for Inspection of LIGO Components

#### 4.0 Quality System:

Referring to the above referenced LIGO Specification Q0900001, Suppliers should include a copy of their current ISO 9001, AS9100, or TS16949 certification in their bid package. Suppliers lacking current certification should send a copy of their Quality Manual with their bid package.

#### 5.0 Parts/Assemblies to be manufactured, Quantity Required, and Inspection requirements:

Note: refer to Section 8.0 for delivery schedule and location

Drawing #	Specification #	Part Description	Total Qty:	AQL number (Inspection Frequency)
<a href="#">LIGO-D080658-v4</a>	<a href="#">LIGO-E080512-v3</a>	End Test Mass	6	1.0 (100%)

Note: refer to LIGO-Q1100003 in Section 3.0 for the AQL table.

## **6.0 Manufacturing:**

### **6.1 Requirements:**

Suppliers must refer to the LIGO Specifications referenced in Section 3 for additional, and in some cases, non-industry standard requirements.

### **6.2 Sub-Contracted Work:**

- LIGO expects that at least 2/3 (by dollar value) of the contracted work be performed by the Supplier named on the Purchase Order. The Supplier shall be responsible for all sub-contracted work.

### **6.3 Precedence:**

The drawings typically represent the finished part as needed for use in service. There may be requirements on the drawing (such as coatings) which are specifically defined as not the responsibility of the supplier in this SOW. Suppliers should always contact a LIGO representative to resolve any discrepancies or uncertainties in the documentation or instructions.

## **7.0 End Item Data Package:**

Before delivery of the parts, the Supplier shall provide the following data, as a minimum:

- Any as-built modifications (with approval of the LIGO Contracting Officer) as mark-ups to the drawings
- Inspection reports of all dimensional features for the number of parts specified per the AQL number and referenced in the AQL table LIGO- Q1100003 in Section 3.0 and other inspection requirements detailed in the specification listed in Section 5 of this SOW
- Certificate of compliance for each part number stating conformance to contract, drawing and specification requirements.

## **8.0 Delivery Requirements:**

### **8.1 Shipping Containers and Packaging:**

Caltech will supply clean containers and transit cases for each polished substrate. Optics are to be shipped clean, and packaged per [LIGO-E0900394-v5](#)

### **8.2 Shipping Destination(s):**

The deliveries are FOB at this destination, i.e. the Supplier has the 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.

These items will be shipped to:

#### **California Institute of Technology (CIT)**

LIGO Project MS 100-36  
391 S. Holliston Ave.  
Pasadena, CA 91125

### **8.3 Delivery Schedule:**

The first ETM is to be delivered on or before April 30, 2012, followed by at least one optic per month until completion.