TABLE 207-A: CROSSING REQUIREMENTS

CROSSING	COVER / CLEARANCE	OTHER AUTHORITY REQUIREMENTS	
		OPEN CUT	BORED
RAILWAY LINES	> 1600 BELOW RAIL LEVEL, > 600 BELOW FORMATION LEVEL (GROUND LEVEL IMMEDIATELY BELOW BALLAST), > 2000 BETWEEN RAIL LEVEL AND TOP OF TUNNELS	SLEEVED AS PER AS4799	SLEEVED AS PER AS4799. FULLY SUPPORTED BORE HOLE REQUIRED.
WATERWAYS	>1000 (OPEN CUT) >2000 (TRENCHLESS CONSTRUCTION)	CONCRETE ENCASED [E] (REF MRWA-S-202)	NONE
MELBOURNE WATER MAJOR DRAINS	> 300	NONE	NONE
FREEWAYS	> 1200	NONE [G]	NONE [G]
MAJOR ROADS	> 1200	NONE	NONE
TRAMWAYS	> 1200 (TOP OF RAIL TO TOP OF PIPE)	NONE	NONE

NOTES Regarding Major Crossings:

A. A crossing is considered "major" and shall be constructed in accordance with this drawing when a sewer is crossing a Freeway, Tollway, VicRoads designated road, Rail line, Melbourne Water trunk sewer or a waterway indicated in the Melways.
B. Sewers major crossings shall be one size larger than would otherwise be the case.
C. Microtunneling / HDD installations as per MRWA-S-208.
D. Sleeves shall be approved GRP, steel, RC concrete or butt fused PE.
E. Concrete encasement shall extend to the end of pipe sockets at both ends as per MRWA-S-202.
F. Melbourne water often allows this clearance to be reduced by 50% if there is a compelling reason.
G. Vicroads do not typically require sleeves for gravity flows.

NOTES Regarding Syphons:

1. Syphons require water agency approval.
2. Syphon sewer crossings of existing obstructions shall consist of horizontal directional drilled (HDD) PE or fusible PVC pipe if possible.
   2.1. Pipe shall be butt welded and de-beaded internally.
   2.2. No concrete encasement or sleeving is required in this case.
3. Any alignment between upstream and downstream maintenance holes is acceptable provided:
   3.1. PE or PVC pipe is bent within the constraints of PIPA guideline POP202.
   3.2. The pipe always maintains minimum clearance below the obstruction and minimum cover.
   3.3. The pipe is constantly falling to midway of obstruction and constantly rising to the discharge point.
4. Syphons are typically twin pipes.
   Smaller pipe to contain all PDWF. Larger pipe to contain remaining flow.
   Water agency planning will designate the sizes and number of mains in the syphon.
5. Maintenance Structures at both ends of syphons shall be MHs unless the syphon is a single pipe ≤DN150, in which case MCs may be used.
6. At upstream and downstream maintenance structures:
   6.1. Match invert of smaller syphon sewer with invert of incoming / outgoing sewer (allowing for drop across the MHs).
   6.2. Match invert of larger syphon sewer with the obvert of the smaller syphon sewer.
7. Vertical drop across syphon to equal 600 + calculated head loss of syphon.
8. Syphons must achieve a minimum velocity of 1.5 m/s at PDWF.
9. All syphon pipework shall be acceptance tested as per >DN300 gravity pipe.
10. Design & construct maintenance structures as per MRWA-S-300 series drawings.

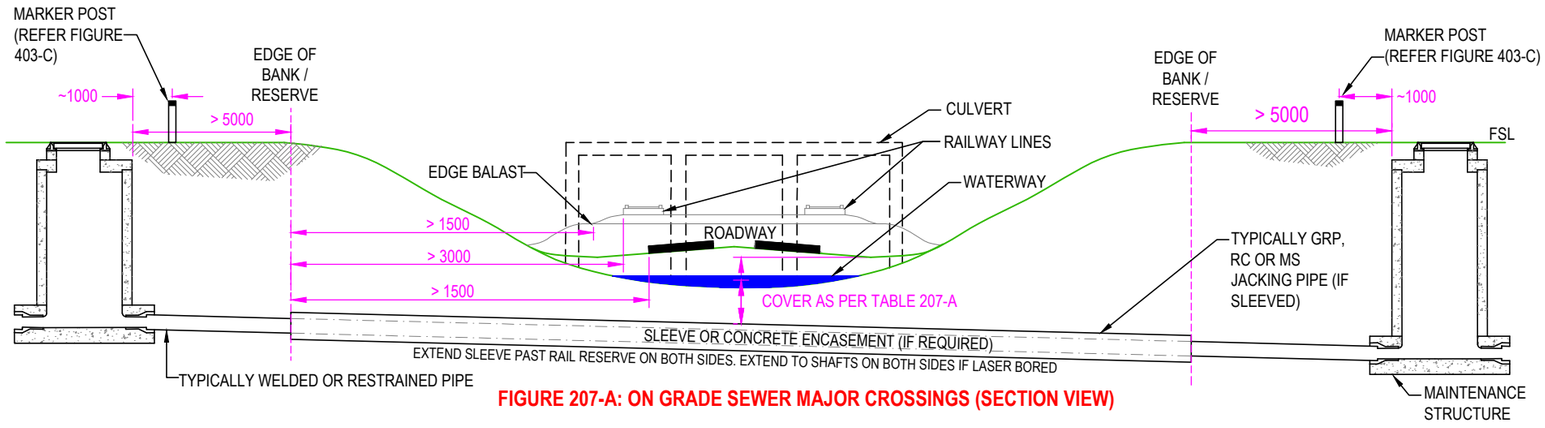
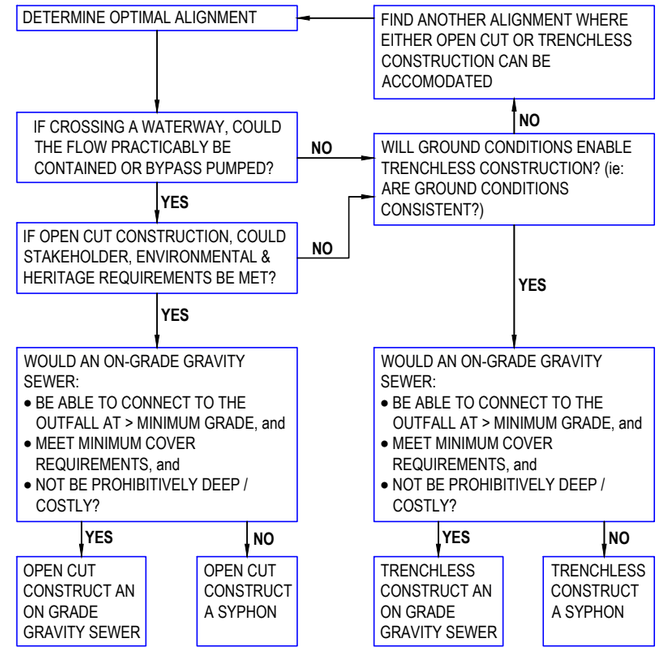


FIGURE 207-A: ON GRADE SEWER MAJOR CROSSINGS (SECTION VIEW)

FIGURE 207-D: CROSSING DECISION MAKING PROCESS



Melboure Water waterway crossing requirements:

1. A Melbourne Water (MWC) permit to work is required prior to commencement of any works.
2. Prior to commencement of construction, a site environmental management plan (SEMP) is to be submitted to Melbourne Water.
3. Prior to commencement of construction, a work method statement and risk task assessment must be submitted outlining the general construction technique to be adopted.
4. If the crossing is to be open cut constructed, the pipe is to be protected via concrete encasement or a concrete slab place above the pipe.
5. Open cut crossings require a rock chute along the bed and banks at the crossing location in accordance with Melbourne Water standard 'Rockwork and Rip Rap Detail: Service Crossing Open Trenching'.

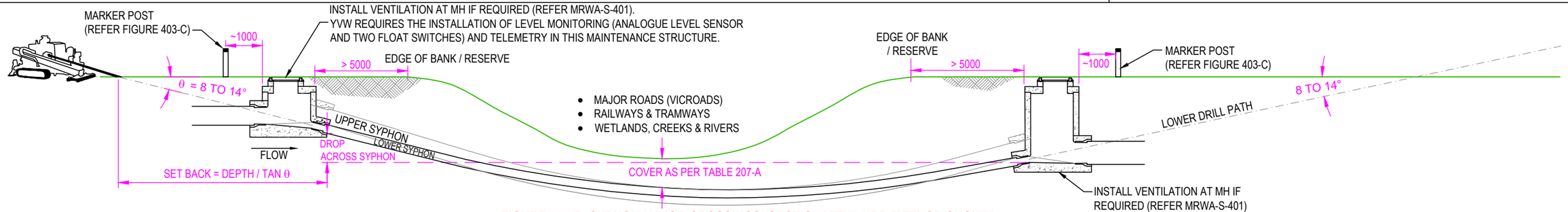


FIGURE 207-B: SYPHON MAJOR CROSSINGS (SECTION VIEW- HDD METHOD SHOWN)
OTHER CONSTRUCTION METHODS (ie: OPEN CUT) MAY BE MORE APPROPRIATE

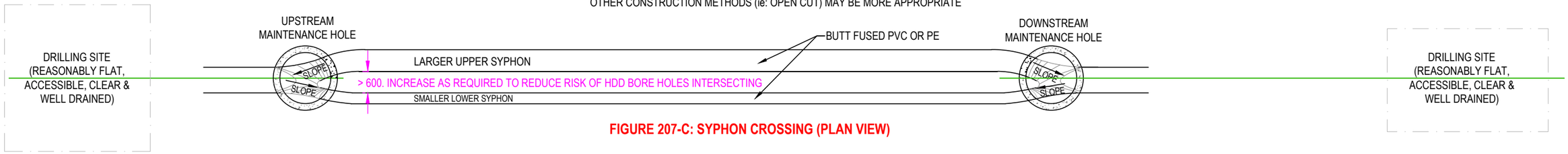


FIGURE 207-C: SYPHON CROSSING (PLAN VIEW)

REV	DESCRIPTION	DATE	APPROVED
2	PUBLISHED FIRST ISSUE	01/10/15	CP / JT / KD / RJ
1	PRE-PUBLISHED DRAFT	01/03/15	CP / JT / KD / RJ

ALL DIMENSIONS IN mm UNLESS STATED OTHERWISE

	NAME	DATE
DESIGNED:	R. JAGGER	1 JULY 2015
DRAWN:	R. JAGGER	1 JULY 2015

CHECKED:	NAME	DATE	APPROVED:	NAME	DATE
☒ CWW	D. MOORE	01/09/15	☒ CWW	R. CARRUTHERS	01/09/15
☒ SEW	C. PAXMAN	01/09/15	☒ SEW	D. O'DONOVAN	01/09/15
☒ YVW	K. DAWSON	01/09/15	☒ YVW	J. TOMASI	01/09/15

ISSUED 2015 | VERSION 1

MELBOURNE RETAIL WATER AGENCIES
City West Water
South East Water
Yarra Valley Water

MRWA SEWERAGE STANDARDS

MAJOR CROSSINGS

NOT TO SCALE

MRWA-S-207

Planning	Design	Construction
✓	✓ ✓	✓ ✓