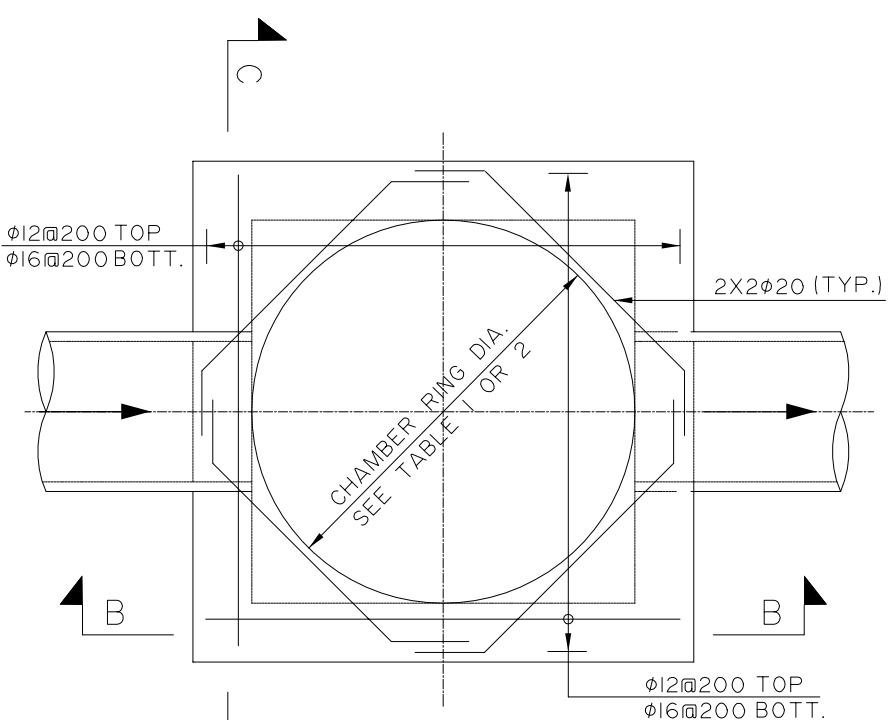
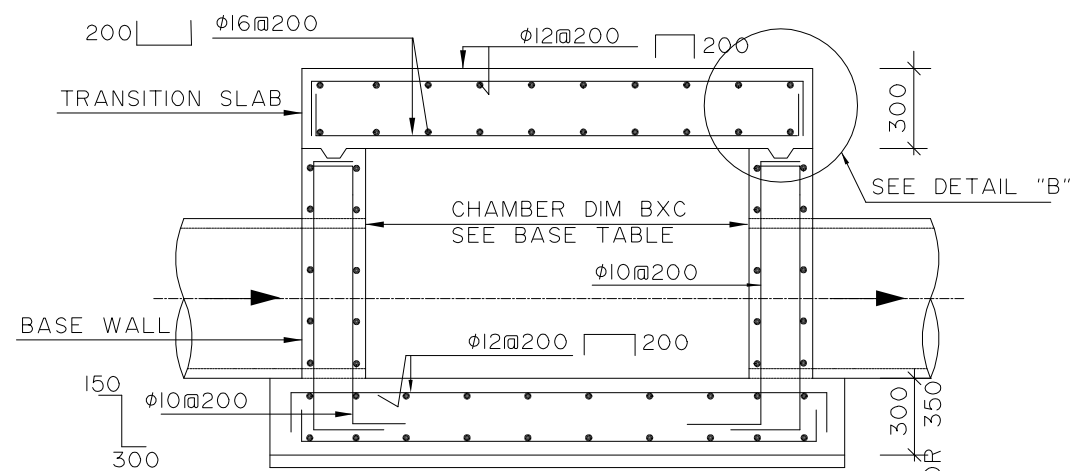


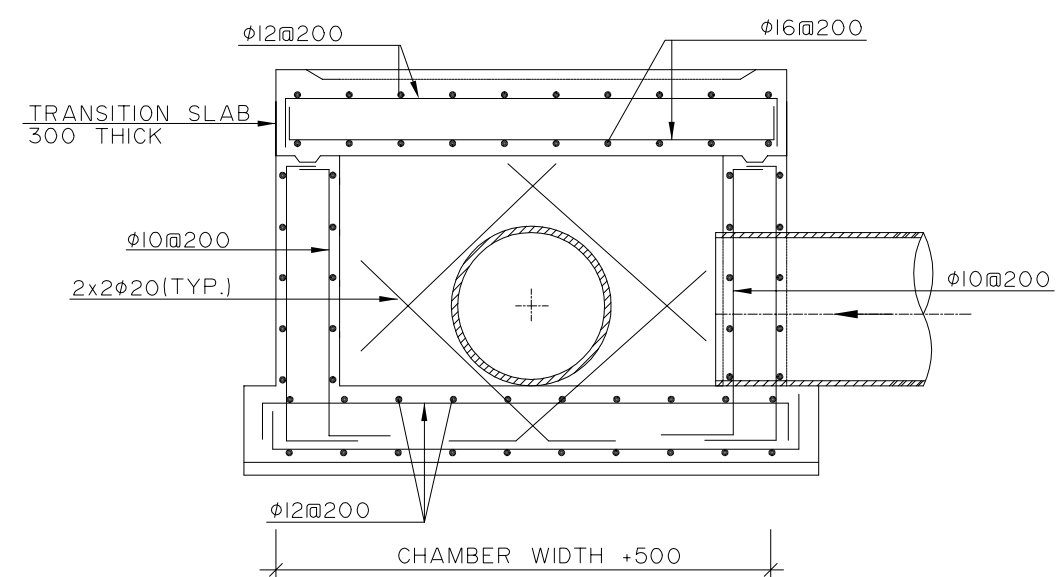
SECTION PLAN OF BASE WALL



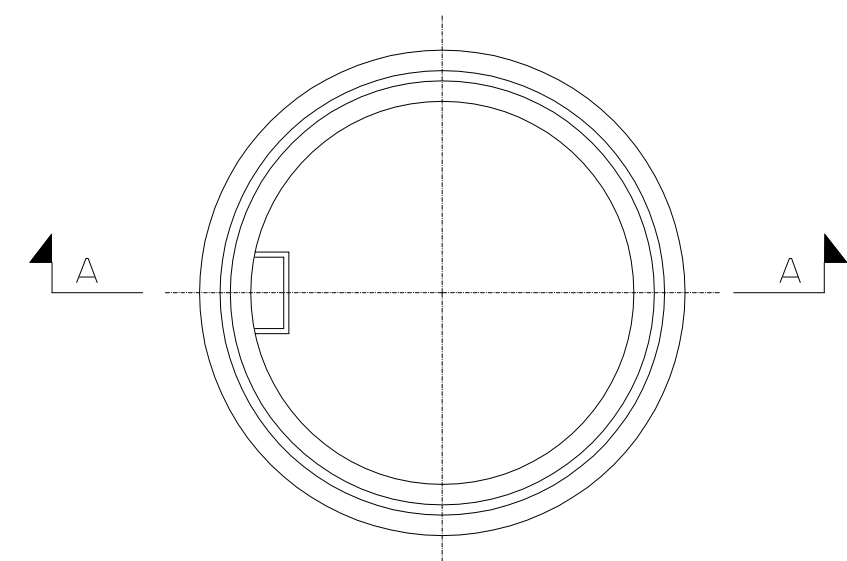
SECTION C-C  
TRANSITION SLAB



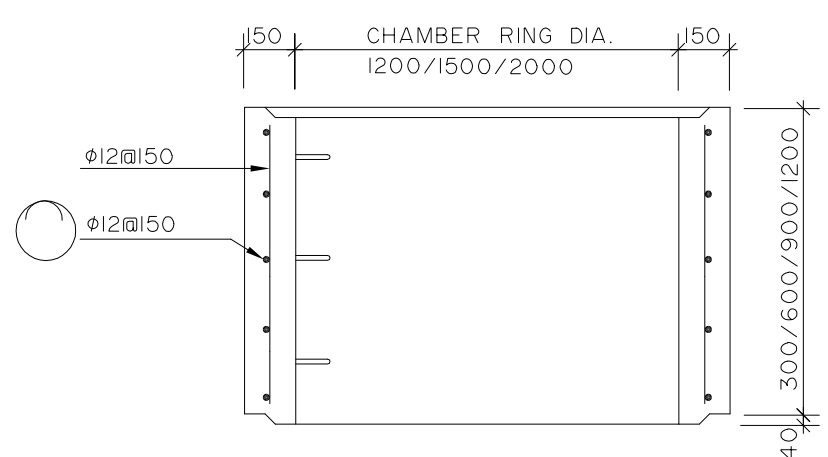
SECTION B-B



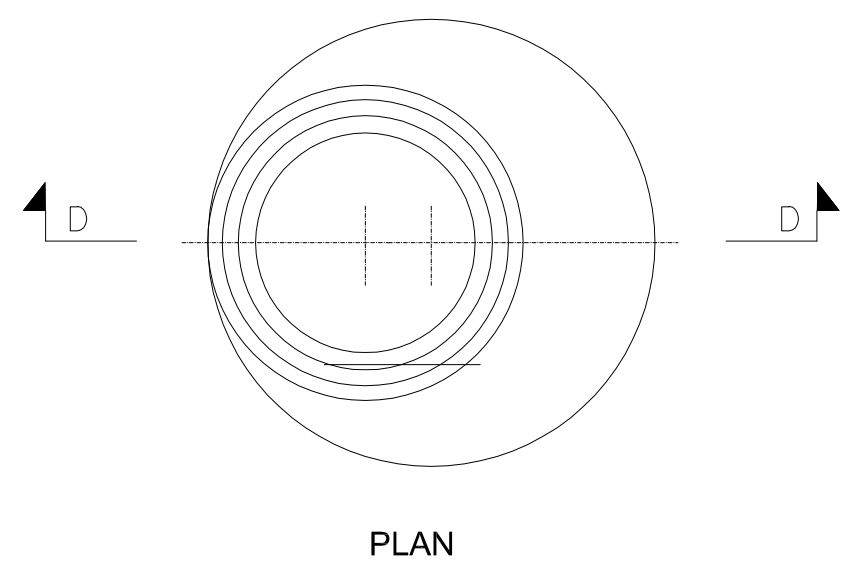
SECTION C-C



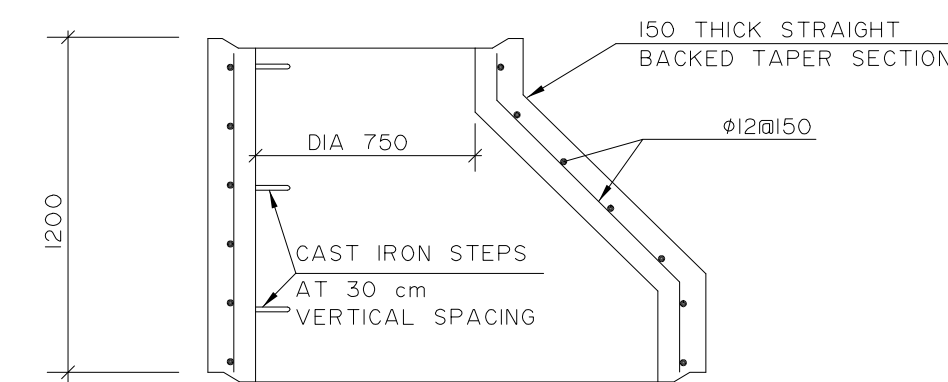
PLAN



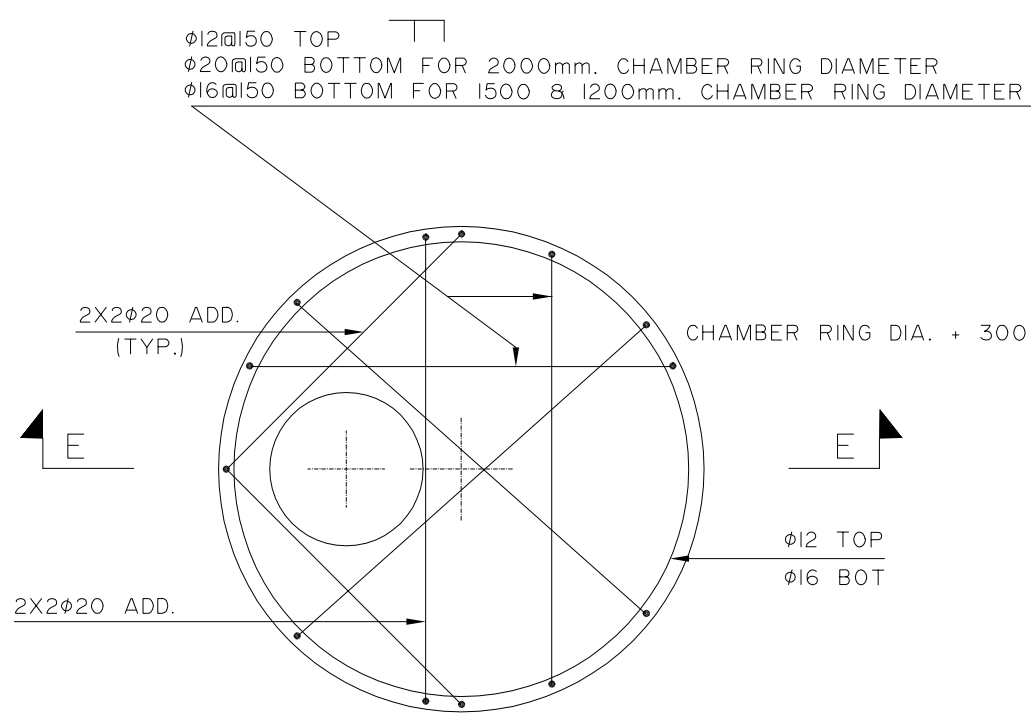
SECTION A-A  
STANDARD CHAMBER RING



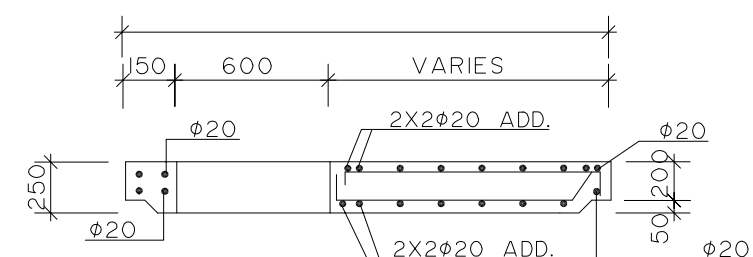
PLAN



SECTION D-D

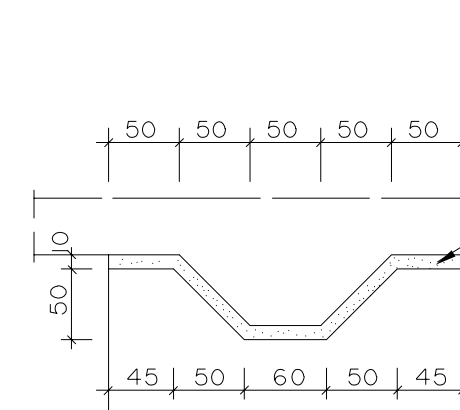


PLAN

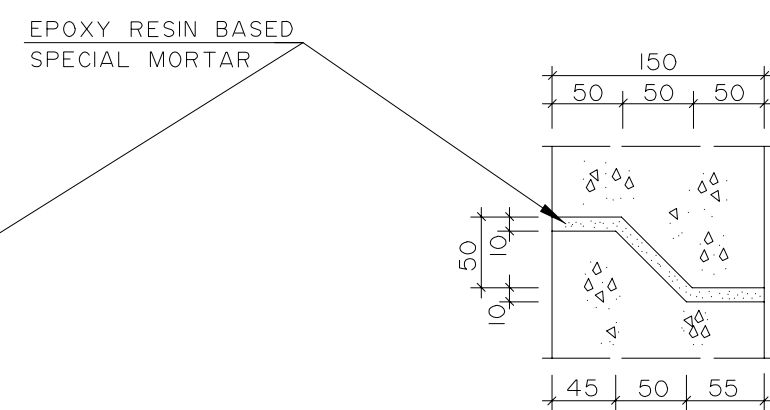


SECTION E-E  
COVER SLAB REINFORCEMENT

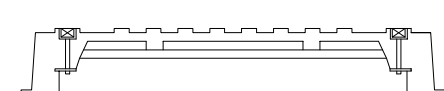
## DETAILS "A" AND "B"



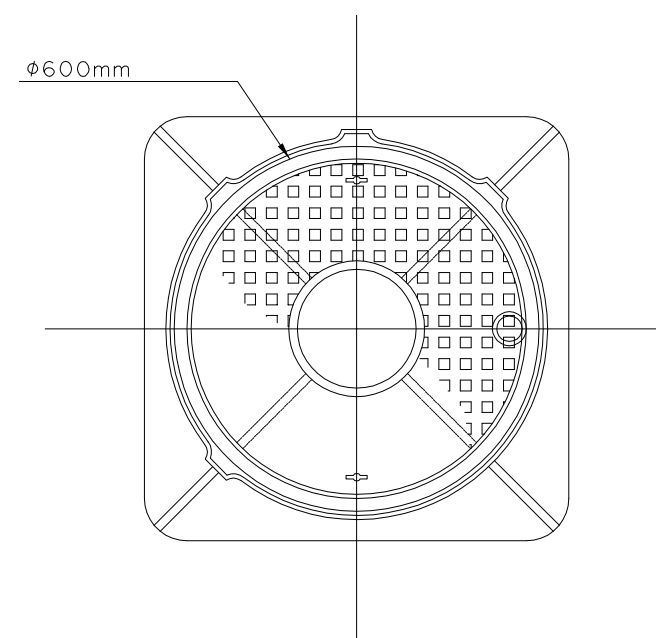
DETAIL "B"



DETAIL "A"



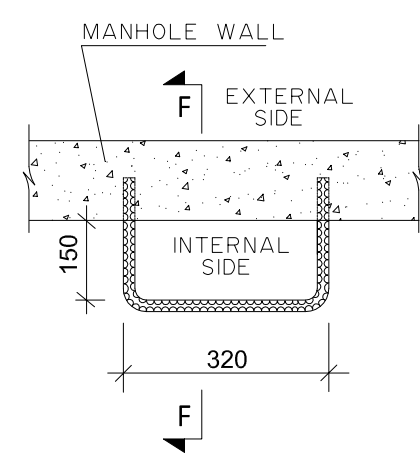
SECTION VIEW



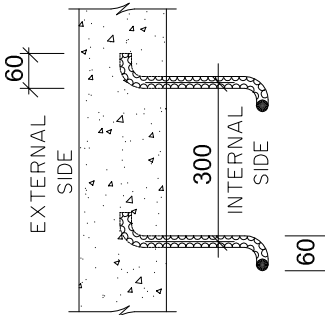
DETAIL "C"

HEAVY DUTY, CLASS D-400, 40T ON ROAD SURFACES  
MEDIUM DUTY, CLASS C-250, 25T ON SIDEWALKS

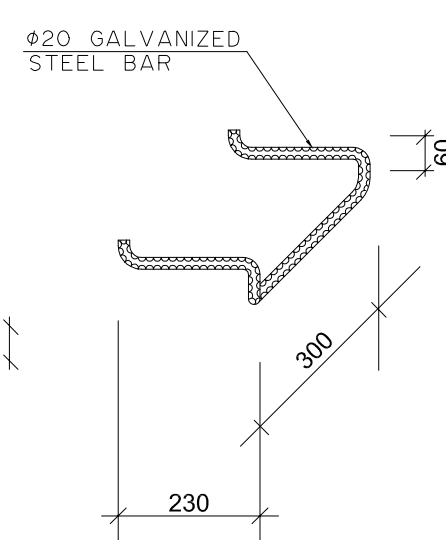
## DUCTILE IRON COVER WITH FRAME AND LOCK



PLAN VIEW

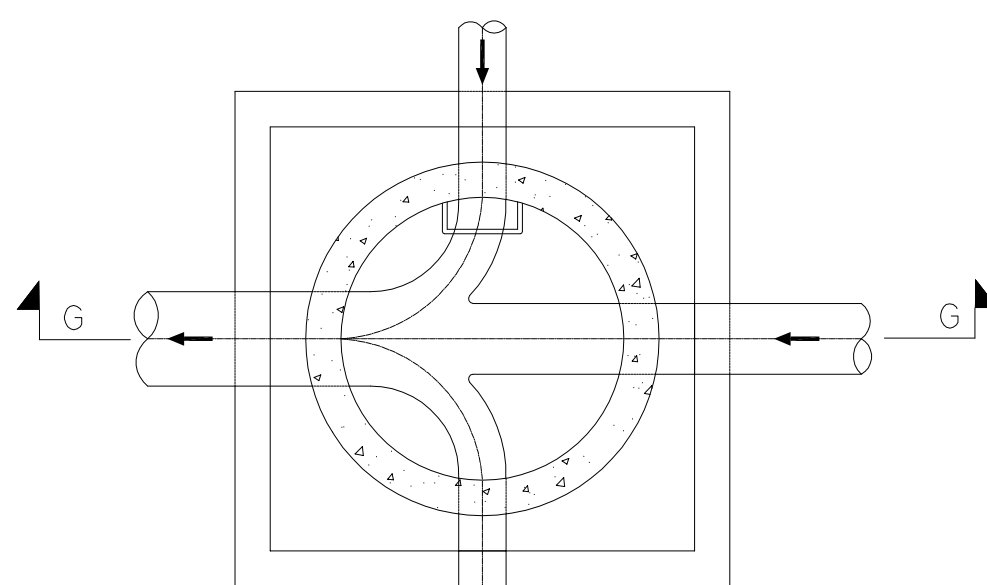


SECTION F-F

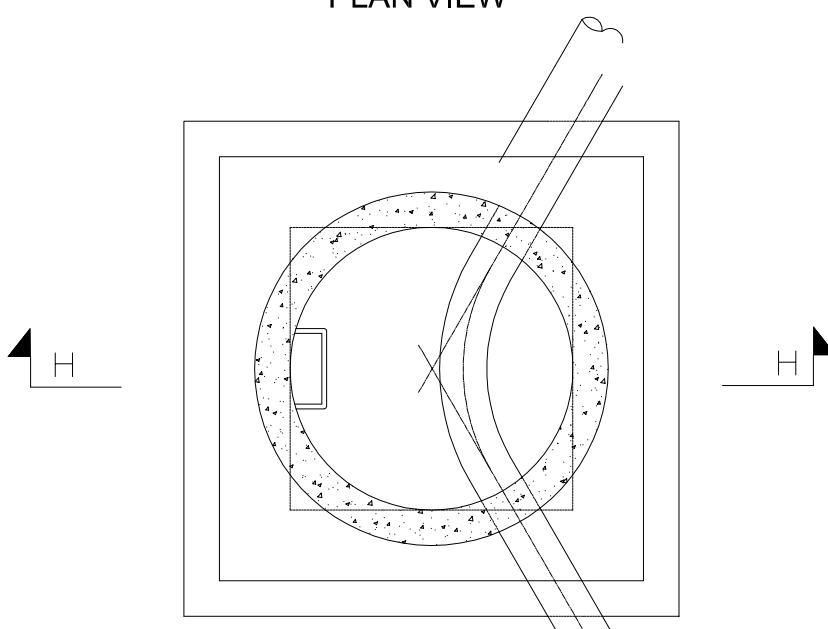


ELEVATION

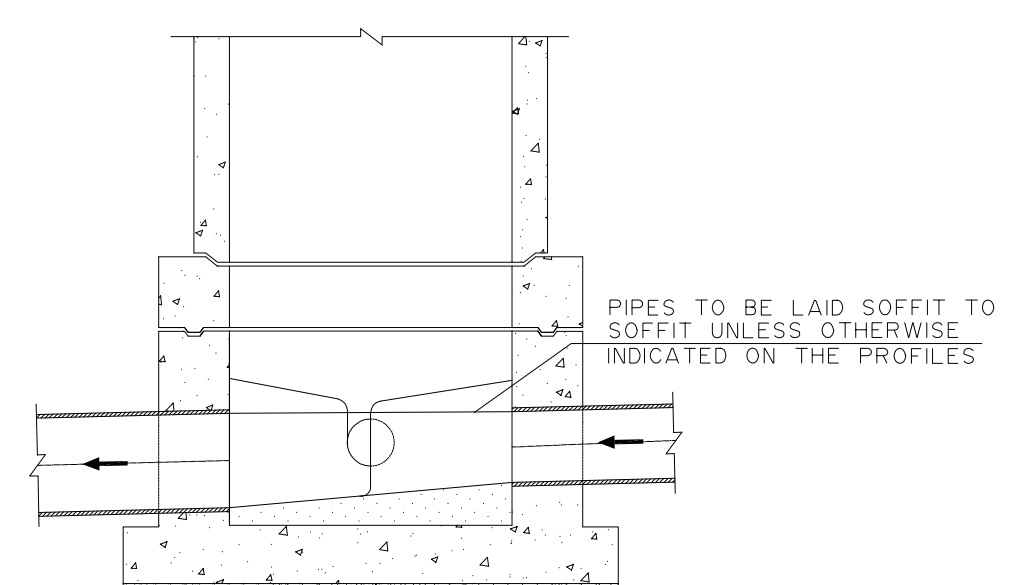
## MANHOLE STEP DETAIL



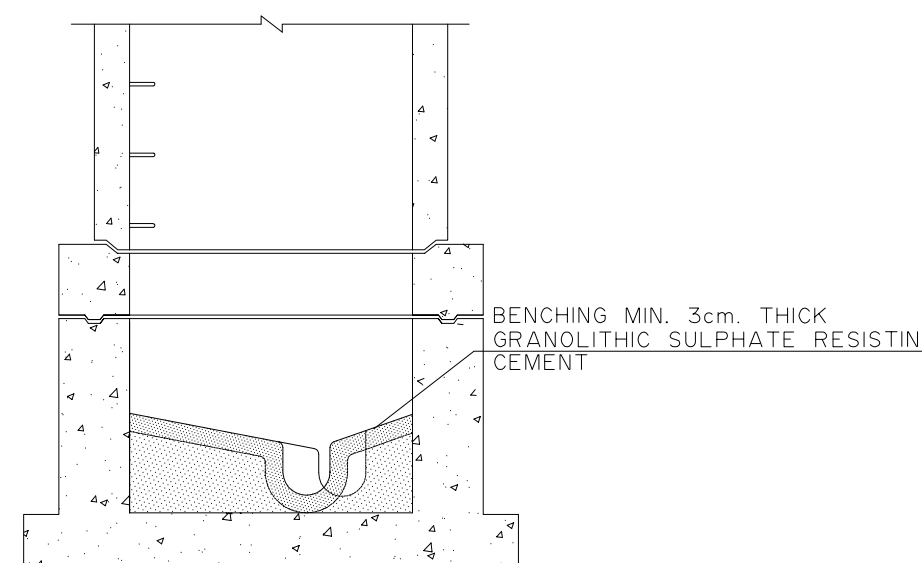
PLAN VIEW



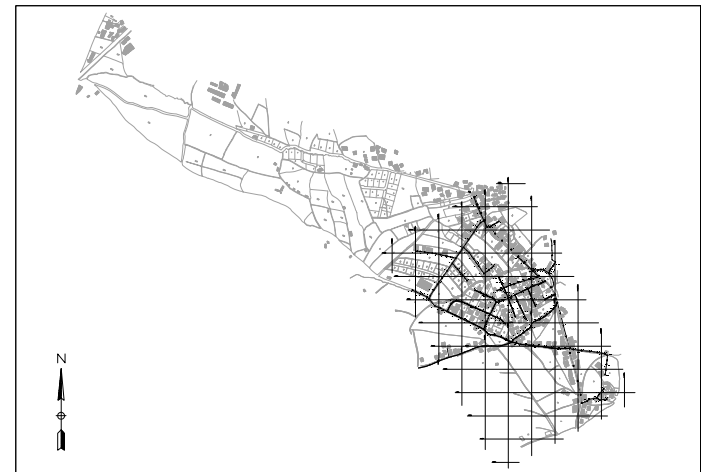
PLAN VIEW



SECTION G-G



SECTION H-H



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 / cm<sup>2</sup> CLASS B - WHERE INDICATE CONCRETE = 175 kg / cm<sup>2</sup> CLASS C - BLINDING & MASS CONCRETE = 105 kg / cm<sup>2</sup>
  - 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/cm<sup>2</sup>, AND MILD STEEL HAVING A MINIMUM YIELD OF 2800Kg/cm<sup>2</sup>.
  - 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 φ8 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.

| REV                          | BY  | Date       | Description      | Appr. |
|------------------------------|-----|------------|------------------|-------|
| 0                            | M.N | 11-12-2015 | GENERAL REVISION | M.N   |
| 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 2 OF 4  
L1505-PH1-SW-11-REV.0  
Project Number Phase Type Drawing Number Revision