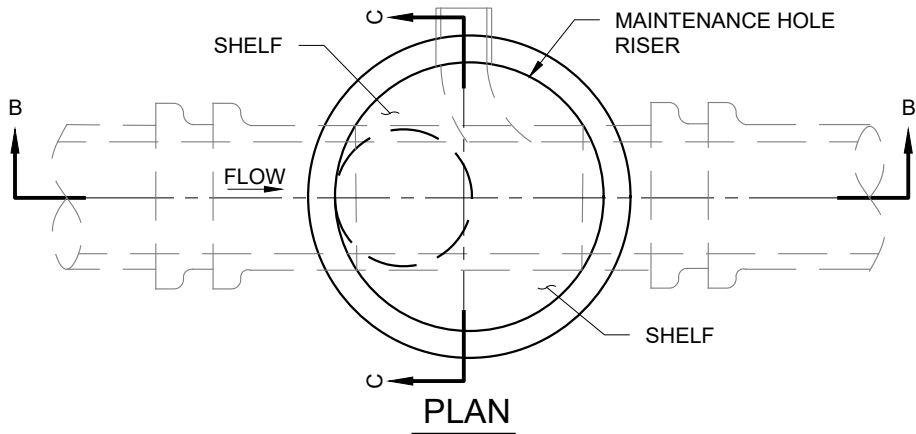


**SECTION B-B**

REINFORCING REQUIREMENTS

**SECTION C-C**



**TABLE 1 - MINIMUM DROP ACROSS MAINTENANCE HOLE (FT)**

PIPE SIZE	CHANNEL CONFIGURATION		
	STRAIGHT	TURN	RIGHT ANGLE
NO CHANGE	0.1	0.1	0.2
CHANGE	0.2*	0.2*	0.2*

\* MATCH PIPE SOFFITS

**TABLE 2 - REQUIRED DIAMETER OF MAINTENANCE HOLE**

MAINTENANCE HOLE DEPTH	PIPE DIAMETER	A	CONCRETE BASE REINFORCING REQ'T.
5' < 0 < 12'	< 18"	48"	NO
	≥ 18"	60"	YES
12' TO 20'	ANY SIZE	60"	YES
> 20'	ANY SIZE	SPECIAL DESIGN	SPECIAL DESIGN

**MAINTENANCE HOLE WITH CAST IN PLACE BASE**

**WDS - 502**



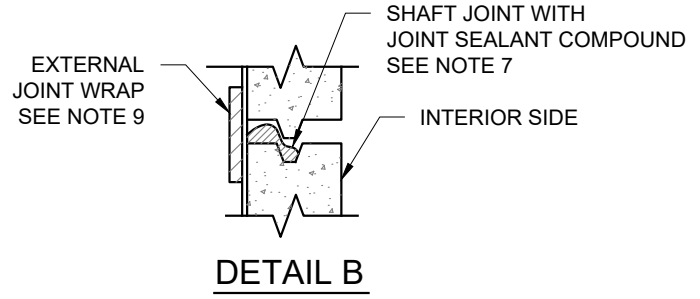
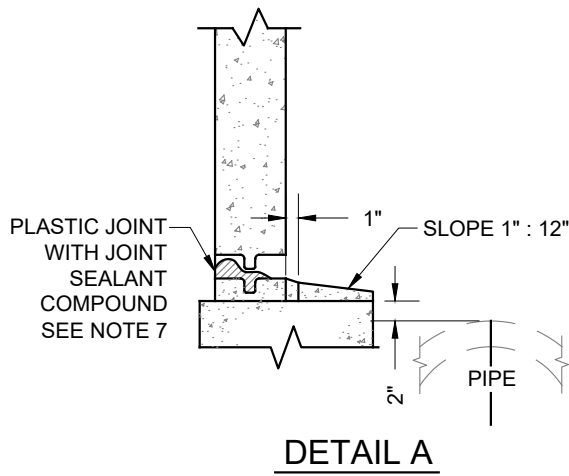
RECOMMENDED  
*Robert Johnson*  
 DIRECTOR OF ENGINEERING

APPROVED  
*[Signature]*  
 DEPUTY GENERAL MANAGER / CHIEF ENGINEER

DATE: 02-2020

SCALE: N.T.S.

SHEET 1 OF 2



**NOTES:**

1. A KNOCKOUT SHAFT SECTION MAY BE SUBSTITUTED FOR CAST IN PLACE CONCRETE BASE, IN WHICH CASE THE PRECAST UNIT SHALL CONFORM TO A.S.T.M. C-478.
2. FOR 24 INCH PIPE AND LARGER, THE TOP HALF OF THE PIPE SHALL BE REMOVED TO THE CONTOUR OF THE INSIDE OF THE MAINTENANCE HOLE AND THE BROKEN EDGES PLASTERED SMOOTH WITH CEMENT MORTAR.
3. THE PCC COLLAR SHALL BE 1 1/2 INCHES FROM FINISH GRADE AND 3 INCHES BELOW THE RING AND CONE JOINT. THE MIX DESIGN SHALL BE CLASS A2 CONCRETE (600-C-2500).
4. JOINTS MAY BE KEY TYPE OR TONGUE AND GROOVE AND SHALL CONFORM WITH A.S.T.M. C-478, SECTION 14.
5. SEE TABLE 1 FOR MINIMUM DROP ACROSS MAINTENANCE HOLE.
6. INSTALL TWO 2-FOOT SECTIONS OF PIPE AT INLET(S) AND OUTLET(S) OF MAINTENANCE HOLE.
7. PLASTIC JOINTS: PREFORMED COLD APPLIED READY TO USE PLASTIC JOINT SEALING COMPOUND SHALL BE CON-SEAL SEALANT, OR APPROVED EQUAL.
8. WATERPROOFING: ALL EXTERIOR JOINTS OF THE MAINTENANCE HOLE STRUCTURE, INCLUDING BUT NOT LIMITED TO RING AND SHAFT JOINTS, PIPE PENETRATION JOINTS, AND ALL COMPONENT INTERFACE JOINTS, SHALL BE FILLED AND/OR APPLIED WITH A PASTE GRADE BITUMINOUS ASPHALT SEALANT. THE REMAINING EXTERIOR CONCRETE SURFACE OF THE MAINTENANCE HOLE STRUCTURE SHALL THEN BE COATED WITH A POURABLE GRADE OF BITUMINOUS ASPHALT SEALANT. FINISHED THICKNESS SHALL BE A MINIMUM OF 50 MILS.
9. EXTERNAL JOINT WRAP: INSTALL 9 INCH WIDE EXTERNAL JOINT SEAL PRIOR TO BACKFILLING. MATERIAL FOR EXTERNAL JOINT SEAL SHALL CONFORM TO A.S.T.M. C-923 TEST, AS MODIFIED, WITH A MIN. 3/16 INCH THICKNESS FOR DURABILITY AND RESISTANCE TO TEARING OR PUNCTURING.
10. THE CONCRETE BASE SHALL BE CLASS A2 TYPE II/V CONCRETE (600-C-2500) . ALL PRECAST CONCRETE RISERS AND CONES SHALL BE CLASS A 4000 PSI CONCRETE.
11. EXCEPT AS NOTED HEREON, PRECAST UNIT SHALL BE MANUFACTURED AND TESTED IN ACCORDANCE WITH A.S.T.M. C-478. THE CURING OF THE PRECAST UNITS SHALL CONFORM TO SECTION 207-2.7 OF STANDARD SPECIFICATIONS.
12. RISER SECTIONS AND ECCENTRIC CONE SHALL BE REINFORCED. REINFORCED SECTIONS SHALL BE IN ACCORDANCE WITH A.S.T.M. C-478 AND SHALL HAVE A MINIMUM WALL THICKNESS OF 6 INCHES. REINFORCING SHALL BE IN ACCORDANCE WITH A.S.T.M. A-615.
13. SUBGRADE SHALL BE OVEREXCAVATED 2 FEET BELOW BOTTOM OF MAINTENANCE HOLE BASE AND REPLACED WITH CRUSHED ROCK. MAINTENANCE HOLE BASE ON UNDISTURBED SOIL IF APPROVED BY LBWD.
14. ALL MAINTENANCE HOLES SHALL BE DESIGNED FOR AASHTO H-25 LOADING.

MAINTENANCE HOLE WITH CAST IN PLACE BASE

WDS - 502



**Long Beach Water**  
Exceptional Water • Exceptional Service

RECOMMENDED

*Robert Johnson*

DIRECTOR OF ENGINEERING

APPROVED

*Shirley Reed*

DEPUTY GENERAL MANAGER / CHIEF ENGINEER

DATE: 02-2020

SCALE: N.T.S.

SHEET 2 OF 2