



Statement of Work

Acquisition of Shielded Pair Cables Needed for aLIGO Suspension System C1105864-v3

1.0 Scope

This Statement of Work is for the procurement of two types of individually, twisted, shielded pair cables needed for the aLIGO Suspension System. The quantities, lengths and types are called out in the tables in Section 5 of this document. Note that for each type of cable, there are multiple lengths required.

The description for each type of cable is shown in the table below.

Drawing Number	Description
D1002956-v1 (See Sec. 3.0)	DB25 Male to DB25 Female Cable with individually twisted, shielded pairs. The shield is terminated at the Male connector end only and the pairs are per the table in the schematic.
D1002958-v1 (See Sec. 3.0)	DB15 Male to DB15 Female Cable with individually twisted, shielded pairs. The shield is terminated at the Male connector end only and the pairs are per the table in the schematic.

Each of the drawings for the desired cables call out a specific example of a cable type to be used for the manufacture of these cables, specifically Alpha 6017C and Alpha 6014C for D1002956 and D1002958, respectively. These specific Alpha cables are meant to be representative of the type of cable to be used for fabrication. Alternative, equivalent, cable types can be used, but must meet or exceed the Alpha cable types in the following areas:

- Each twisted pair must have its own individual shield
- Minimum 22 AWG wire
- 300V insulation rating
- In the case of D1002958, Alpha 6014C is a 9 pair cable type, but only 7 pairs are needed. Alternative cable types may have 7 individual pairs.

If alternative cable types are proposed for fabrication, the quote should state the cable type to be used and a datasheet for that cable type shall be included with the quote.

2.0 Document Access

Many supplemental documents and specifications are incorporated into, and made a part of, 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/> 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
- [D1002956-v1](#) *DB25 Male-Female Cable, Indiv. Twist/Shield Pair*
- [D1002958-v1](#) *DB15 Male-Female Cable, Indiv. Twist/Shield Pair*

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 and Quantity Required:

Note: refer to Section 8.0 for delivery schedule and location

The quantities for each length of the DB25 Male to DB25 Female Cable (D1002956 (See Sec. 3.0)) are shown in the table below.

Drawing Number	Length	Quantity
D1002956	6 feet	115
D1002956	10 feet	130
D1002956	50 feet	5
D1002956	60 feet	30
D1002956	90 feet	12
D1002956	100 feet	18
D1002956	120 feet	5
D1002956	140 feet	45
D1002956	150 feet	20
D1002956	165 feet	10
D1002956	200 feet	20

The quantities for each length of the DB15 Male to DB15 Female Cable (D1002958 (See Sec. 3.0)) are shown in the table below.

Drawing Number	Length	Quantity
D1002958	90 feet	12
D1002958	100 feet	18
D1002958	120 feet	5
D1002958	140 feet	45
D1002958	150 feet	20
D1002958	165 feet	10
D1002958	200 feet	20

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.

6.4 Special Considerations:

It is recognized that there are minimum quantity purchases for the types of cable material that is being requested. If the quantities requested in this statement of work do not allow the vendor to meet these minimum quantities, the quote should state the number of additional feet of each type of cable that would be required to meet the minimum quantity.

6.5 Testing & Inspection Requirements:

All cables must be visually inspected for quality workmanship, cleanliness and free of defects. All cables must be electrically tested for continuity, shorting and withstand voltage.

6.6 Marking:

The drawing/part number, revision, length and serial number shall be placed onto each cable (preferably the backshell). The method used for marking is unimportant except that it should be permanent. The serial number sequence will be prescribed by LIGO Lab. Example:

D1002956-v1 6ft S1101234

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
- Certificate of compliance for each part number stating conformance to contract and drawing requirements

8.0 Delivery Requirements:

8.1 Shipping Containers and Packaging:

The contractor is responsible for providing shipping containers and transportation which protects these parts from damage from the transportation environment (weather, handling, accidents, etc.). Mating edges of parts should be especially protected from damage during shipping.

8.2 Shipping Destination(s):

The deliveries are FOB at these destinations, 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.

LHO Cable Totals:

The following tables detail the cables that will be delivered to the LIGO Hanford Observatory.

Drawing Number (DB25 Cable)	Length	Quantity
D1002956	6 feet	90
D1002956	10 feet	100
D1002956	50 feet	5
D1002956	60 feet	15
D1002956	90 feet	12
D1002956	100 feet	18
D1002956	120 feet	5
D1002956	140 feet	38
D1002956	150 feet	20
D1002956	165 feet	10
D1002956	200 feet	20

Drawing Number (DB15 Cable)	Length	Quantity
D1002958	90 feet	12
D1002958	100 feet	18
D1002958	120 feet	5
D1002958	140 feet	38
D1002958	150 feet	20
D1002958	165 feet	10
D1002958	200 feet	20

Shipping Location:

LIGO Hanford Observatory
 127124 North Route 10
 Richland, WA 99354

Attn: Terry Santini / Jodi Fauver

LLO Cable Totals:

The following tables detail the cables that will be delivered to the LIGO Livingston Observatory.

Drawing Number (DB25 Cable)	Length	Quantity
D1002956	6 feet	25
D1002956	10 feet	30
D1002956	60 feet	15
D1002956	140 feet	7

Drawing Number (DB15 Cable)	Length	Quantity
D1002958	140 feet	7

Shipping Location:

LIGO Livingston Laboratory
19100 LIGO Lane
Livingston, LA 70754

Attn: Willie Hawkins / Celine Ramet

8.3 Delivery Schedule:

Delivery is expected within 8 weeks ARO.