THE COUNCIL ACCEPTS RESPONSIBILITY FOR ANY SEWER LINE MORE THAN 15m FROM THE BOUNDARY OF THE LAST PROPERTY SERVED (CROSS LEASED UNITS ARE CONSIDERED ONE PROPERTY)

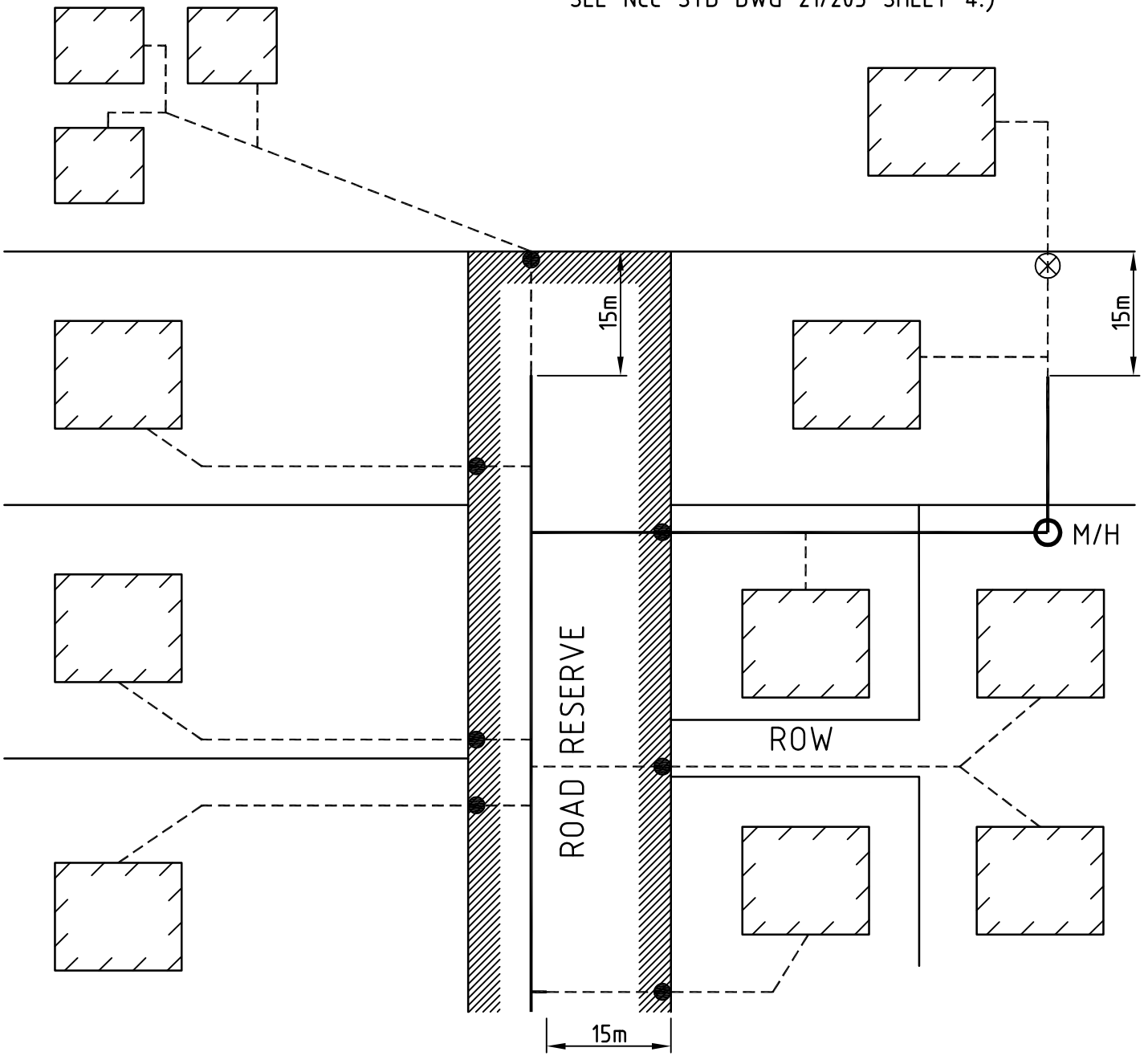
PUBLIC SEWER

PRIVATE SEWER

LHCE

INSPECTION 'T'

(100mm 'T' JUNCTION VERTICAL INSPECTION PIPE. SEE NCC STD DWG 21/205 SHEET 4.)



NELSON CITY COUNCIL

DEFINITION OF PUBLIC SEWER

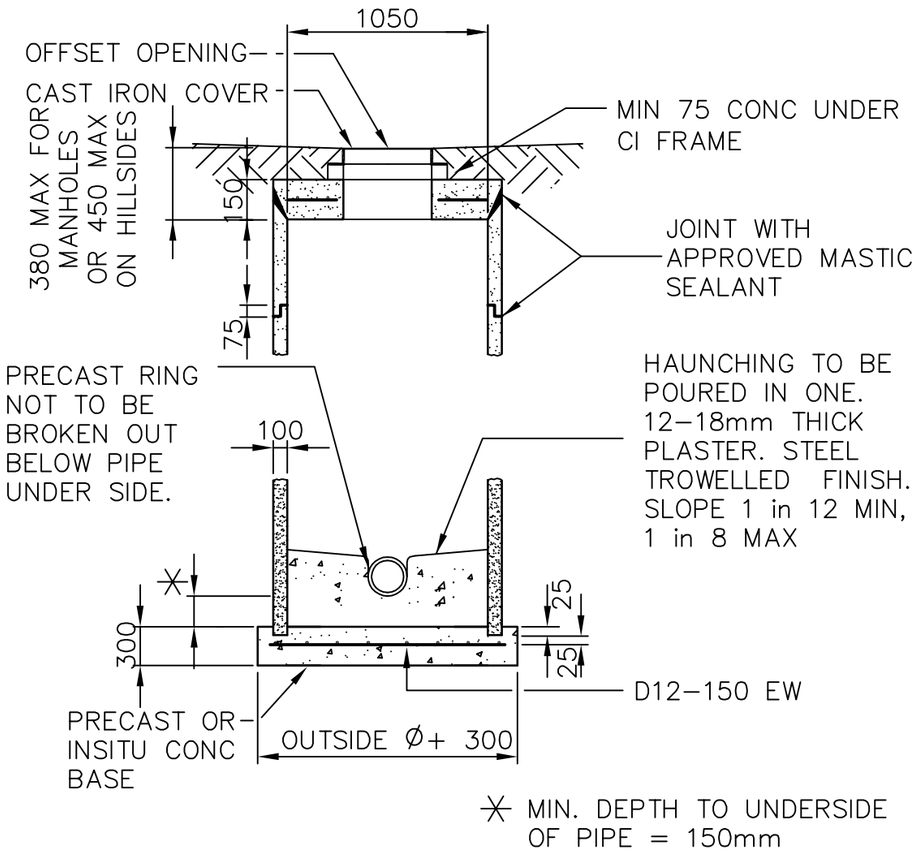
INFRASTRUCTURAL ASSETS

APPROVED

29/07/2010

SENIOR EXECUTIVE INFRASTRUCTURE — DATE

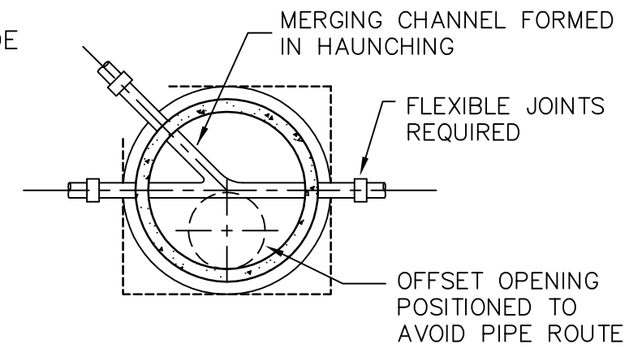
SD 601



PRECAST MANHOLE DETAIL

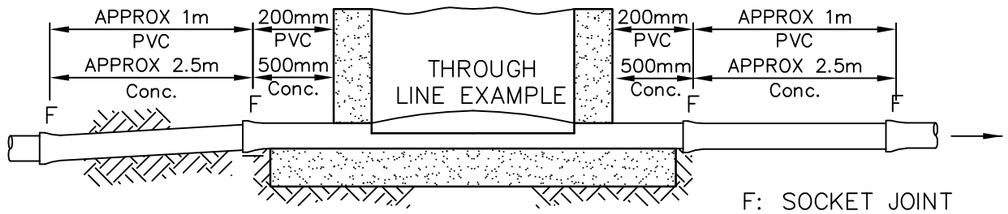
NOTES

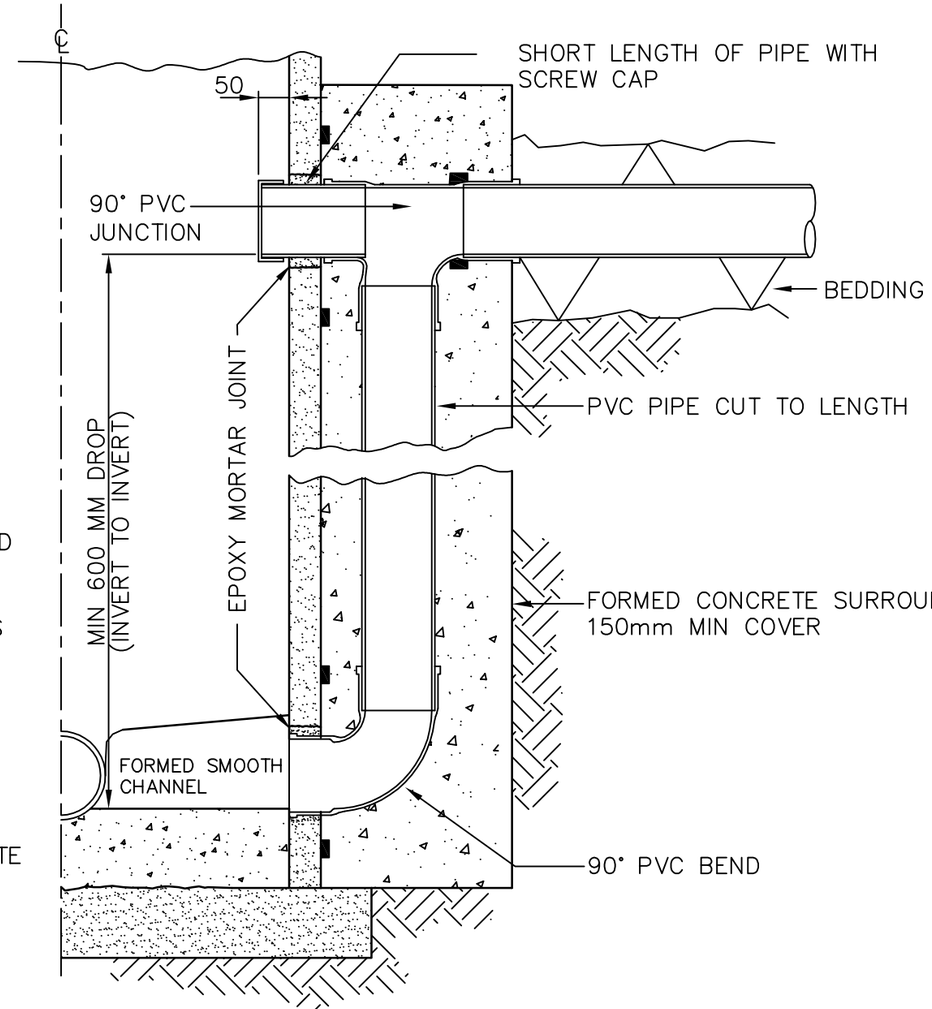
1. ALL "INSITU" CONCRETE TO BE VIBRATED
2. CONCRETE CRUSHING STRENGTH TO BE 20 MPa AFTER 28 DAYS
3. MAX. SIZE OF PIPE TO BE 450 mm DIA FOR 1050mm MANHOLE
4. PRECAST CONCRETE MANHOLE RISERS SHALL COMPLY WITH THE REQUIREMENTS FOR CLASS 2 PRECAST CONCRETE PIPES TO AS/NZS 4058, 2007
5. MAXIMUM GRADIENT FOR HAUNCHING THROUGH MANHOLES SHALL BE 1 in 3
6. HYDROPHILLIC SEALANT SHALL BE USED WHERE THERE IS A HIGH GROUNDWATER LEVEL OR WHERE DRAINAGE OF THE TRENCH IS NOT POSSIBLE. THIS SHALL BE USED FOR ALL WASTEWATER MANHOLES, AS PER 21/204 Sht6 (UNLESS APPROVED OTHERWISE BY COUNCIL).
   SEALANT TO BE ADEKA ULTRASEAL P–201, (or similar) WATER SWELLING ELASTIC SEALANT 10mm MIN. THICKNESS AROUND THE PIPE AT PUDDLE FLANGE CURED BEFORE PLACING EPOXY MORTAR IN LINEAR JOINT. MIN. COVER TO SEALANT FROM FREE EDGE OF INSITU CONCRETE IS 75mm



TYPICAL PLAN

FLEXIBLE JOINTS AT MANHOLES





EXTERNAL DROP MANHOLE DETAIL PVC 150ø

(FOR DROPS LESS THAN 600mm SEE 21/204 SHEET 2)

NELSON CITY COUNCIL

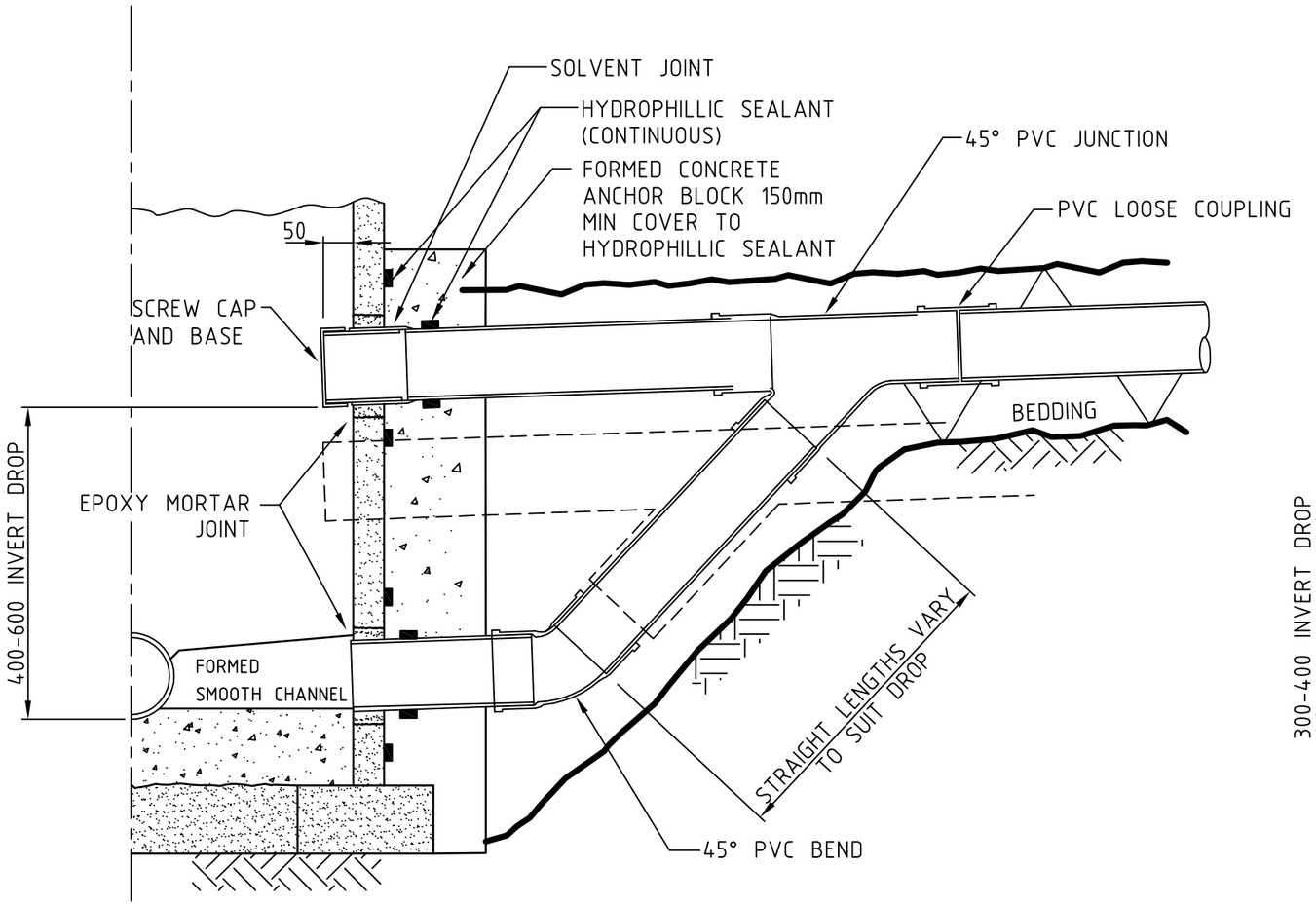
1050ø PRECAST MANHOLE FOR PIPELINES UP TO AND INCL. 450ø

INFRASTRUCTURAL ASSETS

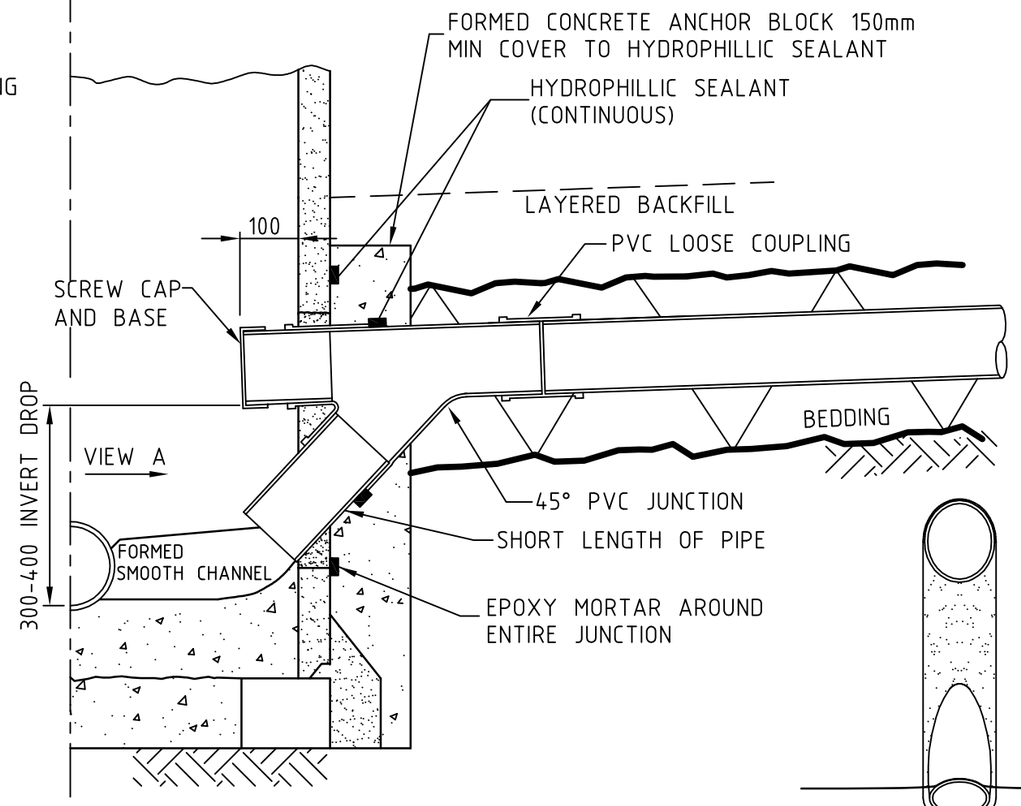
APPROVED 29/07/2010

SENIOR EXECUTIVE INFRASTRUCTURE DATE

SD 602



CASE OF DROP OF 400-600 mm



CASE OF DROP OF 300-400 mm

VIEW A

NOTES

1. HYDROPHILLIC SEALANT as per NCC STANDARD DRAWING 21/204-1

DROP MANHOLE DETAIL PVC 150 ø

(FOR DROPS MORE THAN 600mm SEE 21/204 SHEET 1)

NELSON CITY COUNCIL

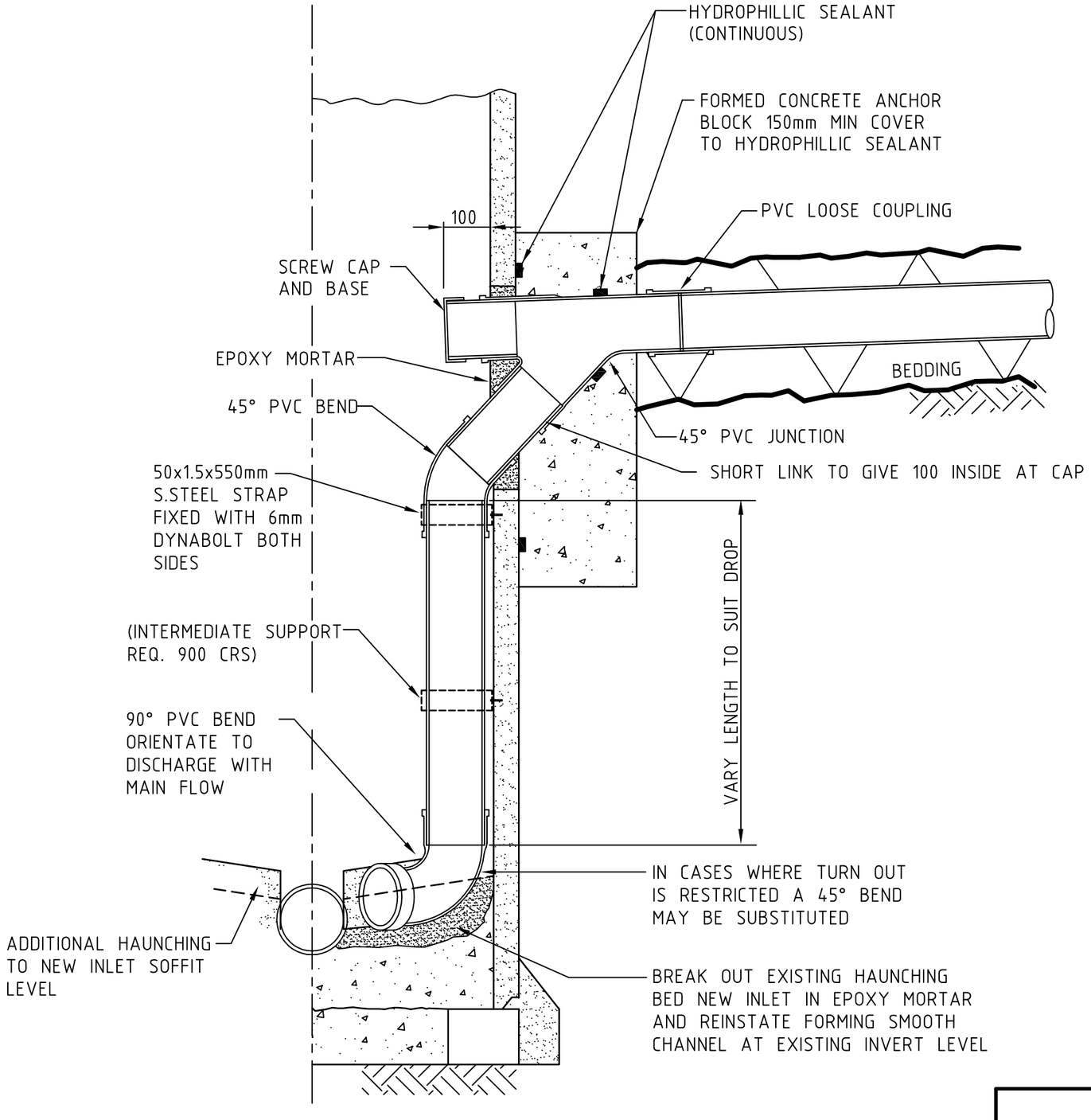
WASTEWATER DROP MANHOLE

INFRASTRUCTURAL ASSETS

APPROVED 29/07/2010

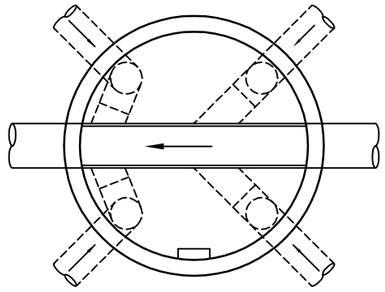
SENIOR EXECUTIVE INFRASTRUCTURE DATE

SD 603



INTERNAL DROP MANHOLE DETAIL PVC 150 ø

TO BE USED IN SPECIAL CASES AT ENGINEERS DIRECTION
FOR EXISTING MANHOLES ONLY



GENERAL APPROACH
POSITION RELATED
TO MANHOLE -1 ONLY

NOTES

1. HYDROPHILLIC SEALANT as per NCC STANDARD DRAWING 21/204-1

NELSON CITY COUNCIL

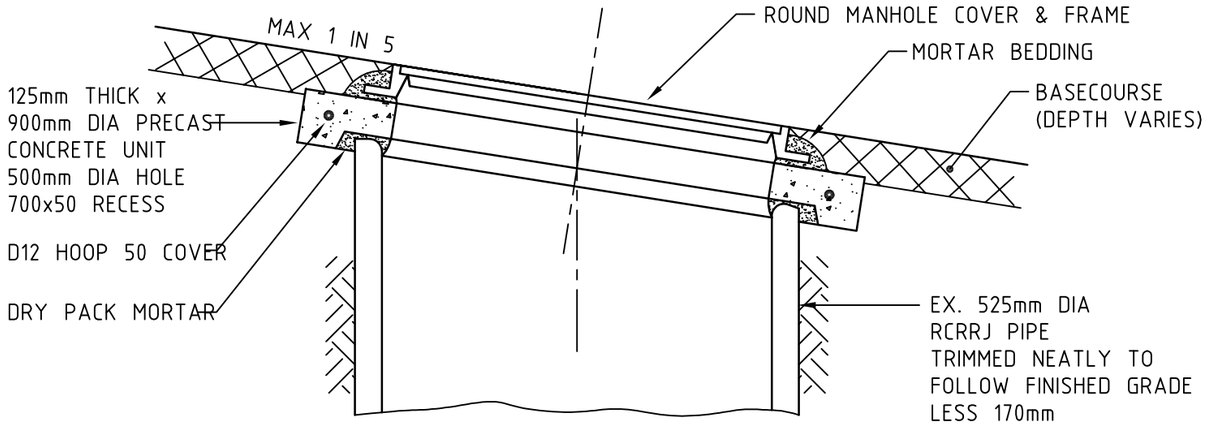
INTERNAL DROP MANHOLE

INFRASTRUCTURAL ASSETS

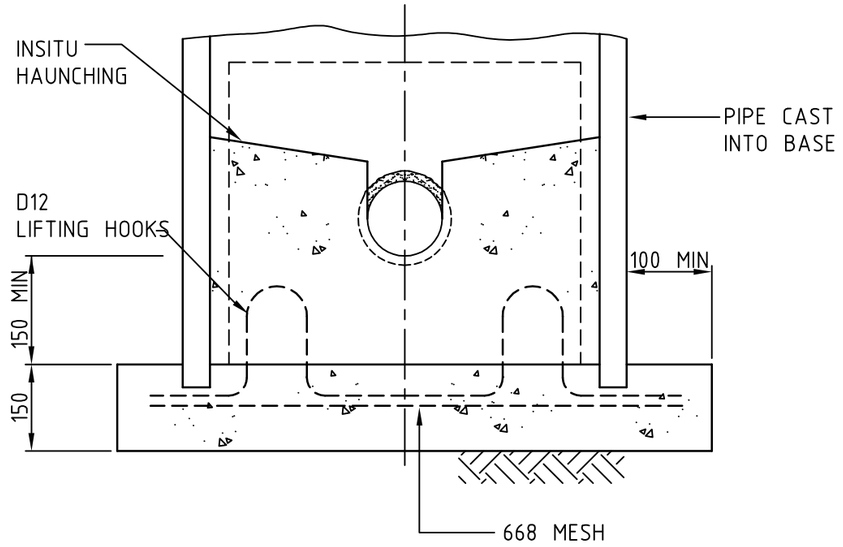
APPROVED _____ 29/07/2010

SENIOR EXECUTIVE INFRASTRUCTURE DATE

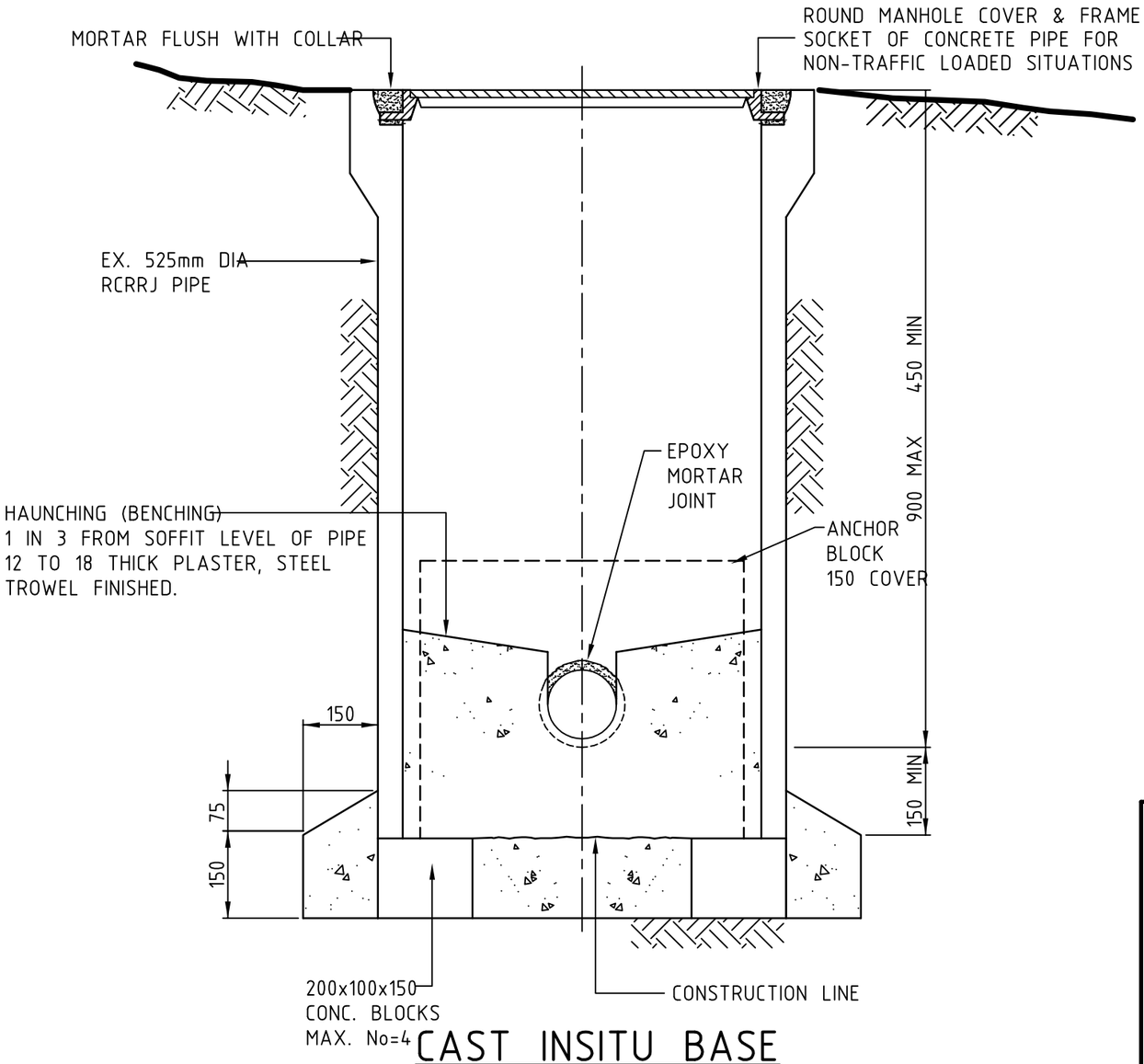
SD 604



TOP FOR DRIVEWAYS OR R.O.W.



ALTERNATIVE PRECAST UNIT



CAST INSITU BASE

NOTES

1. APPROVED PRE-FORMED PLASTIC INSPECTION CHAMBERS MAY BE USED AS MINI-MANHOLES FOR PIPE SIZES 100mm Ø & 150mm Ø SUITABLE FOR SEWER & STORMWATER SEWERS
2. MINI-MANHOLES ARE NOT TO BE ASSUMED TO REPLACE THE STANDARD MANHOLE
3. MINI-MANHOLES SHALL NOT BE USED IN AREAS SUBJECT TO VEHICULAR TRAFFIC, EXCEPT IN FORMED RESIDENTIAL DRIVEWAYS OR RIGHTS OF WAYS FOR LIGHT DOMESTIC VEHICLES
4. THE USE OF MINI-MANHOLES IS TO BE LIMITED, AND AT THE DISCRETION OF COUNCIL:
   A) MANHOLES LESS THAN 1M DEEP
   B) THE MAXIMUM PIPE SIZES OF 150mm Ø FOR SEWERS & 225mm Ø FOR STORMWATER DRAINS
   C) MANHOLES AT THE HEAD OF A LINE
   D) STRAIGHT THROUGH MANHOLES
   E) CHANGES OF GRADE
5. CONCRETE MINI-MANHOLES AS DETAILED ARE NOT TO BE USED IN SEWERS AT:
   A) JUNCTIONS
   B) DEFLECTIONS GREATER THAN 45 DEGREES.
6. COVER & FAME SHALL BE CAST IRON or DUCTILE IRON TO CLASS C STRENGTH TO AS3996(CLASS & STANDARD TO BE STAMPED OF FRAME & LID
7. COVER MUST HAVE 2 SEPARATE RECESSED SLOTS TO FACILITATE LIFTING & REMOVAL OF COVER, AND MUST BE WATER TIGHT TO PREVENT SW INGRESS
8. COVERS MUST HAVE ANTI-SKID PATTERN EMBOSSED ON TOP WITH THE WORDS WASTEWATER or STORMWATER. ALL FONT TO BE GOTHIC, 15mm HEIGHT RAISED 2.5mm
9. ANY OTHER WORDING, SUCH AS THE SUPPLIERS & MANUFACTURERS NAME, SHALL BE PLACED ON THE UNDERSIDE OF THE COVER (NOT ON THE TOP)

NELSON CITY COUNCIL

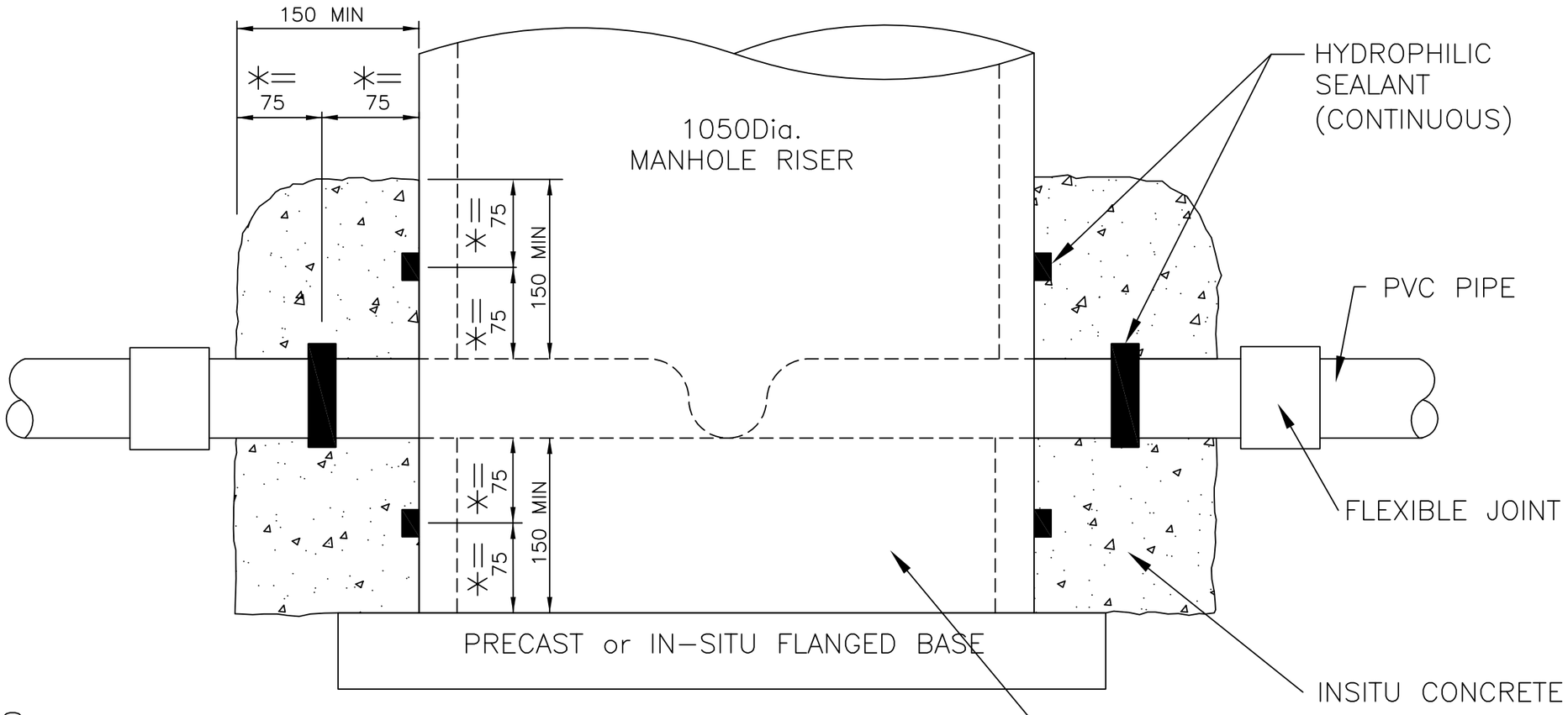
SHALLOW MINI–MANHOLE

INFRASTRUCTURAL ASSETS

APPROVED 29/07/2010

SENIOR EXECUTIVE INFRASTRUCTURE ..... DATE

SD 605



NOTES:

1. HYDROPHILLIC SEALANT TO BE ADEKA ULTRASEAL P–201 (OR SIMILAR) WATER SWELLING ELASTIC SEALANT 10mm MIN. THICKNESS AROUND THE PIPE CURED BEFORE PLACING IN–SITU CONCRETE.
2. DETAIL APPLIES TO ALL WASTEWATER MANHOLES WHERE THE WASTEWATER PIPELINE MAY BE DEEPER THAN THE WATER TABLE &/or WHERE TRENCH DRAINAGE (NCC 21/212) IS NOT POSSIBLE
3. WRAP EACH INCOMING & OUTGOING PIPE WITH HYDROPHILIC SEALANT PRIOR TO CONCRETE POUR
4. HYDROSTATIC WATER TEST EACH SEALED MANHOLE PRIOR TO BACKFILLING MANHOLES
5. ALL WORKS TO BE INSPECTED BY NCC PRIOR TO PLACING OF IN–SITU CONCRETE

∗ MINIMUM COVER TO SEALANT FROM FREE EDGE OF IN–SITU CONCRETE

NELSON CITY COUNCIL

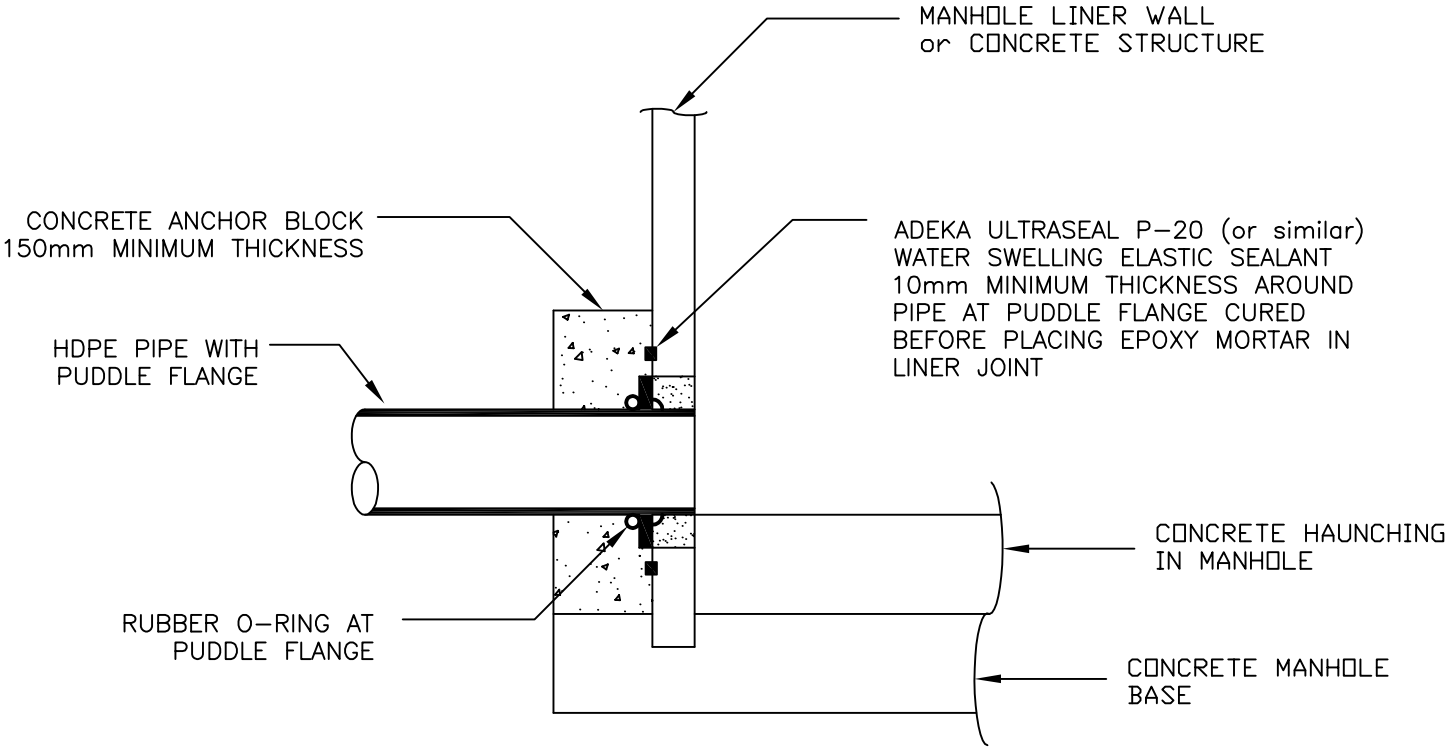
WASTEWATER MANHOLE WATER TIGHTNESS FOR PVC PIPES

INFRASTRUCTURAL ASSETS

APPROVED 29/07/2010

SENIOR EXECUTIVE INFRASTRUCTURE DATE

SD 606



NOTE:

ALL WORKS TO BE INSPECTED BY NCC BEFORE CONCRETE ANCHOR BLOCK HAS BEEN POURED

NELSON CITY COUNCIL

WASTEWATER MANHOLE WATER TIGHTNESS & PIPE RESTRAINT FOR HDPE PIPES

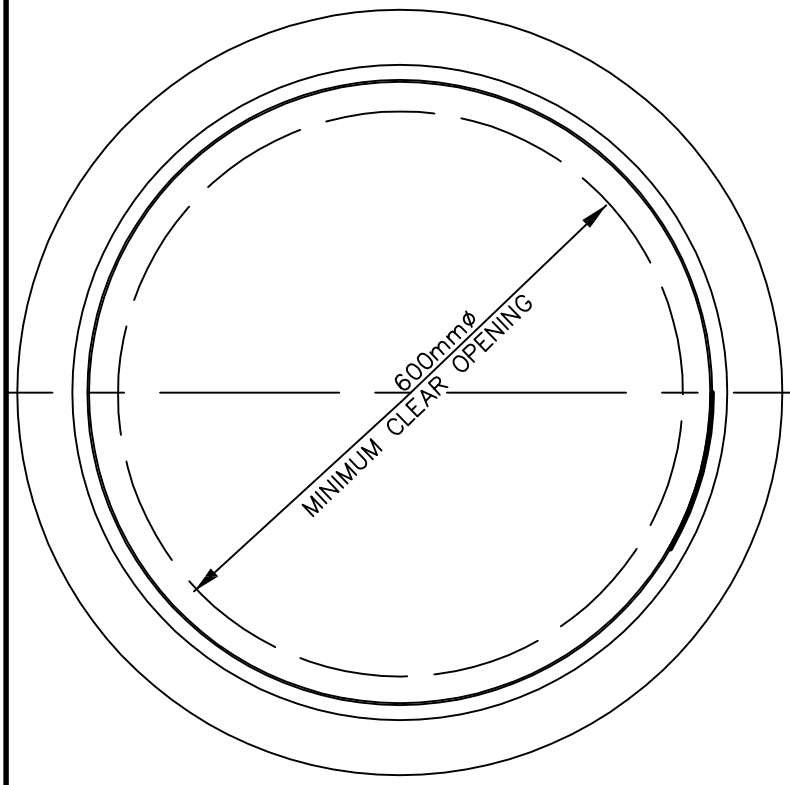
INFRASTRUCTURAL ASSETS

APPROVED

29/07/2010

SENIOR EXECUTIVE INFRASTRUCTURE — DATE

SD 607



PLAN – COVER + FRAME
(PATTERN OMITTED)

PLAN – COVER
(WITH PATTERN SHOWN)

NOTES:

1. TO BE USED ON ALL STANDARD 1050ø MANHOLES OR LARGER
2. MATERIAL DUCTILE IRON TO AS1831:2007
3. ALL DIMENSIONS ARE IN mm
4. FRAME and COVER SHALL BE CERTIFIED TO MEET CLASS D STRENGTH CLASSIFICATION to AS 3996 (THE CLASS STRENGTH and STANDARD MUST BE STAMPED ON UNDERSIDE OF THE COVER
5. COVER TO HAVE AT LEAST 2 SEPARATE RECESSED SLOTS TO FACILITATE LIFTING AND REMOVAL OF COVER
6. THE LIFTING HOLES FOR THE WASTERWATER COVER MUST BE SEALED TO PREVENT STORMWATER INGRESS
7. SEATS OF COVER AND FRAME TO BE FINISHED BY MACHINING OR OTHERWISE, SO THAT THE CENTRE SEATS EVENLY AND COMPLETELY COVER THE FULL CIRCUMFERENCE IN ANY POSITION IN THE FRAME
8. COVERS MUST HAVE NCC PATTERN FORMED INTO TOP OF COVER AS 5mm DEPTH RAISED LINEWORK
9. ALL FONT TO BE CENTURY GOTHIC, 15mm HEIGHT RAISED 2.5mm
10. THE FOLLOWING INFORMATION SHALL BE PLACED ON THE UNDERSIDE OF THE COVER:
    SUPPLIERS NAME & PRODUCT CODE
    BATCH NUMBER, DATE OF MANUFACTURE

NELSON CITY COUNCIL

NCC STANDARD PATTERN for 600mmø (NOMINAL) D.I. FRAME AND COVER

INFRASTRUCTURAL ASSETS

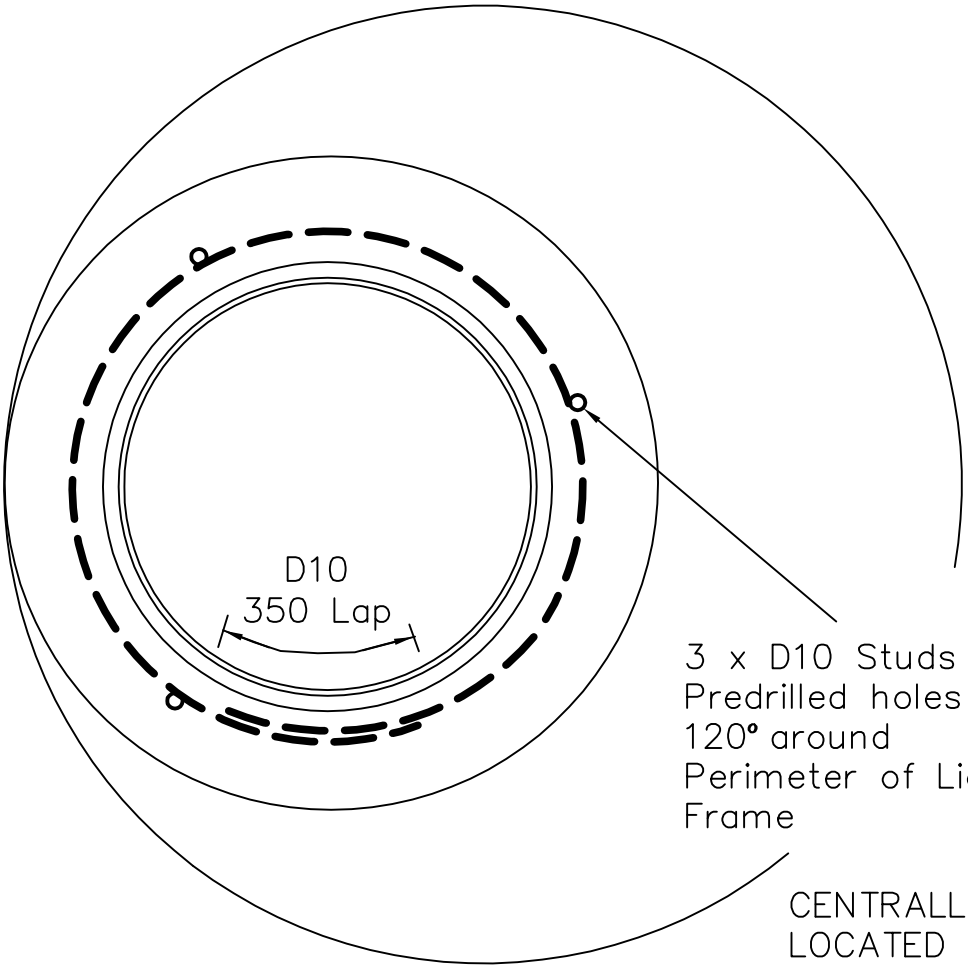
APPROVED

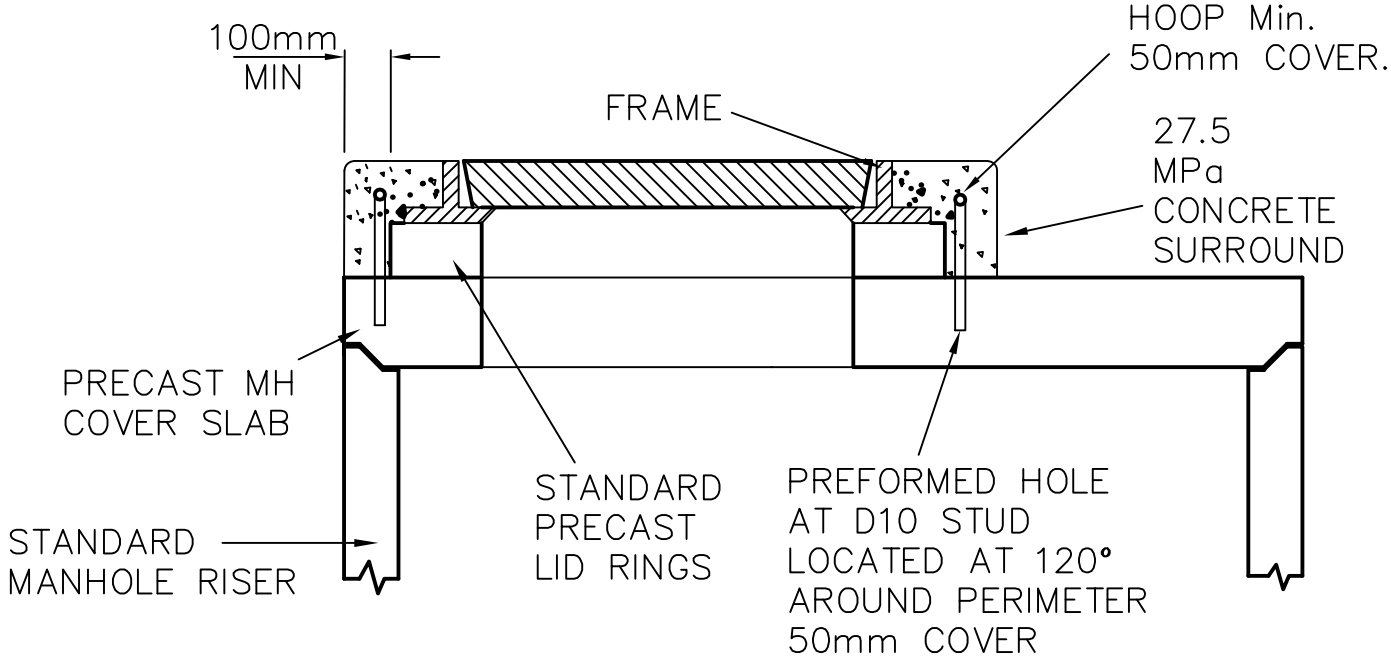
SENIOR EXECUTIVE INFRASTRUCTURE

29/07/2010
DATE

SD 608

PLAN





SECTION

NELSON CITY COUNCIL

MANHOLE FRAME & COVER FIXING

INFRASTRUCTURAL ASSETS

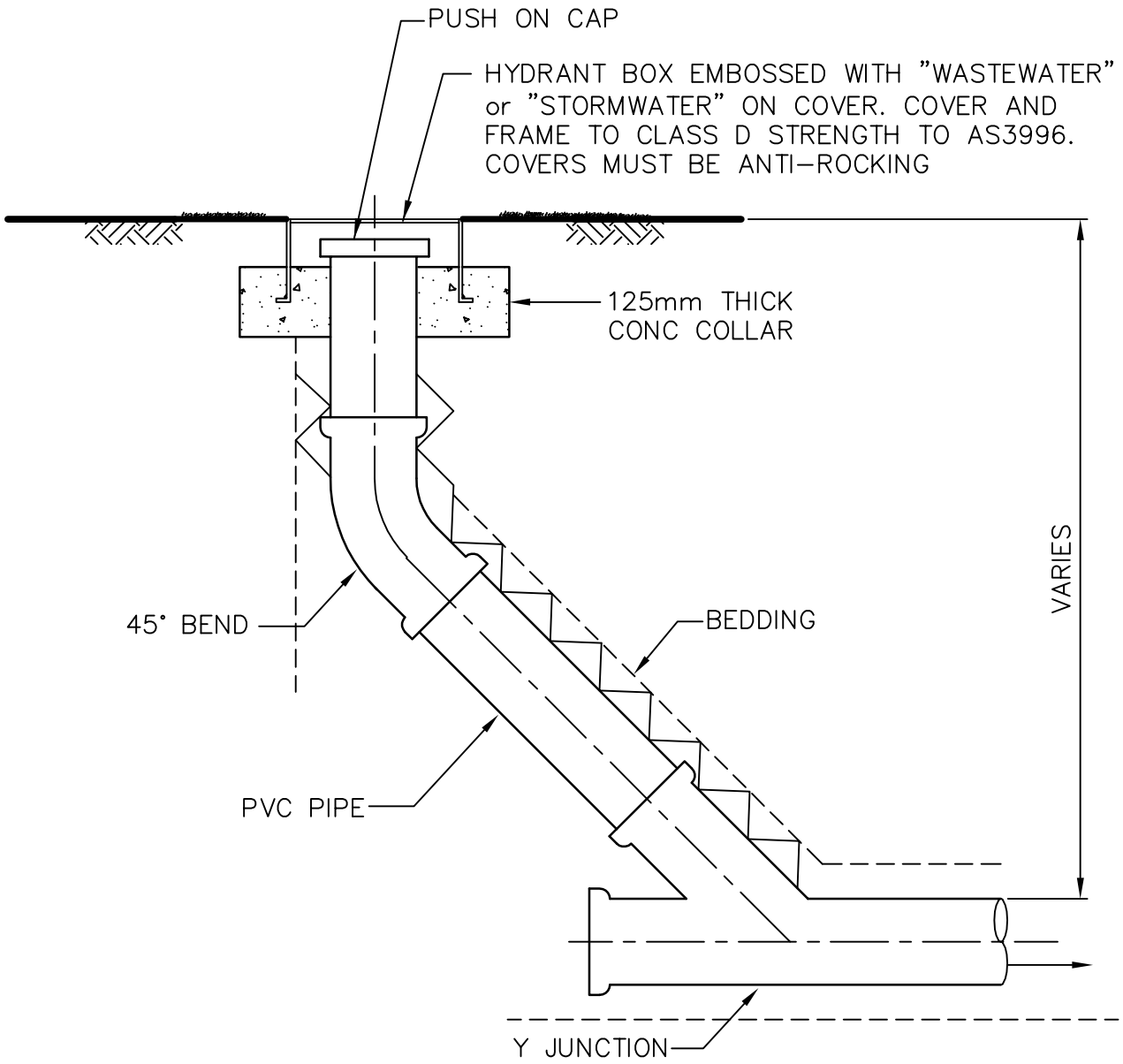
APPROVED

SENIOR EXECUTIVE INFRASTRUCTURE

29/07/2010

DATE

SD 609



FOR TRAFFIC LOADED RODING POINTS REFER TO STANDARD DRAWING 21/205 SHEET 2.

NOTES

1. RODING POINTS MAY BE USED IN LIEU OF MANHOLES IN ANY OR ALL OF THE FOLLOWING CIRCUMSTANCES:
   - A) AT CHANGE OF DIRECTION or GRADE. (BURIED, PRE-FORMED BENDS MAY BE USED IN LIEU OF RODING POINT WHERE THE CHANGE ON DIRECTION or GRADE IS CLOSER THAN 20m FROM A RODING POINT or MANHOLE
   - B) AT THE HEAD OF A WASTEWATER SYSTEM
   - C) AT THE TOP OF STEEP BANKS WHERE A STANDARD MANHOLE WOULD BE IMPRACTICAL

NELSON CITY COUNCIL

RODING POINT (NON TRAFFIC LOADED)

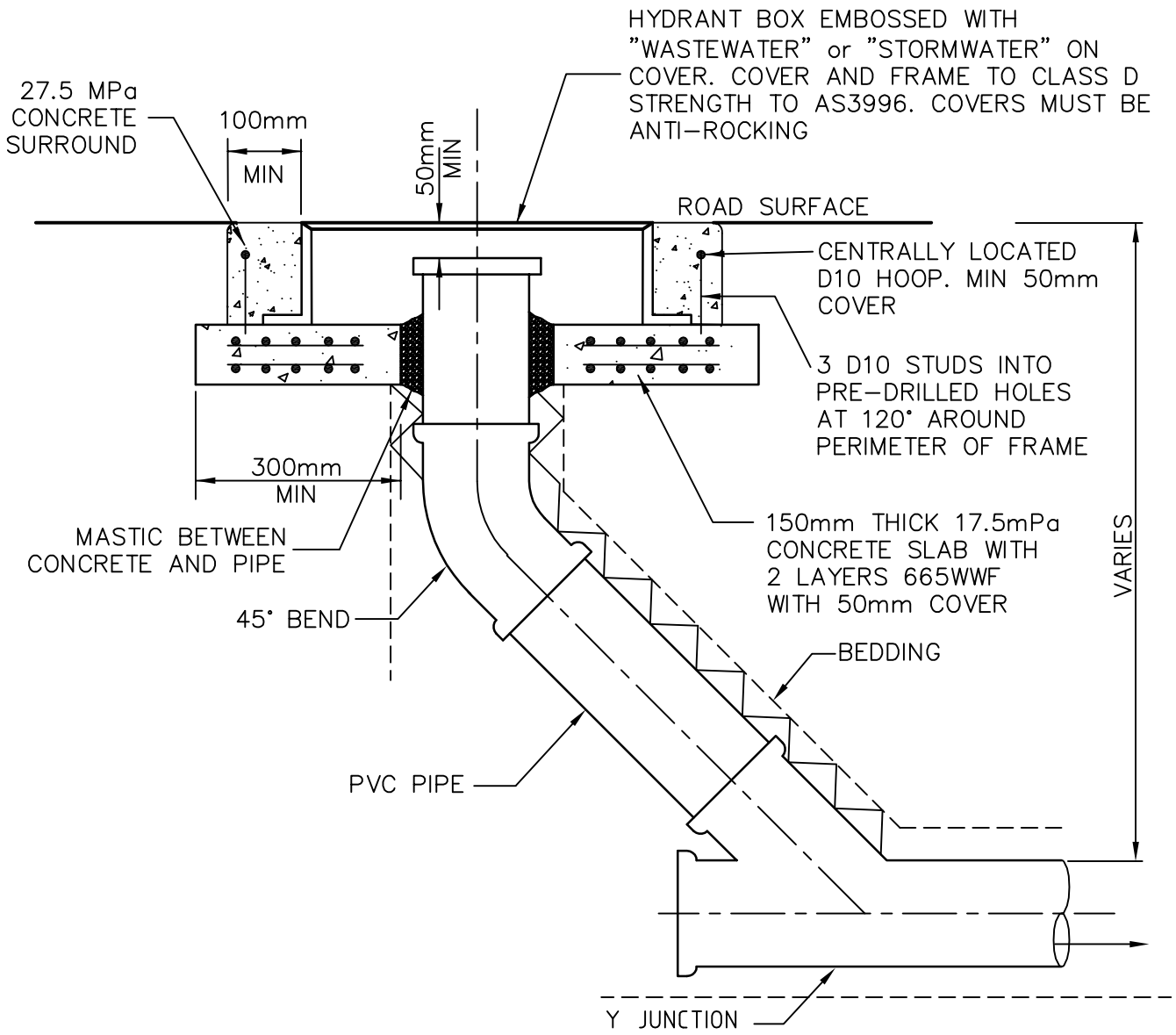
INFRASTRUCTURAL ASSETS

APPROVED

29/07/2010

SENIOR EXECUTIVE INFRASTRUCTURE — DATE

SD 610



FOR NON TRAFFIC LOADED RODING POINTS, REFER TO SD 601

NOTES

1. RODING POINTS MAY BE USED IN LIEU OF MANHOLES IN ANY OR ALL OF THE FOLLOWING CIRCUMSTANCES:
   - A) AT CHANGE OF DIRECTION or GRADE. (BURIED, PRE-FORMED BENDS MAY BE USED IN LIEU OF RODING POINT WHERE THE CHANGE ON DIRECTION or GRADE IS CLOSER THAN 20m FROM A RODING POINT or MANHOLE)
   - B) AT THE HEAD OF A WASTEWATER SYSTEM
   - C) AT THE TOP OF STEEP BANKS WHERE A STANDARD MANHOLE WOULD BE IMPRACTICAL

NELSON CITY COUNCIL

RODING POINT (TRAFFIC LOADED)

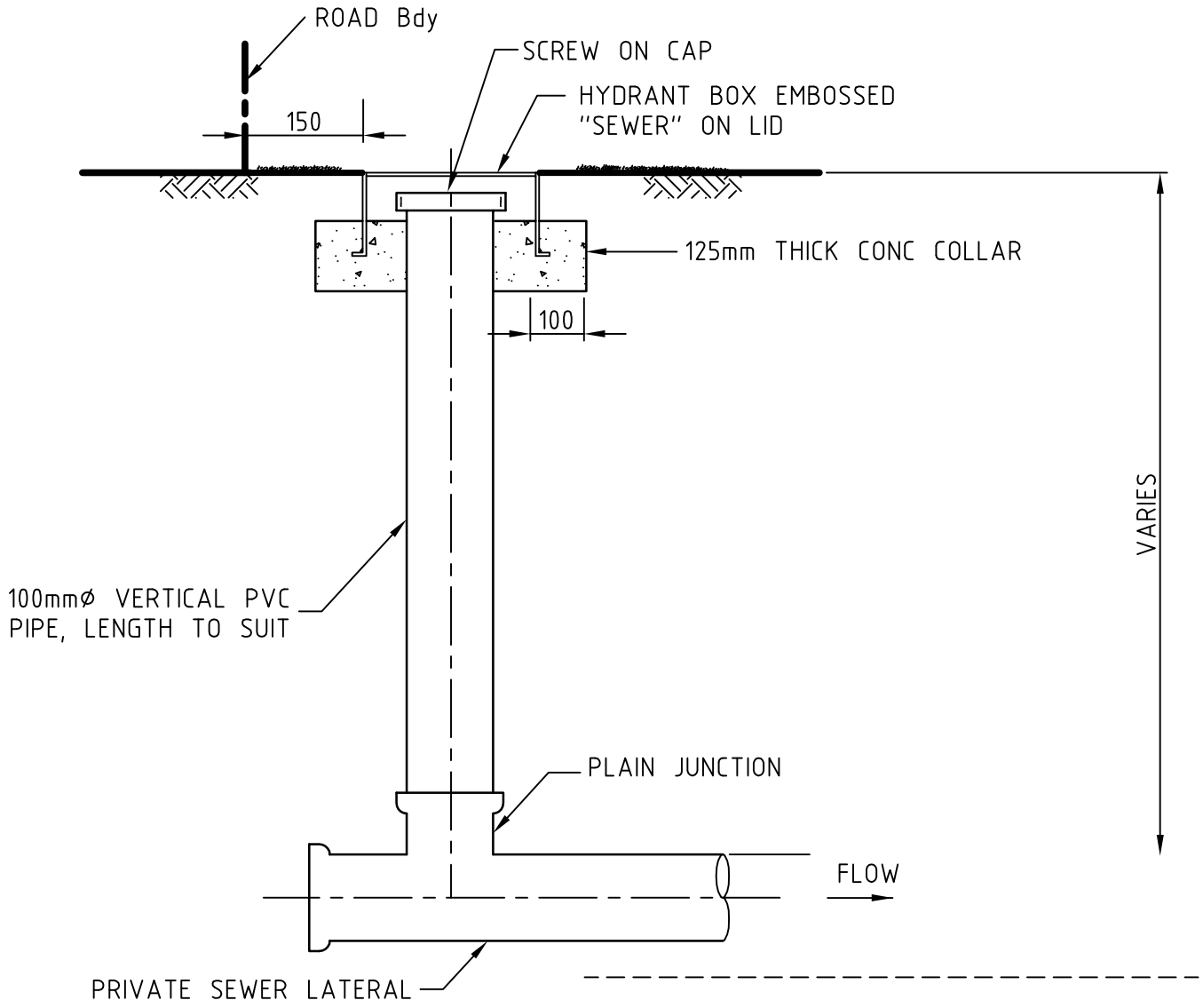
INFRASTRUCTURAL ASSETS

APPROVED

29/07/2010

SENIOR EXECUTIVE INFRASTRUCTURE — DATE

SD 611



NOTES

1. IF USED IN AREAS SUBJECT TO VEHICULAR TRAFFIC, THEN USE A TRAFFIC LOADED LID DESIGN, AS PER 21/205 SHEET 2
2. INSPECTION T's SHALL BE POSITIONED 150mm ON THE ROAD RESERVE SIDE OF THE BOUNDARY

NELSON CITY COUNCIL

INSPECTION TEE

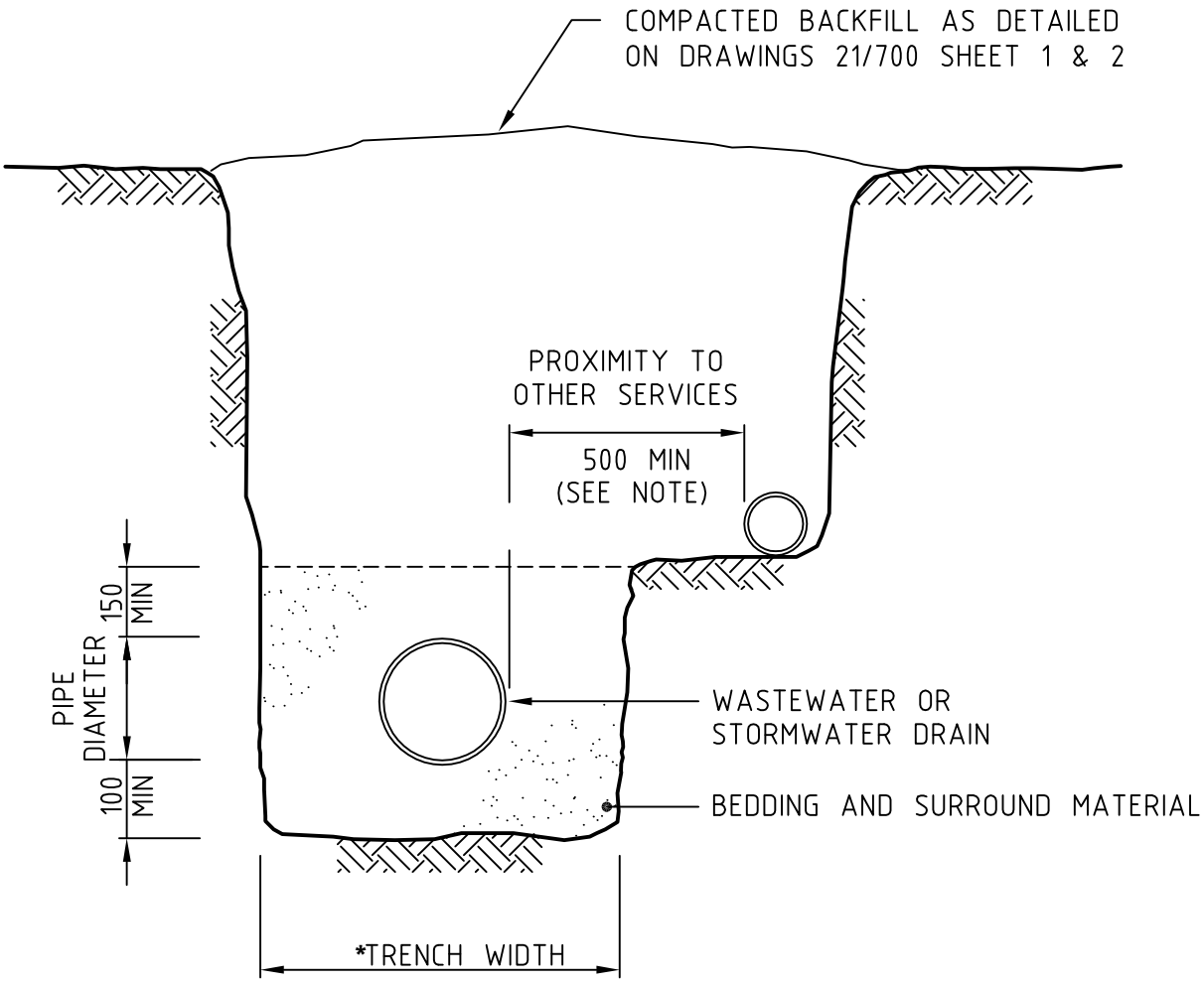
INFRASTRUCTURAL ASSETS

APPROVED

29/07/2010

SENIOR EXECUTIVE INFRASTRUCTURE — DATE

SD 612



NOTES:

1. SEE SD 617 & SD 523 FOR TRENCH WIDTHS

2. THE TRENCH WIDTH SHALL BE THE MINIMUM NECESSARY TO ADEQUATELY AND SAFELY LAY THE PIPE AND TO COMPACT THE SIDE SUPPORT ZONE

3. A MINIMUM HORIZONTAL SEPARATION OF 300mm MAY BE USED WHERE 500mm IS NOT PRACTICAL

NELSON CITY COUNCIL

DRAINAGE SHARED TRENCH CLEARANCES

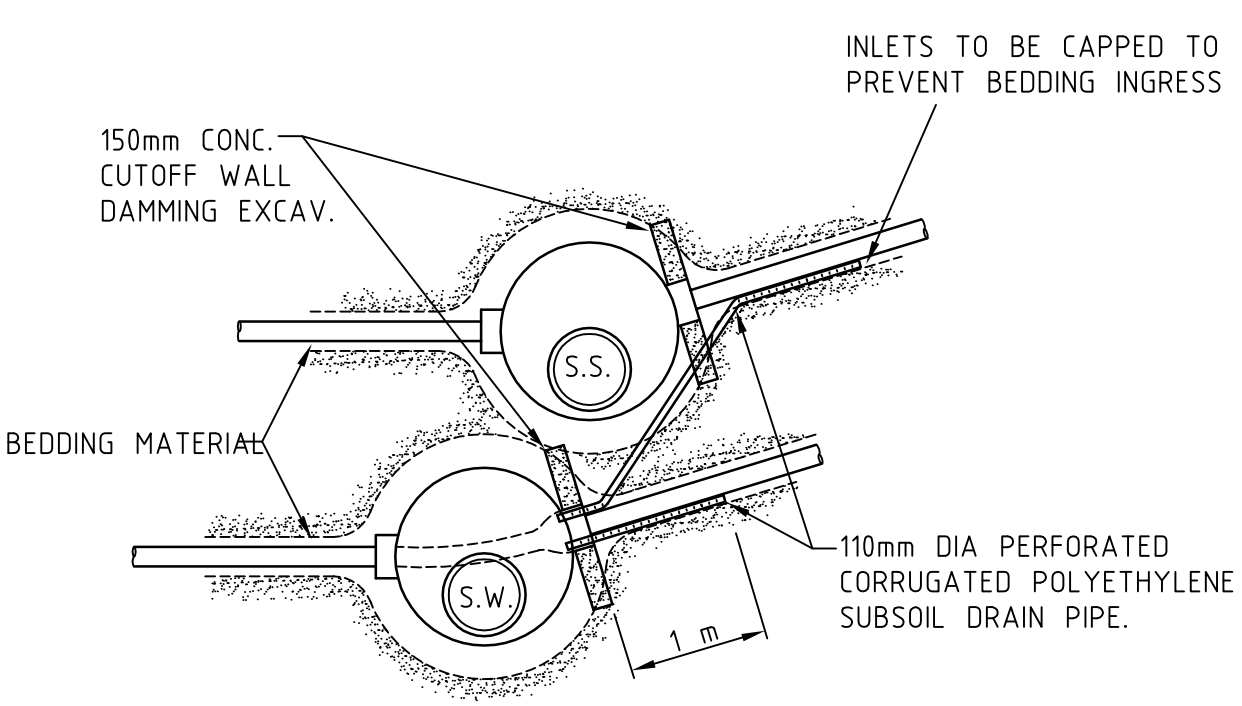
INFRASTRUCTURAL ASSETS

APPROVED

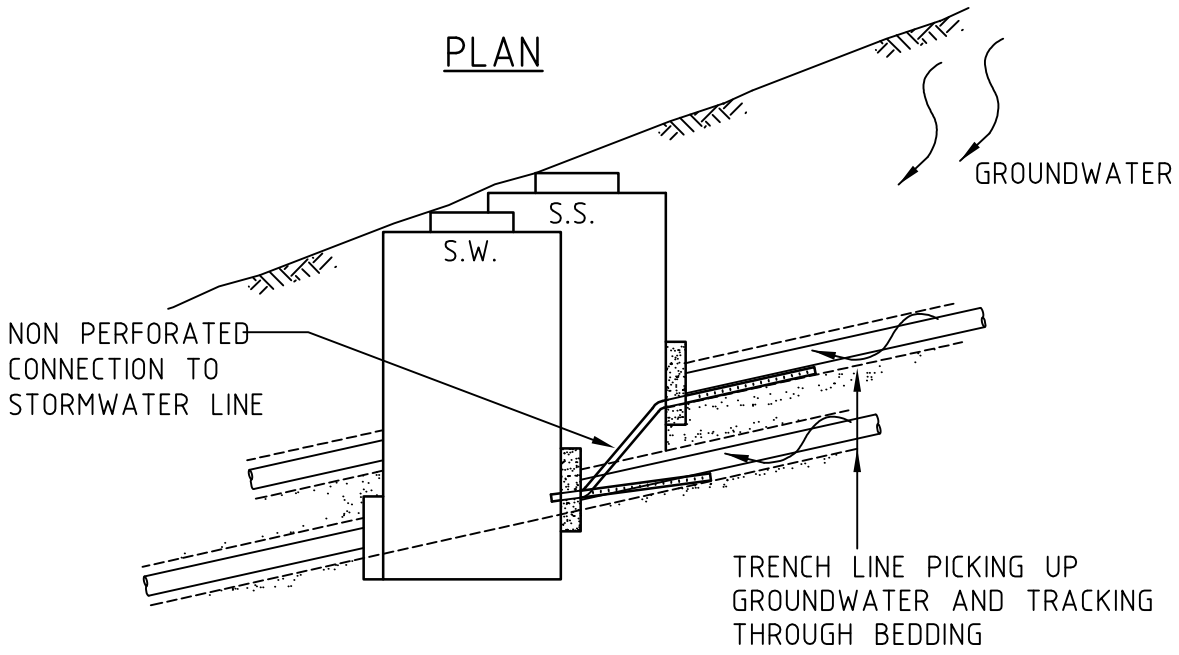
29/07/2010

SENIOR EXECUTIVE INFRASTRUCTURE — DATE

SD 613



PLAN

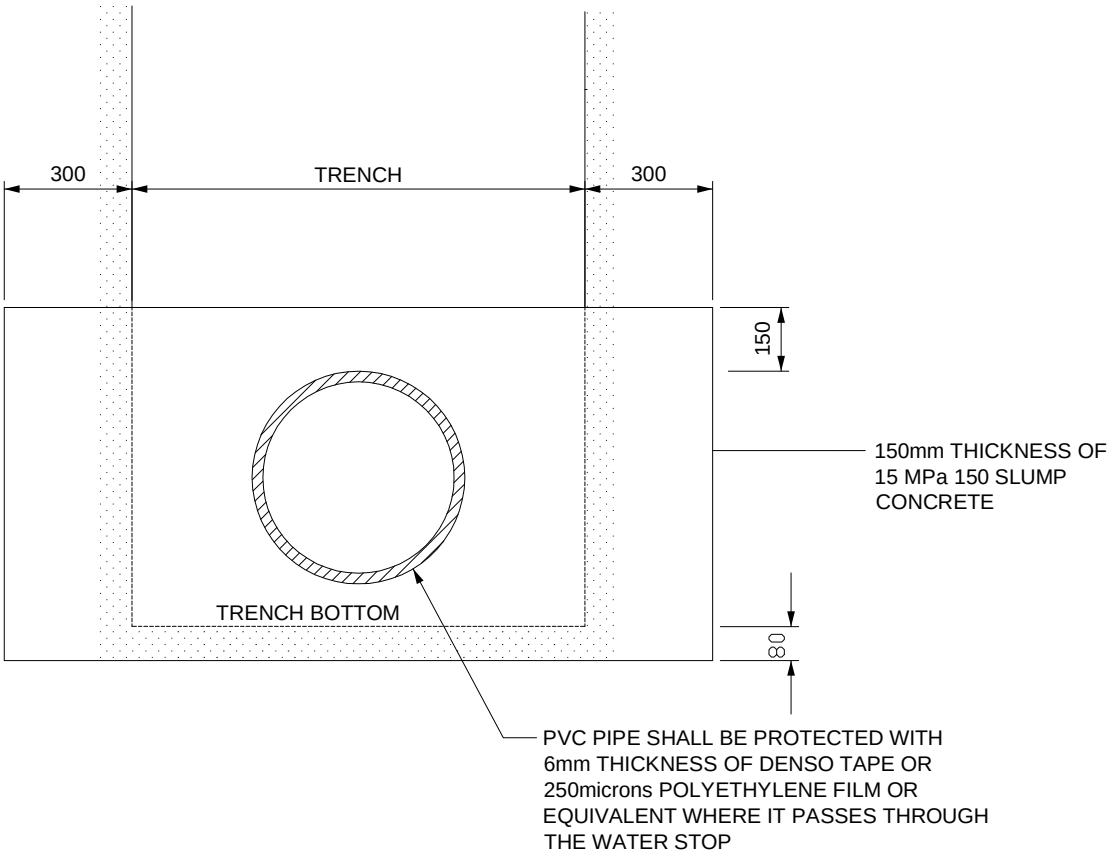


ELEVATION

NOTE:

1. SIMILAR PROVISION FOR DRAINAGE OF CABLE AND WATER TRENCHS MAY BE REQUIRED.
2. STORMWATER TRENCHES TO BE LAID SLIGHTLY DEEPER THAN SEWER TRENCHES WHERE POSSIBLE.
3. WHERE DRAINAGE OF THE WASTEWATER IS NOT POSSIBLE, ADDITIONAL WATERTIGHT CONSTRUCTION AS PER 21/204 SHEET 6 WILL BE REQUIRED. ALTERNATELY, AN APPROVED THERMOPLASTIC MANHOLE MAY BE PERMITTED.

NELSON CITY COUNCIL	TRENCH DRAINAGE DETAILS	
	INFRASTRUCTURAL ASSETS APPROVED SENIOR EXECUTIVE INFRASTRUCTURE	29/07/2010 DATE
		SD 614



NOTES:

1. WATER STOPS SHALL GENERALLY BE AT THE FOLLOWING SPACINGS:

PIPE GRADIENT	MAXIMUM SPACING (metres)
1 : 15 or steeper	12
1 : 25	15
1 : 50	30
1 : 100	60

PROVIDED:

a. INTERMEDIATE GRADES ARE DETERMINED BY INTERPOLATION

b. MANHOLES POURED AGAINST A TRIMMED EXCAVATION MAY BE RECKONED AS WATER STOPS

c. WHERE A FLATTER GRADE OCCURS BELOW A STEEPER GRADE, AT LEAST ONE FURTHER WATER STOP SHALL BE LOCATED ON THE UPPER SECTION OF THE FLATTER GRADE AT A DISTANCE FROM THE CHANGE IN GRADE EQUAL TO THE ABOVE TABLE SPACING FOR THE STEEPER GRADE

NELSON CITY COUNCIL

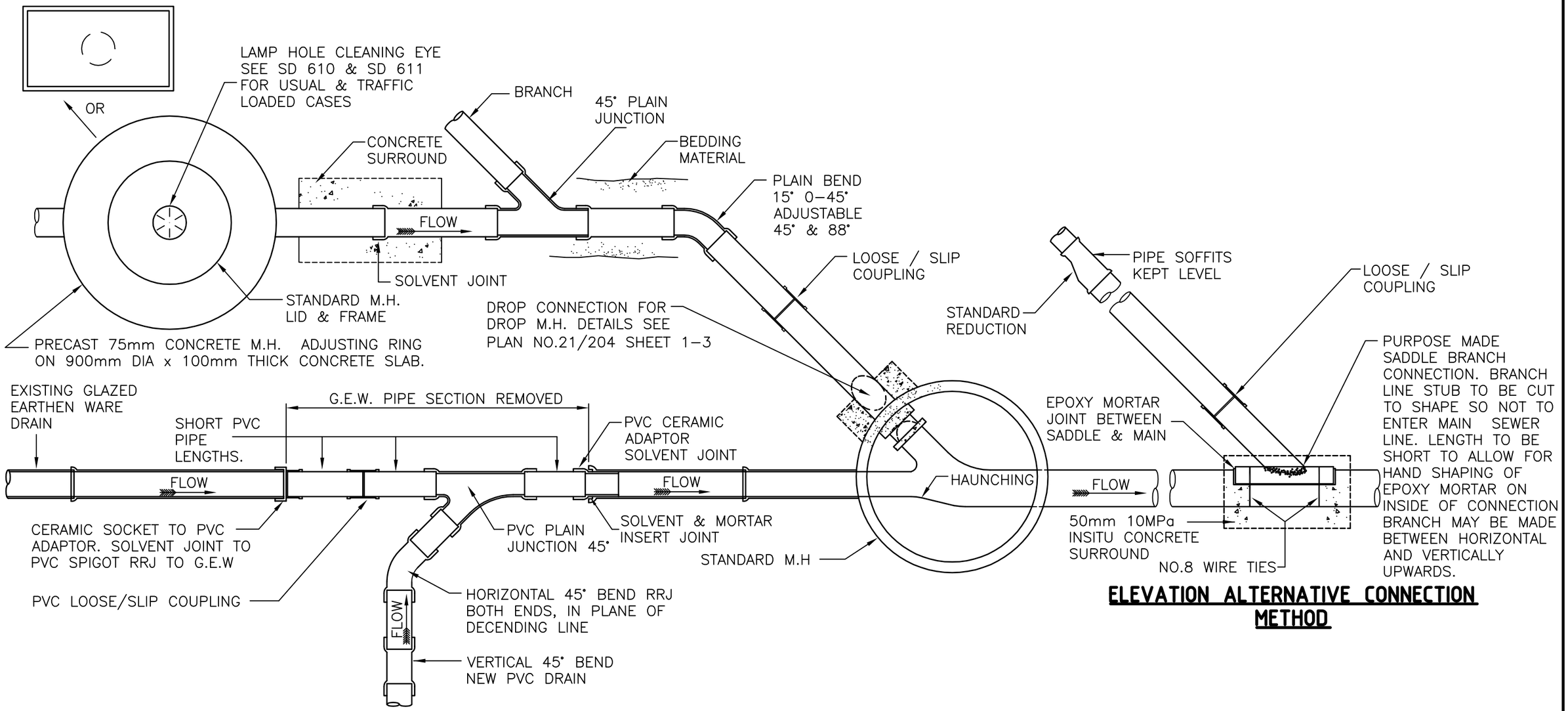
WATER STOPS

INFRASTRUCTURAL ASSETS

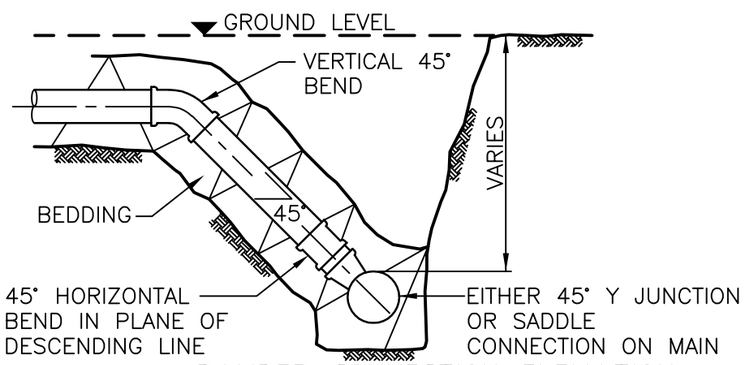
APPROVED 29/07/2010

SENIOR EXECUTIVE INFRASTRUCTURE DATE

SD 615



ELEVATION ALTERNATIVE CONNECTION METHOD



RAMPED CONNECTION ELEVATION

SCHEMATIC OF ELEMENTS USED IN PVC DRAIN CONSTRUCTION

PREFERRED CONNECTION METHOD

SIMILAR SYSTEM TO BE USED CONNECTING INTO EXISTING PVC PIPELINES. PVC CONNECTIONS AS DETAILED TO BE USED IN NEW PVC DRAINS.

NELSON CITY COUNCIL

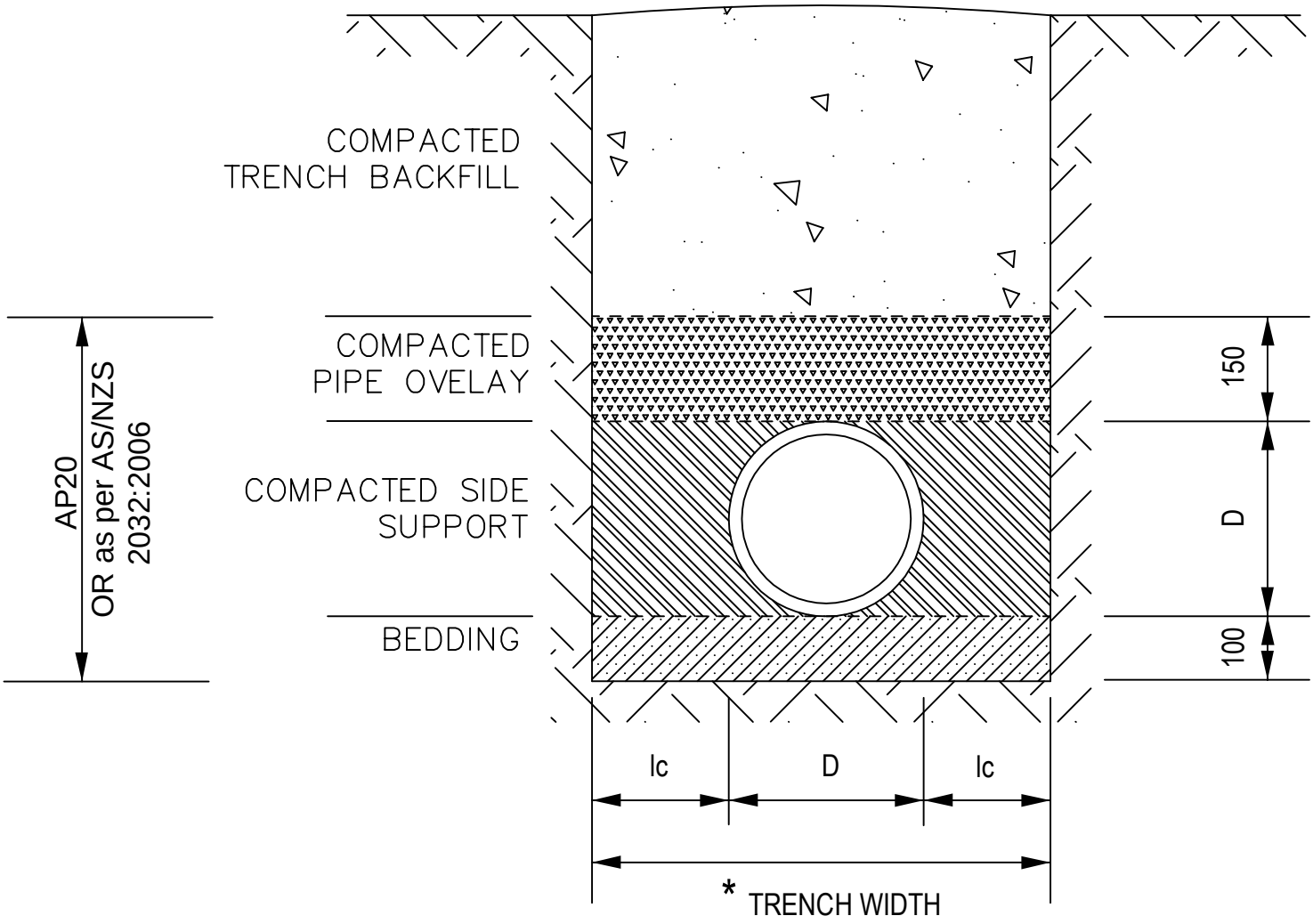
STANDARD PVC PIPE DETAILS

INFRASTRUCTURAL ASSETS

APPROVED 29/07/2010

SENIOR EXECUTIVE INFRASTRUCTURE DATE

SD 616



*TRENCH WIDTH

NOMINAL DIAMETER DN (mm)	MINIMUM TRENCH SIDE CLEARANCE " lc " TO AS/NZS 2566	* MAXIMUM
UP TO 150	100	600
200 - 250	150	600
300 - 375	200	775

THE TRENCH WIDTH SHALL BE THE MINIMUM NECESSARY TO ADEQUATELY AND SAFELY LAY THE PIPE AND TO COMPACT THE SIDE SUPPORT ZONE

NELSON CITY COUNCIL

PIPE BEDDING for PVC, PE & OTHER FLEXIBLE PIPES

INFRASTRUCTURE DIVISION

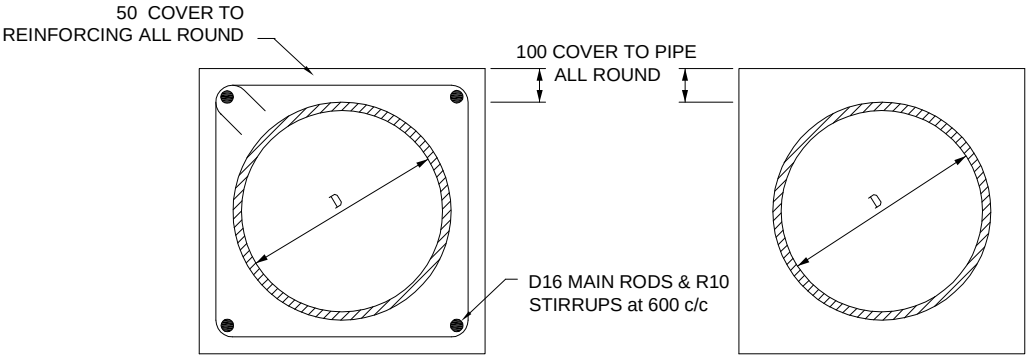
APPROVED

SENIOR EXECUTIVE INFRASTRUCTURE

29/07/2010

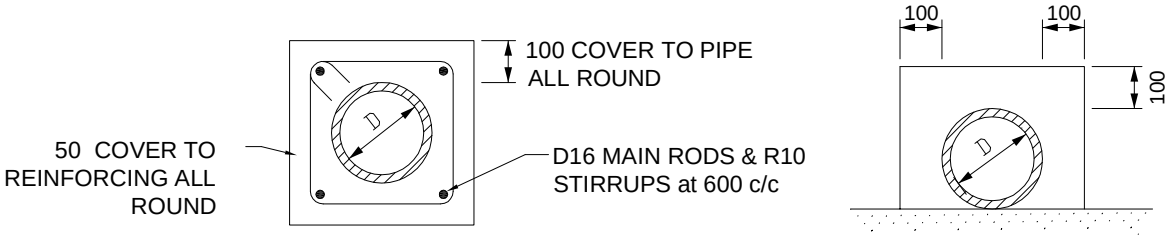
DATE

SD 617



REINFORCED
CONCRETE SURROUND
D=150Ø to 450Ø
TYPE A

PLAIN CONCRETE
SURROUND
D=150Ø to 450Ø
TYPE B



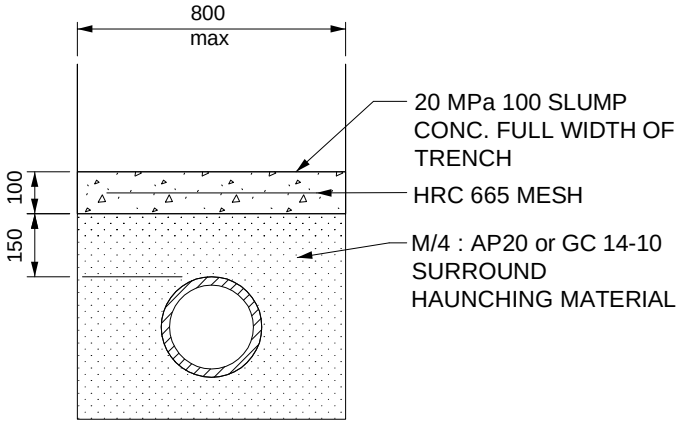
REINFORCED
CONCRETE SURROUND
D=100Ø
TYPE C

CONCRETE COVER
D=100Ø
TYPE D

NOTES:
1. FOR DIAMETERS GREATER THAN 450MM SPECIAL DESIGN APPLIES.
2. CONCRETE SHALL BE 20 MPa 100 SLUMP WITH A TOLERANCE OF +0,-20mm.
3. TYPE OF SURROUND SHALL BE SPECIFIED.
4. CONCRETE SURROUND SHALL TERMINATE AT A PIPE JOINT.
5. CONTRACTION JOINTS SHALL BE FORMED AT PIPE JOINTS BY INTERRUPTING CONCRETE WITH 12mm SOFTBOARD OR EQUIVALENT AND APPLYING APPROVED SEALANT TO THE PIPE JOINT TO PREVENT ENTRY OF CONCRETE. ANY REINFORCING STEEL SHALL BE STOPPED UNHOOKED 50mm FROM JOINT.
6. CONTRACTION JOINT SPACING - MAXIMUM:

	R.C.R.R.
TYPE A	10m
TYPE B	5m
TYPE C	} Engineer to
TYPE D	} Specify

7. WITH PVC PIPE TYPE E PROTECTION TO BE USED UNLESS OTHERWISE SPECIFIED.



CONCRETE COVER SLAB
MAXIMUM PIPE SIZE 375Ø
TYPE E

NELSON CITY COUNCIL

PIPE CONCRETE SURROUND & COVER SLAB

INFRASTRUCTURAL ASSETS

APPROVED 29/07/2010

SENIOR EXECUTIVE INFRASTRUCTURE ..... DATE

SD 618