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|---|---|
| <b>Hamilton City Development Manual</b>             |   |
| <b>Volume 3 : Standard Technical Specifications</b> | <b>Part 4 — Stormwater &amp; Wastewater Sewers</b>              |
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## **SECTION C : WORKS COMPLETION AND CLEARANCE**

### **1.0 AS-BUILT PLANS**

Upon completion of construction work, copies of “As-Built” plans and data recording information about the completed works, as listed in section 5.0 shall be provided to Council. Separate plans are required for wastewater, stormwater and water supply for contracts and larger developments only (Refer Threshold Matrix in Clause 6.0 of this Part. Responsibility for providing the plans and associated data shall lie with:

- The Developer, in the case of land development (urban and industrial sub-division)
- The Contractor, in the case of works constructed for the Council under contract to the Council

Plans presented in fulfilment of this requirement shall be shown as “As-Built” in the amendments part of the drawing title block and signed-off as ‘approved for issue’ by a person having responsibility for the quality assurance aspect of the as-built information.

As-built plans and associated data shall be sent to:

- In the case of subdivisions -

Subdivisions Officer  
 Planning Guidance Unit  
 Private Bag 3010  
 Hamilton

e-mail electronic files to:- [asbuilts@hcc.govt.nz](mailto:asbuilts@hcc.govt.nz)  
 include in the subject heading:- HCC Subdivision Consent Number  
 subdivision name and stage number

- In the case of Council contracts, send to the Engineer for forwarding to the appropriate Council Asset Manager.

### **2.0 DATA PRESENTATION FORMATS**

For larger developments the as-built data is required in 3 formats (Refer Threshold Matrix in Clause 6.0 of this Part):

- Conventional hard copy plans using line formats as indicated in Vol 1 Part 2 Clause 2.4, drawing sheet size A1 and plan scale 1:500 preferred.
- Electronic Microsoft Excel spreadsheets listing various attributes of the assets constructed - refer blank template files accessed from the Table of Contents page of this Part.
- Where as built plans are prepared using computer aided design software, DXF format export files of the hard copy plans are required. The specification for the format is laid out in Volume 4 : Appendix 7.

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Hard copy plans are used in updating the Council's records and for archiving to microfilm. The DXF format files facilitate data upload to the GIS. The spreadsheet lists of asset data facilitate data upload to the asset information database. As well as recording dimension and materials information this database is used to manage asset condition information.

### 3.0 ASSET VALUES

This requirement has been suspended pending review. Refer to Volume 4, Part 9, Appendix 8.

### 4.0 DATUMS AND UNITS OF MEASUREMENT

Only metric units are to be used in as-built data. Principally these are millimetres (mm), metres (m), litres/sec (L/s), cubic metres /day (m<sup>3</sup>/day). All levels are to be in terms of Moturiki Datum and to 2 decimal places.

Geographic coordinates shall be:

New Zealand Geodetic Datum 2000 (NZGD2000)  
Projection: Mount Eden Circuit 2000

or

New Zealand Geodetic Datum 1949  
Projection: Mount Eden Circuit 1949

Coordinates should be presented in standard 6 digit format (east coordinate followed by north coordinate) to 2 decimal places. e.g. 305718.97, 643728.35

### 5.0 ASSET COMPONENTS TYPES AND AS-BUILT DATA REQUIREMENTS

As-built data shall be accompanied by the following list of project specific data:

- Works construction contractor
- Project name or subdivision name (including subdivision stage number)
- Council contract number (Council projects)
- Council project ledger code (Council projects)
- Name of person responsible for preparing the as-built data
- Date of preparing the as-built data

The following list of asset specific data shall be supplied as tabulated data and shown on the drawings.

**Note:** occasionally privately owned assets need to be shown on as-built plans; such assets shall be clearly labelled 'Private ...whatever'.

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| Asset Component Type         | Asset Attribute Required                       | Shown on plans  | Comment   |
|------------------------------|--|---|---|
| Wastewater Pipelines         | Plan ID  | Yes   | Plan number used to identify as-built plan  |
|                              | Upstream MH ID                                 | Yes   | Use 'pipe-end ID' if pipeline is simply blanked-off.  |
|                              | Downstream MH ID                               | Yes   |   |
|                              | Street Name                                    | Yes   | If street name is not applicable use a property deposited plan (DP) number  |
|                              | Street Type                                    | Yes   | Qualifier to street name e.g. Crescent, Road, Lane, etc.  |
|                              | Location                                       |   | Private property, roadway, berm, reserve  |
|                              | Pipe Diameter                                  | Yes   | Nominal bore in millimetres   |
|                              | Pipe Length                                    | Yes   | Length upstream MH to downstream MH   |
|                              | Pipe Material                                  | Yes   | Material and strength classification e.g. uPVC SN16   |
|                              | Joint Type                                     |   | e.g. RRJ  |
|                              | Invert Level Upstream                          | Yes   | Pipe invert level   |
|                              | Invert Level Downstream                        | Yes   | Pipe invert level   |
|                              | Service Status                                 | Yes   | Abandoned and decommissioned pipelines are required to be identified on as-built records. Show "A" for abandoned pipes otherwise leave blank. |
|                              | Asset Value                                    |   | Refer Clause 3.0 of this section.   |
| Comments                     |  | Any pertinent comments (particularly water table depth and soil conditions) |   |
| Wastewater service pipelines | Plan ID  | Yes   | Plan number used to identify as-built plan  |
|                              | Upstream MH ID                                 | Yes   | Use pipe-end ID if pipeline is simply blanked-off   |
|                              | Downstream MH ID                               | Yes   |   |
|                              | Property ID                                    | Yes   | Either property number or legal description   |
|                              | Street Name                                    | Yes   | If street name is not applicable use a property deposited plan (DP) number  |
|                              | Street Type                                    | Yes   | Qualifier to street name e.g. Crescent, Road, Lane, etc.  |
|                              | Service Pipe Diameter                          |   | Nominal bore in millimetres   |
|                              | Service Pipe Length                            | Yes   |   |
|                              | Service Pipe Material                          |   | Material and strength classification  |
|                              | Invert level at private end                    | Yes   | Pipe invert level   |
|                              | Depth at Private End                           |   | Depth from ground level to Invert Level   |
|                              | Eastern coordinate end 1                       |   | Coordinate of upstream end of service pipeline  |
|                              | Northern coordinate end 1                      |   | Coordinate of upstream end of service pipeline  |
|                              | Distance from left (LB) or right (RB) boundary | Yes   | Left-hand or right-hand boundary facing the property from the street  |
|                              | Distance from front (FB) or back (BB) boundary | Yes   |   |
|                              | Asset Value                                    |   | Refer Clause 3.0 of this section.   |
|                              | Comments                                       |   | Any pertinent comments (particularly water table depth and soil conditions)   |
| Wastewater Manholes          | Plan ID  | Yes   | Plan number used to identify as-built plan  |
|                              | MH ID  | Yes   |   |
|                              | Property ID                                    | Yes   | Either property number or legal description adjacent to manhole   |
|                              | Street Name                                    | Yes   | If street name is not applicable use a property deposited plan (DP) number  |
|                              | Street Type                                    | Yes   | Qualifier to street name e.g. Crescent, Road, Lane, etc.  |
|                              | Lid Level                                      | Yes   | Top edge and northern part of rim casting   |
|                              | Invert Level                                   | Yes   | Invert level of wetwell   |
|                              | MH Diameter                                    |   | Nominal Bore of MH risers   |
|                              | Eastern coordinate                             |   | Location as per lid level   |
|                              | Northern coordinate                            |   | Location as per lid level   |
|                              | Asset Value                                    |   | Refer Clause 3.0 of this section.   |

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| Asset Component Type         | Asset Attribute Required                     | Shown on plans  | Comment   |
|------------------------------|--|---|---|
|                              | Comments                                     |   | Any pertinent comments (particularly water table depth and soil conditions)             |
| Wastewater Pumpstation       |  |   | Refer Volume 3, Part 5, Section C   |
| Stormwater Inlets            | Plan ID                                      | Yes   | Plan number used to identify as-built plan  |
|                              | Downstream MH ID                             | Yes   |   |
|                              | Property ID                                  | Yes   | Either property number or legal description adjacent to manhole                         |
|                              | Street Name                                  | Yes   | If street name is not applicable use a property deposited plan (DP) number              |
|                              | Street Type                                  | Yes   | Qualifier to street name e.g. Crescent, Road, Lane, etc.                                |
|                              | Location                                     |   | Private property, roadway, berm, reserve  |
|                              | Structure Type                               | Yes   | Plain end pipe, headwall, in-ground chamber, etc. Show structure location on plan       |
|                              | Structure Material                           |   | PVC, concrete, timber, etc  |
|                              | Eastern coordinate                           |   |   |
|                              | Northern coordinate                          |   |   |
|                              | Asset Value                                  |   | Refer Clause 3.0 of this section.   |
|                              | Comments                                     |   | Any pertinent comments (particularly water table depth and soil conditions)             |
|                              | Stormwater Pipelines<br>(including culverts) | Plan ID   | Yes   |
| Upstream MH ID               |  | Yes   | Use pipe-end ID if pipeline is simply blanked-off                                       |
| Downstream MH ID             |  | Yes   | Or ID of stormwater outlet structure  |
| Street Name                  |  | Yes   | If street name is not applicable use a property deposited plan (DP) number              |
| Street Type                  |  | Yes   | Qualifier to street name e.g. Crescent, Road, Lane, etc.                                |
| Location                     |  |   | Private property, roadway, berm, reserve  |
| Pipe Diameter                |  | Yes   | Nominal bore in millimetres   |
| Pipe Length                  |  | Yes   | Length upstream MH to downstream MH   |
| Pipe Material                |  | Yes   | Material and strength classification  |
| Joint Type                   |  |   | RRJ   |
| Invert Level Upstream        |  | Yes   | Pipe invert level   |
| Invert Level Downstream      |  | Yes   | Pipe invert level   |
| Secondary Flow Path          |  | Yes   | Show on as-built plans (easement required on private land). Not required on data sheet. |
| Service Status               | Yes  | Abandoned and decommissioned pipelines are required to be identified on as-built records. Show "A" for abandoned pipes otherwise leave blank. |   |
| Asset Value                  |  | Refer Clause 3.0 of this section.   |   |
| Comments                     |  | Any pertinent comments (particularly water table depth and soil conditions). Identify culverts.   |   |
| Stormwater Service Pipelines | Plan ID                                      | Yes   | Plan number used to identify as-built plan  |
|                              | Upstream MH ID                               | Yes   | Use 'Pipe-End ID' if pipeline is simply blanked-off                                     |
|                              | Downstream MH ID                             | Yes   | Or ID of downstream asset.  |
|                              | Property ID                                  | Yes   | Either property number or legal description   |
|                              | Street Name                                  | Yes   | If street name is not applicable use a property deposited plan (DP) number              |
|                              | Street Type                                  | Yes   | Qualifier to street name e.g. Crescent, Road, Lane, etc.                                |
|                              | Service Type                                 |   | Pipe drain, K & C connection  |
| Service Pipe Diameter        | Yes  | Nominal bore in millimetres   |   |

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| Asset Component Type      | Asset Attribute Required                       | Shown on plans | Comment  |
|---------------------------|--|----------------|--|
|                           | Service Pipe Length                            | Yes            |  |
|                           | Service Pipe Material                          | Yes            | Material and strength classification   |
|                           | Invert level at private end                    | Yes            | Pipe invert level  |
|                           | Depth at Private End                           |                | Depth from ground level to invert level  |
|                           | Eastern coordinate connection                  |                | Coordinate of customer end of service pipeline   |
|                           | Northern coordinate connection                 |                | Coordinate of customer end of service pipeline   |
|                           | Distance from left (LB) or right (RB) boundary | Yes            | Distance to customer connection point relative to left-hand or right-hand boundary facing the property from the street |
|                           | Distance from front (FB) or back (BB) boundary | Yes            |  |
|                           | Asset Value                                    |                | Refer Clause 3.0 of this section.  |
|                           | Comments                                       |                | Any pertinent comments (particularly water table depth and soil conditions)  |
| Stormwater Manholes       | Plan ID  | Yes            | Plan number used to identify as-built plan   |
|                           | MH ID  | Yes            |  |
|                           | Property ID                                    | Yes            | Either property number or legal description adjacent to manhole  |
|                           | Street Name                                    | Yes            | If street name is not applicable use a property deposited plan (DP) number   |
|                           | Street Type                                    | Yes            | Qualifier to street name e.g. Crescent, Road, Lane, etc.   |
|                           | Lid Level                                      | Yes            | Top edge and northern part of rim casting  |
|                           | Invert Level                                   | Yes            |  |
|                           | MH Diameter                                    |                | Nominal Bore of MH risers  |
|                           | Eastern coordinate                             |                | Location as per lid level  |
|                           | Northern coordinate                            |                | Location as per lid level  |
|                           | Asset Value                                    |                | Refer Clause 3.0 of this section.  |
|                           | Comments                                       |                | Any pertinent comments (particularly water table depth and soil conditions)  |
| Stormwater Soakage Trench | Plan ID  | Yes            | Plan number used to identify as-built plan   |
|                           | Street Name                                    | Yes            | If street name is not applicable use a property deposited plan (DP) number   |
|                           | Street Type                                    | Yes            | Qualifier to street name e.g. Crescent, Road, Lane, etc.   |
|                           | Location                                       |                | Roadway, private, recreation reserve, etc.   |
|                           | Trench soakage media                           | Yes            |  |
|                           | Length   | Yes            |  |
|                           | Width  | Yes            |  |
|                           | Depth  | Yes            |  |
|                           | Ground Level                                   |                |  |
|                           | Invert Level                                   |                |  |
|                           | Eastern coordinate — end 1                     |                |  |
|                           | Northern coordinate — end 1                    |                |  |
|                           | Eastern coordinate — end 2                     |                | Only one set of coordinates is required if the 'trench' is circular, i.e. a 'soakage hole'.                            |
|                           | Northern coordinate — end 2                    |                | Only one set of coordinates is required if the 'trench' is circular, i.e. a 'soakage hole'.                            |
|                           | Structure Type                                 | Yes            | Proprietary name, lined hole, perforated pipe, etc.  |
|                           | Asset Value                                    |                | Refer section 2.4.3  |
|                           | Comments                                       |                | Any pertinent comments (particularly water table depth and soil conditions)  |
| Stormwater Outlets        | Plan ID  | Yes            | Plan number used to identify as-built plan   |
|                           | Upstream MH ID                                 | Yes            |  |
|                           | Property ID                                    | Yes            | Either property number or legal description adjacent to manhole  |

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| Asset Component Type                    | Asset Attribute Required                  | Shown on plans | Comment   |
|---|---|----------------|---|
|   | Street Name                               | Yes            | If street name is not applicable use a property deposited plan (DP) number                                    |
|   | Street Type                               | Yes            | Qualifier to street name e.g. Crescent, Road, Lane, etc.  |
|   | Location                                  | Yes            | Private property, roadway, berm, reserve  |
|   | Structure Type                            | Yes            | Plain end pipe, headwall, etc. Show structure location on plan  |
|   | Structure material                        |                | PVC, concrete, timber, etc  |
|   | Discharges to                             |                | Name of receiving water body, e.g. Waikato River.   |
|   | Ground Level                              |                |   |
|   | Eastern coordinate                        |                | Location at point of stormwater discharge   |
|   | Northern coordinate                       |                | Location at point of stormwater discharge   |
|   | Asset Value                               |                | Refer Clause 3.0 of this section.   |
|   | Comments                                  |                | Any pertinent comments (particularly water table depth and soil conditions)                                   |
| Stormwater Catchpits                    | Plan ID                                   | Yes            | Plan number used to identify as-built plan  |
|   | Catchpit ID                               | Yes            | Provide a catchpit ID to ensure correct association of tabulated information and plan                         |
|   | Property ID                               | Yes            | Either property number or legal description adjacent to manhole   |
|   | Street Name                               | Yes            | If street name is not applicable use a property deposited plan (DP) number                                    |
|   | Street Type                               | Yes            | Qualifier to street name e.g. Crescent, Road, Lane, etc.  |
|   | Catchpit Type                             | Yes            | Footpath berm, single or double sump, vertical entry.   |
|   | Catchpit Grate Level                      |                |   |
|   | Eastern coordinate                        |                | Centre of catchpit grate  |
|   | Northern coordinate                       |                | Centre of catchpit grate  |
|   | Asset Value                               |                | Refer Clause 3.0 of this section.   |
|   | Comments                                  |                | Any pertinent comments (particularly water table depth and soil conditions)                                   |
| Stormwater catchpit connections / leads | Plan ID                                   | Yes            | Plan number used to identify as-built plan  |
|   | Catchpit ID                               | Yes            | Identifier to associate pipeline with correct catchpit  |
|   | Downstream MH ID                          | Yes            | Or ID of downstream asset.  |
|   | Property ID                               | Yes            | Either property number or legal description adjacent to manhole   |
|   | Street Name                               | Yes            | If street name is not applicable use a property deposited plan (DP) number                                    |
|   | Street Type                               | Yes            | Qualifier to street name e.g. Crescent, Road, Lane, etc.  |
|   | Connection Pipe Diameter                  |                | Nominal Bore of connection pipeline   |
|   | Connection Pipe Length                    | Yes            |   |
|   | Connection Pipe Material                  |                | Material of connection pipeline   |
|   | Invert level downstream end of connection |                | RL of pipeline invert when catchpit connected to a manhole  |
|   | Asset Value                               |                | Refer Clause 3.0 of this section.   |
|   | Comments                                  |                | Any pertinent comments (particularly water table depth and soil conditions)                                   |
| Stormwater Open Channels                | Plan ID                                   | Yes            | Plan number used to identify as-built plan  |
|   | Upstream Outlet ID                        | Yes            | Define lengths of open channel as draining between structures or junctions with other water courses / drains. |
|   | Downstream Inlet ID                       | Yes            | Define lengths of open channel as draining between structures or junctions with other water courses /         |

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| Asset Component Type | Asset Attribute Required                | Shown on plans | Comment   |
|----------------------|---|----------------|---|
|                      |   |                | drains.   |
|                      | Street Name                             | Yes            | If street name is not applicable use a property deposited plan (DP) number. |
|                      | Street Type                             | Yes            | Qualifier to street name e.g. Crescent, Road, Lane, etc.                    |
|                      | Location                                | Yes            | Private property, roadway, berm, reserve                                    |
|                      | Channel Lining Material                 | Yes            |   |
|                      | Channel Length                          | Yes            | Length upstream outlet to downstream inlet                                  |
|                      | Channel Width                           | Yes            |   |
|                      | Average Depth                           |                | Formation depth, ground level to invert level                               |
|                      | Invert Level Upstream                   | Yes            |   |
|                      | Invert Level Downstream                 | Yes            |   |
|                      | Eastern coordinate — upstream inlet.    |                |   |
|                      | Northern coordinate — upstream inlet    |                |   |
|                      | Eastern coordinate — downstream outlet  |                |   |
|                      | Northern coordinate — downstream outlet |                |   |
|                      | Asset Value                             |                | Refer Clause 3.0 of this section excluding land value, formation cost only. |
|                      | Comments                                |                | Any pertinent comments (particularly water table depth and soil conditions) |
| Stormwater Drains    | Subsoil Plan ID                         | Yes            | Plan number used to identify as-built plan                                  |
|                      | Downstream MH ID                        | Yes            | Or ID of discharge point for drain  |
|                      | Street Name                             | Yes            | If street name is not applicable use a property deposited plan (DP) number  |
|                      | Street Type                             | Yes            | Qualifier to street name e.g. Crescent, Road, Lane, etc.                    |
|                      | Location                                | Yes            | Private property, roadway, berm, reserve                                    |
|                      | Ownership                               | Yes            | Public or private responsibility for the subsoil drain                      |
|                      | Pipe Diameter                           | Yes            | Nominal bore in millimetres   |
|                      | Pipe Length                             | Yes            | Length upstream MH to downstream MH   |
|                      | Pipe Material                           | Yes            | PE, Earthenware, etc.   |
|                      | Invert Level Upstream                   | Yes            |   |
|                      | Invert Level Downstream                 | Yes            |   |
|                      | Eastern coordinate — upstream end       |                |   |
|                      | Northern coordinate — upstream end      |                |   |
|                      | Eastern coordinate — downstream outlet  |                |   |
|                      | Northern coordinate — downstream outlet |                |   |
|                      | Asset Value                             |                | Refer Clause 3.0 of this section.   |
|                      | Comments                                |                | Any pertinent comments (particularly water table depth and soil conditions) |
| Stormwater Device    | Control Plan ID                         | Yes            | Plan number used to identify as-built plan                                  |
|                      | Street Name                             | Yes            | If street name is not applicable use a property deposited plan (DP) number  |
|                      | Street Type                             | Yes            | Qualifier to street name e.g. Crescent, Road, Lane, etc.                    |
|                      | Location                                |                | Private property, roadway, berm, reserve                                    |
|                      | Site Plan                               | Yes            | Site plan showing detention area location and                               |

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| Asset Component Type | Asset Attribute Required | Shown on plans | Comment  |
|----------------------|--------------------------|----------------|--|
|                      |                          |                | contours relative to adjoining properties and receiving watercourse. To show control structure(s) in both plan and elevation and access provision. |
|                      | Type                     |                | e.g. Detention area, wet detention pond, wetland, chamber, etc.  |
|                      | Surface Area             | Yes            | Surface area at top water level. On the plan, show extent of pond at top water level.  |
|                      | Total Capacity           |                | Total volume of detention area below top water level   |
|                      | Live Storage Capacity    |                | Volume of detention area between normal water level and top water level  |
|                      | Top water level          | Yes            | Level at which spillway becomes operative  |
|                      | Outlet invert            | Yes            | Invert level of discharge control pipeline (lower operating level)   |
|                      | Asset Value              |                | Refer Clause 3.0 of this section excluding land value, formation cost only.  |
|                      | Comments                 |                | Any pertinent comments   |
| Secondary Flow Paths | Plan ID                  | Yes            | Plan number used to identify as-built plan   |
|                      | Street Name              | Yes            | If street name is not applicable use a property deposited plan (DP) number   |
|                      | Street Type              | Yes            | Qualifier to street name e.g. Crescent, Road, Lane etc   |
|                      | Location                 |                | Private property, roadway, berm, reserve   |
|                      | Site Plan                | Yes            | Site plan showing secondary flow path location and contours relative to adjoining properties and receiving watercourse                             |
|                      | Type                     |                | e.g. grassed swale, concrete footpath  |
|                      | Surface Width            | Yes            | Surface width at top water level. On the plan, show extent of secondary flow path at top water level   |
|                      | Overflow Level           | Yes            | RL of point at which overflow into the secondary flow path begins  |
|                      | Asset Level              |                | Refer Clause 3.0 of this section, exclude land value, formation cost only  |
|                      | Comments                 |                | Any pertinent comments such as covered by easement over xxx property title   |



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## 6.0 THRESHOLD MATRIX FOR AS-BUILT DATA

For small developments the provision of separate as-built plans for each service, separate data sheets and dxf data is not justified. Therefore the following matrix has been developed to guide when each type of data presentation is required. If the data presented is not clear, Council may request additional information.

|                                 | Small development<br>(2-5 lots)                            | Medium development<br>(5-10 lots)   | Large development<br>(10+ lots) | Contract                                       |
|---------------------------------|--|---|---------------------------------|--|
| Separate plans for each service | No   | Not required if adequate clarity is possible on same plan                     | Yes                             | As per large development or contract documents |
| dxf data                        | Please supply if available                                 | Yes   | Yes                             | As above                                       |
| Separate data spreadsheets      | No, include information on plans, no coordinates required. | WW or SW if >2 manholes or 10 lots<br>Water if more than 5 hydrants or valves | Yes                             | As above                                       |
| GST invoice on vesting          | Yes  | Yes   | Yes                             | As above                                       |
| Plan size                       | A3   | A3 and A1   | A3 and A1                       | As above                                       |

As-built drawings must be scaleable. Refer to Volume 1, part 2, Clause 2.2.2.1.