



## **Mechanical & Electrical Engineer**

### **Mechanical & Electrical Engineer's Brief and specification for Trowbridge Museum's Expansion Project**

#### **Trowbridge Museum**

Trowbridge Museum is an Accredited museum. Its collections tell the lengthy, rich and varied story of this Magna Carta Baron town and its deeply rooted historic association with West of England woollen cloth production.

Displays incorporate rare textile machinery including a Spinning Jenny, one of only five left worldwide. Other displays encompass a variety of different mediums, objects and artefacts to reflect and interpret the social impact the industry had upon the town's development and its people.

Trowbridge Museum has been celebrating this rich heritage from within the last working woollen cloth mill, a Grade II listed building since 1990.

For the elimination of doubt, the client is Trowbridge Town Council. Trowbridge Town Council has a 25 year lease on the Museum from Zurich Assurance. Zurich Assurance own The Shires shopping centre within which the Trowbridge Museum is located.

#### **Project Summary**

Trowbridge Museum has secured an HLF stage 2 pass and has obtained planning and listed building consent and is now ready to commence the Delivery Phase to conserve, expand and develop Trowbridge Museum by:

- Repairing and reinsulating and recovering the roofs. Brickwork repairs and extensive repairing or replacement of windows and rooflight.
- Enhancing the original Home Mill building and therefore the Museum entrance within the Shires Shopping Centre
- Improving accessibility to all floors of the Museum by installing a new lift, lift shaft and access bridges that are DDA compatible
- Enhancing interpretation, displays, navigation and showcasing unique textile machinery on the existing floor of the Museum
- Creating a Library and Research facility on the existing floor
- Creating an archaeological store on the existing floor
- Enhancing retail space and creating an area for refreshments
- Expanding into the floor above the existing Museum to exploit the original factory settings of the Mill
- Exploiting the upper floor's natural light and the views of the historic townscape and referencing the textile related architecture through the original factory windows
- Creating purpose built Learning and Outreach space on the upper floor
- Developing meeting and room hire facilities on the upper floor
- Developing enhanced temporary exhibition space on the upper floor
- Conservation/ repairs to the existing brick/ concrete and steel structure
- Fire protection of the existing structure



## Mechanical & Electrical Engineer

The total Delivery budget is in the region of £2,433,400, of this £260,140 encompasses repairs, £861,520 covers the conversion costs and the remainder incorporates interpretation and exhibition costs, the movement and conservation of machinery, the relocation, storage and conservation of the collection, digital outputs, activity costs, retail set costs, marketing etc. The construction budget is therefore approximately £1,122,000 excluding fees, inflation, contingency or VAT.

### Summary of responsibilities

To work effectively with the Museum Curator, Town Clerk, Project Manager, Project Architect, Structural Engineer, Quantity Surveyor and the Design and Interpretation Consultant to deliver mechanical & electrical engineering services during the Delivery Phase to ensure that Trowbridge Museum's expansion is delivered to the appropriate quality standards on time and on budget.

### Scope of work

SERVICES ENGINEER – SCHEDULE OF DUTIES		
	AT ALL STAGES	Services applicable to all stages of the commission
	<b>Principal Role</b>	<ol style="list-style-type: none"> <li>1 Fully design and document all building services systems including;               <ol style="list-style-type: none"> <li>a. input to cost plan</li> <li>b. advising on quality control and adherence to performance requirements during contract.</li> </ol> </li> <li>2 For the purposes of this document the shaded areas are used as a generic description of the RIBA stage and shall not be construed as specified duties under this appointment.</li> <li>3 Attend meetings and workshops called by client / PM to progress any aspect of the commission – on generally a monthly basis.</li> </ol>
	<b>Client Interface</b>	<ol style="list-style-type: none"> <li>4 Provide information as requested by the client to the client and/or any other participant</li> <li>5 Initiate and maintain liaison in order that the client is kept fully informed on the progress of the commission</li> <li>6 Progress the design and provide sufficient detail to obtain the appropriate approvals in accordance with the client's approvals processes</li> <li>7 Participate in the carrying out of independent audits including those in relation to CDM Regulations</li> </ol>
	<b>Participants</b>	<ol style="list-style-type: none"> <li>8 Advise on the need for and scope of services of other consultants that may be required</li> <li>9 Be aware of the work which other participants are carrying out and advise on any apparent errors and omissions</li> </ol>



## Mechanical & Electrical Engineer

		10 Co-ordinate with other participants in order to produce a fully integrated design
	<b>Processes</b>	<p>11 Provide a management plan indicating the structure of the Building Services Engineer's project team and resources to be committed at each stage</p> <p>12 Participate in value management/engineering exercises as the design</p> <p>13 Assist in preparation of a register of risks formulating and reviewing strategies for minimising the same</p> <p>14 Assist in the preparation and updating of overall project programmes showing all significant activities and events</p> <p>15 Implement and adhere to the requirements of any change control procedure developed for the project</p> <p>16 Adhere to the requirements of the project execution plan</p> <p>17 Execute services in accordance with agreed project programmes</p> <p>18 Obtain information on and become familiar with any client procedures and standards applicable to this commission and adhere to these in carrying out any services</p> <p>19 Seek out relevant client departments/ individuals and liaise/obtain instructions prior to any contact with external bodies</p> <p>20 Participate in the implementation of client performance testing initiatives and procedures e.g. key performance indicators</p> <p>21 Provide relevant information for incorporation in the pre-construction plan and health and safety file</p> <p>22 Provide monthly progress reports to the client and PM</p>
	<b>Design Services</b>	<p>23 Provide services in order to satisfy the needs of occupants with respect to environmental conditions, comply with legislation, ensure compliance with documentation while optimising operational, construction and environmental costs</p> <p>24 Provide design services in respect of but not limited to the following items of work;</p> <p>a) All services associated with the new and refurbishment works associated with the Museum project including: Trenches / pipeways, soil and waste (above ground), hot and cold water, natural gas, boilers, heating, compressed air, VRV / VRF systems, ventilation, BMS controls, electrical generation, HV &amp; LV services, general lighting, specialist Museum lighting, general power, emergency lighting, data and telecoms containment and power, CCTV, access control and intruder alarm power and containment, fire detection and alarms, earthing, lightning protection and lifts, audio visual installations, audio systems relating to museum display, induction loop systems and builder's work.</p>



## Mechanical & Electrical Engineer

		<ul style="list-style-type: none"> <li>b) Design and manage the interface between the Museum Interpretation Designer's fit out package and the main construction works</li> <li>c) External lighting to pavements, car park and highway</li> <li>d) Renewable systems</li> <li>e) Sprinklers (if required)</li> </ul> <p>25 New incoming utilities and diversions of existing utilities</p> <p>26 Building Regulations package information inclusive of SBEM, BRUKL and EPC documentation as required.</p>
	<b>Clarifications</b>	<p>27 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</p> <p>28 For the purposes of this document, the term client refers to Trowbridge Town Council.</p>
<b>STAGE 3 – FINAL PROPOSALS</b>		
<b>E</b>	<b>FINAL PROPOSALS</b>	<p>Preparation of final proposals for the project sufficient for co-ordination of all components and elements of the project.</p> <p>Preparation of design information in sufficient detail to enable a tender or tenders to be obtained.</p>
	<b>Final Proposals</b>	<ul style="list-style-type: none"> <li>1. Monitor, by such means as the Consultant shall consider necessary, the performance of Contractors and Sub-Contractors in the development of the system designs.</li> <li>2. Seek through the Lead Designer the Client's consent to proceed to the Production Information Stage.</li> </ul>
	<b>Client Interface and Processes</b>	<ul style="list-style-type: none"> <li>3. Assist in implementing the project execution plan</li> <li>4. Assist in finalising draft facilities management plan</li> <li>5. Prepare and participate in a Stage E final proposals presentation to the Client coordinated with other designers including the Museum Gallery Designer. Presentation to be provided in hard and electronic format presented to the Client drawing attention to any significant differences from the previously agreed requirements for the works.</li> </ul>
	<b>Full Design and Documentation</b>	<ul style="list-style-type: none"> <li>6. Develop building services full design from approved scheme design in accordance with the clients brief and cost estimate for incorporation into the employer's requirements</li> <li>7. Assist in agreeing the form and content of the employer's requirements and contractor's proposals</li> <li>8. Provide builders work information sufficient to allow development of the structural, architectural and Museum fit out design and to inform the cost plan.</li> </ul>



## Mechanical & Electrical Engineer

	<ol style="list-style-type: none"> <li>9. Invite quotations for equipment, report upon offers received and select equipment</li> <li>10. Integrate into the design of the Works any requirements of specialist sub-consultants, Contractors or Sub-Contractors.</li> <li>11. Provide information, where appropriate, including               <ol style="list-style-type: none"> <li>a specifications of materials and workmanship</li> <li>b performance requirements for all systems</li> <li>c infrastructure interface requirements</li> <li>d energy policy</li> <li>e phasing requirements/access arrangements</li> </ol> </li> <li>12. Co-ordinate production of information with other participants including IT/CAD protocols and drawing formats</li> <li>13. Prepare comprehensive description of fire detection, alarm and fire fighting systems and provide input to fire safety strategy document. This is to be fully coordinated with the Clients and Shires' existing infrastructure and BMS system linked to other buildings as required.</li> <li>14. Assist in preparing strategy for testing, commissioning handover including securing maintenance manuals from the contractor prior to practical completion</li> <li>15. Provide design services in respect of but not limited to the following items of work;               <ol style="list-style-type: none"> <li>a) All services associated with the new and the refurbishment works affecting the Museum including: Trenches / pipeways, soil and waste (above ground), hot and cold water, natural gas, boilers, heating, compressed air, VRV / VRF systems, ventilation, BMS controls, electrical generation, HV &amp; LV services, general lighting, specialist lighting, general power, emergency lighting, data and telecoms containment and power, CCTV, access control and intruder alarm power and containment, fire detection and alarms, earthing, lightning protection and lifts, audio visual installations, audio systems relating to museum display, induction loop systems and builder's work.</li> <li>f) External lighting</li> <li>b) Renewable systems</li> </ol> </li> <li>17. Assess and confirm existing capacities and the need for new incoming utilities and diversions of existing utilities</li> <li>18. Thermal and solar gain modelling</li> <li>19. Building Regulations package information, inclusive of SBEM, BRUKL and EPC documentation as required.</li> </ol>
<b>Cost Planning and Control</b>	<ol style="list-style-type: none"> <li>20. Provide building services costs and other information required for the development of estimates of construction and life cycle costs</li> </ol>



## Mechanical & Electrical Engineer

		21. Provide information required by the quantity surveyor for the preparation of comprehensive financial statements and fee entitlements
	<b>External Bodies</b>	22. Submit drawings for approval of; funders, Neighbours, landlords, tenants or others as requested by the client
<b>STAGE 4 – PRODUCTION</b>		
<b>F</b>	<b>PRODUCTION INFORMATION</b>	F1 Preparation of production information in sufficient detail to enable trade tenders to be obtained. F2 Preparation of further production information required under the building contract.
	Production Information	<ol style="list-style-type: none"> <li>1. After receiving the Client's consent to proceed to the Production Information Stage:</li> <li>2. Prepare detailed design drawings for the Works.</li> <li>3. Prepare such calculations and details relating to the works as may be required for submission to any appropriate statutory authority including the coordination of such information for the Works submitted by any other consultants, specialist suppliers as is available which may need to be included in such submissions.</li> <li>4. Prepare specification for the works.</li> <li>5. Advise the Lead Designer on the need for any special conditions of contract relevant to the Works or on appropriate forms of Contract and invitations to tender for the Works.</li> <li>6. Seek through the Lead Designer the Client's consent to proceed to the Mobilisation Construction and completion Stage.</li> </ol>
<b>STAGE 5 - PROCUREMENT</b>		
<b>G</b>	<b>TENDER DOCUMENTATION</b>	Preparation and collation of tender documentation in sufficient detail to enable a tender or tenders to be obtained for the construction of the project.
<b>H</b>	<b>TENDER ACTION</b>	Identification and evaluation of potential contractors and/or specialists for the construction of the project. Obtaining and appraising tenders and submission of recommendations to the client
	<b>Procurement</b>	<ol style="list-style-type: none"> <li>1. Assist in identifying and selecting site staff including specialist clerks of works (if employed)</li> <li>2. Assist in preparing the conditions of contract and preliminaries and in assembling the tender documentation</li> <li>3. Assist in preparing a list of tenderers and participate in prequalification/1<sup>st</sup> and 2<sup>nd</sup> stage tender interviews</li> <li>4. Participate in mid bid interviews</li> <li>5. Assist in reviewing and reporting on tenderer's design proposals, programmes and method statements and advise on acceptability</li> </ol>





## Mechanical & Electrical Engineer

		6. Assist in negotiating with a tenderer 7. Revise production information to adjust tender sum or to obtain new tenders within the project budget
<b>STAGE 6 – CONSTRUCTION &amp; OCCUPATION</b>		
J	MOBILISATION	Letting the building contract, appointing the contractor. Issuing of production information to the contractor. Arranging site handover to the contractor.
K	CONSTRUCTION TO PRACTICAL COMPLETION	Administration of the building contract up to and including practical completion. Provision to the contractor of further information as and when reasonably required.
L	AFTER PRACTICAL COMPLETION	Administration of the building contract after practical completion. Making final inspections and settling the final account.
	<b>Mobilisation</b>	1. After receiving the Client's consent to proceed to the Mobilisation, Construction and Completion Stage. 2. Advise the Client on the appointment and duties of Site Staff and where they have been appointed instruct Site Staff in accordance with B4. (Refer to ACE Agreement). 3. Examine Contractors and Sub-Contractors proposals for the execution of the Works insofar as these reflect upon the design intent. Comment to the Other Consultants as may be necessary. 4. Make such visits to the site as the Consultant shall consider necessary to satisfy himself generally as to the execution of the Works insofar as it reflects upon the design intent. Two visits per month during the construction period, one of which is in conjunction with the monthly progress meeting. 5. Examine the mechanical, electrical and other building services, installations, plant and equipment comprising the Works by Contractors and Sub-Contractors, the result of their commissioning and the documentary records thereof. Report to the Client. 6. Inspect the Works on completion and in conjunction with any Site Staff, record any defects. 7. Perform work or advise the Client in connection with any claim or matter where such claim or matter arises out of any contract for the execution of the Works and is referred for the first time to the Consultant provided that this service shall not extend to the detailed examination of any financial claim nor advising the Client following the taking of any step in or towards any resolution of any dispute or difference or towards any adjudication, arbitration or litigation in connection with the Works.
	<b>Design and Documentation</b>	8. Receive design, fabrication and installation drawings from contractors and check for adequacy, accuracy good



## Mechanical & Electrical Engineer

		<p>engineering practice and adherence to the design concept and authorise for construction where applicable</p> <p>9. Provide such further information as is reasonably necessary, in the opinion of the Consultant, to enable Contractors and/or Sub Contractors to prepare installation drawings</p> <p>10. Receive copies of record drawings, operating instructions and maintenance manuals prepared by the main contractor or any nominated subcontractors/suppliers and check for adequacy and adherence to contract requirements</p> <p>11. Perform any services which the Consultant may be so required to do under any contract for the execution of the Works including where appropriate the witnessing of any specified tests.</p>
	<b>Contract Administration</b>	<p>12. Advise the Contract Administrator of any draft instructions required to achieve satisfactory completion of the work</p> <p>13. Attend meetings with the contractor at regular intervals (minimum monthly or more regularly as required) to review progress and identify information requirements</p> <p>14. Visit the site at minimum two visits per month during the construction period, one of which is in conjunction with the monthly progress meeting. to inspect the progress and quality of the works</p> <p>15. Verify whether construction activities and completed work is in accordance with the requirements of legislation, contract documents, client requirements and other good practice guidance and report any discrepancies</p> <p>16. Inspect, witness and comment on the acceptance all building services engineering systems</p> <p>17. Assist in evaluating claims for delay and additional costs made by the contractor or any nominated subcontractors/suppliers</p> <p>18. Assist in monitoring progress of the works against the contractor's programme</p> <p>19. Prepare snagging lists in order that the contractor may achieve timely completion</p> <p>20. Assist in documenting all items of work incomplete at practical completion</p> <p>21. Advise on the issue of certificates of sectional or practical completion in accordance with any contract requirements relating to the submission of operation and maintenance manuals</p> <p>22. Comment to the Lead Designer and QS on the value of any variations to the works for which any Contractors or Sub Contractors may submit.</p>
	<b>After practical completion</b>	<p>23. Assist in post completion review of project to enable future improvements to design, procurement and administration</p>





## Mechanical & Electrical Engineer

		24. Visit site to monitor satisfactory completion of outstanding items and/or investigate defects notified by the client 25. Inspect, witness and comment on acceptance the final regulation of engineering systems required due to progressive loading of the building and seasonal
	<b>Additional / Other Services</b>	
	yes	1. Above ground drainage
	yes	2. Acoustical design and treatment in connection with the Engineering Services only, in particular external plant.
	No	3. Air compressors and compressed air services
	Yes	4. Air conditioning and M&E ventilation services
	Yes	5. Boiler plants and auxillaries
	Yes	6. Calorifier Plants
	No	7. Power and containment for clock installations
	Yes	8. Incoming cold water services and distribution
	Yes	9. Low voltage electrical distribution services
	Yes	10. Electricity, lighting and power installations, including luminaires and specialist lighting
	Yes	11. Electrical Sub-stations
	Yes	12. Fire detection and alarm services
	Yes	13. Natural gas incoming supply and distribution
	Yes	14. Heating installation
	Yes	15. Hot water services
	Yes	16. Incoming electrical supplies
	yes	17. Lightning protection services
	yes	18. Lifts
	yes	19. Power and containment for Public Address systems



## Mechanical & Electrical Engineer

	yes	20. Power and containment for Radio and Television systems
	yes	21. External and Street lighting
	yes	22. Power and containment for Telephone Equipment and distribution services
	yes	23. Thermal insulation
	no	24. Steam services and condensate return services
	yes	25. Vibration control in connection with engineering services
	yes	26. Water treatment and filtration for heating and HW system
	No	27. Power and containment for food preparation and catering
	yes	28. Wet and dry risers for fire fighting
	yes	29. Power and containment for security systems
	yes	30. Power and containment for Audio Visual systems
	yes	31. Performance specification of Fire Suppression systems
	yes	32. Energy Performance Certification
	No	33. Part L2A Criteria 3 Overheating and 1 Carbon
	Yes	34. Energy Assessment
	No	35. Renewables Study
	Yes	36. Fire strategy services
	No	37. Preparation, or assistance in the preparation, of an Environmental impact assessment in respect of the Works.
	yes	39. Liaison with systems specialists for specialist power systems

General Issues	
	Professional Indemnity Insurance of £5m will be required on an each and every claim basis.
	All appointments will be executed as a deed.



## **Mechanical & Electrical Engineer**

	Collateral warranties will be required in a form to be agreed including two assignments.
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### **Project constraints:**

- The Mill where the Museum is housed is Grade II listed

### **Ownership**

- The building is owned by Zurich Assurance (Threadneedle) but the Town Council has the surety of a 25 year lease with no break clauses
- The building is managed by Workman. The Centre Manager is Sarah-Louise Moore.

### **Access**

- The Museum is within the Shires Shopping Centre. Physical access to the Building is via an internal staircase at the rear of the building. There is on-site parking for large vehicles at the rear of the Shires Shopping Centre with Goods Lift access to the ground floor of the Museum.

### **Experience**

- A proven track record of successfully designing HLF capital projects essential
- An appreciation and understanding of the issues that relate to works on Listed Buildings
- Evidence of working on Listed Buildings with Conservation Plans
- Up to date knowledge of the latest Health and Safety and Environmental standards
- A familiarity with Local Authorities

### **Application Process**

Applicants will be asked to submit a lump sum fixed price proposal. The proposal is to include all expenses for the work as outlined in the brief and it is to be completed over the lifetime of the Project. The proposal should demonstrate the Consultant's appreciation and understanding of the M&E Engineer's role and give an outline of how they intend to approach the tasks in methodology and timescale.

Their proposal should include:

- Details of relevant experience of similar projects – no more than 4 pages of A4 paper
- Details of methodology and approach to the Project brief – no more than 3 pages of A4 paper
- Details of the breakdown of their fee, inclusive of all expenses
- Details of two Referees and two reference websites that showcase experience of involvement with relevant projects

### **Method of Scoring Tender Returns**

In order to identify the offer that provides the Most Economically Advantageous Tender, tenders will be marked on a price/ quality basis. 40% of the score will be allocated to Price and 60% allocated to Quality.

Each response to the quality questions will be scored between 0 to 5, where:-

- 5 Meets and exceeds the standards specified, Excellent
- 4 Meets the standard specified, Good
- 3 Meets the standard in most aspects, fails in some, Satisfactory
- 2 Fails standard in most aspects, meets it in some, Unsatisfactory



## **Mechanical & Electrical Engineer**

- 1 Significantly fails to meet the standard, Poor
- 0 Completely fails to meet the standard. Not to be considered

For the quality, the following weightings will be applied:

1. Details of relevant experience of similar projects – (25% weighting)
2. Details of methodology and approach to the Project brief – (25% weighting)
3. Details of two Referees and two reference websites that showcase experience of involvement with relevant projects – (10% weighting)

The weighting multiplied by the score (0 to 5) will provide the weighted score. The Employer reserves the right to not consider further a tender where a quality score of less than 3 is given for an answer.

For the priced element, the weighting will be 40%

4. Details of the breakdown of their fee, inclusive of all expenses

Scores for the priced element will be based on the average fee returned. For each percentage (or part percentage) point that a tender offer is below the average fee, the score will increase accordingly. For each percentage (or part percentage) point that a tender offer is above the average fee, the score will reduce accordingly. For example, an offer 2.5% below the average fee offer will score 42.5%.

**Closing date for applications:** 1pm Friday 29<sup>th</sup> June 2018

**Submission of applications:** Electronically to [clare.lyall@trowbridge.gov.uk](mailto:clare.lyall@trowbridge.gov.uk)

**Contract commences:** TBC