



Preliminary Project Quality Management System

For

**INTERIOR HEART & SURGICAL CENTRE (“IHSC”)
Kelowna, British Columbia**

Plenary Group (Canada) Ltd.

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1.0 INTRODUCTION

1.1 DISTRIBUTION OF CONTROLLED COPIES

The following table represents those firms who are in possession of this project quality management system manual. The Quality Management Representative (QMR) will record and label each manual upon initial distribution and record any revisions issued accordingly. Revision of this table does not constitute a revision to this quality management system manual.

Copy #	Date Issued	Subcontractor/Vendor	Recipient's Name	Media (hard copy/digital)	Revisions Issued
1					
2					
3					
4					
5					
6					
7					

1.2 SCOPE, EXCLUSIONS, COMPLIANCE

1.2.1 Scope

This Quality Manual describes the Quality Management System (QMS) implemented by PCL to assure the quality of the work on the Interior Heart & Surgical Centre. It applies to the construction work and related supply on the Project by PCL and its subcontractors. Specifically, it sets out the responsibilities and authority for documenting and implementing the quality system in each participating organization in the Project. Subcontractors of critical materials and services, as determined by PCL, shall prepare quality plans, consistent with the requirements of this manual, to control and assure the quality of their processes.

1.2.2 Exclusions

List any exclusions here that this QMS does not apply to.



1.2.3 Compliance

List any organizations that this QMS complies with such as ISO 9001 or a project specification section.

1.2.4 Approval

This Quality Manual is approved for use by PCL

Signature: _____ Date: _____

Insert name of highest management authority on the Project

Title:

Signature: _____ Date: _____

Insert name of Project Quality Manager

Title:

1.3 OWNERSHIP AND CONTACT

The owner of this Quality Manual is PCL. All copies must be returned to the owner upon request.

The contact person for this manual is:

*Rupert Marshall
Project Manager
Telephone: (250) 868-8394
Email: rmarshall@pcl.com*



2.0 QUALITY MISSION STATEMENT

PCL is committed to providing quality projects constructed to meet or exceed the specifications, the specified quality standards, and conforming to all aspects of contractual, safety, and statutory requirements.

PCL's goal is to make sure that all employees, suppliers, and subcontractors understand the importance of quality in their work throughout the duration of the project. PCL will identify and advise our clients and the project consultants of quality related non-conformances for timely corrective action. We will take reasonable steps to make sure that corrective action by responsible parties, whenever required, is properly implemented, documented and a procedure for continuous learning is achieved.

To achieve this, our Quality Management System (QMS) is established, implemented and maintained on our projects in an efficient and cost effective manner.

PCL's top management will promote compliance with the requirements of, and continually improve the effectiveness of, the Quality Management System by:

1. Requiring corporate adherence to this mission statement
2. Requiring orientation of all project personnel to the requirements of the project QMS
3. Establishing and reviewing quality objectives
4. Reviewing this mission statement, the quality objectives, and the QMS at scheduled intervals during the terms of our contracts to ensure accountability and ownership.

The management of PCL requires all managers and supervisors to make reasonable efforts to communicate and explain this PCL Quality Mission Statement to their employees and subcontractors at or before the commencement of their employment on our projects.

The employees of PCL are committed to the development, implementation, and continuous improvement of our Quality Management System.

Dated: _____

Sean Brock, District Manager
PCL Constructors Westcoast Inc.



3.0 OVERVIEW OF PCL QUALITY MANAGEMENT SYSTEM

3.1 GENERAL

PCL has developed and implemented the Quality Management System (QMS) documented in this manual, consistent with all contractual requirements to assure conformance to the construction requirements of the Interior Heart & Surgical Centre. The QMS may periodically be updated as deemed necessary should the requirements of the project change accordingly. Revisions to this manual will be issued to all controlled copy holders.

3.2 PROCESS APPROACH

PCL describes its core processes (those that realize the requirements of the agreement and sustain the QMS) as the basis for identifying the key processes that assure conformity to the agreement. PCL documents procedures and retains records where needed for effective process control and QMS operations or where otherwise required by the contract.

3.3 OUTSOURCED PROCESSES

PCL relies on various subcontractors and suppliers to complete portions of this project. These entities are required to implement and demonstrate effective quality control and to provide PCL with satisfactory evidence and access to activities, documents and records as required demonstrating PCL's effective control of all project processes.

PCL establishes formal contractual agreements with its subcontractors, suppliers and consultants (collectively subcontractors) to assure the quality of outsourced work and materials on the Project. PCL reviews or audits its subcontractors' work and records as appropriate to ensure that project requirements are being met.

PCL requires its subcontractors to prepare and submit quality control plans to PCL for the work they are engaged to perform. The quality control plans must show the activities, and products to be supplied, the requirements to be met, the controls to achieve acceptable results and the verification and recording activities used to provide assurance of conformity to the contract.



3.4 ORGANIZATION AND STAFFING

PCL defines the project organization, relationships, responsibilities and authorities to effectively manage and execute the project including members of the PCL organization and all subcontractors and key personnel engaged or seconded to the project.

PCL assigns qualified management to develop, implement and maintain the QMS and ensures that all work affecting quality is reviewed.

3.5 QUALITY MANAGEMENT REPRESENTATIVE

The Quality Assurance Manager is the designated Quality Management Representative (QMR) responsible for:

- Ensuring that processes needed for the QMS are established, implemented and maintained
- Monitoring, updating and managing the QMS continually through the stages of the project
- Reporting to the Construction Manager on the performance of the QMS and any need for improvement
- Ensuring the promotion of awareness of customer requirements throughout the organization, and conducting liaison with external parties on matters relating to the quality management system

The QMR reports directly to the Construction Manager and is independent of the subcontractors engaged by PCL on the project.

3.6 PROJECT ORGANIZATIONAL CHART

The following project organizational chart maintained by PCL illustrates the management structure and the relationships among the various members of the PCL project team.

Refer to Appendix ? for the project specific organizational chart

The staff organizational chart also reflects the relationship between the PCL staff member and our subcontractors. The project manager for each of the subcontractors is responsible for the quality of the work delivered to the Project. The management of each subcontractor is responsible for defining and documenting the corresponding responsibilities, authorities and interrelations within their organization to be consistent with PCL's quality requirements.



4.0 MANAGEMENT RESPONSIBILITY

4.1 MANAGEMENT COMMITMENT

As construction leaders our quality culture at PCL will demonstrate this commitment to all of our clients, design partners, trade contractors, and our employees, positively differentiating us from our competition.

We will achieve this commitment through:

- Leadership
- Detailed Planning
- Education
- Training
- Documentation
- Compliance Audits
- Accountability
- Client Focus
- Continued Improvement

4.2 RESPONSIBILITIES

The District Manager or Operations Manager has designated the QMR for this project to perform the duties and responsibilities outlined in section 3.5 above.

4.3 INTERNAL COMMUNICATIONS

Communication among the subcontractors and PCL employees has been established by means of meetings, e-mail and teleconferencing as required. The PCL Project Document Control (PDC) website has been established to share information for the Project including minutes of meetings, design and construction information and quality control related test, reports and documents.

4.4 MANAGEMENT REVIEW

The QMR shall on a monthly basis report to the Construction Manager on the status of the effectiveness of the QMS on the project. The status report shall include the following as a minimum:

- Results of PCL Monthly Project audits for the project
- Client and Consultant feedback and observations



- Status of non-compliant work (NCR's)
- Review of Quality Incident Reports (QIR's)
- Follow-up actions from previous status reports
- Assessment of opportunities for improvement
- Review of resources involved with the QMS

The QMR shall conduct a meeting to review the status report and publish meeting minutes noting attendees, items discussed and any items to be addressed.

4.5 MANAGEMENT REVIEW OUTPUT

The project construction manager may issue recommendations for improvements based on the monthly quality status reports and input from the QMR. These recommendations may include identification of additional resources to assist with the QMS program or re-assignment of current staff as required. The construction manager will direct the QMR to be responsible for monitoring the output from the management review to ensure the decisions made are implemented.



5.0 RESOURCE MANAGEMENT

5.1 PROVISION OF RESOURCES

PCL District Management determines and provides the resources needed to implement and maintain the QMS on this project. PCL has resources in place to monitor, review and improve the QMS in order to enhance our client's satisfaction by meeting our contractual requirements and expectations.

Each of our subcontractors is required to provide the resources and supporting infrastructure to execute their quality obligations of the project.

5.2 HUMAN RESOURCES

PCL has determined the necessary competency for personnel performing work affecting the project quality.

Personnel performing work that affects quality shall have the qualifications to perform the work successfully on the basis of their educations, training, skills and experience.

PCL or the subcontractors shall provide training where required ensuring that the project requirements are satisfied. Personnel performing specific assigned tasks affecting quality are trained using the applicable plans, processes and procedures.

PCL evaluates the effectiveness of the training provided as it relates to the skill or competency required.

PCL ensures that its personnel are aware of the relevance and importance of their activities and how they contribute to the achievement of the quality objectives. All personnel whose work affects quality receive an orientation to the QMS and its implications for their work.

PCL maintains appropriate records of education, training, skills and experience.

5.3 INFRASTRUCTURE

PCL and its subcontractors determine, provide and maintain the facilities, equipment, software and supporting services for all work for which they are responsible for on the project site.

PCL recognizes that the work environment for this project is subject to weather, geology and geography and that from time to time the



work may be limited as to what can be accomplished or may need to be modified to achieve the desired results. In all cases, the methods and materials employed must comply with the contractual agreement and applicable specifications, standards and regulations unless a waiver is approved by the governing authority.

5.4 WORK ENVIRONMENT

The project management team will endeavor to maintain a work environment that has a positive attitude relating to the QMS throughout the duration of the project to ensure conformity to the contract requirements. Factors to be considered may include employee involvement, training, educations and social interaction.



6.0 PROJECT REALIZATION AND DELIVERY

6.1 PLANNING

PCL and our subcontractors will prepare project quality plans to address the following requirements;

- Quality objectives and requirements based on the contractual requirements and expectations
- Quality plans, processes, documents and resources for each activity will be established by PCL (for self performed work) and the responsible subcontractors in accordance with this QMS and the project schedule
- Verification, validation, monitoring, inspection and testing are specified in the quality plans in accordance with the project specifications and product acceptance criteria
- Records retained to demonstrate conformance to the specifications and QMS are retained according to the Control of Records procedure.

6.2 CLIENT-RELATED PROCESSES

6.2.1 Determination of Requirements

The PCL project management team shall determine the product requirements specified by the client, including the contract requirements for delivery and post-delivery activities for inspections and certifications.

The client's quality expectations shall be confirmed during a "Quality Expectations Meeting" to be conducted with the client and key consultants prior to commencement of the project. PCL shall ensure that the product quality requirements are defined and any differing contractual requirements are resolved. When project requirements are changed by change order to the original contract, PCL shall ensure that relevant changes affecting quality are amended and that relevant personnel are aware of the changes.

6.2.2 Client Communication

The project team will implement effective methods of communication with the client concerning the quality aspects of the project. These may include;

- Discussing the status of the QMS at each scheduled project team meeting to review any issues or concerns
- Reviewing the status of any non-conforming items



- Jointly reviewing the quality of the work at various stages of completion
- Reviewing mock-ups of the work as defined in the specifications

If any discrepancies in quality expectations are identified in any form of communication with the client, then PCL and the client shall work together to resolve these issues in an expeditious manner.

6.3 DESIGN AND DEVELOPMENT

6.3.1 Planning

The PCL project team shall work cooperatively with the client and design partners to identify and resolve any quality related risk, ambiguities or issues prior to construction commencing. We understand that not all issues can or will be identified prior to construction and that resolution of them will occur as the work is in progress.

6.3.2 Preconstruction

The consultants are responsible for design of the project to conform to the following:

- Functional and performance requirements
- Applicable statutory and regulatory requirements
- Previous similar project
- Other essential requirements

PCL will conduct “preparatory meetings” with the project subcontractors to identify the quality requirements for their applicable scopes of work. The subcontractor’s project specific team (project manager and superintendent) must attend this meeting and discuss their approach (means & methods) to accomplish the quality requirements of the project. Minutes of these meetings will be documented and recorded.

6.3.3 Construction

The project team will conduct “initial quality meetings” with the various subcontractors and PCL self performing staff immediately following the commencement of their work. These meetings will focus on inspecting the initial work to verify that the quality requirements as discussed during the preparatory meetings are being met. Formal meetings will be conducted after reviewing the work on



site with meeting minutes recorded. Any discrepancies noted will be recorded as non-compliant work.

6.4 PURCHASING

6.4.1 Process

PCL's purchasing procedures primarily governs the selection and management of suppliers and subcontractors to perform various scope of work for the project. The purchasing procedures address the issues of subcontractor selection and control, provision of complete and accurate information to subcontractors and verification of the quality of their work.

PCL communicates the purchase item requirements to the potential subcontractors in the form of a specific bid package for their scope of services.

PCL evaluated and selects Suppliers based on their ability to meet the purchasing requirements of the project.

Criteria for selecting and evaluating Suppliers are documented and maintained.

6.4.2 Purchasing Information

Purchasing information that describes the requirements of the subcontracted work will be developed in accordance with the project specific procurement plan. Where appropriate, the information includes:

- Requirements for approval of the subcontracted work, procedures and processes
- Requirements for quality personnel and
- Quality management system requirements

6.4.3 Verification of Purchased Product

At the time of award of a subcontract, PCL will review and confirm the quality requirements and expectations in a meeting with the Supplier. A subcontract agreement will be executed that included these items and any exceptions noted.

When required by the project specifications, PCL will obtain all Manufacturer Certifications and Test Reports for materials prior to or with delivery and installation.



PCL may elect as deemed necessary to inspect the Suppliers premises to perform verification of the product during the fabrication stage.

6.5 PRODUCTION AND SERVICE PROVISION

6.5.1 Process Control

PCL plans and executes its construction and service activities under controlled conditions including the following:

- Control of the availability of documentation describing the characteristics of the project. Contract documents, design drawings, specifications and shop drawings are controlled and recorded by PCL and issued to the appropriate project subcontractors. During construction, periodic updates to the information provided will be issued to the subcontractors in the form of a contract change or supplemental information instruction in the form of a Request for Information (RFI).
- PCL will establish a sequence of work plans to complete the work in accordance with the overall project schedule. These plans will be developed and communicated to the subcontractors during regular project planning and coordination meetings.
- The use of suitable equipment required to perform the specific work will be coordinated with the subcontractors during the coordination meetings. Equipment maintenance activities are required to be available with the equipment upon request.
- The availability and use of monitoring and measuring devices will be coordinated with PCL. Individual trades people are responsible for their assigned equipment.
- PCL controls the implementation and measurement of inspection and testing in accordance with the project specific inspection and test plan (ITP). Refer to the Appendix C for the project specific ITP.
- PCL controls the certification for compliance of the work in accordance with the project specific close out and commissioning plans.

6.5.2 Validation of Processes

Validation of process is reviewing and ascertaining the status of the construction during production where the outcome cannot be non-destructively or economically verified on the project site. PCL may employ the following processes to ensure confidence in the quality of the product during production:

- Identify criteria for inspection and verification of the construction during production.



- Perform regular inspections of the construction during fabrication using the inspection criteria established.
- Identifying any non-compliant work and positively identifying it from the other completed work. Communicate any issues to the project management team.
- Identify and pre-determine in the ITP any specific hold points required during construction to allow for adequate inspections to occur prior to specific aspects of the work being concealed or completed.
- Document and file all inspections and reviews of the work made during the fabrication process.

6.5.3 Identification and Traceability

Where traceability is a requirement, PCL will control and record a unique identification for the construction. Quality information describing the location, date and inspection measurements taken will be included in the traceability record.

6.5.4 Client Property

PCL exercises care with client property while under PCL control. PCL identifies, verifies, protects and safeguards client property assigned to our project for use in the construction. If any client property is lost, damaged or otherwise found to be unusable for use, proper records will be maintained for the specific product.

Client property may include drawings, standards, electronic data, permanent materials or intellectual property.

6.5.5 Preservation of Product

PCL will preserve and protect conformity of project quality as identified in the contract documents, specifications and drawings indicate. Preservation techniques may include:

- Providing protection and storage conditions on site per the manufacturers recommendations
- Maintenance of temporary environmental conditions for finished work installed on the jobsite.
- Identification, treatment and retention of test or control samples.

6.6 CONTROL OF MONITORING AND MEASURING EQUIPMENT

PCL shall review the monitoring and measuring devices required to provide evidence of conformity to the specifications.



PCL shall establish processes to ensure monitoring and measurement can be carried out in a manner consistent with the requirements.

To ensure valid results, measuring equipment is calibrated or verified at specified intervals prior to use against measurable standards. These measurement standards are traceable to international or national measurement standards. When no such standards exist, the basis used for calibration is recorded.

To ensure valid results, measuring equipment is adjusted or re-adjusted to comply with the calibration standards.

The measuring equipment is uniquely identified to determine the calibration status of the equipment.

The measuring equipment is protected from damage and safeguard against improper use to ensure the results.

PCL shall assess previous measuring results if the monitoring equipment is found not to confirm to the requirements. PCL will take appropriate action on the affected results as necessary.

PCL considers established engineering software is suitable for its intended use without further independent validation.

7.0 MEASUREMENT, ANALYSIS & IMPROVEMENT

7.1 GENERAL

PCL shall plan and implement a monitoring, measurement and analysis process that will:

- Demonstrate conformity of the specified requirements
- Ensure conformity to the Quality Management System
- Continually improve the effectiveness of the Quality Management System; and
- Determine applicable methods, including statistical techniques and the extent of their use.

7.2 CUSTOMER SATISFACTION

As a measurement of our Quality Management System, PCL monitors the client's perception of whether we are meeting their quality requirements by the following methods:

- Regular discussions throughout the course of the construction project
- Regular feedback during formal project coordination meetings
- Discussions during mock-up and sample reviews
- Discussions during regular performance evaluations, if applicable)
- Discussion during formal partnering meetings, if applicable)

7.3 INTERNAL QUALITY AUDIT

PCL determines whether the Quality Management System conforms to the planned product realization arrangements of this plan. This includes review of the Quality Management System to ensure their continued accuracy and relevance to the project operations.

The responsibilities and requirements for planning and conducting an audit, reporting results and maintaining records are defined in a document procedure. Refer to Appendix D

PCL conducts internal quality audits at planned intervals. In addition, the District Office conducts project audits using other PCL employees visiting the project site for an independent review.

The audit program is planned taking into consideration the status and importance of the processes to be audited and the results of the previous audit.

Selection of auditors and conduct of the audits shall ensure objectivity and impartiality of the audit process. Auditors will not audit their own work.

The results of the audit are recorded on the Project Quality Audit Form and reviewed with personnel having responsibility in the area audited, no more than two working days following completion of the audit. In addition, a copy of the project audit form is forwarded to the District Operations Manager within three working days following the audit.

Management responsible for the audited area shall ensure that the root cause of nonconformance items noted in the audit are identified and that actions are planned, implemented and tracked to prevent their recurrence.

PCL will audit subcontractors as required during the performance of their contract.

7.4 MONITORING AND MEASURING PROCESSES

PCL applies suitable methods for monitoring and measurement of the construction process. These methods demonstrate the ability of the processes to achieve the planned results.

When planned result are not achieved, correction and corrective action shall be taken as appropriate, to ensure conformity to the specifications.

7.5 MONITORING AND MEASUREMENT OF PRODUCT (INSPECTION AND TESTING)

PCL monitors and measures the characteristics of the construction to verify that the contractual requirements have been met. This is carried out at appropriate stages of the construction delivery process in accordance with the Construction Inspection and Testing Plan (ITP). The PCL Quality is responsible for the ITP plan and procedures.

Evidence of conformity with the accepted criteria is maintained, including the certificates of conformity where required. Punch lists shall be developed in accordance with the contract and sequence of the work. QA/QC personnel are responsible for completing and recording the punch list items. Punch list items shall be recorded and maintained in PCL's PDC data base.

Correction and subsequent re-inspection of punch list items shall be required prior to release of the work product.

Construction hold points shall be identified for QA/QC testing and inspection to provide the opportunity to perform the verification tests.

PCL will meet the minimum frequencies for sampling, testing and inspection as described in the contract documents.

7.6 CONTROL OF NONCONFORMING PRODUCT (WORK)

PCL ensures that product or work, which does not conform to the contract requirements, is identified and controlled to prevent its unintended use.

PCL deals with non-conforming work by one or more of the following ways:

- By taking action to eliminate or remove the detected non-conformance.
- By authorizing its use, release or acceptance under concession by a relevant authority such as the client or consultants.
- By correcting the non-conformance item

Records of the nature of the non-conformance and any subsequent actions taken, including concessions obtained, are documented and maintained by PCL.

When non-conformance work is corrected it shall be subject to re-verification to demonstrate conformity to the project requirements. The Quality Manager is responsible for verifying the conformance.

7.6.1 Requirements for Control of Non-conforming Work

PCL will develop and maintain a system to identify, control, remedy and report non-conforming work in the ITP plan. Non-conforming work is identified on a non-conformance Report (NCR) which includes:

- Identification, evaluation & cause of non-conforming work
- Recommendation and review of “repair” or “use” as is dispositions.
- Proposed correction action to prevent recurrence
- Responsibility for accomplishing corrective action
- Scheduling for resolution

The non-conforming work shall be entered into the non-confirming work log on PDC to identify the nonconformance and to track resolution of the issues. The Quality Manager will approve the recommended remedy for non-conforming work, and the client shall approve recommendations to remedy the item unless the remedy is to remove and replace the non-conforming work. Progress payments may be withheld from suppliers or subcontractors until the non-conforming work has been rectified.

7.6.2 Response to Non-conforming Work Notices

Upon receipt of a non-conforming work notice from the client or Consultants, the Quality Manager shall have the notice entered in to the NCR Log and identified as an Owner generated notice. The Quality Manager shall have the nonconformance investigated and shall generate a written response to the notice specifying how PCL proposes to remedy the work.

Once the proposed remedy has received written acceptance from the client, PCL will track the corrective action and perform a follow-up inspection to ensure that the actions taken were implemented and effective in eliminating the cause of the non-conformance.

7.7 ANALYSIS OF DATA

PCL determines, collects and analyzes appropriate data to demonstrate the suitability and effectiveness of the Quality Management System. Data may include evaluations from the customer satisfaction surveys, findings from the quality audits, results from management reviews or informal customer comments.

PCL evaluates where continual improvement of the Quality Management System can be made. The Senior Management of the project has the primary responsibility to evaluate and improve the current system.

Data generated as a result of monitoring and measurement or from other relevant sources aids the fulfillment of the analysis requirements. Inspection and testing trend charts and non-conformance reports will aid in the improvement process as well.

The analysis of the data will provide information relating to; customer satisfaction, conformity to product requirements, characteristics of trends and supplier/subcontractor performances.

7.8 IMPROVEMENT

PCL will continually improve the effectiveness of the Quality Management System on this project through the use of a quality

policy, quality objectives, audit results, analysis, corrective and preventative actions and management review.

7.8.1 Corrective Action

PCL shall take action to eliminate the cause of non-conformities in order to prevent recurrence. Corrective Action Meetings will be established to;

- Review non-conformance items & determine their root cause
- Evaluate the need for action
- Determine and implement actions needed
- Record the results of the action taken, and
- Review the corrective action.

7.8.2 Preventive Action

PCL shall determine action to eliminate the causes of potential non-conformances in order to prevent their occurrence. Preventive Action Meetings will be established to;

- Determine the potential non-conformances and their root causes
- Evaluate the need for action to prevent the occurrence of non-conformances
- Determine and implement the action needed
- Record the results of action taken, and
- Review the preventive action taken.