

# The Royal Theater “OLD STAGE”

## Theatre Machinery and Control system upgrade for the Royal Theatre Old Stage Summer 2024

### Scope of Service

Theatre Engineering Consultant

1.0

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# 1. General

## 1.1 Principal Role

- 1.1.1 Perform all the duties of a "designer" under the Construction (Design and Management) Regulations 2015.
- 1.1.2 Work closely with the Employer, Employer's representative, and other design team members
- 1.1.3 Provide the services and deliverables as listed below by project phase

## 1.2 Participants

- 1.2.1 Throughout all project phases, review the work of others in conjunction with the systems design to ensure appropriate safety, maintainability, and functional efficiency.
- 1.2.2 It shall not be the responsibility of the Consultant to coordinate the work of other consultants not engaged and/or controlled by consultant.

## 1.3 Design Services

- 1.3.1 The theatre engineering consultant will consult on the following areas:

- Replacement of the stage engineering control system
- Replacement/Installation of new overstage flybare machinery:
  - 64 Powered Flying hoists 400 kg.
  - 8 Mobile Point hoist 500 kg.
  - 6 Lighting LX hoists 2000 kg
  - 1 Loudspeaker hoists
  - Update Fire curtains control and safety system.
- Replacement for Revolve/turntable drive system and control system
- Update orchestra pit lift system and control system

- 1.3.2 Assist in the evaluation of project cost exercises and participate in value engineering exercises.

- 1.3.3 Attend meetings and presentations as required.

## 1.4 Clarifications

- 1.4.1 The project stages described below are intended for general guidance only. The actual sequence and timing of activities will be as required to meet the needs of the project and as directed by the client.

## 1.5 Project Time schedule

	Start	End
Preparation of tender documents	-	March 2023
Approval of tender documents		May 2023
Tender period	May 2023	June 2023
Evaluation of Tenders		June 2023
Contract		June 2023
Preparation of onsite upgrade		June 2024
Installation/Upgrade		Handover August 2024

## 2. Strategic Definition - Preparation and Brief

### 2.1 Client Interface and Processes

- 2.1.1 Meet with the Employer, other design team members and user groups to agree upon the standards, principles, and design philosophy that shall guide the machinery upgrade and control replacement works.
- 2.1.2 Meet with the Employer, other design team members and user groups as required to confirm the proper scope and type of upgrades and replacements and inform the design team of the spatial, electrical, mechanical, and structural requirements of the machinery upgrade and control replacement works.

### 2.2 Design and Documentation

- 2.2.1 Capture requirements of new control system.
- 2.2.2 Develop preliminary control system replacement options exploring design alternatives including retaining or replacing the hoist motors.
- 2.2.3 Develop preliminary options for removing as many hydraulic systems as practicable from the theatre.
- 2.2.4 Stage deliverables to include:
  - Preliminary definition of control system requirements.
  - Preliminary control system and prime mover topologies for hoists.
  - Preliminary strategy and options for reducing the amount of hydraulic equipment.
  - Updated rigging and stage machinery load information for structural coordination.
  - Updated mechanical and electrical design criteria and estimates of electrical and heat loads for stage engineering equipment.

### 2.3 Cost Planning and Control

- 2.3.1 Stage deliverables to include:
  - Preliminary stage engineering equipment cost estimates for each option.

## 3. Concept Design

### 3.1 Client Interface and Processes

- 3.1.1 Meet with the Employer, other design team members and user groups as required to review the status of the machinery upgrade and control replacement works.

### 3.2 Design and Documentation

- 3.2.1 Incorporate any review comments into design development deliverables for coordination and cost analysis.
- 3.2.2 Stage deliverables to include:
  - Concept design for new control system including layouts of new equipment locations and GA drawings of any mechanical changes to hoists and lifts.
  - Concept design for all proposed mechanical changes to eradicate hydraulic systems including GA drawings and revised electrical requirements.
  - Outline specifications including control system requirements.

### 3.3 Cost Planning and Control

3.3.1 Stage deliverables to include:

- Stage engineering equipment cost estimate

## 4. Developed Design – Technical Design

### 4.1 Client Interface and Processes

4.1.1 Meet with the Employer, other design team members and user groups as required to review the status of the machinery upgrade and control replacement works.

### 4.2 Design and Documentation

4.2.1 Incorporate any review comments into documentation for the tender and procurement of the machinery upgrade and control replacement works.

4.2.2 Stage deliverables to include:

- Layouts showing equipment locations.
- GA drawings showing any modifications to equipment.
- Full Employer's Requirements with Pricing Schedule.

## 4.3 Cost Planning and Control

### 4.3.1 Stage deliverable to include:

- Stage engineering equipment pre-tender cost estimate.

## 4.4 Procurement

4.4.1 Assist all relevant parties in pre-qualifying interested stage engineering equipment bidders, as required.

4.4.2 Attend pre-bid conferences as required.

4.4.3 Assist in the receipt and evaluation of bids.

4.4.4 Review and coordinate stage engineering equipment addenda and clarifications during the bid process.

# 5. Construction

## 5.1 Contract Administration

5.1.1 Review and stamp for approval submittals for the systems the theatre engineering consultant specifies.

5.1.2 Assist the Client in response to Contractor Requests for Information and the issuance of Site Instructions, scope changes or other Client-initiated changes.

5.1.3 Visit the site as required to answer field questions.

5.2 Attend Factory Acceptance Tests (FATs) and any on-site early integration testing as called for in the specifications.

# 6. Handover and Close Out

6.1 Monitor on site the contractor's system commissioning period.

6.2 Visit the site to assist the Employer in acceptance testing and to inspect the completed project.

6.3 Prepare a list of any defects and advise on the issuing of Practical Completion.

6.4 Assist the Employer in follow-up acceptance testing to clear the list of outstanding defects. Maintain the list of outstanding defects throughout the defects liability period.

6.5 Attend site at the end of the defects liability period to witness that all defects have been resolved.