



Vendor Documentation Specification

0.4.1.1 Rev. 3

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Canadian Light Source Inc.
101 Perimeter Road
University of Saskatchewan
Saskatoon, Saskatchewan Canada

Signature

Date

Original on File – Signed by:

Author

E. Matias

Reviewer #1

T. Johnson

Reviewer #2

J. Swirsky

Approver

M. de Jong

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1.0 INTRODUCTION

1.1 PURPOSE

This document specifies the vendor documentation requirements for the Canadian Light Source Inc. (CLSI). These requirements are intended to ensure that adequate design information is retained by CLSI to install, maintain and operate the facility effectively.

1.2 SCOPE

This specification covers the required engineering, design, manufacture, installation and test documents that shall be submitted to CLSI. Table 1 lists the items required for each activity. For design-build contracts all columns are applicable. For build-to-print contracts the design review column is not applicable.

Table 1 - Applicability to Contracts

| | Design Review ¹ | Manufacture Test | Shipment | Installation | Contract Closeout |
|---|----------------------------|------------------|----------|--------------|-------------------|
| 2.1 General | X | | X | X | X |
| 2.2 CAD | X | | X | X | X |
| 2.3 Documents | X | | X | X | X |
| 2.4 Design Review | X | | X | X | X |
| 2.5 Manufacture | | X | | | |
| 2.6 Shipments | | | X | | |
| 2.7 Safety & Environment | | X | X | X | X |
| 2.9 QA | X | X | X | X | X |
| 2.10 Inspection, Testing, Commissioning | | | | X | X |
| 2.11 Reliability and Maintainability | | | | | X |

1.3 BACKGROUND

The CLSI is a national synchrotron facility on the University of Saskatchewan campus in Saskatoon, Saskatchewan. This facility is a 3rd generation synchrotron light source, which will produce a high intensity source of infrared, visible, ultraviolet and x-ray radiation.

2.0 REQUIREMENTS

2.1 GENERAL

2.1.1 All documentation shall be written in the English language.

¹ Not required for Build-To-Print contracts.

- 2.1.2 System International (metric) units shall be used based on *CAN/CSA-Z234.1-89 Canadian Metric Practice Guide*.
- 2.1.3 Unless otherwise agreed in writing by CLSI, all drawings, 3D CAD model files, and data becomes the property of CLSI at the completion of this Contract. CLSI will update and modify drawings as required to support the ongoing operation of the equipment.
- 2.1.4 To the greatest extent possible documentation shall be provided electronically and transmitted to CLSI electronically.
- 2.1.5 All documents shall have a title, revision history, revision number and date of issue.
- 2.1.6 All Proponent drawings and document submissions must be identified with the contract number and equipment numbers.

2.2 CAD DRAWINGS

- 2.2.1 CLS has selected a series of preferred CAD software packages. To the greatest extent possible the vendor shall use:
 - a) Autodesk Inventor as the preferred 3D modeling software, with Autodesk Mechanical Desktop as a second choice.
 - b) Autodesk AutoCAD Electrical as the preferred electrical drafting software.
 - c) Autodesk AutoCAD as the preferred drafting software for 2D drafting.
 - d) Microsoft Visio as the preferred UML drawing package.
 - e) CadSoft Eagle as the preferred PCB layout package.

If the vendor chooses not to use these preferred software, the vendor shall provide the CAD files exported into 2D dxf and 3D step file formats. The vendor shall also provide the native CAD files.
- 2.2.2 All text contained within a drawing shall be written in English.
- 2.2.3 All drawings shall have revision control.
- 2.2.4 All 2D drawings should use 3rd angle orthographic projection and shall contain at least 2 orthographic views.
- 2.2.5 All components, parts, assemblies, layouts, process flow diagrams process and instrumentation diagrams, wiring diagrams, schematics, etc. shall be drawn full scale (1:1) using millimeters.
- 2.2.6 All assembly and weldment shall have a Bill of Materials (Parts List) on the drawing. Electrical drawings shall have a Bill Of Materials (Parts List) on the drawing, where applicable.
- 2.2.7 Each purchased component shall have a drawing containing a detailed written description of the component.
- 2.2.8 All General Arrangement Assembly drawings shall be represented with beam direction (electron or photon) going from left to right. Beam direction shall also be indicated for clarity.
- 2.2.9 The color "yellow" should be avoided as CLS plots in color and yellow is not easily seen on white paper.
- 2.2.10 CLSI can supply the Autocad, Mechanical Desktop and Inventor drawing templates. The Autocad plot style table files are also available.

- 2.2.11 All drawings shall be listed in a drawing transmittal list whenever drawings are passed from the vendor to CLS, refer to Appendix B.
- 2.2.12 A drawing list shall be supplied to CLS for each contract number, as a vendor may have concurrent contracts with CLS. The drawing list shall contain all drawings used in the contract, refer to Appendix C.
- 2.2.13 When using Autocad or Mechanical Desktop, drawing information should be created in MODEL SPACE. The exceptions are the drawing border, title block, bill of materials, parts lists and notes. This information should be inserted into PAPER SPACE as they should be plotted at a 1:1 scale.
- 2.2.14 When using Autocad or Mechanical Desktop all layer names should be full length.
- 2.2.15 When using Autocad or Mechanical Desktop all 2D blocks should be created on layer "0".

2.3 DOCUMENTS

- 2.3.1 All documents shall be provided in printed form and electronically in PDF format. The original document format, e.g., Microsoft Word, HTML, Wordperfect etc. shall also be provided. Should the vendor use a different text processing package the vendor shall convert the documents into the MS-Word or RTF format.

2.4 DESIGN REVIEW

- 2.4.1 The vendor shall submit to CLS I a documentation package for design review at least two (2) weeks prior to the review.
- 2.4.2 The vendor shall submit three (3) sets of full-size clear reproducible drawings of systems and/or dimensioned equipment arrangements, assembly, erection and/or fabrication detail, and vendor drawings as specified for review by CLS I prior to fabrication or delivery of equipment. To expedite shop drawing reviews CAD files may be forwarded to CLS I, but these must be followed up immediately with reproducible prints.
- 2.4.3 The vendor shall furnish three (3) copies of installation instructions including data sheets, catalogue information, and instructions for all components.
- 2.4.4 The vendor shall furnish three (3) copies of spare lists, operating manuals, and maintenance and lubrication manuals.
- 2.4.5 The vendor shall furnish detailed parts list (three (3) copies) with original manufacturer's part number, name and address.
- 2.4.6 The vendor shall furnish a list of manufacture, assembly, test and installation procedures and records. CLS will then identify those procedures and test records that must be submitted as part of the manufacture process or included in the Operations and Maintenance Manual.

2.5 MANUFACTURE

- 2.5.1 The vendor shall make Mill Maintenance System Data Sheets, Assembly, Welding, Vacuum Cleaning, Painting, and Calibration Procedures available for inspection. The vendor shall also make the associated test and manufacture records available for inspection. During the design review CLS I may require that some of this documentation be submitted to CLS I for approval prior to manufacture or on delivery.

2.6 SHIPMENTS

- 2.6.1 The vendor shall identify all hazardous material (chemicals, beryllium, radiological material, etc.) and obtain CLS Health Safety and Environment approval in writing prior to shipment. In the case of hazardous chemical Material Safety Data Sheets (MSDS) must accompany all copies of the Bill of Materials.
- 2.6.2 Complete bill of materials and customs documents for any shipment arriving from outside of Canada accompanying the shipment¹.
- 2.6.3 A copy of the bill of materials and customs documents shall also be sent to the CLSI contact for the contract and e-mailed to stores01@lightsource.ca or faxed to (306) 657-3533 prior to shipment. The cover sheet shall identify the CLS I/University of Saskatchewan purchase order number.
- 2.6.4 Once available the shipment tracking number shall also be forwarded to CLS.
- 2.6.5 Customs documents must contain the following information for each item in the shipment:
- a) country of origin,
 - b) Harmonized Tariff Schedule (HTS) code, and
 - c) true dollar value of each item.
- 2.6.6 Tools and other items that will be shipped back to the vendor at the end of the contract must be identified as such on the shipping manifest.
- 2.6.7 To expedite processing by Canada Customs and Revenue Agency this information must be provided in English.

2.7 SAFETY AND ENVIRONMENTAL

- 2.7.1 Should the use of hazardous material be required on site for the installation or operation of the equipment the vendor shall submit three (3) copies of the associated safety procedures to CLSI for review and approval prior to installation.

2.8 APPLICABLE CODES, STANDARDS AND PROCEDURES

- 2.8.1 Not applicable.

2.9 QUALITY ASSURANCE

- 2.9.1 The vendor shall submit a photocopy of any ISO 9001 or ISO 16025 certificate with the proposal.
- 2.9.2 The vendor shall make the organization's quality assurance manual and the procedures covering services provided to CLSI available to CLSI throughout the term of the contract.

2.10 INSPECTION, TESTING AND COMMISSIONING

- 2.10.1 As identified in the design review the vendor shall include copies of all manufacture test reports, inspections, and calibrations.
- 2.10.2 Should the scope of supply include installation and commissioning the vendor shall provide a commissioning procedure for inspection by CLS I prior to commissioning and a

¹ Consult guidelines issued with the purchase order for current legal requirements and quantities.

commissioning report.

2.11 RELIABILITY AND MAINTAINABILITY

- 2.11.1 The vendor shall develop and supply an Operations and Maintenance (O&M) Manual. Appendix A contains a suggested table of Contents.
- 2.11.2 Three (3) printed copies and three (3) electronic copies on CD-ROM of the O&M manual shall be provided and labeled accordingly:
- a) CLSI Records/Central file (Copy No. 1),
 - b) Beamline (Copy No. 2) and
 - c) CLSI Engineering (Copy No. 3).
- 2.11.3 A complete set of "as-built" drawings containing all fabrication, purchased components and assembly drawings shall be included with final shipment of components. This set of drawings shall include both AutoCAD Mechanical Desktop and/or Inventor electronic and three (3) hardcopies.
- 2.11.4 The O&M Manual shall at a minimum contain the following information:
- a) Function Description¹,
 - b) Design Description¹,
 - c) Operation Procedures¹,
 - d) Mechanical, Electrical, and Electronics Drawings¹,
 - e) Data Sheets and Shop Drawing for Components,
 - f) Welding, Vacuum Cleaning, Painting, Calibration, Survey and Installation Procedures (as required)
 - g) Maintenance Procedures¹,
 - h) Recommended Spares¹,
 - i) Recommended Maintenance Schedule¹,
 - j) Commissioning Procedure and Report¹.
- 2.11.5 The recommended spare parts list shall include the name of the original manufacturer, contact information and manufacturer model number.
- 2.11.6 Drawings included in the O&M Manual shall include all "as-built" changes from manufacture and installation.

2.12 LAYOUT

- 2.12.1 Not applicable.

2.13 OTHER REQUIREMENTS AND CONSTRAINTS

- 2.13.1 Not applicable.

3.0 REFERENCES

Not applicable.

¹ Not required for build-to-print contracts.

Appendix A: Suggested O&M Manual Table of Contents

- Section 1 – Introduction and Safety
- Section 2 – Function Description
- Section 3 – Design Description
- Section 4 - Operating Procedures
- Section 5 – Process and Flow and Process and Instrumentation Drawings
- Section 6 – Mechanical Drawings
- Section 7 – Electrical Drawings
Electronics Schematics and Layouts
Controls Drawings
- Section 8 – Component Data Sheets and Manuals
- Section 9 - Manufacturing and Installation Procedures;
Calibration and Manufacture Quality Control Sheets/Reports
Commissioning Procedures and Commissioning Report (If Required)
- Section 10 – Maintenance Procedures
Recommended Spares List and
Maintenance Schedule

Suggested Subsections:

- x.1 – General
- x.2 – Optics
- x.3 – Mechanical Systems
- x.4 – Vacuum Systems
- x.5 – Electrical Systems
- x.6 – Controls

Appendix B: Drawing Transmittal

| DRAWING TRANSMITTAL | | | | | |
|---------------------|-----------------|---------------------|-----------------------|---------------|------------|
| To: | | | Date: | | |
| From: | | | Tran No. | | |
| Contract Number: | | | Page: | | |
| Remarks: | | | | | |
| Drawing Number | Revision Status | Drawing Description | Author (Company Name) | Revision Date | Paper Size |
| | | | | | |

Appendix C: Drawing List

| DRAWING LIST | | | | | |
|------------------|-----------------|---------------------|-----------------------|---------------|------------|
| Project Name: | | | | | |
| Contract Number: | | | | | |
| Date: | | | | | |
| Drawing Number | Revision Status | Drawing Description | Author (Company Name) | Revision Date | Paper Size |
| | | | | | |

Appendix D: Document List

| | Design Review ¹ | Manufacture Test | Shipment & Installation | Contract Closeout |
|-------------------------------------|----------------------------|---|-------------------------|-----------------------|
| Drawings | | | | |
| Equipment Arrangement Drawing | 3 copies | As Needed | As Needed | 3 copies ² |
| Assembly Drawing | 3 copies | As Needed | As Needed | 3 copies ² |
| Erection and/or Fabrication Drawing | 3 copies | As Needed | As Needed | 3 copies ² |
| Vendor Drawings | 3 copies | As Needed | As Needed | 3 copies ² |
| PID Drawing | 3 copies | As Needed | As Needed | 3 copies ² |
| PFD Drawing | 3 copies | As Needed | As Needed | 3 copies ² |
| Installation Instructions | 3 copies | As Needed | As Needed | 3 copies ² |
| Spare Parts List | 3 copies | As Needed | As Needed | 3 copies ² |
| Operating Manual | 3 copies | As Needed | As Needed | 3 copies ² |
| Maintenance and Lubrication Manual | 3 copies | As Needed | As Needed | 3 copies ² |
| Parts List | 3 copies | As Needed | As Needed | 3 copies ² |
| List of Procedures | 3 copies | | | |
| Procedures | - | As agreed in design review ² | | |
| Test Reports | - | | | |
| MSDS Sheets | - | - | As Needed | - |
| Bill of Materials | - | - | As Needed | - |
| O&M Manual | - | - | - | 3 copies |

¹ Design Review Documentation is provided for review and approval by CLSI.

² Included in O&M Manual.