



WESTERN AUSTRALIA

SPECIFICATION

D12

**PROPERTY DEVELOPMENT
DESIGN GUIDELINES**

Amendment Record for this Specification Part

This Specification is Council's edition of the AUS-SPEC generic specification part and includes Council's primary amendments.

Details are provided below outlining the clauses amended from the Council edition of this AUS-SPEC Specification Part. The clause numbering and context of each clause are preserved. New clauses are added towards the rear of the specification part as special requirements clauses. Project specific additional script is shown in the specification as italic font.

The amendment code indicated below is 'A' for additional script 'M' for modification to script and 'O' for omission of script. An additional code 'P' is included when the amendment is project specific.

Amendment Sequence No.	Key Topic addressed in amendment	Clause No.	Amendment Code	Author Initials	Amendment Date
1	Full document review and update	12.03, 12.04, 12.05, 12.06, 12.07, 12.08, 12.09, 12.10,	A,M,P	CW	13/11/03
2	Check for R codes and Town planning scheme requirements	12.03, 12.04, 12.06, 12.07, 12.08	M	CW	1/04/04
3	Councils revised policies	12.03 12.06 12.08 12.10 12.11	M	CW	1/11/04
4	Floor levels, Table 1, Text formatting, Standard drawings updated.	12.04 12.06 12.07 12.08	A,M	CW	21/3/05
5	Amended soak well requirements to allow for more choice	12.10	M	DB	16/08/16

SPECIFICATION D12 – PROPERTY DEVELOPMENT DESIGN

CLAUSE	CONTENTS	PAGE
GENERAL		1
D12.01	SCOPE	1
D12.02	OBJECTIVES	1
D12.03	REFERENCE AND SOURCE DOCUMENTS	1
D12.04	CONSULTATION	2
D12.05	SITE PLAN REQUIREMENTS	3
D12.06	ACCESS	3
D12.07	PARKING	4
D12.08	PARKING DESIGN DETAIL	6
D12.09	PAVEMENT	6
D12.10	DRAINAGE	8
D12.11	STORMWATER CONNECTIONS	9
D12.12	REFUSE COLLECTION AND STORAGE	10

SPECIFICATION D12 : PROPERTY DEVELOPMENT DESIGN

GENERAL

D12.01 SCOPE

1. This specification outlines the design aspects for development of individual properties other than subdivision development. The specification outlines standards traditionally applied throughout the City for issues relating to vehicular access, parking and stormwater drainage.

2. Controls for property development are contained in the City's Town Planning Scheme and are administered by the Development Control Unit (DCU) which consists of officers from various City departments.

***Development
Control Unit***

3. This specification is to be read in conjunction with Council's standards relating to pavement design, stormwater drainage and vehicular crossovers.

D12.02 OBJECTIVES

1. This specification aims to set standards and document requirements related to the development of individual properties other than individual residential development in order that there is a consistent approach to meeting desired standards across the City.

D12.03 REFERENCE AND SOURCE DOCUMENTS

(a) Council Specifications

***Reference
Documents***

D1 - Geometric Road Design

D2 - Pavement Design

D5 - Stormwater Drainage

Crossover Specifications

Council Policies – POL-E9.2, POL-C-009, POL-C-062, POL-C-096, POL-C-040,
POL-C-058

Acts & Regulations

Local Government Act 1995

Local Government Uniform Local Provisions Regulations 1996

Road Traffic Act & Code

City of Swan Town Planning Scheme

Residential Design Codes of WA

(b) Australian Standards

Austrroads Design Guidelines Parts 1 to 14 and other publications

AS 2890.1 - Off Street Parking Facilities

AS 1428, AS 2890.1

AS 1742 series

MRWA Design Guidelines

GUIDLEINES

Standard Drawings

- STD 25-1s - Standard Stormwater Pit
- STD 48-1s - Undercover Car Bay Dimensions
- STD 49-2s - Stormwater Connection (Council)
- STD 52-1s - Site Plan Requirements
- STD 55-1s - Car Turning Templates

D12.04 CONSULTATION

The Designer is encouraged to consult with Council, and relevant authorities prior to and during the preparation of the property development design.

Authorities

All developments must conform to these specifications unless specifically authorised by the Council's Engineer

Areas that have clay soils like Midland, Bellevue, Guildford etc must have a minimum height of the finished floor levels to be 400mm above edge of Road Levels. The R Codes also state a maximum of 500mm fill above natural level. (3.6.1)

Floor levels

Bonds and Fees

Currently under review

D12.05 SITE PLAN REQUIREMENTS

(Refer to Drawing STD 52-1s for details required on plan)

STD 52-1s

1. The site plan must include the following information also as required in the Development Application process:
 - Lot number, lot dimensions and north point, title and title block
 - Existing ground levels of the site (preferably contoured) to Australian Height Datum (AHD). Existing road frontage levels ie. Face of kerb, top of kerb, boundary level and a datum point (bench mark)
 - All existing features on the allotment eg. trees, existing, buildings, easements, services
 - All existing features in the road reserve eg. Trees, kerb, footpath, stormwater pits, service pits etc and the current condition
 - Existing finished floor level (existing buildings) to AHD
 - Proposed finished floor level (proposed buildings) to AHD
 - Proposed pavement details to include:
 - Proposed finished levels to AHD ie. high points, low points
 - Construction details ie. pavement thickness, surface type etc
 - Dimensions eg. parking dimensions
 - Location, size and type of existing and/or proposed crossovers
 - Proposed drainage details to include:
 - Pipe diameter, length and gradient
 - Upstream and downstream invert levels (to AHD)
 - Lid levels of gullies (to AHD)
 - Location and invert level of existing Council drainage system where connection is to be made (this information may be obtained by contacting Council)

Note: plan scales to be 1:100, 1:200 or 1:250 on A3, A2 or A1 size sheets

D12.06 ACCESS

1. Layout of access ways must be in accordance Table 1 and Town Planning Scheme and the R codes. Other Consideration may include AS2890-1 (1993) – Off

Australian Standard

GUIDLEINES

Street Parking.

- 2. All Crossovers must be designed and constructed in accordance with Council's Crossover Specification. The R Codes Section 3.5.4 for crossovers also applies. **Vehicular Crossover**
- 3. Where applicable, access ways shall be designed to accommodate service vehicles and private rubbish trucks. **Service Vehicles**
- 4. Internal vehicle manoeuvring (cars only) to conform to turning template on drawing STD 55-1s **STD 55-1s**
- 5. The following are a list of minimum width standards which must be followed for access ways:

TABLE 1 Residential/Strata Developments

Table 1

Number of Units	Pavement Width	Comments
2 - 5 R Codes	Absolute Minimum 3.5m 4.0m	Refer Note 1
6 - 9	6.0m minimum	Refer Note 2
10 or more	6.0m plus 1.2m dedicated pedestrian access	
Rear Dwelling	6.5m minimum (REVERSING ONLY)	Refer Note 2

Note1: *Total gap between wall and/or fence to be a minimum of 4.0m plus 0.5m landscaping on both sides if possible.*

Note 2: Add 0.5m to pavement width when abutting a fence and/or wall and check vehicle manoeuvring i.e. could need localised widening adjacent to parking areas/corners, etc. Refer turning template STD 55-1s.

Table 2 Commercial/Industrial Developments

Table 2

Type of Access	Pavement Width	Comments
Two way access	6.0m (min)	Refer Note 3
One way access	3.5m (min)	Refer Note 4

Note 3: *May need widening to 7.0m if traffic includes substantial heavy vehicle traffic as determined by Council.*

Must be increased to 6.50m if abutting a wall or fence with right angled parking.

Note 4: When located adjacent to parking areas width will need to be increased accordingly and the provision of storage access may be required.

D12.07 PARKING

1. The number of car bays required is laid down in the City's Town Planning Scheme and designers should consult with the Town Planning Department in the early stages of the design process and the Residential Design Codes (where applicable). **Town Planning Scheme**
 2. Standard bay layout and sizes shall be in accordance Councils Town Planning Scheme. As a general guide, the details of typical layout are given in Council's Standard Drawing Number STD 52-1s with consideration with AS2890-1 (1993). **Standard Bay Layout**
STD 52-1s
 3. All turning manoeuvring must comply with Councils Turning Template on drawing STD 55-1s. **STD 55-1s**
 4. Disabled parking bays and access ramps must comply with Australian Standard 1428.1-1 and AS 2890.1. Maximum cross fall across car parks is 2.5% in disabled bays. **Disabled Parking Bays**
 5. Bays and access ways shall be designed to clear eaves overhangs and protuberances off buildings or walls. Where a bay is in front of or immediately adjacent to an emergency egress door, then a bollard shall be installed so as to ensure the egress is not obstructed by parked vehicles. **Buildings**
- All access widths are to be increased by 0.5m when located adjacent to a wall without an opening and increased by 1.2m when adjacent to a wall with an opening ie Door.
- For parking bays abutting a wall or other barriers refer to drawing STD 48-1s **STD 48-1s**
6. Multi storey car park proposals shall be assessed independently. Refer to Australian Standards. **Multi Storey Car parks**
 7. All parking areas are to be sealed, kerbed, marked and drained to the satisfaction of the Council. All parking areas must be constructed in one of the following; Concrete, Red or Black Asphalt, brick paving, two coat seal (some rural locations). Council does not accept compacted gravel, road base, manicured grass, or any loose material.

GUIDLEINES

one disabled bay is required per development. This number may need to be increased depending upon the use of the development.

Disabled Bays

D12.09 PAVEMENT

1. All pavement areas must be sealed, kerbed, and drained to the satisfaction of the Council.
2. Maximum grade of driveway to be 1 in 10 (10%)
3. Maximum grade of parking areas to be in 16 (6.25%)
4. Minimum pavement gradient to be 1 in 150 (0.67%)

Note: All bitumen paved areas to be kerbed and all other types of pavement to have a suitable edge restraint.

Proposed pavement details are to include thickness type (recommended minimum pavement thickness for bituminised areas are outlines in table 1).

It is required that pavement and drainage design of developments is undertaken by an Engineer qualified for membership of the institution of Engineers Australia.

In addition, new or alterations to vehicular access onto a main road or highway must be referred to the Main Roads Western Australia for approval

Table 3 Recommended minimum pavement thickness	Table 3
<ul style="list-style-type: none"> ▪ Clay Areas (Midland, Bellevue, Guildford etc.) <ul style="list-style-type: none"> Parking areas (up to 30 bays) Transport facilities, service areas, access, roads, major parking 	<ul style="list-style-type: none"> 150mm limestone 75mm gravel 25mm bituminous concrete 225mm limestone 75mm gravel 25mm bituminous concrete
<p><i>Note: design proposals for developments in the Midland, Bellevue or Guildford clay areas must consider the re-active and impervious properties of Midland's clay soil and pavement design in these areas may need to be certified by a Civil Engineer.</i></p>	
<ul style="list-style-type: none"> ▪ Sand or Filled Areas <ul style="list-style-type: none"> Parking areas (up to 30 bays) Other areas (transport, facilities, service areas, etc) 	<ul style="list-style-type: none"> 150mm gravel or road-base 25mm bituminous concrete 150mm limestone 75mm gravel or 200mm gravel 25mm bituminous concrete
<ul style="list-style-type: none"> ▪ Hardstand Areas 	<ul style="list-style-type: none"> 150mm gravel or road-base 50mm bituminous concrete or 150mm thick reinforced
<p>Note: 1) all bituminous concrete to be laid on bitumen emulsion tack coat.</p> <p>2) Crossover may be constructed in asphalt as per above for Industrial / Commercial developments.</p>	

GUIDELINES

D12.10 DRAINAGE

1. All stormwater run-off from the site shall be collected and disposed into Council's stormwater system or have an onsite retention systems. This could be drainage basins (Dams), soak wells or the alike as approved by Council. Please check your requirements before applying for planning or building approval.

2. Stormwater drainage calculation shall be undertaken in accordance with the requirements of Council's Standards D5. **Aus Spec D5**

3. Properties outside areas covered by drainage contributions policies may require a drainage extension of the existing council stormwater system for connection to the property. Any alteration or extension of the city's drainage system required as part of a development will be at the developer expense. A fee for Council to undertakes these works will be payable. All costs, including reinstatement of verge, roadway, footpath and relocation of services will be at the developer's cost, and must be considered from the outset. This will need to be paid before a Building licence is issued. Refer to drawing STD 49-2s. **Drainage Costs**

STD 49-2s

4. Midland, Bellevue, Middle Swan, Hazelmere, Guildford, South Guildford and Koongamia areas are covered by a Council drainage contribution policy. A contribution from the developer is paid to council for drainage upgrades. This will need to be paid before a Building licence is issued. **Drainage Contributions**

- 5 The following requirements outline traditional standards used throughout the City for drainage of properties. Designers are encouraged to incorporate these requirements into their development proposals. **Minimum Design Criteria**
 - All bends and junctions in pipe lines to be at manholes or gullies
 - All downpipes to be piped to internal drainage system
 - All drainage to be trapped or treated as required, prior to entry into the street drainage system. Refer to drawing STD 25-1s **STD 25-1s**
 - Minimum pipe size to be 150mm diameter with a minimum grade of 1:100 (1%)
 - Minimum pipe cover to be 450mm.
 - Any change in grade, direction or size of pipe must be done via a manhole
 - No stormwater is to be discharged from the property over the crossover or verge onto the roadway or any right of carriageway.
 - Manholes to be 1m (approximately) diameter and gullies a minimum of 750mm diameter and are to have a soak hole in their bases.
 - Gully grates are to be a minimum 450mm x 450mm in size with 2 straps (30mm x 4.5mm approx) welded transversely across the base and shall be fully galvanised. Brick paving is not to be laid over the top of gully grates.
 - No oils, chemicals, food wastes etc shall be deposited into the stormwater drainage system. Where stormwater is to be disposed of from a service area, it is to be via a trapped gully. Roof run-off must be discharged via downpipes directly to the car park drainage system.
 - To ensure the continued satisfactory operation of the drainage system, careful

GUIDLEINES

attention should be paid to the required maintenance. This particularly applies to soak wells.

- Drainage design run-off is calculated using 100% run-off from all impervious surfaces on the development and a time of concentration of 10 minutes used for a 5year ARI (Intensity = 75mm/hr).
- Pipe design is based on the Rational Method, assuming a full pipe flow not under head.

6. On-site soakage areas are designed in accordance with sump design criteria outlined in Standard D5.

Soak wells

As a general guide soak well volumes are based on the formula

$$\text{Volume Required (m}^3\text{)} = 0.0122 \times A_c \quad A_c = \text{impervious area (sq.m)}$$

The above values are a guide only, based upon sandy soil of high permeability, slotted sides and open bases in soak wells surrounded by blue metal and crushed limestone surrounds to the soak well.

All soak wells installed in paved or concrete areas are to be provided with trafficable lids and made accessible for maintenance purposes.

Soak wells to be no closer than 1.8m to a footing or property boundary

Selection and performance of soak wells are the responsibility of the builder. The capacities provided in the table below are based on concrete louvered soakwells - where adifferent style of soak well is used, they must be sized for the 5 year 10 minute storm event in accordance with the manufacturer's specifications.

All soak wells must be installed in accordance with the manufacturer specifications and backfilled with appropriate material.

Capacity will be reduced accordingly where the groundwater table rises above the base, in which case soak wells may not be suitable.

TABLE 4 SOAKWELL SIZES AND CAPACITIES

Table 4

Diameter (mm)	Depth (mm)	Capacity	
		Area m2	m3
600	600	13.9	0.17
600	1200	27.8	0.339
900	600	31.0	0.38
900	900	46.9	0.573
900	1200	62.0	0.76
900	1800	93.9	1.145
1050	1050	74.5	0.909
1070	600	44.0	0.54
1070	1200	89.0	1.09
1200	600	56.0	0.68
1200	900	84.0	1.02
1200	1200	111.0	1.357
1200	1500	139.0	1.70
1500	600	87.0	1.06
1500	1200	172.0	2.10
1500	1500	217.0	2.65
1800	600	125.0	1.53
1800	900	188.0	2.29

GUIDLEINES

1800	1200	250.0	3.05
1800	1800	375.4	4.58

Values are based on concrete soak wells with angled holes around the sides

D12.11 STORMWATER CONNECTIONS

Purpose

To specify Council’s stormwater connections

1. Stormwater connection fees or drainage contributions maybe charged on planning and or building licence applications whenever considered necessary by Council policies or the City Engineer.
2. Council will undertake Stormwater connection work within the road reserve for all developments where a connection point is required at the applicant’s expense or contribution payment unless otherwise authorised by the City Engineer.
3. The developer will undertake all Stormwater connection work for industrial, commercial and multi-residential developments within side the property and to Councils system unless otherwise authorised by the City Engineer.
4. That the developer contact Council’s Operations Department at least forty eight (48) hours prior to the commencement of drainage works and at the end of construction to allow for inspection.
5. Stormwater Contributions and fees be assessed as follows:

(a)	Residential connections (single unit) - standard fee	under review
	Bond (minimum)	under review
	Non-refundable administration & inspection fee	under review
(b)	Industrial, commercial and multi-residential – standard fee	under review
	▪ Bond (minimum)	under review
	▪ non-refundable administration & inspection fee	under review
(c)	Manholes (if required)	\$1,500.00
(d)	Conversions ie. SEG to Gully Grate (Provisional Sum)	\$3,500.00
(e)	Extension line (approx \$100 per m subject to size of pipe and location)	
(f)	Councils Policies C-040 , C-062 for contribution rates	as per policy

Note: Contact the Council on (08) 9267 9000 for current fees and any further information.

D12.12 REFUSE COLLECTION AND STORAGE

GROUP DWELLINGS

Grouped dwellings may arrange to have domestic refuse collected by the following methods:

Method 1 2 x 240 litre carts for general and recyclable refuse at each dwelling unit to be collected from the frontage road verge.

Carts to be kept at each unit, and positioned on the street verge on collection day. The distance between the normal place of storage and the street verge shall not be more than 40 metres. Grades should not be so steep as to increase difficulty of moving carts.

Method 2 2 x 240 litre carts for each dwelling unit kept in a bin storage structure within the dwelling site and placed on the frontage road verge for collection.

Carts to be kept in a centrally located bin storage area, but shall be positioned on the street verge on collection day. The bin store shall be a minimum of 2.5 metres wide so as to accommodate two rows of bins with a central aisle.

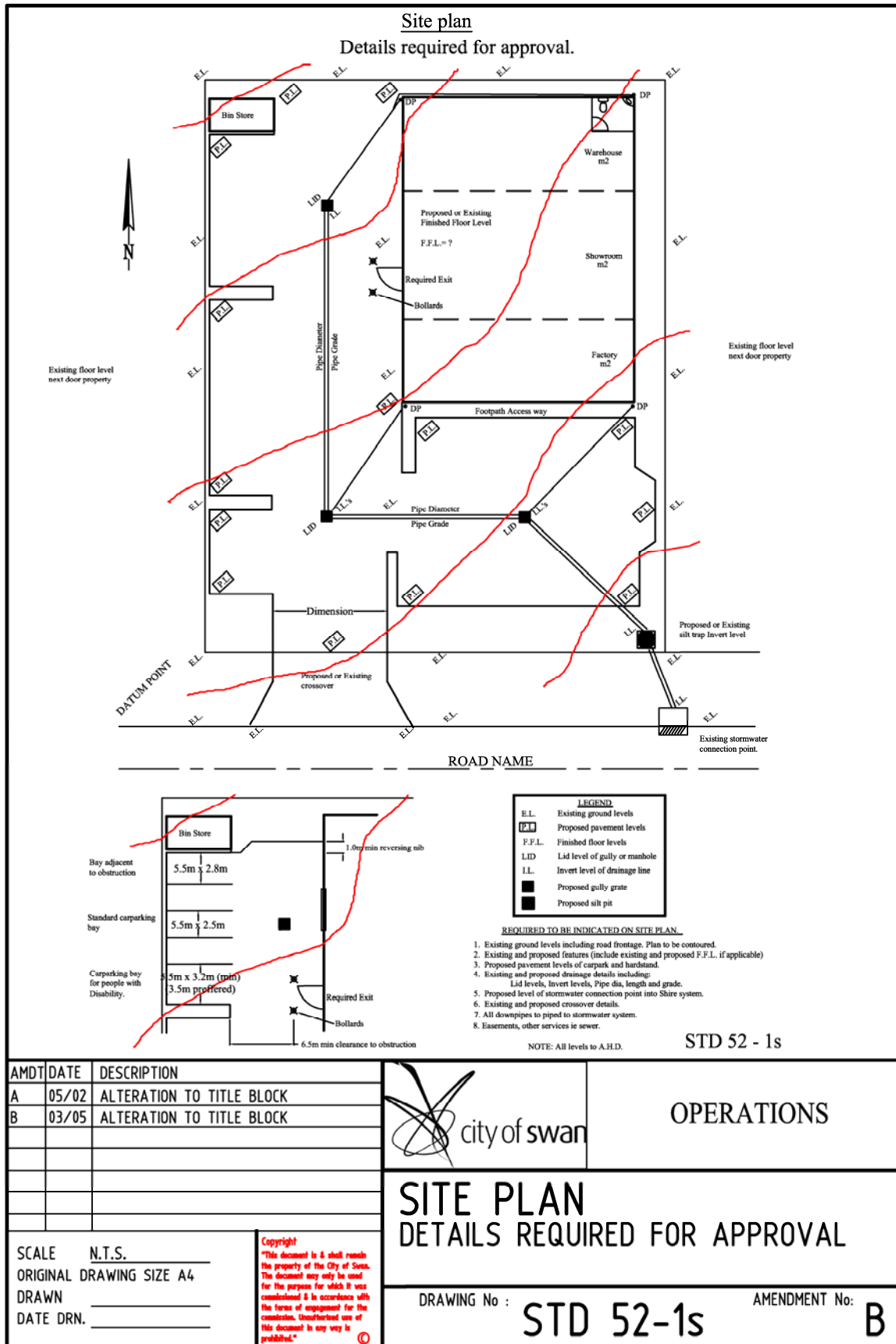
Method 3 A 240 litre cart at each dwelling unit to be collected from the verge of an internal service road in dwelling site.

Carts to be kept at each unit, and positioned alongside the service road circulating around the site. This method is only suitable where the site is large enough to accommodate a road designed to take a standard 10 metre long refuse vehicle, with an inside turning radius of 7.0 metres and an outside turning radius of 12.5 metres. Council will not accept any claims for damage to the internal roads as a result of use by its refuse trucks. A deed of agreement between Council and the developer/management corporation is required to indemnify Council from any public liability or damaged road claims.

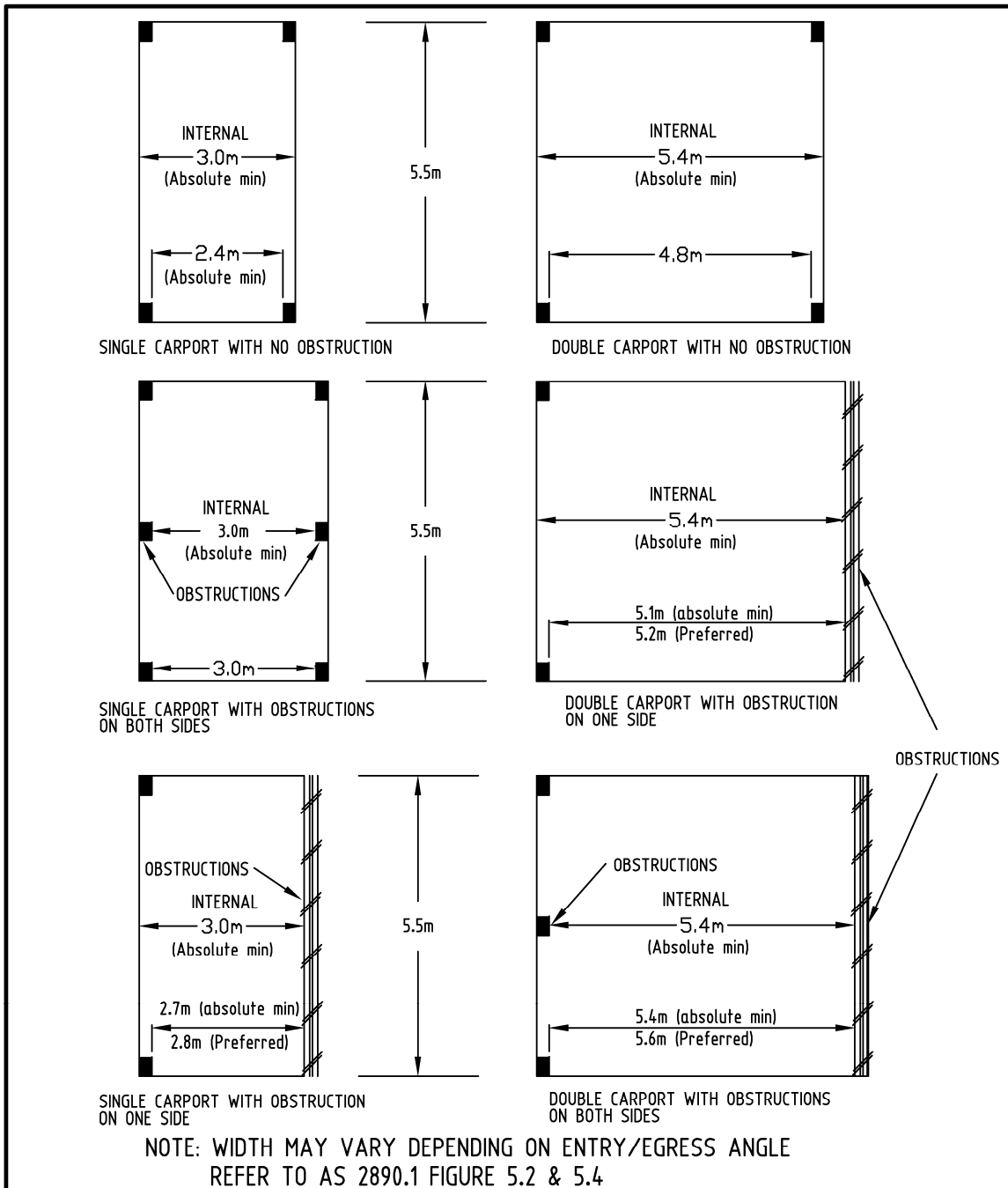
Method 4 A bulk bin located in an approved bin storage structure within the dwelling site. (Private refuse collection service only)

A centrally located bulk bin store may be used, (one bulk bin to service 20 units/maximum 40 metres from units). This method is only suitable where the site is large enough to accommodate a road designed to take a standard 10 metre long refuse vehicle, with an inside turning radius of 7.0 metres and an outside turning radius of 12.5 metres.

Approximate size for a 240 litre bin pad is 0.6m x 0.7m
Bulk bins will need to be designed separately.

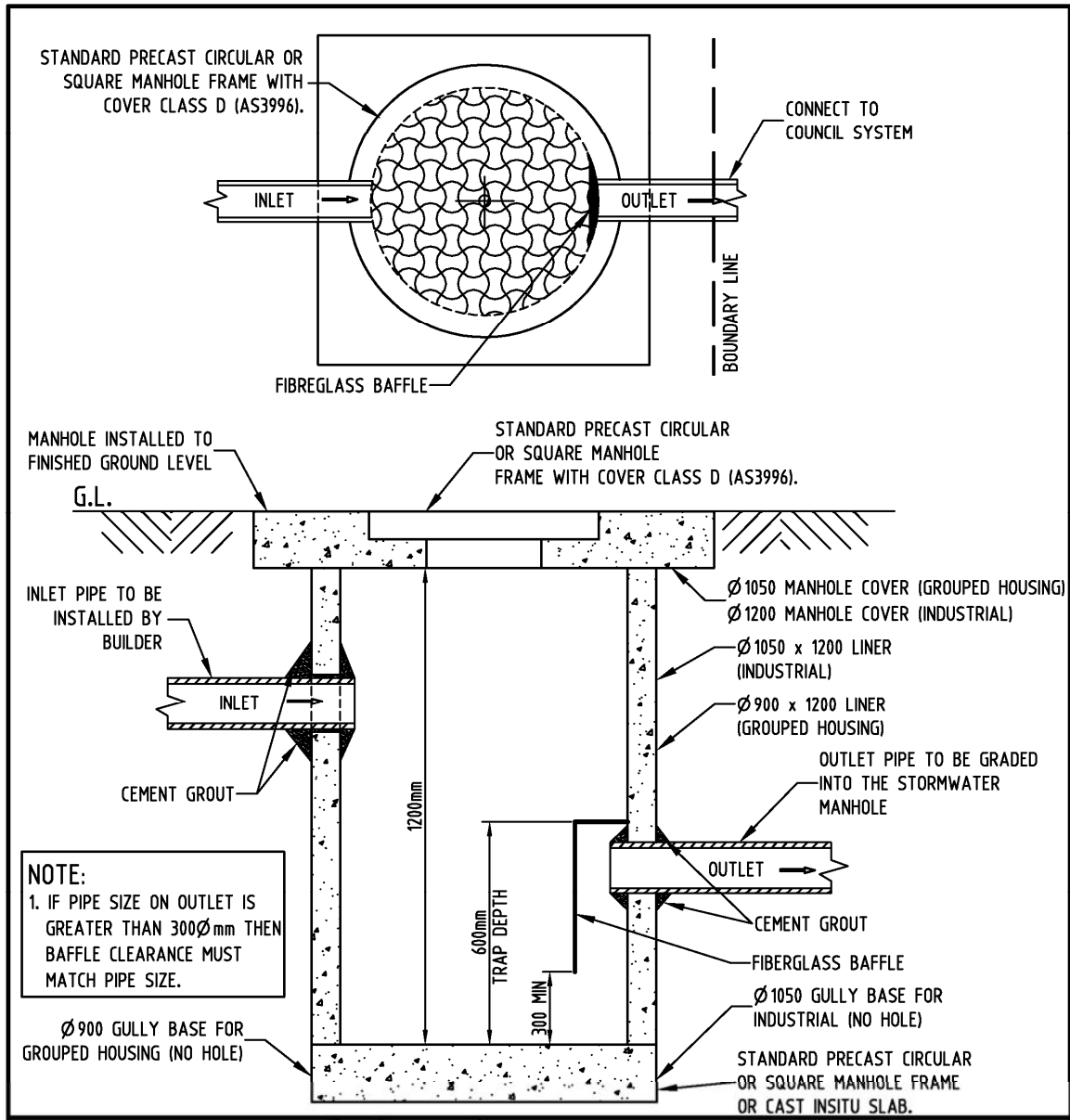


GUIDELINES



AMDT	DATE	DESCRIPTION
C	05/02	ALTERATION TO TITLE BLOCK
D	12/04	ALTERATION TO CARPORT WIDTHS
E	6/05	EXTRA WIDTHS AND REFERENCE TO AS
SCALE 1:100 ORIGINAL DRAWING SIZE A4 DRAWN A.J.VULETA DATE DRN. 05/02/92		Copyright "This document is & shall remain the property of the City of Swan. The document may only be used for the purpose for which it was commissioned & in accordance with the terms of engagement for the commission. Unauthorised use of this document in any way is prohibited."
		city of swan OPERATIONS PARKING UNDER COVER CAR BAY DIMENSIONS RESIDENTIAL PLANNING CODES DRAWING No : STD 48-1s AMENDMENT No: E

GUIDELINES



NOTE:
1. IF PIPE SIZE ON OUTLET IS GREATER THAN 300Ømm THEN BAFFLE CLEARANCE MUST MATCH PIPE SIZE.

AUTHORISATION	AMDT/DATE	DESCRIPTION
	D 10/04	ALTERATION TO TITLE BLOCK
	E 06/05	ALTERATION TO FIBREGLASS BAFFLE - MC
PROJECT MANAGER _____ DATE _____	F 08/08	NOTES AND DIMENSIONS ADDED

SCALE: N.T.S.
DATUM: A.H.D.
ORIGINAL DRAWING SIZE A4



OPERATIONS

APPROVED
DESIGN CO-ORDINATOR _____ DATE _____

STORMWATER PIT FOR INDUSTRIAL/COMMERCIAL CONNECTIONS

DESIGNED: A.J.LA SPADA
DRAWN: A.J.LA SPADA
CHECKED: _____
DATE DRN. MARCH 1998

Copyright
This document is a shall remain the property of the City of Swan. The document may only be used for the purposes for which it was commissioned & in accordance with the terms of engagement for the commission. Unauthorised use of this document in any way is prohibited.

DRAWING No : **STD 25-1s** AMENDMENT No: **F**

GUIDLEINES

