

RISKS OF LEAVING EMPTY REDUNDANT SEWERS IN PLACE:

- a. **Sewer Collapse.** May lead to subsidence of the surface or neighboring structures.
- b. **Damage from Groundwater.** Empty decommissioned sewers can provide a conduit whereby ground water could enter, accelerate and erode or scour the area where it discharges. Steep decommissioned sewers (steeper than 1 in 20) and decommissioned sewers with substantial elevation change (>2m) should be grouted or removed.
- c. **Infiltration and inflow.** Ground water may enter decommissioned assets and flow into live sewers unless downstream junctions are correctly sealed.

TABLE 516-A: SITUATIONS WHERE SEWERS REQUIRE GROUTING or REMOVAL

PIPE MATERIAL	LIKELIHOOD OF COLLAPSE	PIPE SIZE	WHEN GROUTING / REMOVAL REQUIRED
CONCRETE or METALLIC	HIGH	ANY	ADJACENT INFRASTRUCTURE PRESENT
PLASTIC, GRP or DEFECTIVE VC ²	MEDIUM	≥DN150	ADJACENT INFRASTRUCTURE PRESENT ¹
		ANY	ADJACENT SIGNIFICANT INFRASTRUCTURE PRESENT
SOUND VC ²	LOW	≥DN150	ADJACENT SIGNIFICANT INFRASTRUCTURE PRESENT

TYPICALLY ALL OF REDUNDANT SEWER SHALL BE REMOVED OR GROUTED UNLESS NOTE 1 APPLIES

TABLE 516-B: SEWER DECOMMISSIONING OPTIONS

DECOMMISSIONING OPTION	GROUTING / REMOVAL REQ'D (REF) TABLE 516-A	TYPICAL SITUATION WHERE OPTION APPROPRIATE	REFERENCE
1 SEAL DOWNSTREAM JUNCTION	NOT NECESSARY	ALL DECOMMISSIONED SEWERS	FIG 516- B to J
2 REMOVE SEWER + OPTION 1	YES	SHALLOW SEWER and UNPAVED SURFACE	FIG 516- G and H
3 GROUT SEWER + OPTION 1	YES	DEEP SEWERS or PAVED SURFACE or EXCAVATION IMPRACTICAL	FIG 516- A to F

"SHALLOW" and "DEEP" terms defined in Table 514-B.

- "ADJACENT" can be considered to be where the sewer is within the zone of influence of the infrastructure.
 - "PRESENT" could be now or in the future.
 - "INFRASTRUCTURE" can be considered to be any functioning asset (eg: road, footpath, residential dwellings, shops etc).
 - "SIGNIFICANT INFRASTRUCTURE" can be considered to be any functioning asset of high importance (eg: ≥3 story buildings, VicRoads roads, rail, tram lines etc).
- ¹ Only required for the part of sewer adjacent to the infrastructure.
² Assess condition of DN100 VC pipe where Adjacent Significant Infrastructure present as per MRWA-S-500.

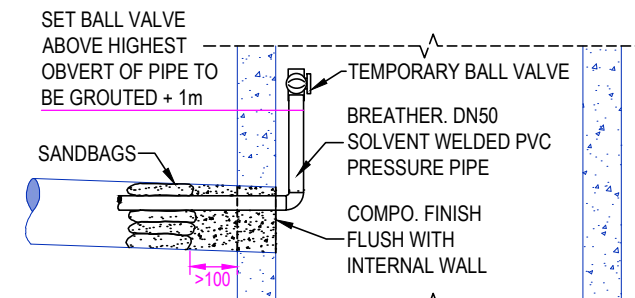


FIGURE 516-B: MH SHAFT JUNCTION SEAL, PRE GROUT PLACEMENT

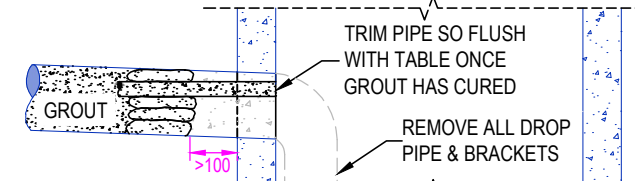


FIGURE 516-C: MH SHAFT JUNCTION SEAL, GROUTED SEWER

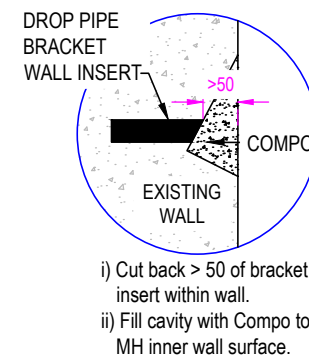


FIGURE 516-D: MH SHAFT JUNCTION SEAL, DROP PIPE CHANNEL FILL
THIS FIGURE APPLIES TO ALL SHAFT JUNCTION SEALS (FIGURES 516- C, G & I)

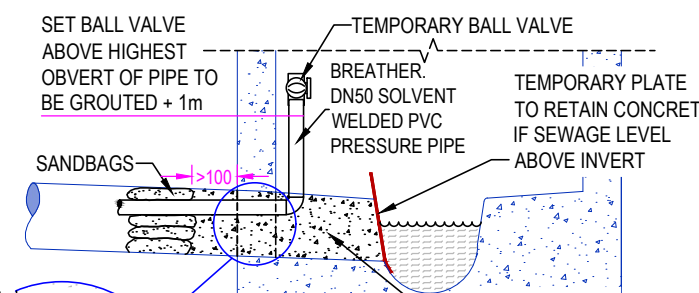


FIGURE 516-E: MH BASE JUNCTION SEAL, PRE GROUT PLACEMENT

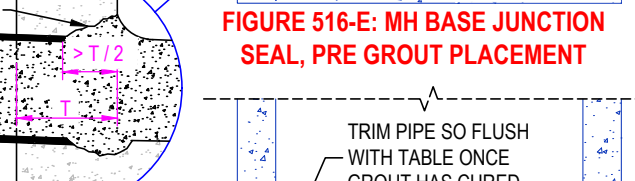


FIGURE 516-F: MH BASE JUNCTION SEAL, POST GROUTED SEWER

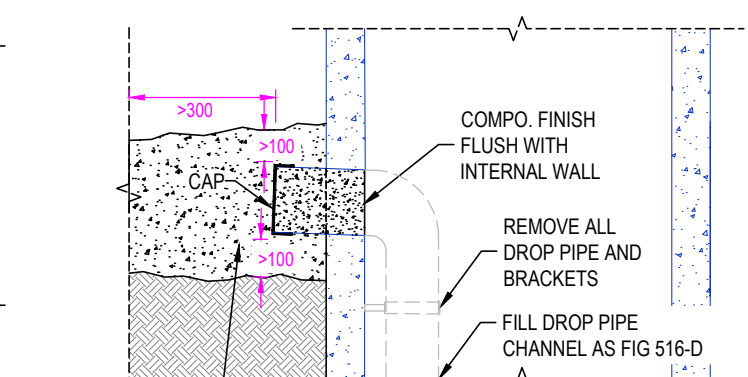


FIGURE 516-G: MH SHAFT JUNCTION SEAL, REMOVED SEWER

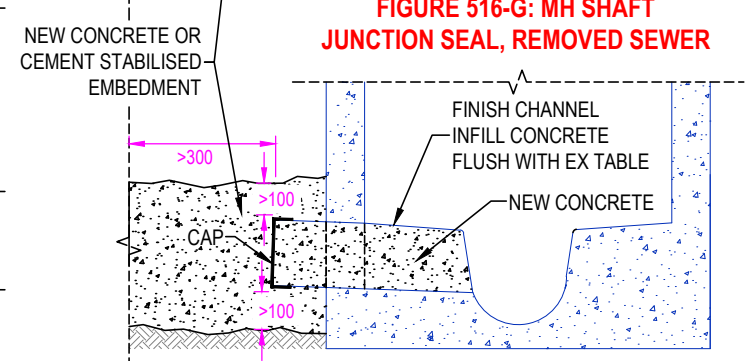


FIGURE 516-H: MH BASE JUNCTION SEAL, REMOVED SEWER

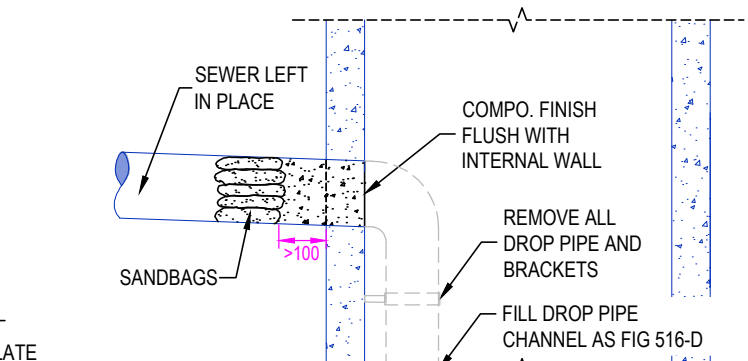


FIGURE 516-I: MH SHAFT JUNCTION SEAL, SEWER LEFT IN PLACE

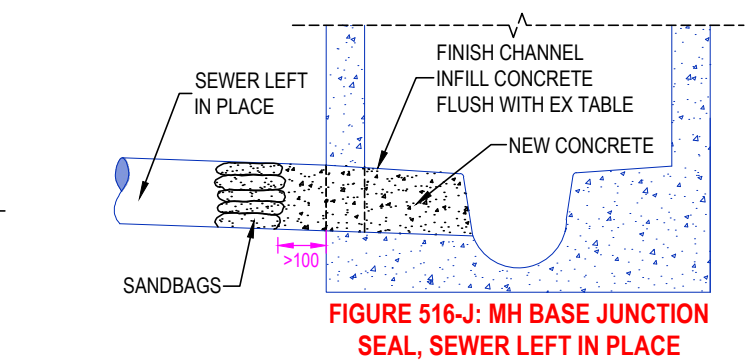
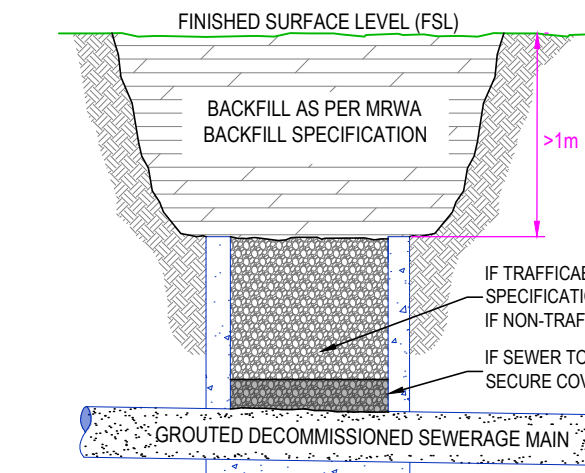


FIGURE 516-J: MH BASE JUNCTION SEAL, SEWER LEFT IN PLACE

- GENERAL NOTES:**
- All live sewer maintenance (cleaning) and construction work shall be completed by a Water Agency approved contractor.
 - Flow control is the responsibility of the contractor. Spills are not acceptable.



- Maintenance Structure Decommissioning Procedure:**
1. Grout redundant sewers, or cover channels with half pipe (one size larger than channel), seal gaps and concrete to 100 above crown of covers.
 2. Remove all of structure within 1m of surface and dispose of all materials.
 3. Backfill the excavation as per the relevant MRWA Backfill Specification 04-03.

- Vent Decommissioning Procedure:**
- a. Remove and dispose of the vent and base.
 - b. Excavate and remove all buried pipework within 1m of FSL.
 - c. Grout the buried vent pipe if required as per Table 516-A & B.

FIGURE 516-A: MAINTENANCE STRUCTURE DECOMMISSIONING

Sewer Decommissioning Procedure: (Assumes concrete MHs)
Select and apply materials as described in Tables 500-B & C and adjacent notes.

- A. Remove sewer main from service (disconnect inflows).
- Option 1: Seal Downstream Junctions:**
- B. Prepare inflow channel and pipe for concrete / Compo.
 - B.A. Remove all drop pipe, fittings and brackets. Refer Figure 516-D.
 - B.B. Remove greater than half of pipe within MH wall (cut or jackhammer out).
 - C. If grouting buried sewer line or leaving in place:
 - C.A. Place sandbags up inflow pipe, more than 100 past structure wall.
 - C.B. If grouting, place breather through sandbags and extend into MH and up to a higher elevation than the highest grout level (highest obvert of sewer being decommissioned) plus 1m.
 - D. Place Bonding Agent on all surfaces which will contact concrete.
 - E. Fill redundant shaft inflow pipe with Compo.
 - F. Fill base channel with concrete, ensuring new concrete finishes flush with existing table and live channel surfaces (refer Notes F & G of MRWA-S-500).
 - G. Remove any retaining plate and plug any fastener holes in table with Compo.

- I. Cut sewer cleanly and install close fit cap to pipe.
 - J. Place concrete or cement stabilised embedment all around capped pipe down to bottom of excavation.
- Option 3: Grout Sewer**
If sewer terminates at a MH:
- K. Open temporary ball valve on breather.
 - L. Where practical, open property service IO caps to allow air escape and the property connection pipe to be grouted below the grout level.
 - M. Place grout, slowly enough that the grout will rise from the low point without creating any air pockets.
 - N. Monitor the grout level in the breather and ensure that it does not overflow from the breather by closing the ball valve if the grout level gets too high.
 - O. Complete grouting of the sewer until the pipe is full. Allow grout to set (ie: >24 hrs).
 - P. Trim off breather pipe flush with the table or wall surface. Reuse ball valve if functional.
- If sewer terminates at a pipe connection, MS or MC:
- Q. Block the end of pipe by (i) grouting the downstream line as above, (ii) installing mechanical insert or patch liner (refer Fig 514-A & B), or (iii) installing a plug.
 - R. Insert grout placement Tremie hose down pipe sewer to just before end of line.
 - S. Pump grout down Tremie hose in one continuous operation while retracting the Tremie hose at a speed to match the pump rate. Grout until pipe is full.

ALL DIMENSIONS IN mm UNLESS STATED OTHERWISE

DESIGNED: R. JAGGER	DATE: JUNE 2020
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CHECKED: NAME DATE	APPROVED: NAME DATE
<input checked="" type="checkbox"/> CWW G. ANTHONSEN SEP 20	<input checked="" type="checkbox"/> CWW S. TRIKHA SEP 20
<input checked="" type="checkbox"/> SEW C. PAXMAN SEP 20	<input checked="" type="checkbox"/> SEW D. STEWART SEP 20
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ISSUED 2020	VERSION 1

MELBOURNE RETAIL WATER AGENCIES

MRWA SEWERAGE STANDARDS

NOT TO SCALE

MRWA-S-516

Planning	Design	Construction
✓	✓	✓

DECOMMISSIONING OF SEWERS AND STRUCTURES