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# Visual & Performance Specifications

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**National Museum, Oslo**

To be read in conjunction with the Technical Intent Drawings document by Endpoint:

9379\_NMN\_Wayfinding\_Signage\_TD

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Communication  
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## CONTENTS

1.0	General Statement.....	3
2.0	Codes & Regulations .....	3
3.0	Responsibility For Design .....	3
4.0	Visual & Performance Specification.....	4
5.0	Regulations & Compliance.....	5
6.0	Defects Liability Period 'Warranty' & Lifespan .....	6
7.0	General Standard of Workmanship.....	6
8.0	General Construction & Finishes .....	6
9.0	Paintwork & Graphics .....	7
10.0	Metal coatings.....	7
11.0	Stainless Steel .....	8
12.0	Galvanised Steel.....	8
13.0	Fixings.....	8
14.0	Maintenance .....	9
15.0	Artwork.....	9
16.0	Illumination.....	9
17.0	Drainage & Ventilation .....	10
18.0	Infestation .....	10
19.0	Inspection.....	10
20.0	Alternate Proposals.....	10
21.0	O&M Manuals .....	10
22.0	Sign Specification, Nominated Materials & OEM Suppliers.....	<b>Error! Bookmark not defined.</b>



## 1.0 GENERAL STATEMENT

This specification shall be read in conjunction with the complete tender package to ensure that all relevant and related matters are given due consideration during all processes from the preparation of tender documentation through to the end of the Defects Liability Period.

The Contractor will be a contractor and all contract administration and liaison will be through Endpoint. Any non-compliance with this requirement renders the tender void and all additional work, costs or claims resulting from non-compliance on the Contractor's part shall be borne solely by the Contractor.

The tender is to include everything necessary for a complete weatherproof installation including the preparation of surfaces and structures to receive signs, and all suitable electrical feeds and illumination timers/controllers. If any additional builders work or item is required by the Contractor to comply with the drawings and specification or to complete the installation, all details shall be highlighted and included at the time of tender. This specification is to be read in conjunction with the schemes and drawings for National Museum, Oslo.

All external signs specified within this package are subject to planning permission consent for the display of signage from the appropriate local authority, the submission and management of which is being undertaken by Statsbygg. The Contractor is obliged to satisfy any conditions applying to the consents which will be issued post tender (i.e. provide information relating to structural information and lighting outputs where required).

The performance of all materials, finishes and lighting systems needs to be appropriate for both internal and external environments.

## 2.0 CODES & REGULATIONS

The whole of the materials and workmanship as described in the specification are to be new, as specified and the best of their respective kinds. All materials and workmanship shall comply with the relevant codes and regulations stated herein.

## 3.0 RESPONSIBILITY FOR DESIGN

### The Contractor shall:

- Undertake responsibility for the designing, specifying, detailing and fixing of all individual sign components, stating the sizes, materials, positions and fixing of all members required to ensure compliance with this specification. Obtain suitable wiring and electrical detailing plus structural engineering calculations by competent external third party in support of proposed sign designs and make available to client upon request.
- Determine the magnitude of any wind loading on the components and determine the dimensions, locations or method of suspension and fixing to the structure to ensure all aspects meet current standards and Building Regulation requirements.
- Check that all elements of the support structure will be capable of resisting the forces imposed upon them by the sign elements providing that the fixings/support systems are adequately designed and correctly fixed.
- Determine the condition of all surfaces to receive signs and ensure that these are appropriate for the purpose and where not, consult with Endpoint/client to undertake



any preparatory work, cleaning or sub framing to achieve a satisfactory surface prior to installation.

- Provide full details at tender of materials to be utilised where these are different from the drawings. Seek written approval from Endpoint/client for any alterations or variation to agreed design details shown on drawings prior to fabrication.
- Provide details for Endpoint/client approval before the preparation of full working drawings prior to fabrication.
- Provide a schedule of associated builders works and/or electrical requirements to be undertaken by the contractor in accordance with site specific requirements.
- Ensure that the design for the signs as a whole and their connection to, are compatible with the supporting structure and adjacent elements of the building.
- Conform to drawings and specification unless otherwise agreed with Endpoint/client
- Check all dimensions given on all drawings, and obtain relevant other trade drawings relating to sign locations. Check all dimensions on site prior to fabrication.
- Provide all artwork for the production of signs in accordance with Endpoint/client drawings unless specifically requested otherwise by notes on sign drawings.
- Ensure all fixings for assemblies are secret fixings unless otherwise stated on drawings.
- Make site visits and surveys as deemed necessary by the Contractor to be fully familiarised with the scheme and extent of works.
- Provide all necessary plant and access equipment in order to carry out works as agreed with Endpoint/client.

**Endpoint shall:**

- Prepare schematic design drawings of all signs, stating preferred materials and design intent details.

#### **4.0 VISUAL & PERFORMANCE SPECIFICATION**

##### **General requirements & conditions**

- 4.1 These are the 'Visual & Performance Specifications' (the 'Specifications') for National Museum, Oslo external & internal signs (the 'Signs').
- 4.2 These Specifications must be read in conjunction with the Technical Intent Drawings (the 'Drawings').
- 4.3 The Specifications and Drawings together form the Visual & Performance Package.
- 4.4 The Visual & Performance Package must be adhered to as a strict guide for the purposes of tender, Manufacture and Installation so that the finished Sign is as intended.
- 4.5 The Visual & Performance Package should be complied with only insofar as they do not conflict with any statutory or regulatory requirements. In the event of any such conflict, the Contractor must immediately notify the client team.
- 4.6 It is the responsibility of the Contractor to notify the client team of any guidance contained within the Visual & Performance Package, with which they cannot comply. Notification must be made, in writing, at time of tender submission.
- 4.7 It is the responsibility of the Contractor to use materials, components and construction methods such that the finished Sign is ultimately safe to all parties in any predictable situation for the lifetime of the Sign.
- 4.8 All Signs are to be manufactured and installed suitably for the application for which they are intended using best practice in terms of design, materials, construction and installation.
- 4.9 Any deviance to the Visual & Performance Package will only be considered during the post contract detail development phase of the project (i.e. prior to actual production) and will only be included once approval is granted in writing by the client team.



4.10 No additional costs will be considered to meet the requirements stated in the Visual & Performance package, as provided at time of tender submission, unless agreed specifically in writing by the client team.

4.11 The contractor(s) will be responsible for:

- Obtaining all necessary site details, including access information, restrictions and installation dates
- Providing risk assessments as required by client
- Meeting client's health and safety requirements
- Checking 'as built' dimensions prior to installation
- Providing any information requested by the client's appointed sign consultant, and any other consultant
- Ensuring that the installed signs meet all of the requirements as described in the specification and conform to all relevant statutory and specific local requirements
- The structural design and supporting structural calculations of product manufacture, steelwork, holding down bolts and foundations

4.12 The contractor shall be responsible for ensuring that all items are packaged and stored in accordance with any special requirements for particular materials. The contractor will be responsible for the general packaging of all items such that the items will be adequately protected against damage in both storage and transit.

4.13 On completion of installation, the contractor will be responsible for taking a photographic record of the site and of all products installed. The photograph must be submitted as a JPEG image at a minimum 1600 x 1200 resolution. As a minimum requirement, photographs are to consist of a face on view of each building elevation, a close-up of each installed product and close-ups of any making good carried out.

4.14 The contractor will be responsible for the design, sourcing and manufacture of tools, moulds, patterns and assembly jigs, and shall be responsible for their accuracy, quality and safe storage. The contractor shall be responsible for and bear all costs of the maintenance and eventual replacement of tools, moulds, patterns and assembly jigs.

## **5.0 REGULATIONS & COMPLIANCE**

5.1 In undertaking the detail design, manufacture and installation of the Signs, the Contractor is to comply with all current and applicable local statutory and legislative requirements.

5.2 The Signs are to be designed manufactured and installed in accordance with Norwegian standards to be specified by Statsbygg.

5.3 The Contractor is to ensure that all electrical work is done by qualified electrical engineers and Norwegian standards, any referred standards therein and any other applicable electrical statutory or legislative requirements.

5.4 The Contractor is to check all existing electrical feeds and certify suitability for use, and provide new electrical feeds, including all relevant illumination controllers and timeclocks for the correct operation of the signage where required. In the case of LED or other low voltage systems, all transformers/drivers must be located in secure (lockable) watertight, easily accessible (requiring no access equipment) housing.

5.5 Signs and work carried out on sign installations shall additionally comply with the following legislation where relevant:

- The Low Voltage Directive (LVD) 2014/35/EU
- The Electromagnetic Compatibility Directive (EMC) 2014/30/EU
- The Health & Safety at Work Act 1974 and the Electricity at Work Regulations 1989
- Signs which may be described, as electrical products (i.e. small portable signs) shall be CE marked indicating compliance with the LVD and EMC. The contractor must ensure that no aspects of the technical development and manufacture of the signs (materials, finishes, manufacturing details etc.) prevent the signs from being fully compliant with the Equality Act 2010.
- The Construction (Design and Management Regulations) 2015



## **6.0 DEFECTS LIABILITY PERIOD 'WARRANTY' & LIFESPAN**

- 6.1 The defects liability period is one year\* post completion in which all snagging and latent defects are to be made good. (\*TBC by Contractor).
- 6.2 The design life for the signs is a minimum 5 years. All materials, specification, manufacture and installation shall meet this requirement. No physical or structural deterioration of the Signs should occur within this period.
- 6.3 Particular attention should be paid to ensuring that the finish specifications meet these performance specifications. A warranty of 5 years is required on all paint finishes and coatings.
- 6.4 All products and materials described in this specification, with the exception of electrical components, which will require a 1-year all-cost warranty, shall be covered by a full performance, all-cost warranty (parts, access and labour) for a period of 3 years and their structural integrity shall be warranted for a period of 10 years. Where the original material supplier's warranty exceeds these periods then the material supplier's warranty shall apply. The warranty period shall commence from the date of completion.

## **7.0 GENERAL STANDARD OF WORKMANSHIP**

- 7.1 A very high quality of workmanship shall be provided to ensure that the final appearance of the Signs is of a uniform and high quality.

## **8.0 GENERAL CONSTRUCTION & FINISHES**

- 8.1 No visible fixings are allowable unless approved or specified by the client team in cases where the contractor can prove it is not possible to achieve. See 'Fixings' section of this document for more details.
- 8.2 All welds in visible locations to be seamless
- 8.3 All finishes shall be stable, fade resistant, and not affected by ultraviolet light within the design life of the products
- 8.4 All finishes to be durable and fit for purpose. The Signs should be detailed and manufactured to be inherently vandal-resistant and resist as far as is practicably possible all common or anticipated methods of vandalism. Any Signs or Sign components which are anticipated to receive high levels of vandalism must be designed with a capability for easy replacement of the Sign or associated Sign components.
- 8.5 All finishes shall be durable, of uniform texture, colour and gloss/matt level and be resilient to all known and/or specified environmental and pollution effects.
- 8.6 All visible regions to be free of visible scratches, distortions, blemishes, dirt, grease and finger marks upon completion of installation or removal of protective wrapping and packaging (whichever is the latter) when viewed from a distance of 1 metre for wall and ground mounted signs and 3 metres for architectural letters.
- 8.7 No blisters, scratches, flow lines, streaks, or other visual defects shall be allowed
- 8.8 Any Signs or Sign components damaged during the process of installation to be removed and replaced, with the prior agreement of the client team.
- 8.9 The Sign faces and all panels to be completely flat and rigid in all predictable situations. Panels must not deflect or distort under wind loading or physical pressure. All visible flat surfaces to be of one panel with no breaks or seams unless requested or if standard sheet sizes demand otherwise.
- 8.10 All panels and surfaces to be designed, manufactured and installed to be horizontally and vertically true unless stated otherwise. The tolerance for such requirement at installation to be 1mm over any given length.



- 8.11 Ensure correct and accurate alignment of all panels when installed onto the Signs – within the stated permissible tolerances (as specified in the drawings). All joints must be even and consistent with no visible gaps (i.e. no views through to sign internals or light sources).
- 8.12 Any internal structure or framing must not be visible or have any visual external impact. No light leakage through any joints is permissible.
- 8.13 Once installed, all parts of the Signs must be securely fixed with no movement or rattles and in such a way as to prevent removal by unauthorised persons.
- 8.14 No hand gaps or finger traps to be present in the Signs.
- 8.15 All shadow gaps must be of constant and even thickness and depth, as to meet the visual requirements as specified.
- 8.16 All materials and finishes to be demonstrated to be of acceptable quality.
- 8.17 Framework, where exposed, to be finished to the same high quality as other parts of the Sign.
- 8.18 Framework should be hidden as much as possible and must not interfere visually with the logo, graphics or illumination.

## **9.0 PAINTWORK & GRAPHICS**

- 9.1 All paintwork is to be even and consistent, with no holes, blemishes or damage.
- 9.2 Always use graffiti-resistant finishes where signs are accessible and ensure that any graphics applied to any paint finishes are similarly stable, of specified lifespan, and vandal and graffiti-resistant as agreed with the client team during development.
- 9.3 All paints must be precisely matched to the colour and finish benchmarks and control samples given for the appropriate lighting conditions.
- 9.4 Paint colour matches, gloss/matt levels and finishes must be consistent across all Signs.
- 9.5 All surfaces must be adequately prepared prior to application of paint in line with the paint manufacturer's guidelines.
- 9.6 Gloss/matt levels should be in line with the paint manufacturer's recommendations and control samples.
- 9.7 Any protective films or tapes used must be of a low-tack nature. All should be removable without the need for tools, solvents or cleaning solutions, without leaving any witness on visible surfaces.

## **10.0 METAL COATINGS**

- 10.1 Any coating used should be undertaken in line with the manufacturers guidelines and as a minimum to the relevant British Standards.
- 10.2 A minimum of 5 years guarantee is required for the coatings. Full copies of the manufacturers guarantees shall be provided prior to manufacture.
- 10.3 All coating is to be undertaken using materials and substrates suitable for the process and the intended application.
- 10.4 Colours shall be matched to the colours specified in the drawings.
- 10.5 Consistency and uniformity of colour, finish and coating thickness shall be such that no visible difference can be identified across the range of products on site. Any variation in the uniformity that may conflict with this requirement shall be identified and demonstrated at time of tender.



- 10.6 Where relevant coated components must be painted and hung in the same orientation to avoid differences in appearance.
- 10.7 No repair of damage is to be undertaken on site without prior agreement of the client team. Any repairs shall be to the same standard as the original finish, with no noticeable visual impact and shall carry the same guarantee as the original finish

### **11.0 STAINLESS STEEL**

- 11.1 All stainless steel to be grade 316. No other grade will be acceptable and proof of material specification may be required.
- 11.2 Finishes are to be as specified in the drawings, and to the standard required to meet the design life.

### **12.0 GALVANISED STEEL**

- 12.1 Galvanising, where used, shall be in accordance with BS EN ISO 1461 (BS 729) "Hot dip galvanized coatings on iron and steel articles - specifications and test methods" giving a minimum coating weight of 610g/sqm for steel of 5mm thick and over and 460 g/sqm for steel less than 5mm thick but not less than 2mm thick

### **13.0 FIXINGS**

- 13.1 Fixings shall be selected such that adequate protection against any corrosion likely to occur in their position of use is provided for the service life specified.
- 13.2 Unless otherwise specified or proven as impractical and agreed with the client team, fixings shall not be visible. Where fixings are visible these shall be located to minimise visual impact and match or suit the items being fixed or comply with the drawings.
- 13.3 All fixings used for maintenance and repair access must be hex-socket heads (at a size to be agreed) unless mechanical requirements dictate otherwise (in which case approval must be obtained) and unless these located so as to be easily accessible (in which case security fixings must be used).
- 13.4 Removable items that require access for maintenance or removal shall use fixings retained into the sign or panel. These fixings should not be of a self-tapping type, but should use appropriate threaded inserts, tapped metal or removable threaded parts such as nuts.
- 13.5 Rivets and any other non-removable fixings are not acceptable where removal or replacement of that fixing or associated Sign component is likely.
- 13.6 The method of fixing shall not damage anything being fixed or anything receiving fixings.
- 13.7 The Contractor will be responsible for the selection of fixings suitable for their intended purpose and being adequate to comply with the requirements stated in the specifications.
- All fixings shall be of adequate strength for their designed purpose and shall, unless specified otherwise, be manufactured from a corrosive resistant material. All fixings shall conform to all statutory requirements in respect of strength and type
  - Adequate measures shall be taken to prevent bi-metallic corrosion between dissimilar metals and to isolate aluminium components from cementitious surfaces
  - If any fixings are to be visible, then the Contractor is to notify the client team of the extent of the visual impact and obtain approval in writing
  - All fixings to remain secure
  - Any fixings subject to loosening due to movement/ vibration shall be provided with extra security by way of a mechanical locking method (e.g. locknuts) or appropriate engineers adhesives
  - All fixings to be fitted to an appropriate torque
- 13.8 Signs are to contain provision for removal from foundations (in the event of maintenance or replacement).





13.9 The top face of all Signs are to be the same high standard of finish as the other Sign faces, however fixings, where required, are preferred to be located on the non-visible under-side or top face.

#### **14.0 MAINTENANCE**

14.1 The Signs shall incorporate such features and provisions as necessary to allow full access to all parts by maintenance contractor's personnel as required for cleaning, inspection, maintenance and replacement of Sign components.

14.2 So far as is practically possible such access shall be made possible without involving the disproportionate dismantling of parts or making adjacent areas unavailable for use.

14.3 Panels must be easily replaceable in the event of damage.

14.4 The design of the signs must allow easy access for maintenance of internal components as appropriate. There should be minimal visible interference from such access features. The Contractor is to consult the client team for approval of the proposed methods of access prior to manufacture.

14.5 Signs to be accessible for maintenance or replacement only by use of appropriate tools.

#### **15.0 ARTWORK**

15.1 Always use the electronic logo artwork supplied and the specified fonts for printing, precision cutting, routing etc.

15.2 Artwork layouts must follow guidance as provided by the client team.

15.3 It is the Contractor's responsibility to produce production artwork for checking by the client team prior to production.

15.4 Any Signs containing artwork not specifically approved by the client team may require replacement at Contractor's cost.

#### **16.0 ILLUMINATION**

16.1 Any electrical supplies or wiring are to run internally within the Signs unless stated or agreed otherwise. Lighting components should be specified and laid out in accordance with the component suppliers best practice guidance and must be designed and located for ease of maintenance.

16.2 Illumination (where specified) to be consistent, with no hot or cold spots. No light leakage where not required.

16.3 All light fittings or modules are to be mechanically fixed to the mounting surface (adhesive alone is not acceptable) and any cables unsupported by other means must be clipped or bonded back to the mounting surface.

16.4 Contractor is responsible for fully designing, developing, testing & supplying of proper lighting equipment and all associated electrical feeds.

16.5 All illuminated Signs to be assembled and tested for compliance with the Visual & Performance Package and all statutory or legislative requirements prior to delivery on site.

16.6 All illumination may require review and approval by the client team prior to despatch from the factory.

16.7 Where the new sign can utilise the power supply of the existing sign, the contractor must ensure that the supply is suitable for the new sign and ensure all connections are consistent with relevant Norwegian Standards and codes of practice.



- 16.8 Where there is no power supply in the locality of the sign, the contractor will be required to install a fused spur from a distribution board to a suitable location for the sign. The contractor must agree the power required and cabling route with building management prior to installation.
- 16.9 If the supply to the existing sign is not controlled by the building management system, then a suitable timer complete with solar cell for low ambient light conditions will need to be installed to control the power supply to the signage. On/off times will be agreed with client and/or building management.

#### **17.0 DRAINAGE & VENTILATION**

- 17.1 Ensure all Signs are adequately vented and drained as required.
- 17.2 No water traps must be present.
- 17.3 Ensure no unfinished mild steel is used in the construction or finishing of the Signs.
- 17.4 No sign, component, fixing or part must be likely to rust whether internal or external.

#### **18.0 INFESTATION**

- 18.1 The Contractor must use its best endeavour to detail, manufacture and install the Sign package so that all Signs are protected against and do not contain or provide harbourage for infestation by vermin, insects or birds. Where there is any risk of infestation inherent in the design that compromises this the contractor should highlight this to the client team. Transparent plastic bird spikes should be installed as required.

#### **19.0 INSPECTION**

- 19.1 The client team are to be permitted to review all Signs during production and to inspect for quality of workmanship and quality control.
- 19.2 The client team may conduct a final Sign visual inspection of fully assembled and operational Signs prior to leaving the factory. This should be conducted well in advance of any installation date to enable any defects to be rectified without impact upon the installation date. The inspection and its outcome does not restrict the contractor's responsibility and/or liability in respect of their obligations under the contract.

#### **20.0 ALTERNATE PROPOSALS**

- 20.1 If the Contractor has a proposal to increase efficiency, performance or value, whilst adhering to the visual intent as stated, then these suggestions will be welcomed, with drawings, for discussion with and approval from the client team. All suggestions must however be provided in writing and written confirmation received from the client team. Any associated cost implications must receive written approval from the client team.
- 20.2 Any issues or non-compliance that may arise with the Visual & Performance Package must be discussed with the client team immediately and prior to the completion of work. Any proposals for deviation for the given Visual & Performance Package must be presented in drawn and written form for review/approval from the client team.
- 20.3 It is the Contractor's responsibility to raise with the client team any reason for non-compliance with the Visual & Performance Package.

#### **21.0 O&M MANUALS**

- 21.1 Contractor to supply both digital and three hard copies of comprehensive Operations & Maintenance (O&M) manuals complete with photographs and planned maintenance schedule.

END