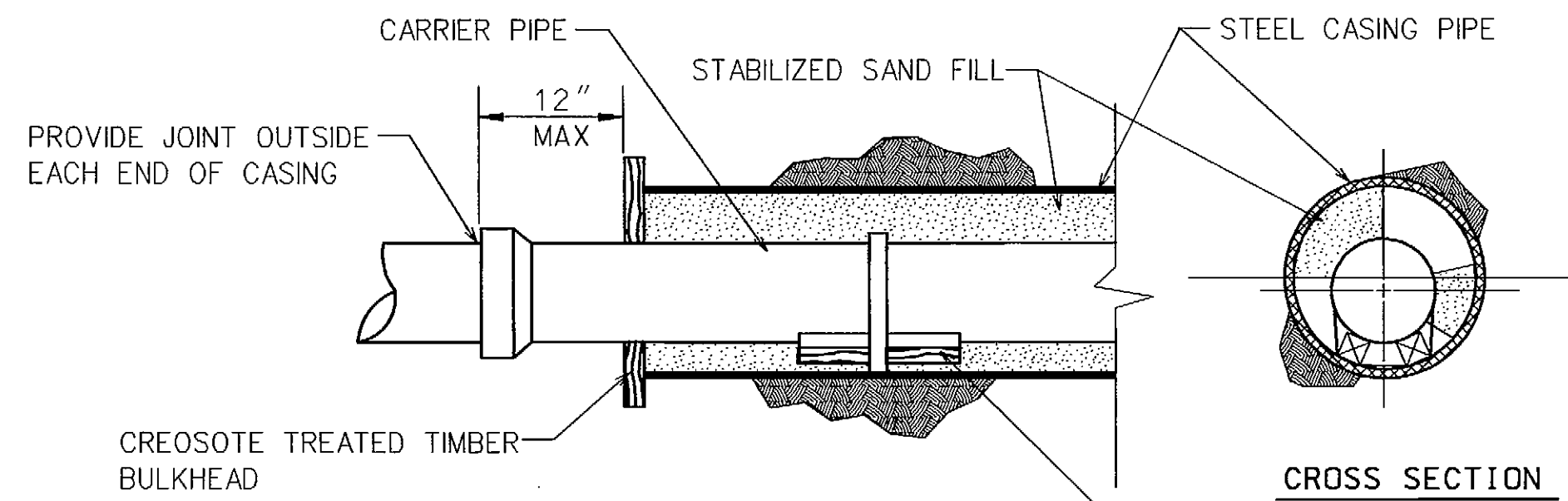


**HORIZONTAL BLOCKING TABLE**

AREA REQUIRED (IN SQUARE FEET) BEARING AGAINST UNDISTURBED TRENCH WALL

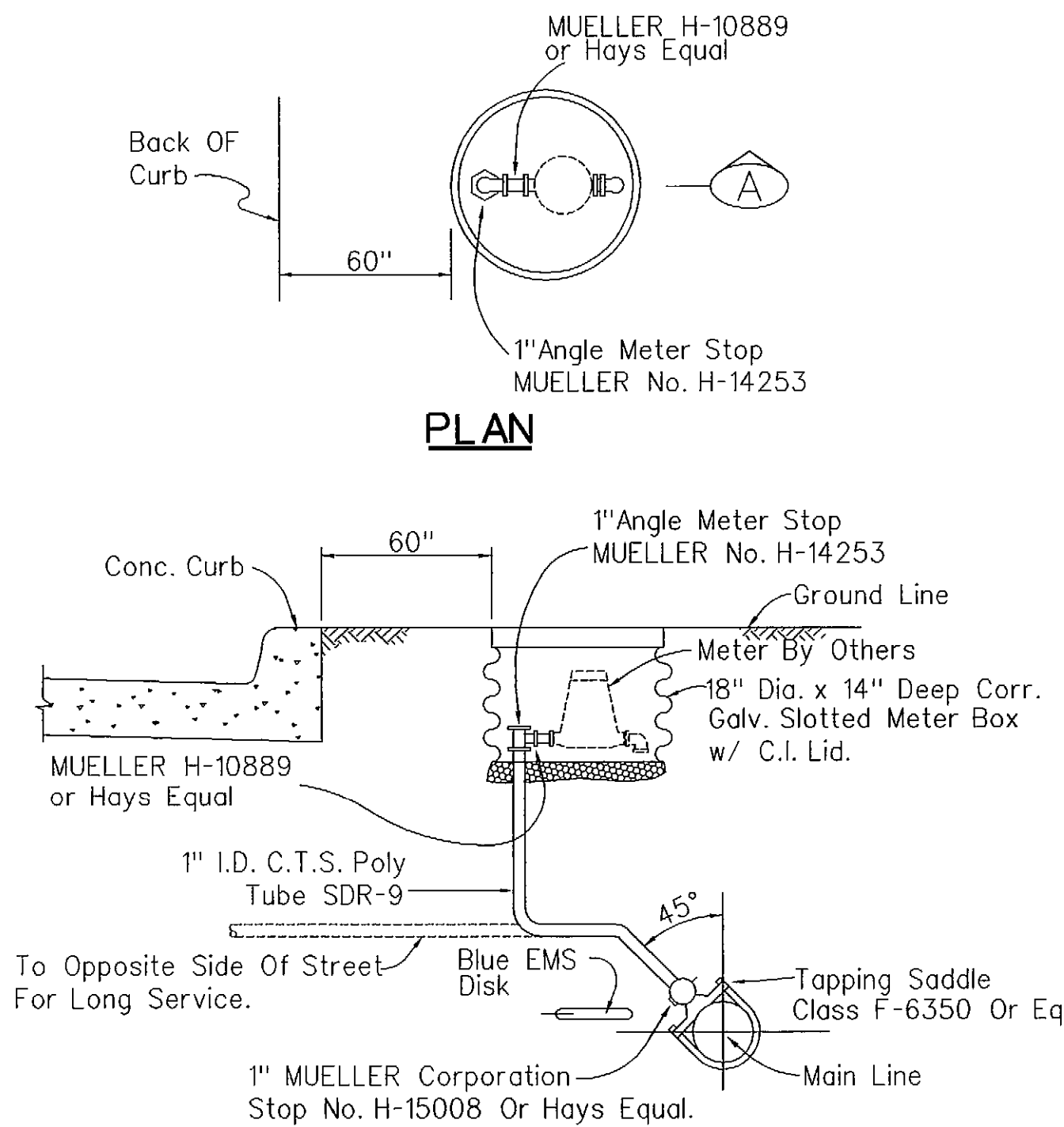
PIPE SIZE (IN.)	THRUST (POUNDS) DEAD END AND TEE	BLOCKING (SQUARE FEET)					
		DEAD END AND TEE	90° BEND	45° BEND	22-1/2° BEND	11-1/4° BEND	5° DEFLECT
4	2,450	1.23	1.73	0.94	0.50	0.50	0.50
6	5,513	2.76	3.90	2.11	1.08	0.54	0.50
8	9,802	4.90	6.93	3.75	1.91	0.96	0.50
10	15,315	7.66	10.83	5.86	2.99	1.50	0.67
12	22,054	11.03	15.59	8.43	4.30	2.16	0.96
14	30,018	15.01	21.23	11.49	5.86	2.94	1.31
16	39,207	19.60	27.73	15.01	7.65	3.84	1.71

BASED ON 2,000 P.S.F. SOIL BEARING CAPACITY AND 195 P.S.I. LINE PRESSURE (150 P.S.I. WORKING PRESSURE PLUS 30% FOR WATER HAMMER.)



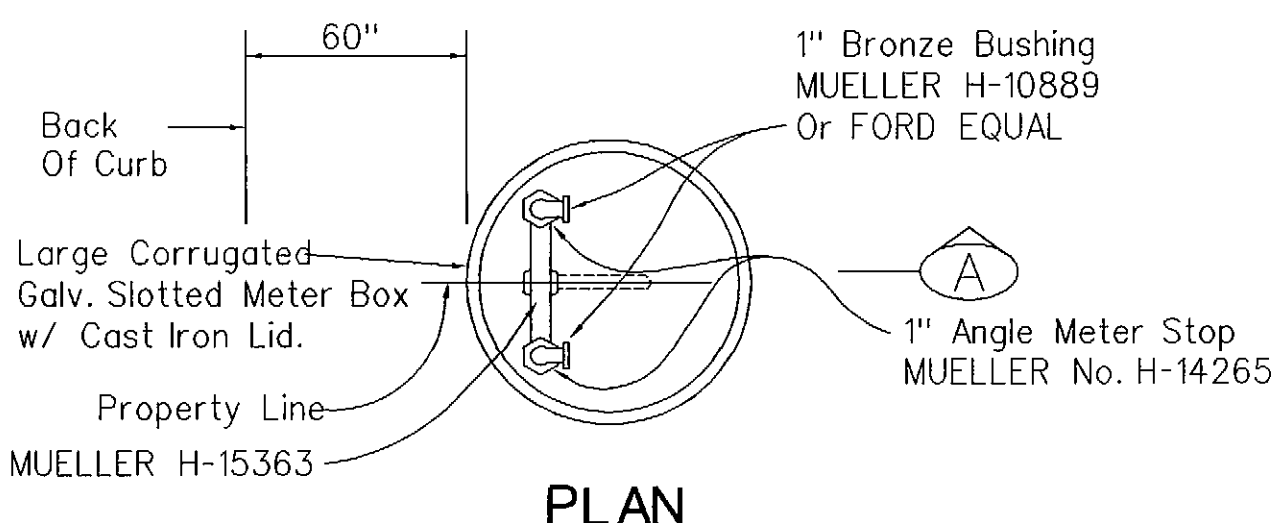
**NOTE:**  
 FOR SIZE AND LENGTH OF CASING REQUIRED SEE PLAN AND PROFILE SHEETS  
 ALL CARRIER PIPE JOINTS INSIDE STEEL CASING PIPE ARE TO BE RESTRAINED WITH MEGA-LUG RESTRAINTS OR APPROVED EQUAL.

**CASING DETAIL**



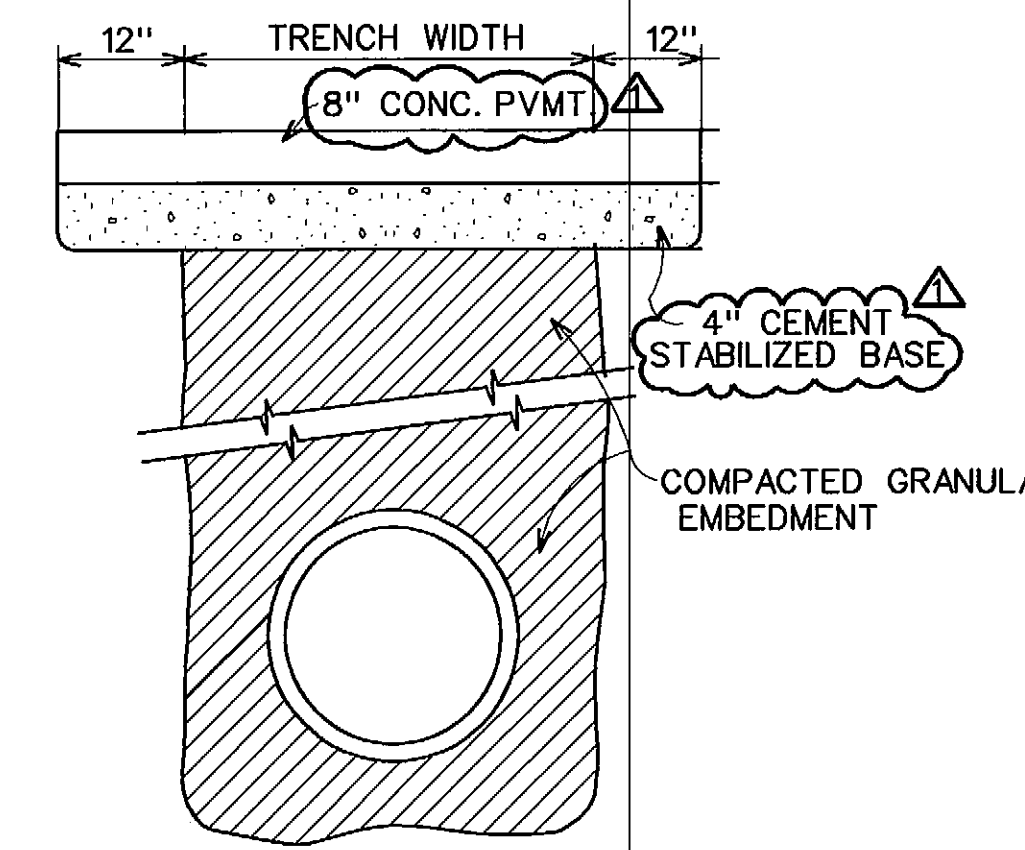
**SINGLE SERVICE CONNECTION**

Not To Scale



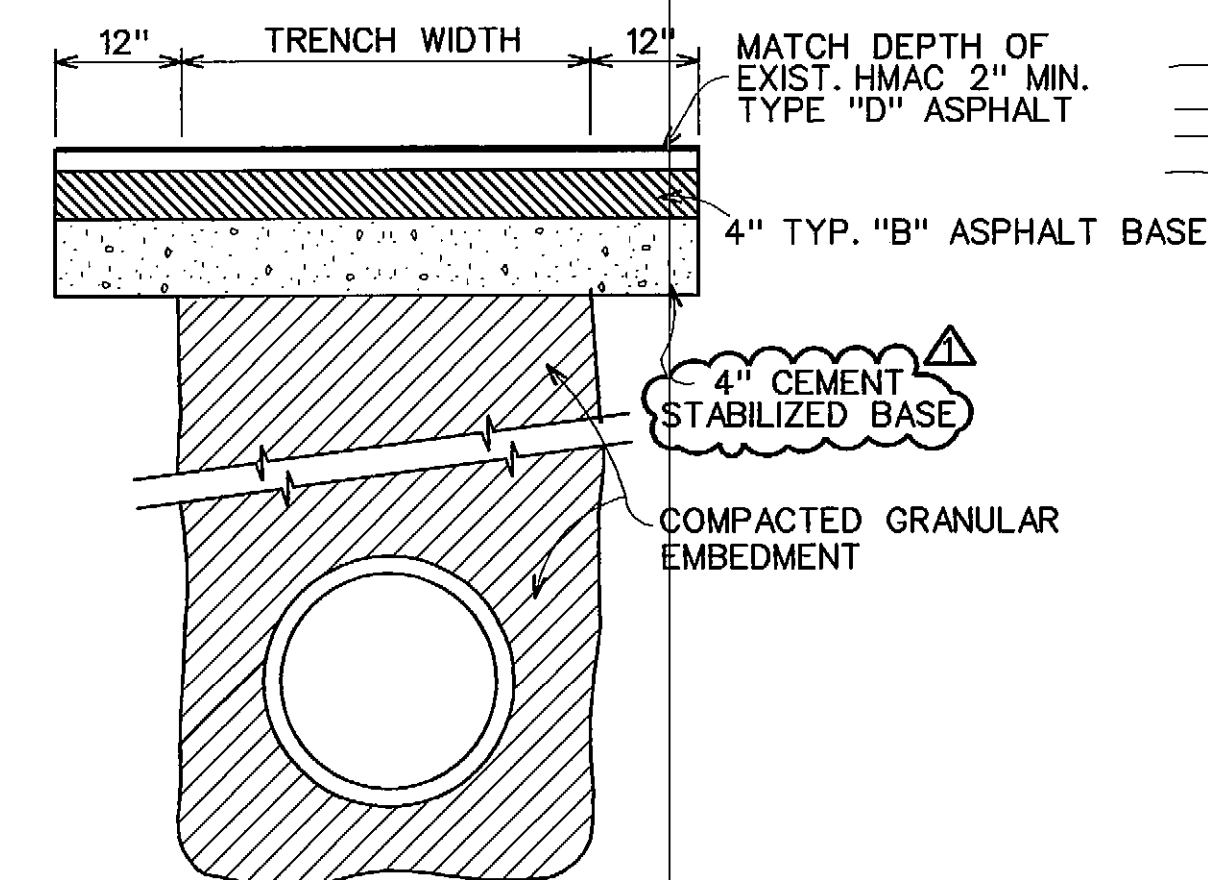
**DOUBLE SERVICE CONNECTION**

Not To Scale



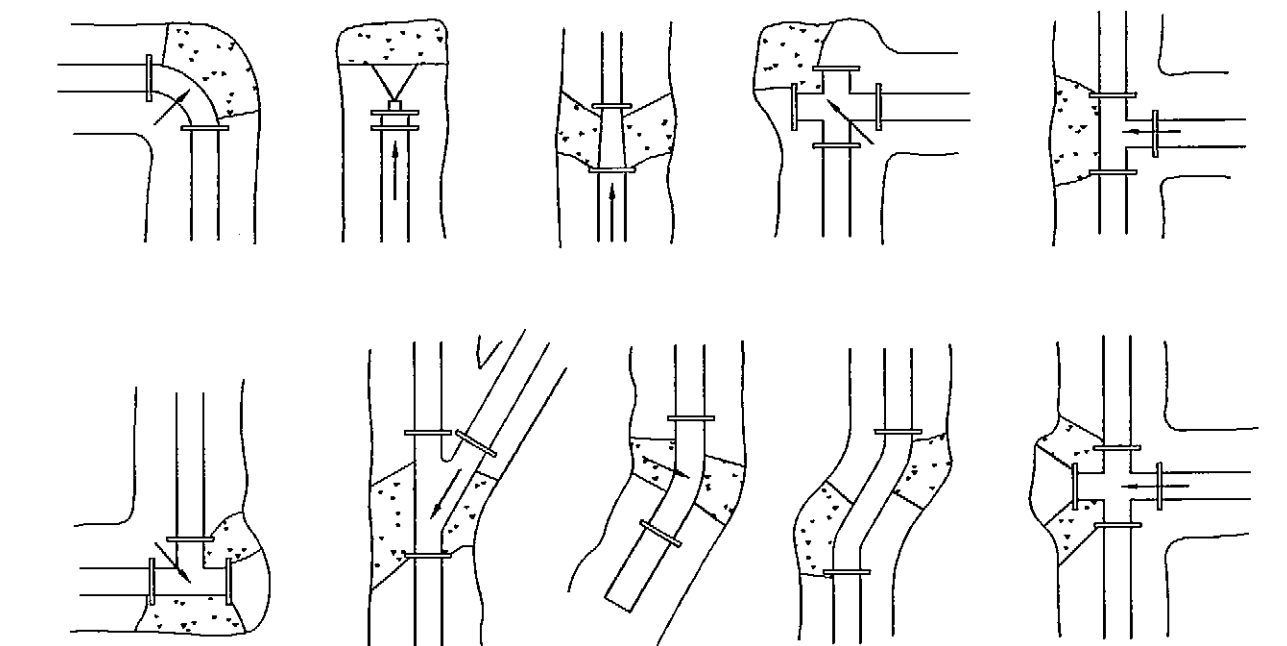
**CONCRETE PAVING REPLACEMENT**

(FOR ALL TYPES OF PIPES)  
N.T.S.



**ASPHALT PAVING REPLACEMENT**

(FOR ALL TYPES OF PIPES)  
N.T.S.



**TYPICAL THRUST BLOCKING DETAILS**

TYPICAL THRUST BLOCKING DETAILS

- NOTES:**
- The earth bearing surface shall be undisturbed material. Keep all joints free from concrete. Thrust block to be constructed of 1,500 P.S.I. (28 day) concrete and placed as shown on "Typical Blocking Details" above.
  - It shall be the responsibility of the contractor to install adequate thrust blocking. The HORIZONTAL BLOCKING TABLE shows the minimum thrust blocking area required (in square feet) bearing against undisturbed trench wall.
  - All fittings shall be blocked regardless of the angle or direction, except as noted in the chart.
  - Soil bearing strength is assumed to be 2,000 P.S.F. Site conditions may vary which will require modifications to the blocking calculations.
  - No concrete shall be placed over pipe joints, nuts, or bolts.

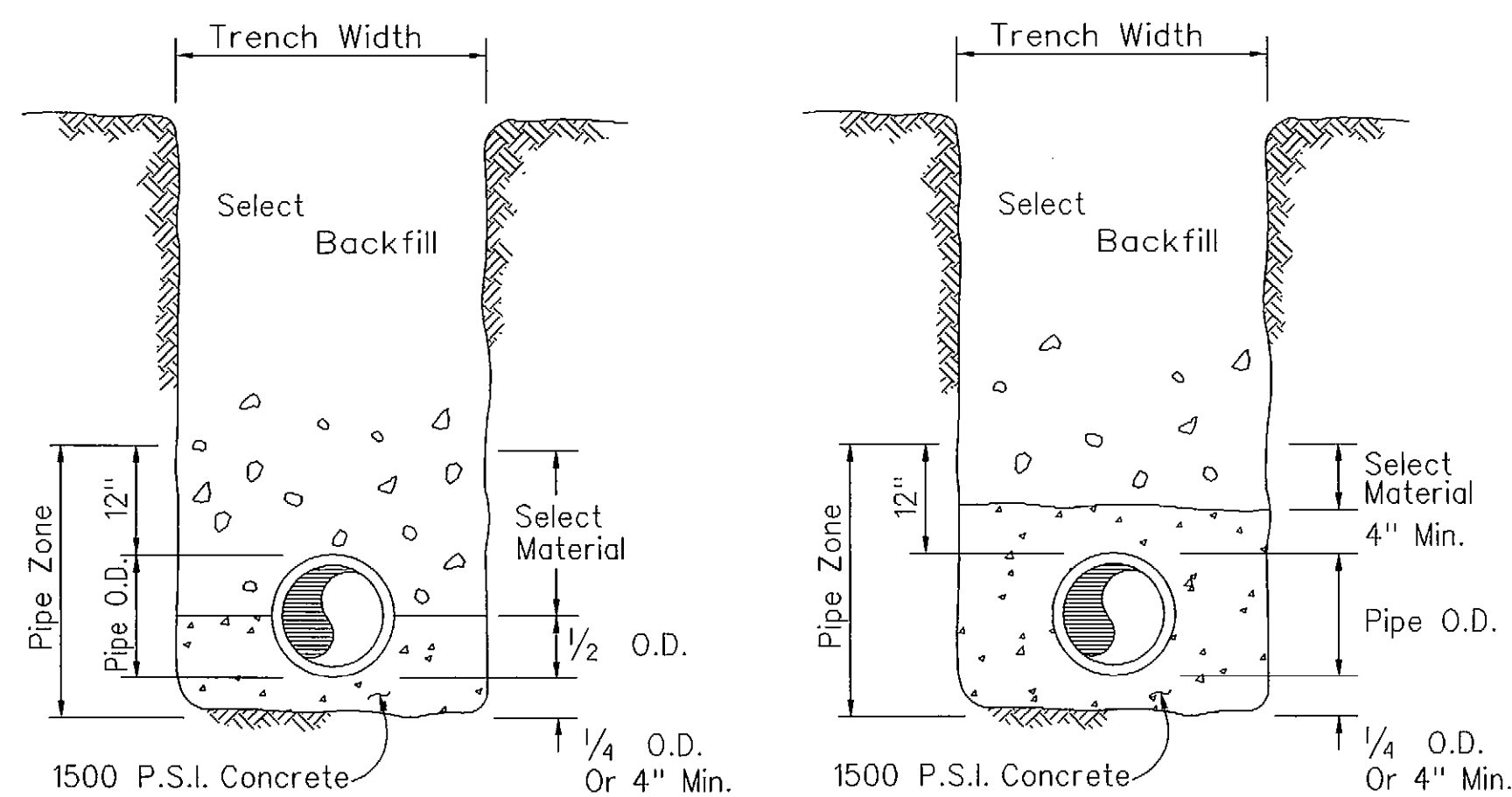
**CRUSHED LIMESTONE, TYPE 1, EMBEDMENT:** Crushed limestone shall consist of durable particles of crushed stone ranging in size from 3/4" to 1/4" with percent of wear not exceeding 35%. The gradation based on ASTM D448 size 67 use as follows:

Sieve Size	% By Weight Passing
1"	100
3/4"	90 - 100
3/8"	20 - 55
No. 4	0 - 10
No. 8	0 - 5

**GRAVEL, TYPE 2, EMBEDMENT:** Gravel for embedment and/or encasement shall be washed gravel ranging in size from 3/4" diameter to 1/4" inch diameter meeting the requirements of ASTM designation C33, Gradation 67. The material shall be free from clay and organic material.

**GRANULAR, TYPE 3, EMBEDMENT:** Pit run granular embedment material shall be free flowing sand or mixed sand and pea gravel free from large stones, clay and organic material. The material may be an inferior grade of pit run or blow sand not normally considered satisfactory for concrete aggregate and may be used directly from pits without processing, provided it complies with the qualities described herein. The material shall be such that when wet it will not form a mud ball or tend to cling together. The material shall have 100% passing one inch (1") sieve and the plasticity index of that part passing the sieve is obtained from the City.

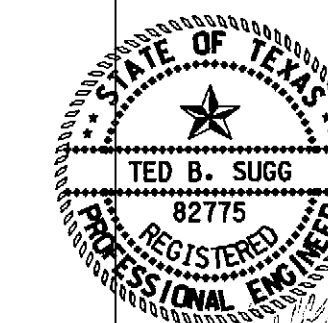
**PIPE EMBEDMENT DETAIL**



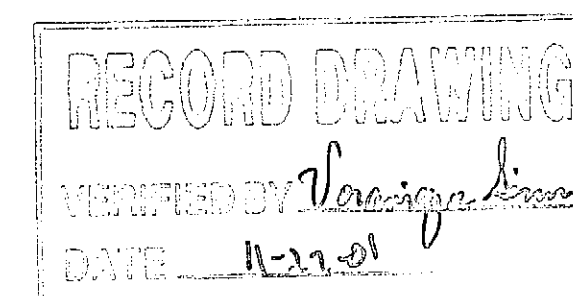
**CONCRETE CRADLE**

**CONCRETE ENCASEMENT**

**CONCRETE CRADLE AND ENCASEMENT DETAILS**



*Ted B. Sugg*  
4-16-99



1	4-16-99	PAVING REPLACEMENT	TBS
NO.	DATE	REVISION	APPROV
<p><b>CITY OF ROCKWALL</b> "THE NEW HORIZON"</p>			
<p><b>IH-30 AND F.M. 549</b> <b>WATER LINE IMPROVEMENT</b></p>			
<p><b>STANDARD WATER DETAILS</b></p>			
<p><b>Turner Collie &amp; Braden Inc.</b> ENGINEERS • PLANNERS • PROJECT MANAGERS</p>			
Unit	A103	Scale: N.T.S.	Date: FEBRUARY, 1999
Designed	TCB	Checked: DWN	Job No. 15-98925-200
Drawn	JLC	Approved: RCR	SHEET 30 OF 33