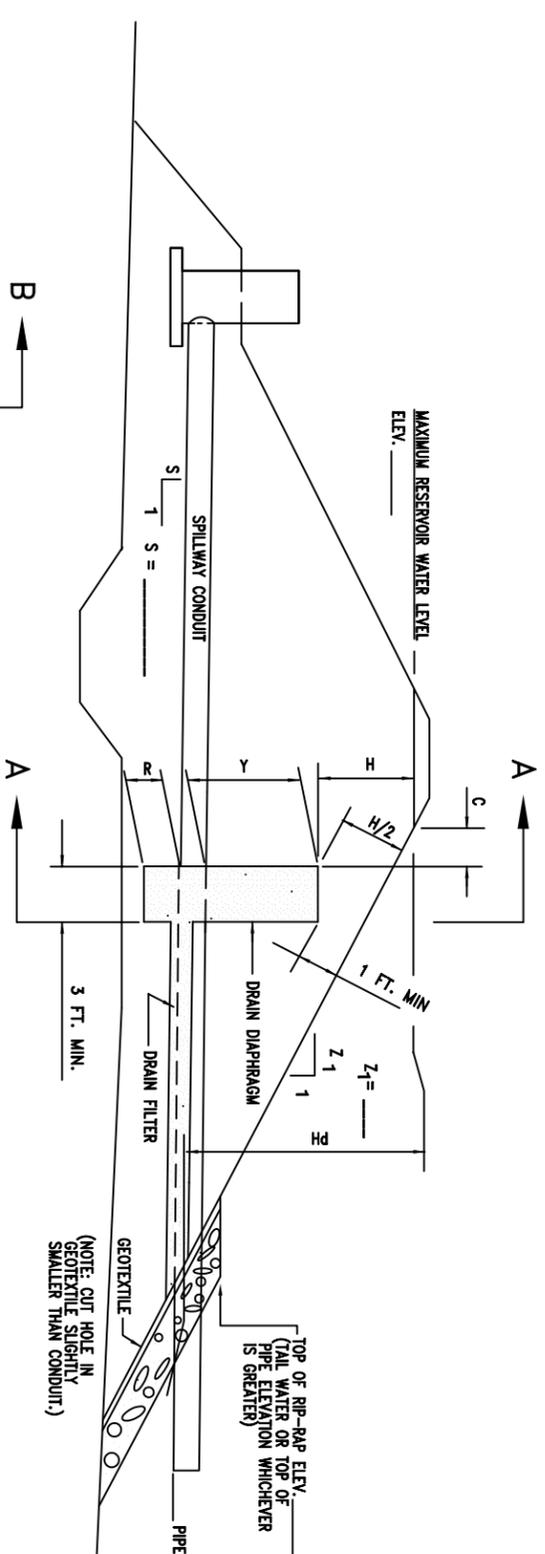


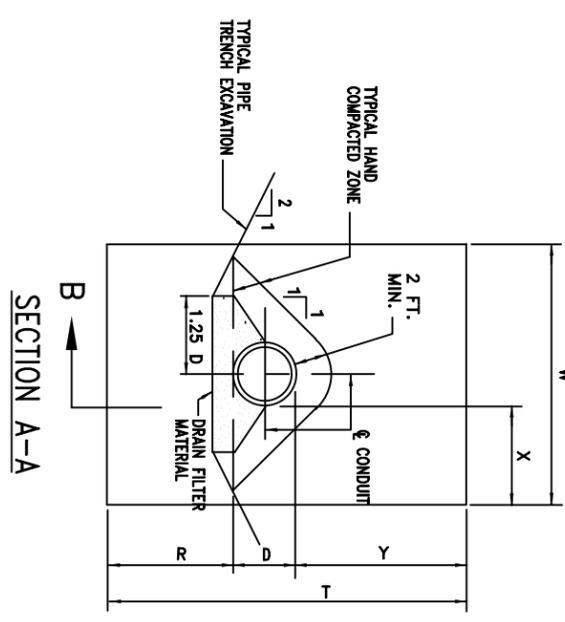
SUMMARY OF DESIGN		SUMMARY OF DIMENSIONS	
H = _____ FEET	Hd = _____ FEET	W = _____ FEET	TOTAL WIDTH OF DRAIN DIAPHRAGM
X = _____ FEET	D = _____ FEET	T = _____ FEET	TOTAL HEIGHT OF DRAIN DIAPHRAGM
R = _____ FEET	Y = _____ FEET	t = _____ FEET	THICKNESS OF FILTER
C = _____ FEET	BEDROCK AT ELEVATION _____		



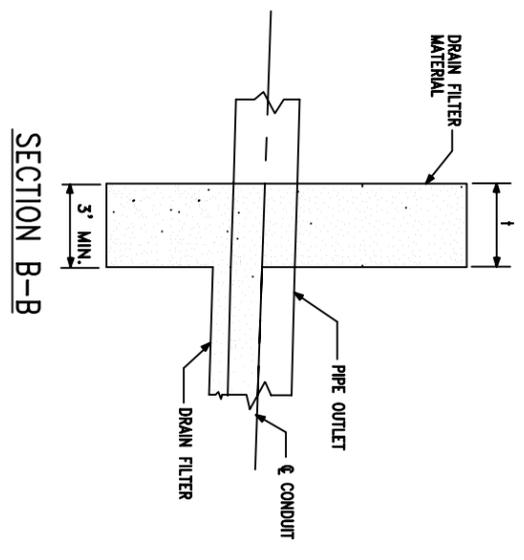
PROFILE ALONG Q-Q OF CONDUIT

MATERIAL NOTE
 THE GEOTEXTILE SHALL CONFORM TO THE CLASS I REQUIREMENTS IN TABLE 1 (WOVEN) OR TABLE 2 (NONWOVEN) MATERIAL SPECIFICATION 592, EXCEPT THE POA OF THE WOVEN SHALL BE GREATER THAN 6% AND THE POROSITY OF THE NONWOVEN SHALL BE GREATER THAN 30%.

ESTIMATED QUANTITIES
 DRAIN FILTER MATERIAL _____ CUBIC YARDS
 GEOTEXTILE _____ SQUARE FEET
 RIP-RAP _____ CUBIC YARDS



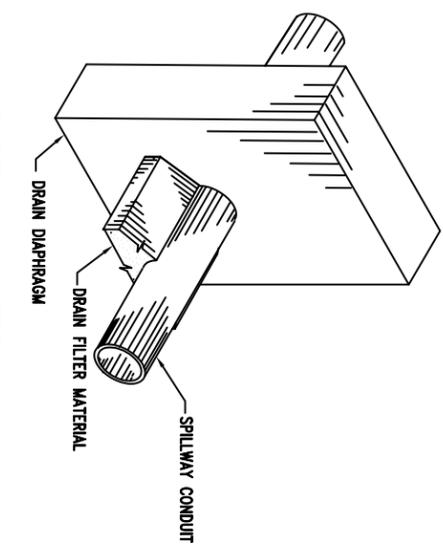
SECTION A-A



SECTION B-B

SHOWING CONDUIT, DRAIN DIAPHRAGM, & DRAIN FILTER MATERIAL

PARTIAL ISOMETRIC



DRAIN FILTER GRADATION		RIPRAP GRADATION	
SI-EVE SIZE	PERCENT PASSING	PERCENT SMALLER	WEIGHT RANGE (LBS.)
3/8	100		SIZE RANGE (IN.)
4	95-100		
16	45-100		
50	5-30		
100	0-10		

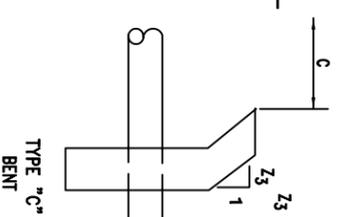
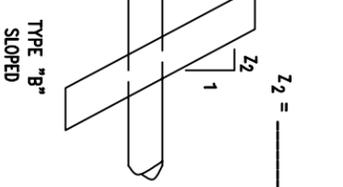
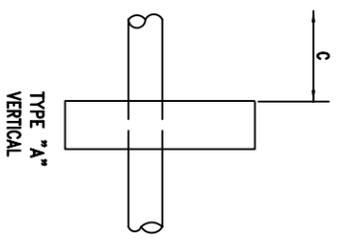
ASTM C-33 FINE AGGREGATE MIN. GRADATION MANDOT 3128 FINE AGG MANDOT 3127 FA-1

DEFINITIONS:

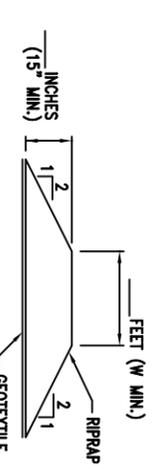
- D = OUTSIDE DIAMETER OF CIRCULAR CONDUIT
- H = VERTICAL DISTANCE BETWEEN THE TOP OF THE DIAPHRAGM AND THE MAXIMUM POTENTIAL RESERVOIR WATER LEVEL.
- X = FOR FLEXIBLE CONDUITS USE THE SMALLER OF 2D OR 5 FEET BEYOND ANY EXCAVATION MADE TO INSTALL THE CONDUIT. FOR RIGID CONDUIT (CONCRETE) USE THE SMALLER OF 3D OR 5 FEET BEYOND ANY EXCAVATION MADE TO INSTALL THE CONDUIT.
- Y = VERTICAL DISTANCE FROM TOP OF CONDUIT TO TOP OF DIAPHRAGM
- C = HORIZONTAL DISTANCE FROM D.S. FACE AT MAXIMUM POTENTIAL RESERVOIR WATER LEVEL TO U.S. FACE OF DIAPHRAGM
- R = 2D OR NOT TO EXCEED BEYOND A BEDROCK SURFACE
- Hd = VERTICAL DISTANCE FROM MAXIMUM POTENTIAL RESERVOIR WATER LEVEL TO CONDUIT INVERT AT D.S. FACE OF SLOPE
- S = SLOPE OF CONDUIT IN FEET OF FALL PER HORIZONTAL FOOT
- $C = Hd * Z_1 - \left(\frac{1.5 * D}{(1 + Z_1)} + \left(\frac{Hd}{Z_1} \right) \right) > 0$ (MAXIMUM)

CONSTRUCTION NOTES:

- NO COMPACTION OF THE DRAIN FILTER MATERIAL IS REQUIRED BEYOND THAT RESULTING FROM THE PLACING & SPREADING OPERATIONS. THE DRAIN FILTER MATERIAL SHALL BE PLACED IN 12 INCH LIFTS. EACH LIFT SHALL BE SATURATED UNIFORMLY WITH APPROXIMATELY 1.2 GALLONS OF WATER PER CUBIC FOOT OF LOOSE DRAIN MATERIAL.
- THE MAXIMUM HEIGHT OF DROP OF THE RIPRAP ONTO THE GEOTEXTILE SHALL BE 3 FEET.



DRAIN DIAPHRAGM CONFIGURATIONS



SECTION OF RIPRAP PERPENDICULAR TO SLOPE



DRAIN DIAPHRAGM LAYOUT FOR DROP-INLET WITH DRAIN FILTER

Designed	CADD (RCG)	(3-89)
Drawn	(MAP) (JAA)	(1-94)
Checked		
Approved		

File No. MN301a.DWG
 Drawing No. MN-ENG-310a
 5/02
 Sheet of