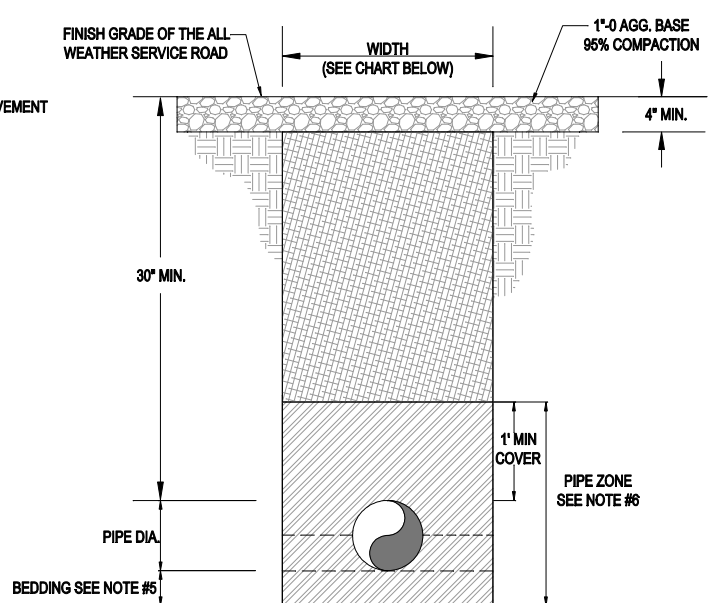


UTILITY TRENCH IN AC PAVED STREET



UTILITY TRENCH IN ALL WEATHER SERVICE ROAD

TRENCH WIDTH & DEPTH

PIPE SIZE I.D.	DEPTH MIN.	WIDTH MIN.
LESS THAN 6"	38"	24"
6"	40"	24"
8"	42"	26"
10"	44"	26"
12"	46"	26"
15"	49"	30"
18"	52"	34"

NOTE:

1. SAW CUT JOINTS SHALL BE TACKED AND SAND SEALED.
2. ASPHALT PATCH SECTION SHALL BE NOT LESS THAN 4" THICK, PLACED IN TWO LIFTS NOT TO EXCEED 2".
3. BASE MATERIAL SHALL MEET CURRENT CITY STANDARDS AS SHOWN IN STANDARD DRAWING 2-1.
4. TRENCHES LESS THAN 24" IN WIDTH UNDER PAVEMENT, CURB AND/OR SIDEWALK AREAS SHALL BE BACKFILLED WITH CEMENT SLURRY OR CONTROLLED LOW STRENGTH MATERIAL. OTHER TRENCHES IN HIGH TRAFFIC AREAS MAY BE BACKFILLED WITH CONTROLLED LOW STRENGTH MATERIAL AS REQUIRED BY THE CITY ENGINEER.
5. PIPE BEDDING SHALL BE 4" MINIMUM DEPTH.
6. PIPE ZONE MATERIAL SHALL BE CLASS "B" BACKFILL, COMPACTED TO 95% OF MAXIMUM DENSITY AASHTO T-99. FOR PIPES LARGER THAN 3" PLACE FIRST LIFT TO PIPE SPRINGLINE.
7. CLASS "A" TRENCH BACKFILL MATERIAL IS ALLOWED FROM 2' ABOVE PIPE TO SUBGRADE FOR TRENCHES DEEPER THAN 6 FEET (FINISH GRADE TO TOP OF PIPE).

CITY OF REDMOND PUBLIC WORKS DEPARTMENT

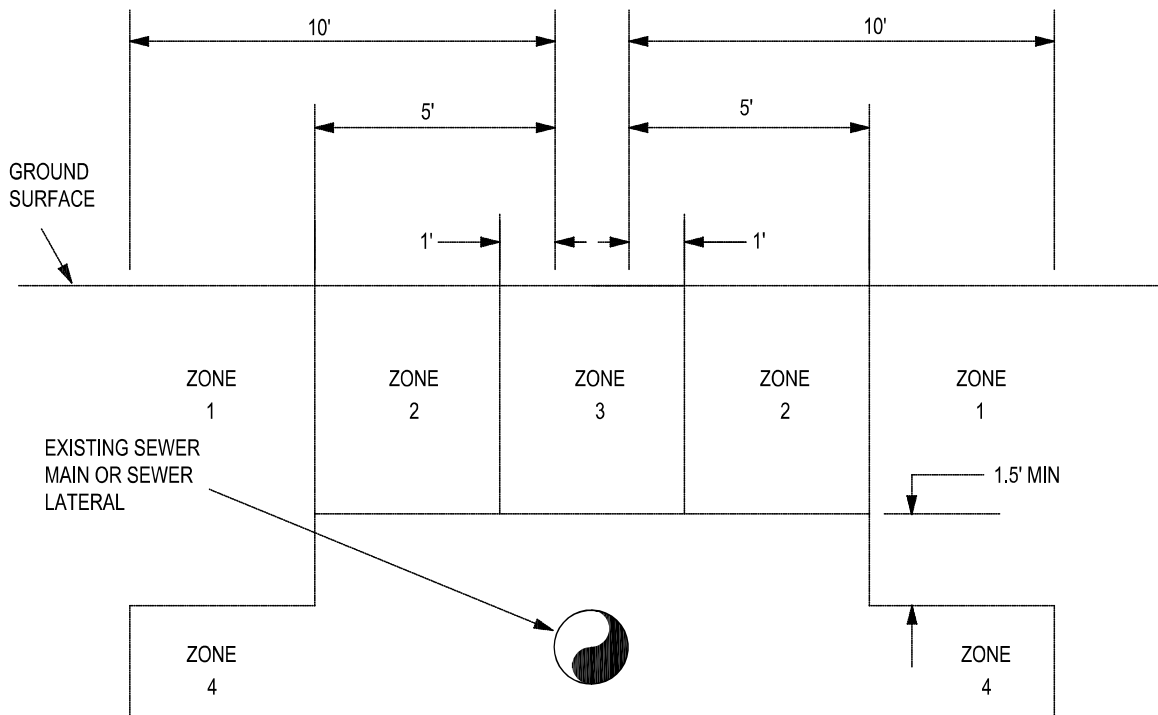
UTILITY TRENCH

SCALE : NTS  
 DRAWN BY: CGI  
 APPROVED BY : MPC  
 REVISION DATE: 10/16/2012



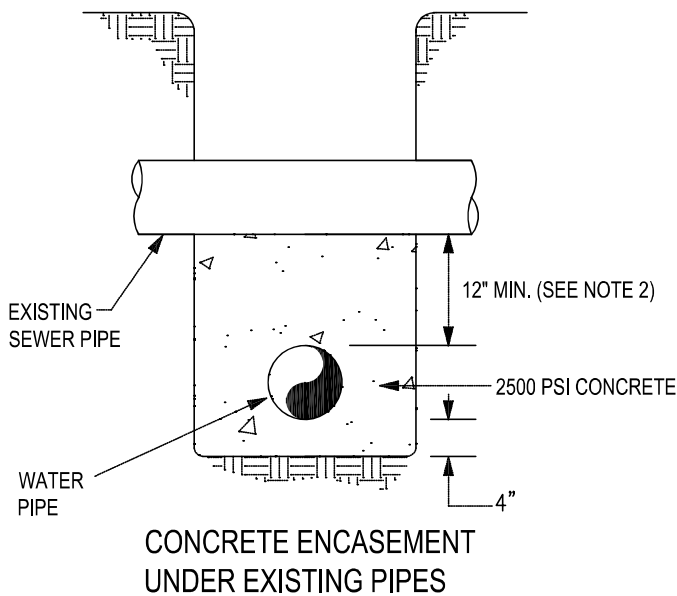
STANDARD DRAWING NO.

1-1



### WATER & SEWER LINE IN PARALLEL CONDITIONS

ZONE	VERTICAL SEPARATION	HORIZONTAL SEPARATION	RESTRICTIONS
1	WATER LINE HIGHER THAN SEWER	5'	ONLY CROSSING RESTRICTIONS APPLY
1	WATER LINE LEVEL OR LOWER THAN SEWER	10'	ONLY CROSSING RESTRICTIONS APPLY
2	WATER LINE 1.5' HIGHER THAN SEWER	GREATER THAN 1', LESS THAN 5'	CASE BY CASE DETERMINATION
3	WATER LINE 1.5' HIGHER THAN SEWER	LESS THAN 1'	PARALLEL WATER LINE PROHIBITED
4	WATER LINE LESS THAN 1.5' ABOVE SEWER	LESS THAN 5'	PARALLEL WATER LINE PROHIBITED
4	WATER LINE LEVEL OR LOWER THAN SEWER	LESS THAN 10'	PARALLEL WATER LINE PROHIBITED



**NOTE:**

1. WATER & SEWER LINE CROSSINGS SHALL COMPLY WITH DESIGN STANDARDS, II C. SEWER OR O.A.R. 333-61-050 FOR SEPARATION AND PIPE MATERIAL REQUIREMENTS.
2. SEPARATION LESS THAN 12" FOR WATER & SEWER LINE CROSSINGS MUST BE APPROVED BY THE CITY ENGINEER.
3. CONCRETE ENCASEMENT TO BE USED IN CASES WHERE A CITY WATER MAIN CROSSES UNDER AN EXISTING SEWER MAIN, WITH CITY APPROVAL. MINIMUM ENCASEMENT LENGTH SHALL BE 3' EACH SIDE.
4. UNDERGROUND UTILITIES SHALL NOT BE LOCATED CLOSER THAN 10' HORIZONTALLY FROM ANY WATER AND SEWER MAIN. UNDER SPECIAL PERMISSION FROM THE CITY ENGINEER, SEPARATION MAY BE REDUCED TO 5'.

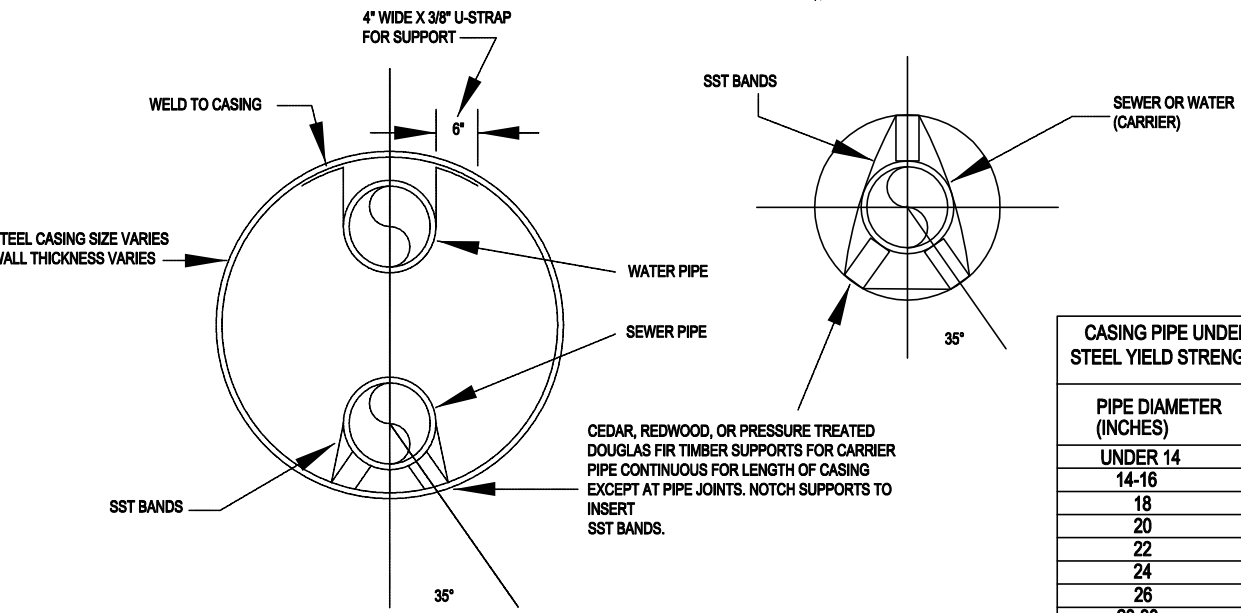
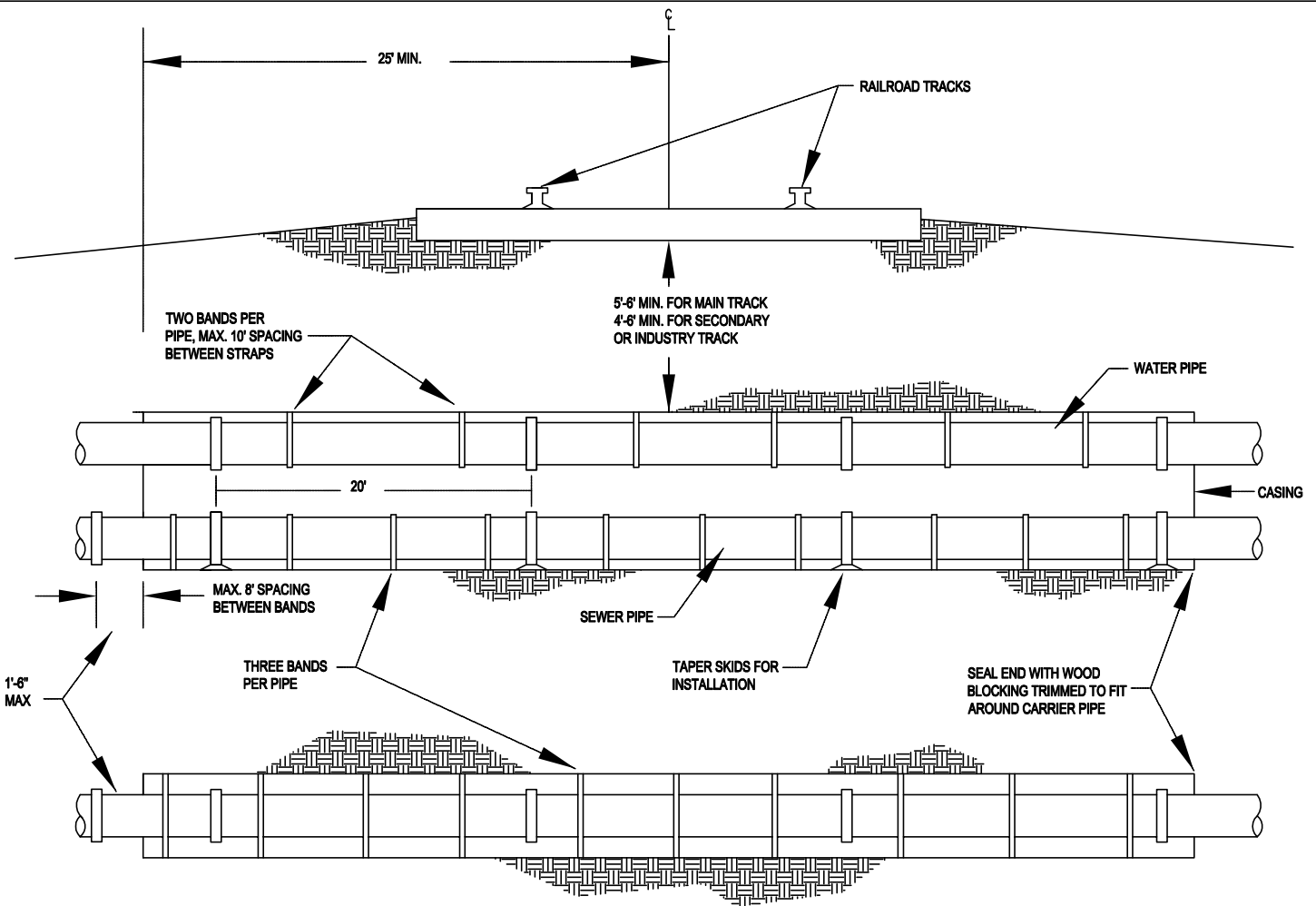
CITY OF REDMOND PUBLIC WORKS DEPARTMENT  
**WATER LINE  
 & SEWER LINE  
 SEPARATION**

SCALE : NTS  
 DESIGN BY : CGI  
 APPROVED BY : MPC  
 REVISION DATE: 11/18/2015



STANDARD  
 DRAWING  
 NO.

1-2




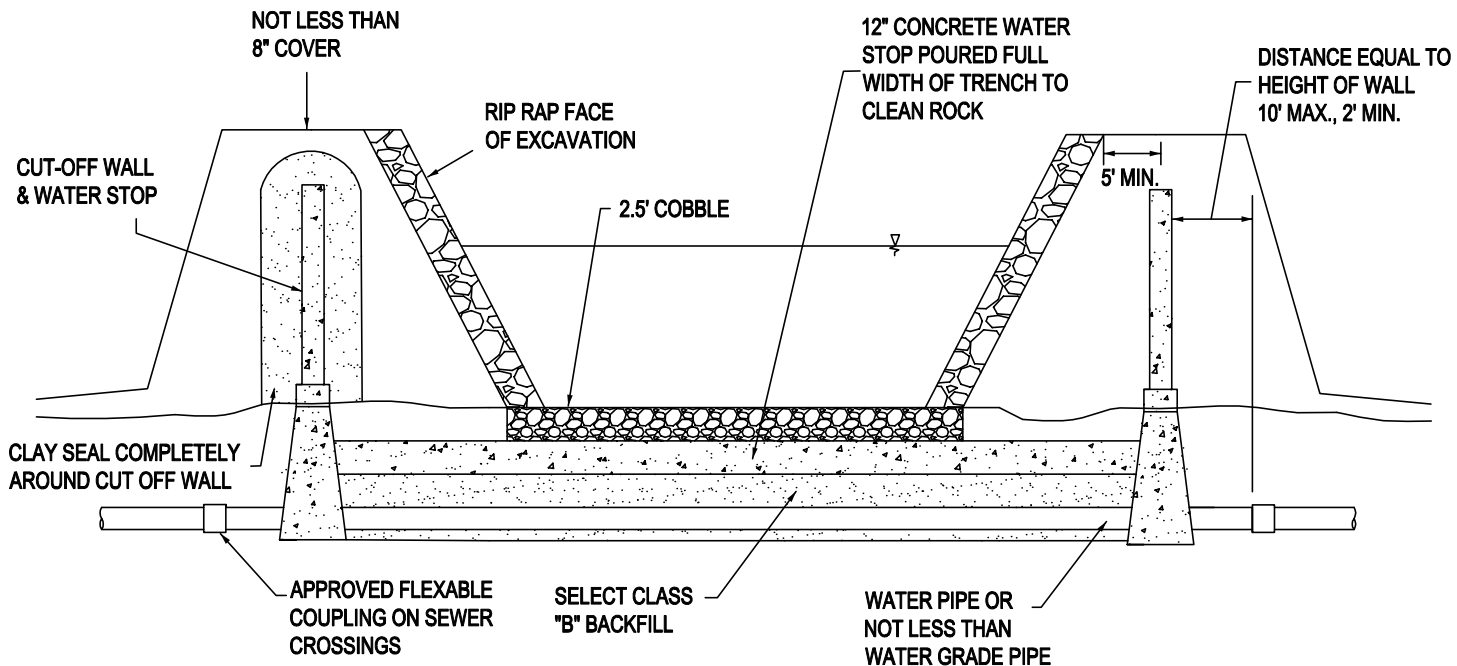
CEDAR, REDWOOD, OR PRESSURE TREATED DOUGLAS FIR TIMBER SUPPORTS FOR CARRIER PIPE CONTINUOUS FOR LENGTH OF CASING EXCEPT AT PIPE JOINTS. NOTCH SUPPORTS TO INSERT SST BANDS.

CASING PIPE UNDER RAILROADS MIN. STEEL YIELD STRENGTH 35,000 PSI	
PIPE DIAMETER (INCHES)	MINIMUM WALL THICKNESS (INCH)
UNDER 14	0.188
14-16	0.219
18	0.250
20	0.281
22	0.312
24	0.344
26	0.375
28-30	0.406
32	0.438
34-36	0.469
38-42	0.500

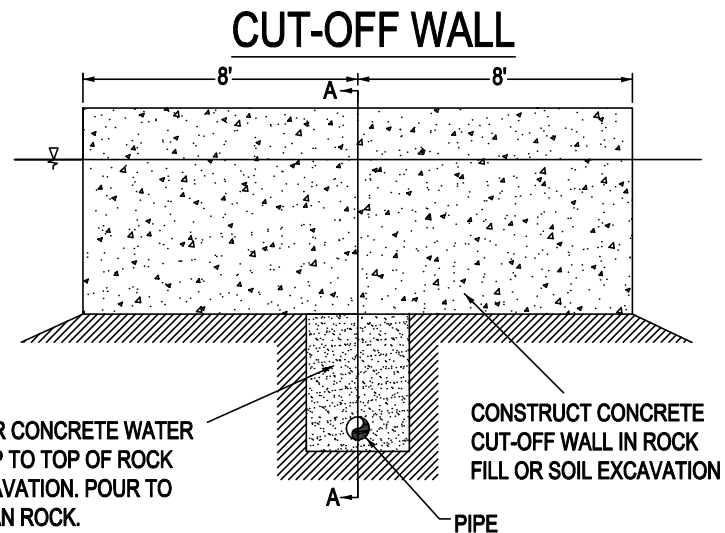
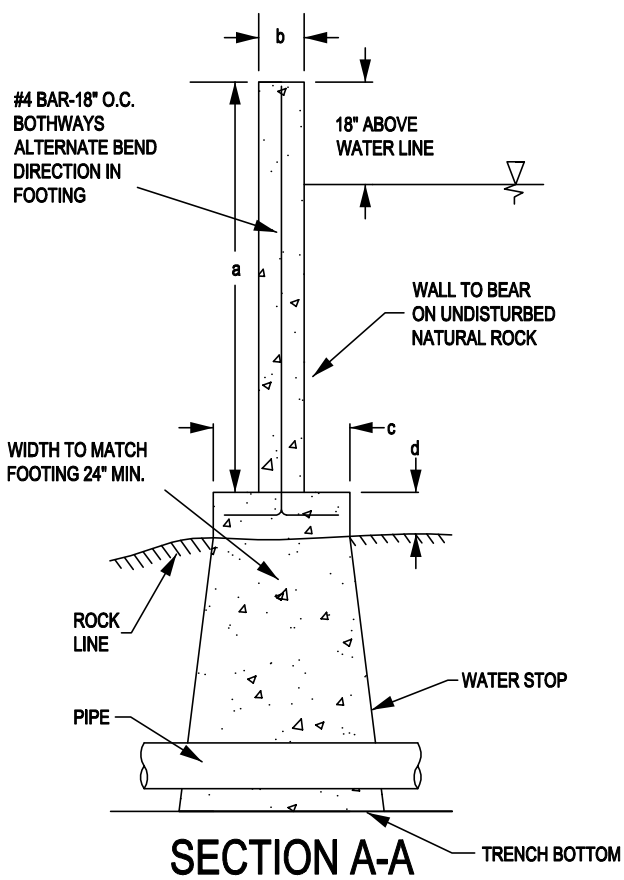
\* PER AMERICAN RAILWAY ENGINEERING ASSOCIATION, E-72 LOADING

- NOTES:
1. MINIMUM CASING WALL THICKNESS VARIES WITH CASING SIZE. SEE TABLE
  2. CASING SHALL CONFORM TO SEWER SLOPE WHEN APPLICABLE.
  3. CROSSING DETAIL MAY BE USED FOR HIGHWAYS, STREETS, AND ROADS WITH MIN. WALL THICKNESS OF 0.25 INCH.


<p>CITY OF REDMOND PUBLIC WORKS DEPARTMENT</p> <p><b>RR X-ING SINGLE/JOINT</b></p> <p><b>USE CASING FOR</b></p> <p><b>WATER &amp; SEWER LINES</b></p>	SCALE :		<p>STANDARD DRAWING NO.</p> <p><b>1-3</b></p>	
	DESIGN BY :			NTS
	APPROVED BY :			SAW
	REVISION DATE:			MPC
	1/12/2011			



### TRENCH PROFILE THRU CANAL



a	b	c	d min
0-6'	8"	24"	8"
6'-10'	12"	36"	8"
10'-14'	12"	48"	12"

<p>CITY OF REDMOND PUBLIC WORKS DEPARTMENT</p> <p><b>TYPICAL IRRIGATION CANAL UTILITY CROSSING</b></p>	SCALE :		<p>STANDARD DRAWING NO.</p> <p style="font-size: 2em;"><b>1-4</b></p>	
	DESIGN BY :			NTS
	APPROVED BY :			SAW
	REVISION DATE:			MPC
				1/12/2011