

Transit Signage Manual



Submittals

Volume

3

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Reference Volumes

Vol. 1
Graphic Standards

Vol. 2
Hardware Specifications
(Controlled Copy)

Vol. 3
Submittals
(Controlled Copy)

Annex A
Revision Log

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Submittals

by Signage Contractor

1

Submittals shall be for every part of the works such as colour, design, materials, components, fixing details, finishes and fabrication quality to be represented in drawings, material samples, specifications, and statements. Works shall not commence without prior acceptance of the required submittals by the Engineer.

The submittals shall include but not limited to the following: -

1.1

- Coordinated programme/s
- Organisation chart
- Progress Reports
- Records & Schedules for tracking progress
- Design statements
- Schedule of Signs
- Shop drawings & Working drawings (including artwork)
- Professional (PE/LEW) design, diagrams, calculations & endorsements
- Fabrication & Installation Method statements
- Safety statements
- Material/ Product specifications & samples
- Manufacturers' statements
- Test reports & certificates
- Prototypes & Benchmarks
- Operation procedure & Maintenance strategy
- As-built drawings & specifications
- Operation & Maintenance Manual

Definitions

in this document

1.2

- **Shop Drawing** refers to drawings for signage artwork/graphics.
- **Submission** refers to first submission and all subsequent resubmissions of the Shop Drawings.
- **Typical Artwork** refers to graphics of standard signs that have typical artwork e.g. fire-fighting equipment signs, safety-warning signs etc., which require no further input.
- **Generic Artwork** refers to general layout of signs where graphics will be further developed into Specific artwork e.g. Directional signs, Fare-charts, Room-name signs.
- **Specific Artwork** refers to fully developed graphics, e.g. specific messages keyed into a Generic layout. The artwork becomes Specific for that signs in its context.

Submittals Procedures

1.3

1. All submissions shall be clearly completed with comprehensive information for identification. This information shall include but not necessarily be limited to that defined herein.
2. A schedule of submittals shall be provided by the Contractor which indicates the dates on which the Engineer will receive the required submittals. The schedule shall be correlated with the master programme and allow a reasonable amount of time for the review of each submittal. Critical decision dates shall be indicated for selection of finishes and colours. The schedule of submittals shall be revised and resubmitted as necessary.
3. Submittals shall be delivered to the premises of the Engineer or location as agreed with the Engineer.
4. Each submittal shall be individually identified with the project name, respective specification reference, suppliers/contractors name, and manufacturer's name and product reference as appropriate. Each submittal shall be accompanied by a transmittal form containing similar information, together with the purpose for which the submittal is being made. Space shall be provided on each item submitted for stamping by the Engineer.
5. Submittals shall be numbered consecutively and retain that numbering system throughout all revisions and re-submittals.
6. All relevant information shall be included within each submittal to completely define and explain each separate system or item of work. Submittals may be combined from various sections as necessary and furnished at one time as a single submission.
7. Submittals which vary and differ from the signage manual shall be clearly identified.

Record & Schedules

2

1. Prepare and maintain a good record of progress status according to sign code/types with the following: -

- Artwork drawing – ‘Typical’, ‘Generic’ or ‘Specific’
- Design Development Construction drawings
- Design Development of Prototypes
- Date of submission and all subsequent resubmissions
- Date of approval

2. Prepare and maintain a good record of material specifications and sample submissions with the following: -

- Material/ Product specifications
- Material/ Product samples
- Submission number & title
- Date required for approval
- Date of submission and all subsequent resubmissions
- Name of recipients
- Date of approval

3. Prepare and maintain a good record of material specifications and sample submissions with the following: -

- Quantities
- Status of Fabrication
- Status of Installation

Sign Reference Tag

2.1

1. Sign Code

- Every sign in Volume 1 comes with a sign code
D3, LT-H, etc.
- For poster signs, signbox will have to be mentioned as well
IN2 (large poster signbox) + SM (System Map) = IN2(SM)

Sign Tag

1	2
3	4

Font: Arial Narrow

2. Sign Numbering B1-03a

- Level of Station **L1, B1, ...**
- Series (in running order) **-01, -02, ...**
 - Suffix (for double-sided signs) **a or b**

3. Mounting Type

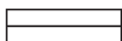
- Ceiling Mounted **CM**
- Surface Mounted **SM**
- Surface Mounted (Recessed) **SM-R**
- Projected Mounted **PM**
- Floor Mounted **FM**
- Floor Mounted (Goal-Post) **FM-G**
- Floor Mounted (Cantilevered) **FM-C**

4. Illumination

- Illuminated / Lit **L**
- Non-Illuminated / Non-Lit **NL**

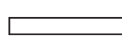
Sign Tag Examples

D3	B1-01
CM	L



D3	B1-02
CM	L

D4	B1-03a
CM	L



D4	B1-03b
CM	L

IN2(SM)	B1-05
SM	L

Shop & Working Drawings

3

Shop drawing and Working-drawing shall be fully annotated and dimensioned describing all scope of the Signs including, as appropriate, their layout configuration, elevations and sections indicating fixings, supporting framework, interface conditions, maintenance access, and associated details.

The Contractor shall maintain on Site a full set of Design and Shop Drawings.

PE Submission & Endorsement

3.1

Following Contract award, the required number of Shop Drawings, and where appropriate relevant structural calculations and other relevant data, shall be submitted by the Contractor to the Engineer for review in good time. Any revisions required to be carried out shall not affect planned manufacturing periods.

Approval of Shop Drawings

3.2

The Shop Drawings shall be submitted in accordance with the Conditions of Contract and fabrication of components shall not commence until formally approved by the Engineer.

Review, Checks, and Compliance

3.3

The Contractor shall review and check all submittals for correctness before submission to the Engineer.

The Engineer shall review the Shop Drawings for compliance with the Particular Specification. The Detailed Design and construction of components shall remain the responsibility of the Contractor following such reviews by the Engineer.

The Engineer's review of the Shop Drawings shall not relieve the Contractor of his responsibility for errors, or for supplying components and materials to the full satisfaction of the Engineer. The Engineer shall be fully satisfied that the Shop Drawings meet the requirements of the Design Drawings and the Particular Specification.

If, before commencing, or during the preparation of the Shop Drawings the Contractor considers the design intent of the Design Drawings and/or Particular Specifications may be affected, or where other elements of the Works may be affected, the Contractor shall notify the Engineer immediately.

The Engineer shall have the right at all reasonable times to visit the Contractor's (or his Specialist Contractors) design office and workshop to check on progress.

The Contractor shall be responsible for correcting any discrepancies, errors or omissions in the Shop Drawings, whether or not the Engineer reviewed such drawings.

Format & Title Block

3.4

All Shop Drawings shall be prepared for the following format: -

- Title: Shall follow the Land Transport Authority's standard format.
- Drawing size: To be agreed with the Engineer.
- Preparation: All drawings shall be prepared with cross-referencing and maintain legibility when reduced to A3 size (minimum).
- Amendment: All amendments shall be identified in the drawing title block with a revision number, date and description of the amendment. Mark or 'Cloud' all amendments on drawings and reference them with the appropriate revision number. For subsequent amendment, marking and 'clouding' from the previous amendment and accepted by the Engineer shall be removed.

Types of Drawings

3.5

1. Directional Sign Layout Plan in conjunction with full directional messages & graphics
2. Schedule of Directional Signs
3. Schedule of Room Name Signs
4. Location and detailed setting-out of signs on floor plans, reflected ceiling plans, sections, and elevations
5. Design statements
6. Co-ordination drawings
7. Construction details
8. Installation details
9. Interfacing details with architectural finishes
10. Electrical schematic drawings (by LEW)
11. Professionally endorsed drawings with calculations and schemes (by the Contractor's PE/LEW)

Graphics

3.6

Graphics/ artwork of every sign with the following information:

- Sign code (generic), sign tag (location specific) and sign description
- Graphics specifications and layout
- Both colour and grid-frame
- Fully dimensioned graphics layout showing spacing, thicknesses, text height, symbol height, etc.
- Posters material size and display size
- Annotated specifications on colour code, typeface (type, weight, and point-size), material, print type, the fabrication method
- Mounting type
- Submission type – ‘typical’, ‘generic’ or ‘specific’
- Scale and scale-bar

Hardcopy graphics/artwork submittals shall be accompanied by the equivalent softcopy in CD-ROM.

Interface with other Trades

3.7

The Shop Drawings shall include full details of interface conditions, demonstrating that the Contractor is fully conversant with adjoining items of works.

In particular, the Shop Drawings should provide sufficient information for the other designated contractors to ensure adequate support structure for ceiling mounted signs and to provide the designated power supply for illuminated signs.

The Contractor shall review and provide all inputs and information as necessary for the development of coordination drawings e.g. Combined Services Drawings (CSD) and Structural, E & M Drawings (SEM).

Quality of Drawings

3.8

The documentation of drawings includes but not limited to: -

- Drawings, diagrams, illustrations, schedules, performance charts, and other data prepared by manufacturers, suppliers, and distributors necessary to the illustration of the works.
- Full-size details and graphic representation describing materials, components and equipment, construction, finishes, provision for movements, fabrication erection tolerances, and, where appropriate, on-site dimensions.
- Layouts, setting-out, locations, and assemblies of all detail construction and junctions, details of materials, the method of jointing, details of all Site connections and fixing and sealing methods, finishes and all pertinent information related to: -
 - Method of fabrication and construction
 - Relations to adjoining work
 - Finishes
 - Amplification of design details
 - Structural calculations
 - Minor changes to the design to suit actual site conditions

All Drawings shall be fully dimensioned in metric to a scale appropriate to the detail.

Where necessary, the Drawings may utilize the manufacturer's standard details in order to ensure their compatibility with the design intent.

Method Statement

4

Submit method statements for all fabrication, installation and construction work concurrent with the submission of shop drawings.

Method statements shall include but not limited to the following: -

- The person in charge of the work on site including name, position in the company and limits of responsibility.
- All health and safety measures necessary to protect the workforce.
- All witness and hold points necessary to ensure the works will meet the specified requirements.
- All tests necessary to ensure the works will meet the specified requirements.
- All temporary structures.
- The storage, movement, and installation of all materials.
- All interfaces.
- Protection of the completed or partially completed work.
- The disposal of all waste material.
- All records that will be kept of the work.

Method Statement shall be endorsed by a qualified person prior to submission.

Other Submittals

5

1. Product Technical Data

This shall include all relevant technical data, which documents the primary performance of each system, system component and/or material in the Works. Primarily product data shall consist of a material schedule, together with manufacturer's literature, which is necessary to clearly identify the primary function, quality, and performance of each product. The schedule shall be arranged in a vertical format with the materials identified by manufacturers name, product name or model number. The schedule shall include the specific location(s) of use and any related Shop Drawings. Product data shall be custom prepared for the project and made specifically for the Works.

It shall include but limited to the following: -

- Technical specifications and drawings
- Test reports
- Performance and rating tables
- Recommendations for installation and maintenance
- Brand/ Product name, manufacturer's name, country of origin, model number and supplier(s)
- Health and safety data sheets

2. Proposed Products Schedules

Within a time-frame agreed with the Engineer submit a schedule of proprietary products proposed for use.

3. Product Certification

If products must comply with product certifications schemes, submit evidence of compliance.

Contract & Control Samples

5.2

1. Contract Samples

The Contractor shall provide samples as listed in this document. These shall be delivered to the Engineer's office (at Contractor's own cost) and shall be of the type and quality of material to be used in the Works. Samples shall comprise materials in their final form. Final Contract Samples will be labelled and kept by the Engineer as a record of materials to be incorporated in the Works. Factory acceptance tests are required prior to manufacture and delivery.

The minimum size of samples shall be 300mm x 300mm unless stated otherwise or agreed with the Engineer. The Contractor shall liaise with the Engineer to allow suitable space to accommodate samples, mock-ups, and prototypes as may be required by the Specification.

2. Control Samples

Immediately after finalisation of the Shop Drawings, the Contractor shall provide the Engineer with two (2) of each of the samples listed, which shall be kept as a record of materials to be incorporated in the Works. The Contractor shall obtain the Engineer's acceptance of these Control Samples, before proceeding with the manufacture of components.

Design Statement

5.3

This statement describes the technical aspects of the design. These shall include details of structural concepts, procedures, basic formulae, references and sketches as appropriate, as well as details of the proposed method of construction and installation, and maintenance strategy.

It shall include a durability assessment, which shall comprise all elements of the signs (including finishes/fixing systems) as follow: -

- Durability assessment set out in the Particular Specification
- Desired performance of the selected design and proposed Contract Materials and Workmanship Specifications
- Identifications of construction processes critical to the achievement of the durability objectives
- Post-construction inspection and maintenance programme

Design Status Report

5.4

The report shall comprise the following: -

- The extent of design which has currently been completed, including the production methodology. Confirmation that all comments made on the previous submittal stage have been addressed.
- Details of contractors/organisations consulted and information obtained from them.
- The detailed information regarding computations, drawings, specifications, and procedures which the contractor proposes to complete between the stages of submittals.
- Actions by the Engineer or others that are necessary to enable the Contractor to complete the design, and in particular to fulfil the requirements for the submittal stages.

Authorities and other Organisations

5.5

1. Correspondence

Submit copies of correspondence and notes of meetings with authorities/other organisations.

2. Authorities' Approvals

Submit documents showing approval of the authorities whose requirements apply to the Work.

Subcontractors and Installers

5.6

- Submit name and contact details of proposed specialist subcontractor(s) and installer(s).
- Submit details of all specialist subcontractor(s) past experience in the work they are being employed to do, including the address of past projects and details of both past employers and architects.
- Where required, arrange access to allow the Engineer to inspect the specialist subcontractor(s) past work.
- Submit subcontractor's and/or installer's confirmation that the substrate is ready to receive the installation.

Review of Submittals

6

The Engineer shall review submittals for general conformance with the requirements of the Design. Submittals, which meet these requirements, shall be stamped or marked in accordance with the procedures described herein. Submittals which are incomplete or erroneous, or which are not required, will be returned and a new submittal made as necessary. The Engineer's review shall not be deemed as exhaustive and shall not relieve the Contractor of the responsibility for any omission or deficiencies or from the responsibility to coordinate the work with that of others.

Submittals which provide supplementary information to substantiate the technical performance of components and materials including, but not necessarily limited to, supplementary product literature, certifications, statements of manufacturer's review and pre-construction testing and inspection reports, will be stamped 'Record Document'.

Resubmission shall be made under the procedures for initial submission, identifying changes made since the previous submission.

As-Built Drawings

7

The Contractor shall, upon completion of the Works, provide As-built Drawings in hardcopy, as well as in a computer format agreed with the Engineer, showing the Works finally fabricated and erected. The As-built Drawings shall also include the graphic artwork in colour prints, and design drawings with calculations endorsed by the Contractor's Professional Engineer / Licensed Electrical Worker.

As-built Drawings shall be produced to an appropriate scale and shall be used to complement the Operation & Maintenance Manual.

As-built Drawings shall be clearly documented and incorporated all modifications made during the progress of the work and testing period.

It shall include but not limited to:

- Approved/ Final Shop Drawings
- Artwork Drawings
- Photo-record of completed works

As-built Drawings shall be prepared in the following formats:

- Paper prints/ Number of sets
- Reproducible/ Number of sets
- DGN or PDF files/ Number of sets
- Electronic format/ Number of sets

Required quantities are stipulated in the Contract.

Reference Volumes

Vol. 1
Graphic Standards

Vol. 2
Hardware Specifications
(Controlled Copy)

Vol. 3
Submittals
(Controlled Copy)

Annex A
Revision Log
for revision histories and
implementation strategy