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GIS POINT CODES

POINT DESCRIPTION:	
SSMH	Wastewater drainage manhole
SSLAT	Wastewater lateral
SWMH	Stormwater manhole
SUMP	Sump
SWTK	Stormwater drainage to kerb
SWLAT	Stormwater lateral
VALVE	Water valve
FH	Fire hydrant
MANI	Water manifold
WMETER	Water meter
WMAIN	Points along water main
KERB	Points along kerb line
EOS	Edge of seal
WMSP	Watermain swabbing point

STANDARD DRAUGHTING SYMBOLS

SYMBOLS:	Existing	Proposed	
			Manhole
			Sump
			Valve
			Hydrant
			Power pole
			Street light
			Water Manifold
			Water Meter
			Watermain swabbing point

LINE TYPES:

S S S S	Sewer
SW SW SW	Stormwater
W W W	Water
P P P	Power
T T T	Telecom
G G G	Gas

STANDARD SYMBOLS AND GIS CODES

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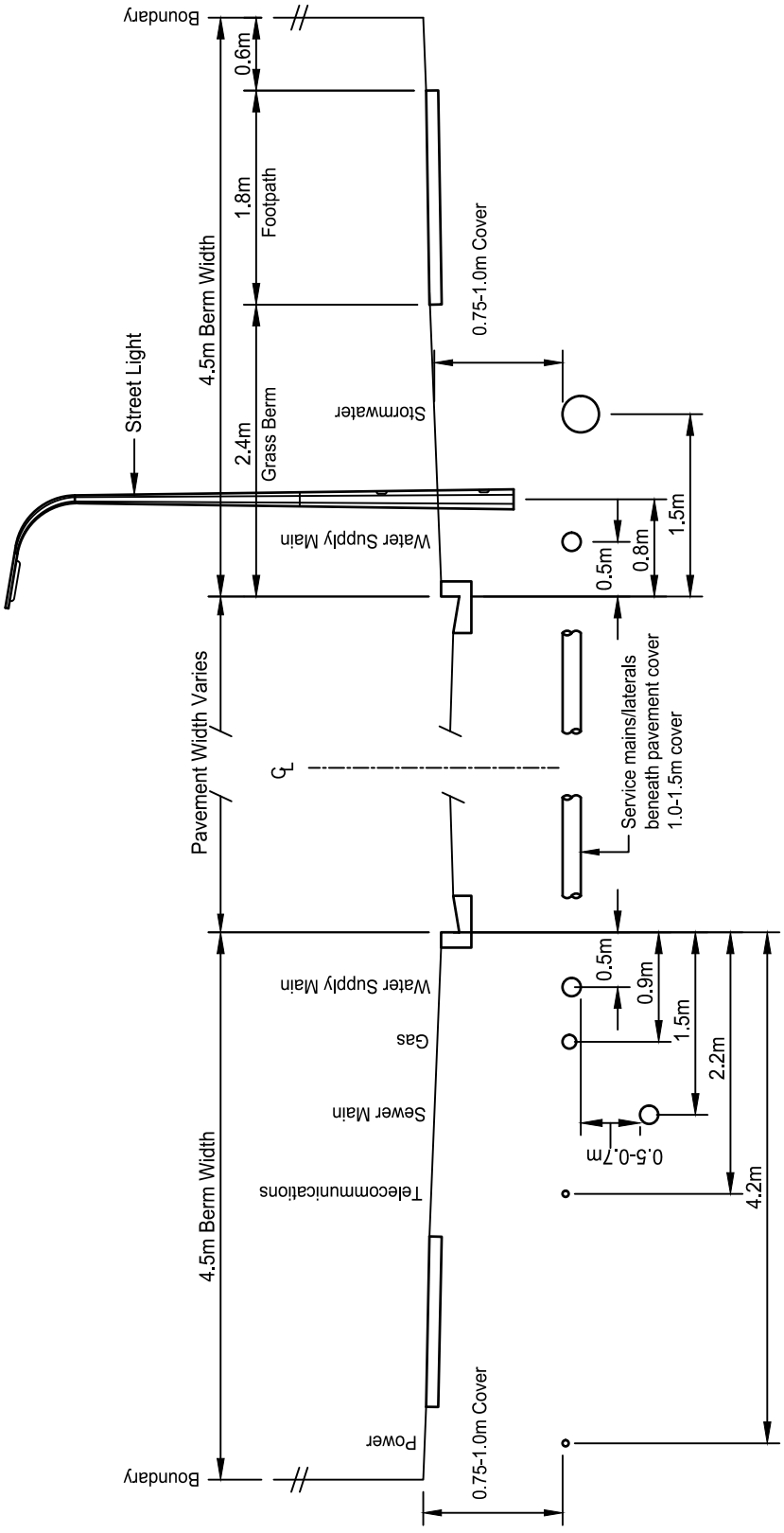
Revised	*05 / 21*

Scales NOT TO SCALE

Plan no.

1.1



NOTE:

1. Principal watermains are required on both sides of street on all arterial, industrial and dual carridgeway roads.
2. Services must also meet minimum backfill depths of 600mm-1000mm.
3. Minimum 80mmØ for Power, Telco, Ridermain and Gas.
4. Minimum 150mmØ for gravity Sewer main, Actual diameters may vary.
5. Refer to NZS4404:2010 for further details and Table 5.6 and 6.4.

TYPICAL CROSS SECTION

STANDARD LOCATION OF SERVICES IN ROAD RESERVE (Sht 1of 2)

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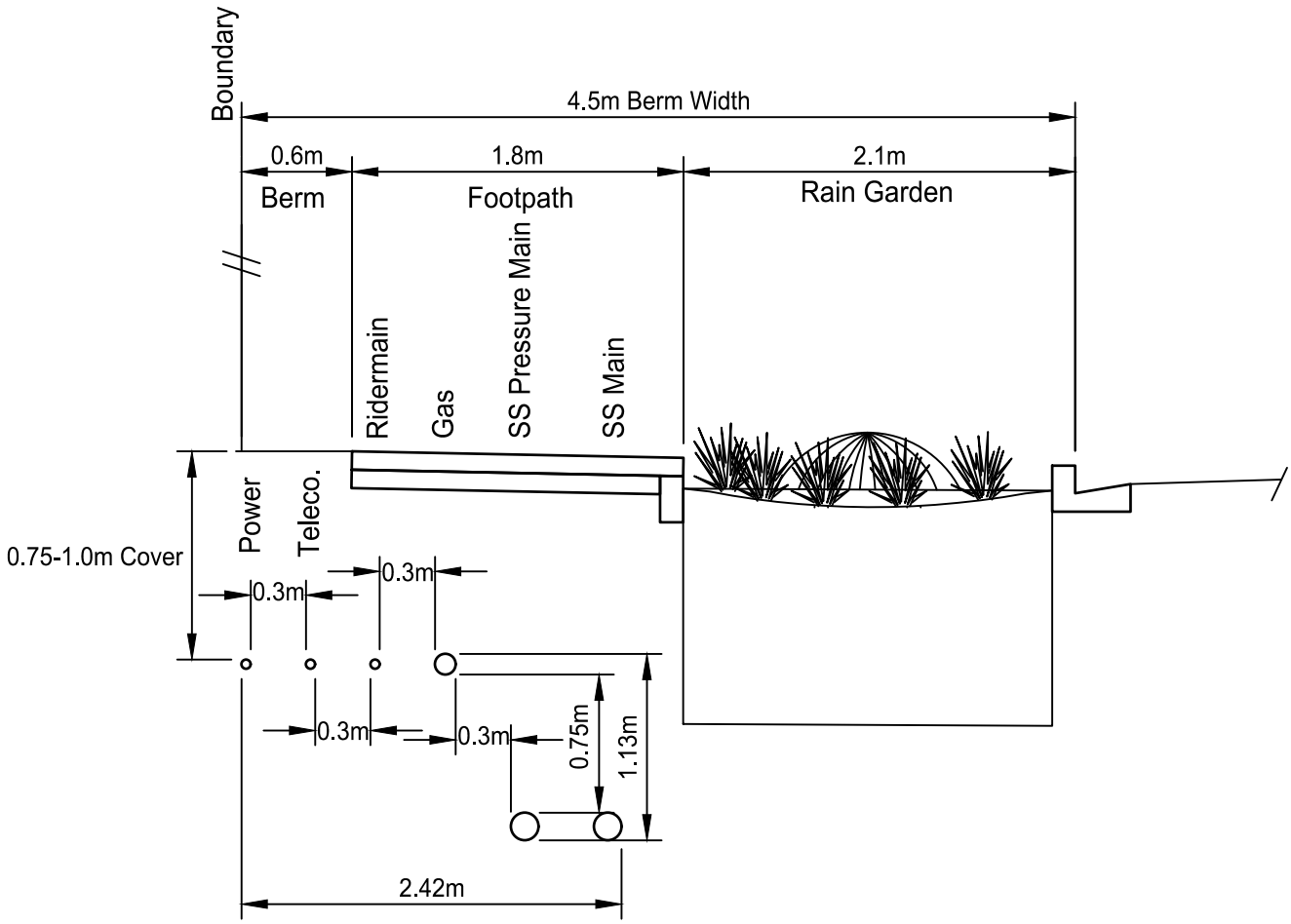
Plan no.

1.2



NOTE:

1. Services must also meet minimum backfill depths of 600mm-1000mm.
2. Minimum 80mmØ for Power, Telco, Ridermain and Gas.
3. Minimum 150mmØ for gravity Sewer main, Actual diameters may vary.
4. Refer to NZS4404:2010 for further details and Table 5.6 and 6.4.

STANDARD LOCATION OF SERVICES IN ROAD RESERVE (Sht 2 of 2)

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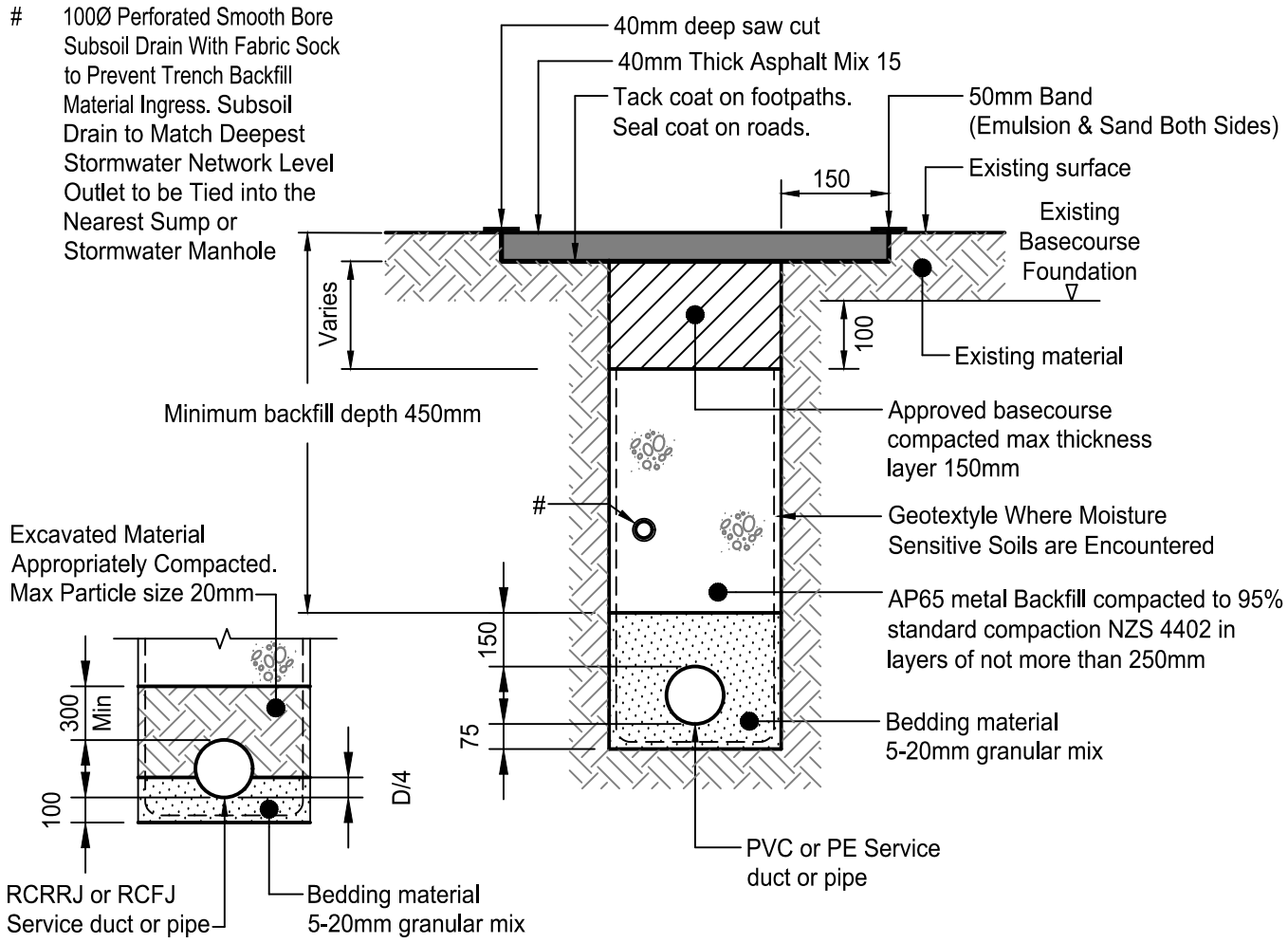
Plan no.

1.2.1



Minimum Backfill Depth

Service		Road Pavement	Berm	Vehicle Access	Parking Areas	Other
Wastewater	Mains	750	750	750	750	600
	Service	750	750	750	750	600
Water Supply	Mains	1000	750	750	750	600
	Service	750	600	600	600	600
Stormwater	Mains	750	750	750	750	600
	Service	750	750	750	750	600
Other Utilities		750	600	600	600	600

NOTE:

1. All dimensions/measurements are in millimeters unless specified otherwise.
2. All trenches must have asphalt surface treatment.

TRENCH CROSS SECTION FOR EXISTING ROADS AND FOOTPATHS

PALMY
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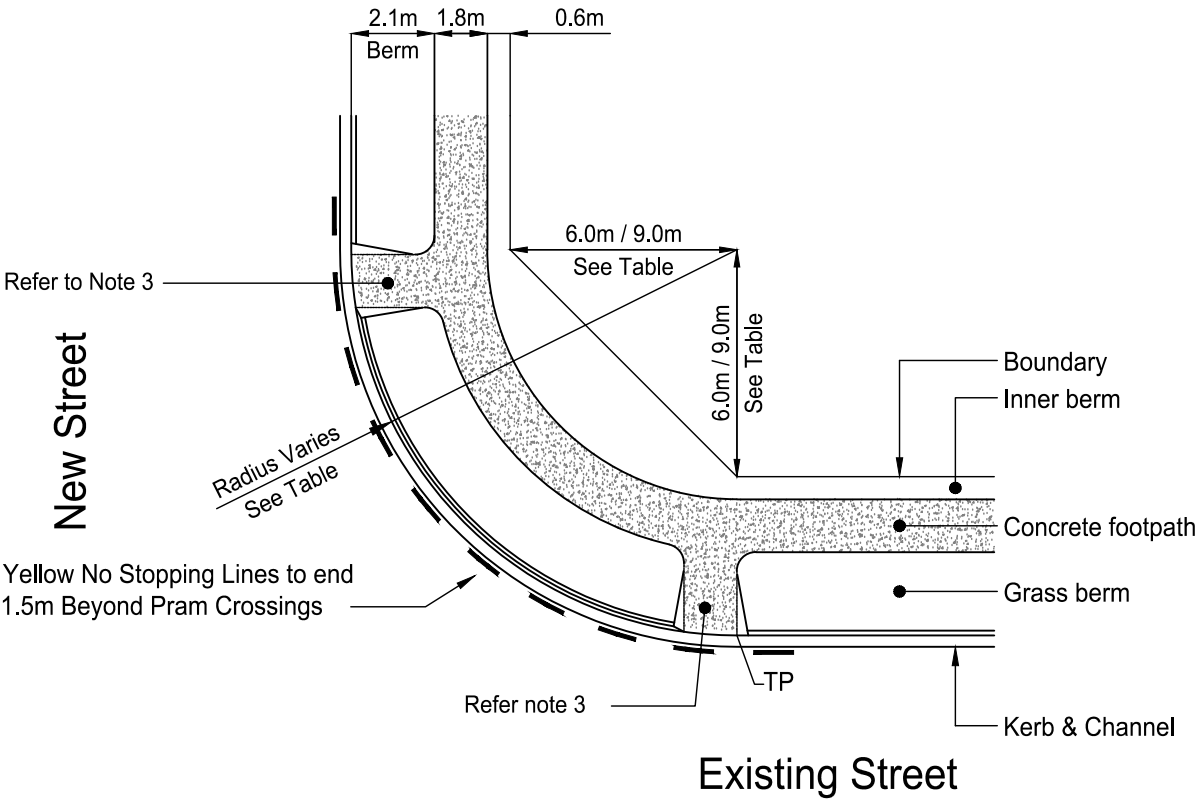
Revised	*02 / 23*

Scales 1:10

Plan no.

1.3



PLAN

Scale 1:200

Kerb Radius Table					
New Road		Existing Road Classification			
		Access		Collector	Arterial
		Residential	Industrial/ Commercial		
Access	Residential	4-6m	13.5m	4-6m	10.5m
	Commerical	13.5m	13.5m	13.5m	13.5m
Collector		4-6m	13.5m	10.5m	10.5m
Arterial		Specific Design			
Shading Denotes 9.0m Splay, All Other Intersections Shall be 6m Splays.					

NOTE:

1. For crossing in grass berm refer to DWG 3.1.1A for construction details.
2. For crossing with no grass frontage refer to DWG 3.1.1B for construction details.
3. Refer to DWG 3.1.2 for crossing location details.
4. Tactile pavers as per RTS 14 on crossings.

MOBILITY CROSSING & CORNER SPLAY DETAILS

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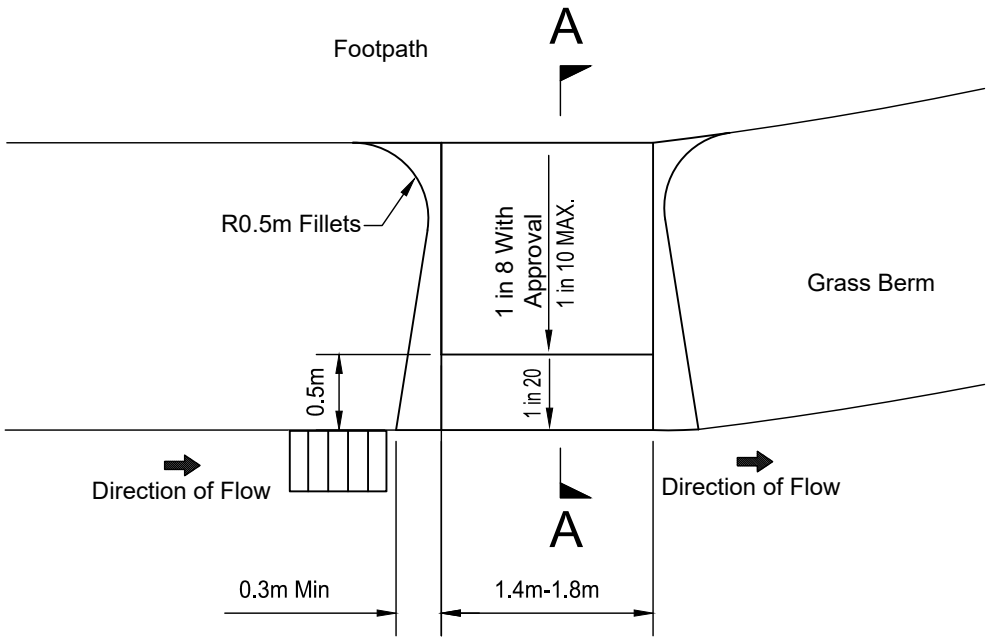
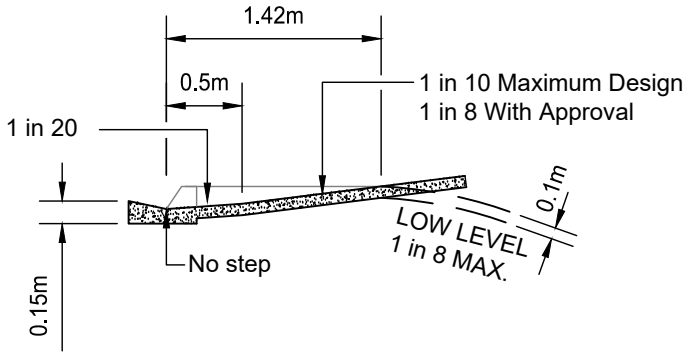
Scales 1:200, 1:20

Plan no. 3.1





SECTION A-A

NOTE:

1. Assumes Maximum transverse grade of 2%.
2. Location and Use of TGSI's to be PNCC approved.
3. Sumps are to be located upstream of crossings or by PNCC approval.
4. Grass Berms < 2.3m require approach footpaths to be graded down to meet Max Slope of 1 in 10 (Refer to DWG 3.1.1B Section B-B).
5. 100mm thick 20MPa concrete on 100mm thick compacted AP40 basecourse.
6. Tactile pavers as per RTS 14 on Crossings.

MOBILITY CROSSING WITH GRASS FRONTAGE

PALMY
BRIDGEA PALMERSTON NORTH CITY

Stuart Cartwright
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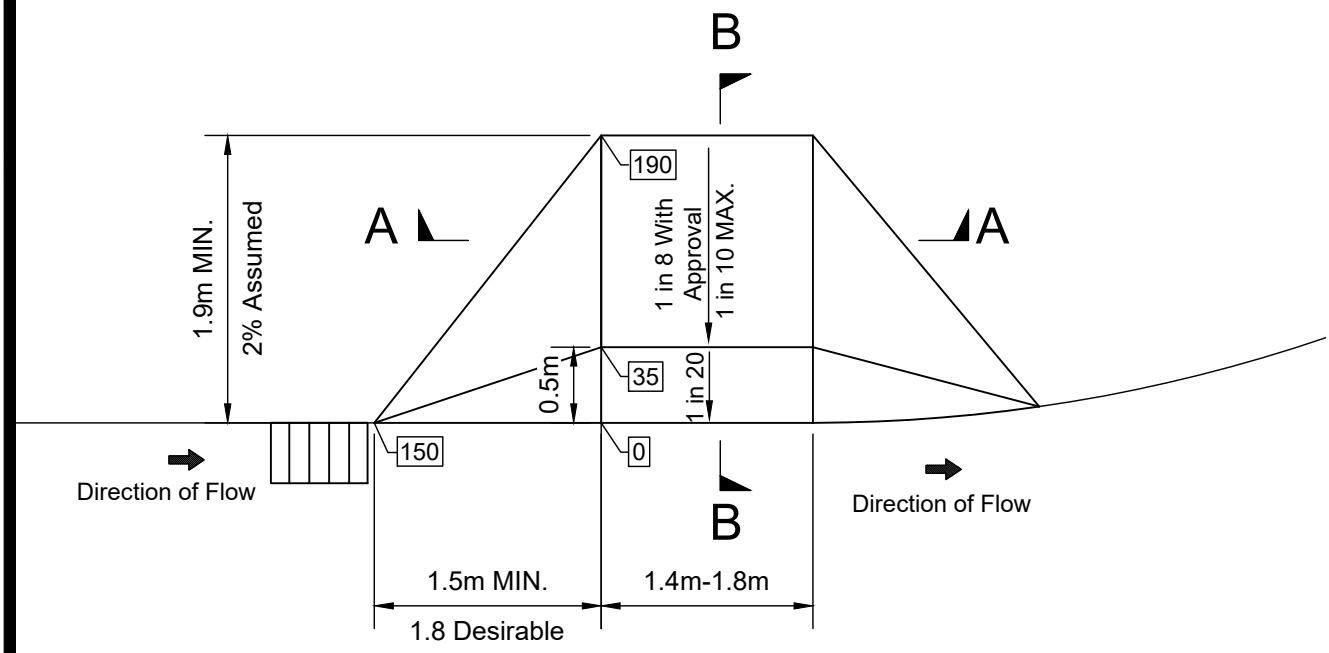
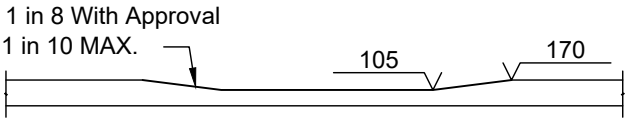
Revised	*02 / 23*

Scales 1:50

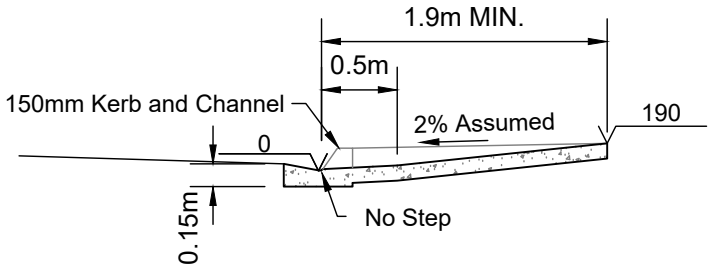
Plan no.

3.1.1A





SECTION A-A



SECTION B-B

NOTE:

1. Where max grade cannot be achieved the footpath will need to be lowered on the approaches.
2. Assumes maximum transverse grade of 2%
3. Location and Use of TGSI's to be PNCC approved.
4. Sumps are to be located upstream of crossings or by PNCC approval.
5. 100mm thick 20MPa concrete on 100mm thick compacted AP40 basecourse.
6. Tactile pavers as per RTS 14 on Crossings.

MOBILITY CROSSING WITH NO GRASS BERM

PALMY
PAPAMOEA PALMERSTON NORTH CITY

Stuart Cartwright
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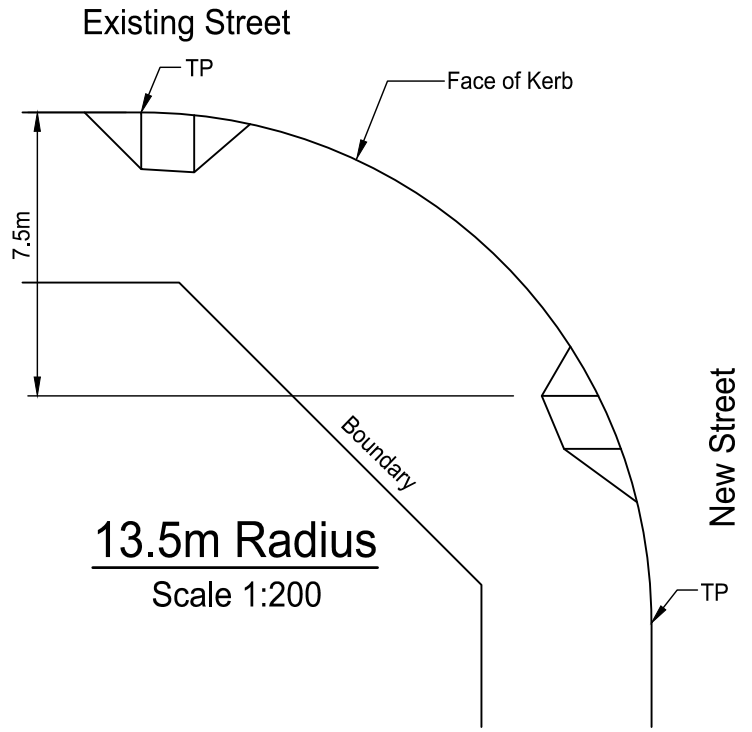
Revised	*02 / 23*

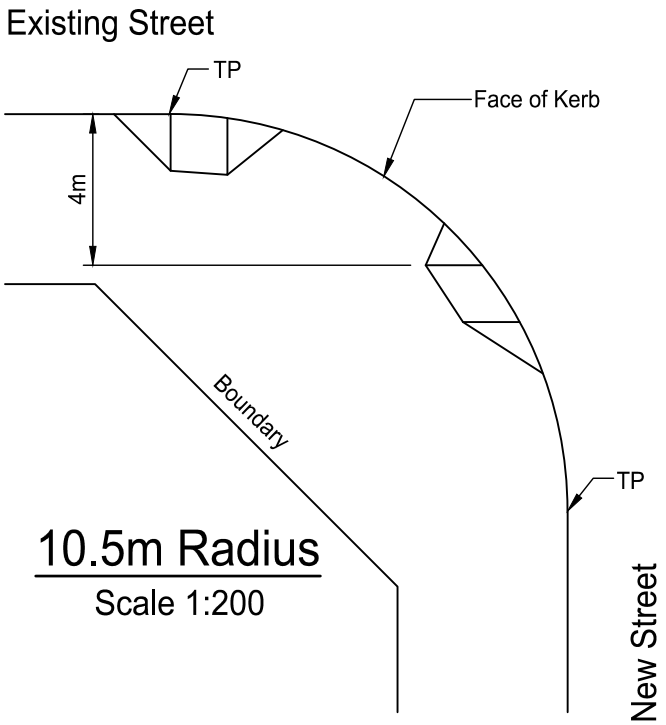
Scales 1:50

Plan no.

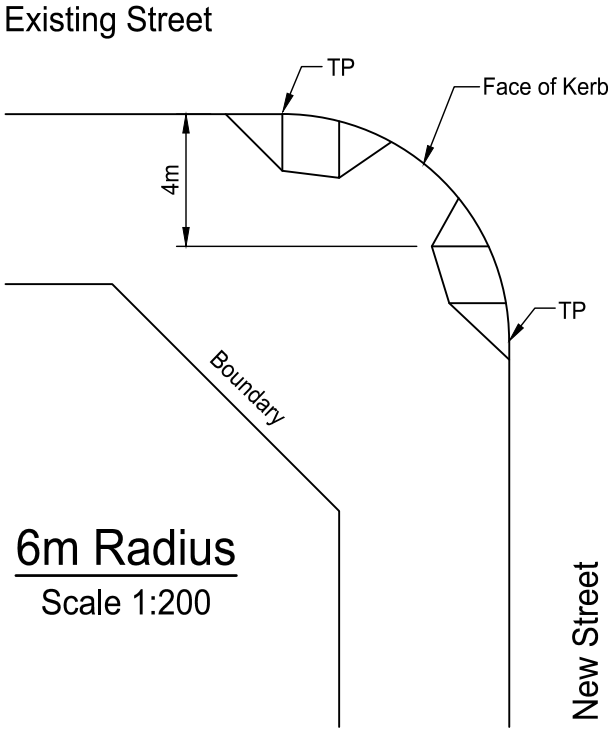
3.1.1B



13.5m Radius
Scale 1:200



10.5m Radius
Scale 1:200



6m Radius
Scale 1:200

NOTE:

1. Refer Table on DWG 3.1 for Corner Radii.

MOBILITY CROSSING LOCATION

PALMY
PARMERSTON NORTH CITY

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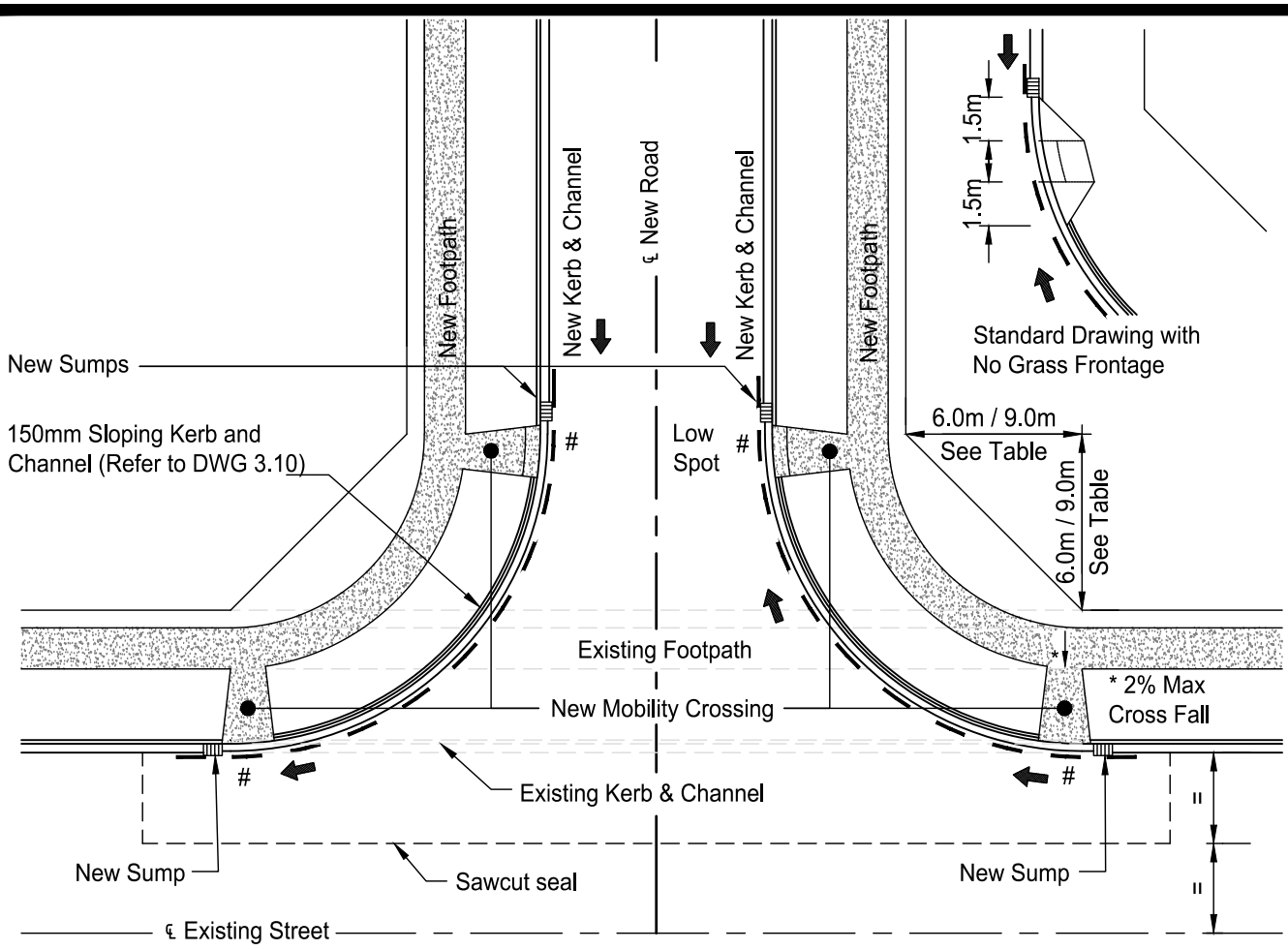
Revised	*05 / 21*

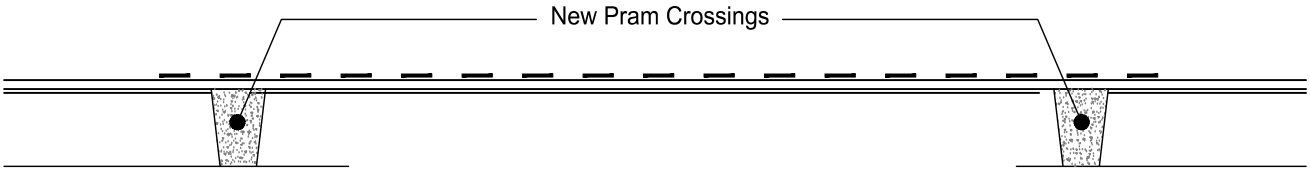
Scales 1:200

Plan no.

3.1.2



#Refer to DWG 3.1.2 for Mobility Crossing Locations



Standard Drawing with Grass Berm

KEY
← Direction of flow

Kerb Radius Table

New Road		Existing Road Classification			
		Access		Collector	Arterial
		Residential	Industrial/ Commercial		
Access	Residential	4-6m	13.5m	4-6m	10.5m
	Commerical	13.5m	13.5m	13.5m	13.5m
Collector		4-6m	13.5m	10.5m	10.5m
Arterial		Specific Design			

Shading Denotes 9.0m Splay, All Other Intersections Shall be 6m Splays.

NOTE:

1. This detail applies where footpath, kerb and channel is to be removed from the existing street.
2. All sumps to be located on upstream side of a mobility crossing.
3. Tactile pavers as per RTS 14 on Crossings.

INTERSECTION DETAIL

PALMY
PAPMOEA
PALMERSTON
NORTH
CITY

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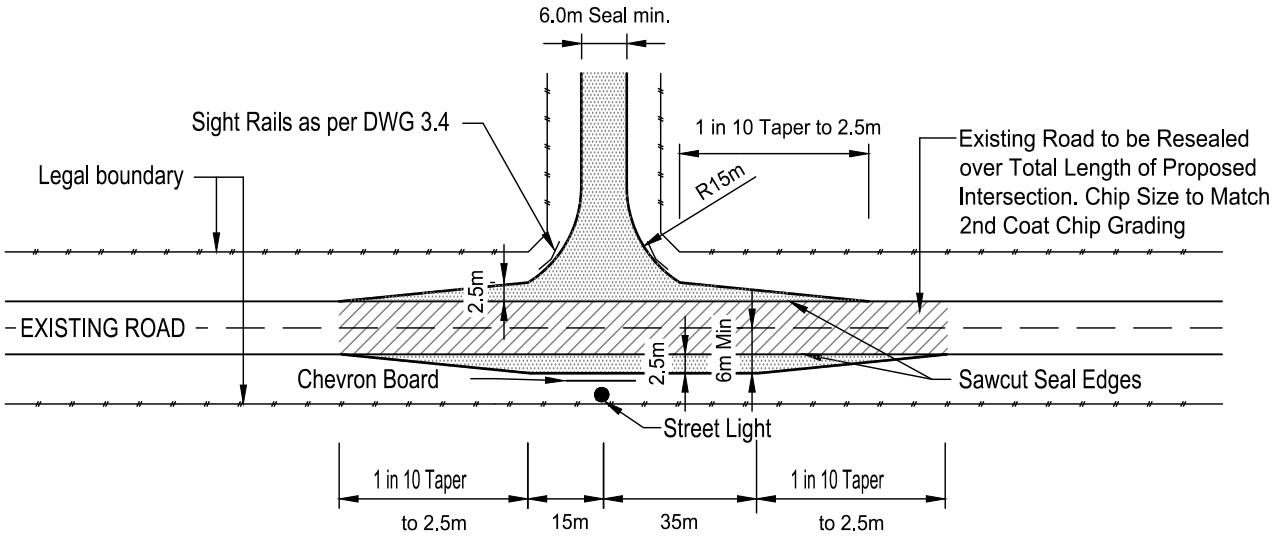
Revised	*02 / 23*

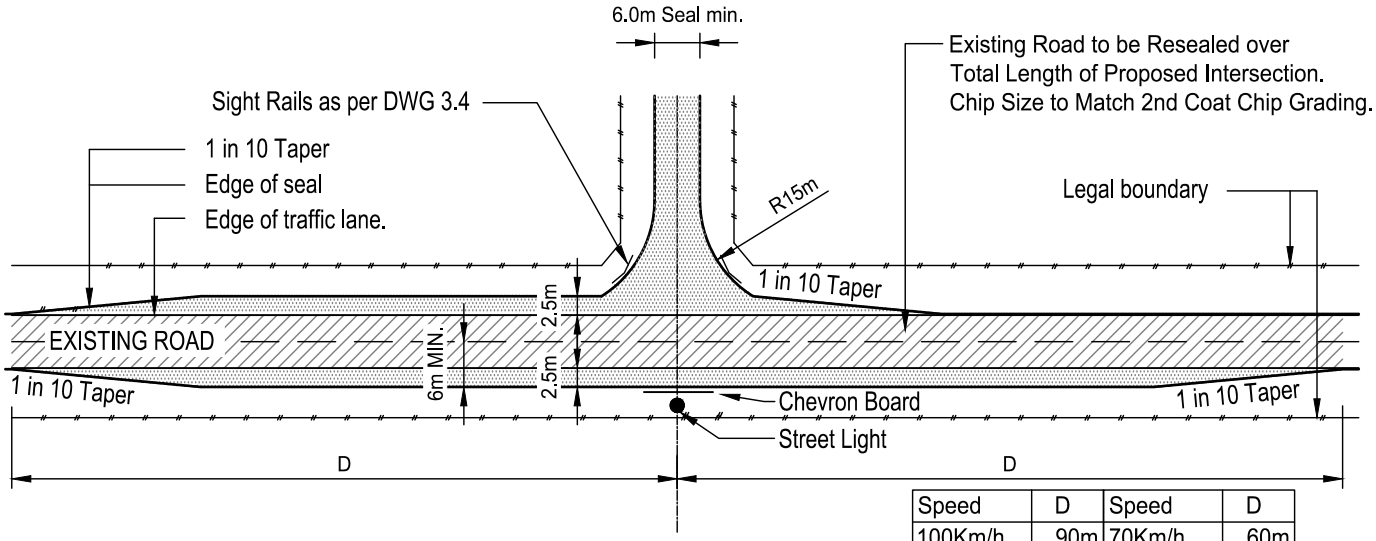
Scales 1:250

Plan no.

3.2



JUNCTION WITH SECONDARY COLLECTOR



Speed	D	Speed	D
100Km/h	90m	70Km/h	60m
90Km/h	80m	60Km/h	50m
80Km/h	70m		

JUNCTION WITH PRIMARY COLLECTOR

NOTE:

1. Existing pavement to be upgraded to similar standard to new road unless it is already to the required standards.
2. Chevron Boards to MOTSAM Standard
3. Road Marking and Lighting to approved design
4. Curved Roads to approved design
5. Chevron Boards only if approved

LEGEND

Seal widening and access sealing

RURAL / RURAL RESIDENTIAL ROAD INTERSECTION

PALMY
PAHAUEA PALMERSTON NORTH CITY

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Drawn	*E.Fromont*
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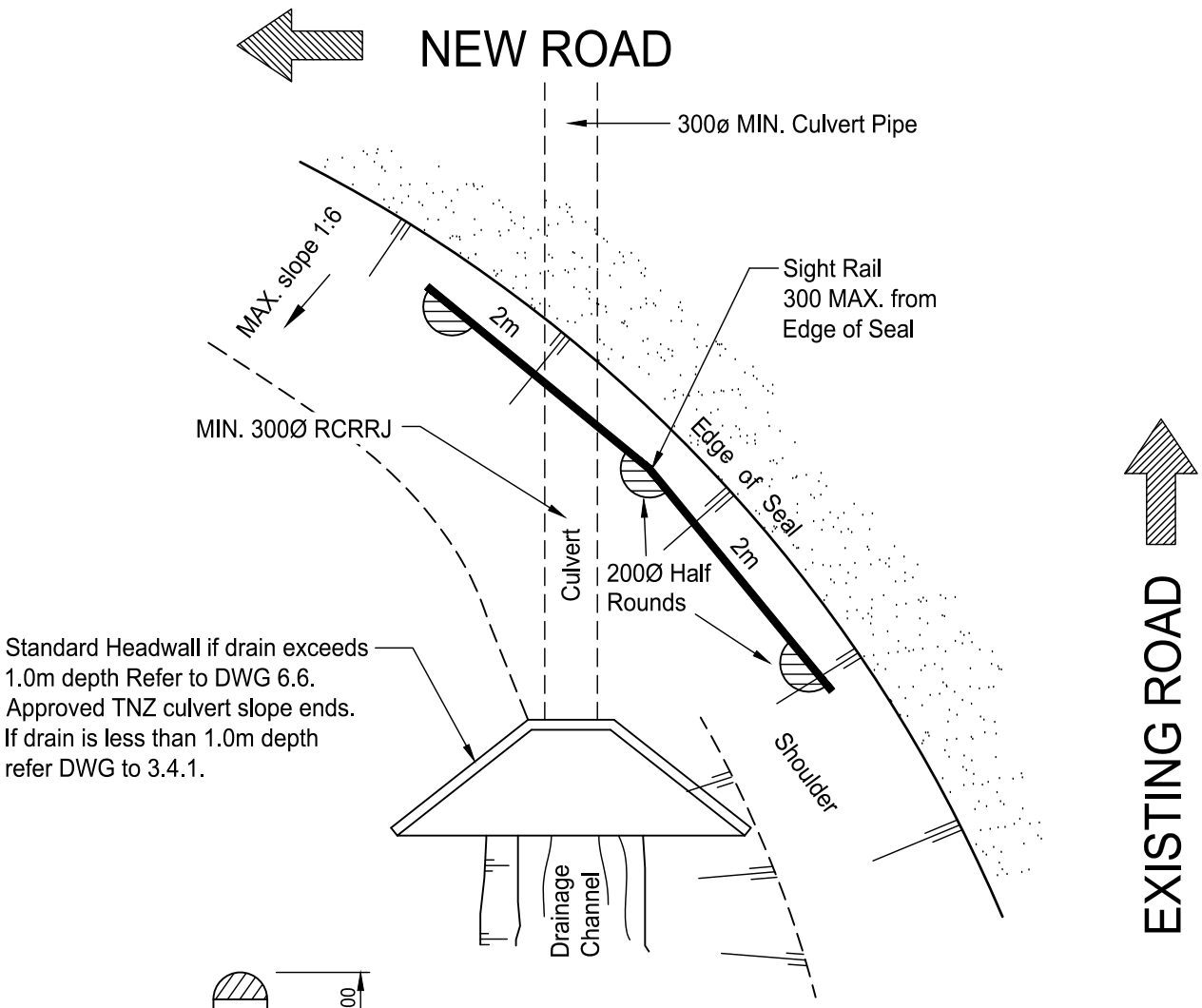
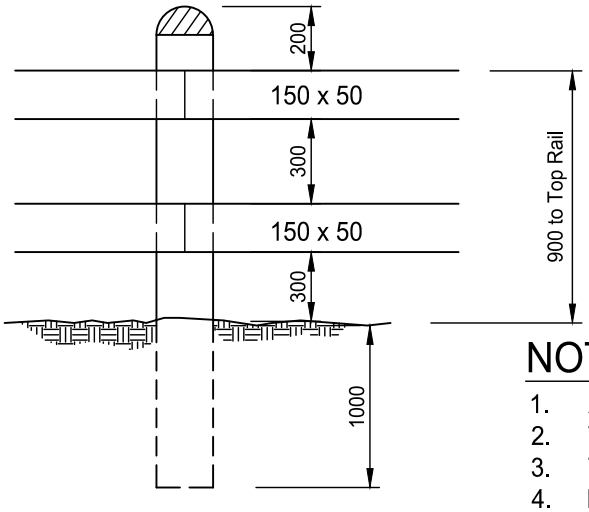
Revised	*05 / 21*

Scales NOT TO SCALE

Plan no.

3.3





SIGHT RAIL DETAIL

NOTE:

1. Also refer to DWG 3.22 & 3.23.
2. Timber posts to be treated to H5 specification.
3. Timber rails to be H3 treated.
4. Hynds 'Kiwisaver' culvert ends may be used as an alternative, subject to installation to manufacturers specification.
5. All dimensions/measurements are in millimeters unless specified otherwise.

RURAL ROAD / ACCESSWAY ENTRANCE EDGE PROTECTION DRAIN DEPTH >1.0m

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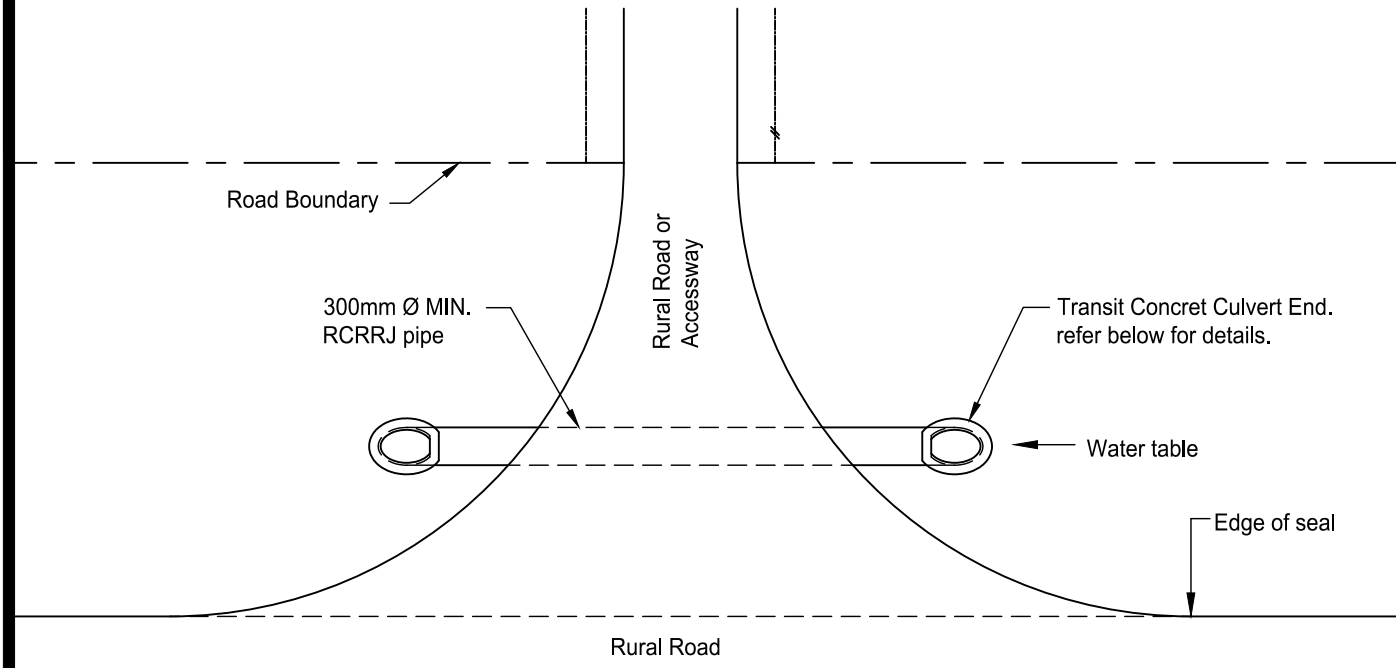
Revised	*05 / 21*

Scales NOT TO SCALE

Plan no.

3.4



1. Only concrete pipes are to be used in the construction of water table culverts. Minimum diameter 300mm.

2. There are various standards currently available for the construction and completion of water table culverts. In order to standardize procedures, all culverts up to a diameter of 425mm shall be constructed as follows:

TRANSIT CONCRETE CULVERT ENDS

3. Humes Transit Concrete Culvert Ends or similar TNZ approved culvert end to be used, Constructed to manufacturers specifications.

4. No concrete filled bags or similar are to be used in any part of a PNCC structure.

RURAL ROAD / ACCESSWAY ENTRANCE - EDGE PROTECTION FOR DRAIN DEPTH <1.0m

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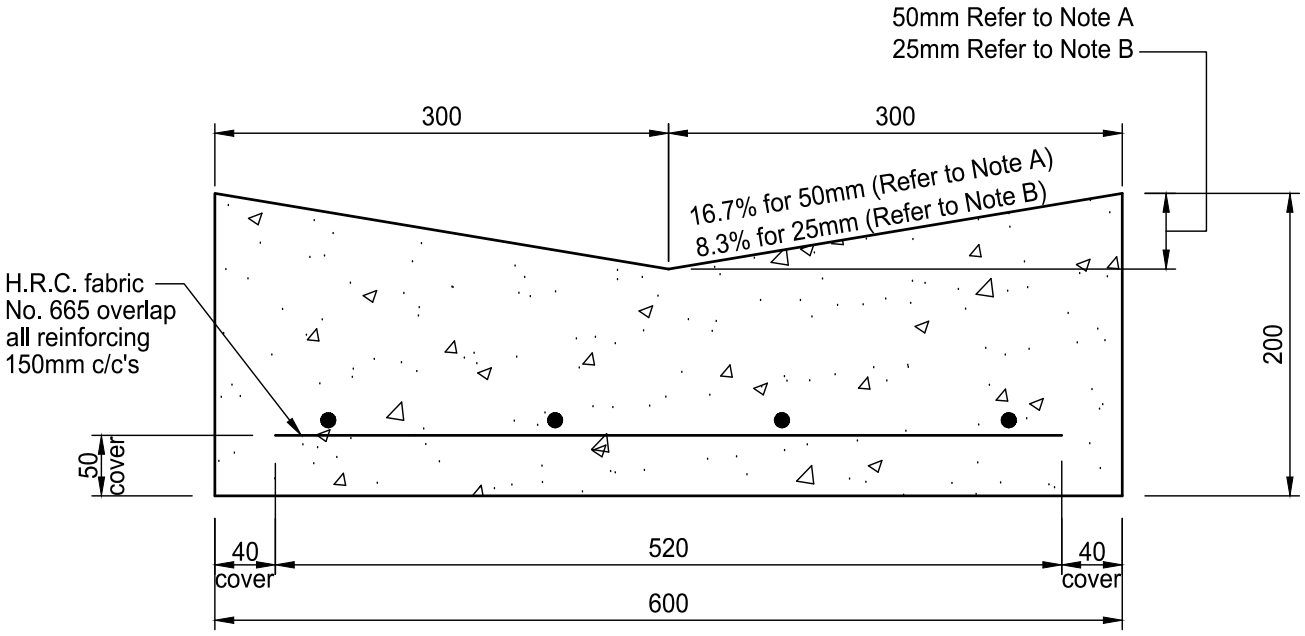
Revised	*05 / 21*

Scales 1:20

Plan no.

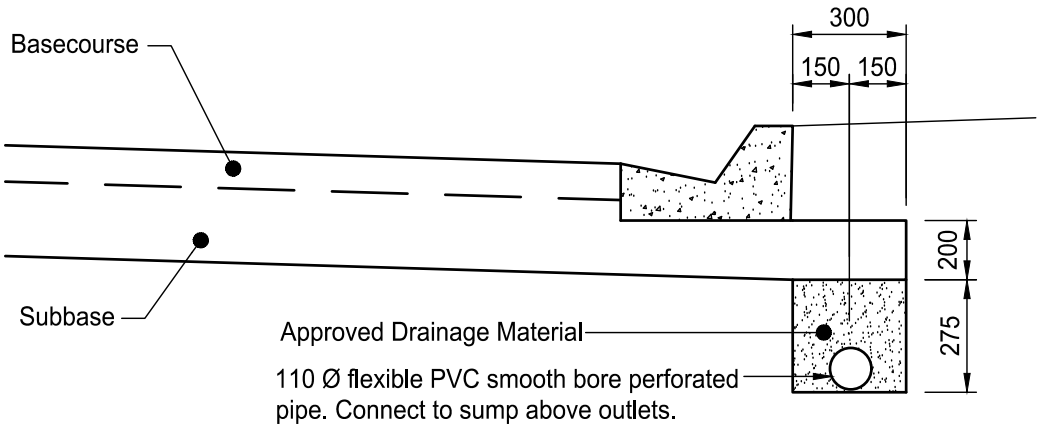
3.4.1



NOTE:

1. Subgrade depth to be designed, design to be approved by PNCC
   - A. 50mm Standard
   - B. 25mm to be used as part of an accessible route
2. Concrete to be minimum 20MPa strength

600mm DISH CHANNEL



SUBGRADE DRAINAGE DETAIL AT KERB

NOTE:

1. All dimensions/measurements are in millimeters unless specified otherwise.

DISH CHANNEL AND SUBGRADE DRAINAGE

PALMY
PAPMURA PALMERSTON NORTH CITY

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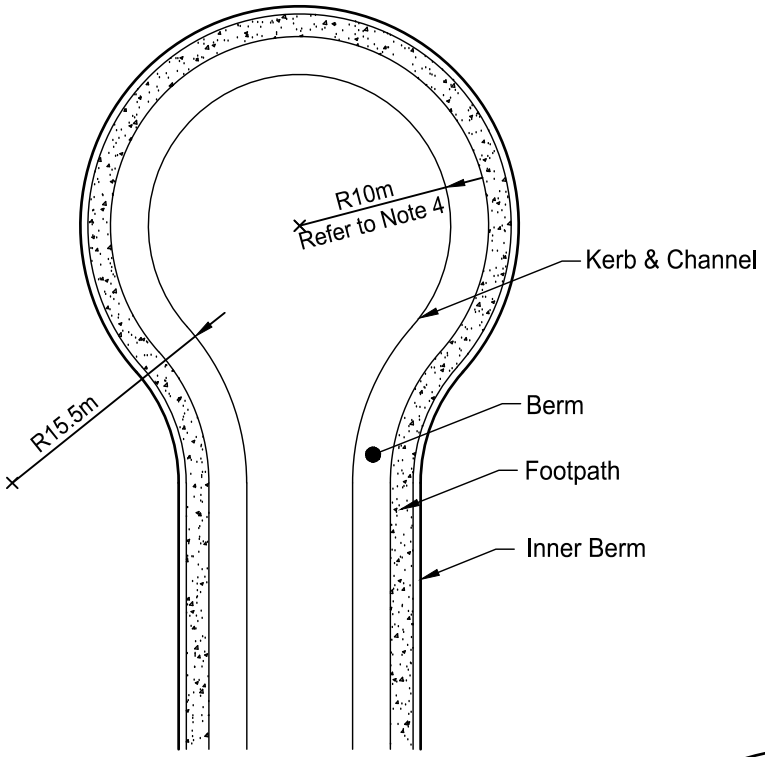
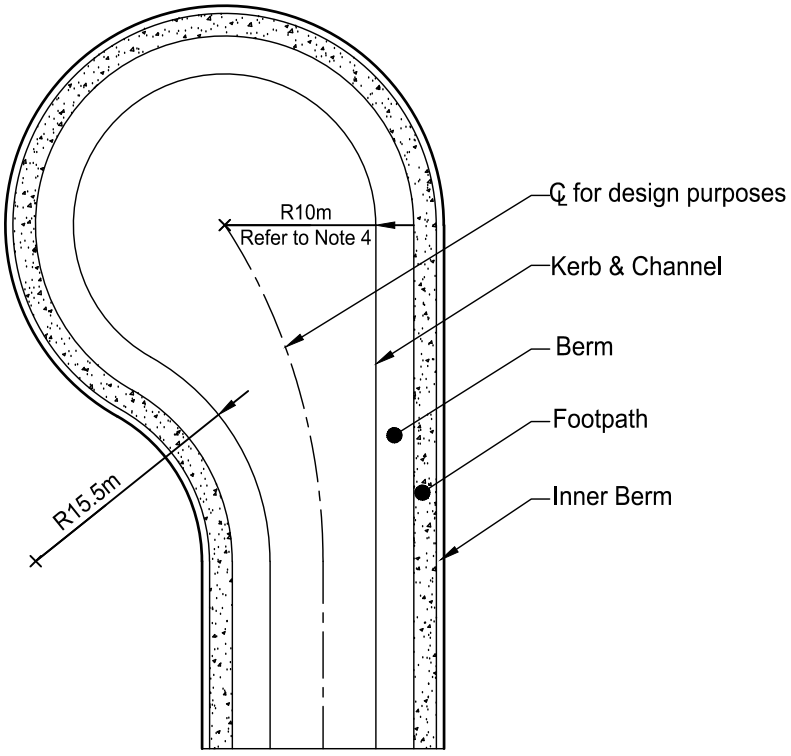
Revised	*02 / 23*

Scales 1:5, 1:20

Plan no.

3.5





NOTE:

1. Carriageway width can vary.
2. Footpath and boundary need not be concentric with kerb.
3. All radii shown are minimum radii.
4. Minimum Industrial Cul-de-Sac radius 15m.

MINIMUM CUL-DE-SAC HEAD DESIGN STANDARDS FOR URBAN / INDUSTRIAL / RURAL R.O.W

PALMY
PAPAKĀREA PALMERSTON NORTH CITY

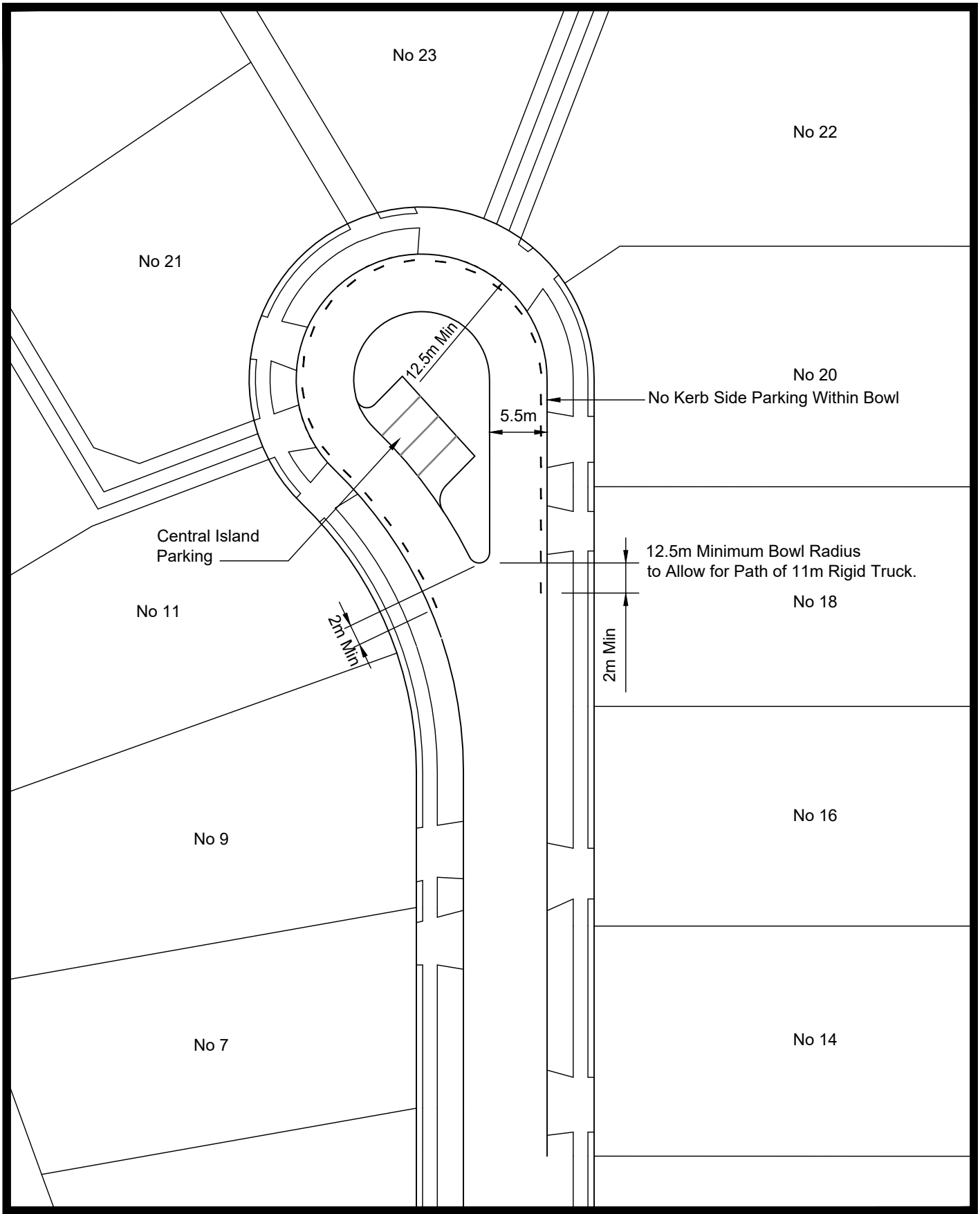
Robert van Bentum
Chief Engineer

Designed	*Infrastructure*
Drawn	*E.Fromont*
Checked	*T. Mcglynn*
Revised	*05 / 21*

Scales 1:500

Plan no.

3.6



CUL-DE-SAC DETAIL SERVICING
MORE THAN 10 ALLOTMENTS

PALMY
PARMURA PALMERSTON NORTH CITY

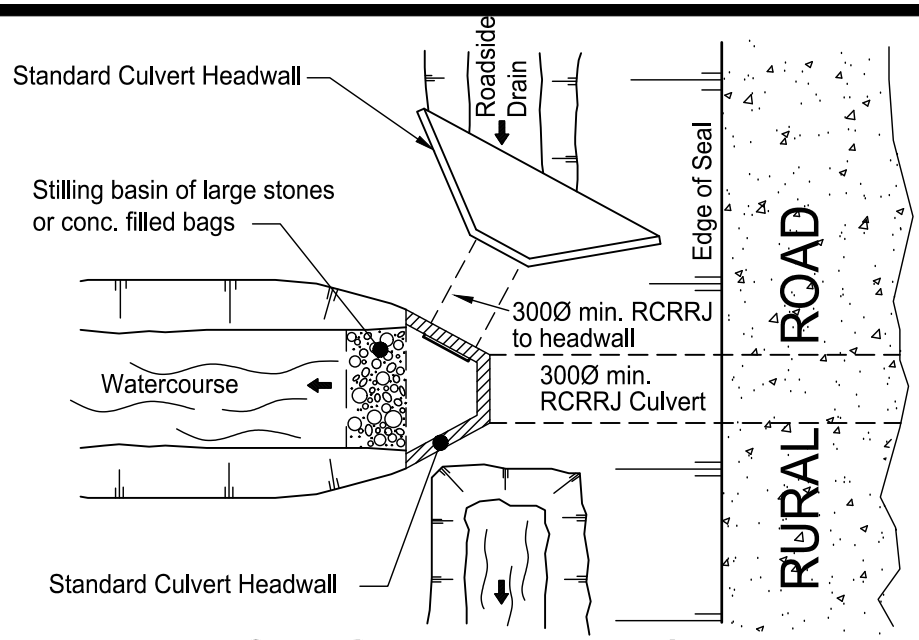
Robert van Bentum
Chief Engineer

Designed	*Infrastructure*
Drawn	*E.Fromont*
Checked	*T. Mcglynn*
Revised	*05 / 21*

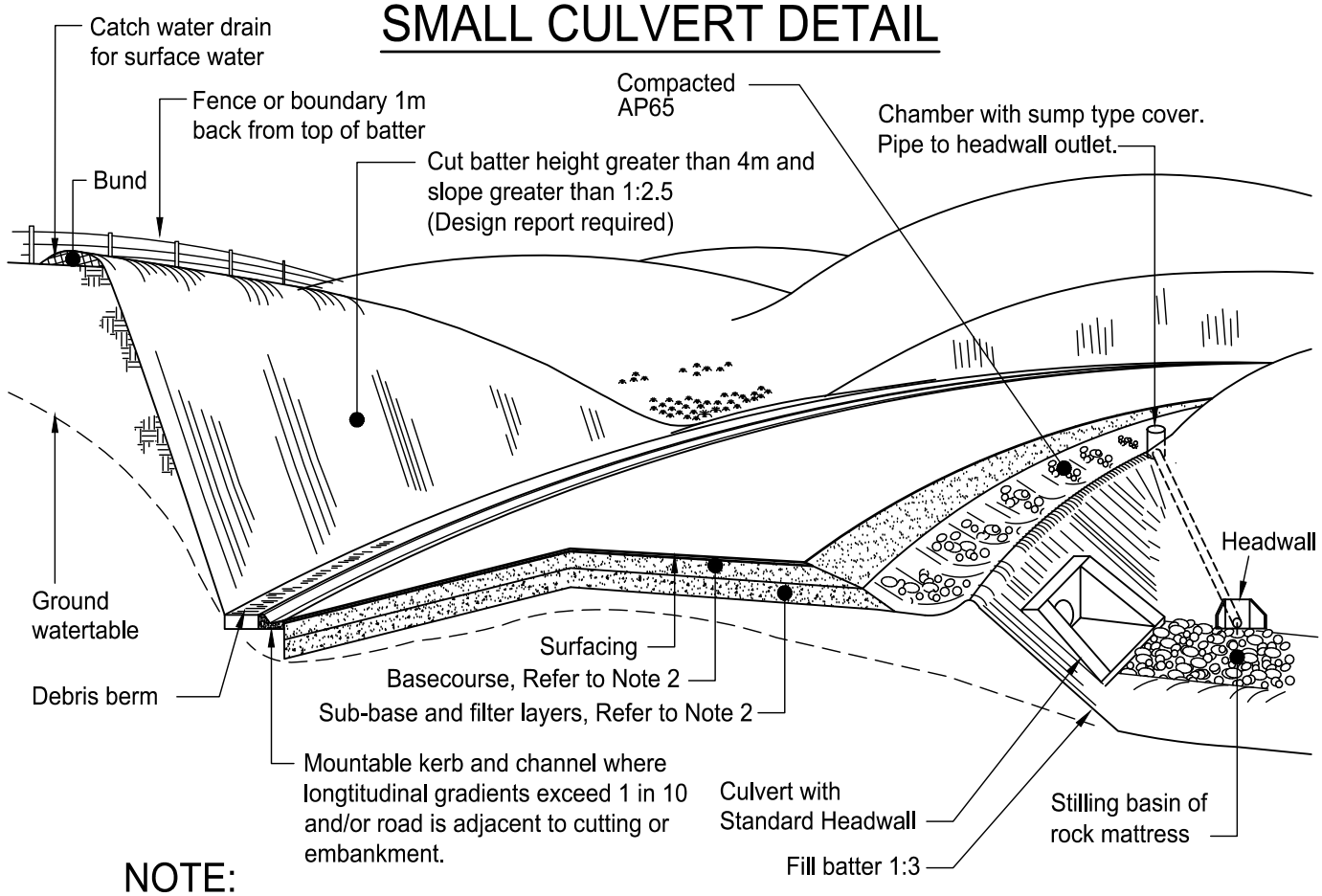
Scales NOT TO SCALE

Plan no.

3.6.1



ROADSIDE DRAINAGE
SMALL CULVERT DETAIL



NOTE:

1. Signs and Markings to be installed, and conform to MOTSAM guidelines, and be approved by PNCC
2. To be designed, design to be approved by PNCC.

RURAL ROAD - TYPICAL DETAILS

PALMY
PARMERA PALMERSTON NORTH CITY

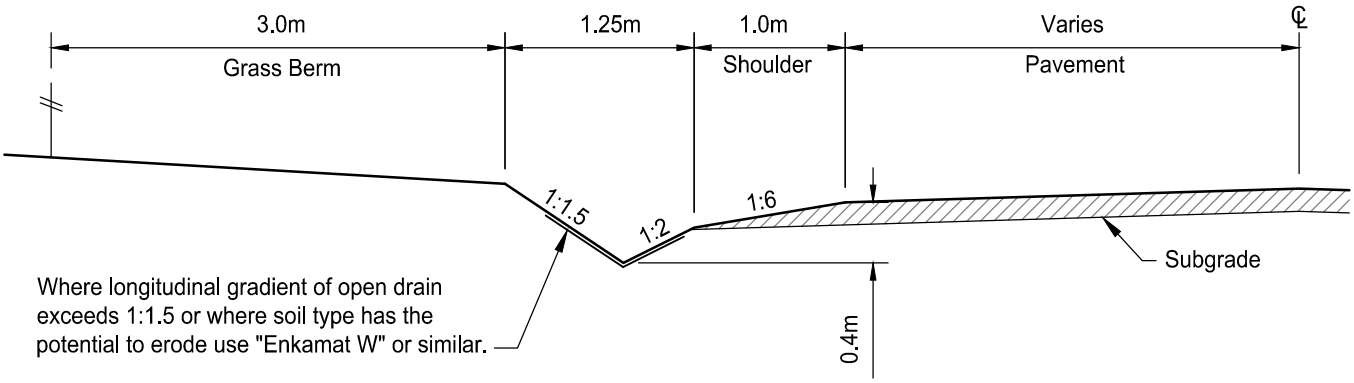
Robert van Bentum
Chief Engineer

Designed	*Infrastructure*
Drawn	*E.Fromont*
Checked	*T. Mcglynn*
Revised	*05 / 21*

Scales NOT TO SCALE

Plan no.

3.7



NOTE:

1. "Enkamat W" or similar to be installed to manufacturers instructions.

RURAL ROAD - OPEN DRAIN TYPICAL DETAILS

PALMY
PAPAIOEA PALMERSTON NORTH CITY

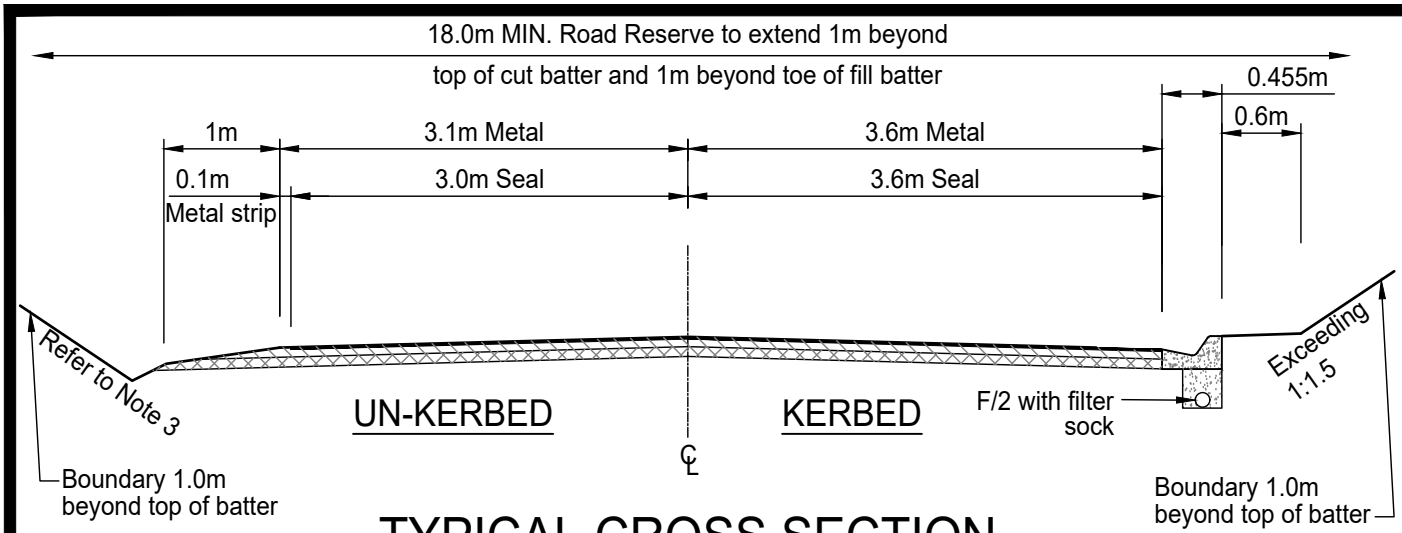
Robert van Bentum
Chief Engineer

Designed	*Infrastructure*
Drawn	*E.Fromont*
Checked	*T. Mcglynn*
Revised	*05 / 21*

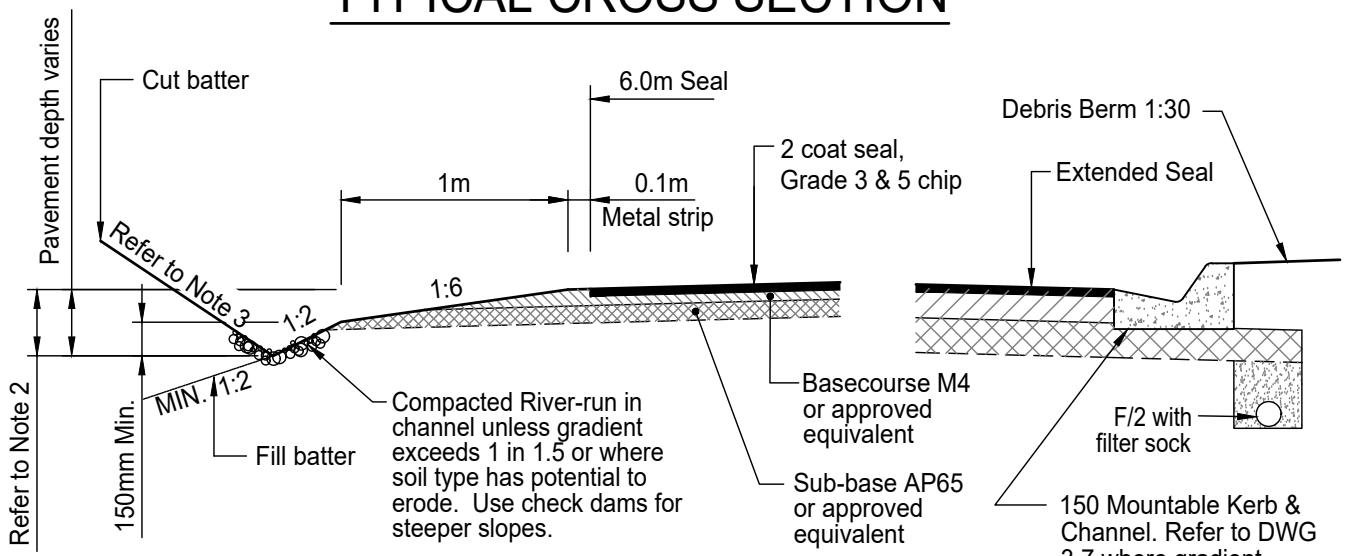
Scales 1:50

Plan no.

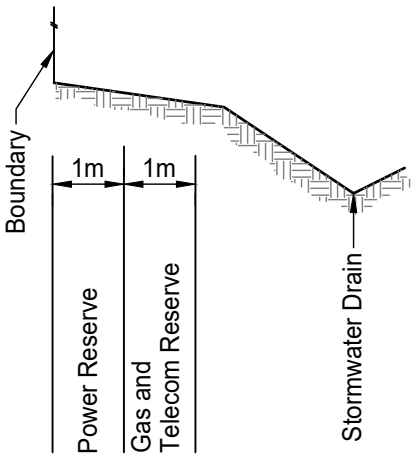
3.8



TYPICAL CROSS SECTION



SIDE SLOPE DETAIL



DESIRED SERVICE LOCATION (for both sides)

NOTE:

1. Pavement depth to be designed
2. Adopt which ever provides the greater depth:
   - (A) 400mm Below the seal edge, or
   - (B) 150mm Below the pavement/subbase interface
3. Batter slopes steeper than 1:1.5 will require engineering design
4. Unbound granular pavement construction shall be in accordance with NZTA B/2.
5. Not included in Rural R.O.W.
6. Second Coat Seal to be laid as per ESLD clause 1.34.

RURAL ROAD - TYPICAL CROSS SECTION

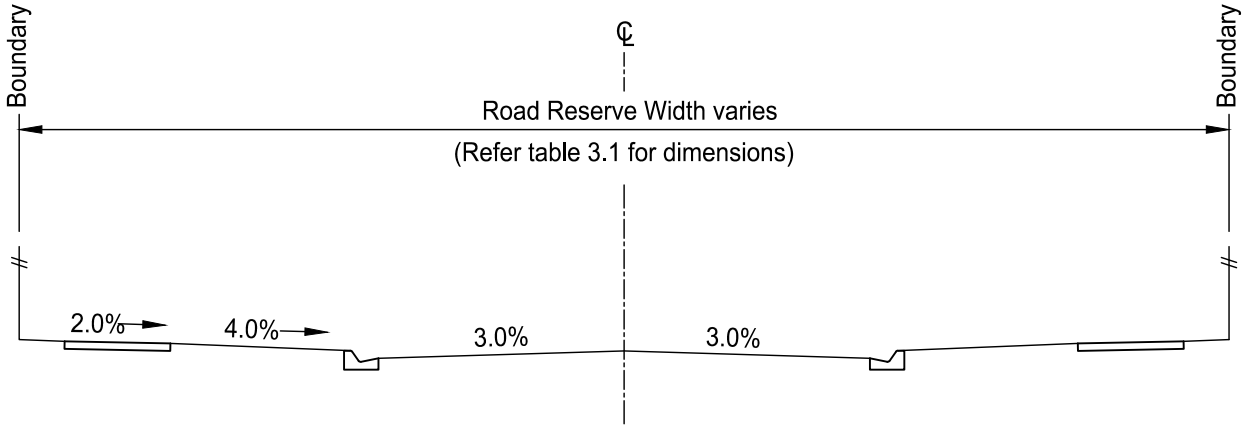
PALMY
PAPAMOEA PALMERSTON NORTH CITY

Stuart Cartwright
Chief Engineer

Designed	*Infrastructure*
Drawn	*R.Hodgson*
Checked	*T. Mcglynn*
Revised	*02 / 23*

Scales NOT TO SCALE

Plan no. 3.9



NOTE:

1. Footpaths required in urban areas only.

TYPICAL CROSS SECTION

URBAN / RURAL RESIDENTIAL / RURAL ROAD - TYPICAL CROSS SECTION

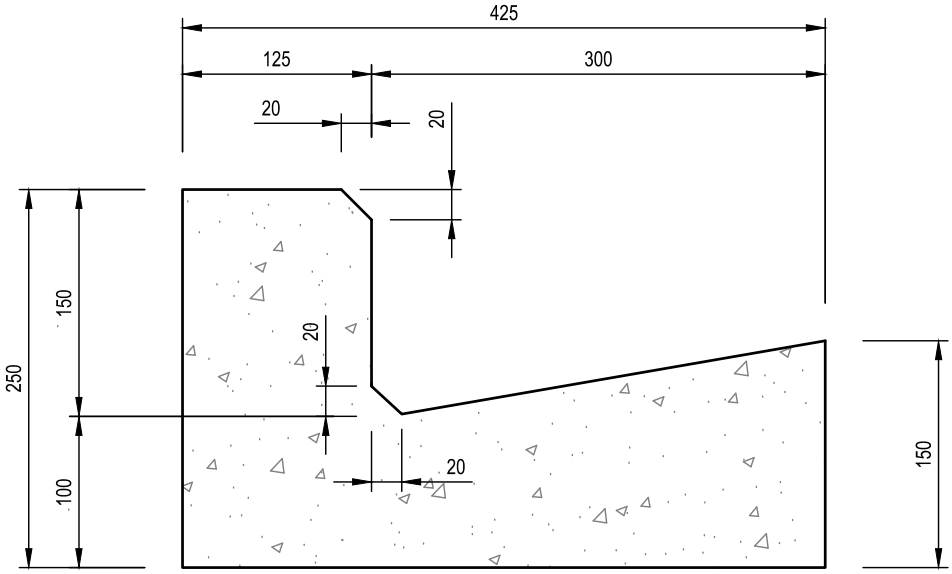
PALMY
PAPAIOEA PALMERSTON NORTH CITY

Robert van Bentum
Chief Engineer

Designed	*Infrastructure*
Drawn	*E.Fromont*
Checked	*T. Mcglynn*
Revised	*05 / 21*

Scales NOT TO SCALE

Plan no. 3.9.1



150mm VERTICAL KERB AND CHANNEL

NOTE:

1. Concrete to be 20MPa with the exeption of 25MPa at intersections.

STANDARD 150mm KERB AND CHANNEL DETAILS

PALMY
BRINGING PALMERSTON NORTH CITY

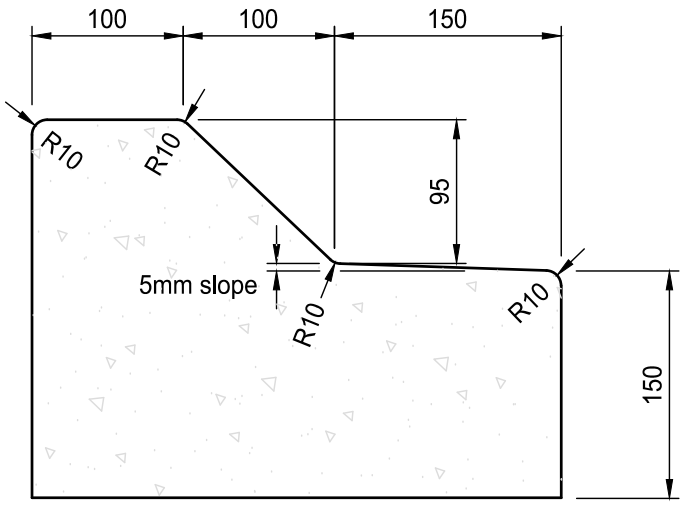
Robert van Bentum
Chief Engineer

Designed	*Infrastructure*
Drawn	*E.Fromont*
Checked	*T. Mcglynn*
Revised	*05 / 21*

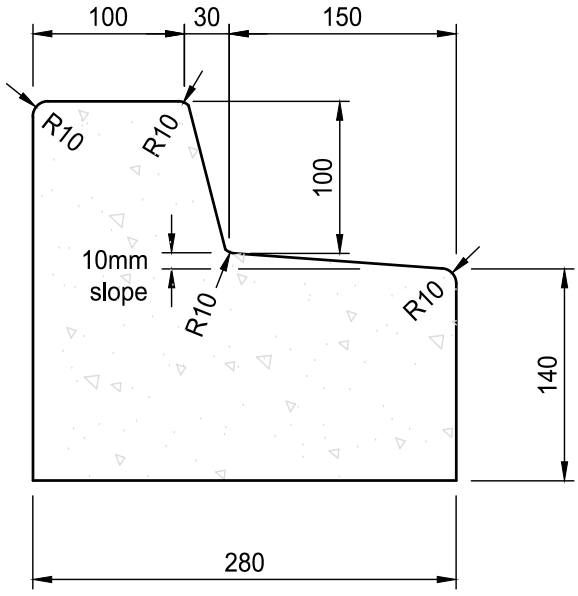
Scales 1:5

Plan no.

3.10



STANDARD MOUNTABLE KERB



STEEP MOUNTABLE KERB

NOTE:

1. All dimensions/measurements are in millimeters unless specified otherwise.
2. 20 MPa concrete only, specific design required for heavies routes.

KERBS FOR TRAFFIC ISLANDS ROUNDABOUTS AND RAISED MEDIANS

PALMY
PARMURA PALMERSTON NORTH CITY

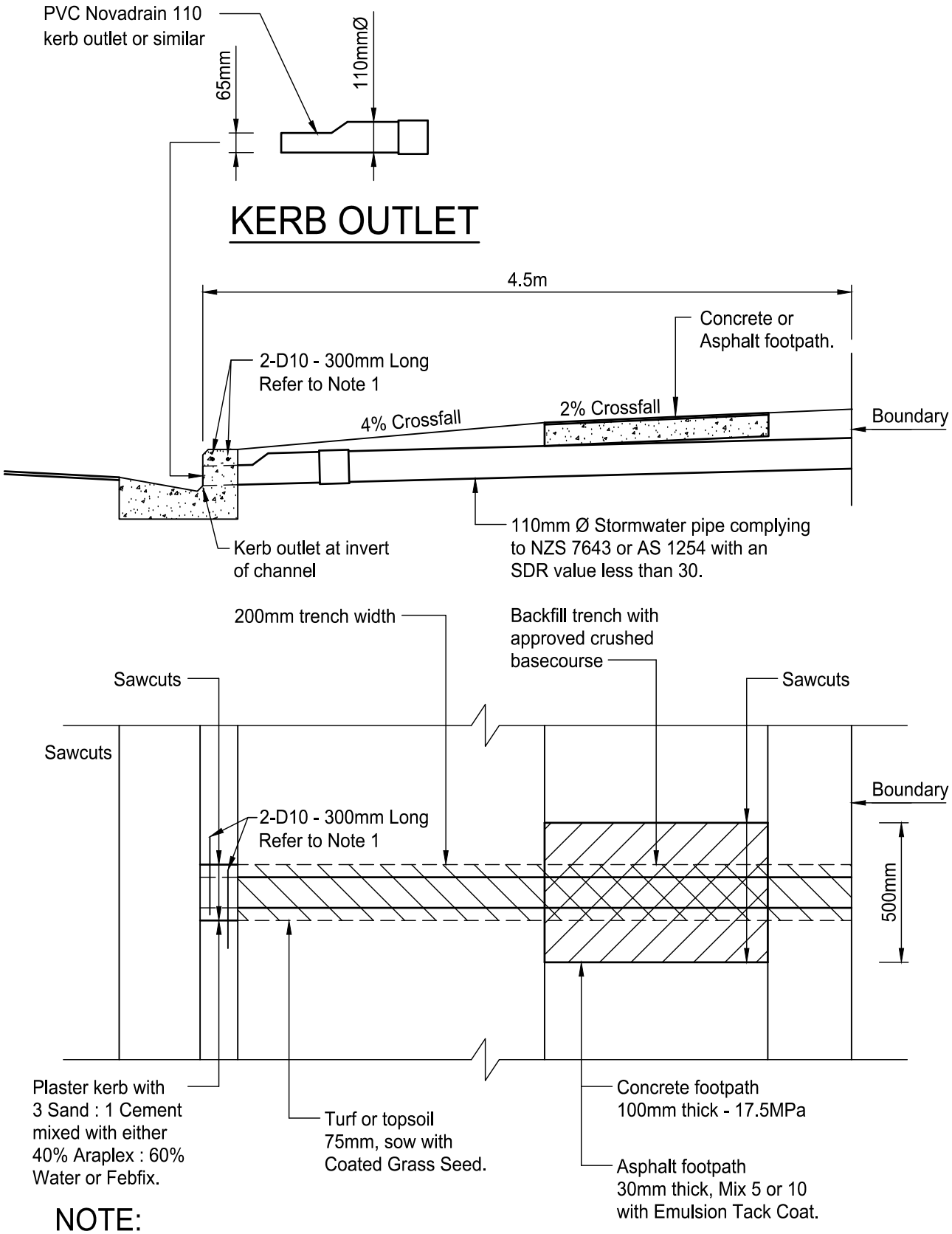
Robert van Bentum
Chief Engineer

Designed	*Infrastructure*
Drawn	*E.Fromont*
Checked	*T. Mcglynn*
Revised	*05 / 21*

Scales 1:5

Plan no.

3.10.1



NOTE:

1. For 150mm minimum Kerb and Channel Profile, Approved design required for Lower Profile kerbs.

STORMWATER TO KERB

PALMY
PĀMAREA
PALMERSTON
NORTH
CITY

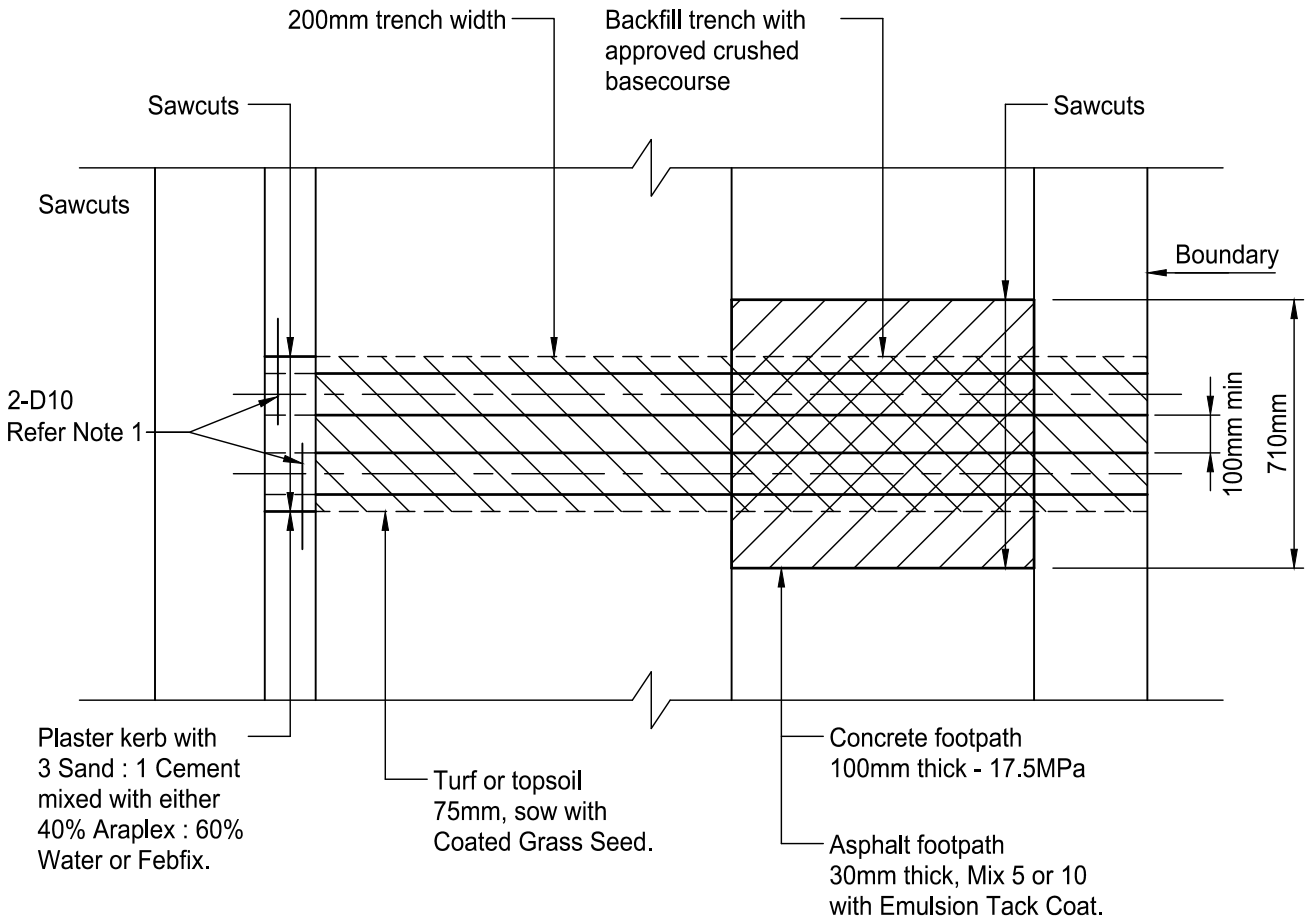
Stuart Cartwright
Chief Engineer

Designed	*Infrastructure*
Drawn	*R.Hodgson*
Checked	*T. Mcglynn*
Revised	*02 / 23*

Scales NOT TO SCALE

Plan no.

3.11



NOTE:

1. For 150mm minimum Kerb and Channel Profile, Approved design required for Lower Profile kerbs.

OUTLET SECTIONAL DETAILS AS PER DWG # 3.11

STORMWATER TO KERB - MULTIPLE OUTLETS

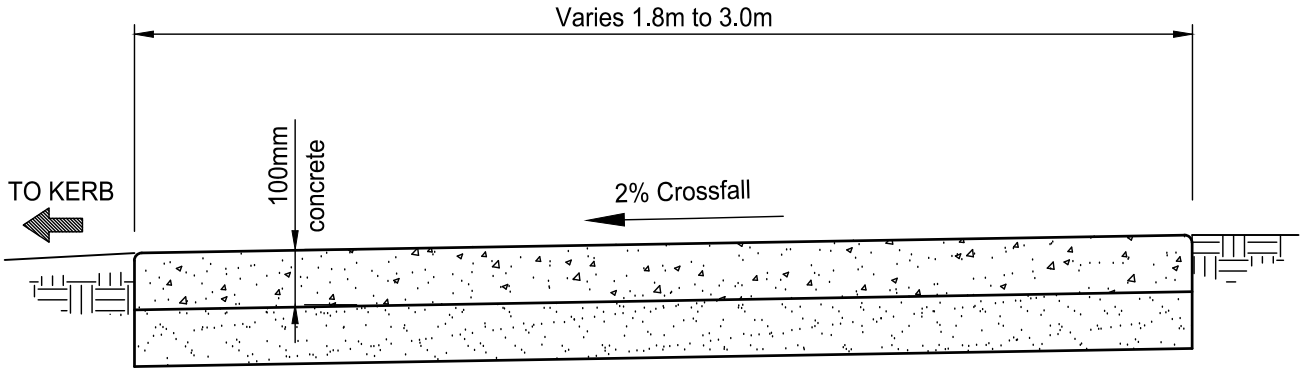
PALMY
PARMERA PALMERSTON NORTH CITY

Robert van Bentum
Chief Engineer

Designed	*Infrastructure*
Drawn	*E.Fromont*
Checked	*T. Mcglynn*
Revised	*05 / 21*

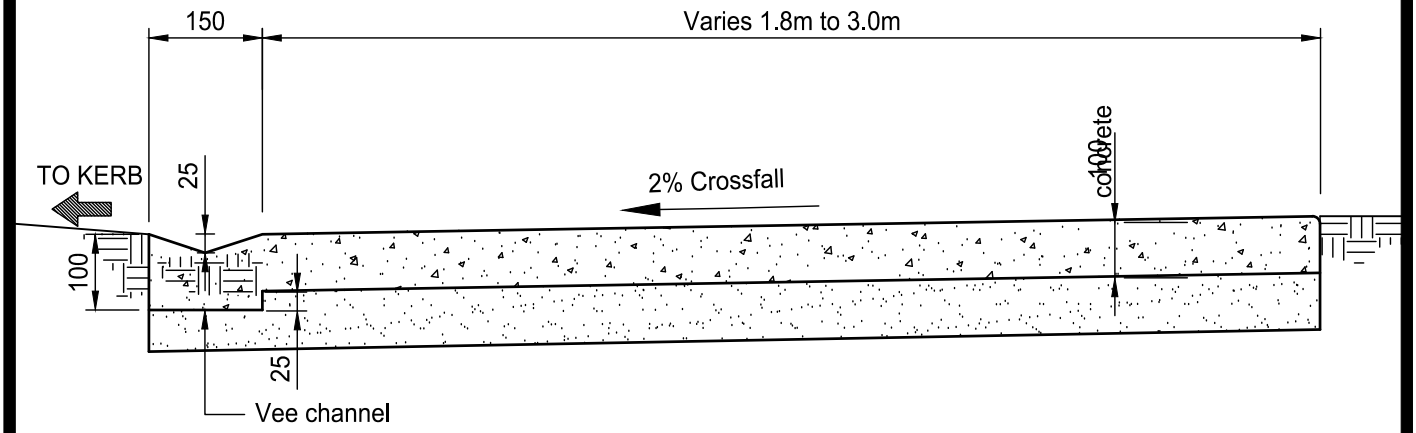
Scales NOT TO SCALE

Plan no. 3.11.1



DETAIL OF CONCRETE FOOTPATH

(Excluding Vehicle Crossings)



SECTION OF LOW LEVEL FOOTPATH

(Excluding Vehicle Crossings)

NOTE:

1. All dimensions/measurements are in millimeters unless specified otherwise.
2. All footpaths are to be laid on minimum 100mm compacted approved basecourse on solid foundation (95% Standard Compaction).
3. Minimum 20 MPa concrete, Ready Mix Concrete Only
4. 8mm rounding of edges to be formed using concrete edging tool.

FOOTPATH DETAILS

PALMY
PARMURA PALMERSTON NORTH CITY

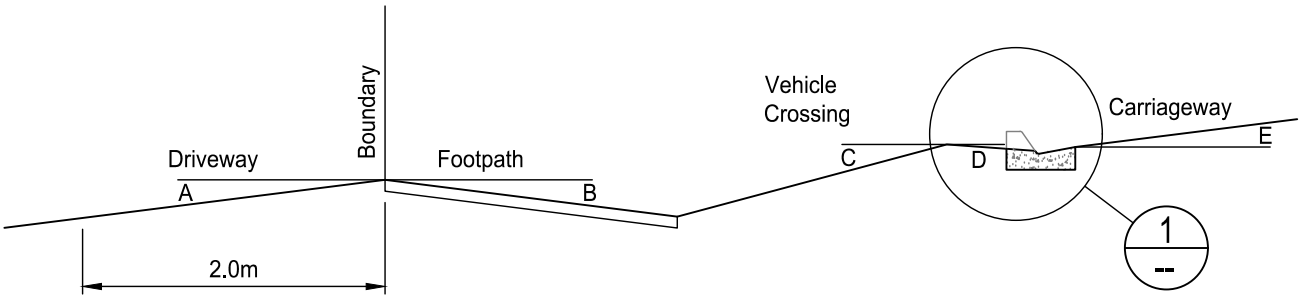
Stuart Cartwright
Chief Engineer

Designed	*Infrastructure*
Drawn	*R. Hodgson*
Checked	*T. Mcglynn*
Revised	*02 / 23*

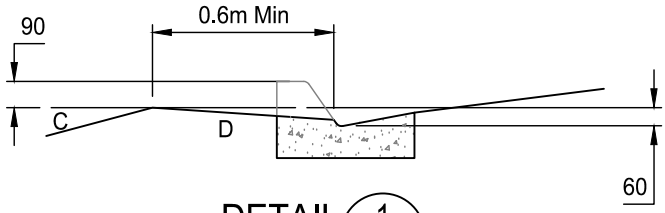
Scales 1:20

Plan no.

3.12

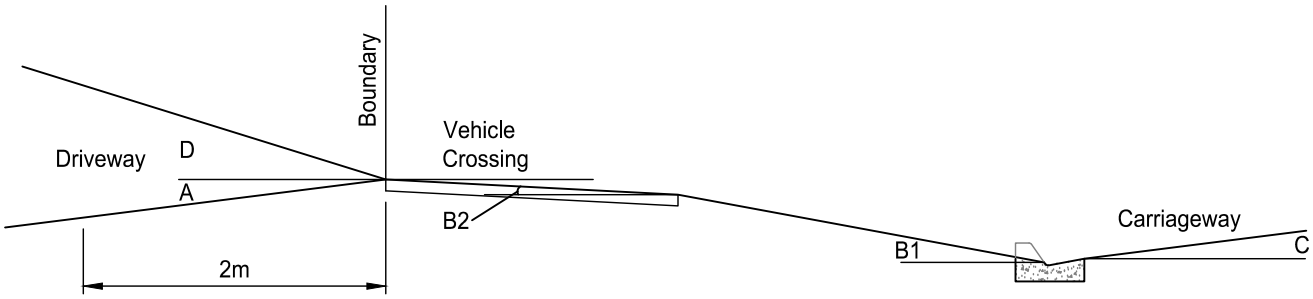


Maximum change of grade: A+B ≤10% (or 5.7°)
B+C ≤17% (or 9.6°)
C+D ≤10% (or 5.7°) (Refer to DWG 3.17)
C-E ≤10% (or 5.7°)



DETAIL 1 / --
1: 50

LOW LEVEL FOOTPATH



Maximum change of grade: A+B2 ≤10% (or 5.7°)
D-B2 ≤17% (or 9.6°) (Refer to DWG 3.17)
B1+C ≤17% (or 9.6°)

STANDARD FOOTPATH

NOTE:

1. Sourced from NZS 4404:2004
2. A, B, B1, B2, C & D refer to the gradients expressed either as a percentage or in degrees.
3. Low slung cars with ground effect features may not meet the criteria assumed in this design guide.
4. LTSA document: Light Vehicle Sizes and Dimensions: Street Survey Results and Parking Space Requirements - Road and Traffic Standards Information No. 35, June 1994 contains more information about the 90th and 99th percentile vehicles.
5. Buses require lower clearance value of (A+B2) of 6% or 3.4°.

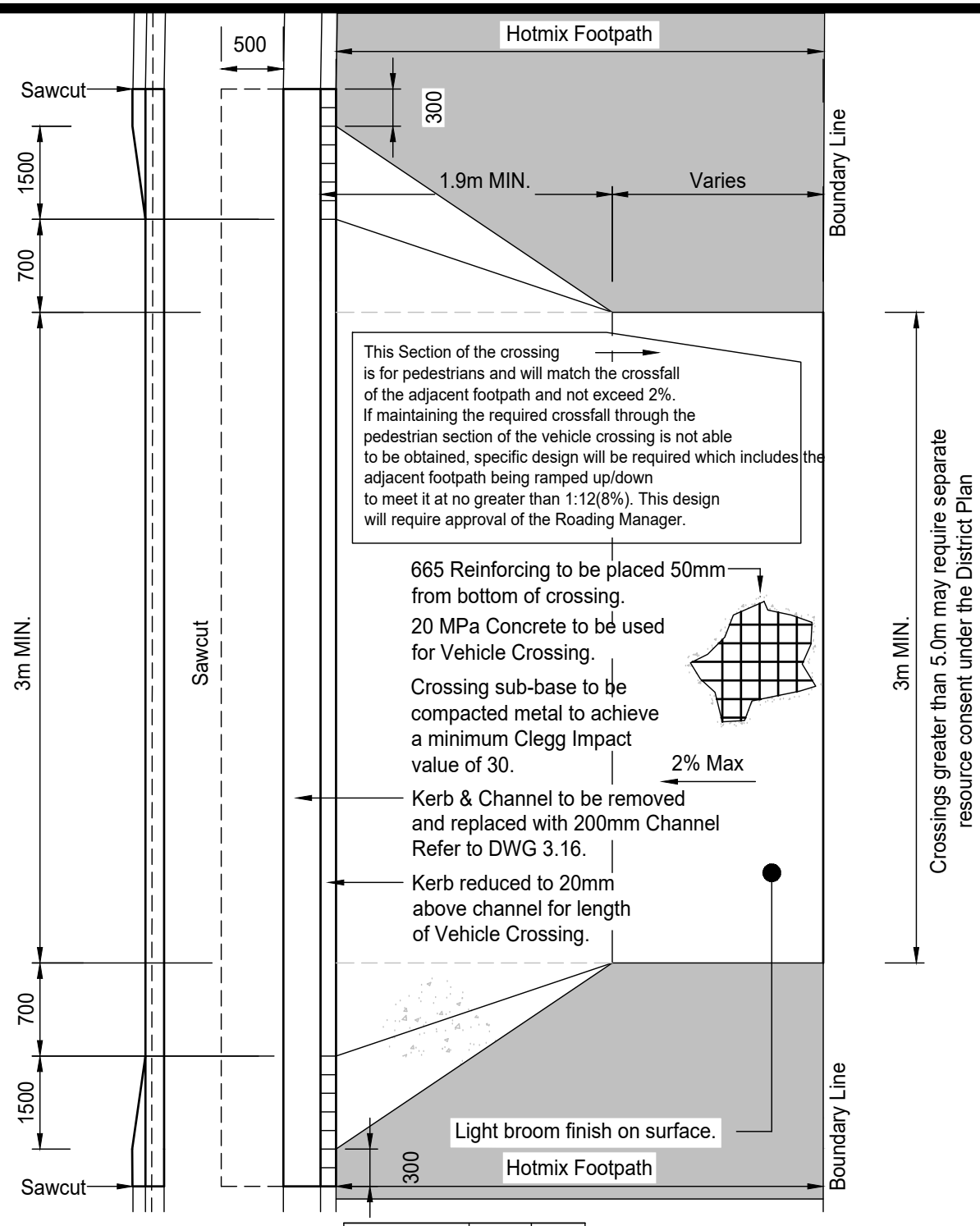
MAXIMUM BREAKOVER ANGLES FOR VEHICULAR ACCESS TO PROPERTY

PALMY
PARMERA PALMERSTON NORTH CITY

Robert van Bentum
Chief Engineer

Designed	*Infrastructure*
Drawn	*E.Fromont*
Checked	*T. Mcglynn*
Revised	*05 / 21*

Scales 1:50
Plan no. 3.13



	Thick	MPa
Residential	150	20
Commercial	200	25
Industrial	300	30

NOTE:

1. All dimensions/measurements are in millimeters unless specified otherwise.

DISH VEHICLE CROSSING DETAILS (HOTMIX FOOTPATH)

PALMY
PAPAMOEA PALMERSTON NORTH CITY

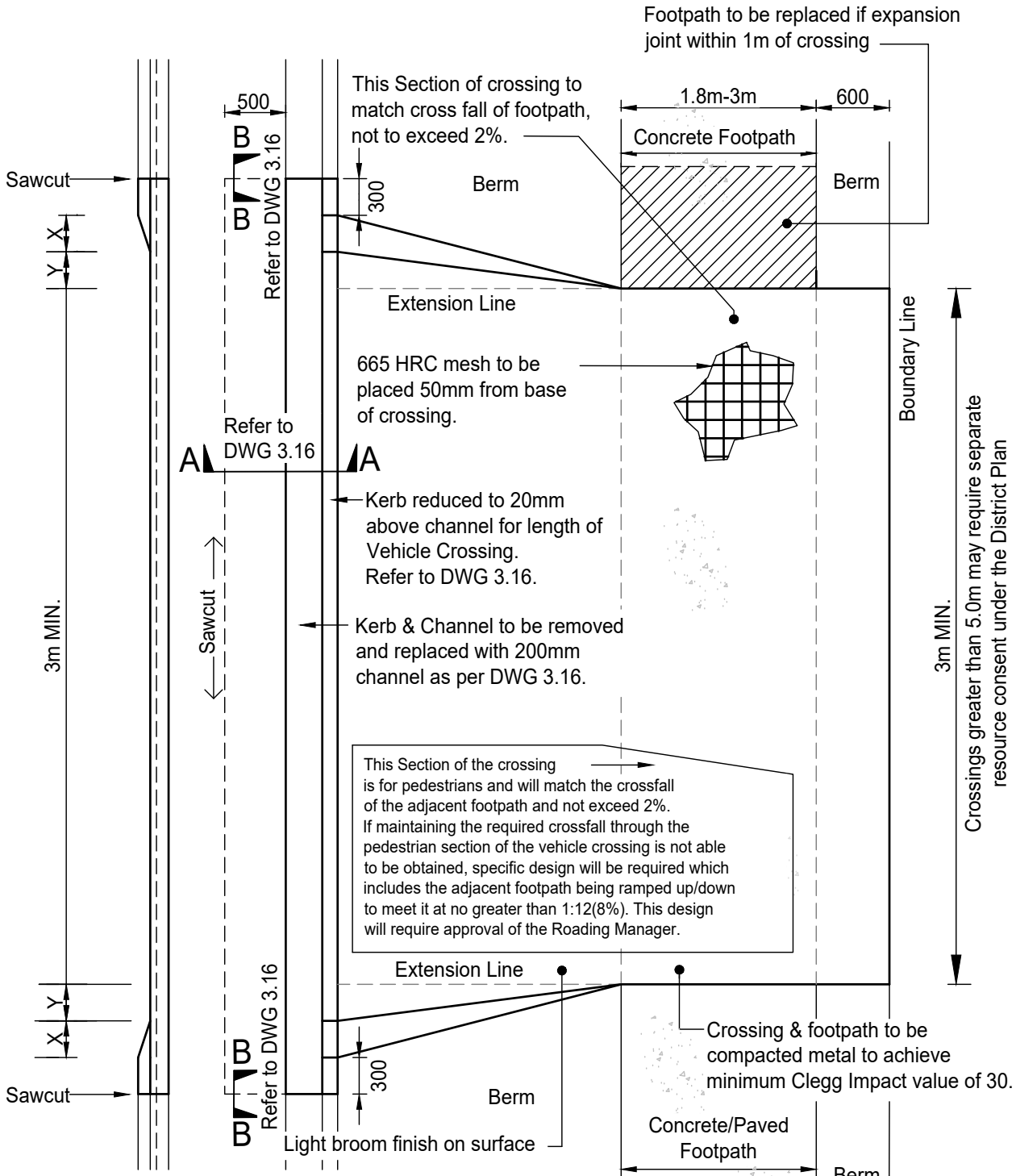
Stuart Cartwright
Chief Engineer

Designed	*Infrastructure*
Drawn	*R.Hodgson*
Checked	*T. Mcglynn*
Revised	*02 / 23*

Scales 1:5

Plan no.

3.14



LANE WIDTH	X	Y
>4m	0.3m	0.70m
3m-4m	0.3m	1.2m
<3m	0.3m	Specific Design

	Thick	MPa
Residential	150	20
Commercial	200	25
Industrial	300	30

NOTE:

1. Lane width = face of kerb to road centreline or edge of median
2. All dimensions/measurements are in millimeters unless specified otherwise.

DISH VEHICLE CROSSING (BERM & FOOTPATH)

PALMY
PARMERA PALMERSTON NORTH CITY

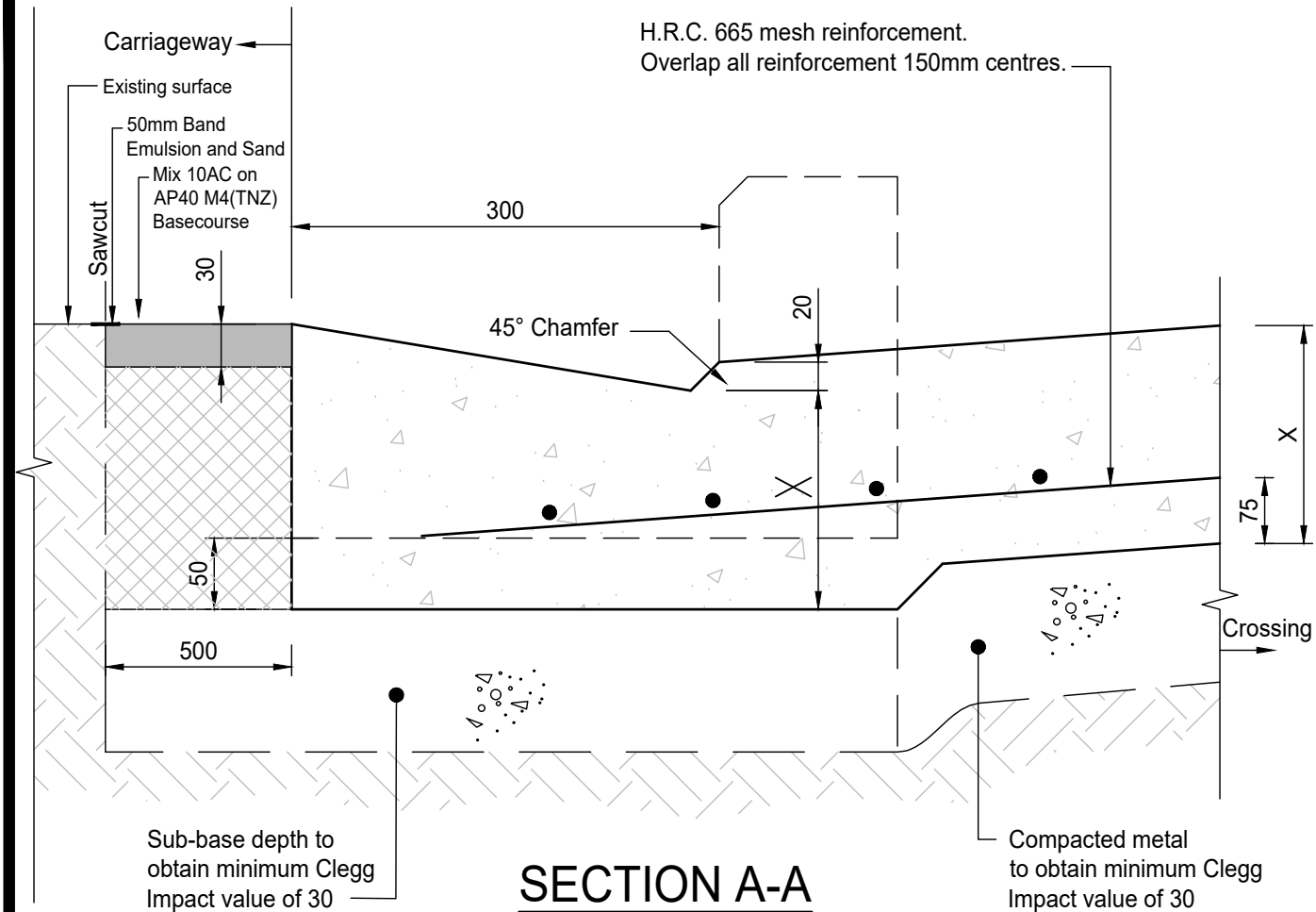
Stuart Cartwright
Chief Engineer

Designed	*Infrastructure*
Drawn	*R.Hodgson*
Checked	*T. Mcglynn*
Revised	*02 / 23*

Scales NOT TO SCALE

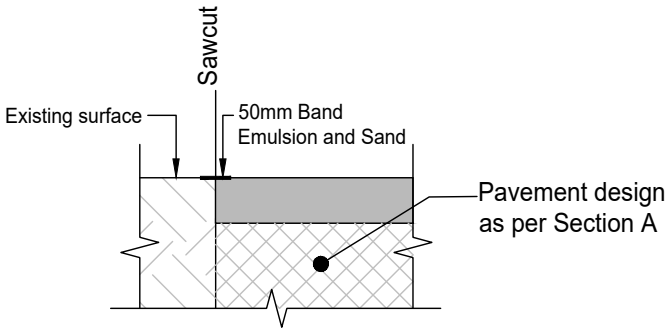
Plan no.

3.15



SECTION A-A

REFER TO DWG 3.15



SECTION B-B

REFER TO DWG 3.15

NOTE:

1. All steel to have 50mm min cover.
2. All dimensions/measurements are in millimeters unless specified otherwise.

	Concrete Strength	Thickness (Thick certified concrete only)
Residential	20MPa	X=150mm
Commercial	25MPa	X=200mm
Industrial	30MPa	X=300mm

DISH VEHICLE CROSSING - CHANNEL DETAIL

PALMY
PAPANUI PALMERSTON NORTH CITY

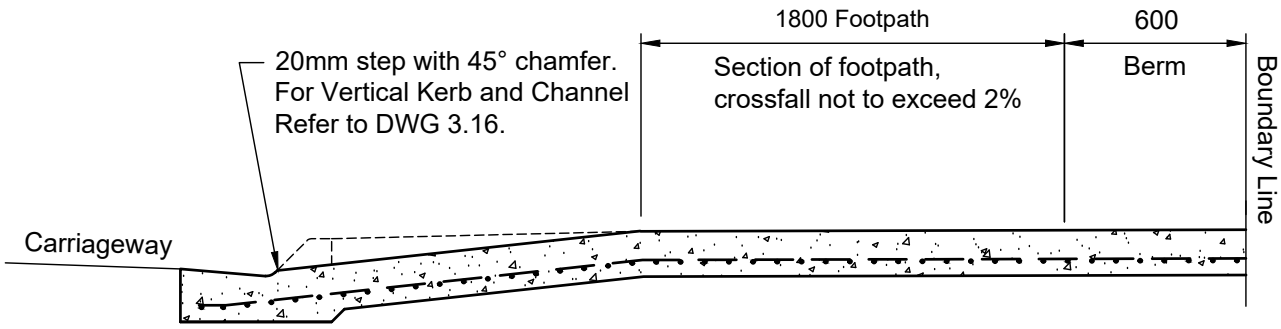
Stuart Cartwright
Chief Engineer

Designed	*Infrastructure*
Drawn	*R. Hodgson*
Checked	*T. Mcglynn*
Revised	*04 / 23*

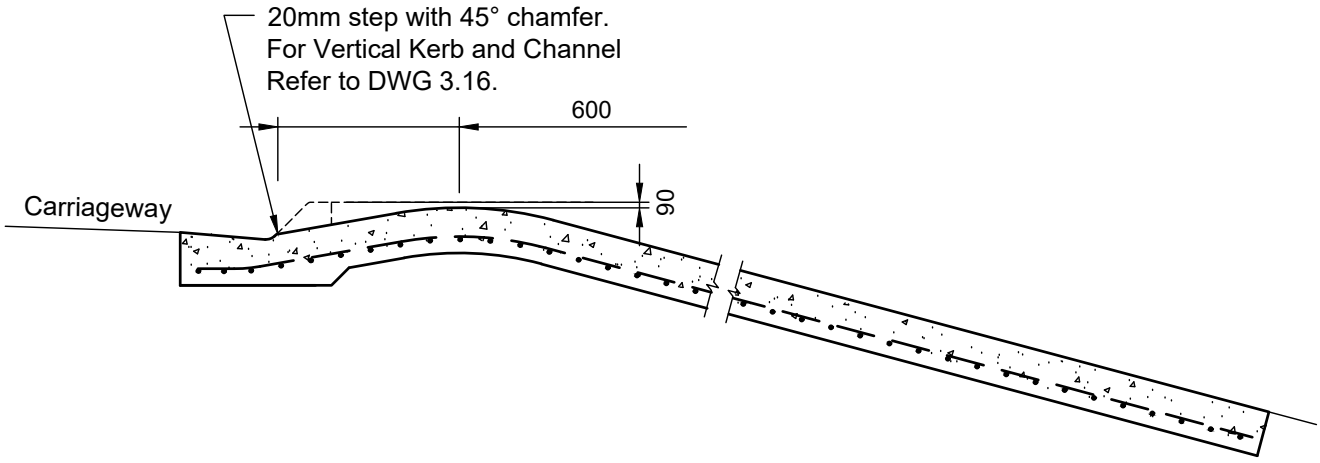
Scales NOT TO SCALE

Plan no.

3.16



STANDARD CONCRETE VEHICLE CROSSING



LOW LEVEL CONCRETE VEHICLE CROSSING

NOTE:

1. Concrete ramp reinforced with HRC 665 mesh, 50mm from bottom of crossing.
2. Refer to DWG 3.13 for breakover angles.
3. Crossing sub-base to be compacted metal to achieve a sound foundation. Refer to the table below.
4. Sub-base depth to to obtain minimum Clegg Impact value of 30.
5. All dimensions/measurements are in millimeters unless specified otherwise.

	Concrete Strength	Thickness (Thick certified concrete only)
Residential	20MPa	X=150mm
Commercial	25MPa	X=200mm
Industrial	30MPa	X=300mm

DISH VEHICLE CROSSING - CROSS SECTIONS

PALMY
PAPAMOEA PALMERSTON NORTH CITY

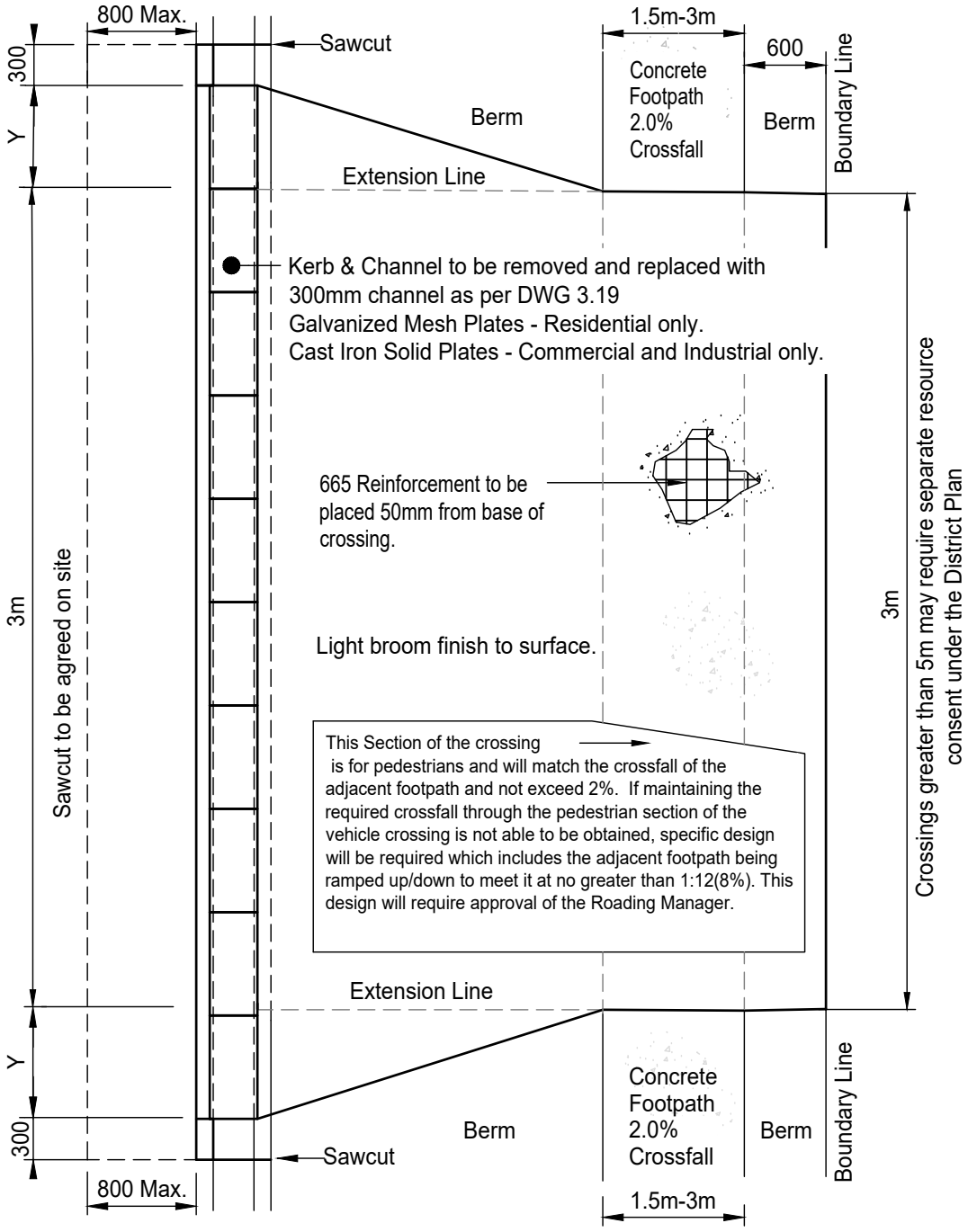
Stuart Cartwright
Chief Engineer

Designed	*Infrastructure*
Drawn	*R. Hodgson*
Checked	*T. Mcglynn*
Revised	*04 / 23*

Scales NOT TO SCALE

Plan no.

3.17



LANE WIDTH	Y
>4m	0.70m
3m-4m	1.2m
<3m	Specific Design

	Thick	MPa
Residential	150	20
Commercial	200	25
Industrial	300	30

NOTE:

1. Lane width = face of kerb to road centreline or edge of median.
2. Crossing sub-base to to obtain minimum Clegg Impact value of 30.
3. All dimensions/measurements are in millimeters unless specified otherwise.

PLATE VEHICLE CROSSING

PALMY
PAPANGEA PALMERSTON NORTH CITY

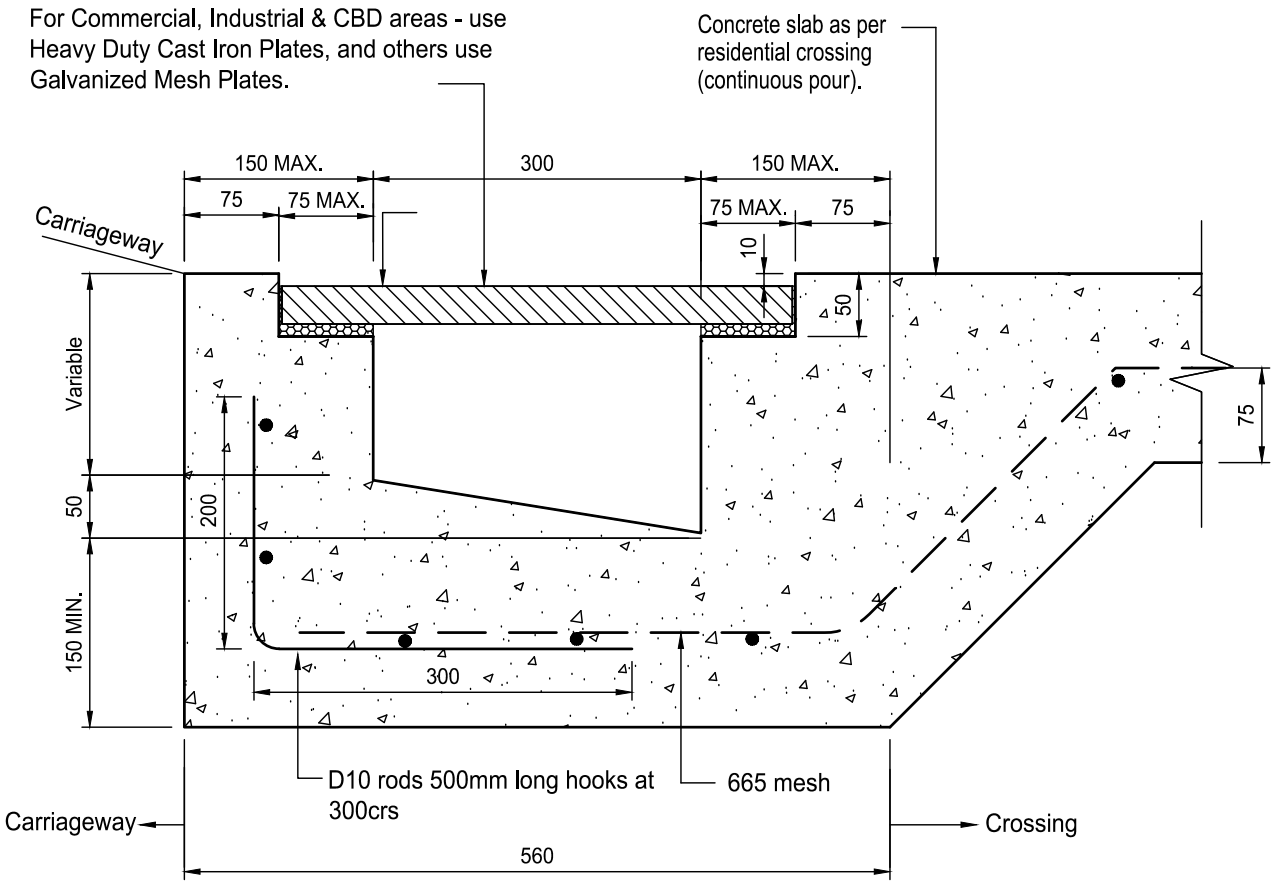
Stuart Cartwright
Chief Engineer

Designed	*Infrastructure*
Drawn	*R. Hodgson*
Checked	*T. Mcglynn*
Revised	*04 / 23*

Scales 1:5

Plan no.

3.18



	Concrete Strength	Thickness (Thick certified concrete only)
Residential	20MPa	150mm
Commercial	25MPa	200mm
Industrial	30MPa	300mm

NOTE:

1. All plates to be 760 x 410 x 30.
2. Plates to be plastered into place (epoxy) 10mm below concrete surface.
3. All steel to have 50mm min. cover.
4. Residential - Heavy duty galvanised mesh plate.
5. Commercial / Industrial - Heavy duty Cast Iron solid plate
6. All dimensions/measurements are in millimeters unless specified otherwise.
7. Only allowed if standard crossing cannot be achieved.

PLATE VEHICLE CROSSING - CHANNEL DETAIL

PALMY
PARAWHEA PALMERSTON NORTH CITY

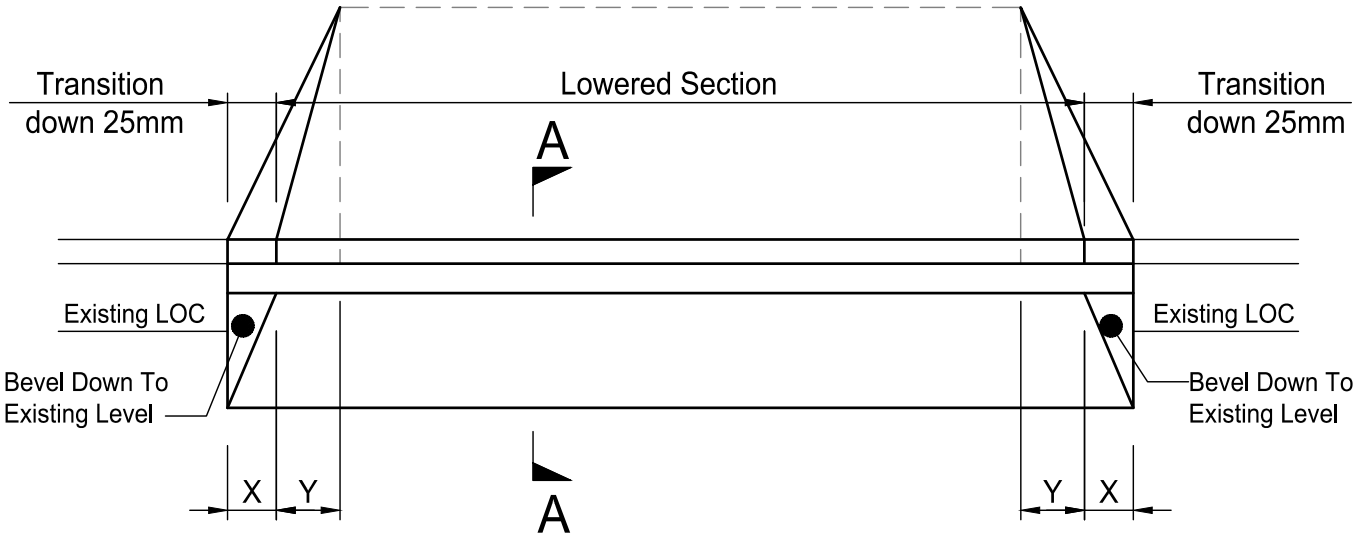
Robert van Bentum
Chief Engineer

Designed	*Infrastructure*
Drawn	*E.Fromont*
Checked	*T. Mcglynn*
Revised	*05 / 21*

Scales NOT TO SCALE

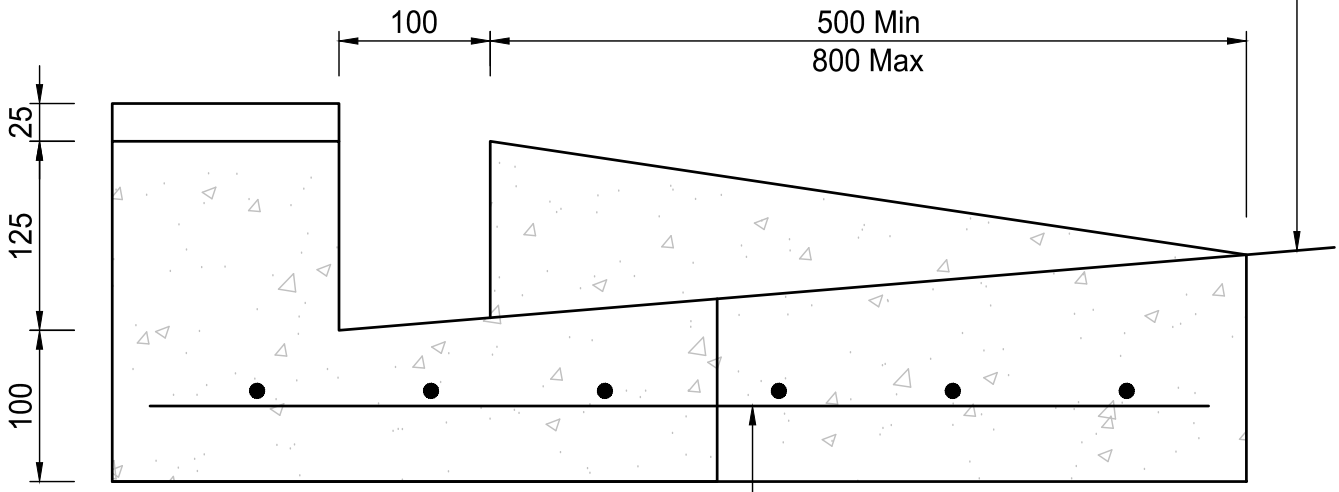
Plan no.

3.19



BUILD UP VEHICLE CROSSING

Carriageway
Slope of build-up must tie in carriageway and there must be no ponding on carriageway.



SECTION "A-A"

H.R.C. 665 mesh reinforcement.
Overlap all reinforcement 150mm centres.

LANE WIDTH	X	Y
>4m	0.3m	0.70m
3m-4m	0.3m	1.2m
<3m	0.3m	Specific Design

	Concrete Strength	Thickness (Thick certified concrete only)
Residential	20MPa	150mm
Commercial	25MPa	200mm
Industrial	30MPa	300mm

NOTE:

1. All dimensions/measurements are in millimeters unless specified otherwise.
2. All steel to have 50mm min. cover.
3. Only allowed if standard crossing cannot be achieved.

BUILD-UP VEHICLE CROSSING

PALMY
PARMERSTON NORTH CITY

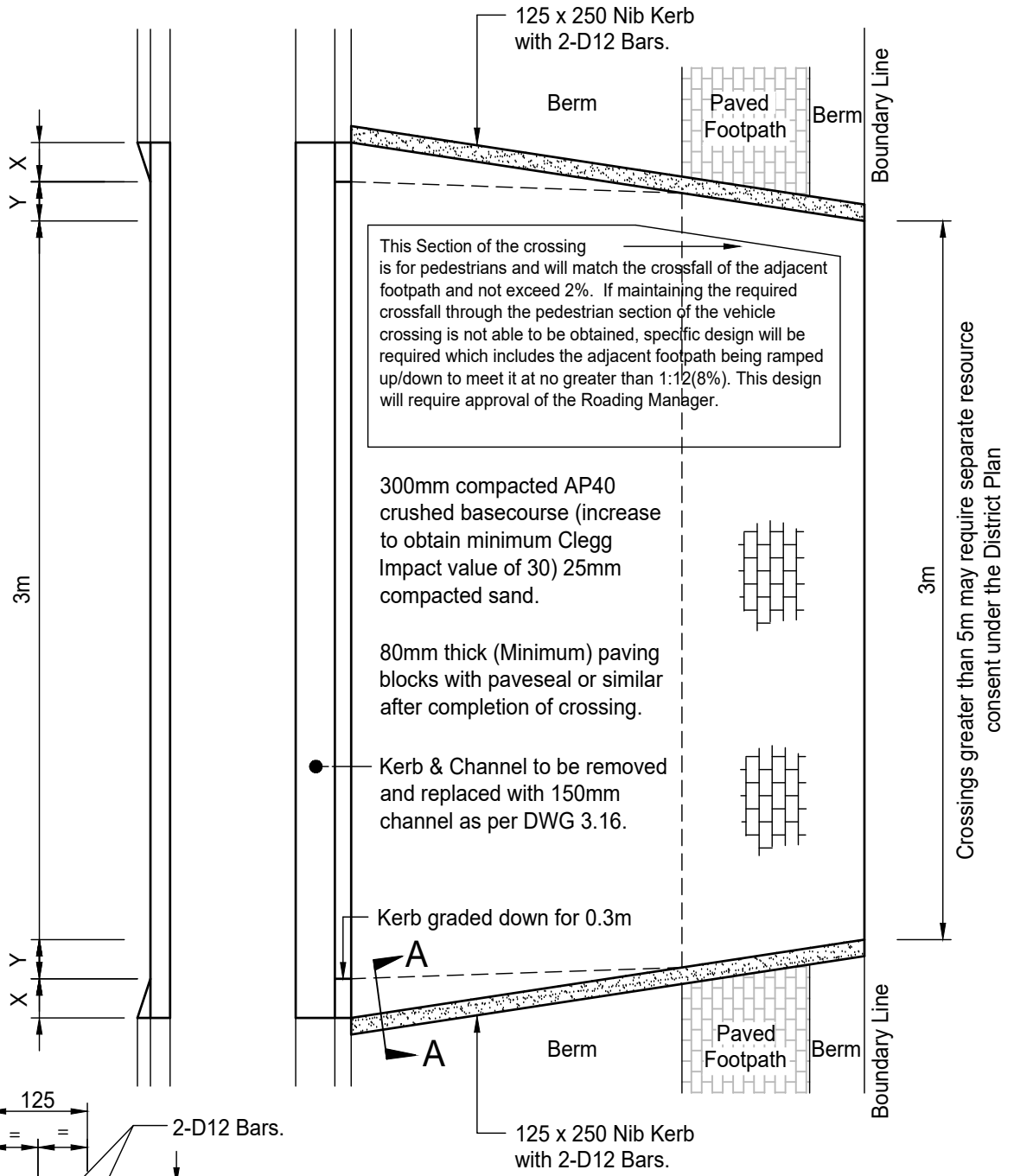
Stuart Cartwright
Chief Engineer

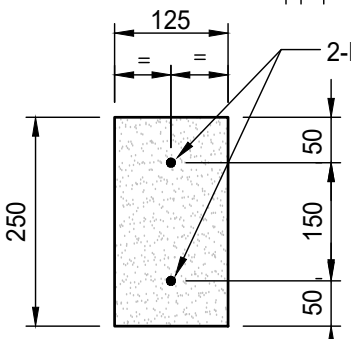
Designed	*Infrastructure*
Drawn	*R.Hodgson*
Checked	*T. Mcglynn*
Revised	*02 / 23*

Scales NOT TO SCALE

Plan no.

3.19.1





SECTION A-A
NIB KERB PROFILE

LANE WIDTH	X	Y
>5m	0.3m	0.3m
4m-5m	0.3m	0.75m
3m-4m	0.3m	1.2m
<3m	0.3m	Specific Design

	Thick	MPa
Residential	150	20
Commercial	200	25
Industrial	300	30

NOTE:

1. Lane width = face of kerb to road centreline or edge of median
2. All dimensions/measurements are in millimeters unless specified otherw

PAVED VEHICLE CROSSING
(FOR EXISTING PAVED AREAS ONLY)

PALMY
PAPAMOEA PALMERSTON NORTH CITY

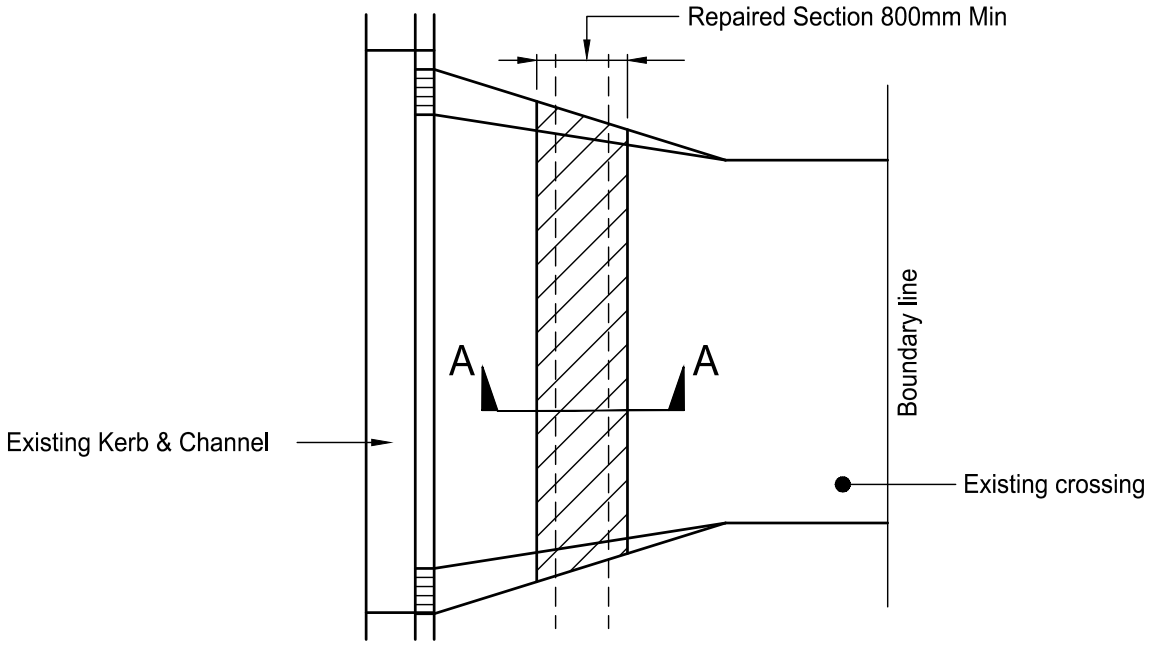
Stuart Cartwright
Chief Engineer

Designed	*Infrastructure*
Drawn	*R. Hodgson*
Checked	*T. Mcglynn*
Revised	*04 / 23*

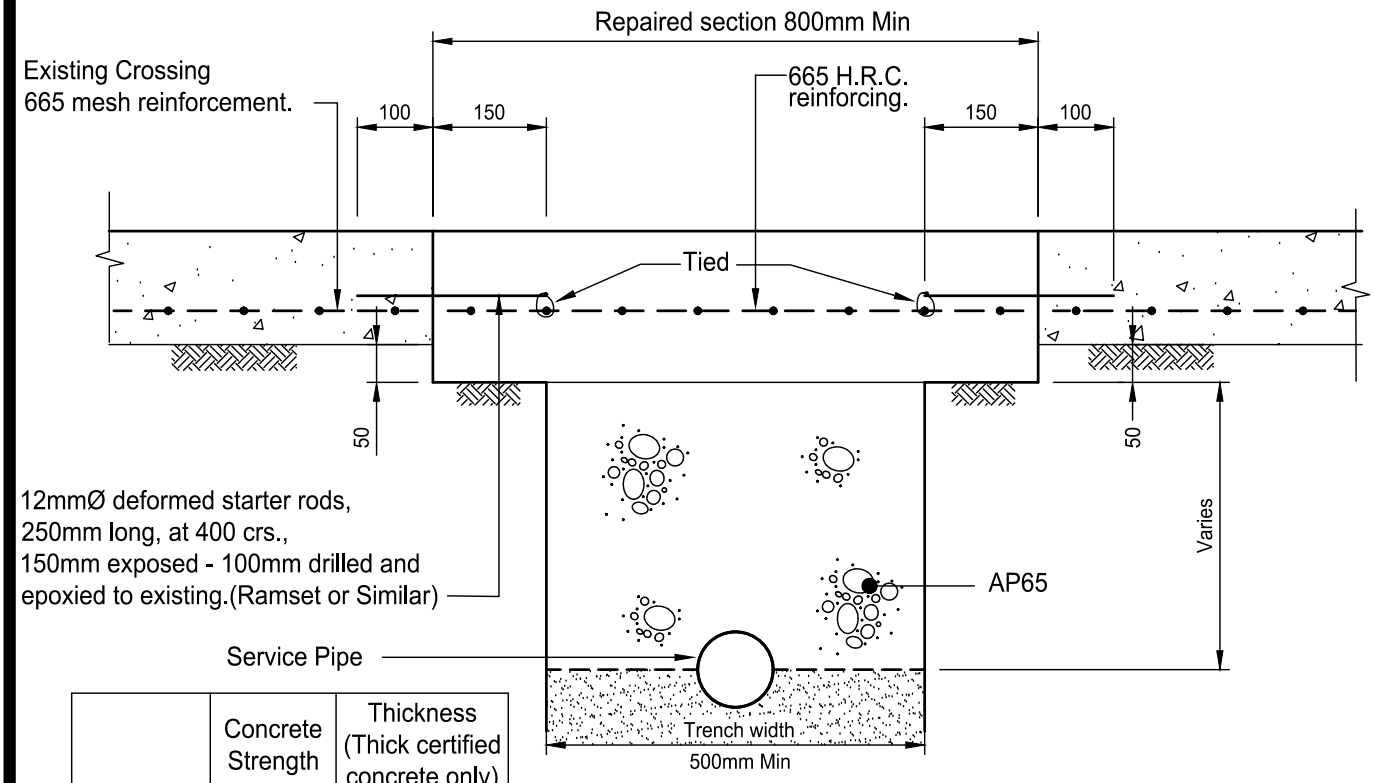
Scales NOT TO SCALE

Plan no.

3.20



PLAN



	Concrete Strength	Thickness (Thick certified concrete only)
Residential	20MPa	150mm
Commercial	25MPa	200mm
Industrial	30MPa	300mm

SECTION A-A

NOTE:

1. All dimensions/measurements are in millimeters unless specified otherwise.

REPAIR OF VEHICLE CROSSING - GENERAL POSITION

PALMY
PAPAMOEA PALMERSTON NORTH CITY

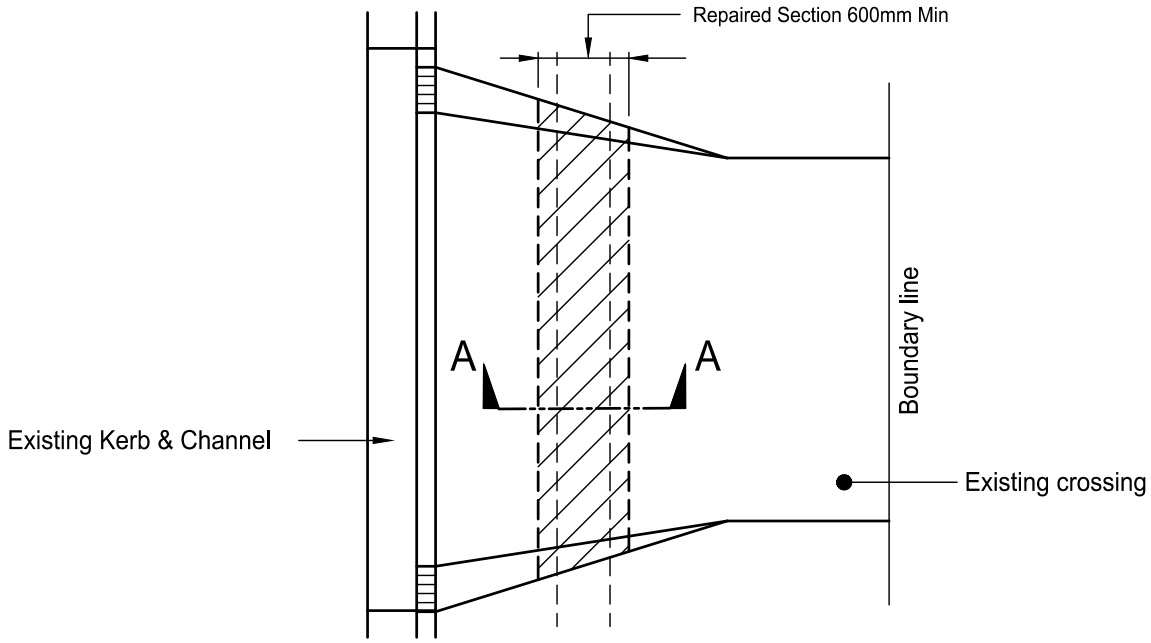
Stuart Cartwright
Chief Engineer

Designed	*Infrastructure*
Drawn	*R.Hodgson*
Checked	*T. Mcglynn*
Revised	*02 / 23*

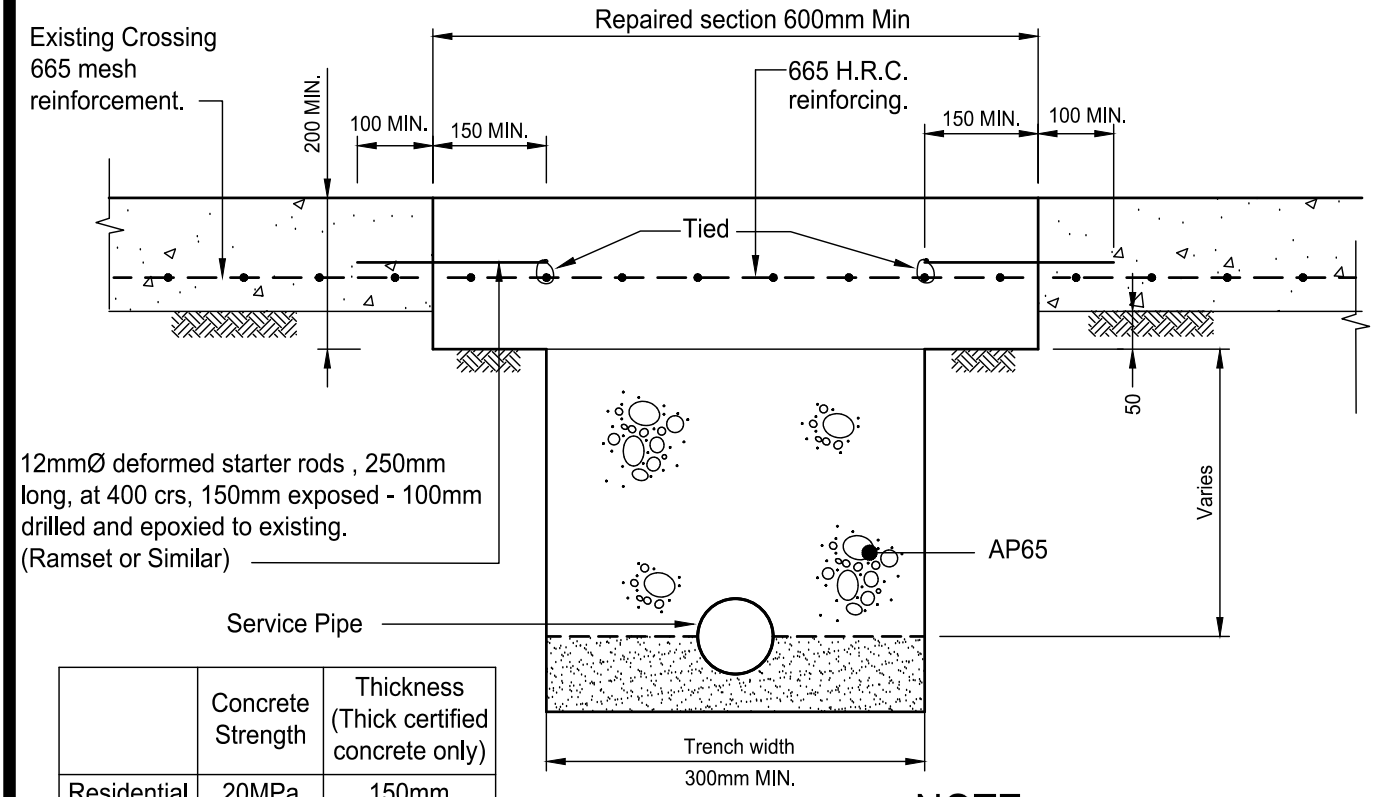
Scales NOT TO SCALE

Plan no.

3.21



PLAN



	Concrete Strength	Thickness (Thick certified concrete only)
Residential	20MPa	150mm
Commercial	25MPa	200mm
Industrial	30MPa	300mm

SECTION A-A

TRENCH REPAIR

NOTE:

1. All dimensions/measurements are in millimeters unless specified otherwise.

RESIDENTIAL VEHICLE CROSSING DETAIL FOR THE UFB FIBRE INSTALLATION REINSTATEMENT REQUIREMENTS (Sheet 1 of 2)

PALMY
BRINDEA PALMERSTON NORTH CITY

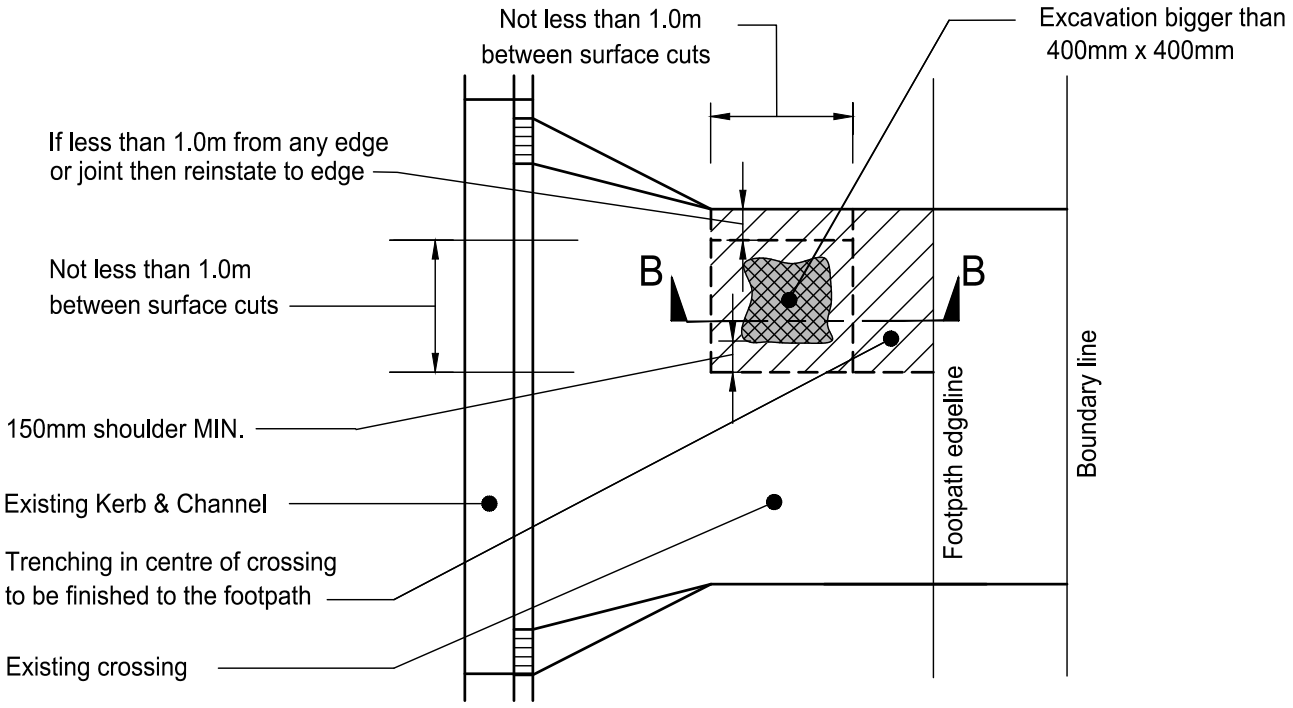
Stuart Cartwright
Chief Engineer

Designed	*Infrastructure*
Drawn	*R.Hodgson*
Checked	*T. Mcglynn*
Revised	*02 / 23*

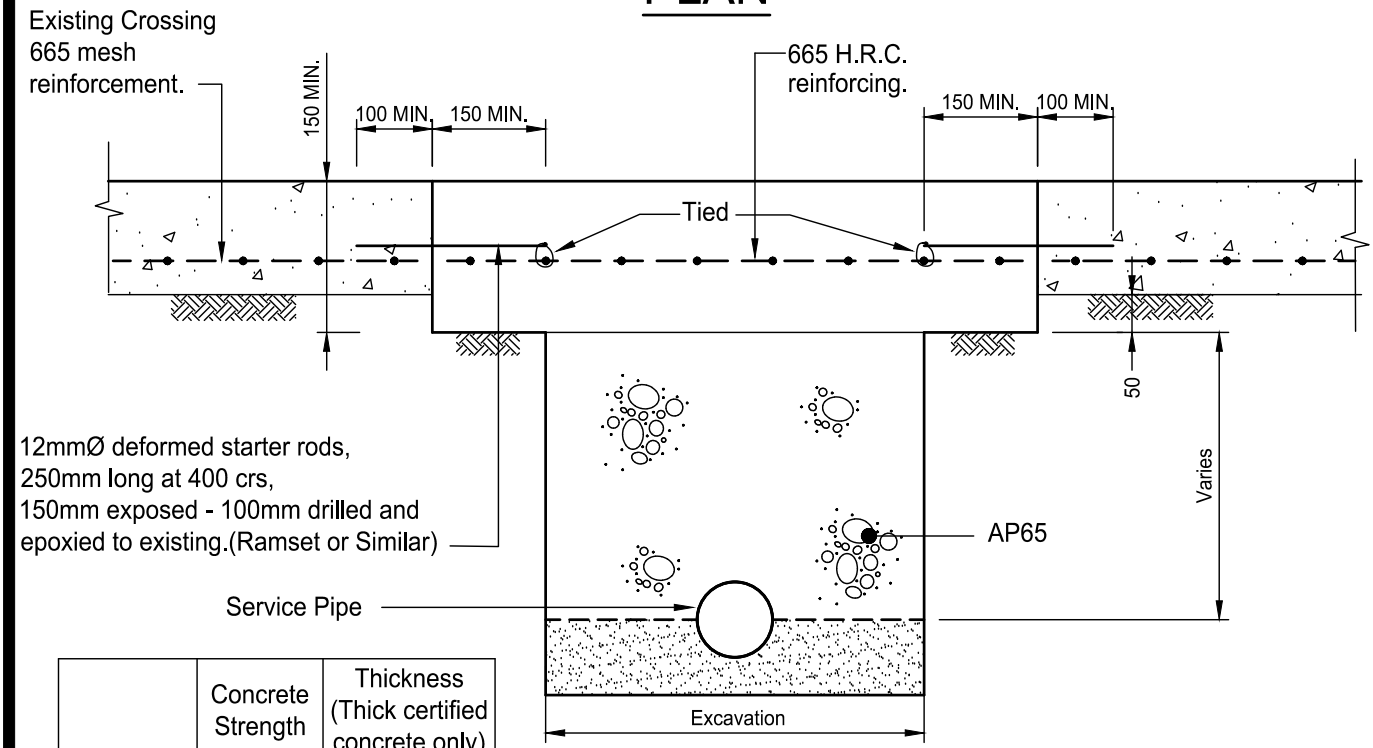
Scales NOT TO SCALE

Plan no.

3.21.1A



PLAN



	Concrete Strength	Thickness (Thick certified concrete only)
Residential	20MPa	150mm
Commercial	25MPa	200mm
Industrial	30MPa	300mm

SECTION B-B

BOX REPAIR

NOTE:

1. All dimensions/measurements are in millimeters unless specified otherwise.

RESIDENTIAL VEHICLE CROSSING DETAIL FOR THE UFB FIBRE INSTALLATION REINSTATEMENT REQUIREMENTS (Sheet 2 of 2)

PALMY
BARNIDOEA PALMERSTON NORTH CITY

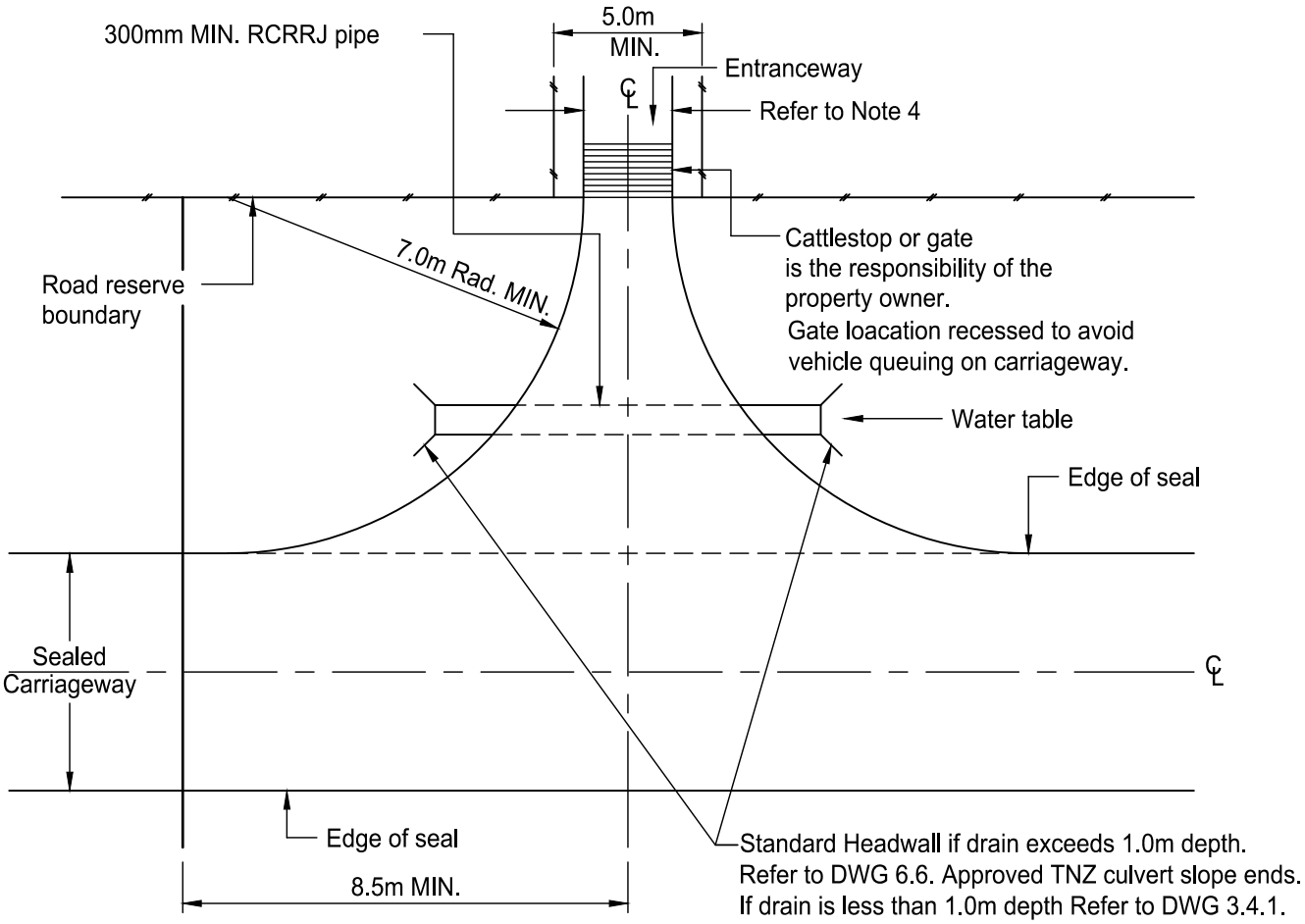
Stuart Cartwright
Chief Engineer

Designed	*City Networks*
Drawn	*R.Hodgson*
Checked	*T. Mcglynn*
Revised	*02 / 23*

Scales NOT TO SCALE

Plan no.

3.21.1B



NOTE:

1. The entrance must be sealed to the road reserve boundary if the road is sealed. The seal to be contiguous to the main carriageway seal. A two coat chip seal of Grade 3 and 5 chip is required.
2. The minimum pavement depth to be designed.
3. A minimum 300Ø rubber ring jointed reinforced concrete culvert to be installed in the existing water table beneath the entrance extending at least 500mm either side. A larger diameter culvert may be required in certain circumstances.
4. Refer to DWG 3.4 and 3.4.1.
5. Compaction test must be carried out and QA needs to be as required for road construction

RURAL VEHICLE CROSSING - ONE LOT

PALMY
PARAWERA PALMERSTON NORTH CITY

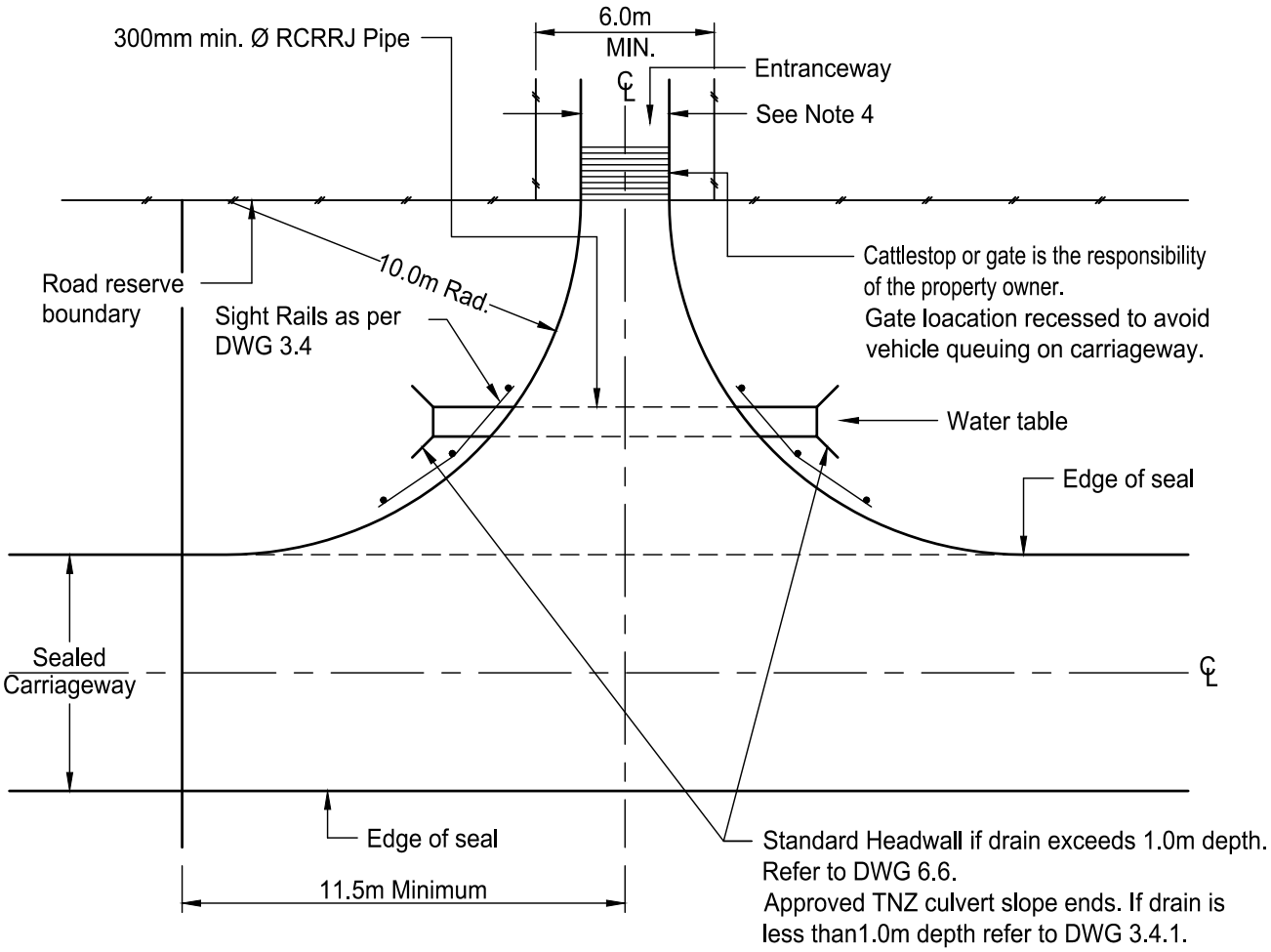
Stuart Cartwright
Chief Engineer

Designed	*Infrastructure*
Drawn	*R.Hodgson*
Checked	*T. Mcglynn*
Revised	*02 / 23*

Scales NOT TO SCALE

Plan no.

3.22



NOTE:

1. The entrance must be sealed to the road reserve boundary if the road is sealed. The seal to be contiguous to the main carriageway seal. A two coat chip seal of Grade 3 and 5 chip is required.
2. The minimum pavement depth to be designed.
3. A minimum 300Ø rubber ring jointed reinforced concrete culvert to be installed in the existing water table beneath the entrance extending at least 500mm either side. A larger diameter culvert may be required in certain circumstances.
4. Refer to DWG 3.4 and 3.4.1.
5. Compaction test must be carried out and QA needs to be as required for road construction

RURAL VEHICLE CROSSING - 2 TO 4 LOTS

PALMY
PAHIATUA PALMERSTON NORTH CITY

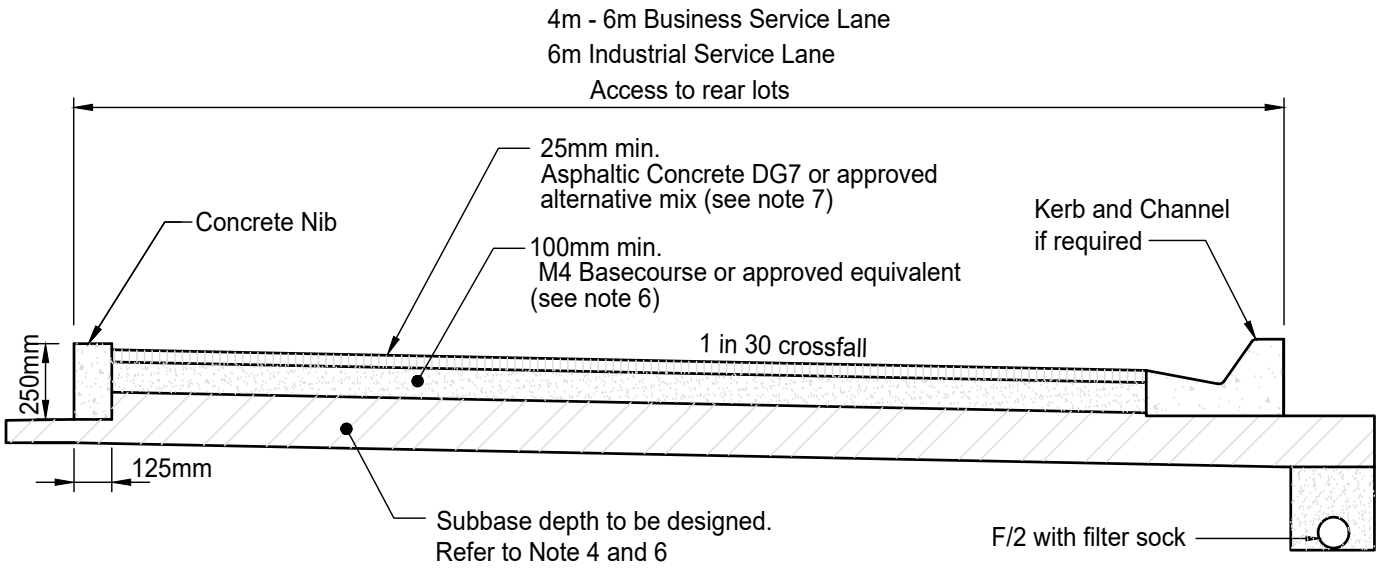
Stuart Cartwright
Chief Engineer

Designed	*Infrastructure*
Drawn	*R.Hodgson*
Checked	*T. Mcglynn*
Revised	*02 / 23*

Scales NOT TO SCALE

Plan no.

3.23



NOTE:

1. Pavement metal depths to be designed.
2. Retain edges of surfacing if required for that type of surface.
3. Wastewater, Stormwater and Water services must be appropriately sized.
   All services may be laid in a common trench provided the required clearances between services are maintained.
4. To obtain minimum Clegg Impact value of 30.
5. Kerb and channel detail to be approved.
6. Unbound granular pavement construction shall be in accordance with NZTA B/2.
7. Asphalt construction and production shall be undertaken in accordance wit NZTA M110.

BUSINESS AND INDUSTRIAL SERVICE LANE, AND ACCESS TO REAR LOT TYPICAL CROSS SECTION

PALMY
PAPAKĀREA PALMERSTON NORTH CITY

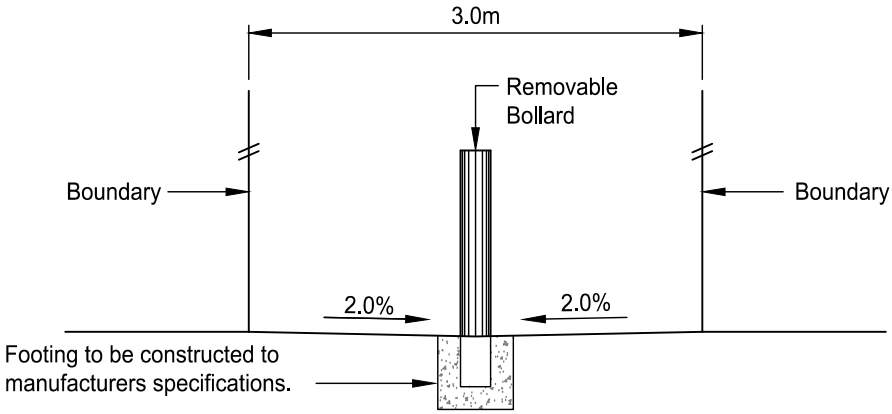
Stuart Cartwright
Chief Engineer

Designed	*Infrastructure*
Drawn	*R.Hodgson*
Checked	*T. Mcglynn*
Revised	*04 / 23*

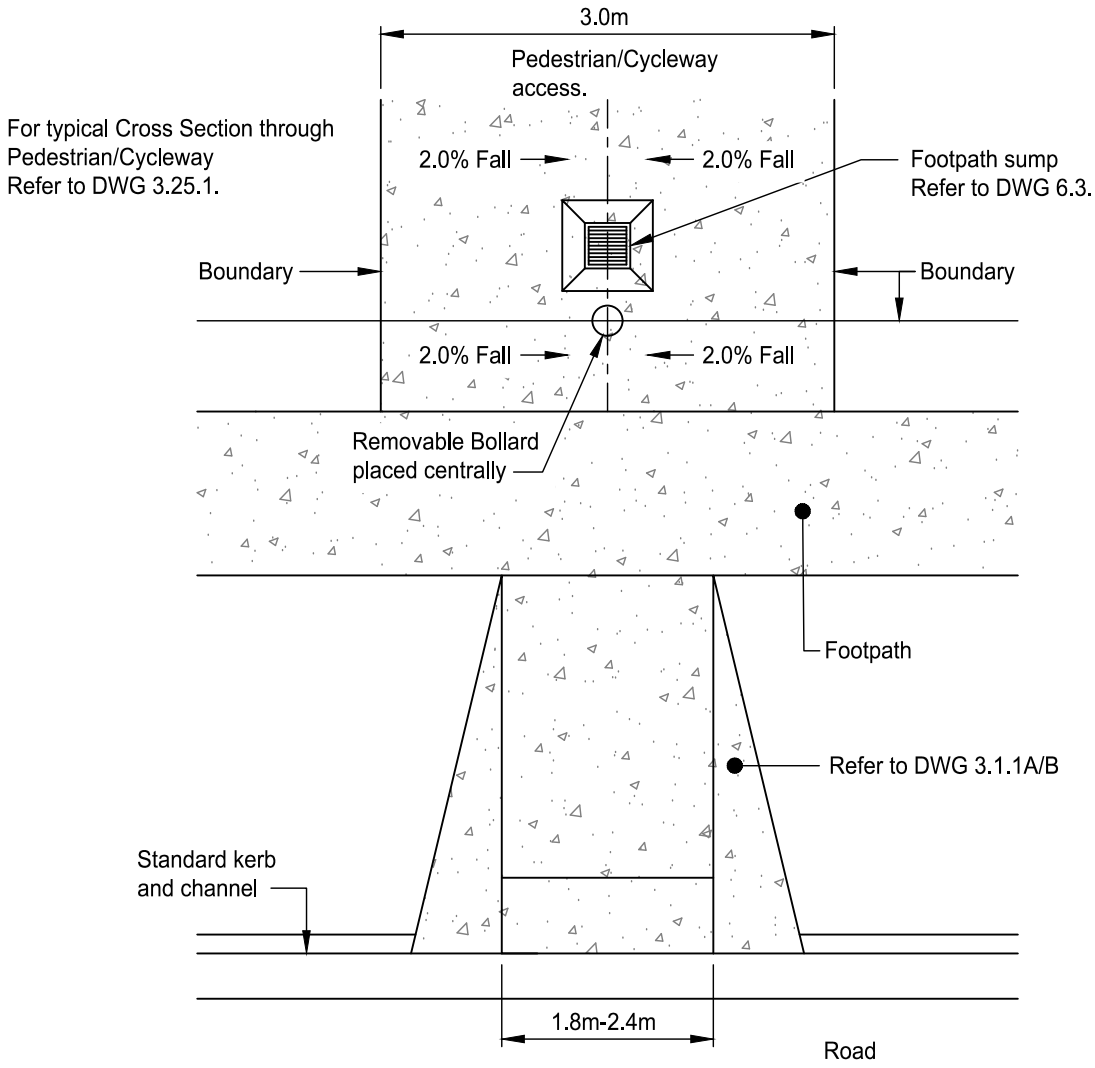
Scales NOT TO SCALE

Plan no.

3.24



FRONT ELEVATION



PLAN

PEDESTRIAN / CYCLEWAY ACCESSWAY BARRIER AND CROSSING

PALMY
PARAWERA
PALMERSTON
NORTH
CITY

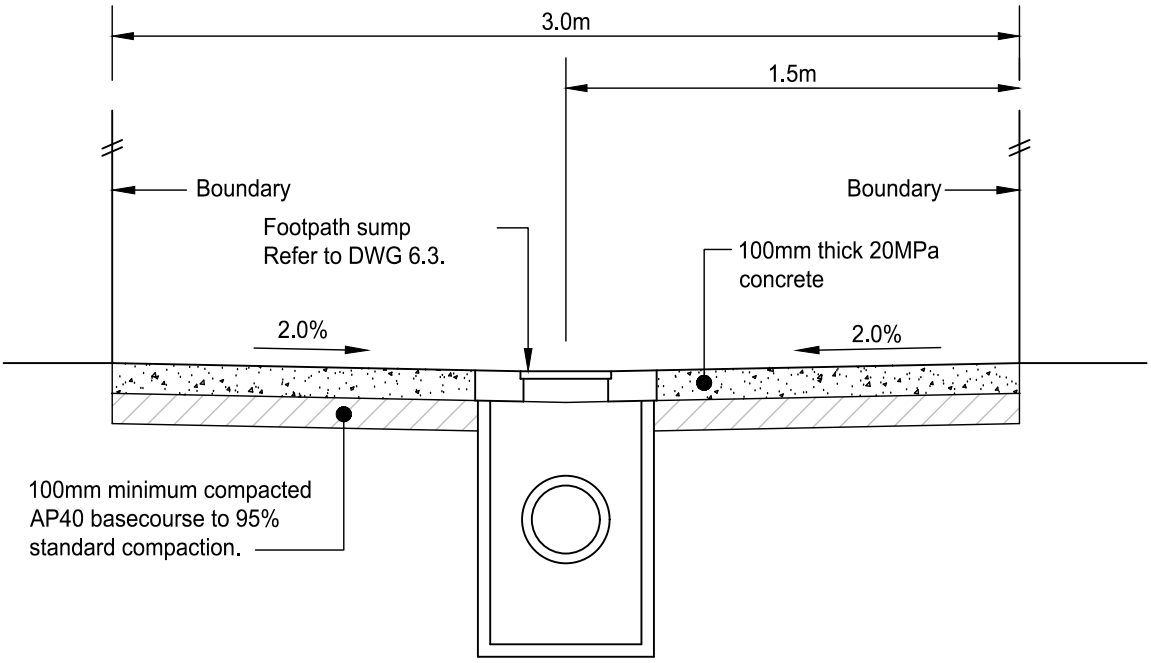
Robert van Bentum
Chief Engineer

Designed	*Infrastructure*
Drawn	*E.Fromont*
Checked	*T. Mcglynn*
Revised	*05 / 21*

Scales 1:50

Plan no.

3.25



TYPICAL CROSS SECTION

PEDESTRIAN / CYCLEWAY ACCESSWAY CROSS SECTION DETAILS

PALMY
PAPAMOEA PALMERSTON NORTH CITY

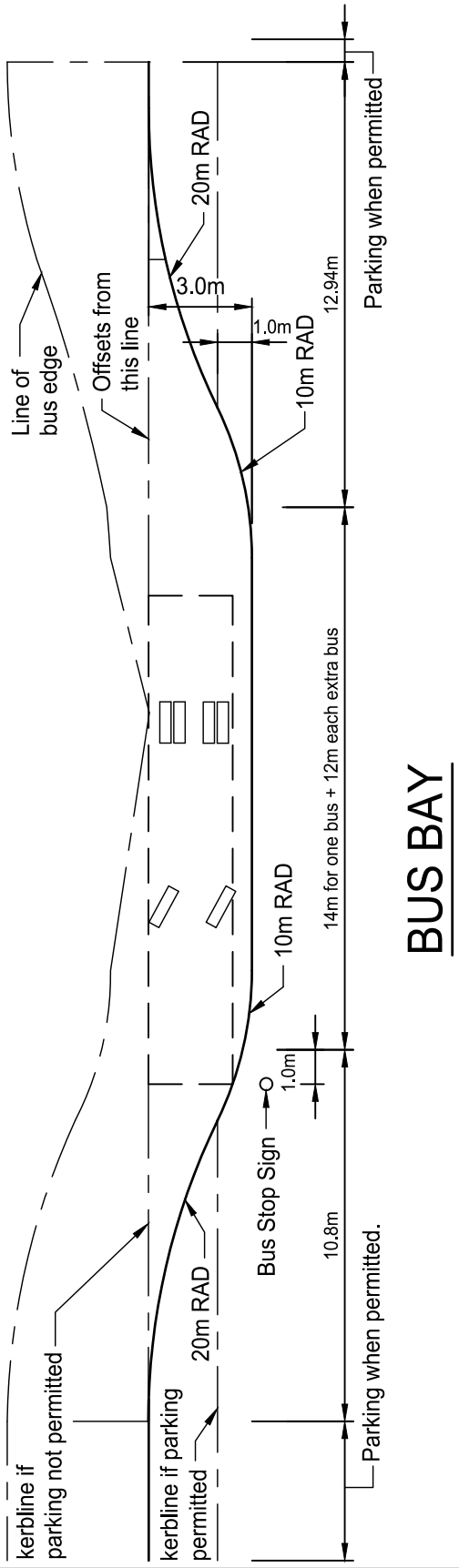
Robert van Bentum
Chief Engineer

Designed	*Infrastructure*
Drawn	*E.Fromont*
Checked	*T. Mcglynn*
Revised	*05 / 21*

Scales 1:25

Plan no.

3.25.1



BUS BAY DESIGN

PALMY
PARAKIKA PALMERSTON NORTH CITY

Robert van Bentum
Chief Engineer

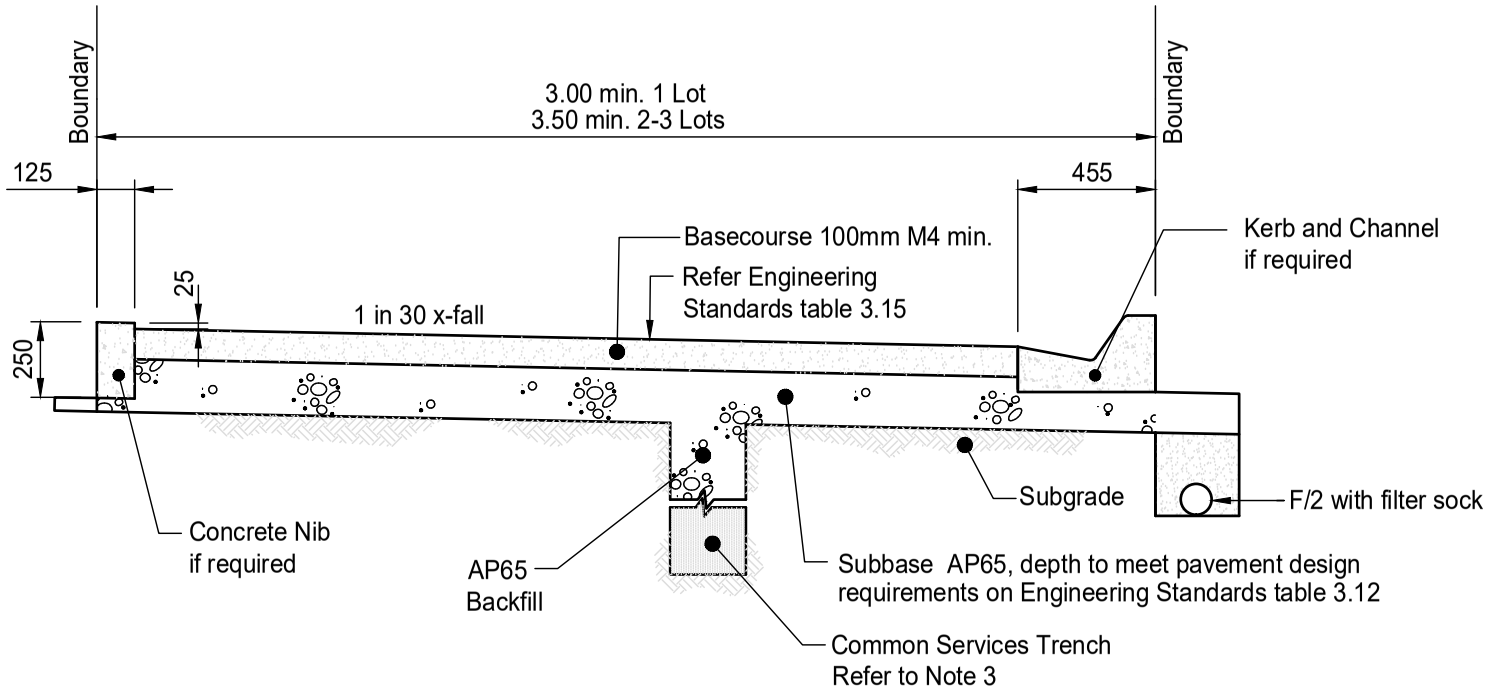
Designed	*Infrastructure*
Drawn	*E.Fromont*
Checked	*T. Mcglynn*
Revised	*05 / 21*

Scales NOT TO SCALE

Plan no.

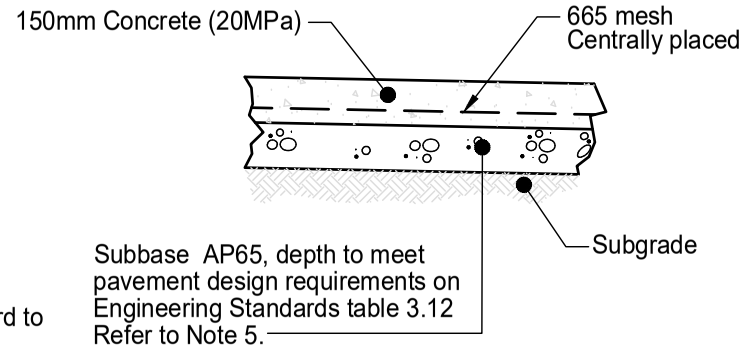
3.26

RESIDENTIAL ACCESS TO REAR LOTS
ONE TO THREE LOTS



NOTE:

1. Pavement formation depths to be designed. Subbase minimum depth to to obtain minimum Clegg Impact value of 30.
2. For surfacing refer Engineering Standards table 3.15
3. Wastewater, Stormwater and water services must be appropriately sized. All services may be laid in a common trench provided the required clearances between services are maintained.
4. Plan and gradient designs are to comply with NZS 4404 : 2010, with specific regard to passing bays, max grades, crossfalls and turning heads.
5. CONCRETE ALTERNATIVE-Concrete ROW's may be drained to centre.
6. All dimensions/measurements are in millimeters unless specified otherwise.
7. Unbound granular pavement construction shall be in accordance with NZTA B/2.
8. Asphalt construction and production shall be undertaken in accordance with NZTA M10.



CONCRETE ALTERNATIVE

Note : Concrete ROW's may be drained to centre.

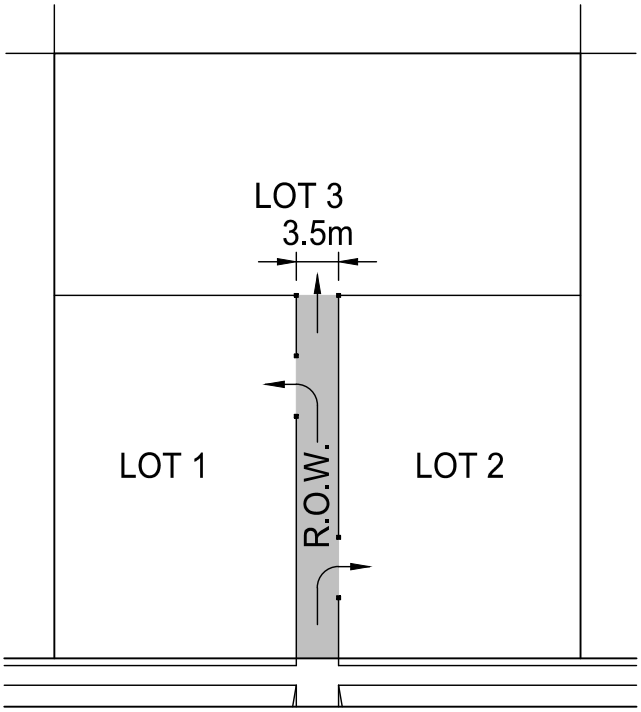
PALMY
PALMERSTON NORTH CITY

Stuart Cartwright
Chief Engineer

Designed	*Infrastructure*		
Drawn	*R.Hodgson*		
Checked	*T. Mcglynn*		
Revised	*03 / 23*		

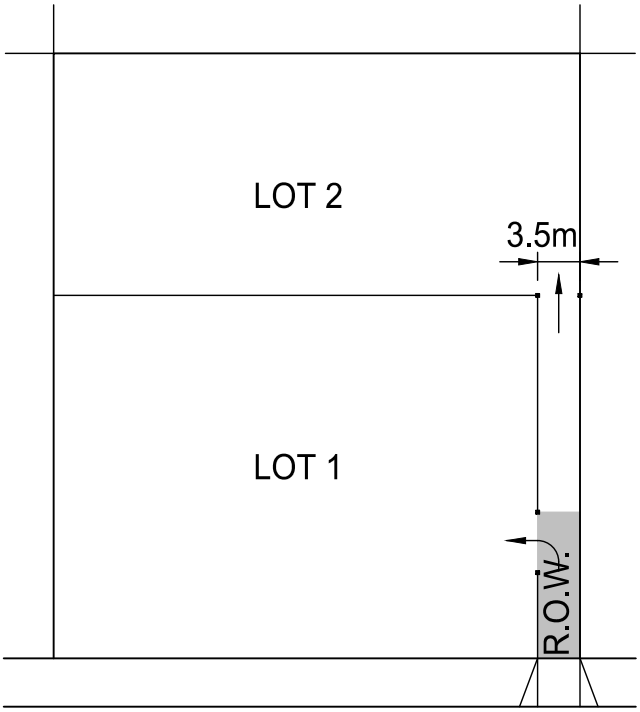
Scales 1:25

Plan no. 3.27



SHARED ACCESS 3 LOTS

Berm Indicative Only



SHARED ACCESS 2 LOTS

Berm Indicative Only

NOTE:

1. Shown above are examples of shared accesses.
2. Right of way to be constructed for full length of shared access.

SHARED ACCESS FOR 2 TO 3 LOTS

PALMY
PAPAIOEA PALMERSTON NORTH CITY

Robert van Bentum
Chief Engineer

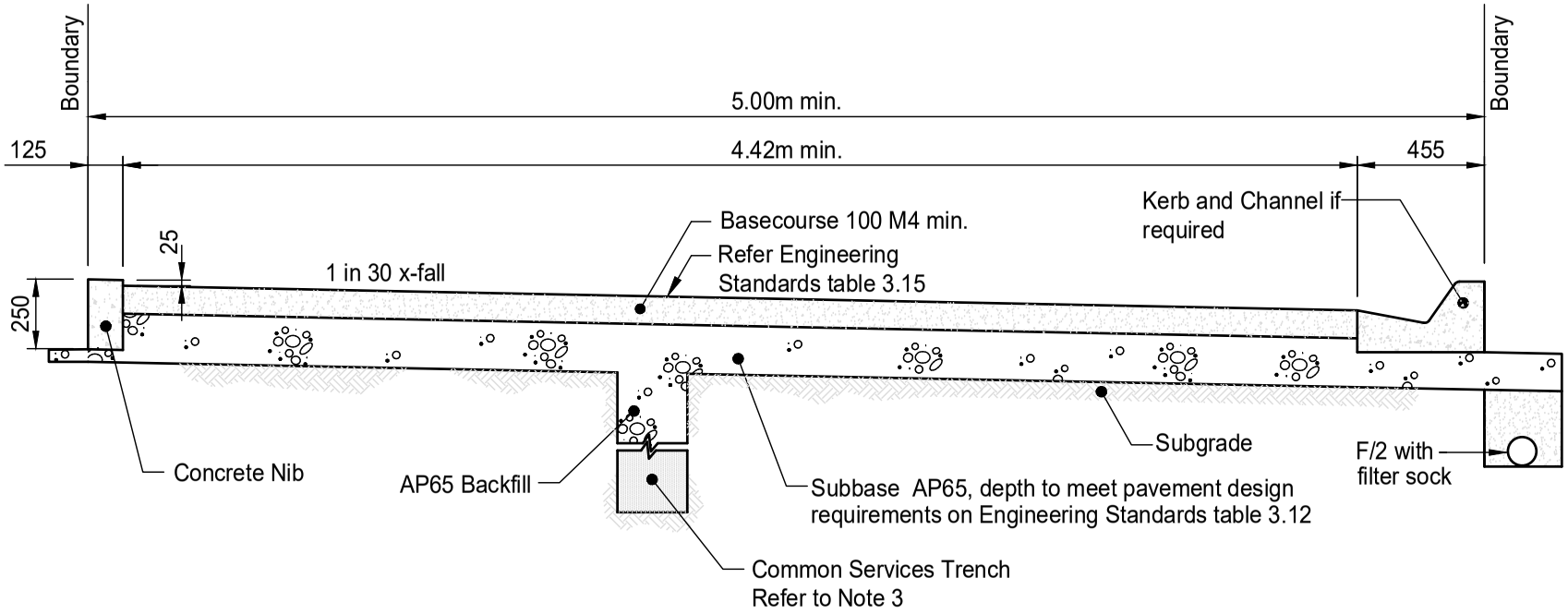
Designed	*Infrastructure*
Drawn	*E.Fromont*
Checked	*T. Mcglynn*
Revised	*05 / 21*

Scales NOT TO SCALE

Plan no.

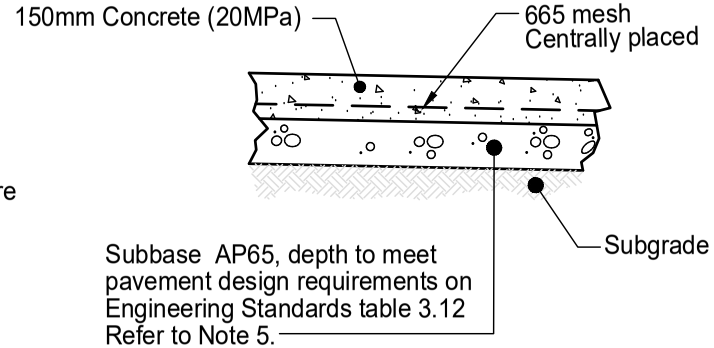
3.27.1

RESIDENTIAL ACCESS TO REAR LOTS - FOUR TO SIX LOTS



NOTE:

1. Pavement formation depths to be designed. Subbase minimum depth to to obtain minimum Clegg Impact value of 30. Concrete pavers are acceptable.
2. Surfacing - Refer table on dwg 3.15
3. Wastewater, Stormwater and water services must be appropriately sized. All services may be laid in a common trench provided the required clearances between services are maintained.
4. Plan and gradient designs are to comply with NZS 4404 : 2010, with specific regard to passing bays, max grades, crossfalls and turning heads.
5. CONCRETE ALTERNATIVE-Concrete ROW's may be drained to centre.
6. All dimensions/measurements are in millimeters unless specified otherwise.
7. Unbound granular pavement construction shall be in accordance with NZTA B/2.
8. Asphalt construction and production shall be undertaken in accordance with NZTA M10.



CONCRETE ALTERNATIVE

Note : Concrete ROW's may be drained to centre.

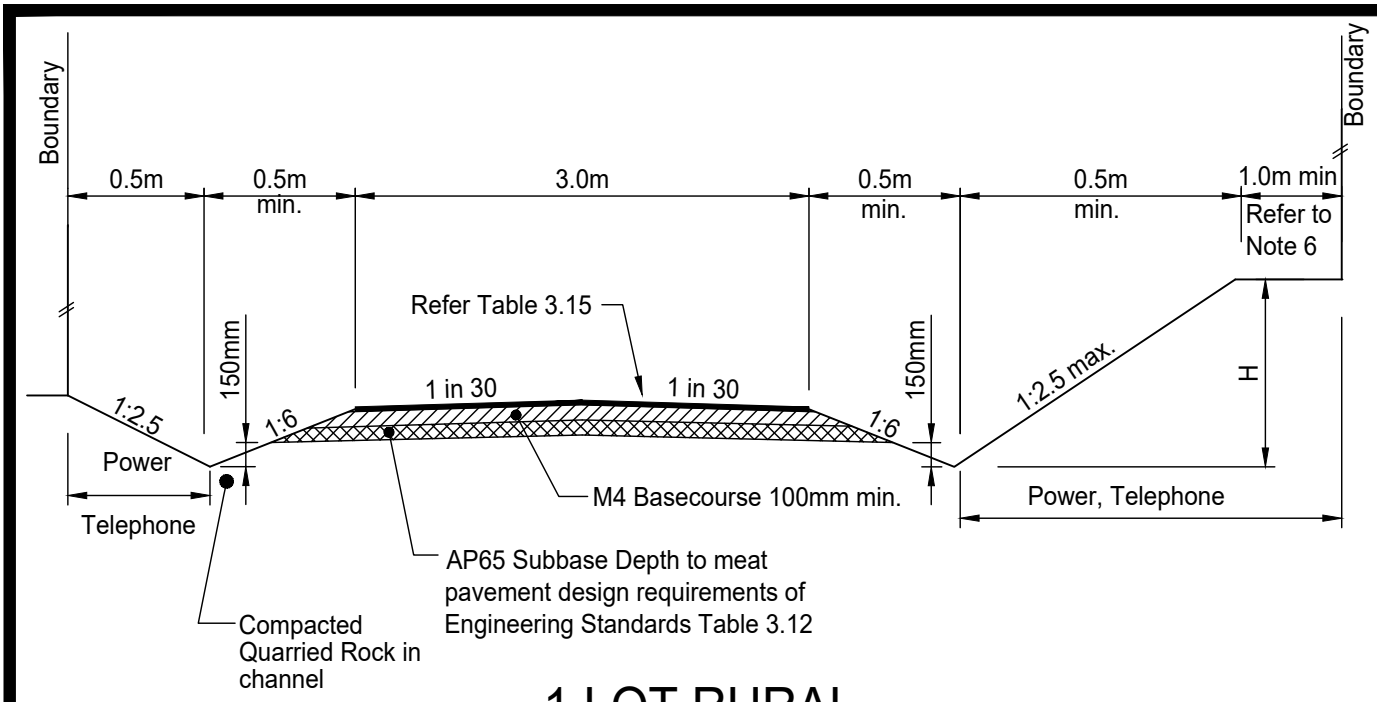
PALMY

Stuart Cartwright
Chief Engineer

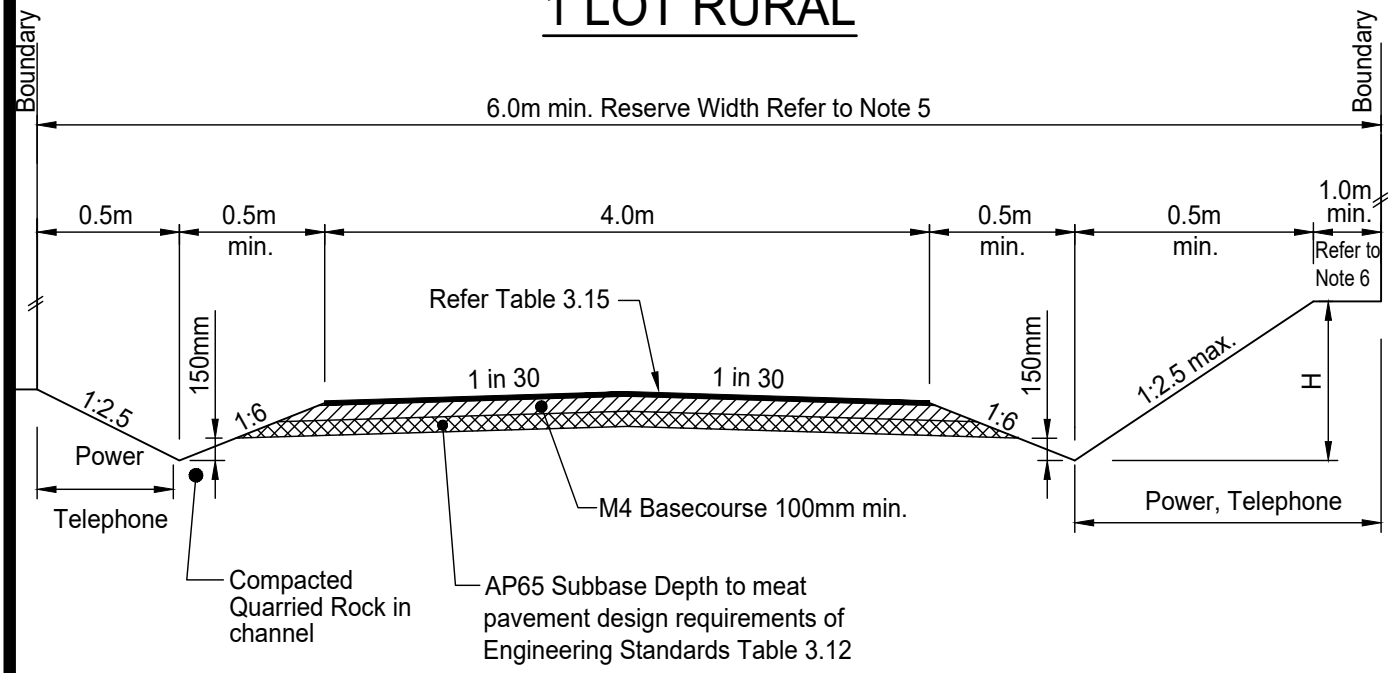
Designed	*Infrastructure*		
Drawn	*R.Hodgson*		
Checked	*T. Mcglynn*		
Revised	*02 / 23*		

Scales 1:25

Plan no. 3.28



1 LOT RURAL



2-4 LOTS RURAL

NOTE:

1. For batter slopes exceeding 1:2.5, Engineering design report will be required.
2. Drainage details as for rural road, Refer to DWG 3.4 & 3.7.
3. Plan and gradient designs are to comply with NZS 4404 : 2010, with specific regard to passing bays, max grades, crossfalls and turning heads.
4. The minimum reserve width of 5.0m must be increased to include cut and fill batters and roadside drainage.
5. The minimum reserve width of 6.0m must be increased to include cut and fill batters and roadside drainage.
6. 1m level platform at top or toe where bank height H is greater than 1.5m. (Not required where batter is less than 1:3.5).

RURAL - ACCESS TO REAR LOTS

PALMY
PAPAMOEA PALMERSTON NORTH CITY

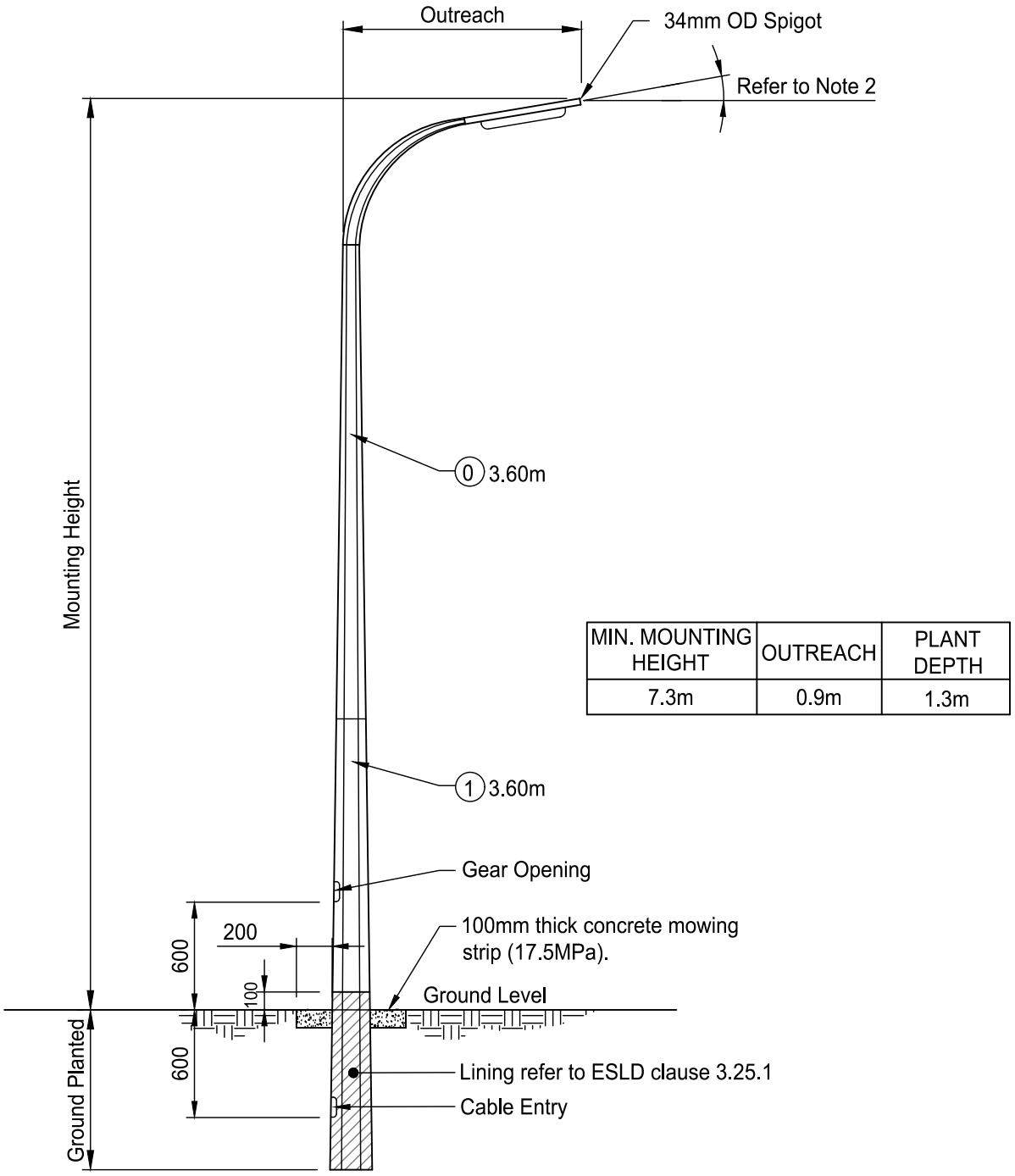
Stuart Cartwright
Chief Engineer

Designed	*Infrastructure*
Drawn	*R.Hodgson*
Checked	*T. Mcglynn*
Revised	*02 / 23*

Scales 1:5

Plan no.

3.29



MIN. MOUNTING HEIGHT	OUTREACH	PLANT DEPTH
7.3m	0.9m	1.3m

NOTE:

1. Columns to be installed to CSP Specifications, luminaires are to meet the AS/NZS1158.6 Standard and are to be included and certified by the NZTA M30 Standard.
   All street lighting in new subdivisions to be LED
2. LED luminaire tilt angles as per design 0° - 5° Max.

STEEL LIGHTING COLUMNS FOR STREETS

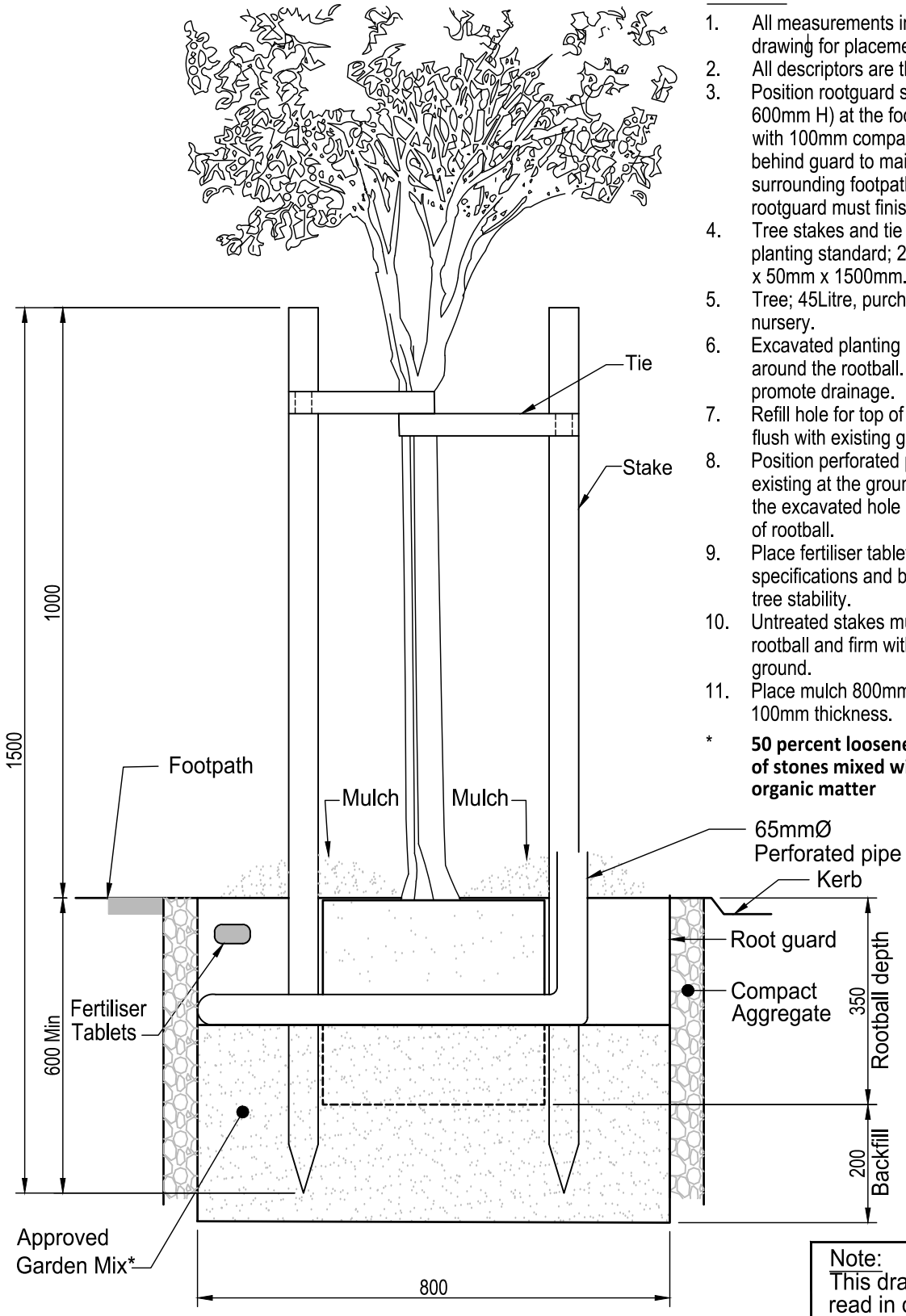
PALMY
PALMERSTON NORTH CITY

Robert van Bentum
Chief Engineer

Designed	*Infrastructure*
Drawn	*E.Fromont*
Checked	*T. Mcglynn*
Revised	*05 / 21*

Scales NOT TO SCALE

Plan no. 3.30



Notes:

1. All measurements in millimetres. Refer to drawing for placement of components.
2. All descriptors are the minimum standard.
3. Position rootguard sheeting (2000mm W x 600mm H) at the footpath and kerb edge with 100mm compacted aggregate placed behind guard to maintain the integrity of any surrounding footpath and kerbing. Top of rootguard must finish at ground level.
4. Tree stakes and tie must be industry tree planting standard; 2 untreated stakes 50mm x 50mm x 1500mm.
5. Tree; 45Litre, purchased from a reputable nursery.
6. Excavated planting hole 200mm clearance around the rootball. Rip base of hole to promote drainage.
7. Refill hole for top of rootball to be finished flush with existing ground level.
8. Position perforated pipe entering and existing at the ground surface, then around the excavated hole and level with the base of rootball.
9. Place fertiliser tablets according to product specifications and backfill hole that ensures tree stability.
10. Untreated stakes must be outside the rootball and firm with 500mm below the ground.
11. Place mulch 800mm around trunk and 100mm thickness.

* **50 percent loosened original soil free of stones mixed with 50 percent organic matter**

Note:
This drawing is be read in conjunction with dwg no. 3.31.1.

STREET TREE - ELEVATION

PALMY
RANGITĪKEI MANAWATŪ NORTH CITY

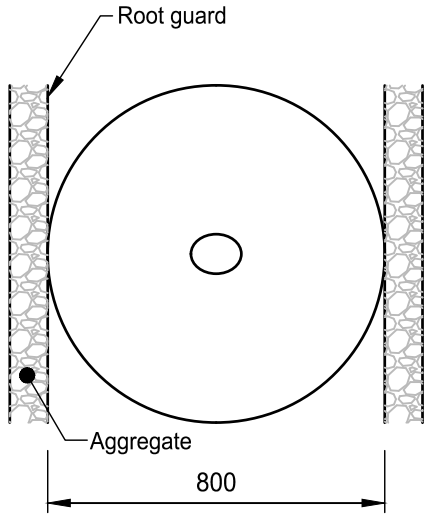
Stuart Cartwright
Chief Engineer

Designed	*Infrastructure*
Drawn	*R.Hodgson*
Checked	*T. Mcglynn*
Revised	*02 / 23*

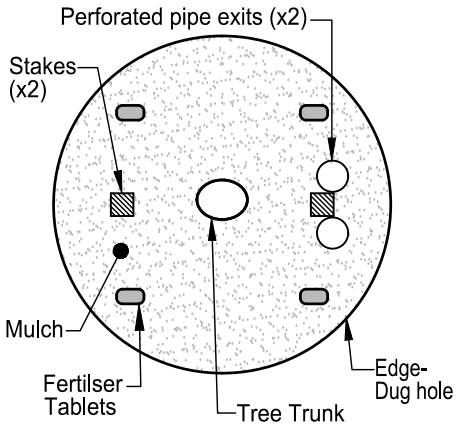
Scales NOT TO SCALE

Plan no.

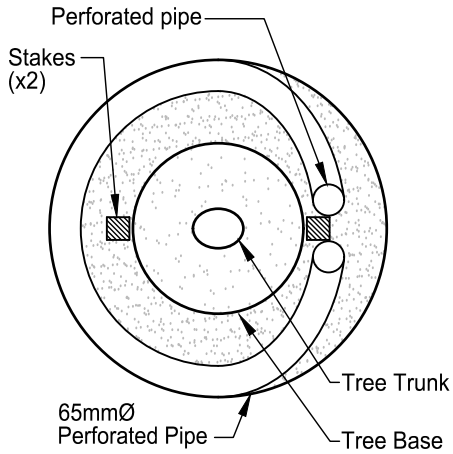
3.31



POSITIONAL DETAIL
ROOT GUARD



POSITIONAL DETAIL
FERTILISER TABLETS



POSITIONAL DETAIL
NOVA FLOW

STREET TREE - PLAN AND DETAILS

PALMY
RANGITĪKEI MANAWATŪ NORTH CITY

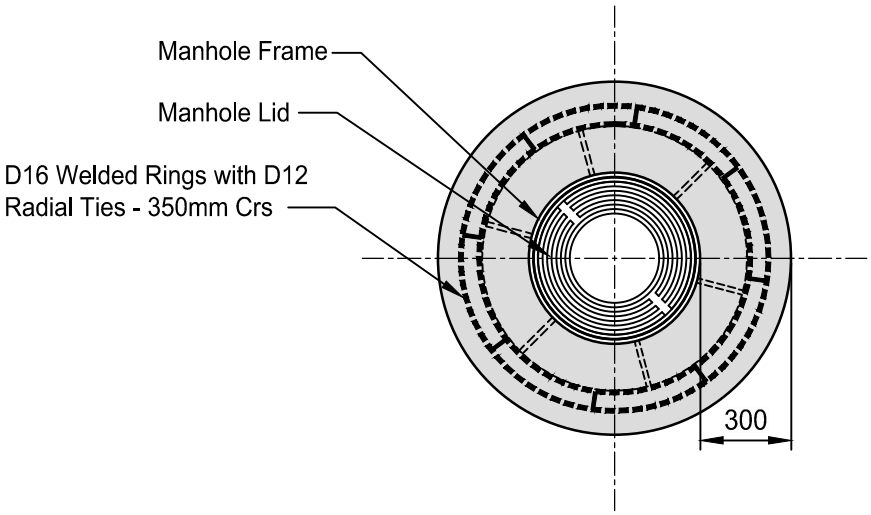
Stuart Cartwright
Chief Engineer

Designed	*Infrastructure*
Drawn	*R.Hodgson*
Checked	*T. Mcglynn*
Revised	*02 /23*

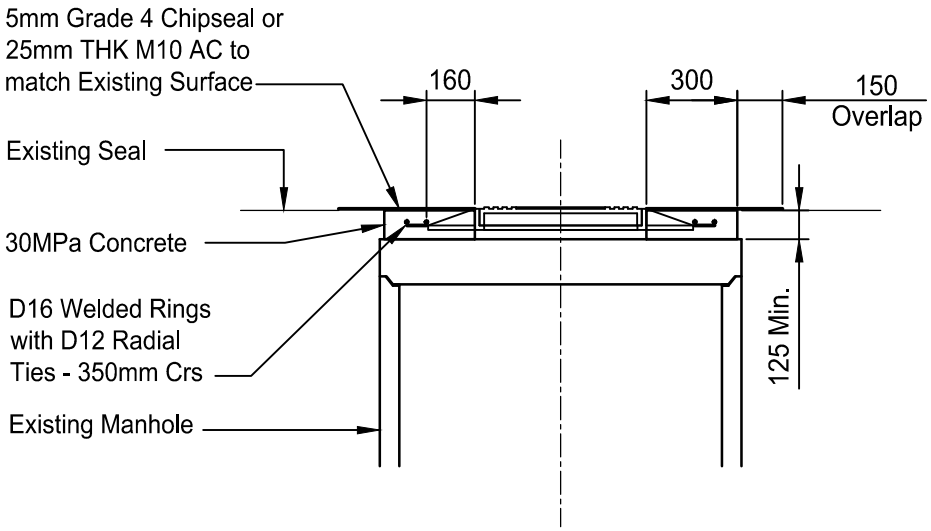
Scales NOT TO SCALE

Plan no.

3.31.1



PLAN



Note: Optional hinged manhole lid to be installed in direction of traffic.

SIDE ELEVATION

All dimensions shown are millimetres unless noted

STORMWATER & SEWER ACCESS CHAMBER LID SECURING DETAILS

PALMY
PAPAIOEA PALMERSTON NORTH CITY

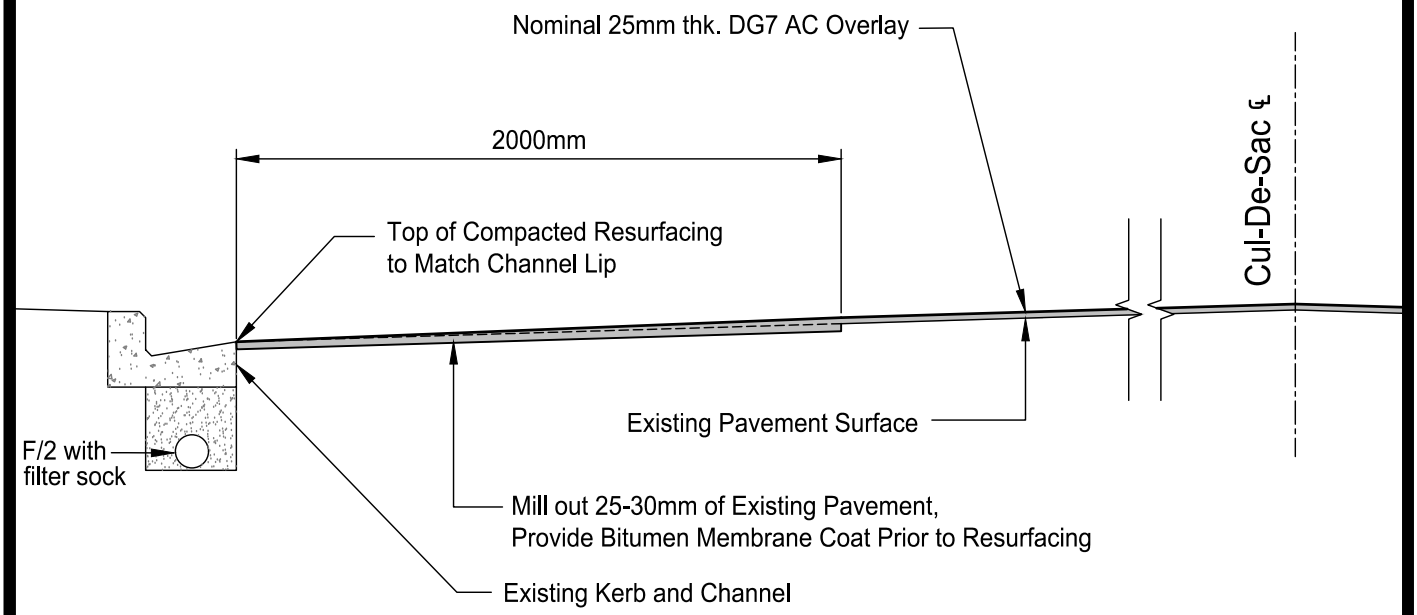
Stuart Cartwright
Chief Engineer

Designed	*Infrastructure*
Drawn	*R.Hodgson*
Checked	*T. Mcglynn*
Revised	*02 / 23*

Scales NOT TO SCALE

Plan no.

3.32



ASPHALTIC CONCRETE RESURFACING
CUL-DE-SAC BOWLS

PALMY
PARMURA PALMERSTON NORTH CITY

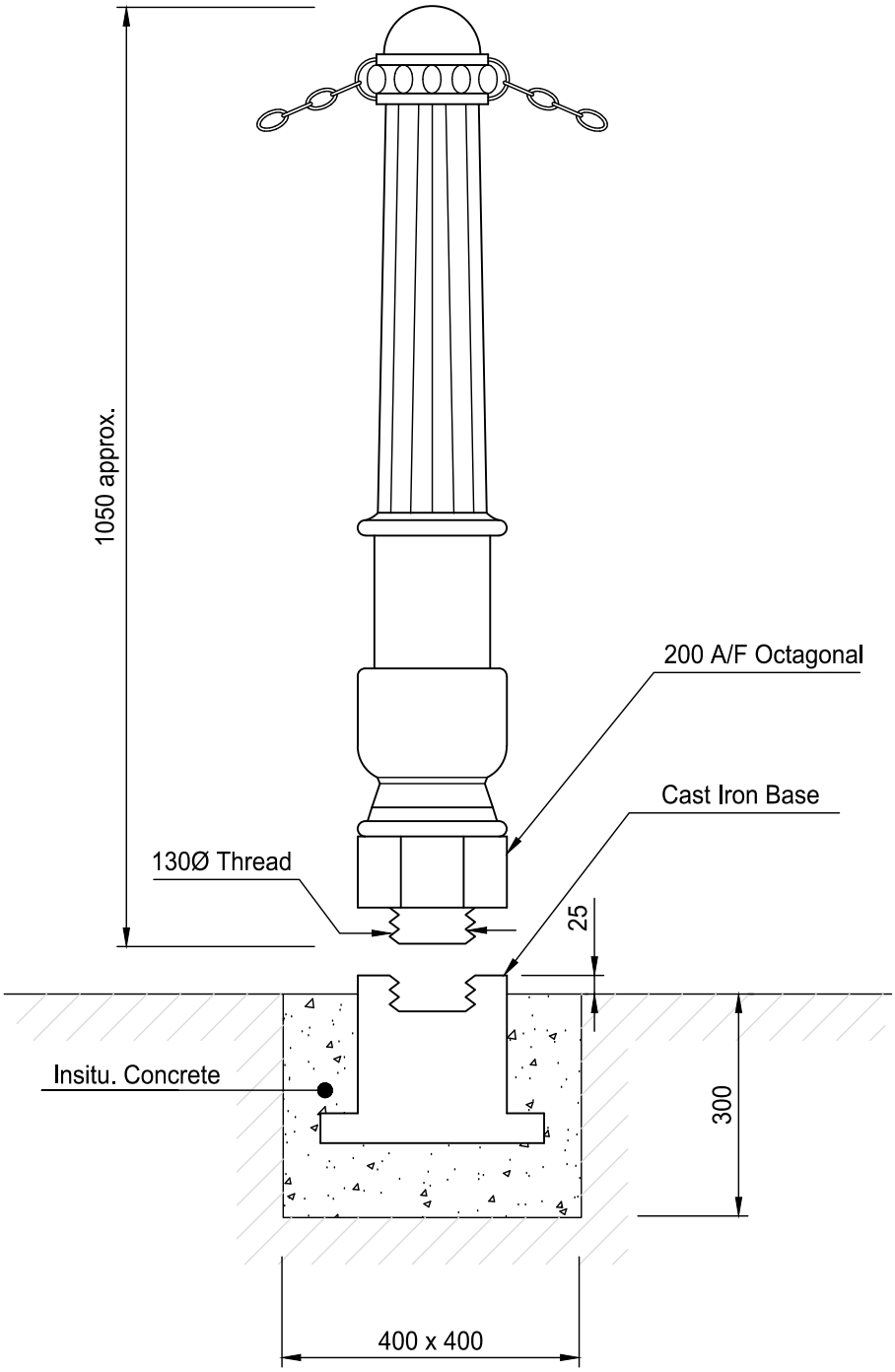
Robert van Bentum
Chief Engineer

Designed	*Infrastructure*
Drawn	*E.Fromont*
Checked	*T. Mcglynn*
Revised	*05 / 21*

Scales NOT TO SCALE

Plan no.

3.33



NOTE:

1. Typical Detail Only, Bollard assembly and footing to be approved.
2. All dimensions/measurements are in millimeters unless specified otherwise.

SCREW MOUNTED BOLLARD

PALMY
PARMURA PALMERSTON NORTH CITY

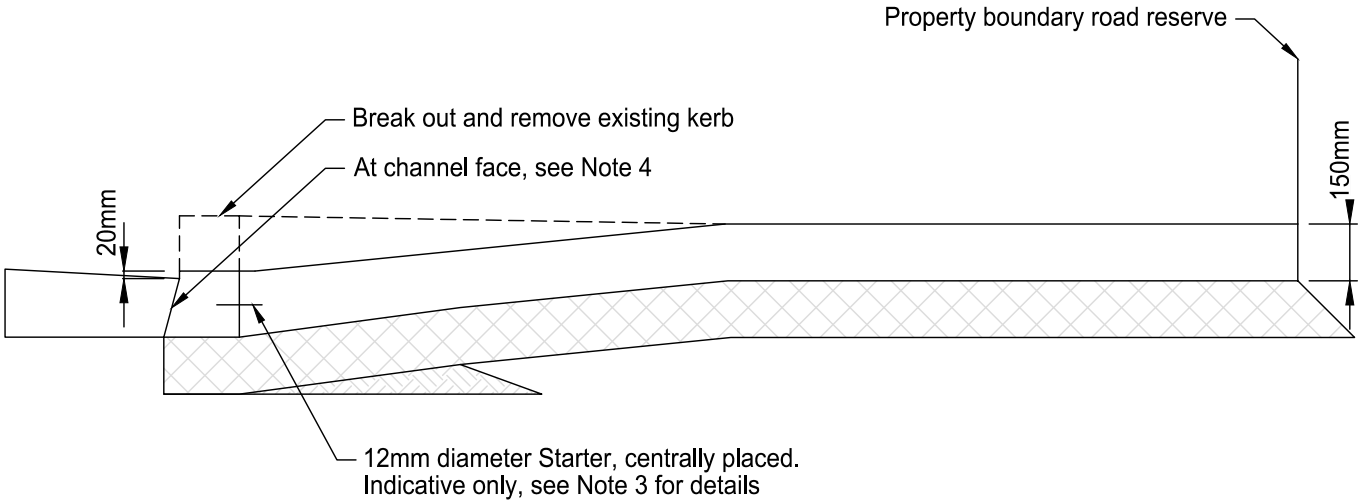
Robert van Bentum
Chief Engineer

Designed	*Infrastructure*
Drawn	*E.Fromont*
Checked	*T. Mcglynn*
Revised	*05 / 21*

Scales NOT TO SCALE

Plan no.

3.34



NOTE:

1. All concrete shall comply in all respects with NZS 3109 and to be minimum. 20MPa crushing strength after 28 days minimum.
2. All surfaces to be broom finish.
3. At channel face:
   12mm diameter deformed starter rods 250mm long at 400mm centers, 150mm exposed 100mm drilled and epoxied into existing concrete.
4. Existing footpath is to be sawcut . The minimum distances between the edge of the new vehicle crossing and and existing construction joint is. 1.0m. It may be necessary to renew atleast 1.0m of footpath either side of the vehicle crossing to achieve this.

GREENFIELD SUBDIVISION NEW VEHICLE CROSSING CUT-IN DETAILS

PALMY
PARMERA PALMERSTON NORTH CITY

Robert van Bentum
Chief Engineer

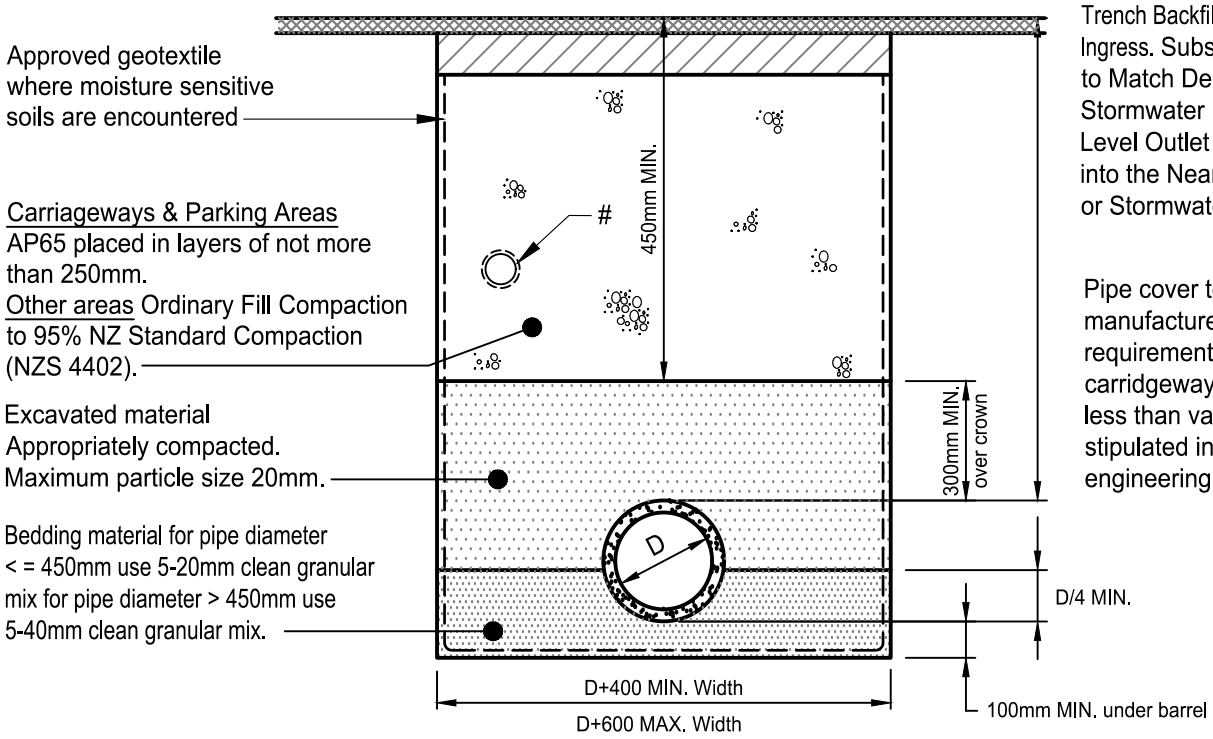
Designed	*Infrastructure*
Drawn	*E.Fromont*
Checked	*T. Mcglynn*
Revised	*05 / 21*

Scales NOT TO SCALE

Plan no. 3.35

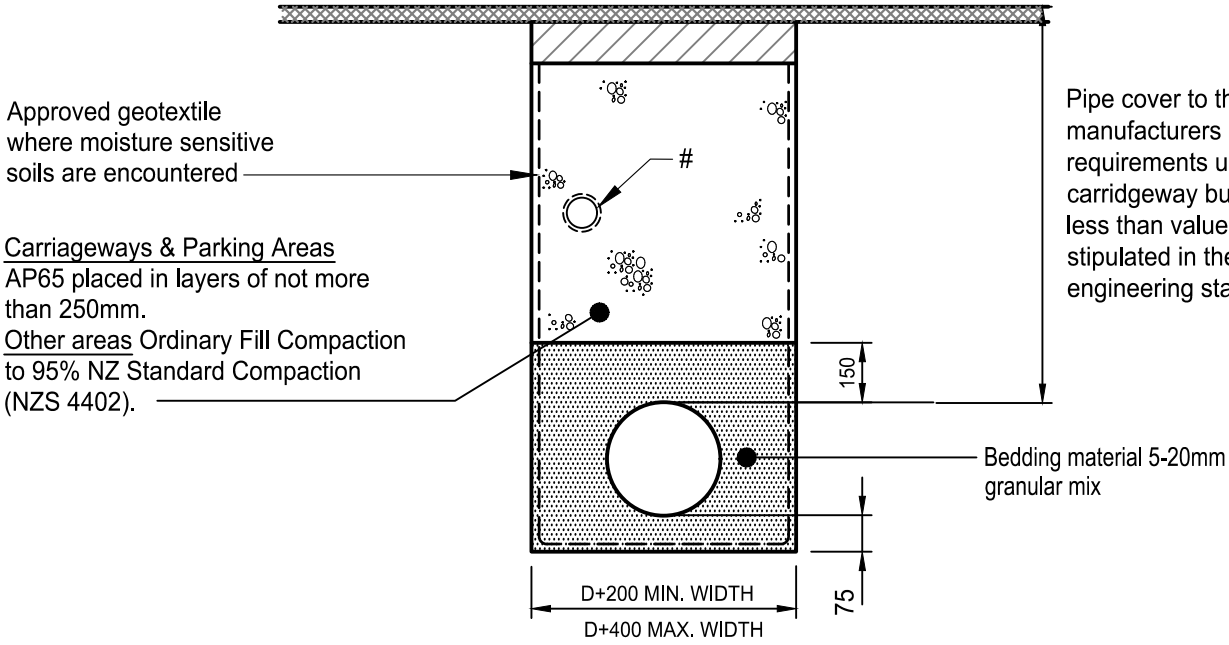
K:/Temp/Ethan/STANDARD/Part 3 ROADING/3.35.dwg Plotted:17 JUN 2021

100Ø Perforated Smooth Bore Subsoil Drain With Fabric Sock to Prevent Trench Backfill Material Ingress. Subsoil Drain to Match Deepest Stormwater Network Level Outlet to be Tied into the Nearest Sump or Stormwater Manhole



Pipe cover to the manufacturers requirements under carridgeway but no less than values stipulated in the engineering standards.

CONCRETE & CERAMIC PIPES



Pipe cover to the manufacturers requirements under carridgeway but no less than values stipulated in the engineering standards.

uPVC PIPES

PIPE TRENCHING DETAILS - WASTEWATER & STORMWATER

PALMY
PARAWERA PALMERSTON NORTH CITY

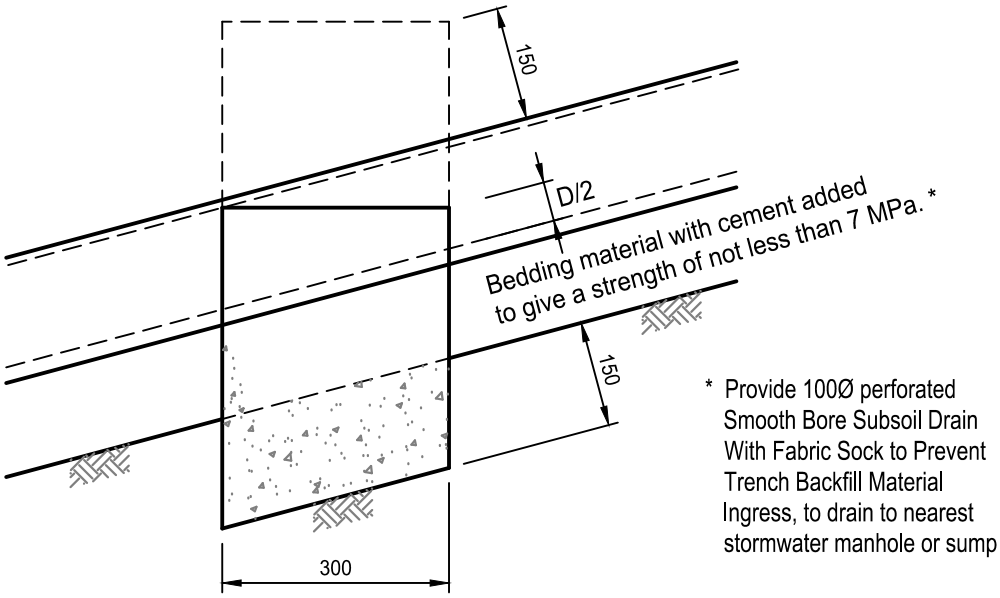
Stuart Cartwright
Chief Engineer

Designed	*Infrastructure*
Drawn	*R.Hodgson*
Checked	*T. Mcglynn*
Revised	*02 / 23*

Scales NOT TO SCALE

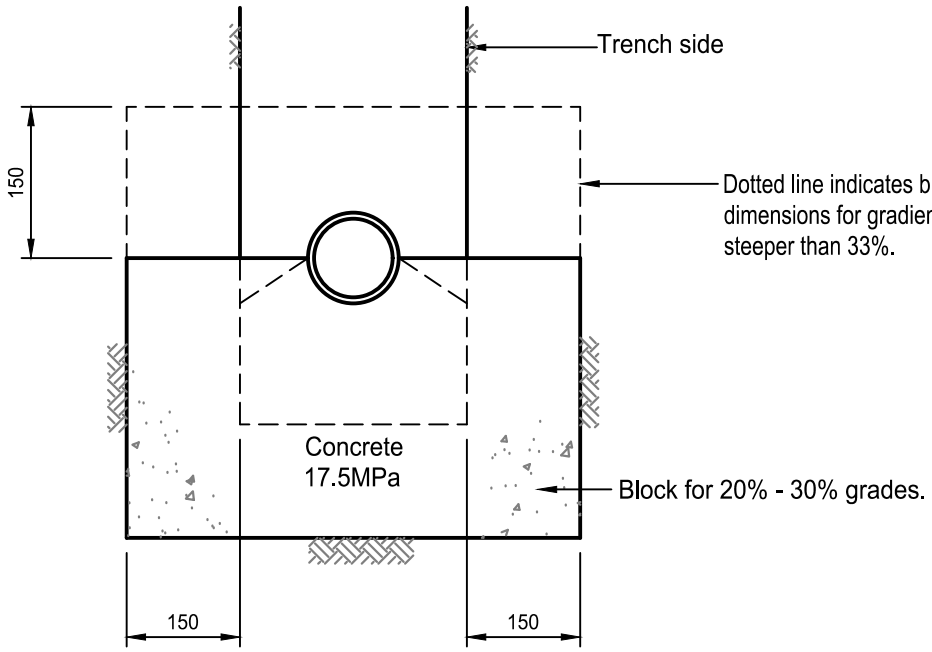
Plan no.

4.1



* Provide 100Ø perforated Smooth Bore Subsoil Drain With Fabric Sock to Prevent Trench Backfill Material Ingress, to drain to nearest stormwater manhole or sump

LONGITUDINAL SECTION



CROSS SECTION

NOTE:

1. All dimensions/measurements are in millimeters unless specified otherwise.
2. When pipeline gradients exceed 20% (1 in 5), a cement bonded bedding and anti-scour blocks placed at 6.0 metre intervals are required.

ANTI-SCOUR BLOCKS FOR STEEP PIPELINES

PALMY
PĀMAHEA
PALMERSTON
NORTH
CITY

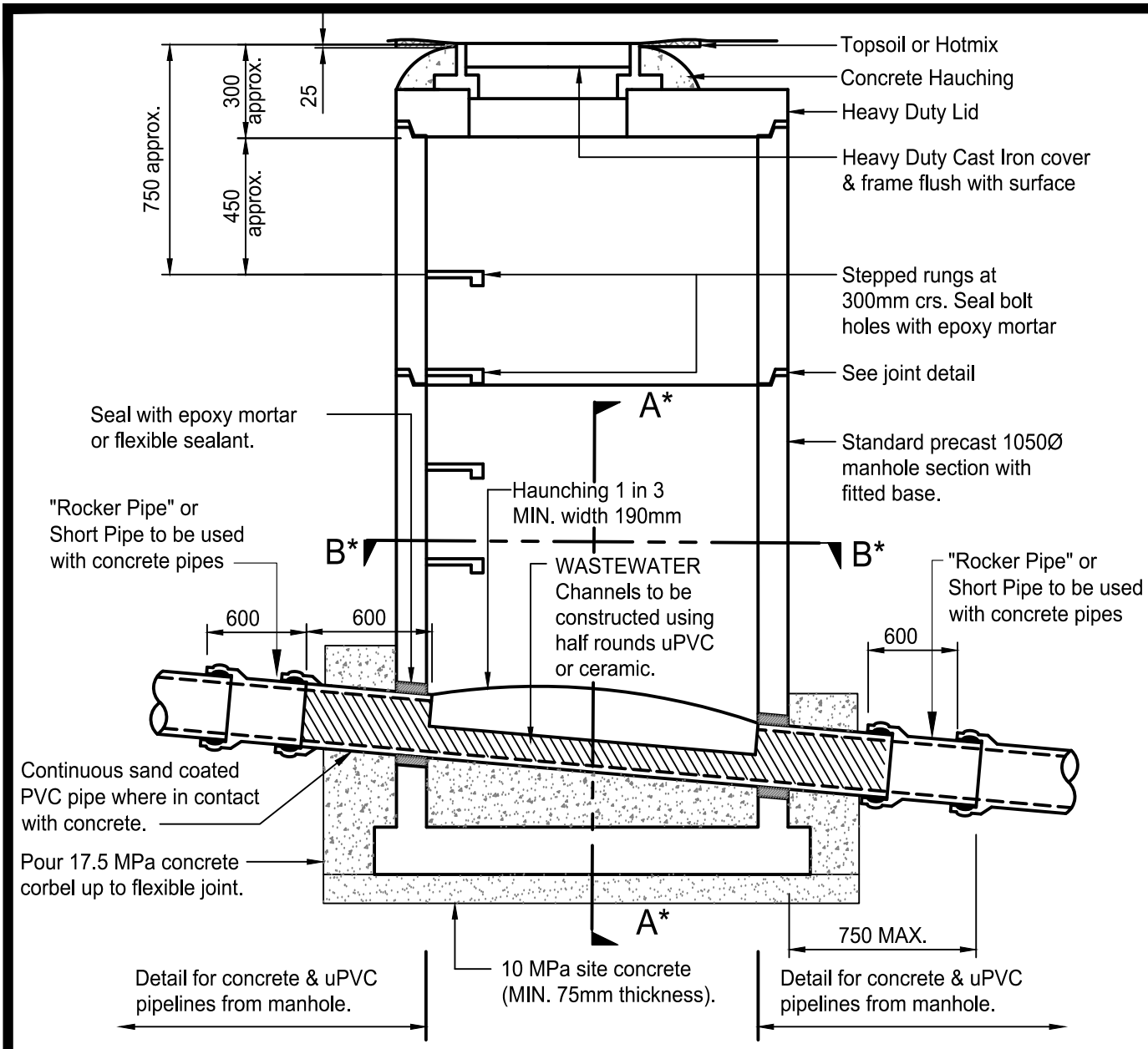
Stuart Cartwright
Chief Engineer

Designed	*Infrastructure*
Drawn	*R.Hodgson*
Checked	*T. Mcglynn*
Revised	*02 / 23*

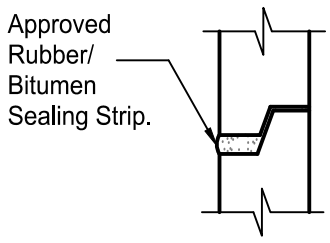
Scales NOT TO SCALE

Plan no.

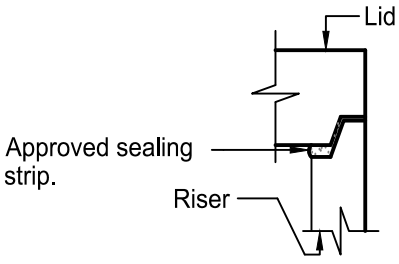
4.2



* Refer to DWG 4.5 for all haunching details

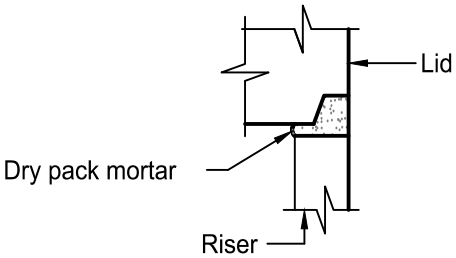


JOINT DETAIL



RISER-LID DETAIL

(Full height riser)



RISER-LID DETAIL

(Riser shortened)

NOTE:

1. All dimensions/measurements are in millimeters unless specified otherwise.

MANHOLE - WASTEWATER

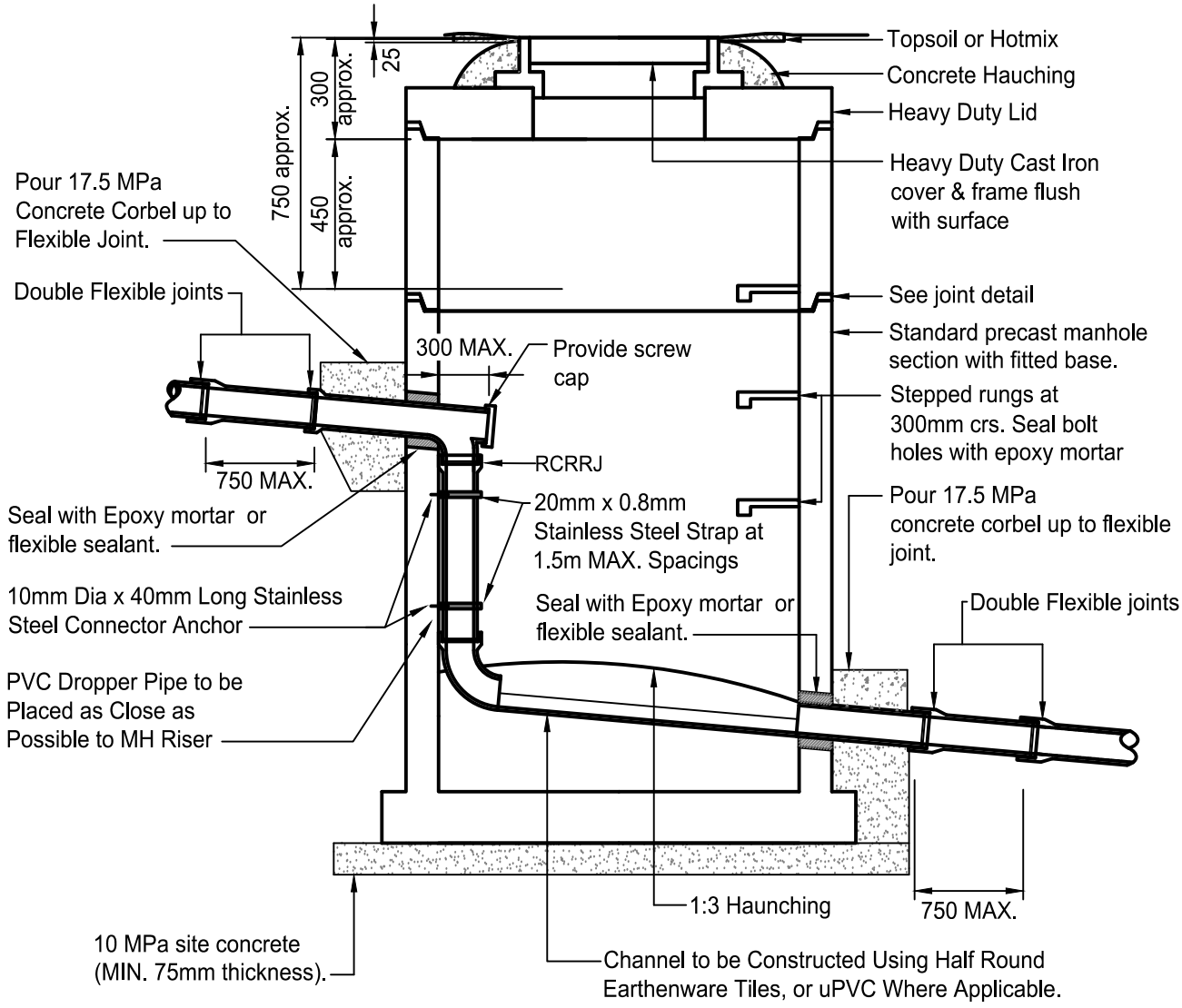
PALMY
PAPAMOEA PALMERSTON NORTH CITY

Stuart Cartwright
Chief Engineer

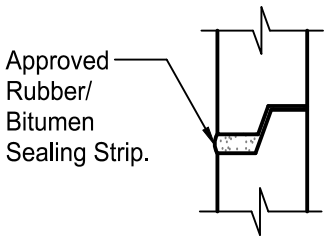
Designed	*Infrastructure*
Drawn	*R.Hodgson*
Checked	*T. Mcglynn*
Revised	*02 / 23*

Scales NOT TO SCALE

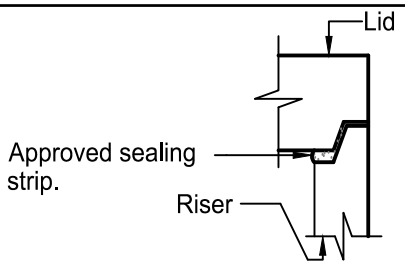
Plan no. **4.3**



100mmØ OR 150mmØ SEWER

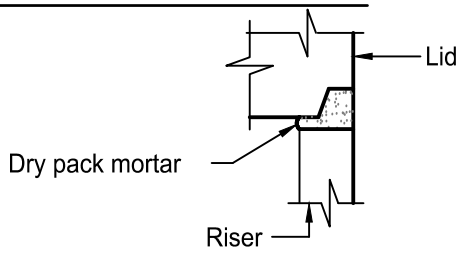


JOINT DETAIL



RISER-LID DETAIL

(Full height riser)



RISER-LID DETAIL

(Riser shortened)

NOTE:

1. All dimensions/measurements are in millimeters unless specified otherwise.

INTERNAL DROP MANHOLE - WASTEWATER

PALMY
PAPAMOEA PALMERSTON NORTH CITY

Stuart Cartwright
Chief Engineer

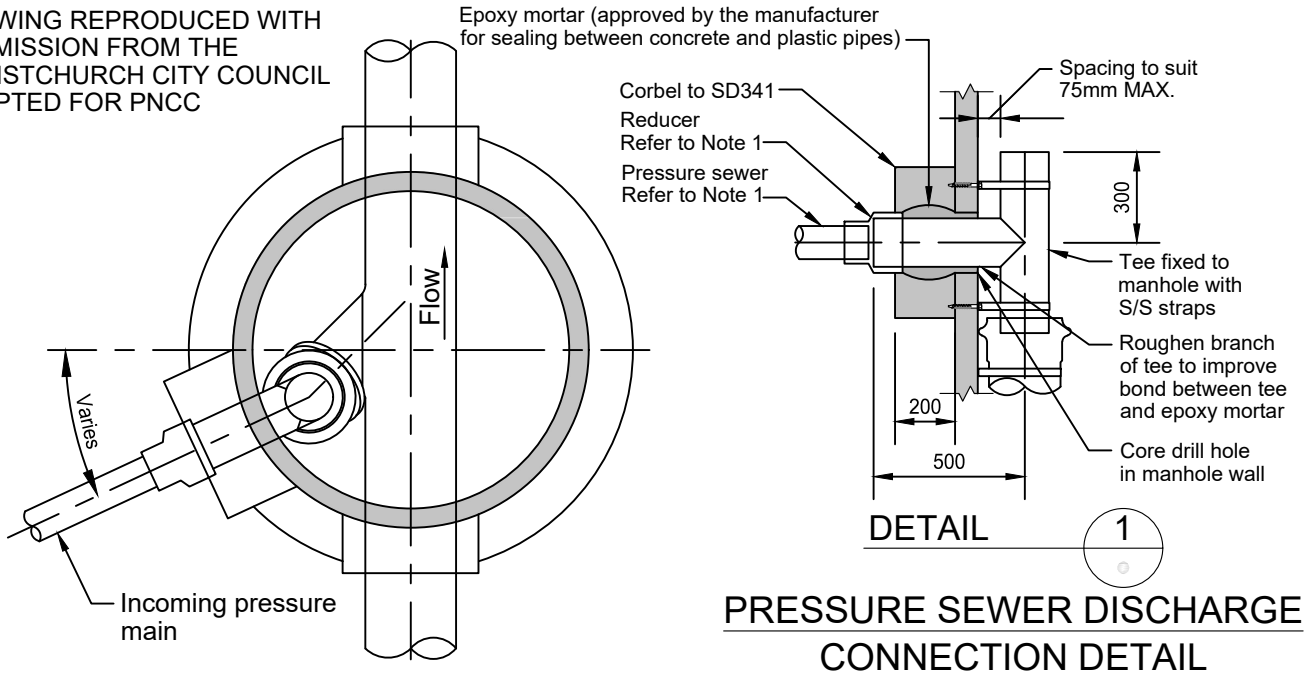
Designed	*Infrastructure*
Drawn	*R.Hodgson*
Checked	*T. Mcglynn*
Revised	*02 / 23*

Scales NOT TO SCALE

Plan no.

4.4

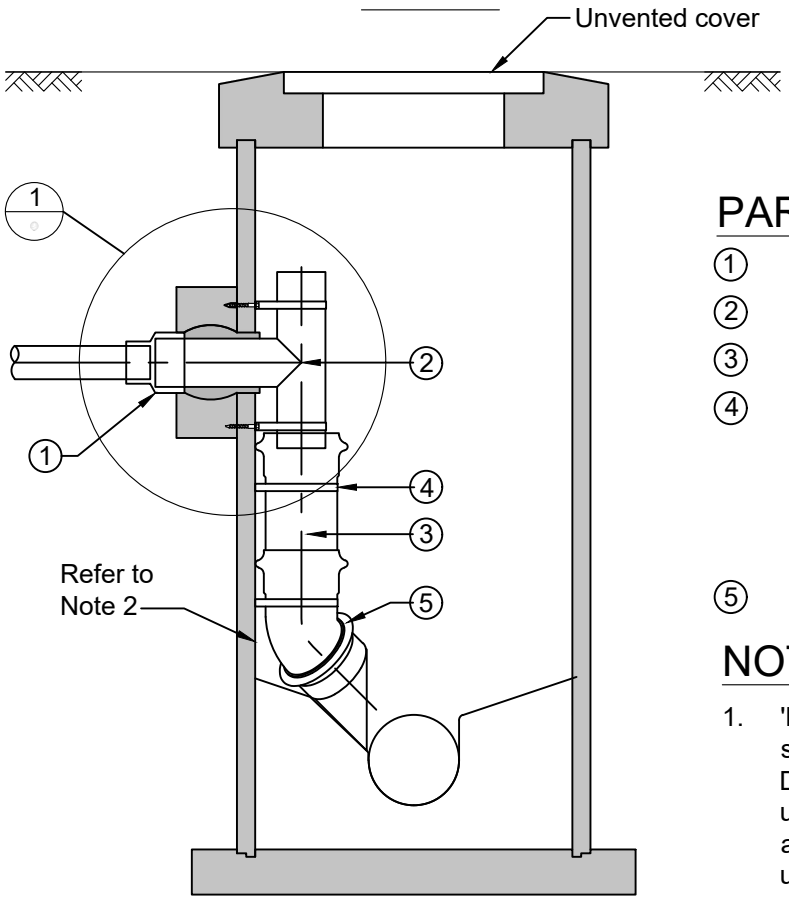
DRAWING REPRODUCED WITH PERMISSION FROM THE CHRISTCHURCH CITY COUNCIL ADAPTED FOR PNCC



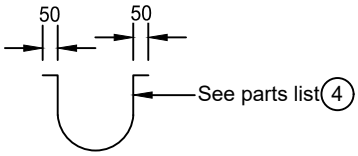
DETAIL 1

PRESSURE SEWER DISCHARGE CONNECTION DETAIL

PLAN



SECTION



STRAP DETAIL

PARTS LIST:

1. DN160 x DNXXX PE reducer.
2. DN160 PE tee.
3. 225Ø PVC pipe.
4. 25mm wide x 1.25mm 316 guage stainless steel strap fixed to manhole wall with 2 -M12 x 100mm 316ss threaded studs. Epoxy anchor with 50mm embedment depth.
5. 225Ø 135° bend.

NOTE:

1. 'Detail 1' can be used for pressure sewers DN125, DN110 & DN90. For DN63 and DN75 pressure sewers, upsize to DN110 using an EF reducer and complete the discharge connection using 'Detail A' for DN110.
2. All internal concrete faces to be treated to prevent corrosion.

INTERNAL DROP MANHOLE FOR PRESSURE SYSTEM CONNECTION - WASTEWATER

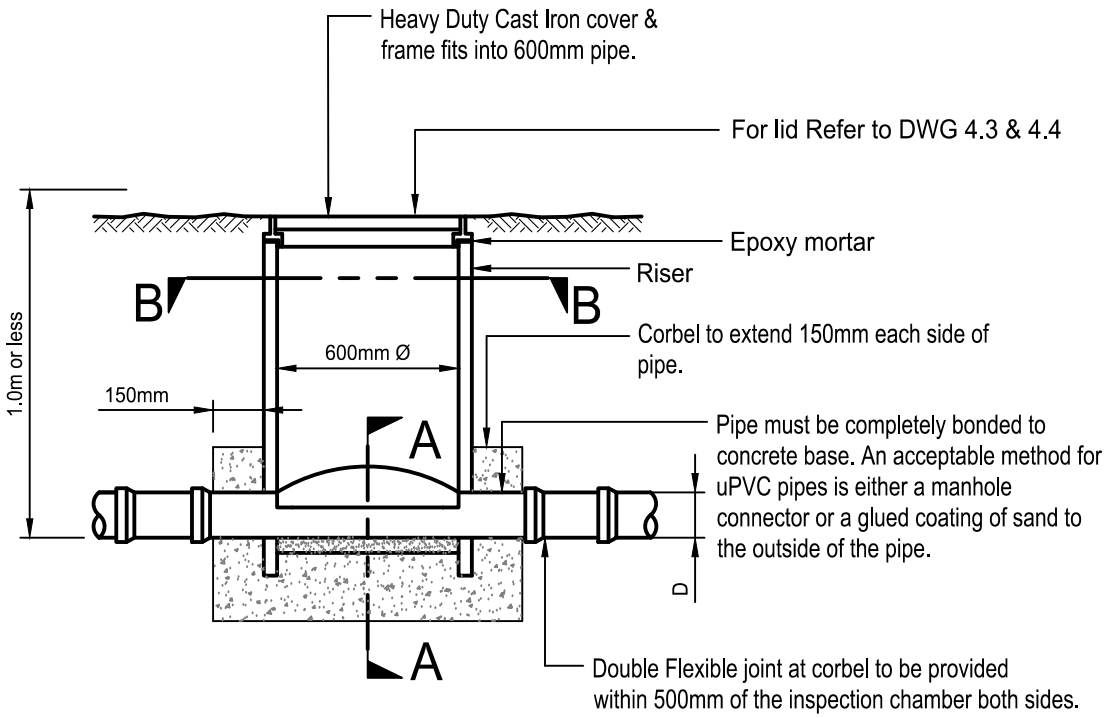
PALMY
PAHAUOA PALMERSTON NORTH CITY

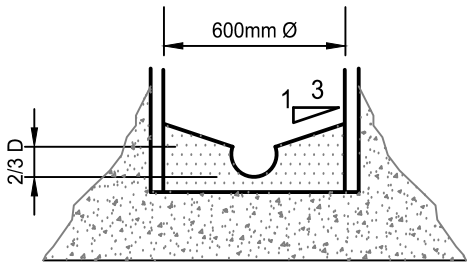
Stuart Cartwright
Chief Engineer

Designed	*Infrastructure*
Drawn	*R.Hodgson*
Checked	*T. Mcglynn*
Revised	*02 / 23*

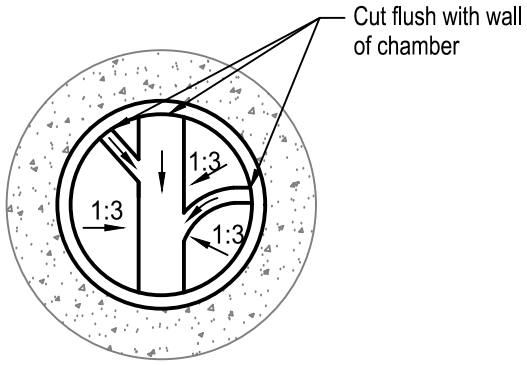
Scales NOT TO SCALE

Plan no. 4.4.1





SECTION A-A



SECTION B-B

WASTEWATER

TYPICAL INSPECTION CHAMBER FOR 100mm PIPE

PALMY
PAPAMOEA PALMERSTON NORTH CITY

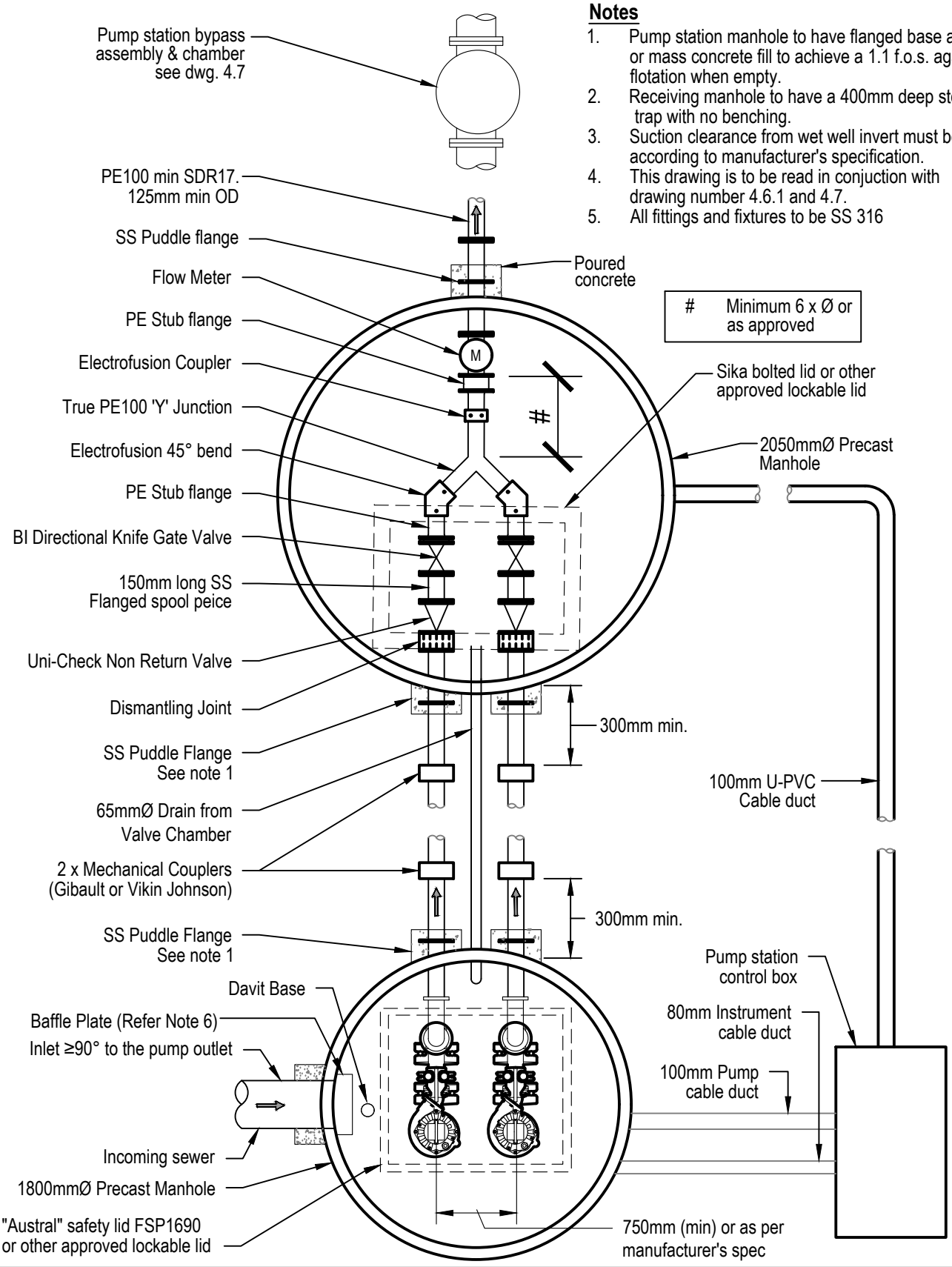
Robert van Bentum
Chief Engineer

Designed	*Infrastructure*
Drawn	*E.Fromont*
Checked	*T. Mcglynn*
Revised	*05 / 21*

Scales NOT TO SCALE

Plan no.

4.5



Notes

1. Pump station manhole to have flanged base and / or mass concrete fill to achieve a 1.1 f.o.s. against flotation when empty.
2. Receiving manhole to have a 400mm deep stone trap with no benching.
3. Suction clearance from wet well invert must be according to manufacturer's specification.
4. This drawing is to be read in conjuction with drawing number 4.6.1 and 4.7.
5. All fittings and fixtures to be SS 316

STANDARD TWO PUMP STATION - PLAN

PALMY
PARAWHEA PALMERSTON NORTH CITY

Stuart Cartwright
Chief Engineer

Designed	*Infrastructure*
Drawn	*R.Hodgson*
Checked	*T. Mcglynn*
Revised	*02 / 23*

Scales NOT TO SCALE

Plan no.

4.6

STANDARD TWO PUMP STATION - ELEVATION

PALMY
PARMURA PALMERSTON NORTH CITY

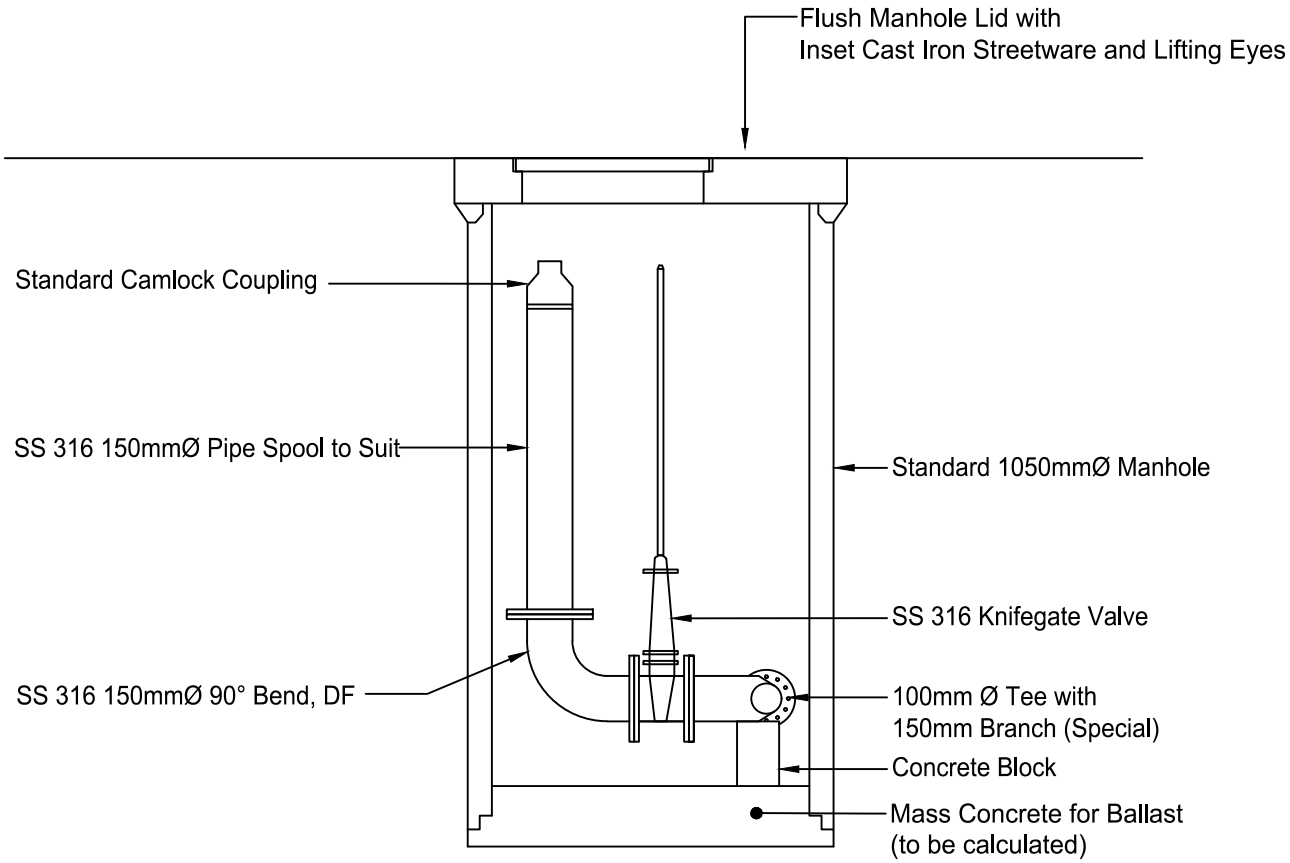
Stuart Cartwright
Chief Engineer

Designed	*Infrastructure*
Drawn	*E.Fromont*
Checked	*T. Mcglynn*
Revised	*05 / 21*

Scales NOT TO SCALE

Plan no.

4.6.1



Note:
This drawing is to be read in conjuction with drawing number 4.6 and 4.6.1

STANDARD PUMP STATION BYPASS

PALMY
PAPAMOEA PALMERSTON NORTH CITY

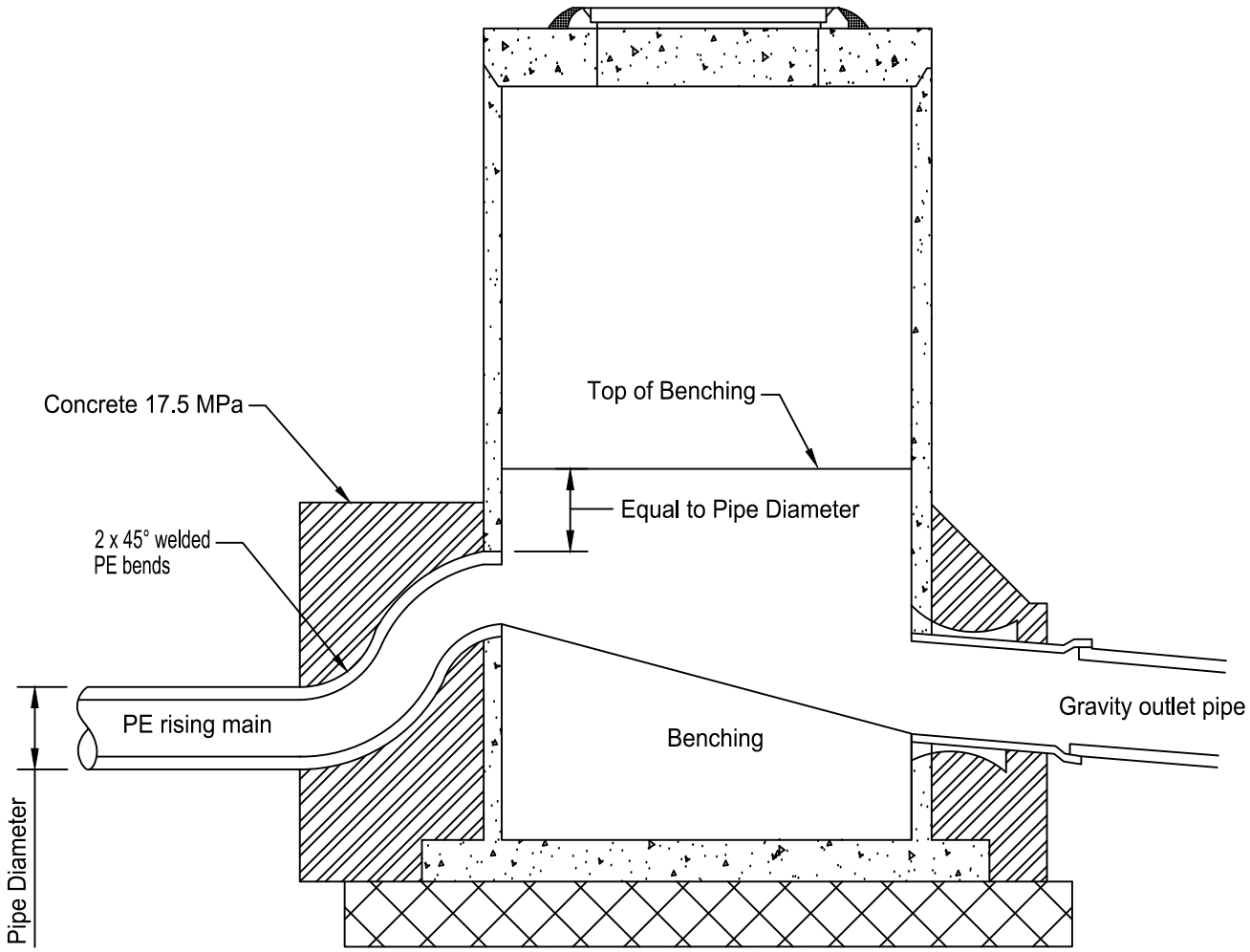
Stuart Cartwright
Chief Engineer

Designed	*Infrastructure*
Drawn	*R.Hodgson*
Checked	*T. Mcglynn*
Revised	*02 / 23*

Scales NOT TO SCALE

Plan no.

4.7



ALTERNATE RISING MAIN ENTRY TO RECEIVING MANHOLE

PALMY
PĀMAREA PALMERSTON NORTH CITY

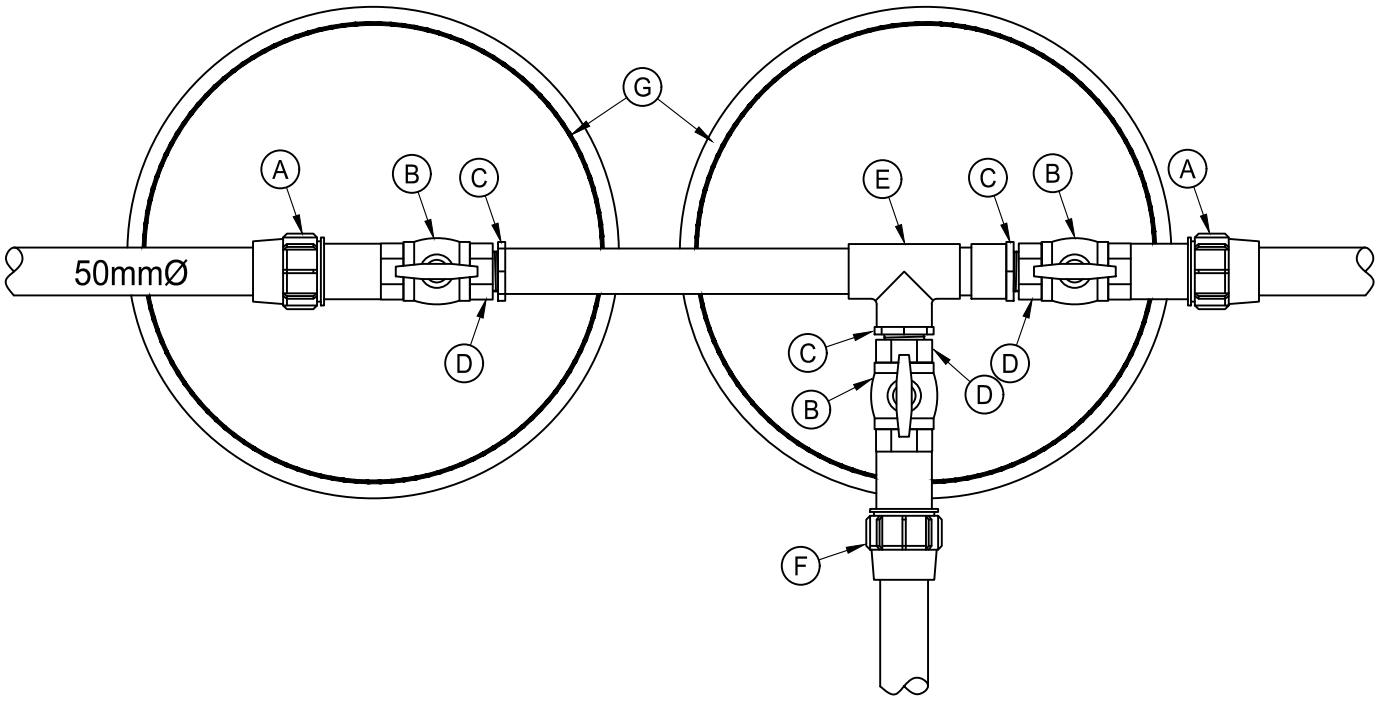
Robert van Bentum
Chief Engineer

Designed	*Infrastructure*
Drawn	*E.Fromont*
Checked	*T. Mcglynn*
Revised	*05 / 21*

Scales NOT TO SCALE

Plan no.

4.8



PARTS LIST:

Ⓐ- 50mm x 3" BSP Male Coupling
Ⓑ- 50mm Brass Ball Valve
Ⓒ- 50mm Valve Spigot
Ⓓ- 50mm Valve Socket
Ⓔ- 50mm Tee
Ⓕ- 50mm x 3" BSP Female Coupling
Ⓖ- 610mm Ø x 450mm Riser,
610mm fibreglass lid & 4 bolts (not shown)

TYPICAL ISOLATION VALVE DETAIL

PALMY
PARMURA PALMERSTON NORTH CITY

Stuart Cartwright
Chief Engineer

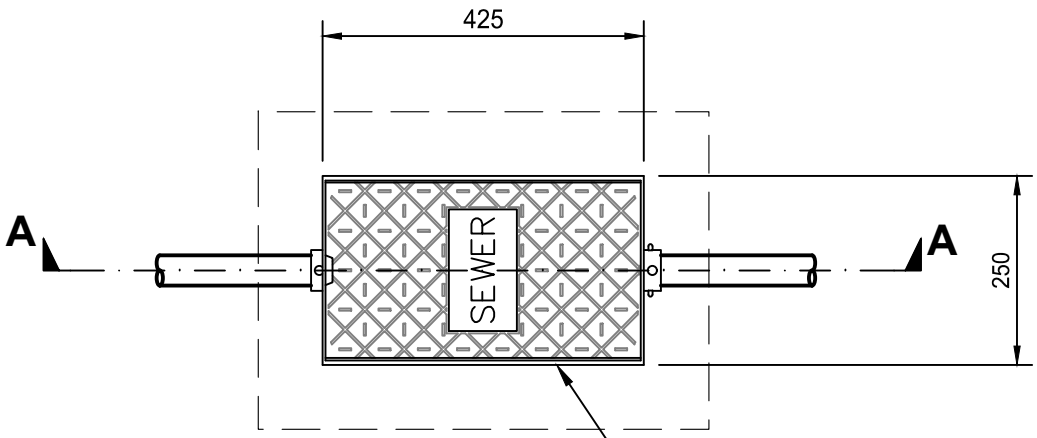
Designed	*Infrastructure*
Drawn	*R.Hodgson*
Checked	*T. Mcglynn*
Revised	*02 / 23*

Scales 1:10

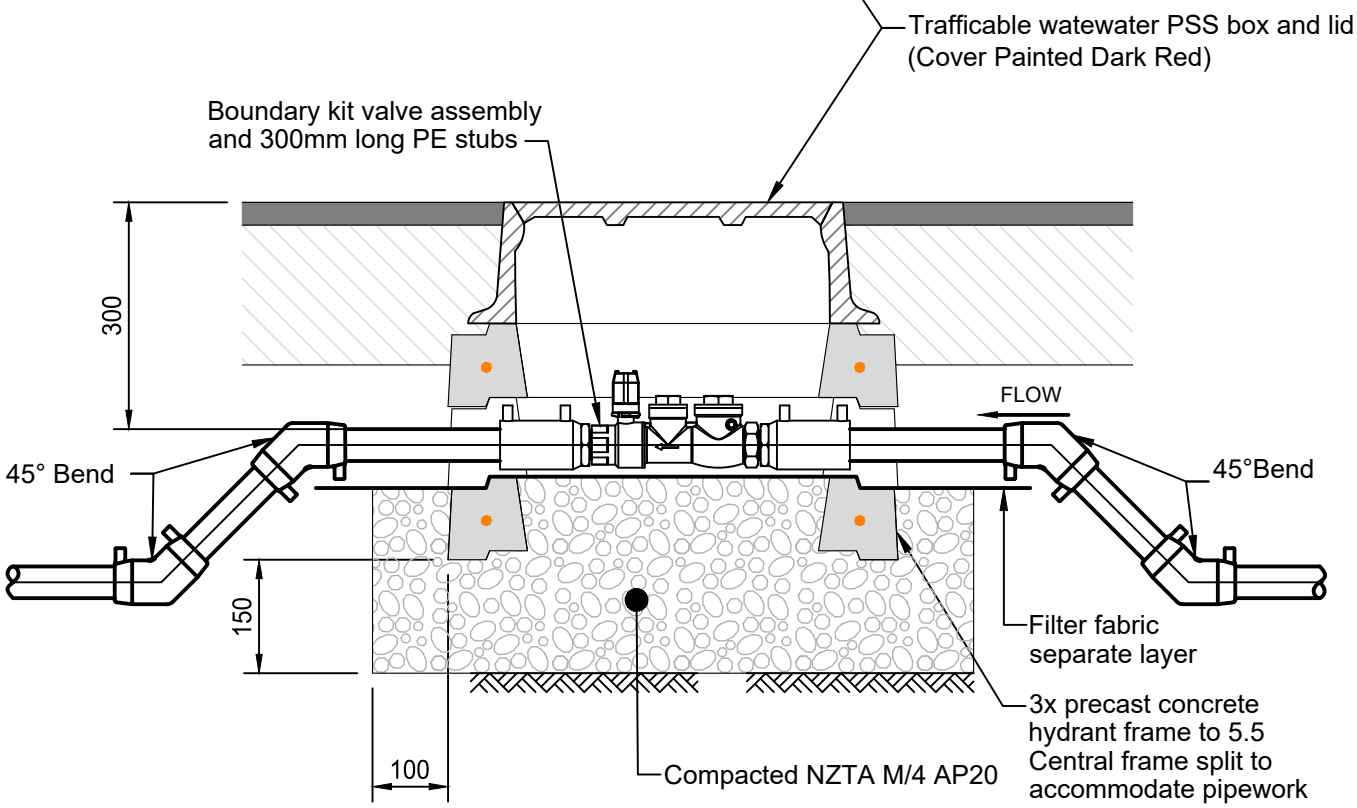
Plan no.

4.9

DRAWING REPRODUCED WITH
PERMISSION FROM
CHRISTCHURCH CITY COUNCIL
ADAPTED FOR PNCC



PLAN



SECTION A-A

NOTE:

1. All dimensions/measurements are in millimeters unless specified otherwise.

TRAFFICABLE BOUNDARY KIT - PRESSURE SEWER

PALMY
PĀMAHEA
PALMERSTON
NORTH
CITY

Stuart Cartwright
Chief Engineer

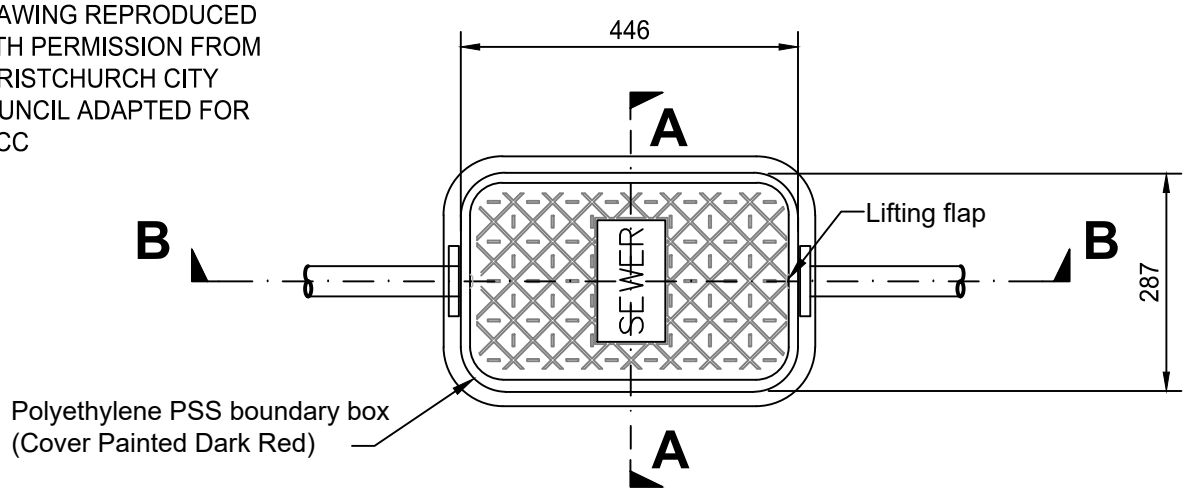
Designed	*Infrastructure*
Drawn	*R.Hodgson*
Checked	*T. Mcglynn*
Revised	*02 / 23*

Scales NOT TO SCALE

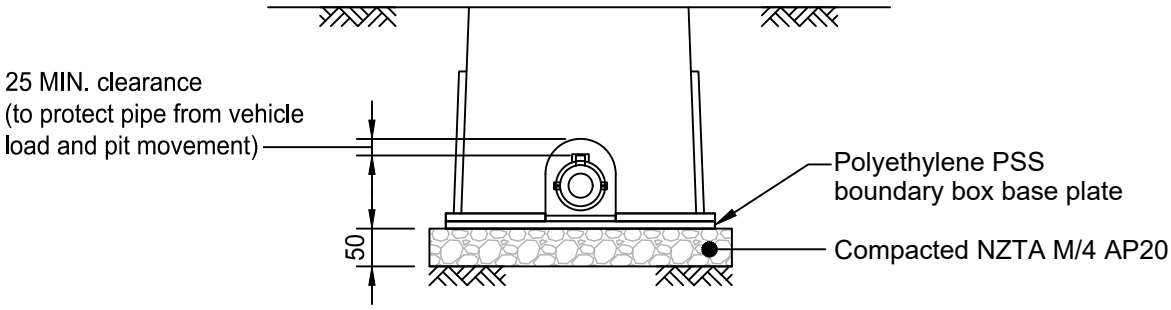
Plan no.

4.10

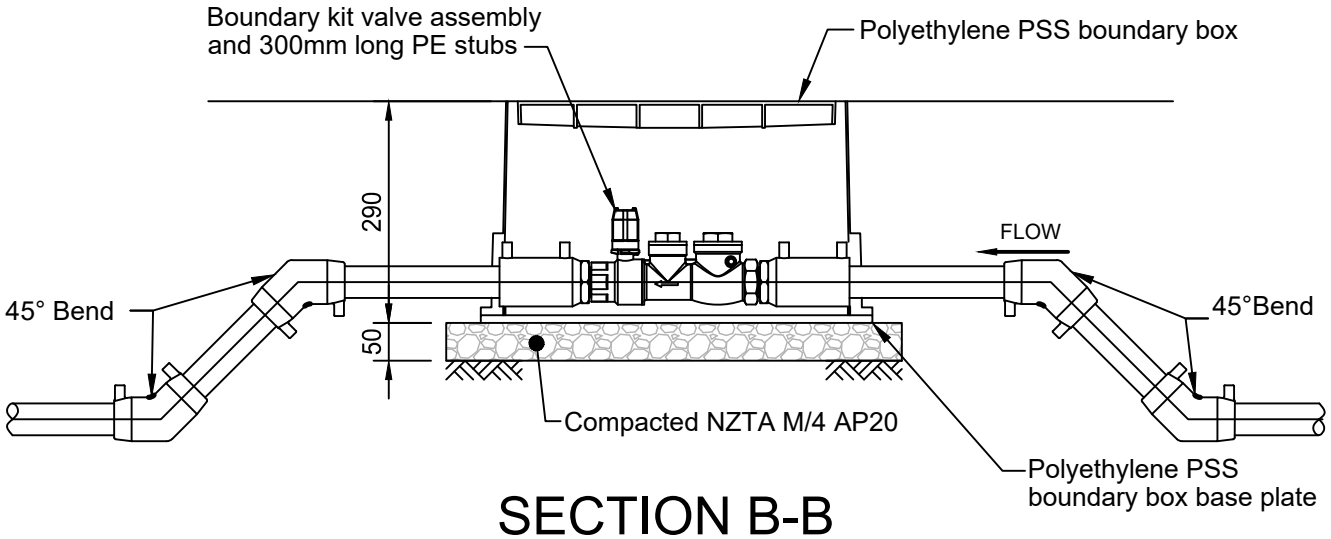
DRAWING REPRODUCED WITH PERMISSION FROM CHRISTCHURCH CITY COUNCIL ADAPTED FOR PNCC



PLAN



SECTION A-A



SECTION B-B

NOTE:

1. All dimensions/measurements are in millimeters unless specified otherwise.

NON-TRAFFICABLE BOUNDARY KIT - PRESSURE SEWER

PALMY
PĀMANUKA PALMERSTON NORTH CITY

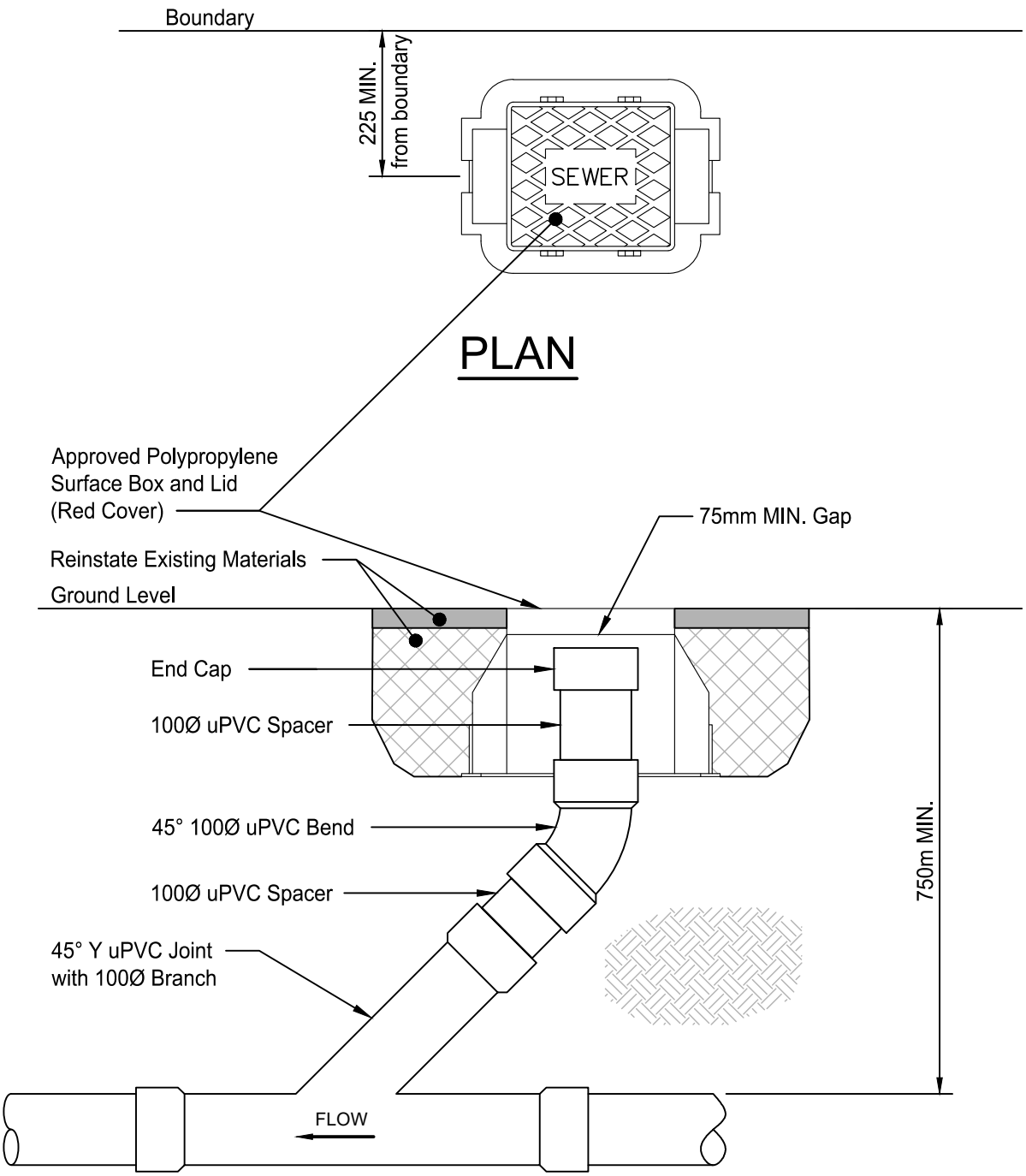
Stuart Cartwright
Chief Engineer

Designed	*Infrastructure*
Drawn	*R.Hodgson*
Checked	*T. Mcglynn*
Revised	*02 / 23*

Scales NOT TO SCALE

Plan no.

4.10.1



NOTE:

1. All dimensions/measurements are in millimeters unless specified otherwise.

RODDING EYE DETAIL

PALMY
PARMURA PALMERSTON NORTH CITY

Robert van Bentum
Chief Engineer

Designed	*Infrastructure*
Drawn	*R.Hodgson*
Checked	*T. Mcglynn*
Revised	*02 / 23*

Scales NOT TO SCALE

Plan no.

4.11

DRAWING REPRODUCED WITH
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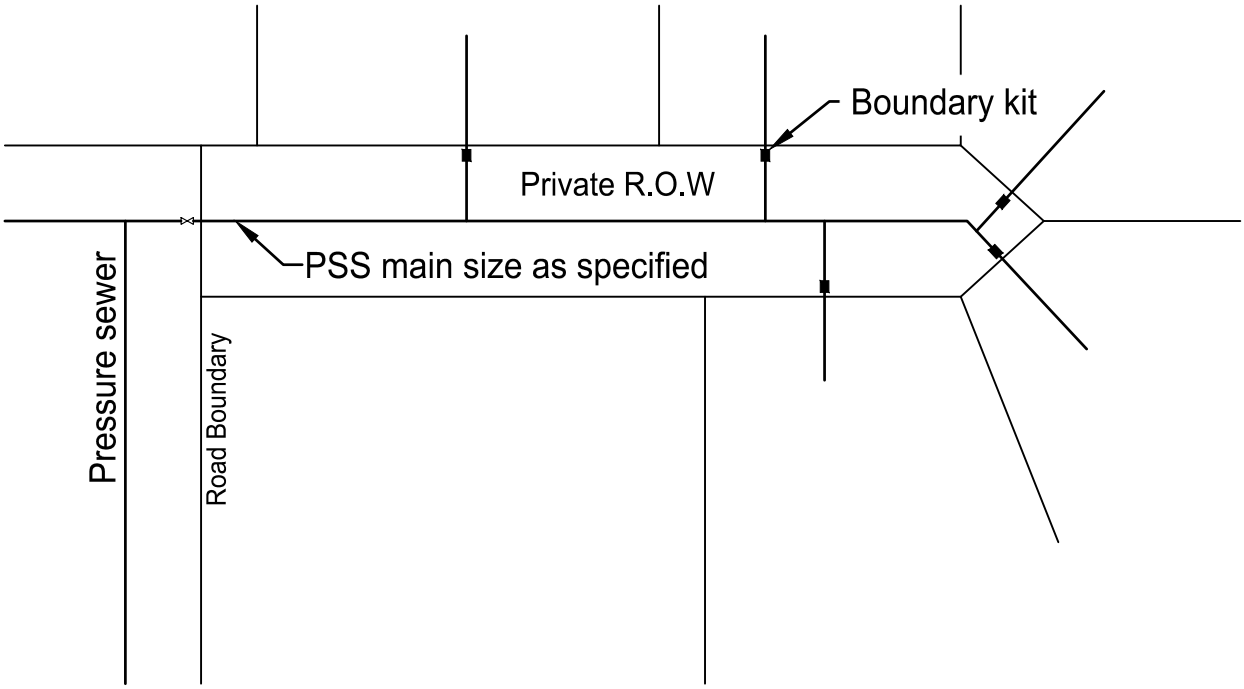
ADAPTED FOR PNCC



NOTE:

1. Where there is only 1 connection laid in the right of way the boundary kit is to be installed within the legal road at the road boundary.

COMMON LAND CONNECTION POSITION

PRESSURE SEWER SYSTEM
TYPICAL BOUNDARY KIT LAYOUT

PALMY
PARMERA PALMERSTON NORTH CITY

Robert van Bentum
Chief Engineer

Designed	*Infrastructure*
Drawn	*E.Fromont*
Checked	*T. Mcglynn*
Revised	*05 / 21*

Scales NOT TO SCALE

Plan no.

4.12

DRAWING REPRODUCED WITH
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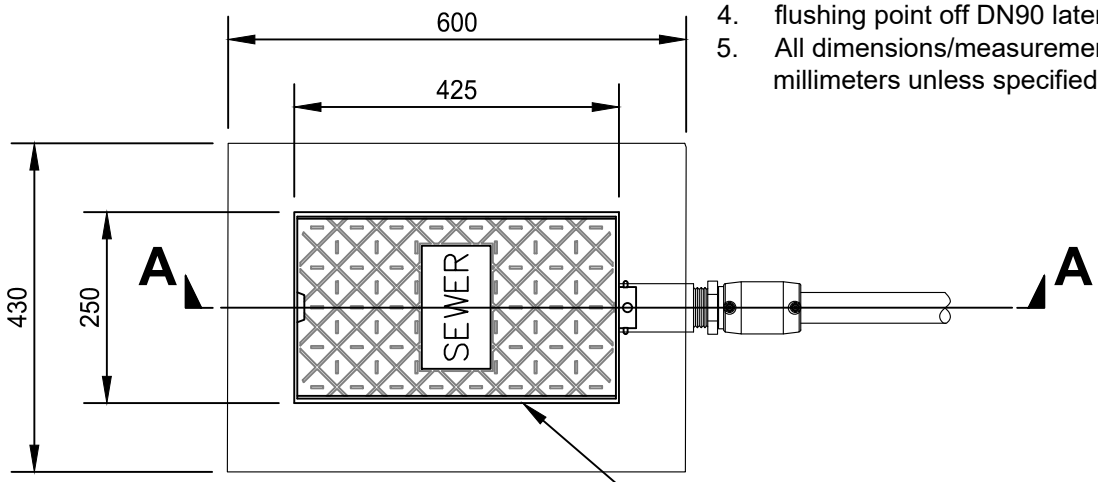
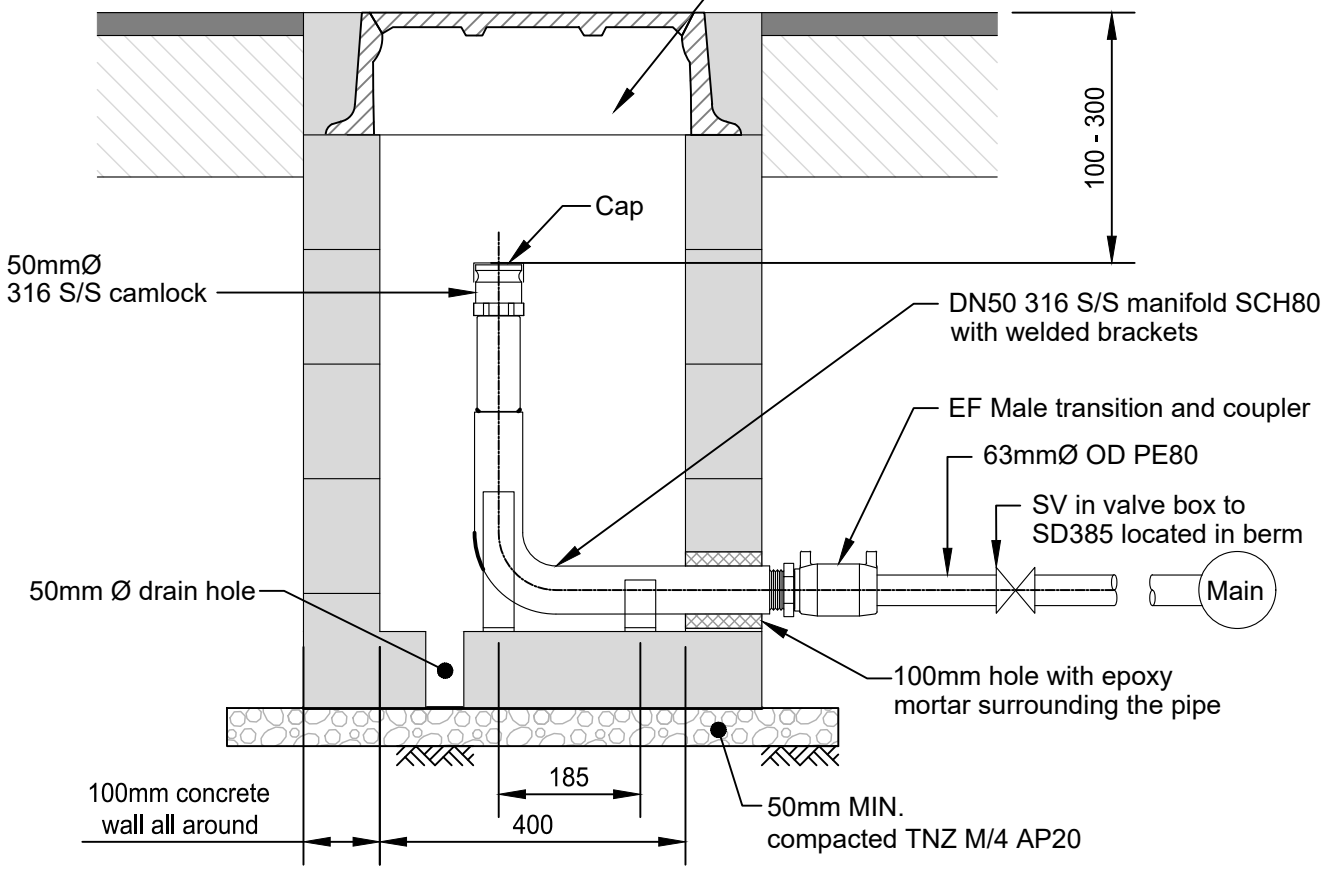
CHRISTCHURCH CITY COUNCIL
ADAPTED FOR PNCC

NOTE:

1. Concrete work to comply with NZS 3109.
2. All concrete to be 40mpa.
3. DN160 mains and above require 75Ø
4. flushing point off DN90 lateral.
5. All dimensions/measurements are in millimeters unless specified otherwise.



PLAN



SECTION A-A

PRESSURE SEWER SYSTEM FLUSHING POINT

PALMY
PAPAMOEA PALMERSTON NORTH CITY

Robert van Bentum
Chief Engineer

Designed	*Infrastructure*
Drawn	*E.Fromont*
Checked	*T. Mcglynn*
Revised	*05 / 21*

Scales NOT TO SCALE

Plan no.

4.13

DRAWING REPRODUCED WITH
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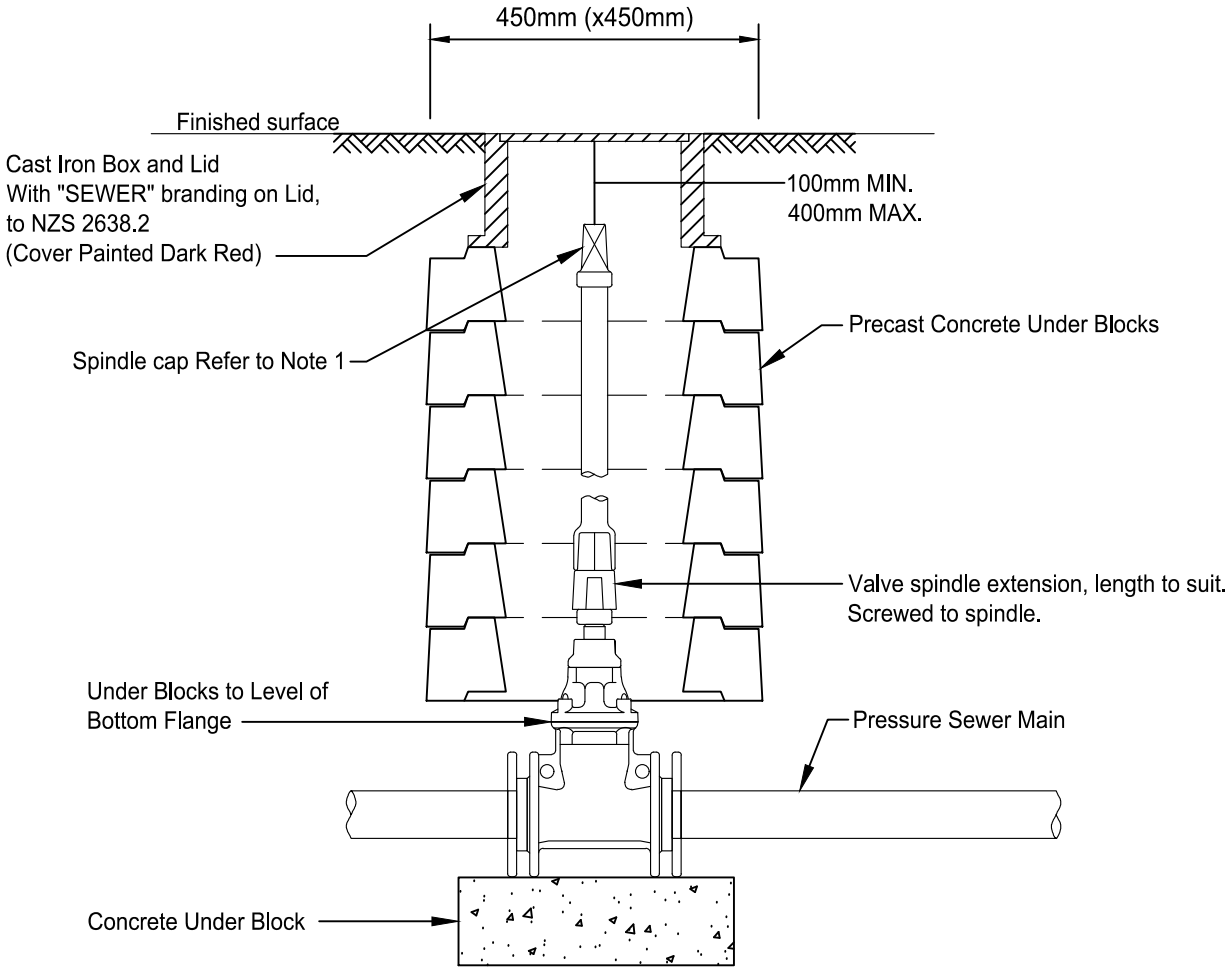
CHRISTCHURCH CITY COUNCIL
ADAPTED FOR PNCC



NOTE:

1. Fit triangular spindle cap and extension to triangular spindle.
2. Precast reinforcing as per manufacturer's specifications.

PRESSURE SEWER SYSTEM VALVE COVER

PALMY
PAPMOEA
PALMERSTON
NORTH
CITY

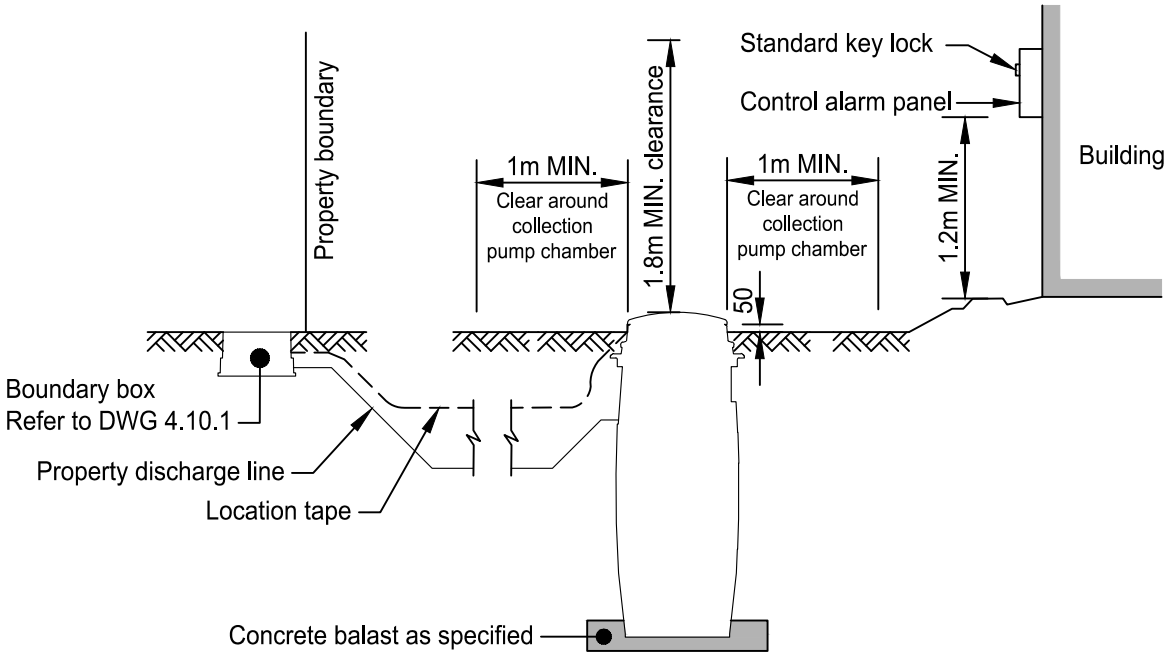
Robert van Bentum
Chief Engineer

Designed	*Infrastructure*
Drawn	*E.Fromont*
Checked	*T. Mcglynn*
Revised	*05 / 21*

Scales NOT TO SCALE

Plan no.

4.14



NOTE:

1. Vents shall be installed to 1.2m height where specified.

PRESSURE SEWER SYSTEM
TYPICAL ON-PROPERTY CHAMBER LOCATION

PALMY
PARMURA PALMERSTON NORTH CITY

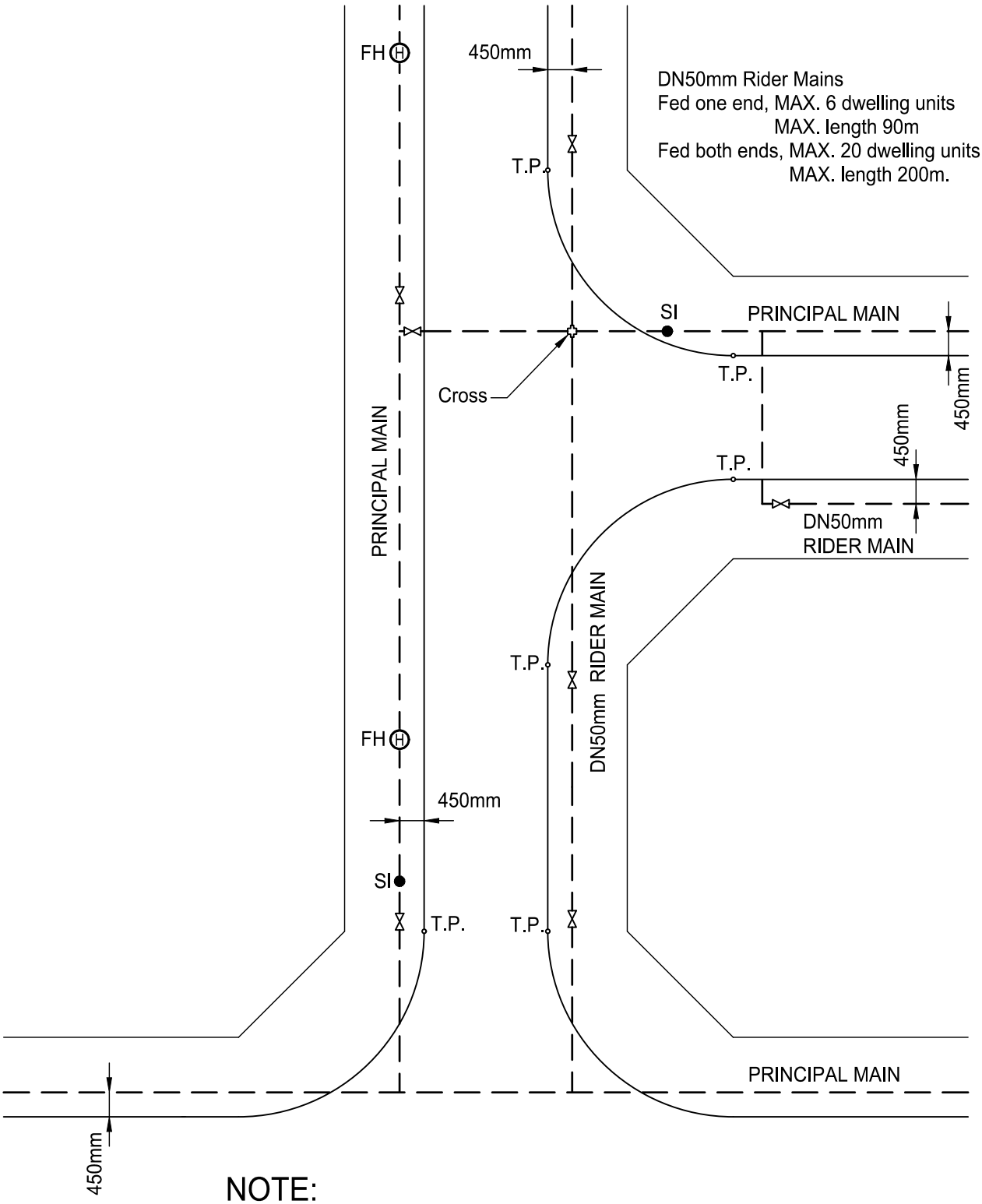
Robert van Bentum
Chief Engineer

Designed	*Infrastructure*
Drawn	*E.Fromont*
Checked	*T. Mcglynn*
Revised	*05 / 21*

Scales NOT TO SCALE

Plan no.

4.15



NOTE:

1. Valve Spacing - Not exceeding 350m
2. Fire Hydrant Spacing: Not exceeding 135m Residential Streets
   Not exceeding 90m Business and Industrial Street
3. SI = Swab Inlet

LAYOUT OF VALVES AND FIRE HYDRANTS

PALMY
PARAWERA PALMERSTON NORTH CITY

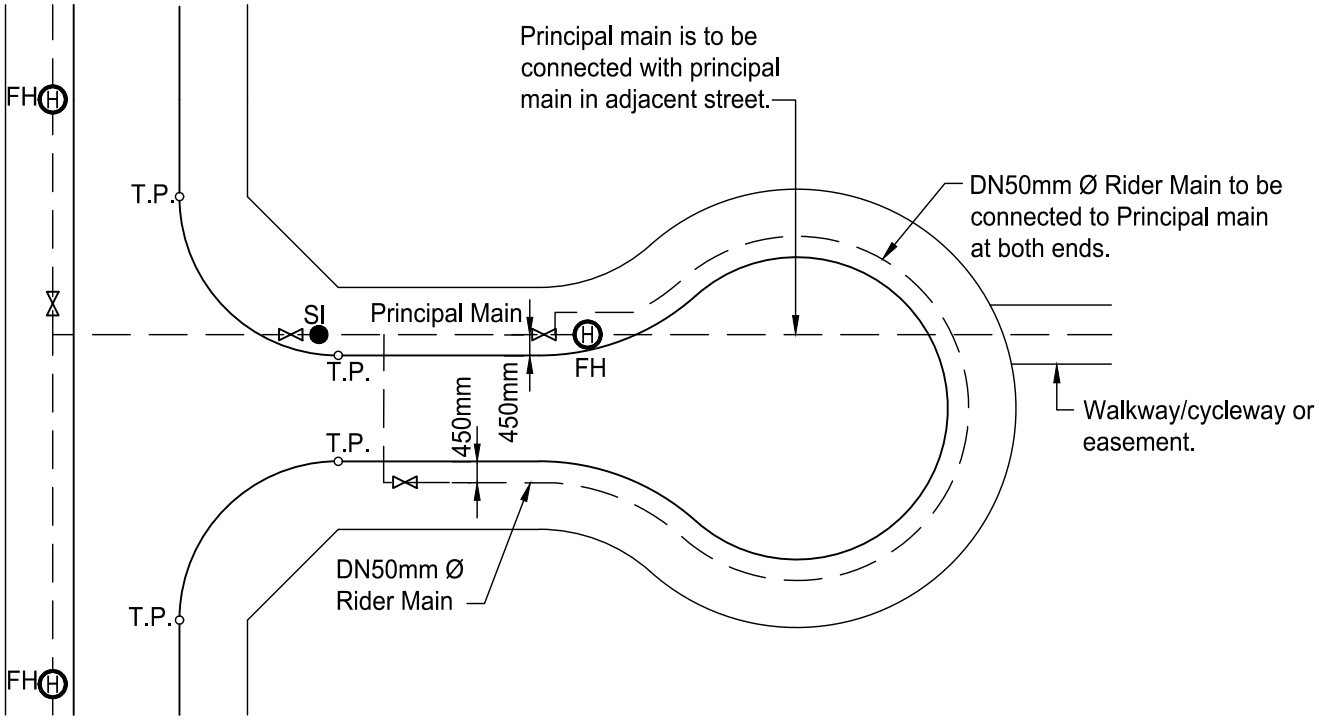
Robert van Bentum
Chief Engineer

Designed	*Infrastructure*
Drawn	*E.Fromont*
Checked	*T. Mcglynn*
Revised	*05 / 21*

Scales NOT TO SCALE

Plan no.

5.1



WATERMAINS IN CUL DE SAC CONNECTED PRINCIPAL MAIN

PALMY
PAPAMOEA PALMERSTON NORTH CITY

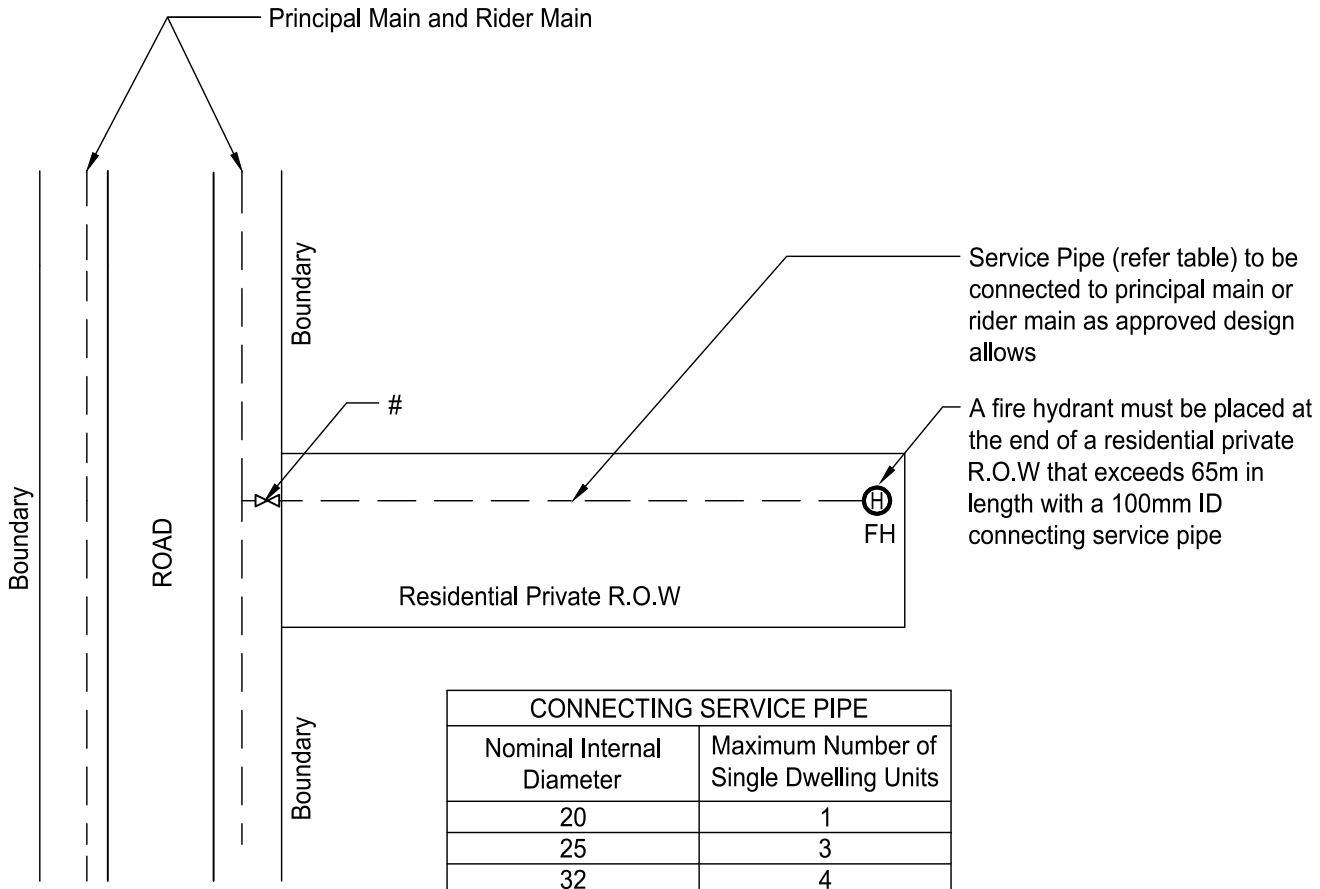
Stuart Cartwright
Chief Engineer

Designed	*Infrastructure*
Drawn	*R.Hodgson*
Checked	*T. Mcglynn*
Revised	*02 / 23*

Scales NOT TO SCALE

Plan no.

5.2



CONNECTING SERVICE PIPE	
Nominal Internal Diameter	Maximum Number of Single Dwelling Units
20	1
25	3
32	4
40	6
Where R.O.W Length exceeds 65mm Refer Fire Hydrant Note	

\# ACUFLO CM2000 or similar approved manifold with backflow prevention function on road side of boundary. Where a fire Hydrant is required (refer notes) an approved sluice valve is required instead.

WATERMAINS IN R.O.W

PALMY
PAPAMOEA PALMERSTON NORTH CITY

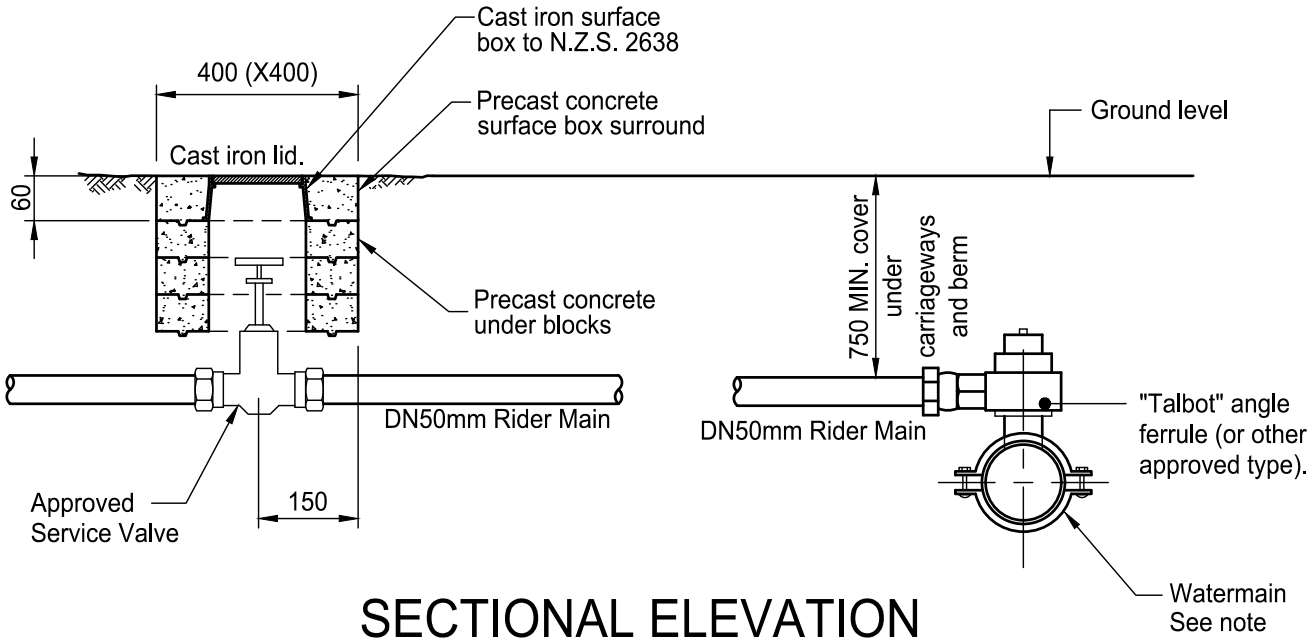
Stuart Cartwright
Chief Engineer

Designed	*Infrastructure*
Drawn	*R.Hodgson*
Checked	*T. Mcglynn*
Revised	*02 / 23*

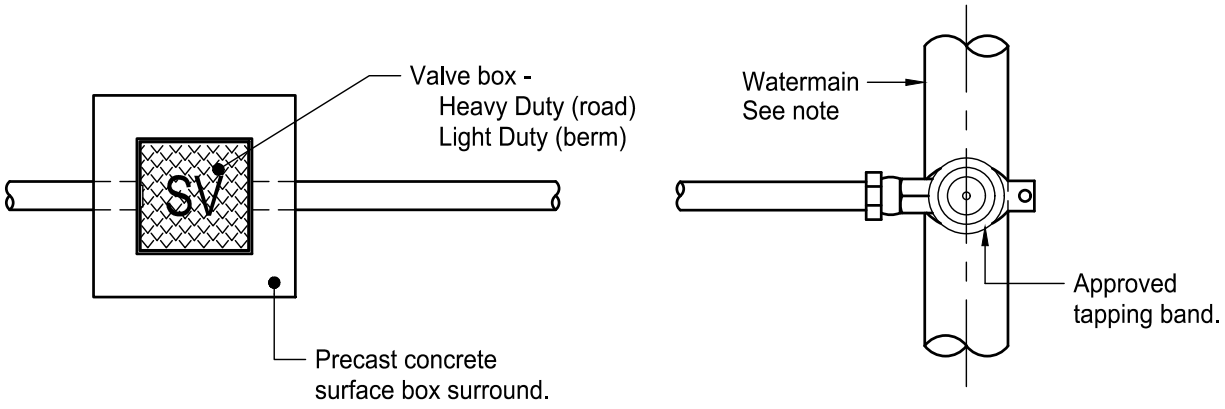
Scales NOT TO SCALE

Plan no.

5.2.1



SECTIONAL ELEVATION



PLAN

NOTE:

1. Principal Main connections:
   100mm: As Shown
   150mm: / 225mm: { Use Gibault joint with 50mm take off placed vertical. 90° bend required.
2. All dimensions/measurements are in millimeters unless specified otherwise.
3. Precast reinforcing as per manufacturer's specifications.

50mm RIDER MAIN OR R.O.W. SERVICE CONNECTION

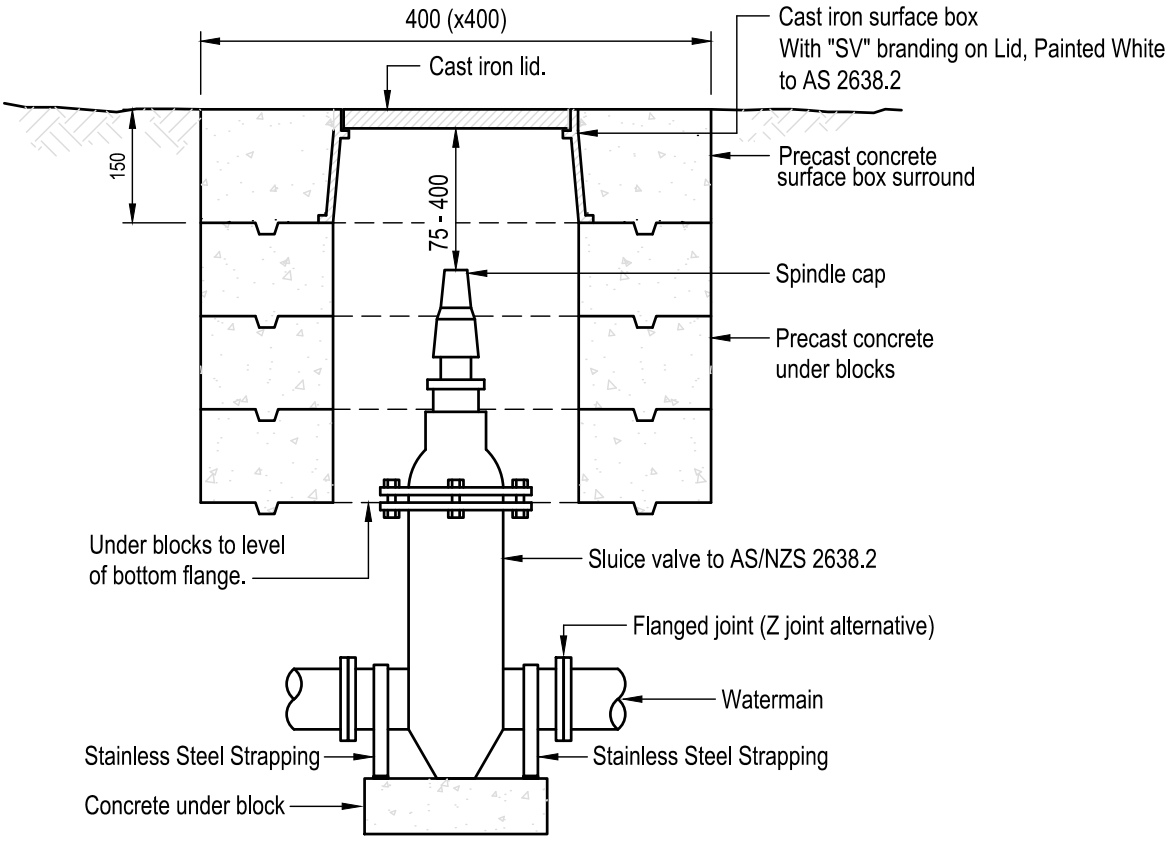
PALMY
PARMUOA PALMERSTON NORTH CITY

Robert van Bentum
Chief Engineer

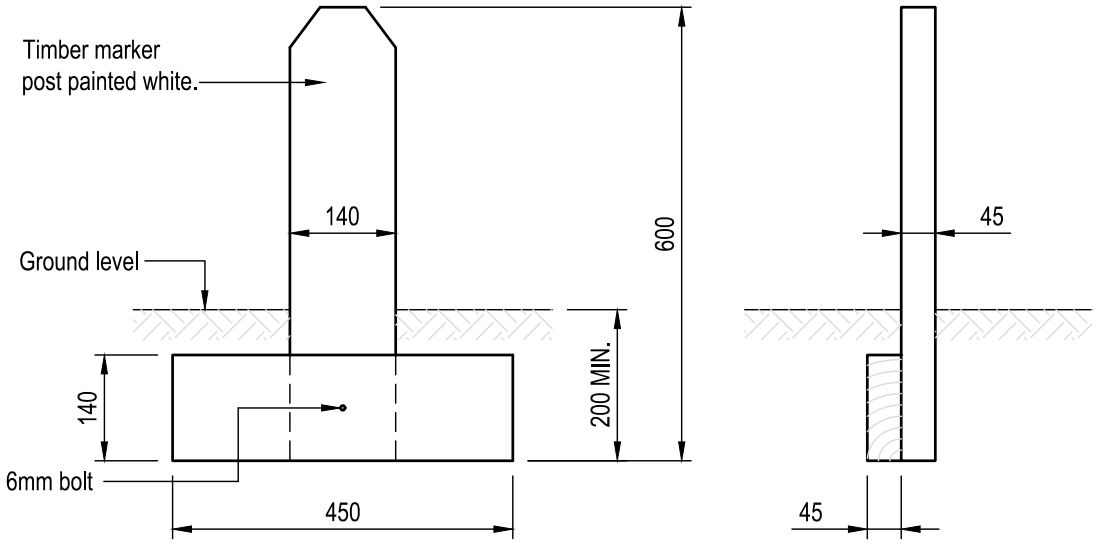
Designed	*Infrastructure*
Drawn	*E.Fromont*
Checked	*T. Mcglynn*
Revised	*05 / 21*

Scales NOT TO SCALE

Plan no. 5.3



SLUICE VALVE INSTALLATION FOR CARRIAGEWAYS



VALVE MARKER INSTALLATION

NOTE:

1. All dimensions/measurements are in millimeters unless specified otherwise.
2. Precast reinforcing as per manufacturer's specifications.

SLUICE VALVE & MARKER INSTALLATION

PALMY
PAPAIOEA PALMERSTON NORTH CITY

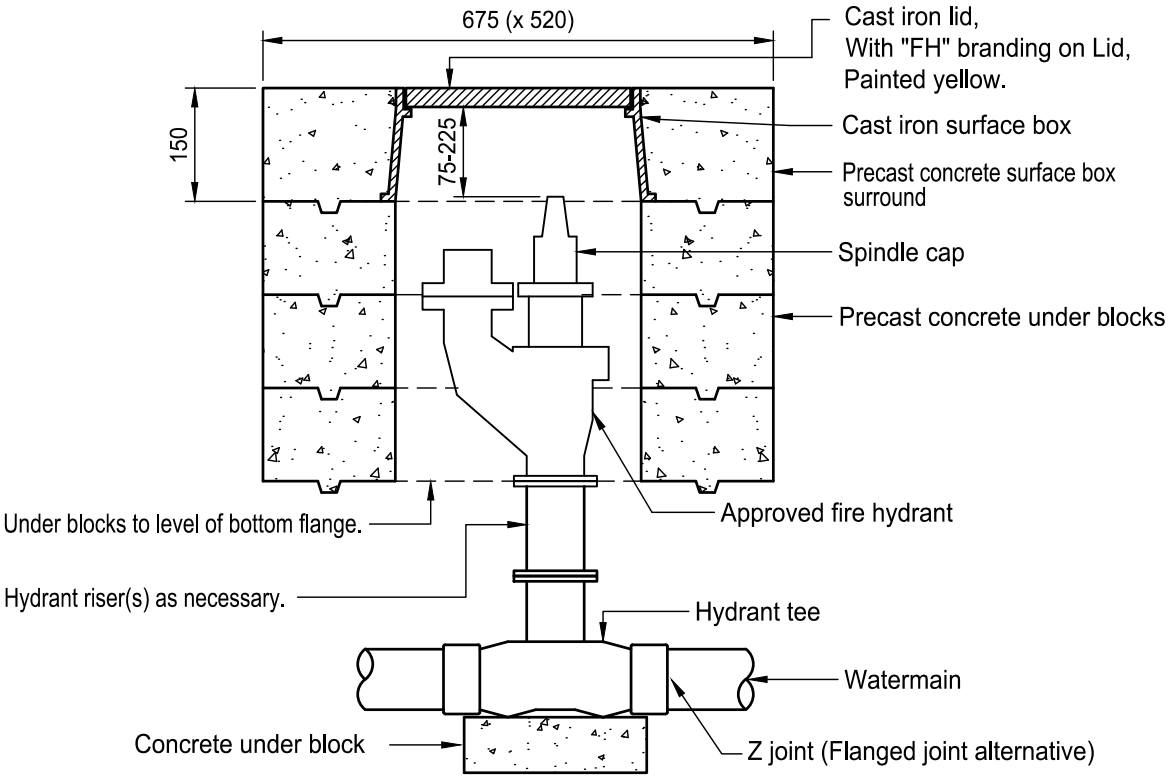
Stuart Cartwright
Chief Engineer

Designed	*Infrastructure*
Drawn	*R.Hodgson*
Checked	*T. Mcglynn*
Revised	*02 / 23*

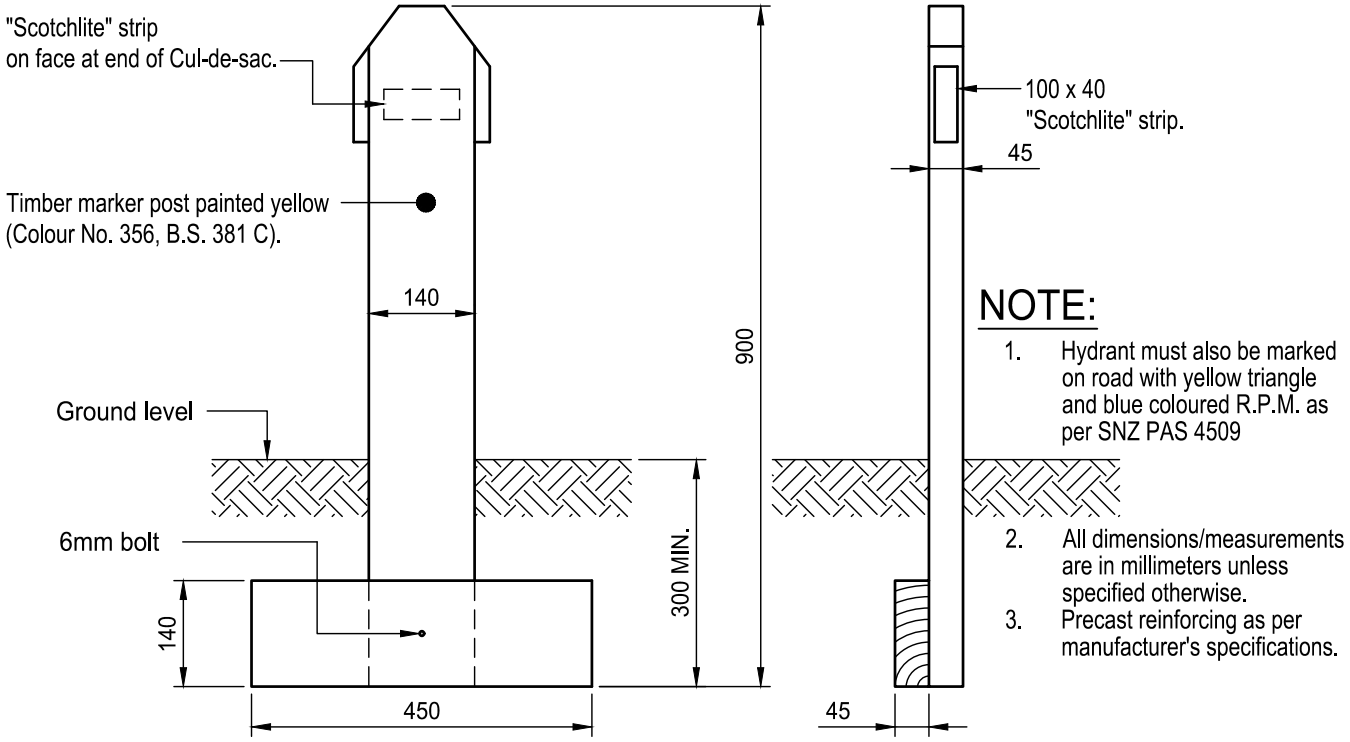
Scales NOT TO SCALE

Plan no.

5.4



HYDRANT INSTALLATION



NOTE:

1. Hydrant must also be marked on road with yellow triangle and blue coloured R.P.M. as per SNZ PAS 4509
2. All dimensions/measurements are in millimeters unless specified otherwise.
3. Precast reinforcing as per manufacturer's specifications.

HYDRANT MARKER INSTALLATION

HYDRANT AND MARKER INSTALLATION

PALMY
PAPMURA
PALMERSTON
NORTH
CITY

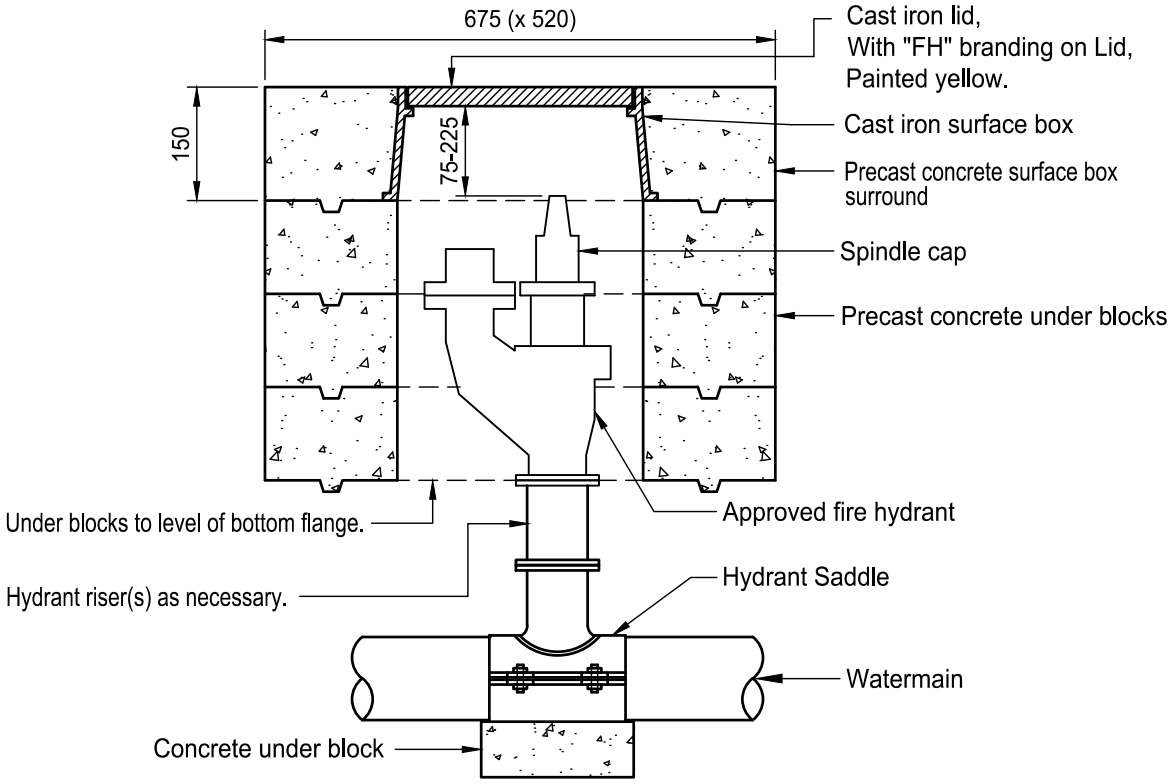
Stuart Cartwright
Chief Engineer

Designed	*City Networks*
Drawn	*R.Hodgson*
Checked	*T. Mcglynn*
Revised	*02 / 23*

Scales NOT TO SCALE

Plan no.

5.5



HYDRANT WITH SADDLE INSTALLATION

(WITH ELECTROFUSION JOINT FOR HDPE WATERMAIN)

HYDRANT WITH SADDLE INSTALLATION FOR HDPE WATERMAIN

PALMY
PAPAIOEA PALMERSTON NORTH CITY

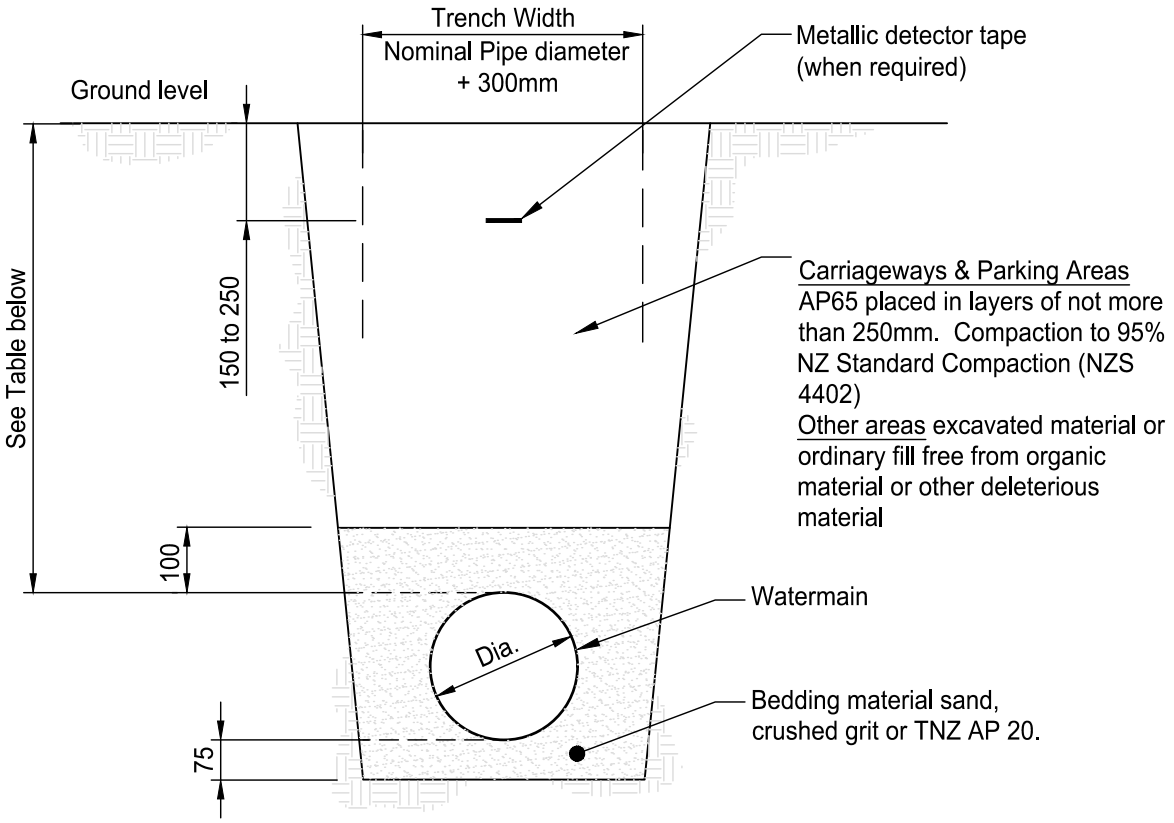
Stuart Cartwright
Chief Engineer

Designed	*City Networks*
Drawn	*R.Hodgson*
Checked	*T. Mcglynn*
Revised	*02 / 23*

Scales NOT TO SCALE

Plan no.

5.5.1



STANDARD PIPELAYING DETAIL

ITEM	COVER
Mains under State Highway	1000mm MIN. under berms 1500mm MIN. under surface of the carriageway and shoulder
Mains under carriageways	1000mm MIN.
Mains under berms and footpaths	750mm MIN.
Rider mains under carriageway and berms	
Hydrant spindles	75mm MIN. and 225mm MAX.
Valve spindles	75mm MIN. and 400mm MAX.
Service pipes under carriageways	750mm MIN. and 1000mm MAX.
Service pipes under berms and footpaths	450mm - 750mm
Service pipes at street boundary	300mm MAX.

NOTE:

1. All dimensions/measurements are in millimeters unless specified otherwise.

WATERMAIN - PIPELAYING DETAILS

PALMY
PAPAIOEA PALMERSTON NORTH CITY

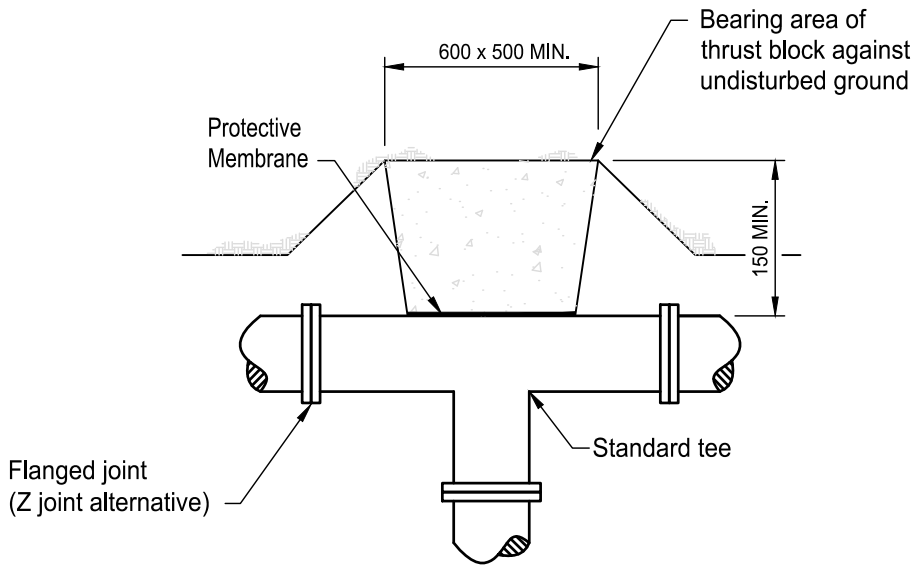
Stuart Cartwright
Chief Engineer

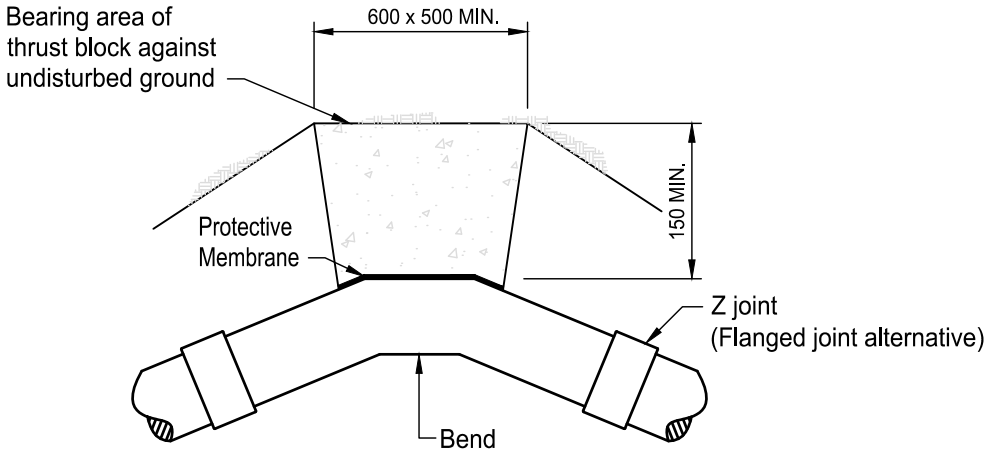
Designed	*Infrastructure*
Drawn	*R.Hodgson*
Checked	*T. Mcglynn*
Revised	*02 / 23*

Scales NOT TO SCALE

Plan no.

5.6





STANDARD THRUST BLOCKS FOR 100mmØ WATERMAIN

NOTE:

1. All dimensions/measurements are in millimeters unless specified otherwise.
2. For proposed Watermains over 100mmØ, PNCC engineer to approve.

WATERMAIN - THRUST BLOCK DETAILS

PALMY
PAPAMOEA PALMERSTON NORTH CITY

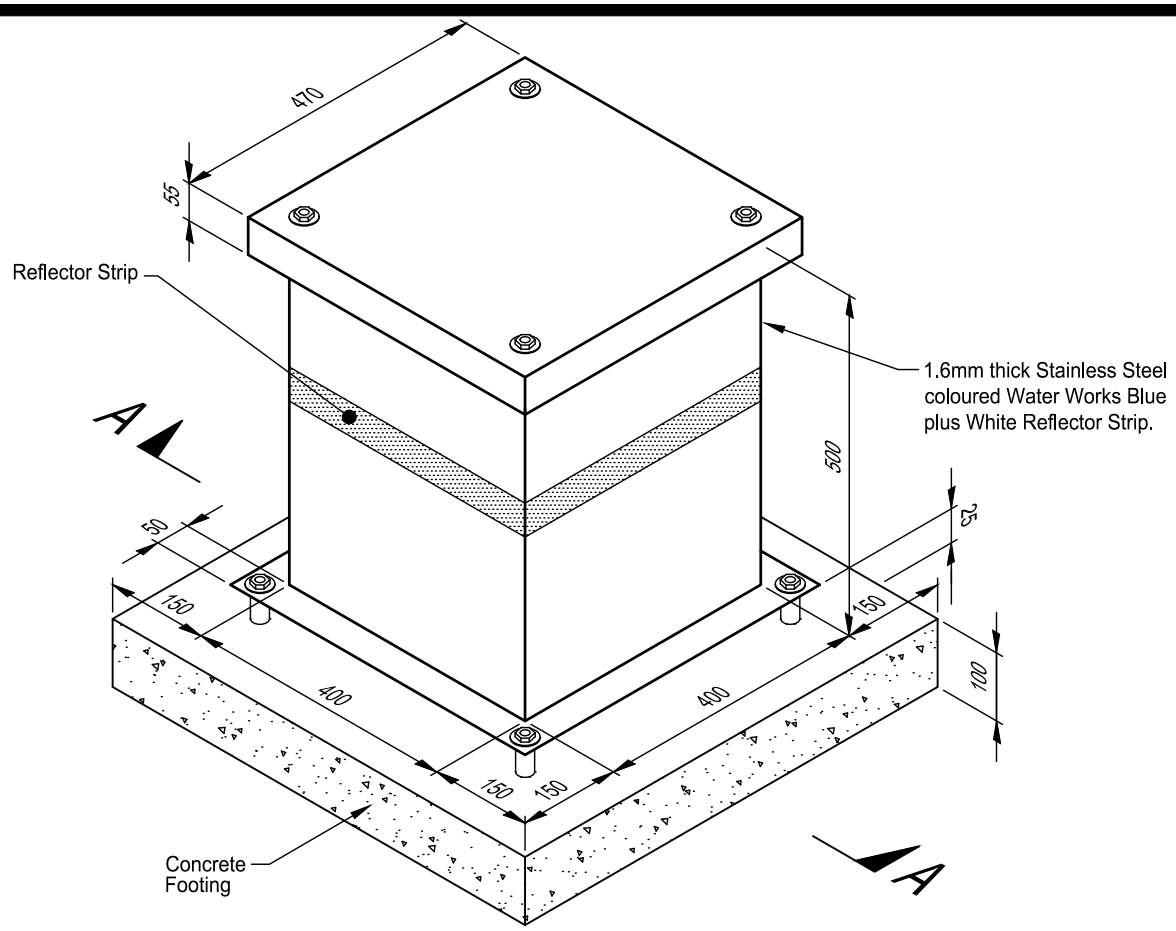
Robert van Bentum
Chief Engineer

Designed	*Infrastructure*
Drawn	*E.Fromont*
Checked	*T. Mcglynn*
Revised	*05 / 21*

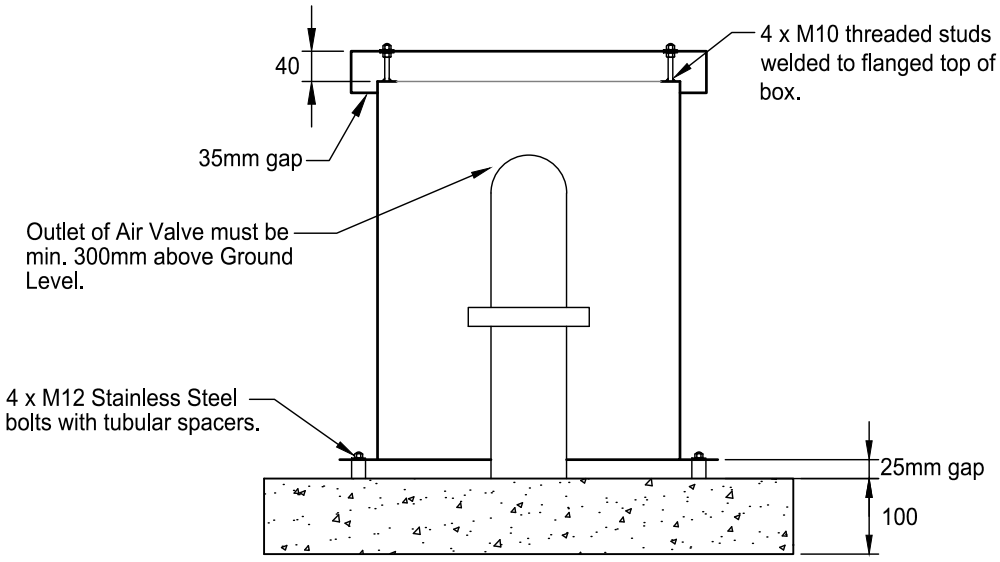
Scales NOT TO SCALE

Plan no.

5.6.1



ISOMETRIC PLAN



SECTION A-A

NOTE:

1. All dimensions/measurements are in millimeters unless specified otherwise.

DETAIL OF BOX TO COVER AIR VALVES (50mmø)

PALMY
PAPMUREA PALMERSTON NORTH CITY

Robert van Bentum
Chief Engineer

Designed	*Infrastructure*
Drawn	*E.Fromont*
Checked	*T. Mcglynn*
Revised	*05 / 21*

Scales NOT TO SCALE

Plan no.

5.7

20mm ID WATER SERVICE CONNECTION AND MANIFOLD

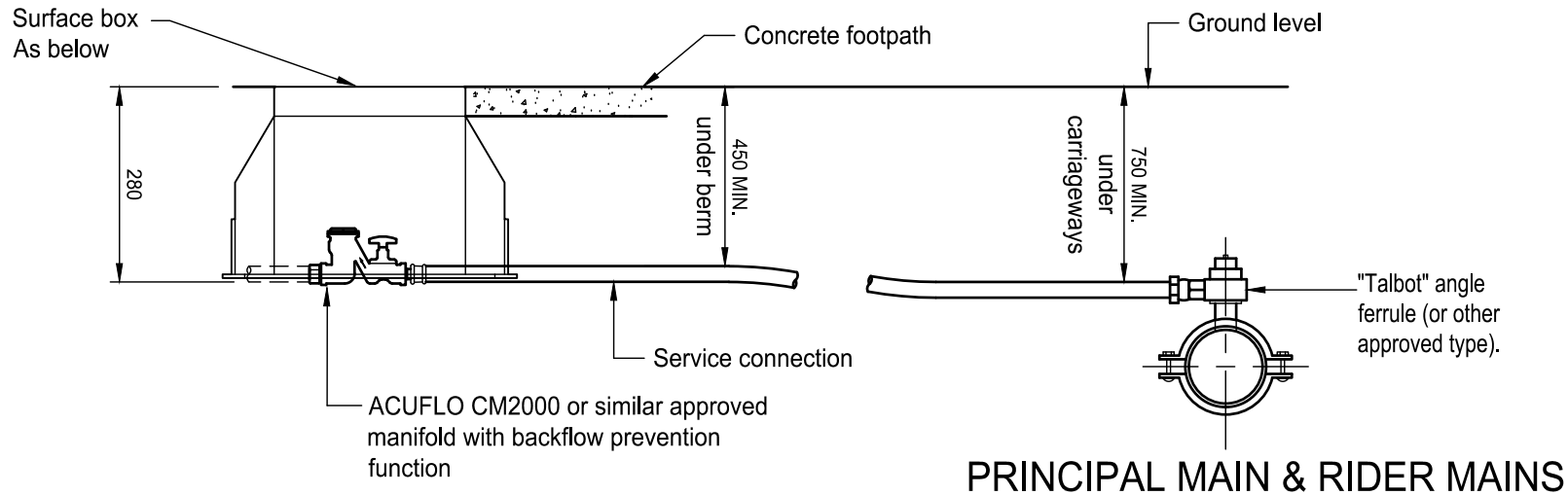
PALMY

Stuart Cartwright
Chief Engineer

Designed	*Infrastructure*	
Drawn	*R.Hodgson*	
Checked	*T. Mcglynn*	
Revised	*02 / 23*	

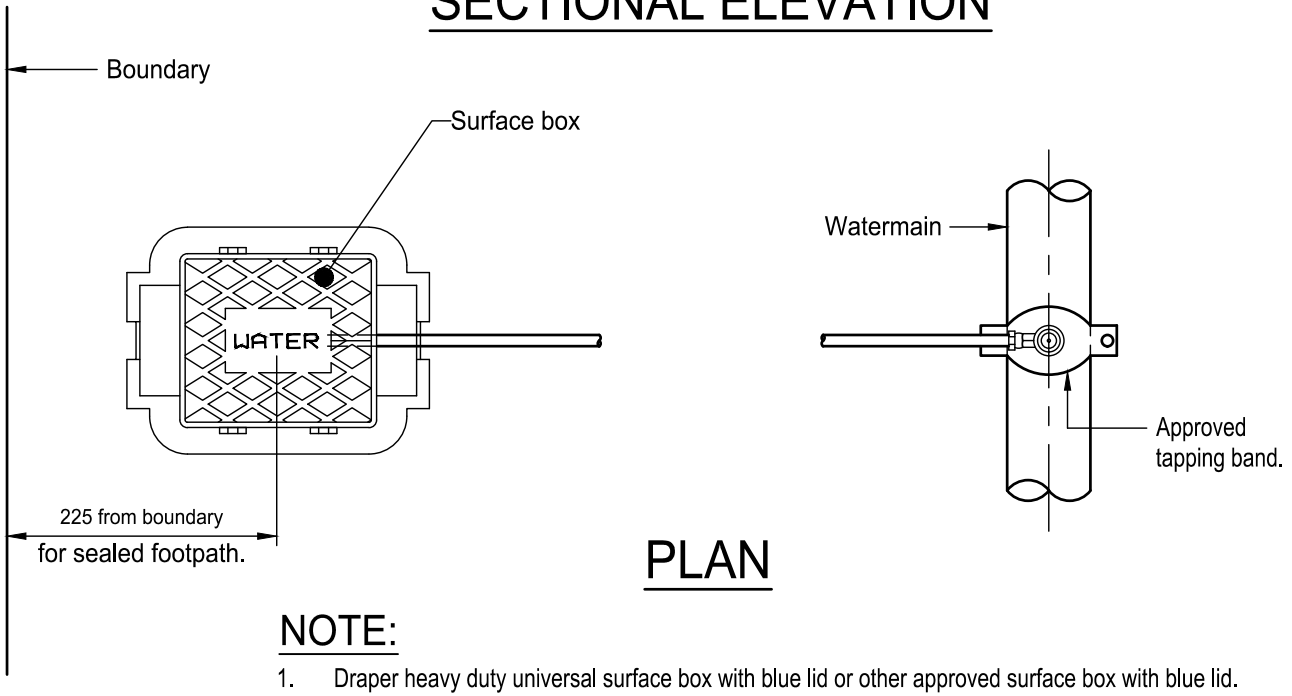
Scales NOT TO SCALE

Plan no. **5.8**



PRINCIPAL MAIN & RIDER MAINS

SECTIONAL ELEVATION

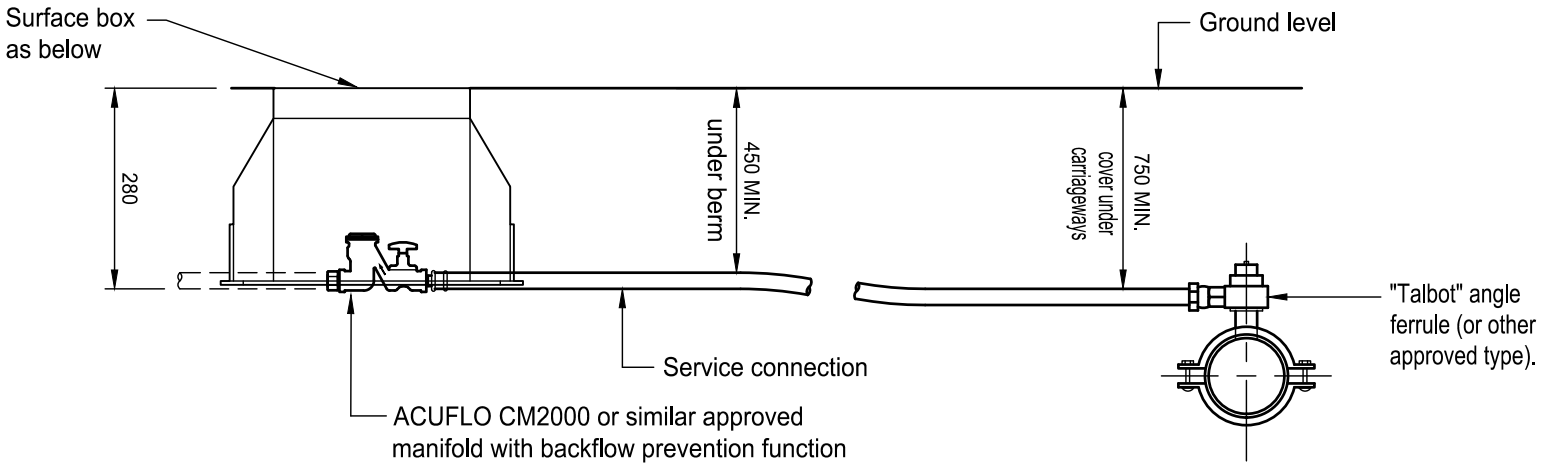


PLAN

NOTE:

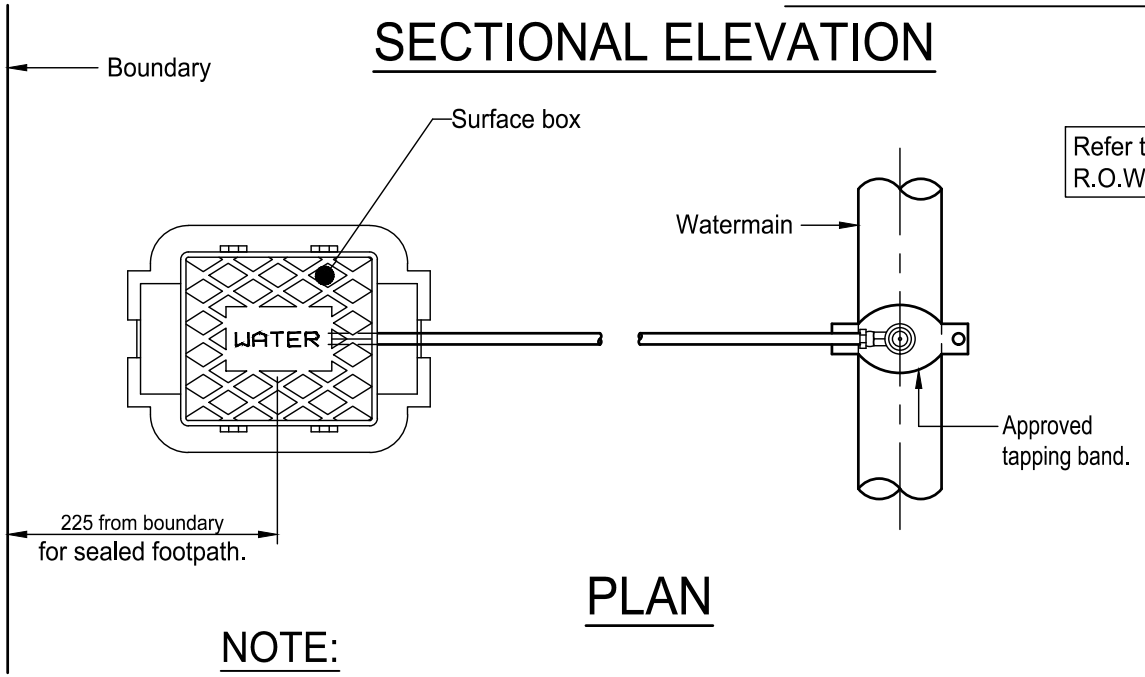
1. Draper heavy duty universal surface box with blue lid or other approved surface box with blue lid.
2. Angle ferrule, service pipe 20mm internal diameter.
3. All dimensions/measurements are in millimeters unless specified otherwise.

25mm,32mm & 40mm ID SERVICE CONNECTION AND VALVE



PRINCIPAL MAIN & RIDER MAINS

SECTIONAL ELEVATION



Refer to DWG 5.2.1 for
R.O.W. Connection details

PLAN

NOTE:

1. Draper heavy duty universal surface box with blue lid or other approved surface box with blue lid.
2. Angle ferrule, service pipe & gate valve shall all be the same nominal internal diameter.
3. All dimensions/measurements are in millimeters unless specified otherwise.

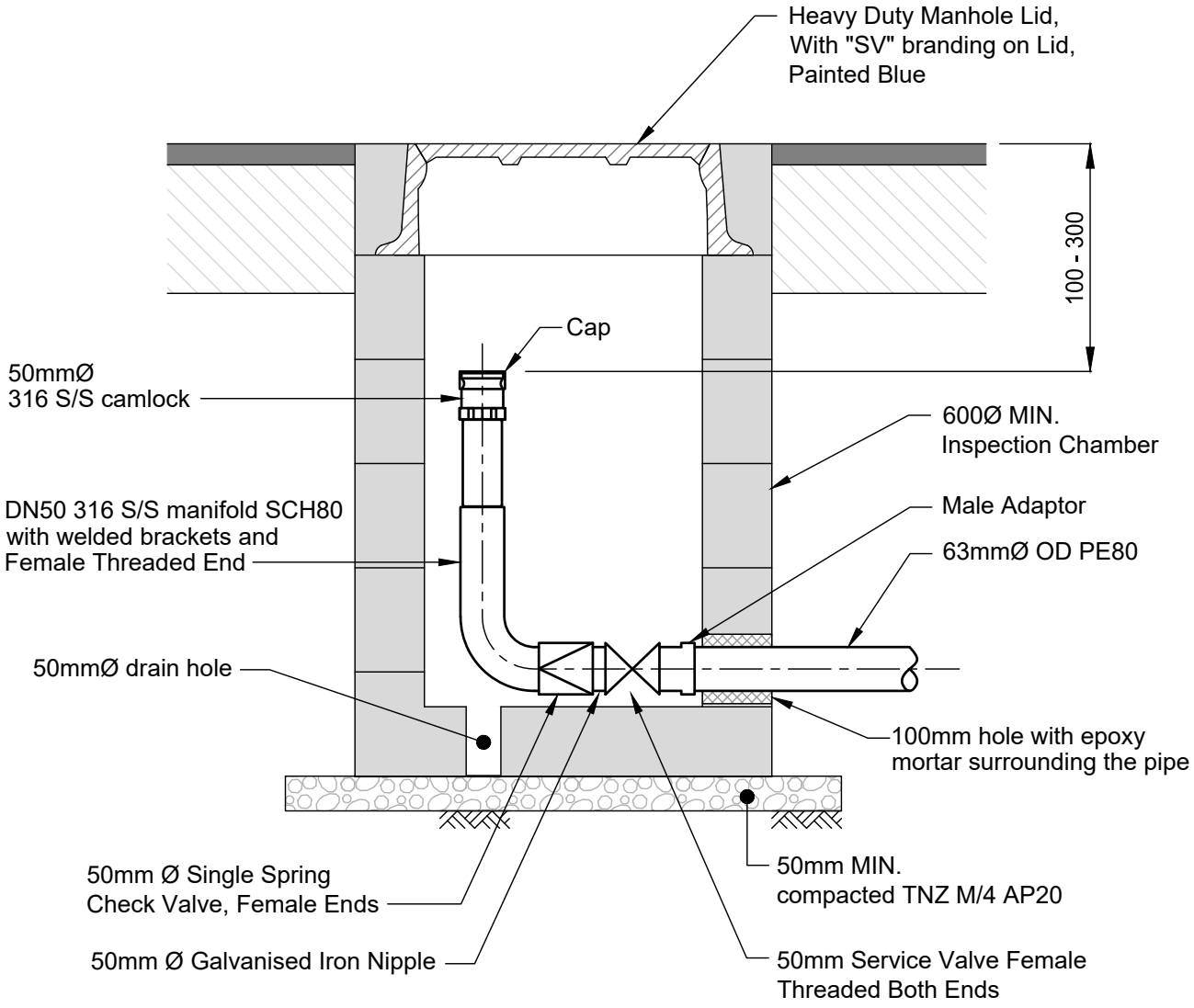
PALMY

Stuart Cartwright
Chief Engineer

Designed	*Infrastructure*		
Drawn	*R.Hodgson*		
Checked	*T. Mcglynn*		
Revised	*02 / 23*		

Scales NOT TO SCALE

Plan no. 5.9



NOTE:

1. All dimensions/measurements are in millimeters unless specified otherwise.

SCOUR VALVE

PALMY
PAPAMOEA PALMERSTON NORTH CITY

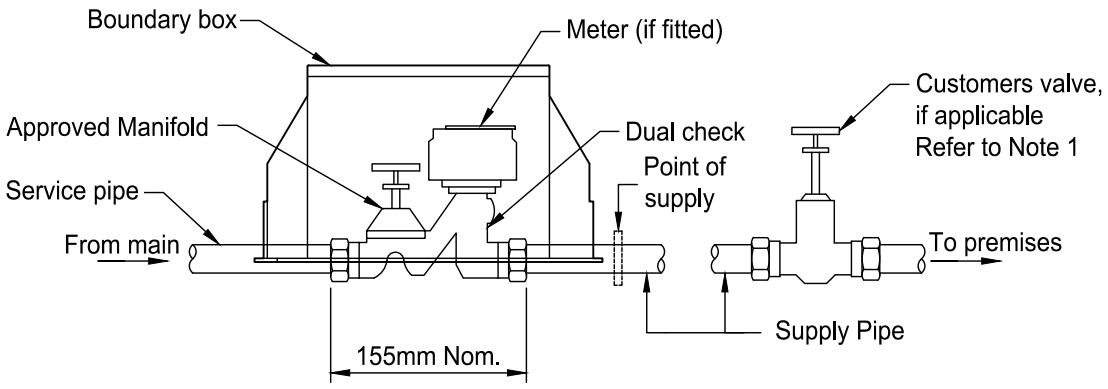
Robert van Bentum
Chief Engineer

Designed	*Infrastructure*
Drawn	*E.Fromont*
Checked	*T. Mcglynn*
Revised	*05 / 21*

Scales NOT TO SCALE

Plan no.

5.10



NOTE:

1. As provided for in NZ building code approved document G12/AS1.

APPROVED MANIFOLDS

- ACUFLO CM2000 composite manifold for residential connection with low risk of backflow (e.g. no swimming pool or spas)
- ACUFLO GM900STR Manifold for residential connections at higher risk of backflow (e.g. houses with swimming pools or spas)

MANIFOLD ASSEMBLY AT BOUNDARY BOX

PALMY
PAPAMOEA PALMERSTON NORTH CITY

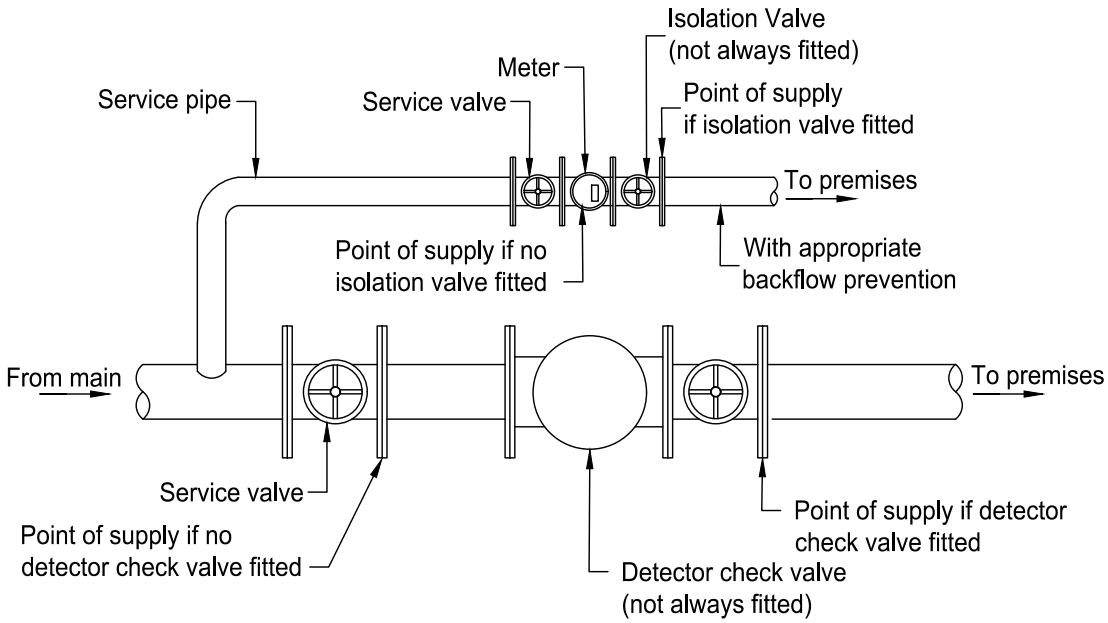
Stuart Cartwright
Chief Engineer

Designed	*Infrastructure*
Drawn	*R.Hodgson*
Checked	*T. Mcglynn*
Revised	*02 / 23*

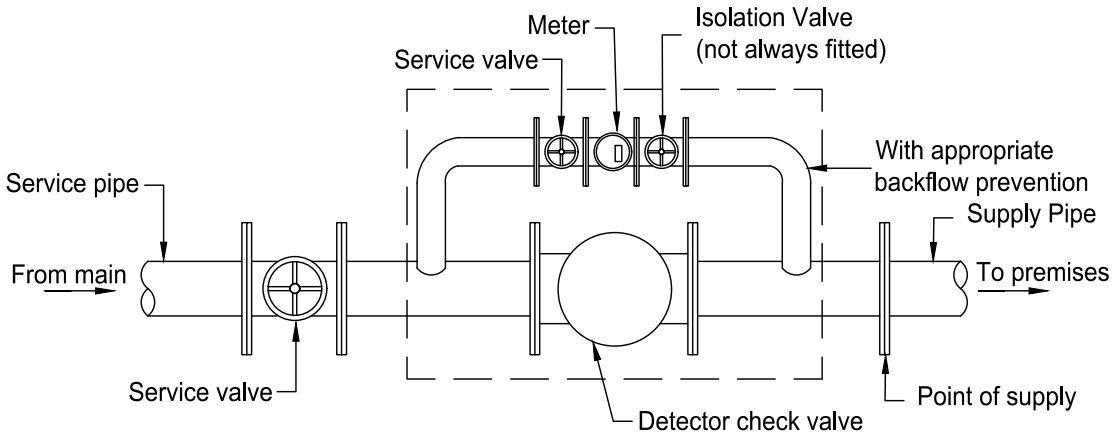
Scales NOT TO SCALE

Plan no.

5.11



SEPERATE FIRE AND METERED SERVICE CONNECTION WITH COMMON LINE FROM MAIN



COMMON FIRE AND METERED SERVICE CONNECTION

FIRE AND METERED SERVICE CONNECTION

PALMY
PAPAMOEA PALMERSTON NORTH CITY

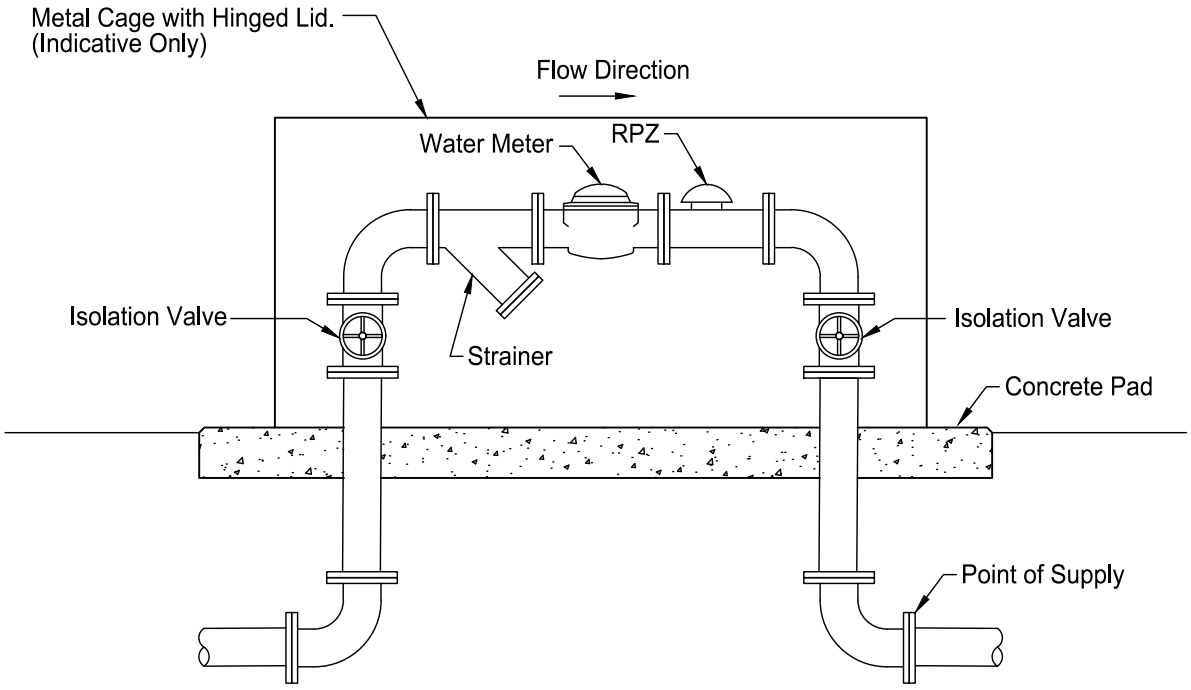
Robert van Bentum
Chief Engineer

Designed	*Infrastructure*
Drawn	*E.Fromont*
Checked	*T. Mcglynn*
Revised	*05 / 21*

Scales NOT TO SCALE

Plan no.

5.11.1



COMMERCIAL / INDUSTRIAL CONNECTION

PALMY
PAPMUREA PALMERSTON NORTH CITY

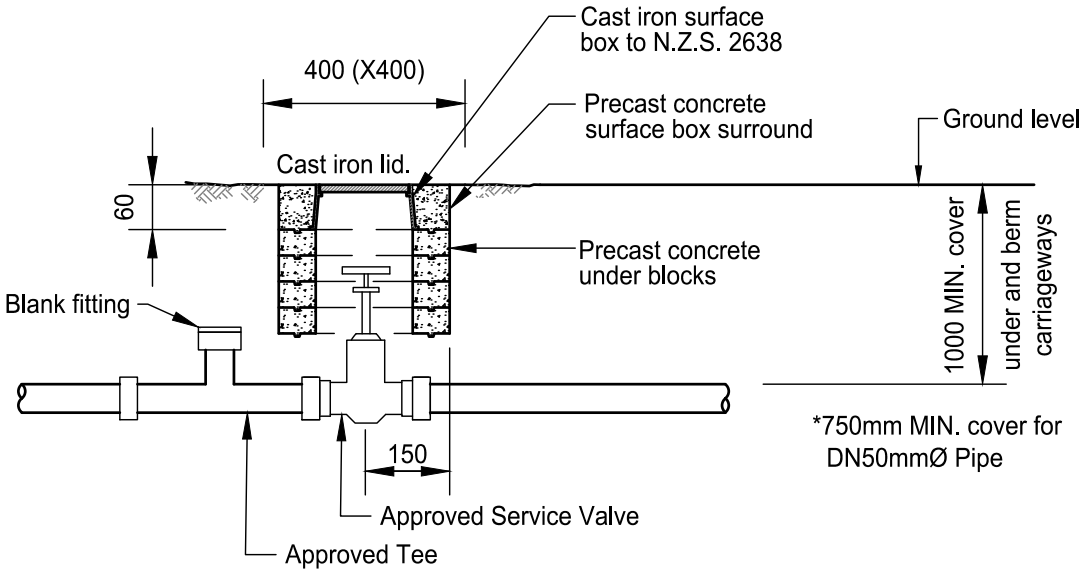
Stuart Cartwright
Chief Engineer

Designed	*City Networks*
Drawn	*R.Hodgson*
Checked	*T. Mcglynn*
Revised	*02 / 23*

Scales NOT TO SCALE

Plan no.

5.12



NOTE:

1. All dimensions/measurements are in millimeters unless specified otherwise.
2. Swab inlets must be provided on all principal mains of DN100 or greater.
3. Precast reinforcing as per manufacturer's specifications.

SWAB INLET DETAIL

PALMY
PAPAMOEA PALMERSTON NORTH CITY

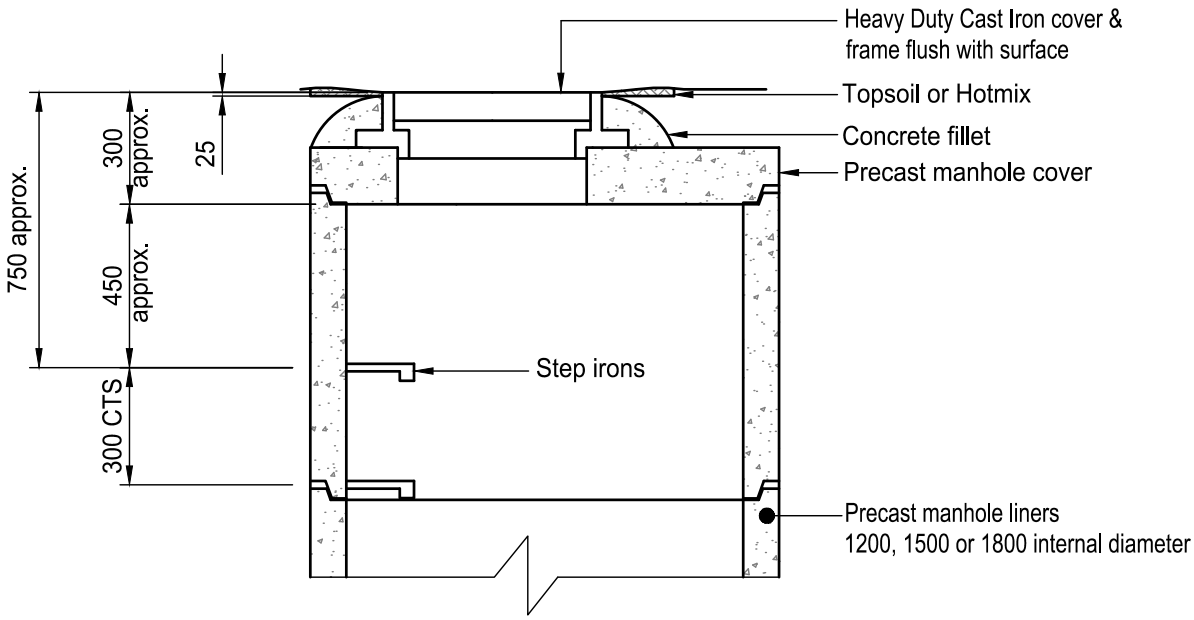
Robert van Bentum
Chief Engineer

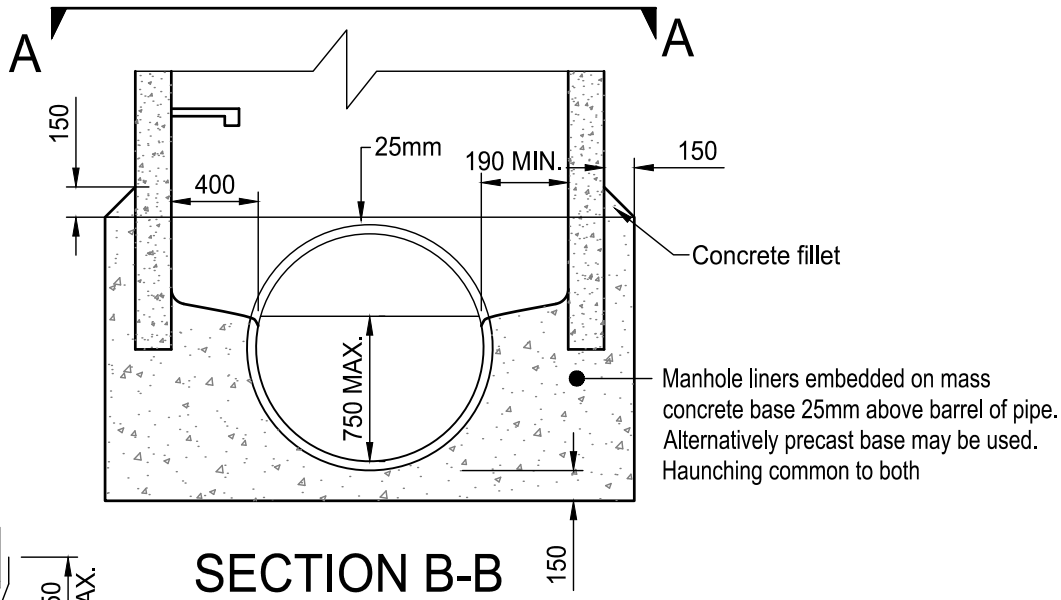
Designed	*Infrastructure*
Drawn	*E.Fromont*
Checked	*T. Mcglynn*
Revised	*05 / 21*

Scales NOT TO SCALE

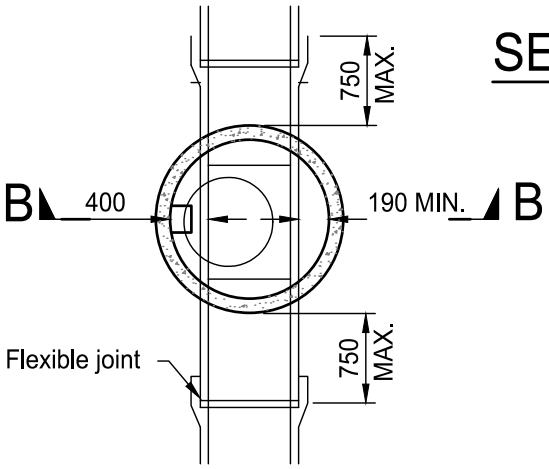
Plan no.

5.13





SECTION B-B



PLAN A-A

NOTE:

1. 1200, 1500 OR 1800 Dia. liners should be selected, having regard to the configuration of bends and junctions within the manhole.
2. The chosen size of liners may need to be offset from the centreline of the pipe to accommodate bends or junctions.
3. All dimensions/measurements are in millimeters unless specified otherwise.

MANHOLE FOR LARGE DIA. PIPES - 750 to 1050mm

PALMY
PAPMUREA PALMERSTON NORTH CITY

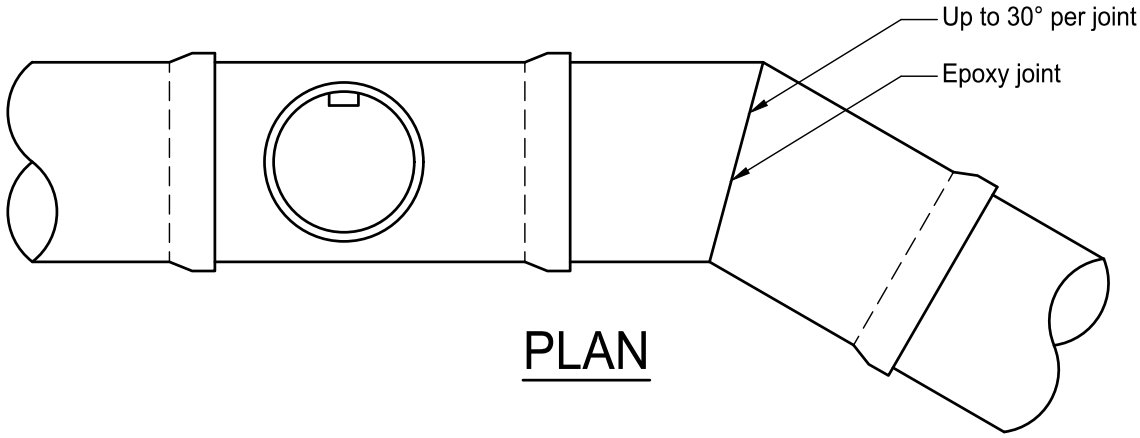
Robert van Bentum
Chief Engineer

Designed	*City Networks*
Drawn	*E.Fromont*
Checked	*T. Mcglynn*
Revised	*05 / 21*

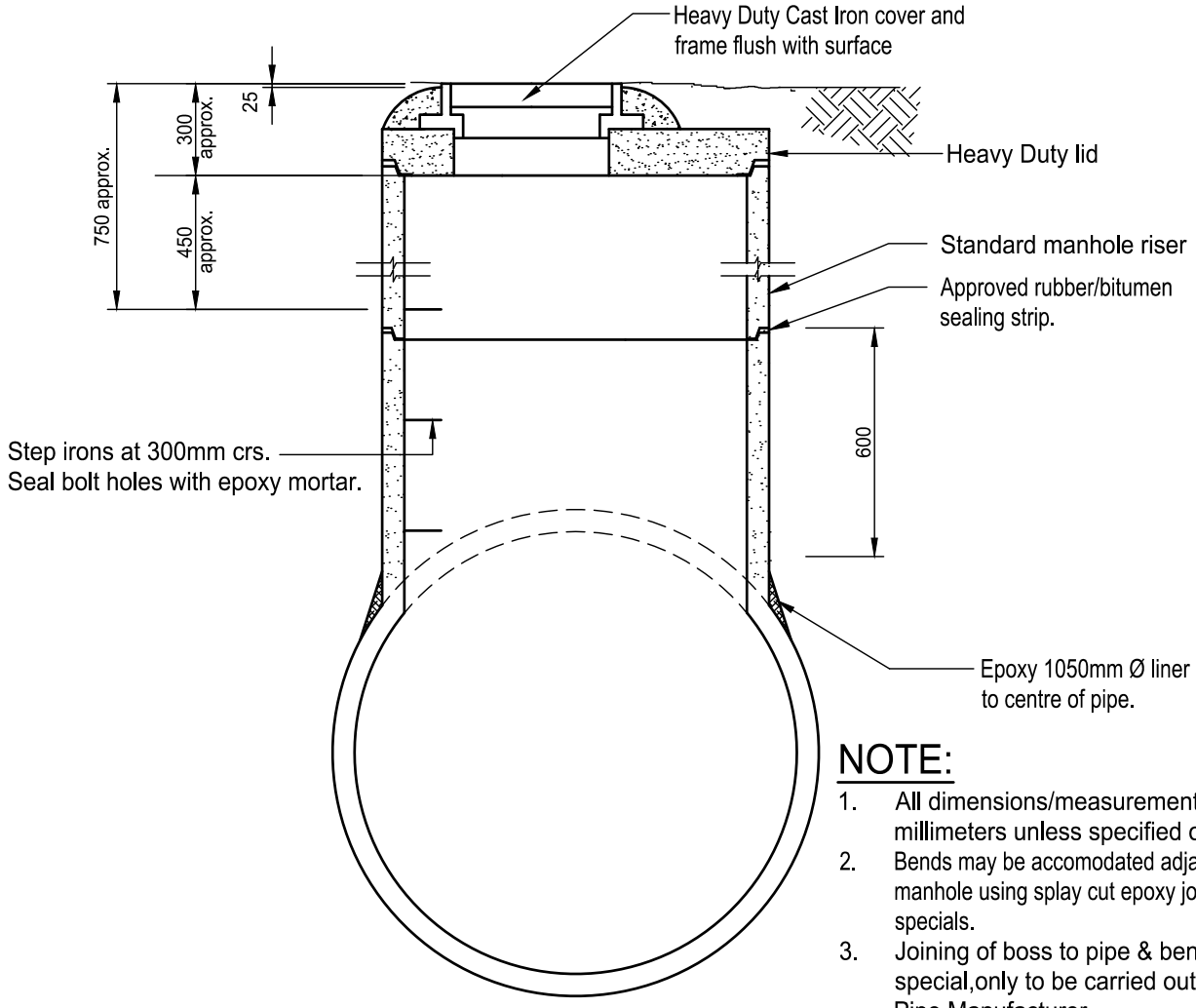
Scales NOT TO SCALE

Plan no.

6.1



PLAN



NOTE:

1. All dimensions/measurements are in millimeters unless specified otherwise.
2. Bends may be accomodated adjacent to the manhole using splay cut epoxy jointed specials.
3. Joining of boss to pipe & bend special,only to be carried out by Pipe Manufacturer.

SECTION

FOR USE WITH PIPES OF 1050mm Ø & OVER INTERNAL DIA. WHERE NO JUNCTION IS REQUIRED.

MANHOLE FOR LARGE DIAMETER PIPES 1050mm DIA. PLUS

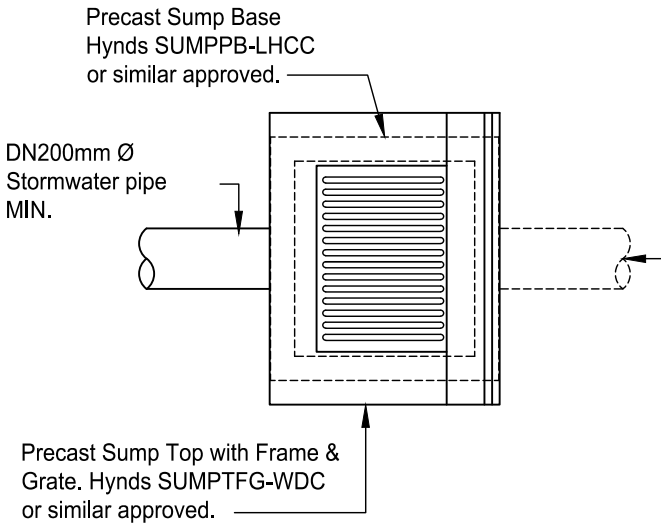
PALMY
PARAWHEA PALMERSTON NORTH CITY

Robert van Bentum
Chief Engineer

Designed	*Infrastructure*
Drawn	*E.Fromont*
Checked	*T. Mcglynn*
Revised	*05 / 21*

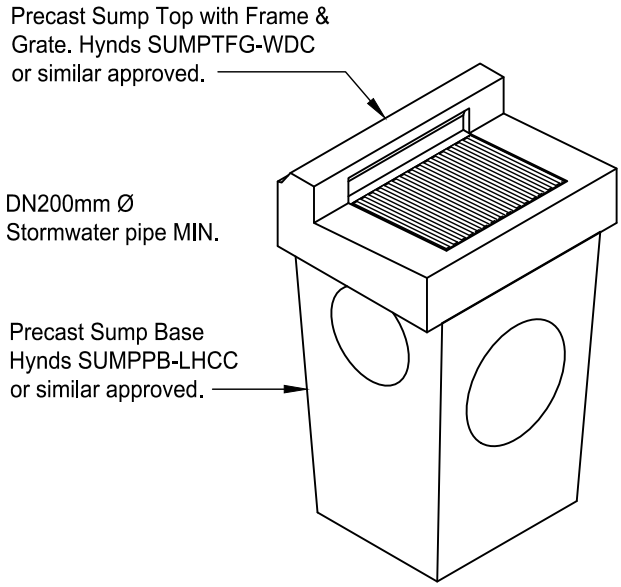
Scales 1:20, 1:50

Plan no. 6.2



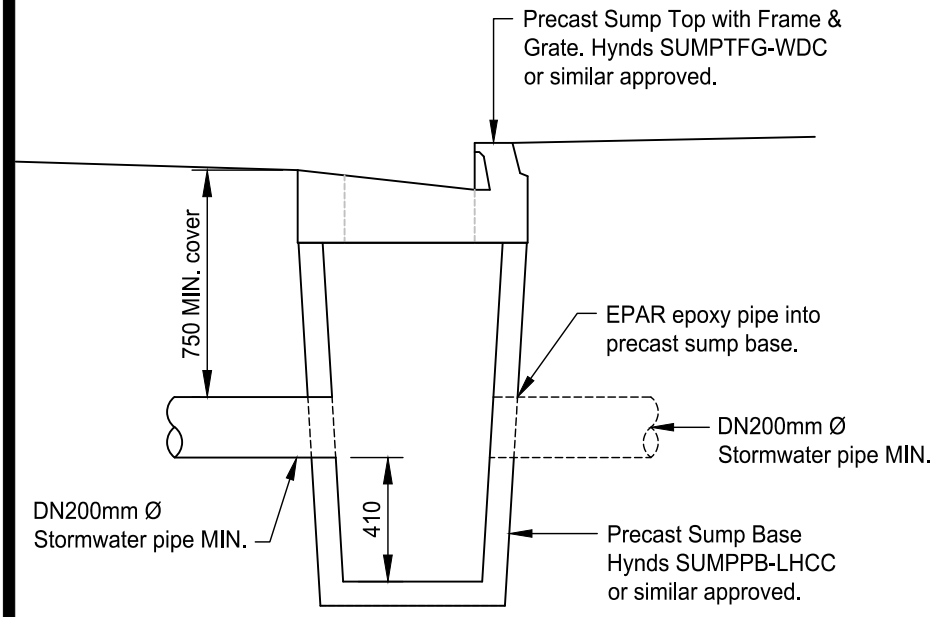
PLAN

Scale: 1:25



ISOMETRIC VIEW

Scale: n.t.s



STREET SUMP

Scale: 1:25

NOTE:

1. All dimensions/measurements are in millimeters unless specified otherwise.

STREET SUMP DETAILS

PALMY
PARAUDEA PALMERSTON NORTH CITY

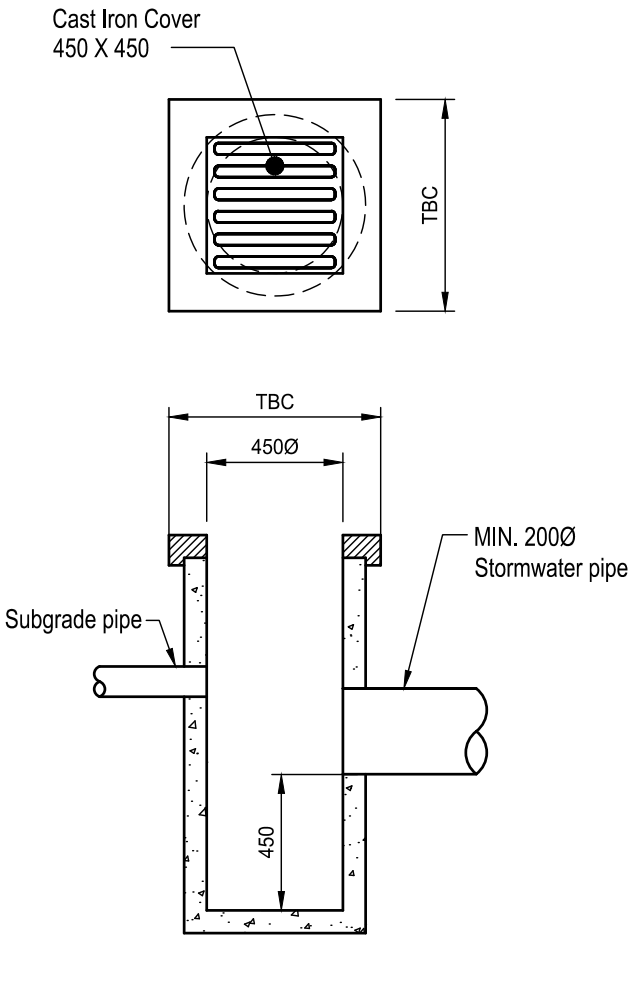
Robert van Bentum
Chief Engineer

Designed	*Infrastructure*
Drawn	*E.Fromont*
Checked	*T. Mcglynn*
Revised	*05 / 21*

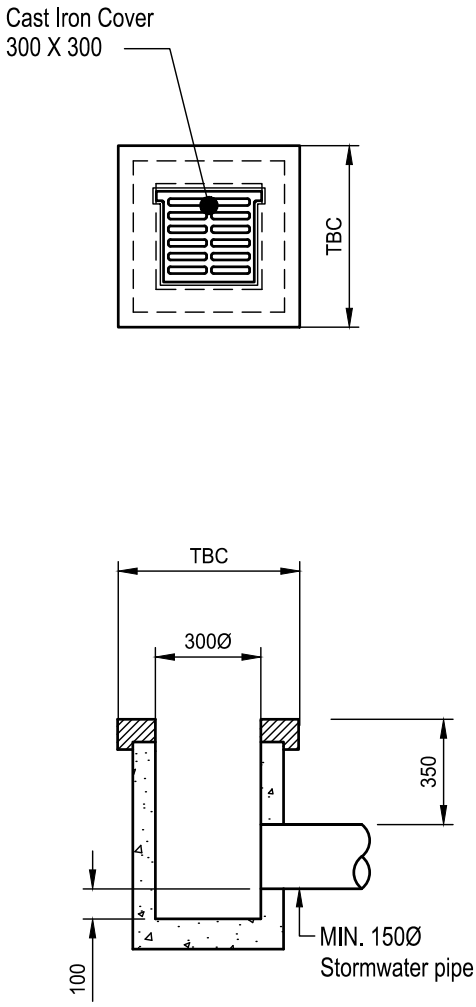
Scales AS SHOWN

Plan no.

6.3



HUMES YARD SUMP OR SIMILAR APPROVED YARD SUMP



FOOTPATH/SMALL SUMP

NOTE:

1. All dimensions/measurements are in millimeters unless specified otherwise.

SUMP DETAILS (YARD SUMP AND FOOTPATH/SMALL SUMP)

PALMY
PARMERA PALMERSTON NORTH CITY

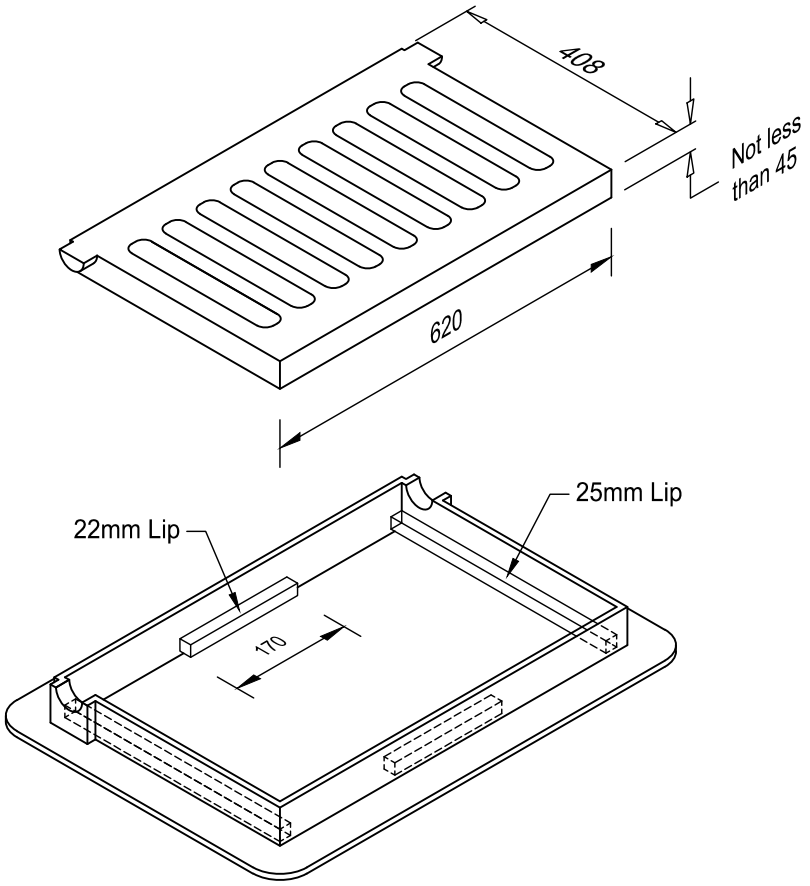
Stuart Cartwright
Chief Engineer

Designed	*Infrastructure*
Drawn	*E.Fromont*
Checked	*T. Mcglynn*
Revised	*05 / 21*

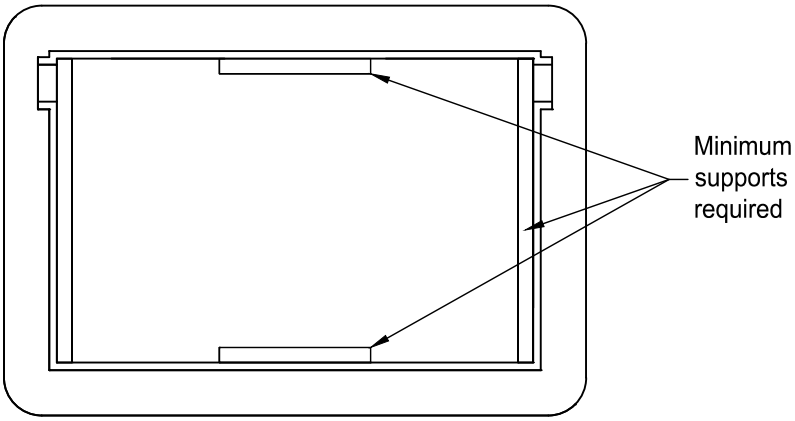
Scales NOT TO SCALE

Plan no.

6.3.1



ISOMETRIC VIEW OF GRATE DETAIL



PLAN VIEW OF FRAME

Scale 1:10

NOTE:

1. Where grates are replaced on frames with no centre supports the grate should have deeper sections, ie greater than 45mm to distribute loading.
2. All dimensions/measurements are in millimeters unless specified otherwise.

STANDARD GRATE DETAILS

PALMY
PARMURIA PALMERSTON NORTH CITY

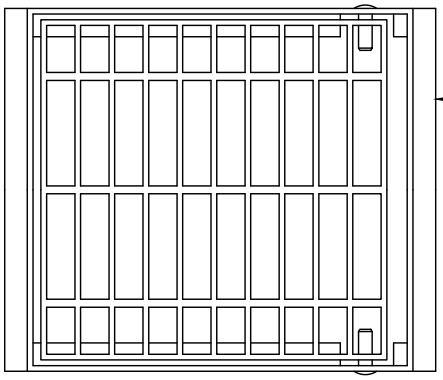
Robert van Bentum
Chief Engineer

Designed	*Infrastructure*
Drawn	*E.Fromont*
Checked	*T. Mcglynn*
Revised	*05 / 21*

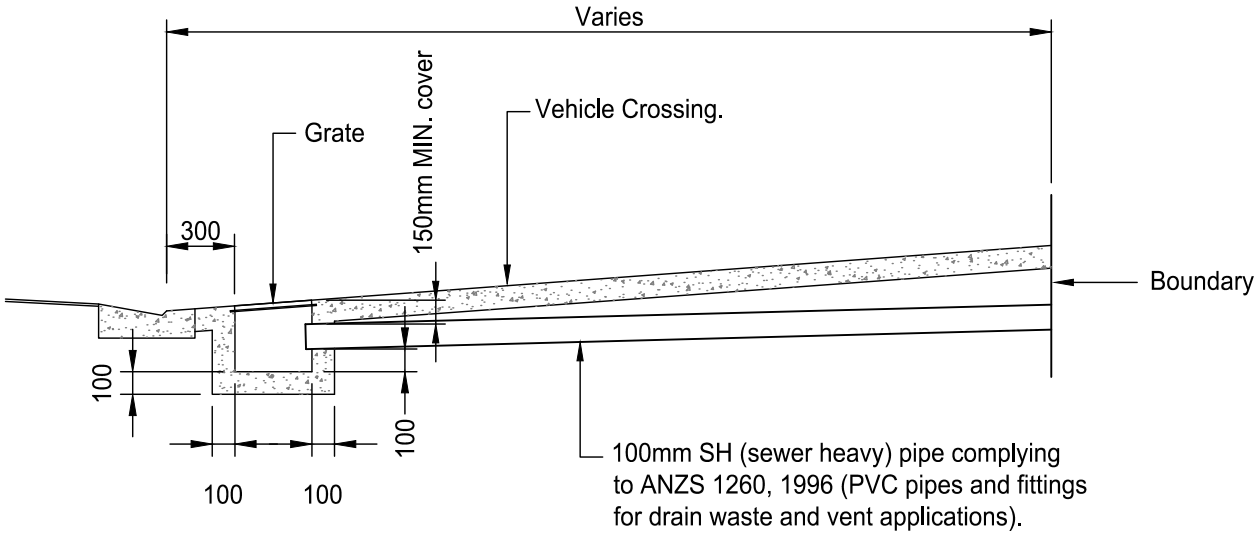
Scales 1:10

Plan no.

6.4



'WEBFORGE'
Well-up sump grate



NOTE:

1. All dimensions/measurements are in millimeters unless specified otherwise.

VEHICLE CROSSING (HEAVY DUTY & STANDARD)
WELL-UP SUMP

PALMY
PARMUOEA PALMERSTON NORTH CITY

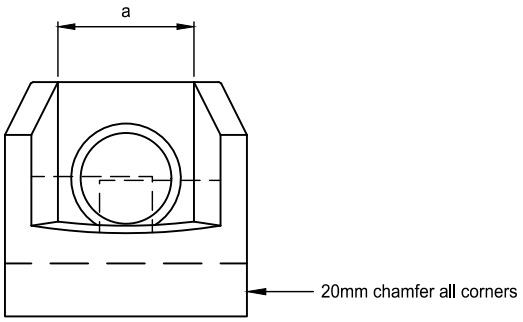
Robert van Bentum
Chief Engineer

Designed	*Infrastructure*
Drawn	*E.Fromont*
Checked	*T. Mcglynn*
Revised	*05 / 21*

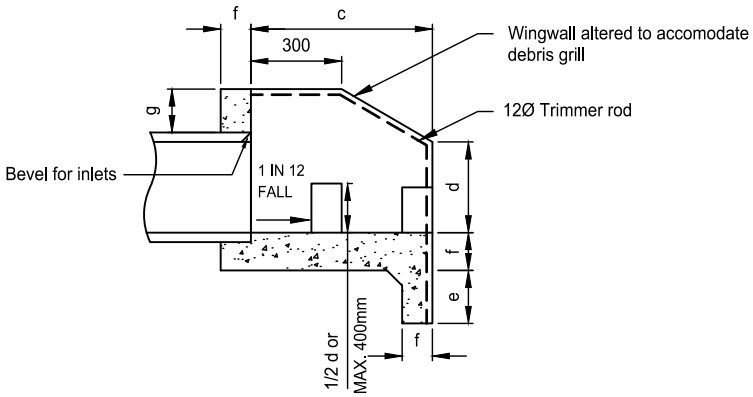
Scales NOT TO SCALE

Plan no.

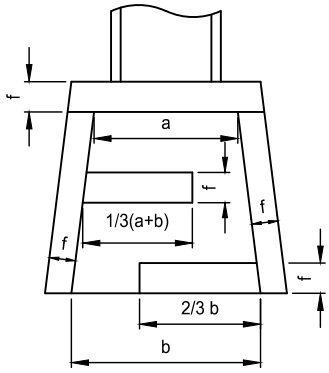
6.5



END ELEVATION

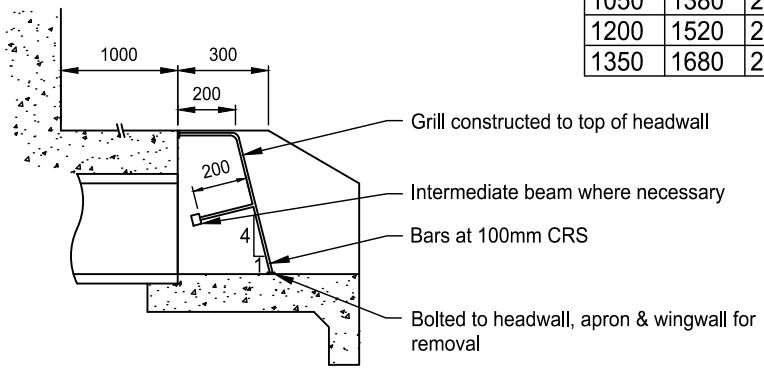


SECTION



PLAN

PRINCIPAL DIMENSIONS (mm)							
Ø of PIPE	a	b	c	d	e	f	g
150	300	450	600	200	150	100	150
230	380	600	700	250	200	100	150
300	450	750	750	300	200	100	150
375	550	900	850	400	200	100	150
450	630	1100	900	450	230	150	230
525	700	1200	1000	550	230	150	230
600	800	1400	1100	600	230	150	230
750	1000	1700	1200	650	300	150	300
900	1170	2000	1450	750	300	150	300
1050	1380	2300	1700	750	450	150	300
1200	1520	2600	2100	750	450	150	450
1350	1680	2800	2400	750	450	150	450



DEBRIS GRILL

NOTE:

1. REINFORCE FLOOR & WALLS WITH:
   150 - 375 665 mesh
   450 - 600 663 mesh or 10Ø rods @ 250 crs
   675 - 900 12Ø rods @ 250 crs
   1050 - 1350 12Ø rods @ 150 crs
2. All reinforcement shall be placed centrally in walls and floor, and shall be continuous between walls and floor.
3. Laps in structural grade bars to be 300mm MIN.
4. There shall be at least two bars - whether mesh or m.s. over the top of the pipe.
5. Concrete is to be ordinary grade (17.5mpa) in accordance with NZS 4229 : 2013.
6. Baffles are to be constructed as shown when outlet velocities and soil conditions dictate. in extreme cases specific design may be required by the engineer.
7. Inlet structures shall have reverse apron fall and no baffles.
8. Dimensions b,c & d may be varied to suit site conditions.
9. Debris grill to be specifically designed.
10. All dimensions/measurements are in millimeters unless specified otherwise.

STANDARD HEADWALL DETAIL

PALMY
PAPAMOEA PALMERSTON NORTH CITY

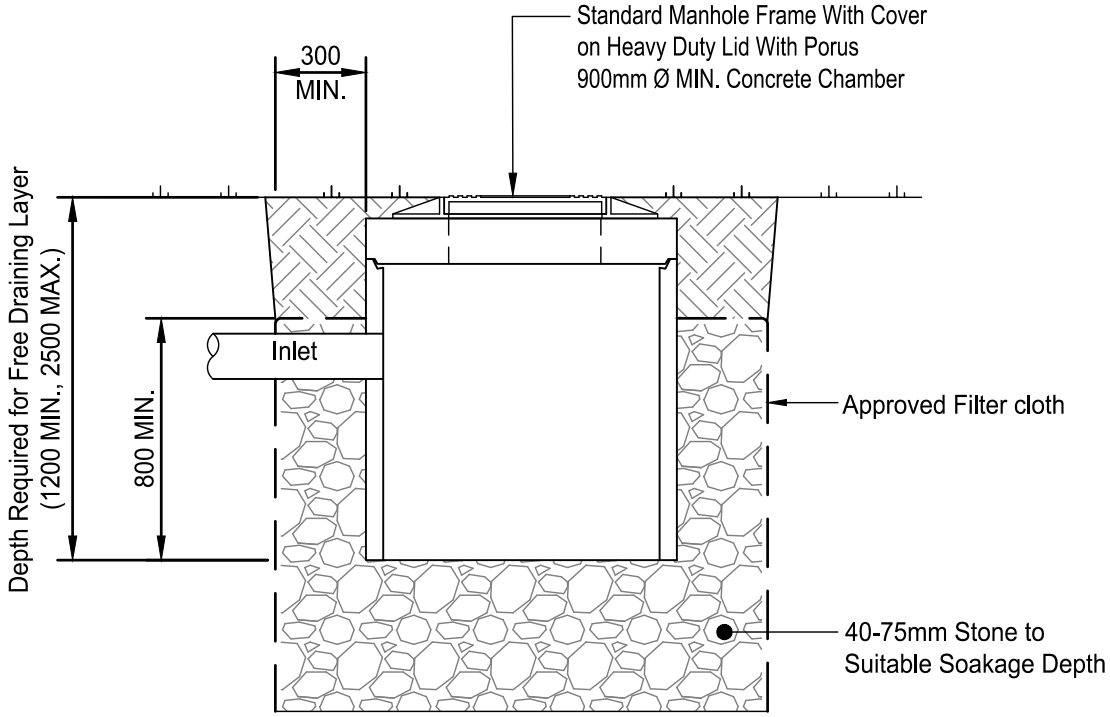
Robert van Bentum
Chief Engineer

Designed	*Infrastructure*
Drawn	*E.Fromont*
Checked	*T. Mcglynn*
Revised	*05 / 21*

Scales 1:25

Plan no.

6.6



NOTE:

1. Soak Pits Shall be Sited Away From Services by 2m and Away From Building Foundations by 45° to Pit Base Min

2. Silt Traps Shall be Constructed with Every Soak Pit Where Draining Surface Water

3. Soakways, raingardens, biofiltration trenches may be allowed for residential lots in those areas of the city which have the proven ability to effectively dispose of stormwater by soakage under all conditions of ground water level. Soakage tests will be required prior to subdivision consent. All proposals for onsite stormwater disposal by ground soakage must be supported by detailed calculation and drawings. Onsite disposal systems must be designed to have no adverse affects on ground stability or on downstream properties and shall be constructed in accordance with requirements of the Building Act 2004. The developer shall undertake detailed testing and calculations to determine that the proposed system is suitable for disposal from a 10% AEP event. Secondary flow paths shall be provided to cater for events exceeding the capacity of the primary system and on occasions when the primary system fails.

4. All dimensions/measurements are in millimeters unless specified otherwise.

STANDARD SOAK PIT DETAIL (RESIDENTIAL)

PALMY
PAPMURA
PALMERSTON
NORTH
CITY

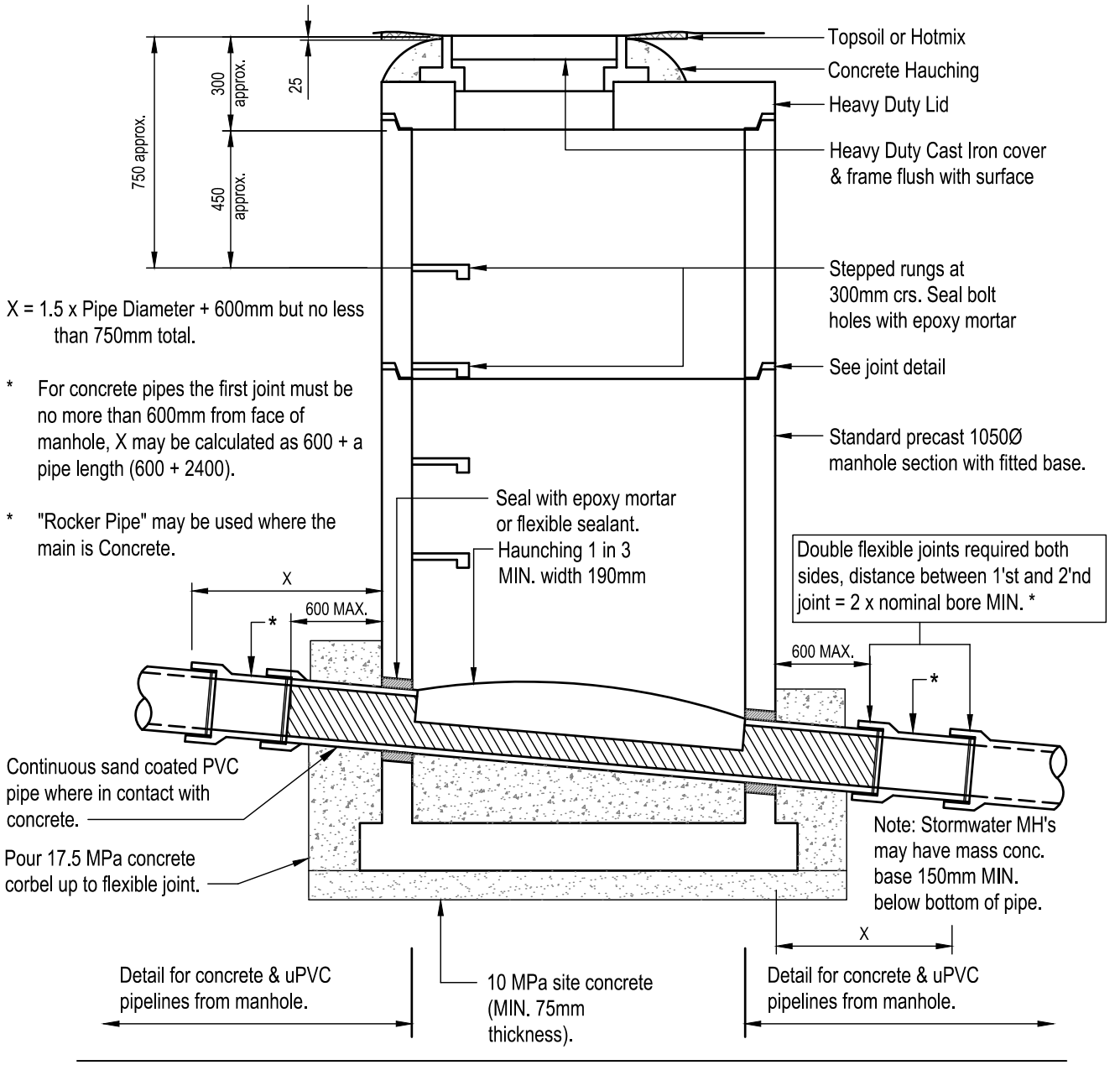
Robert van Bentum
Chief Engineer

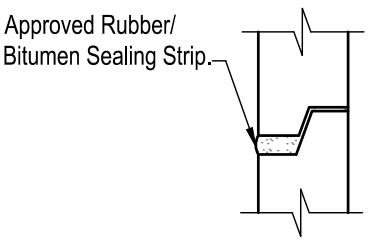
Designed	*Infrastructure*
Drawn	*E.Fromont*
Checked	*T. Mcglynn*
Revised	*05 / 21*

Scales 1:25

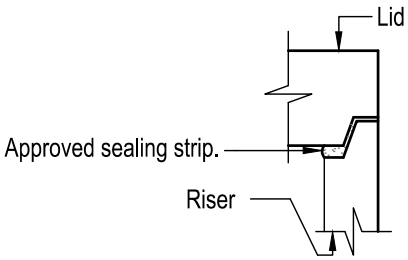
Plan no.

6.7



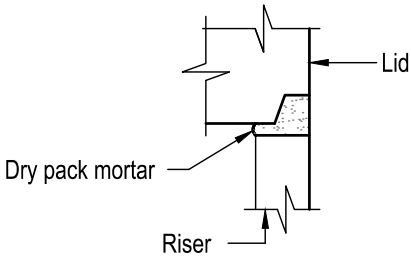


JOINT DETAIL



RISER-LID DETAIL

(Full height riser)



RISER-LID DETAIL

(Riser shortened)

NOTE:

1. All dimensions/measurements are in millimeters unless specified otherwise.

MANHOLE - STORMWATER

PALMY
PARMOEA PALMERSTON NORTH CITY

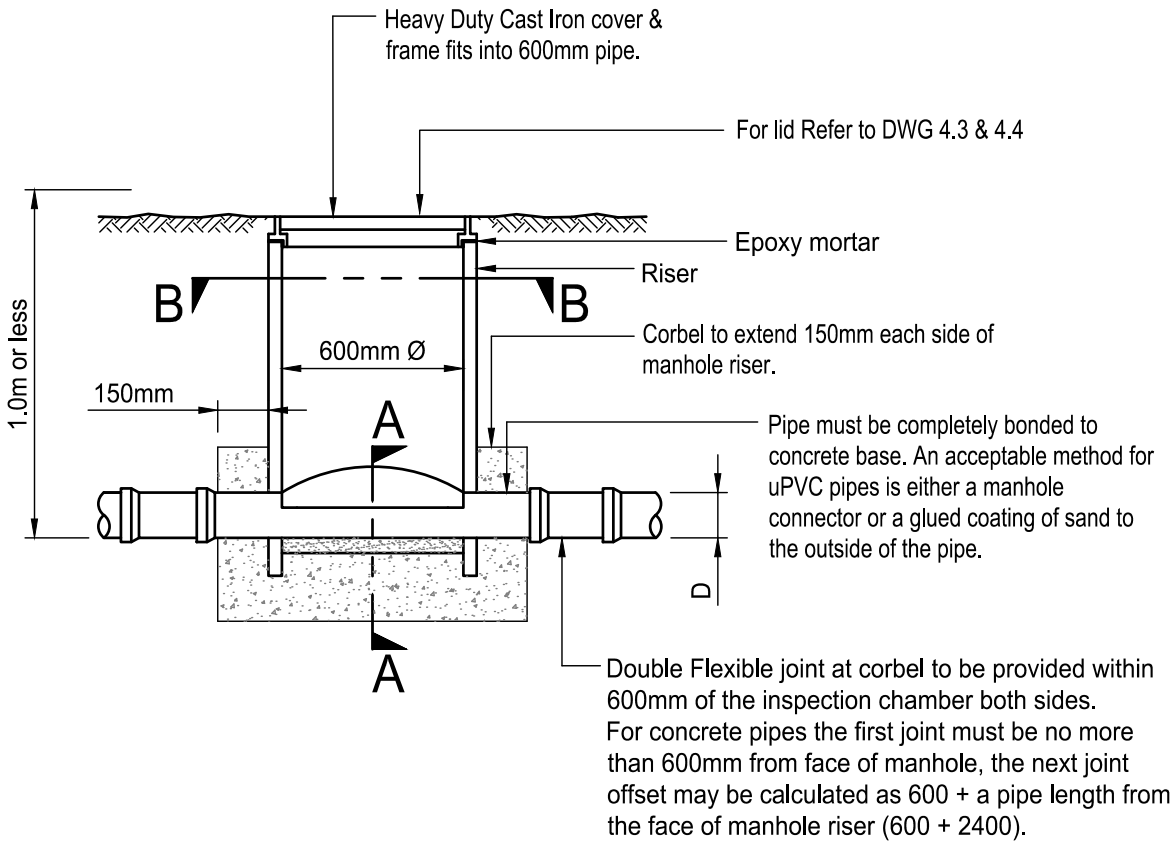
Stuart Cartwright
Chief Engineer

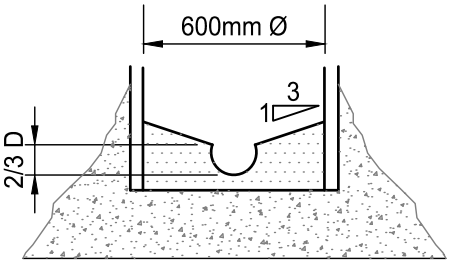
Designed	*Infrastructure*
Drawn	*E.Fromont*
Checked	*T. Mcglynn*
Revised	*05 / 21*

Scales NOT TO SCALE

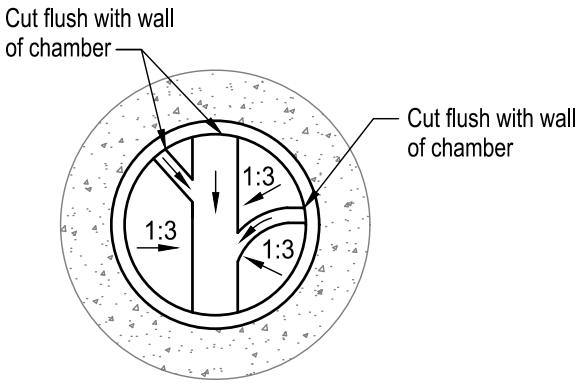
Plan no.

6.8





SECTION A-A



SECTION B-B

STORMWATER

TYPICAL INSPECTION CHAMBER FOR 100mm PIPE, STORMWATER

PALMY
PAPAMOEA
PALMERSTON
NORTH
CITY

Robert van Bentum
Chief Engineer

Designed	*Infrastructure*
Drawn	*E.Fromont*
Checked	*T. Mcglynn*
Revised	*05 / 21*

Scales NOT TO SCALE

Plan no.

6.9