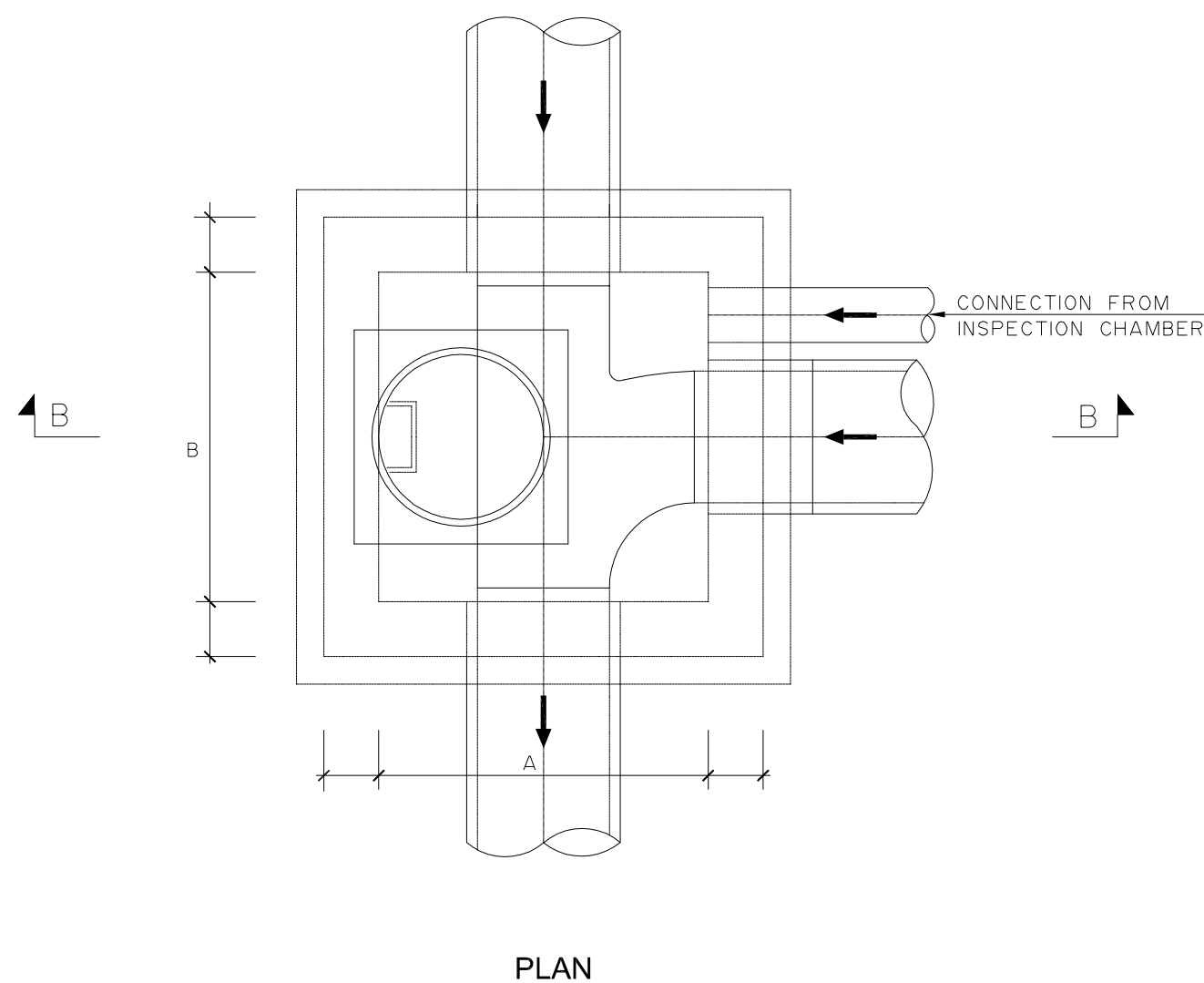
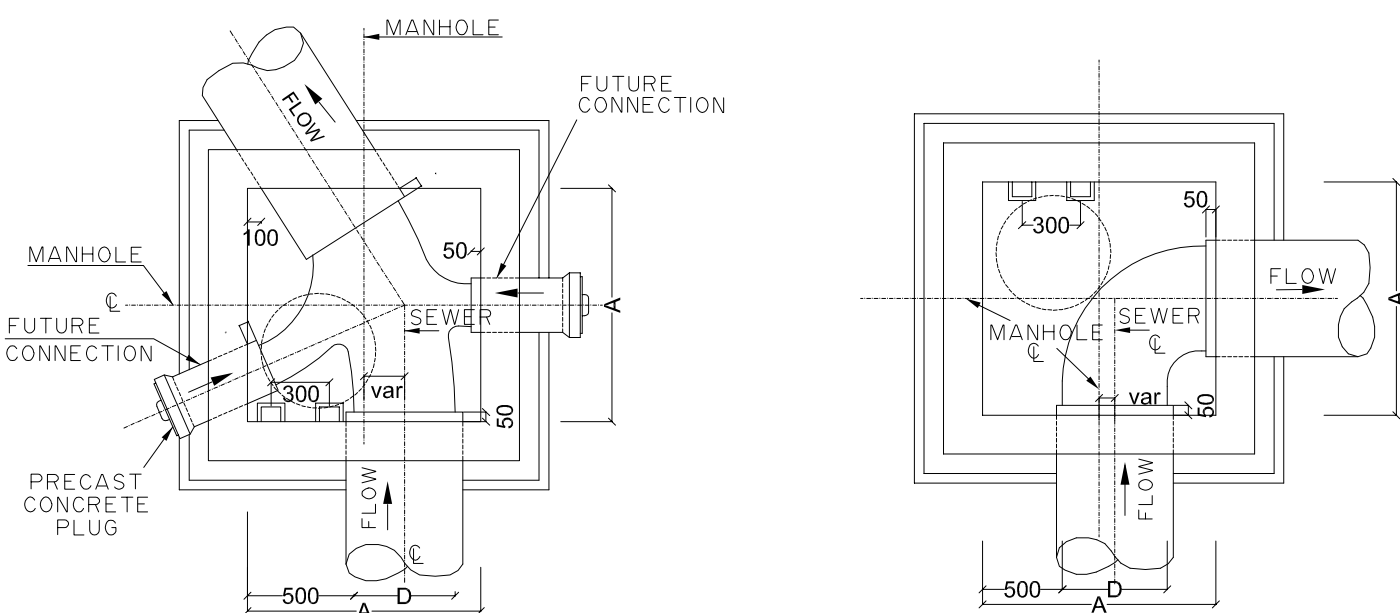


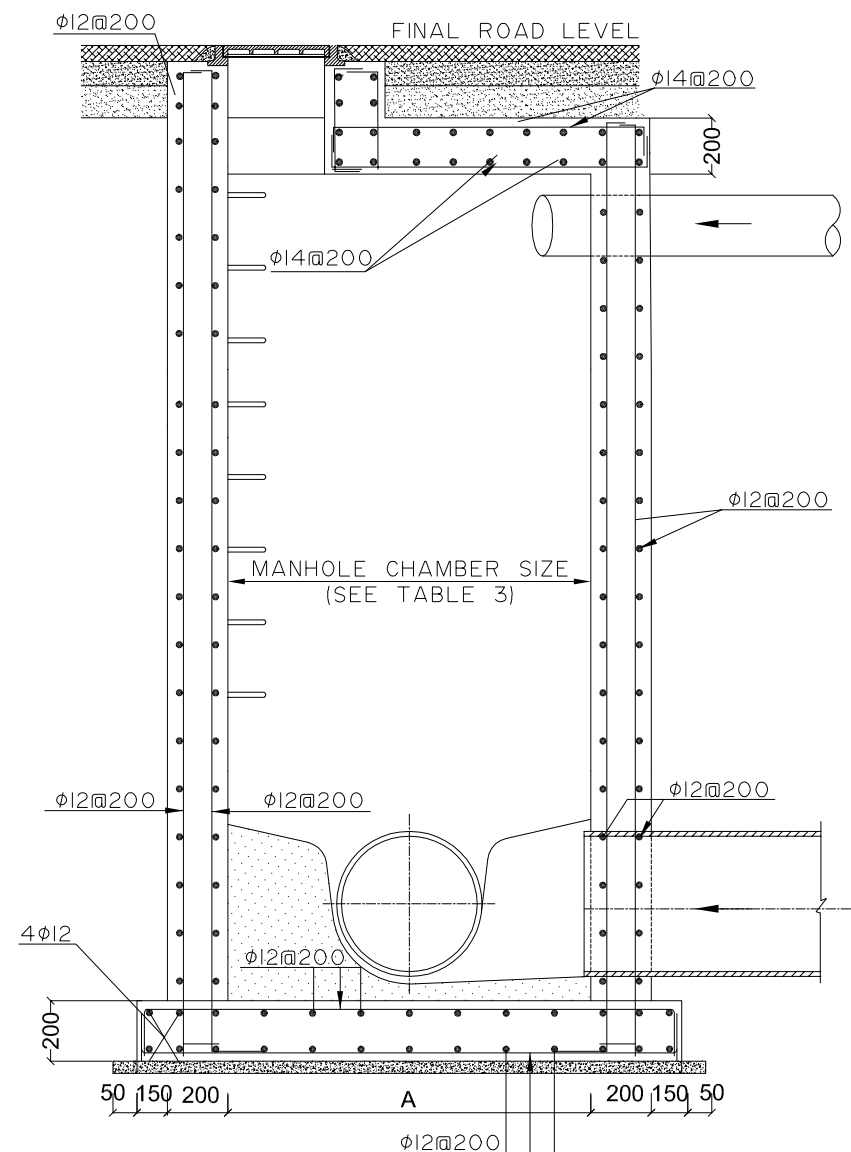
CAST IN SITU REINFORCEMENT - MANHOLE TYPE "A" - $H < 3500$



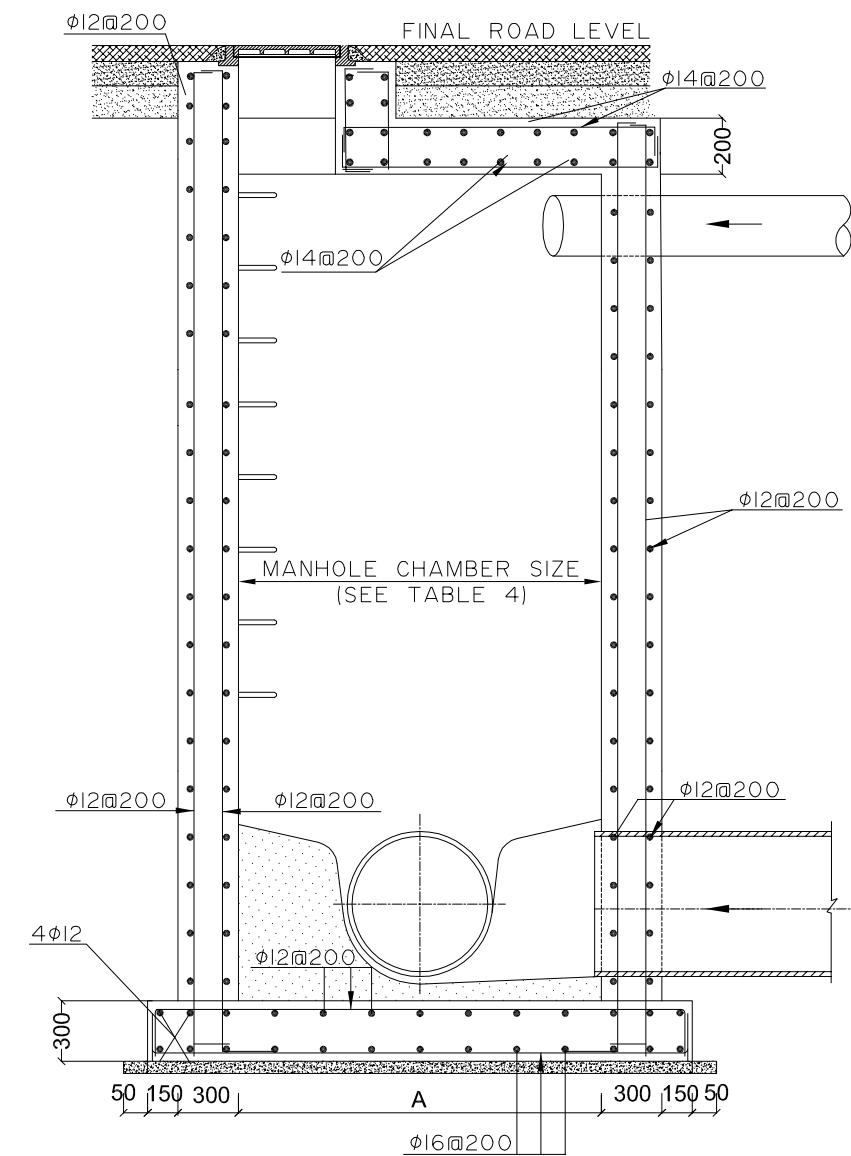
CAST IN SITU REINFORCEMENT MANHOLE TYPE "B" - $3500 < H \leq 7000$



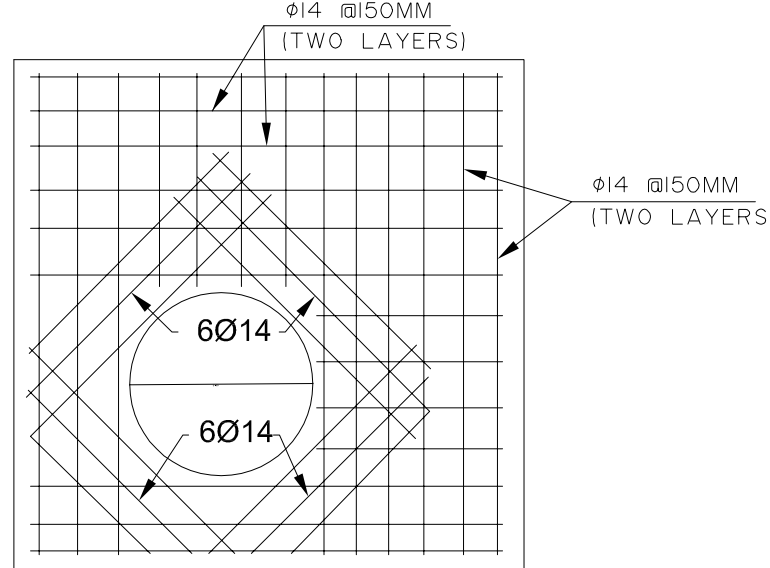
TYPICAL JUNCTION AND BEND FOR CAST IN SITU MANHOLE



SECTION A-A



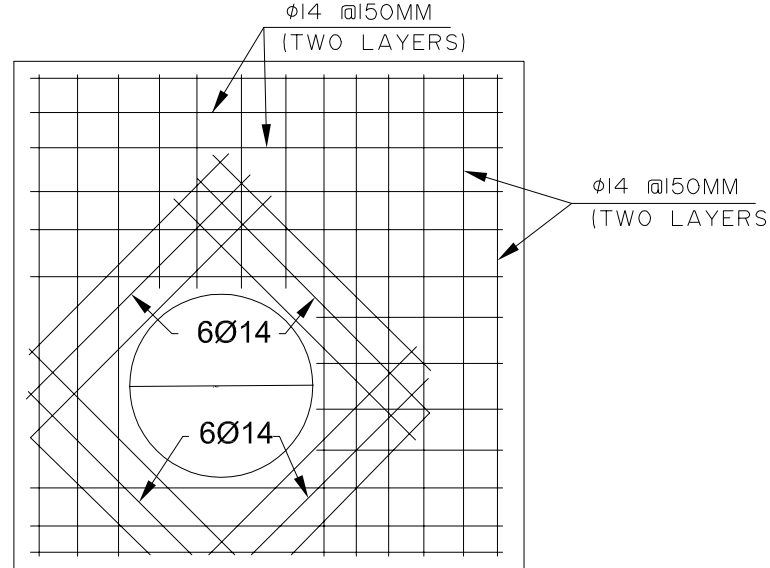
SECTION B-B



TOP SLAB REINFORCEMENT

TABLE 3

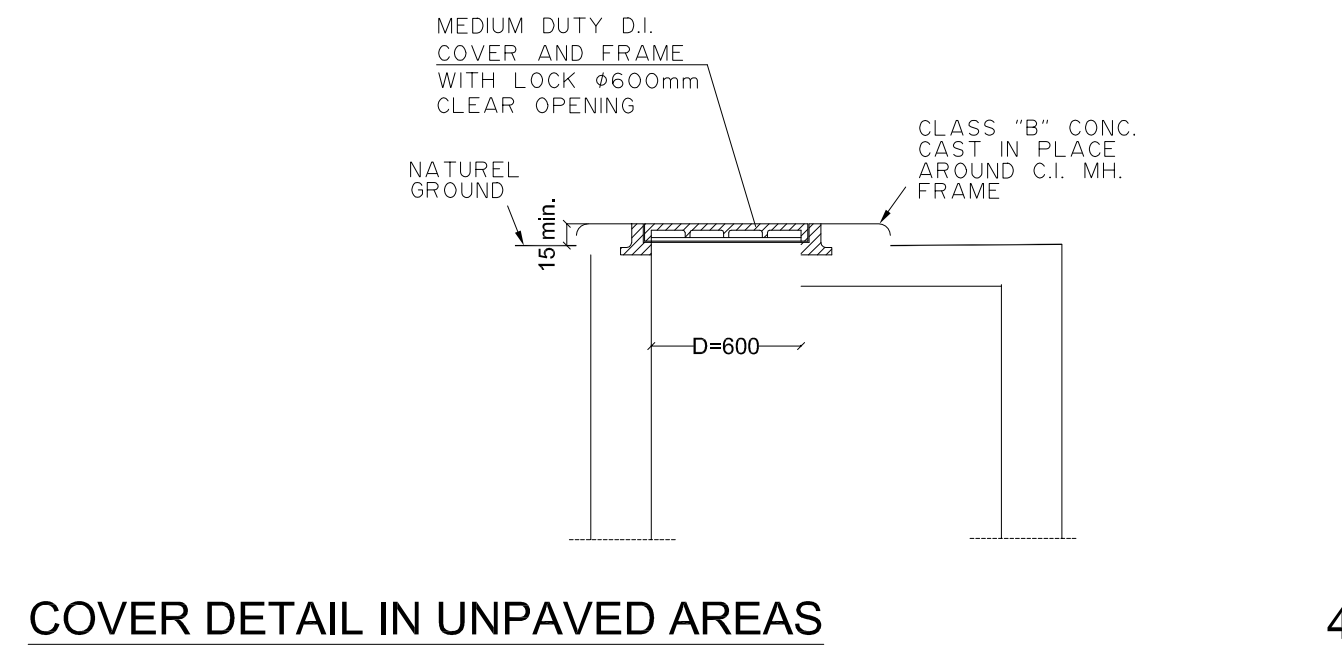
MANHOLE DIMENSIONS	
DIA. OF LARGEST PIPE	A x B
200 - 600 mm.	1200 x 1200 mm.
700 - 900 mm.	1500 x 1500 mm.
1000 - 1500 mm.	2000 x 2000 mm.



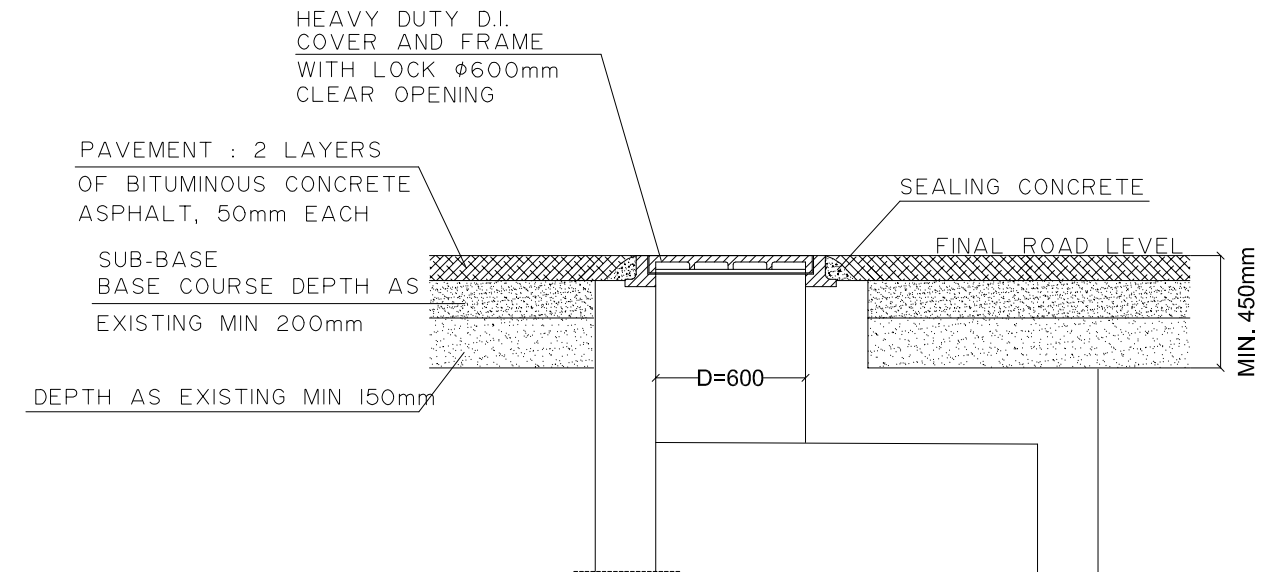
TOP SLAB REINFORCEMENT

TABLE 4

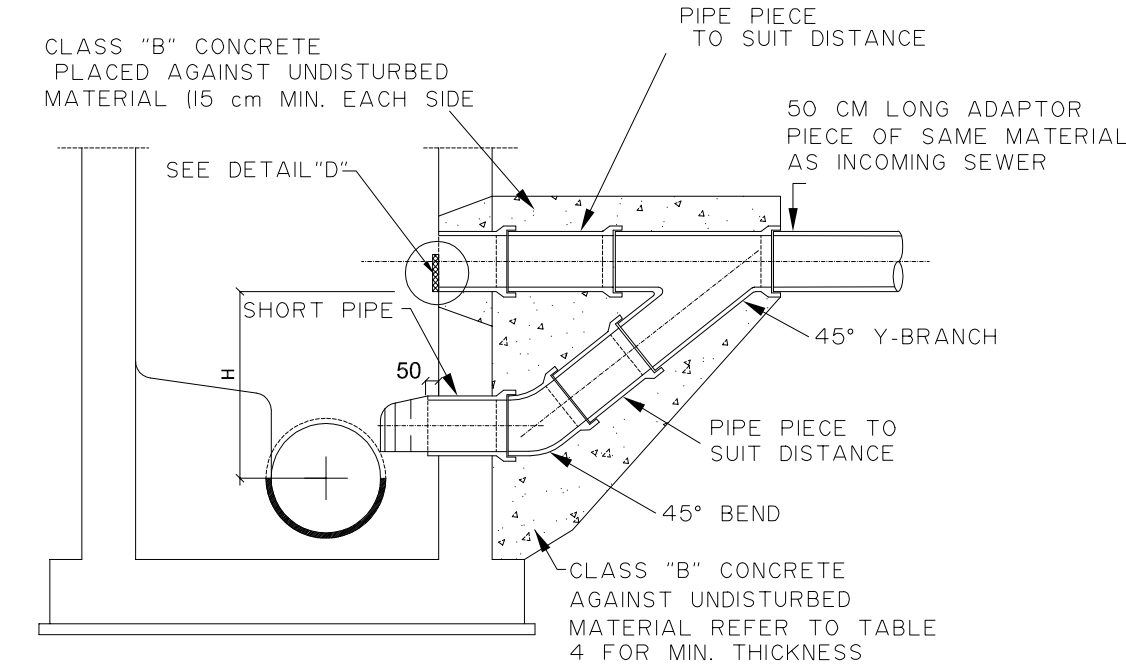
MANHOLE DIMENSIONS	
DIA. OF LARGEST PIPE	A x B
200 - 600 mm.	1200 x 1200 mm.
700 - 900 mm.	1500 x 1500 mm.
1000 - 1500 mm.	2000 x 2000 mm.



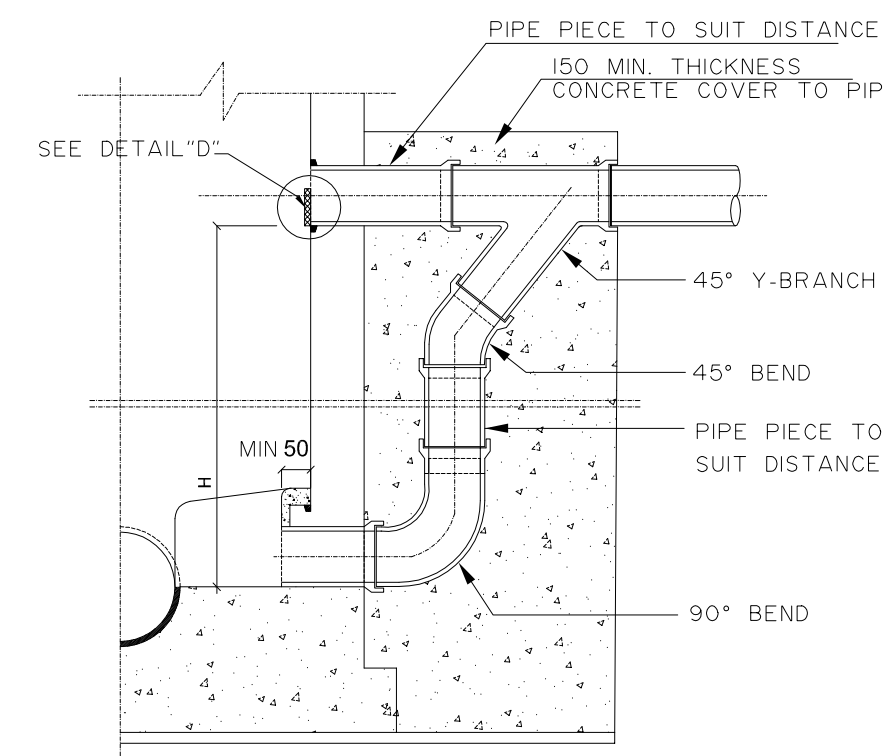
COVER DETAIL IN UNPAVED AREAS



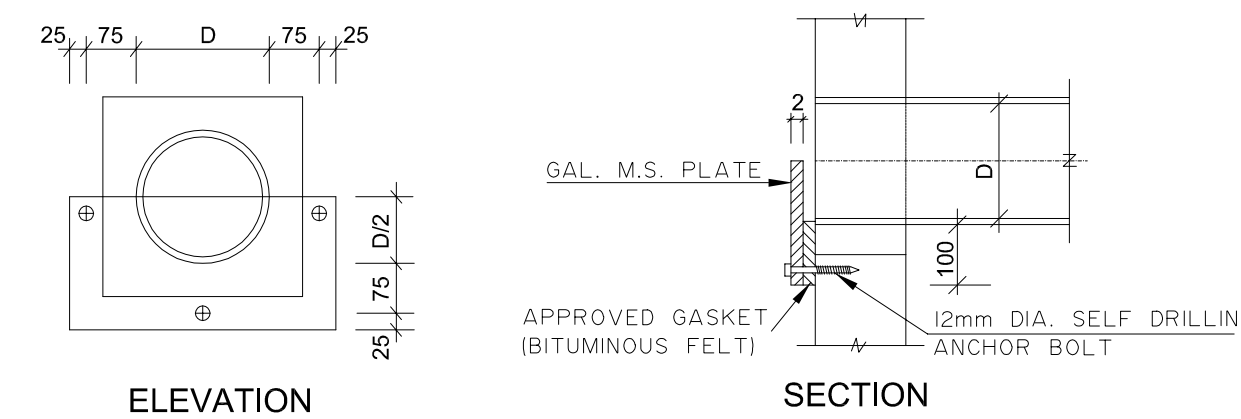
COVER DETAIL IN PAVED AREAS



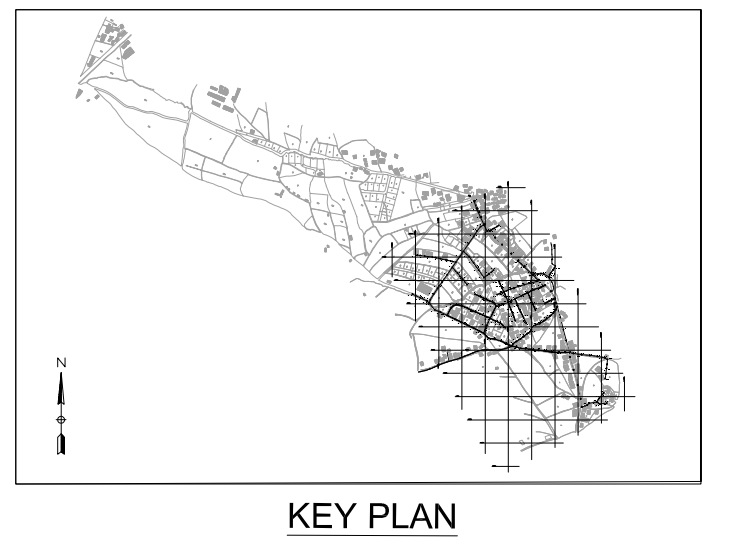
TYPICAL SHALLOW DROP MANHOLE
 $H < 1400m$



TYPICAL DEEP DROP MANHOLE SECTION
FOR $H > 1400m$



DETAIL "D" (FOR SANITARY MANHOLES ONLY)



KEY PLAN

THIS DRAWING IS A COPYRIGHT. DO NOT SCALE FROM THE DRAWING. THE CONTRACTOR AND HIS SUB-CONTRACTORS ARE TO VERIFY ALL DIMENSIONS ON SITE BEFORE MAKING SHOP DRAWINGS OR COMMENCING MANUFACTURE.

United Nation Development Programme
UNDP Lebanon
Social and Local Development Programme
P.O.Box: 11-3216 Beirut, Lebanon
Tel: 961 1 962491

PROGRAMME: Lebanese Host Communities Support Programme
Support to Integrated Service Provision at the Local Level

PROJECT NAME: TAL ABBAS EL GHARBI SEWAGE NETWORK

- NOTES
- ALL DIMENSIONS ARE IN MILLIMETER, UNLESS OTHERWISE INDICATED
 - ALL INFORMATION PROVIDED IS INDICATIVE. DETAILED STRUCTURAL DESIGN AND ARCHITECTURAL SHOP DRAWINGS ARE TO BE PREPARED BY THE CONTRACTOR AND SUBMITTED FOR APPROVAL TO THE ENGINEER.
 - ALL CONCRETE SHALL BE SULFATE RESISTING PORTLAND CEMENT TYPE V WITH A MINIMUM CYLINDRICAL COMPRESSIVE STRENGTH AT 28 DAYS FOR: CLASS A - REINFORCED & BENCHING CONCRETE = 280 kg / cm² CLASS B - WHERE INDICATE CONCRETE = 175 kg / cm² CLASS C - BLINDING & MASS CONCRETE = 105 kg / cm²
 - WATER PROOFING FOR CONCRETE SHALL BE IN THREE LAYERS FOR SURFACE BITUMINOUS COATING APPLIED TO EXTERNAL SURFACES OF MANHOLE WALLS, AND DOUBLE SURFACE COAL TAR EPOXY COATING APPLIED TO INTERNAL SURFACES OF MANHOLE WALLS.
 - MINIMUM CONCRETE COVER TO STEEL REINFORCEMENT SHALL BE = 50mm.
 - ALL REINFORCING STEEL BARS SHALL BE DEFORMED HIGH GRADE STEEL HAVING A MINIMUM YIELD STRENGTH OF 4200Kg/cm², AND MILD STEEL HAVING A MINIMUM YIELD OF 2800kg/cm².
 - LAP LENGTH SHALL NOT BE LESS THAN 50 TIMES THE DIAMETER WHERE SPLICE BARS ARE USED, THEIR LENGTH SHALL NOT BE LESS THAN 2x50 DIAMETER.
 - LAPS SHALL BE STAGGERED FROM ONE HOOP TO THE OTHER AND/OR ONE BAR TO THE OTHER IN ORDER TO REDUCE THE NUMBER OF LAPS IN THE SAME SECTION STIRRUPS #8 SHALL BE USED ON EACH LAP.
 - ADDITIONAL REINFORCEMENT AROUND OPENINGS SHALL BE PROVIDED BY THE CONTRACTOR UP TO THE APPROVAL OF THE ENGINEER.
 - BENDING OF REINFORCEMENT BARS SHALL BE MECHANICAL FOR DIAMETERS GREATER THAN 12mm AND MANUAL FOR LESS. STRAIGHTENING OF BENDED BARS IS NOT ALLOWED.
 - HOLES MADE BY THE RODS SHALL BE FILLED WITH NON-SHRINK GROUT.
 - ALL PIPES CROSSING THROUGH CONCRETE WALLS SHALL BE PROVIDED WITH A 2cm THICK EXPANSIVE MATERIAL (TAR BASED) OR AS APPROVED BY THE ENGINEER
 - WHERE THERE IS A DISCREPANCY BETWEEN THE REQUIREMENTS IN THE SPECIFICATION AND THOSE SHOWN ON THIS DRAWING, THE SPECIFICATION SHALL BE FOLLOWED UNLESS DIRECTED OTHERWISE BY THE ENGINEER.
 - ALL JOINTS BETWEEN PIPES, FIXTURES AND LINING MATERIAL SHALL BE SEALED.
 - ALL JOINTS BETWEEN PIPES AND CONCRETE SHALL BE WATERTIGHT.

o	M.N	11-12-2015	GENERAL REVISION	M.N
REV	BY	Date	Description	Appr.
PROJECT NBR.		L1505		
PROJECT PHASE		TENDER		
DISCIPLINE		CIVIL ENGINEERING		
SECTOR				
BUILDING				
DESIGNED		M.N		
DRAWN		M.N		
CHECKED		M.N		
APPROVED				
DATE		11-12-2015		
SCALE		N.T.S		
SHEET SIZE		A1		

Title
TAL ABBAS EL GHARBI SEWAGE NETWORK
SEWAGE TYPICAL DETAILS

Sheet 3 OF 4

L1505-PH1-SW-12-REV.0

Project Number | Phase | Type | Drawing Number | Revision