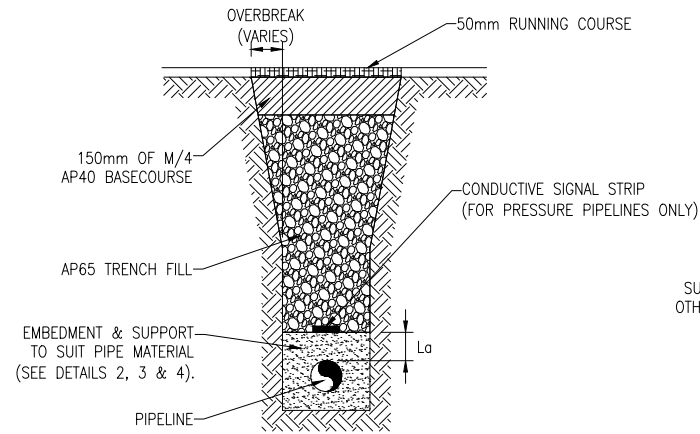
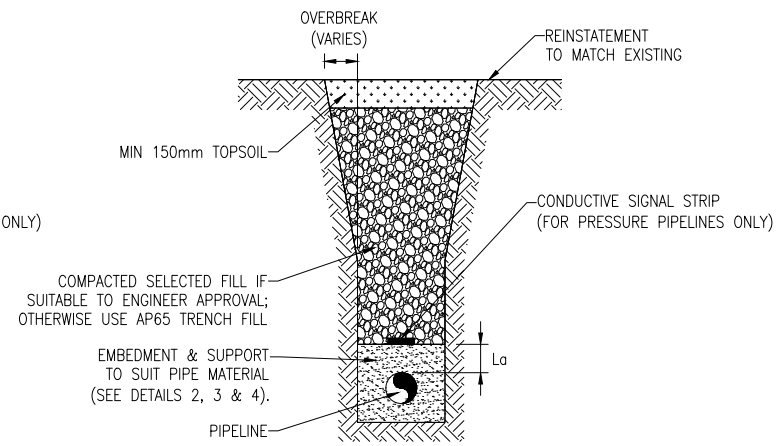


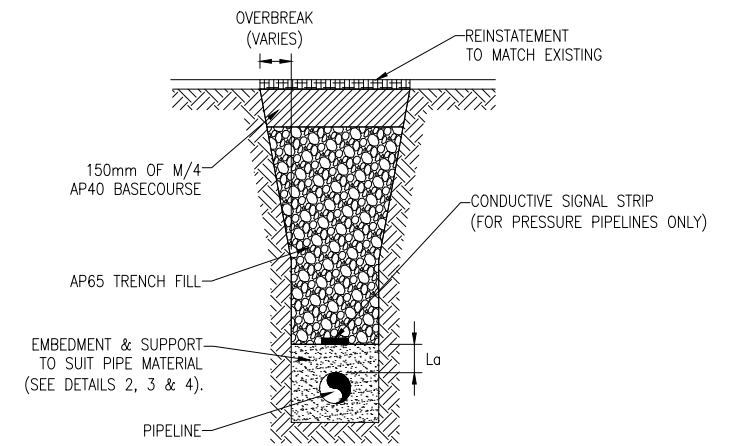
DETAIL 1A
UNDER SEALED ROADS
SCALE 1:20



DETAIL 1B
UNDER METAL ROADS
SCALE 1:20

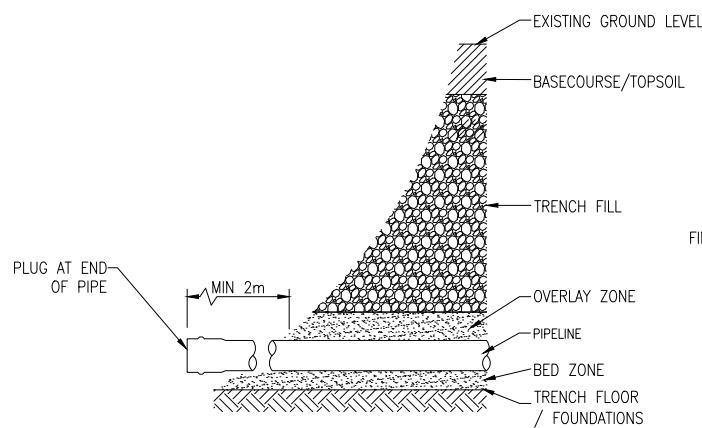


DETAIL 1C
UNDER BERMS AND GRASSED AREAS
SCALE 1:20

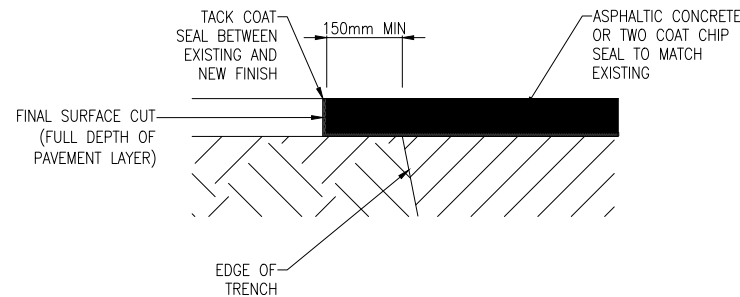


DETAIL 1D
UNDER DRIVEWAYS AND FOOTPATHS
SCALE 1:20

DETAIL 1
EMBEDMENT, TRENCH FILL AND REINSTATEMENT DETAILS

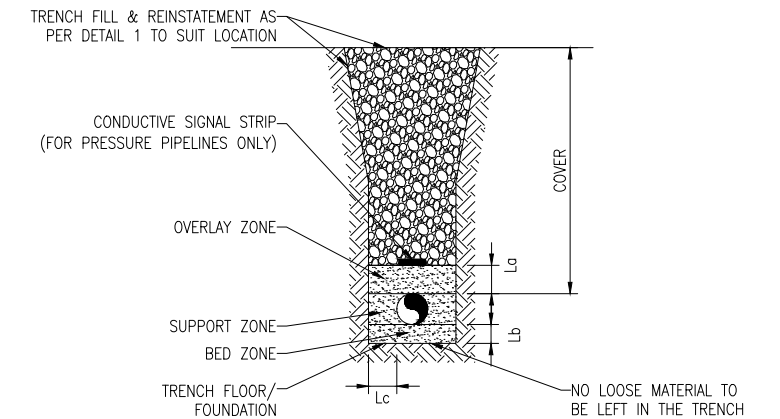


DETAIL 1E
TEMPORARY REINSTATEMENT – SEE NOTES
SCALE 1:20



DETAIL 1F
TACK COAT DETAIL
SCALE 1:10

Parameter	Requirement	
La	150mm MIN IN ALL AREAS FOR DN ≤ 300mm	
Lb	100mm MIN PIPES DN ≤ 600mm AND TO ENSURE THAT PIPE JOINT PROJECTIONS HAVE A MINIMUM OF 50mm BEDDING.	
Lc	NOMINAL DIAMETER DN	MINIMUM CLEARANCE (Lc)
	≤150	100
	>150 – ≤300	150
	>300 – ≤450	200
	>450 – ≤900	300
>900 – ≤1500	350	
COVER	GRAVITY SEWER	UNLESS SPECIFIED ELSEWHERE, MIN 800mm
	PRESSURE PIPE MAINS/ RIDERMAINS	BERM AND GRASSED AREAS – MIN 800, MAX 1500 ROAD RESERVE – MIN 900, MAX 1500 FOOTPATHS – MIN 800, MAX 1500



DETAIL 2A
EMBEDMENT AND SUPPORT DETAILS
FLEXIBLE PIPELINES (PE/PVC-U/GRP)

DETAIL 2
FLEXIBLE PIPELINES TRENCH DETAILS

DETAIL 1 NOTES:

- EMBEDMENT, TRENCH FILL AND REINSTATEMENT AS PER CONTRACT SPECIFICATIONS.
- TRENCH FILL SHALL AT ALL TIMES BE MORE THAN 2m FROM THE EDGE OF THE OVERLAY.
- ANY TRENCH FILL/BASECOURSE/TOPSOIL THAT FALLS INTO THE BEDDING OR TRENCH FLOOR SHALL BE REMOVED IMMEDIATELY.
- THE TRENCH FILL MATERIAL SHALL NOT, AT ANY STAGE, BE EXTENDED TO THE TOP OF THE TRENCH, EVEN TEMPORARILY.
- THE CONTRACTOR IS TO ENSURE THAT THE INSIDE OF THE PIPELINES ARE KEPT FREE OF ALL MATERIAL AT ALL TIMES. ALL MATERIAL IS TO BE REMOVED IMMEDIATELY.
- THE CONTRACTOR IS TO ENSURE THAT THE PIPELINE IS CLEANED AND FREE OF ALL CONSTRUCTION DEBRIS BEFORE RE-ESTABLISHING ANY FLOWS.
- PIPE SHOWN IS DN150 PVC-U

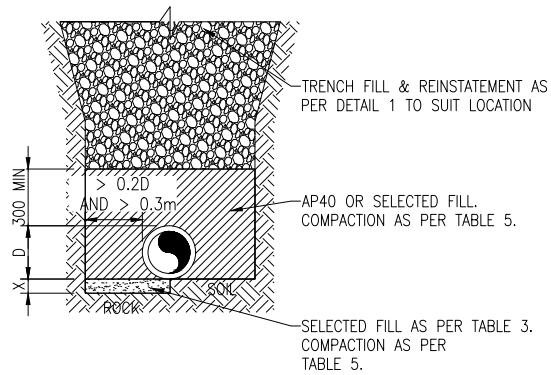
TABLE 2: COMPACTION

SOIL TYPE	TEST METHOD	TRAFFICABLE AREAS		NON TRAFFICABLE AREAS	
		EMBEDMENT MATERIAL %	TRENCH/ EMBANKMENT FILL MATERIAL %	EMBEDMENT MATERIAL %	TRENCH/ EMBANKMENT FILL MATERIAL %
COHESIONLESS	DENSITY INDEX	70	70	60	COMPACTION WILL DEPEND ON SITE REQUIREMENTS
COHESIVE	STANDARD DRY DENSITY RATIO (RD), HILF DENSITY RATIO (R HD)	95	95	90	

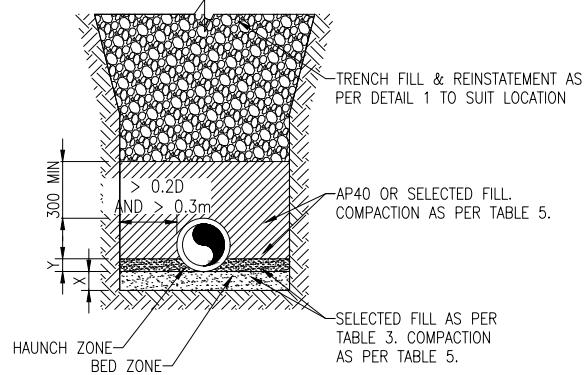
DETAIL 2 NOTES:

- PIPELINE INSTALLATION TO AS/NZS 2566.2 AND TDC DRAINAGE AND WATER CODE OF PRACTICE.
- TRENCH WIDTHS ARE AS PER TABLE 1 AND SHALL BE SUFFICIENT TO SAFELY LAY THE PIPE AND ADEQUATELY COMPACT THE SUPPORT ZONE.
- COMPACTION OF THE BED, SUPPORT AND OVERLAY ZONES IS TO BE AS PER TABLE 2.
- THE CONTRACTOR IS TO CHECK THE SUITABILITY OF THE TRENCH FLOOR/FOUNDATION BEFORE PLACING THE BED ZONE AND REPORT UNSUITABLE FOUNDATION TO THE ENGINEER.
- THE ENGINEER WILL INSTRUCT THE CONTRACTOR ON HOW TO REMOVE ANY UNSUITABLE FOUNDATION MATERIAL.
- TRENCH EXCAVATION AND REINSTATEMENT SHALL BE CARRIED OUT IN ACCORDANCE WITH APPROVED CODE OF PRACTICE FOR SAFETY IN EXCAVATION AND SHAFTS FOR FOUNDATIONS.

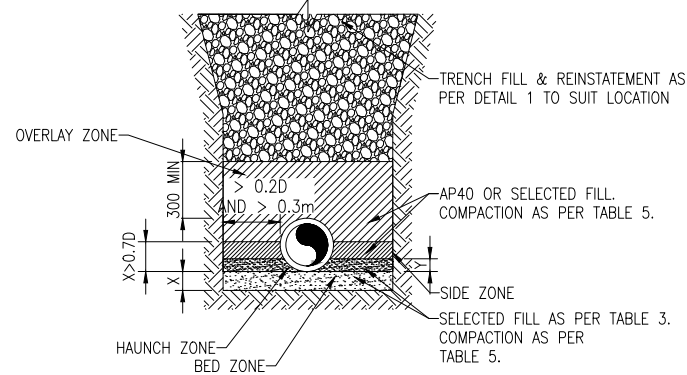
SURVEY FILE: WATER BV 04/11 SURVEYED - DATA SOURCE: DRAINAGE BV 04/11 DESIGNED RRP 04/09 LEVEL DATUM: ROADING DESIGN CHECK ANW 04/09 PARKS DRAWN RRP 04/09 ELEC.PWR DRG CHECK AD 04/09 TELECOM PLANNING APPROVED		INITIAL DATE NAME DATE ORIGINAL SCALE (A1): BV 04/11 - - BV 04/11 RRP 04/09 ANW 04/09 RRP 04/09 AD 04/09 APPROVED		AS SHOWN TIMARU DISTRICT COUNCIL 2 King George Place P.O. Box 522 Timaru 7940 Telephone: 03 687 7200 Website: www.timaru.govt.nz		PROJECT: STANDARD DETAILS TITLE: TRENCH, EMBEDMENT, TRENCH FILL & REINSTATEMENT - REINSTATEMENT & FLEXIBLE PIPE DETAILS CONTRACT NUMBER: 5301 DRAWING NUMBER: 1 OF 2 REVISION: 4	
--	--	---	--	---	--	--	--



DETAIL 3A
TYPE 'U' SUPPORT



DETAIL 3B
TYPE 'H1' AND 'H2' SUPPORT



DETAIL 3C
TYPE 'HS' SUPPORT

DETAIL 3 NOTES:

- DRAWING BASED ON AS/NZS 3725:2007. WHERE DRAWING DIFFERS FROM THIS STANDARD, THIS DRAWING TAKES PRECEDENCE.
- FOR EMBEDMENT OF PIPE IN AN EMBANKMENT, REFER TO AS/NZS 3725:2007.
- ALL SELECTED FILL SHALL:
 - NOT CONTAIN ANY MATERIAL >75mm IN SIZE.
 - NOT CONTAIN STONES >40mm IN SIZE.
 - NOT CONTAIN ANY ORGANIC MATTER.
 - MEET THE GRADING LIMITS OF TABLE 3 OR 4 WHERE SPECIFIED.
 - BE PROVEN TO BE SUITABLE BY THE CONTRACTOR.
 - BE APPROVED BY THE ENGINEER IN WRITING.
- UNLESS OTHERWISE SPECIFIED, SUPPORT SHALL BE:
 - TYPE "U" FOR PIPES IN UNTRAFFICKED GREENFIELD AREAS.
 - TYPE "H2" FOR PIPES NOT WITHIN THE CARRIAGEWAY OR ROAD.
 - TYPE "HS" FOR PIPES WITHIN THE CARRIAGEWAY.
- PIPE SHOWN IS DN225 CLASS 2

DETAIL 3
SUPPORT DETAIL FOR CONCRETE PIPES

TABLE 3: GRADING LIMITS FOR SELECT FILL IN BED AND HAUNCH ZONES

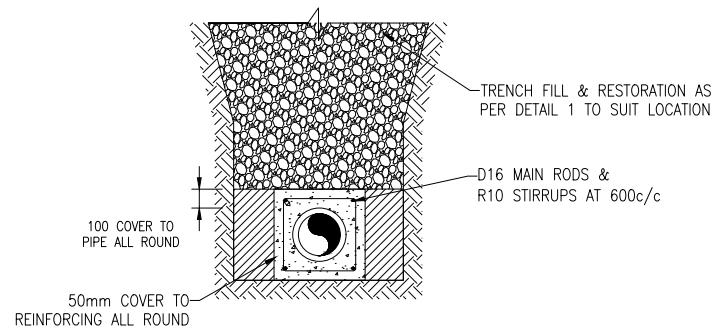
SIEVE SIZE (mm)	WEIGHT PASSING (%)
19.0	100
2.36	100 TO 50
0.60	90 TO 20
0.30	60 TO 10
0.15	25 TO 0
0.075	10 TO 0

TABLE 4: GRADING LIMITS FOR SELECT FILL IN SIDE ZONE

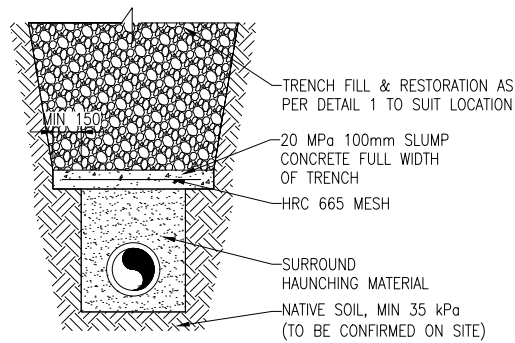
SIEVE SIZE (mm)	WEIGHT PASSING (%)
75.0	100
9.5	100 TO 50
2.36	100 TO 30
0.60	50 TO 15
0.075	25 TO 0

TABLE 5: DIMENSIONS & COMPACTION FOR U, H AND HS SUPPORTS

SUPPORT TYPE	MINIMUM DEPTH, mm		MINIMUM ZONE COMPACTION, %		
	BED ZONE	HAUNCH ZONE	BED AND HAUNCH ZONES	SIDE AND OVERLAY ZONES	
	X	Y	X & Y	AP40/ COHESIONLESS MATERIAL	COHESIVE MATERIAL
U	75	-	-	-	-
H	H1	100 IF D ≤ 1500; OR 150 IF D > 1500	0.1D	50	-
	H2	150 IF D > 1500	0.3D	60	-
HS	HS1	100 IF D ≤ 1500; OR 150 IF D > 1500	0.1D	50	85
	HS2	150 IF D > 1500	0.3D	60	90
	HS3	150 IF D > 1500	0.3D	70	95

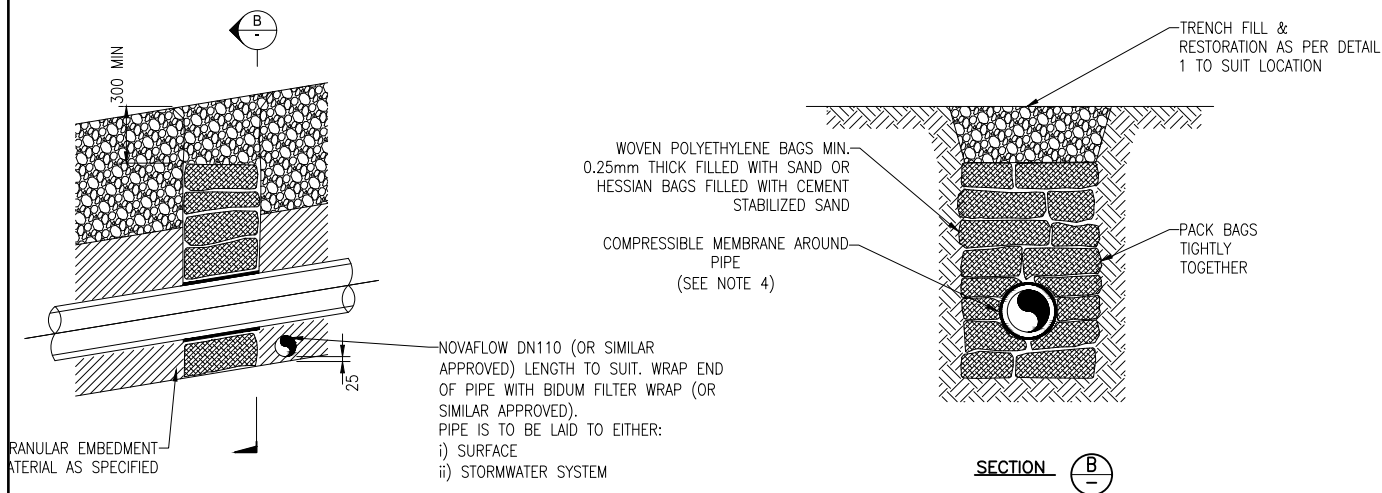


DETAIL 4A
REINFORCED CONCRETE SURROUND FOR DN 150 – DN 450 (RIGID PIPE)



DETAIL 4B
CONCRETE PROTECTION SLAB
MAXIMUM PIPE DN 375 (FLEXIBLE PIPE & VC PIPES)

DETAIL 4
PIPE PROTECTION



DETAIL 5
WATER STOPS

DETAIL 5 NOTES:

- WATER STOPS SHALL GENERALLY BE AT THE FOLLOWING SPACINGS:

PIPE GRADIENT	MAXIMUM SPACING (m)
>1:5	5

PROVIDED:

- INTERMEDIATE GRADES ARE DETERMINED BY INTERPOLATION.
 - MANHOLES POURED AGAINST A TRIMMED EXCAVATION MAY BE RECKONED AS WATER STOPS.
 - 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 UPPER GRADE.
- DO NOT DEFORM PIPES DURING PLACEMENT OF BAGS.
 - SEAL BAGS TO PREVENT LEAKAGE OF CONTAINED MATERIAL.
 - COMPRESSIVE MEMBRANE AROUND PIPE TO BE 10mm THICK POLYSTYRENE FOR BULKHEADS ADJACENT TO KERBS AND 3mm THICK RUBBER FOR BULKHEADS AND TRENCHES ON SLOPES.

DETAIL 4 NOTES:

- FOR PIPES GREATER THAN DN450 SPECIAL DESIGN APPLIES.
- CONCRETE SHALL BE 20MPa 100mm SLUMP WITH A TOLERANCE OF +0, -20mm.
- TYPE OF SURROUND SHALL BE SPECIFIED
- CONCRETE SURROUND SHALL TERMINATE AT A PIPE JOINT.
- 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 SHALL BE STOPPED UNHOOKED 50mm FROM JOINT.
- CONTRACTION JOINT SPACING – MAXIMUM:

	R.C.R.R OR VERTICALLY CAST	CERAMIC PIPES
TYPE A	10m	3.2m
TYPE B	5m	1.6m
TYPE C	ENGINEER TO SPECIFY	3.2m
TYPE D	ENGINEER TO SPECIFY	1.6m
- WITH FLEXIBLE PIPE, DETAIL 4B PROTECTION TO BE USED UNLESS OTHERWISE SPECIFIED.

No.	REVISION	BY	CHK	APP	DATE
4	WATER STOP REQUIREMENT	WC			09/16
3	ISSUED FOR APPROVAL	BMC			11/11
2	UPDATED	KH	SC		09/11
1	DRAFT ISSUE	BMC			05/11

INITIAL	DATE	NAME	DATE	ORIGINAL SCALE (A1)	REDUCED SCALE (A3)
WATER BV	04/11	SURVEYED	-	-	-
DRAINAGE BV	04/11	DESIGNED	RRP	04/09	04/09
ROADING		DESIGN CHECK	ANW	04/09	04/09
PARKS		DRAWN	RRP	04/09	04/09
ELEC.PWR		DRG CHECK	AD	04/09	04/09
TELECOM		APPROVED			

TIMARU DISTRICT COUNCIL
2 King George Place
P.O. Box 522
Timaru 7940
Telephone: 03 687 7200
Website: www.timaru.govt.nz

STANDARD DETAILS

TRENCH, EMBEDMENT, TRENCH FILL & REINSTATEMENT - CONCRETE PIPE DETAILS & PIPE PROTECTION DETAILS

CONTRACT NUMBER:	
DRAWING NUMBER:	5301
REVISION:	4
SHEET:	2 OF 2