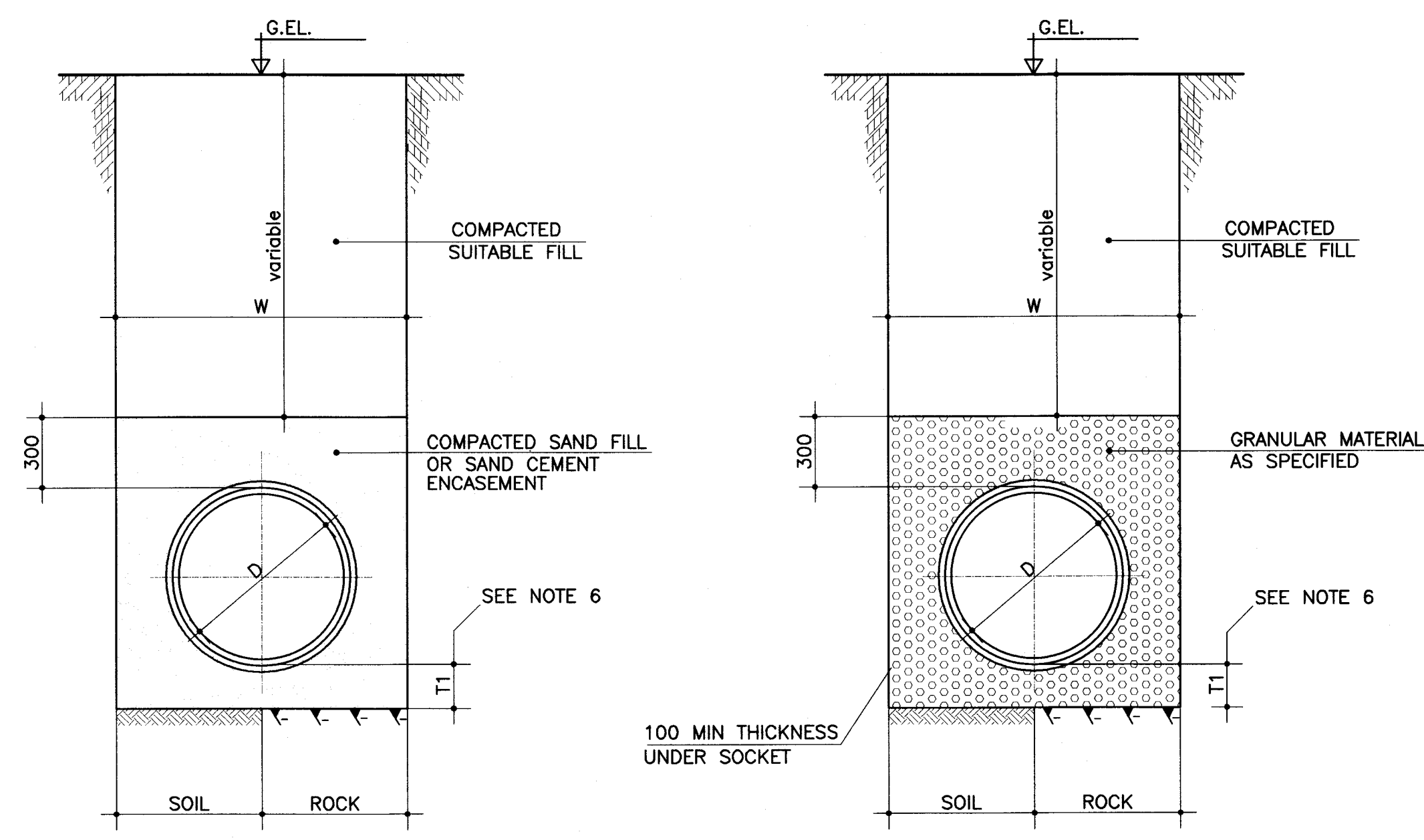


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**SAND OR CEMENT STABILIZED SAND BEDDING AND SURROUND**  
 N.T.S.  
**GRANULAR BEDDING AND SURROUND**  
 N.T.S.

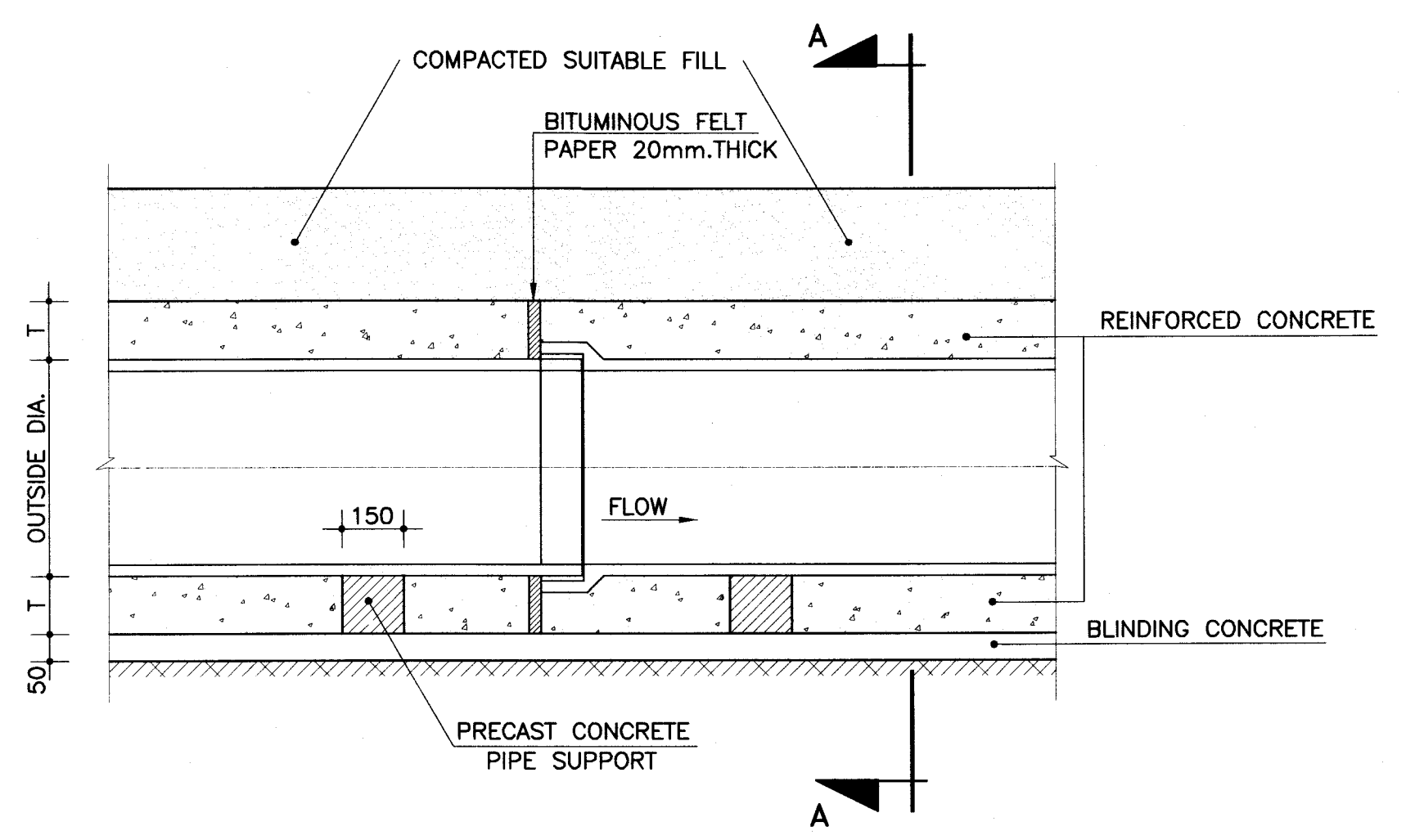
**PIPE BEDDING**

**PIPE BEDDING REQUIREMENTS**  
 LAYING OF DIFFERENT TYPES OF PIPES MUST BE ACCORDING TO THE TABLE BELOW  
 UNLESS OTHERWISE INSTRUCTED BY THE ENGINEER

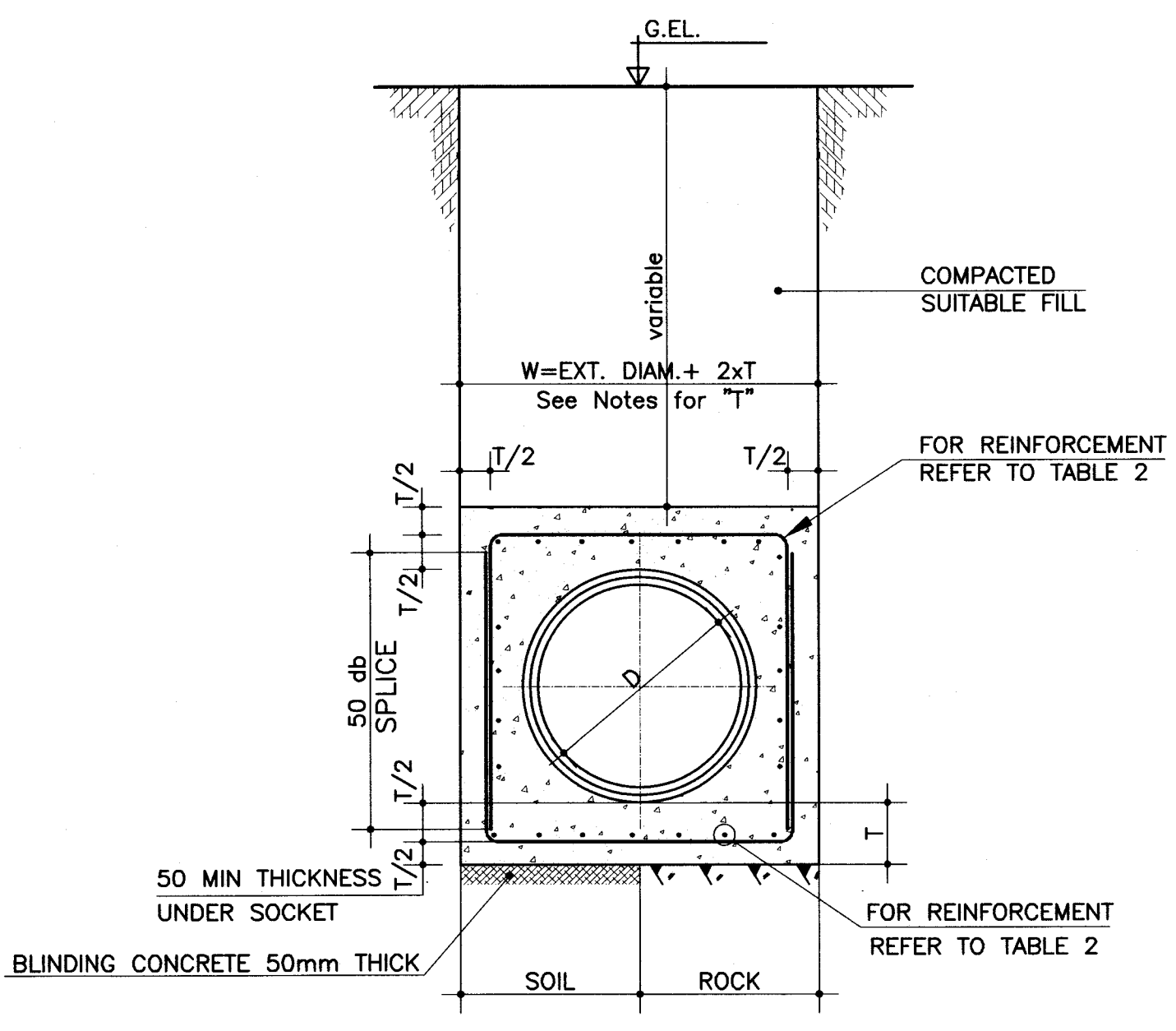
PIPE MATERIAL	HEIGHT OF FILLING OVER THE PIPE FROM GROUND ELEV. TO CROWN OF PIPE	TYPE OF INSTALLATION
DUCTILE IRON	GREATER THAN 1.00m	COMPACTED SAND FILL OR GRANULAR MATERIAL OF MINIMUM 300mm ABOVE CROWN OF PIPE AND BACKFILLED WITH SELECTED EXCAVATED MATERIAL
GALVANIZED STEEL	GREATER THAN 1.00m	COMPACTED SAND FILL OR GRANULAR MATERIAL OF MINIMUM 300mm ABOVE CROWN OF PIPE AND BACKFILLED WITH SELECTED EXCAVATED MATERIAL
HDPE	1-4m	GRANULAR BEDDING AND SURROUND
	GREATER THAN 4.00m	CONCRETE ENCASEMENT
FOR ALL PIPE MATERIALS	LESS THAN 1.00m	CONCRETE ENCASEMENT

- NOTES:**
- UNLESS OTHERWISE INDICATED, ALL DIMENSIONS ARE IN MILLIMETERS.
  - THE MINIMUM THICKNESS "T" FOR CONCRETE ENCASEMENT TO PIPES SHALL BE AS FOLLOWS:  
 $T = 150$  FOR  $D \leq 600$
  - THE GRANULAR MATERIAL AND SAND FILL IN PIPE TRENCHES MUST BE COMPACTED ACCORDING TO THE TECHNICAL SPECIFICATIONS.
  - THE CONTRACTOR SHALL IDENTIFY ALL THE EXISTING UTILITIES AND MANHOLES WITH THEIR LOCATION AND LEVELS, IN ORDER TO AVOID DAMAGE TO EXISTING WORKS.
  - ALL PIPES SHALL BE LAID ON THE APPROPRIATE TYPE OF BEDDING AS INDICATED IN THE TABLE OF PIPE BEDDING REQUIREMENTS AND SHALL RECEIVE SELECTED FILL COMPACTED TO AT LEAST 300mm. ABOVE CROWN OF PIPE AND REST.
  - MINIMUM THICKNESS T1 OF COMPACTED MATERIAL UNDER BARREL BOTTOM:  
 $T1 = 150$  FOR  $D < 300$ mm.
  - REFER TO THE SPECIFICATIONS SECTION: "PIPE BEDDING REQUIREMENTS" TABLE APPLICABLE TO EACH PIPE MATERIAL.
  - THE TRENCH WIDTHS INDICATED IN THE TABLE ARE THE MAXIMUM VALUES. THE TRENCH WIDTHS OF PIPES MUST BE ADOPTED ACCORDING TO THE SITE ENGINEER (DECIDE ACCORDING TO THE NATURE OF THE SOIL).

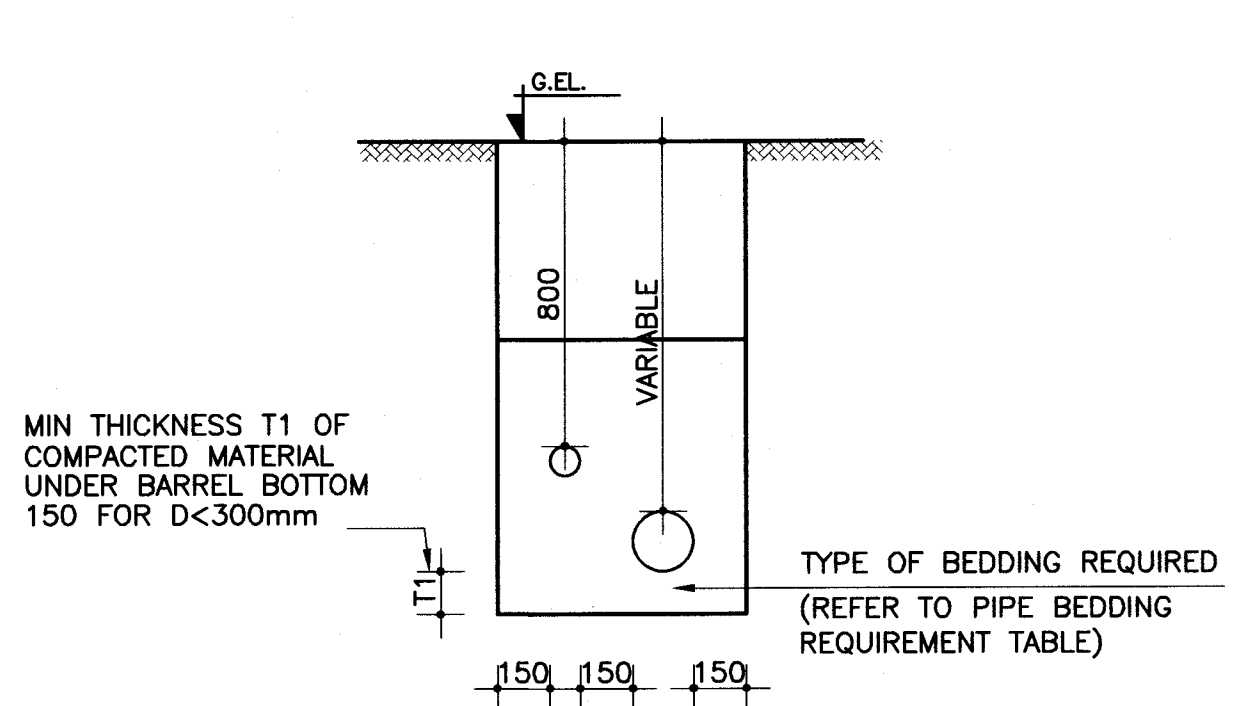
- LEGEND:**
- G.E.L. GROUND ELEVATION
  - CONT. CONTINUOUS
  - db DEFORMED BAR DIAMETER IN mm.
  - DIA. DIAMETER
  - D PIPE DIAMETER



**DETAIL OF CONCRETE PIPE ENCASEMENT**  
 N.T.S.



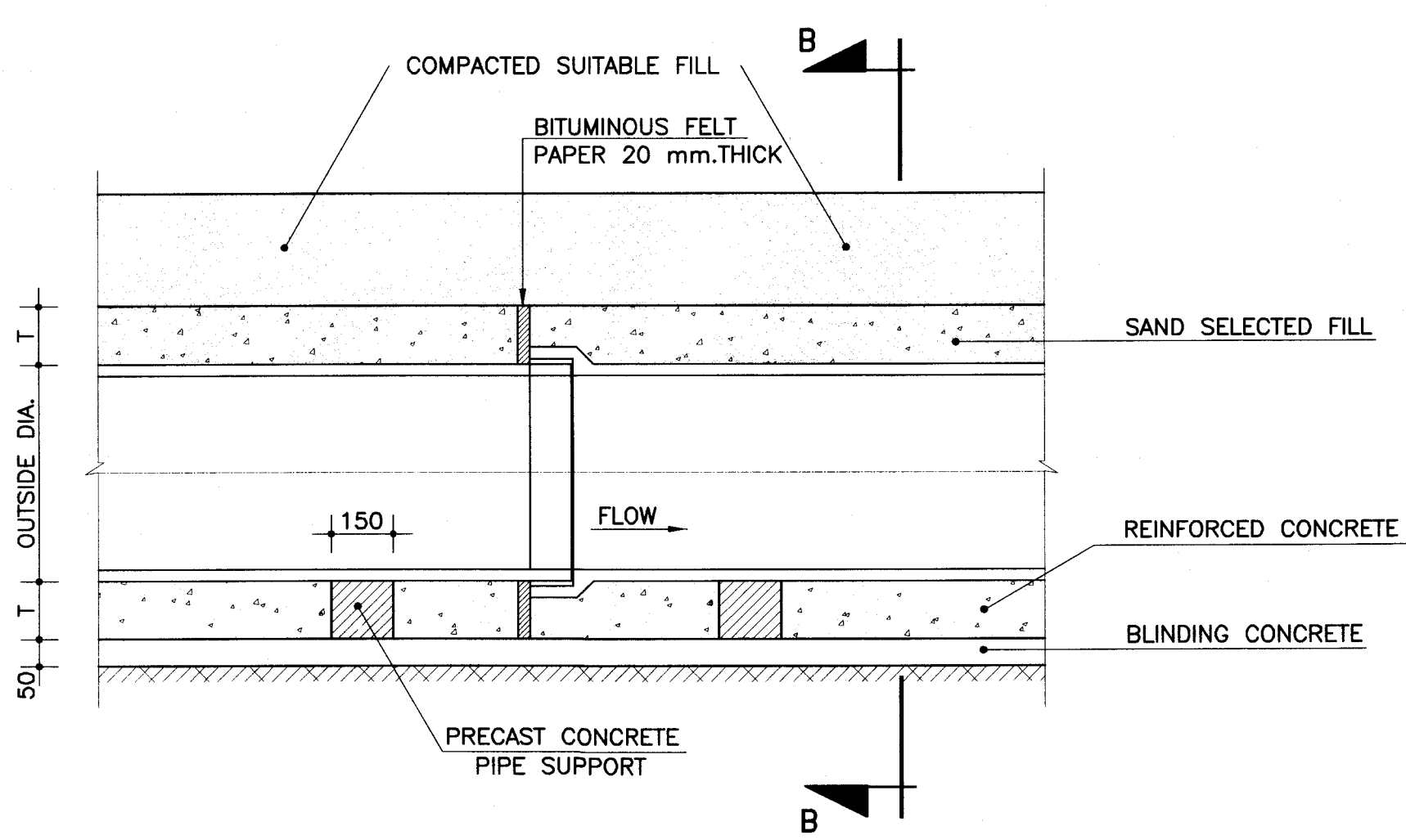
**SECTION A-A CONCRETE ENCASEMENT**  
 N.T.S.



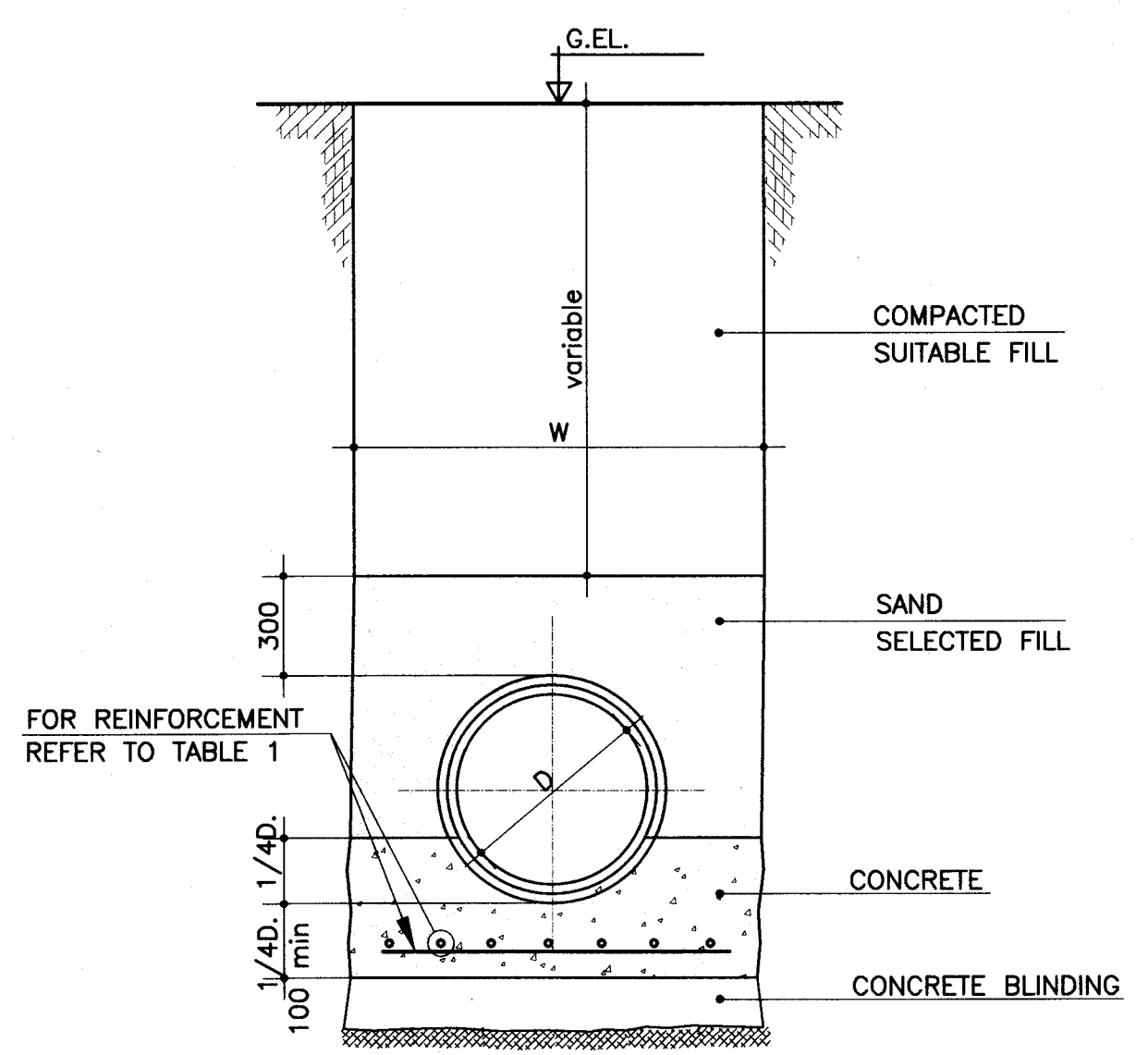
**DETAIL OF TWO PIPES IN SAME TRENCH**  
 N.T.S.

**TABLE FOR TRENCH WIDTH (W)**

PIPE DIAMETER mm	MAX TRENCH WIDTH
50	600
60 - 100	650
125 - 350	D + 650



**DETAIL OF CONCRETE PIPE BEDDING**  
 N.T.S.



**SECTION B-B CONCRETE BEDDING**  
 N.T.S.

**TABLE 1**  
 REINFORCEMENT FOR CONCRETE BEDDING

PIPE SIZE	STEEL BARS
UP TO #600	T10 @ 150 (EACH LAYER)
#700 TO #1000	T12 @ 140 (EACH LAYER)

**TABLE 2**  
 REINFORCEMENT FOR CONCRETE ENCASEMENT

PIPE SIZE	STEEL BARS
UP TO #600	T10 @ 150
#700 TO #1500	T12 @ 140

**GOOD FOR TENDERING**

REV. N.	DATE	BY	DESCRIPTION	CH'KD	APP'D
REVISIONS					
CLIENT					
<b>الجمهورية اللبنانية</b> <b>وزارة الطاقة والمياه</b>					
<b>دراسة خزانات وخطوط جر وتوزيع</b> <b>خطوط دفع لمياه الشرب</b>					
TITLE					
DESIGNED	CHECKED	PROJECT N.	SHEET	DRAWING N.	
V.S.	E.D.	L1102	1 OF 6	KFI-W-2070	
DRAWN	APPROVED	DATE	SCALE	REV.	
S.K.	K.S.		N.T.S.	0	