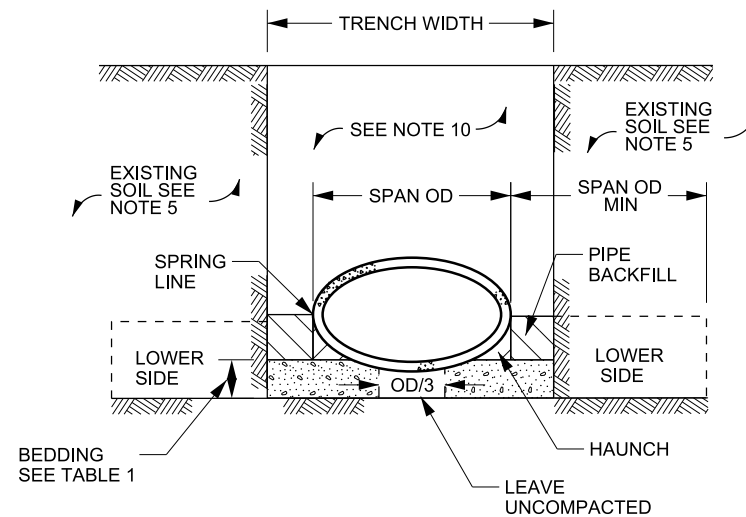
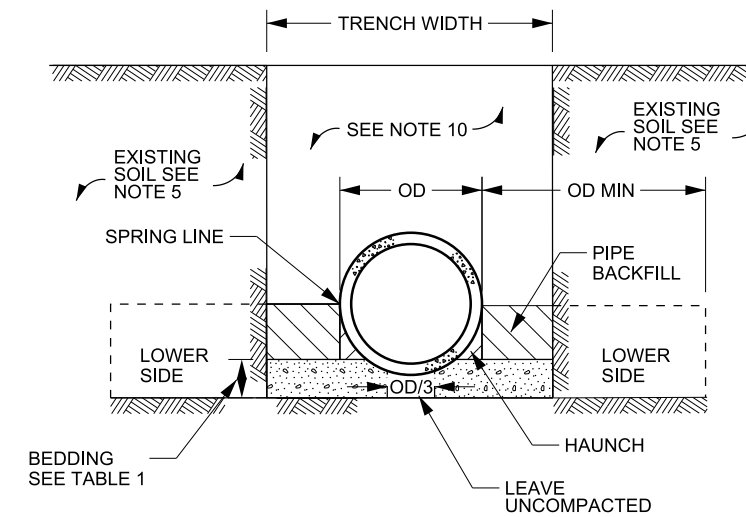


**EMBANKMENT INSTALLATION
ROUND PIPE**



**TRENCH INSTALLATION HORIZONTAL
ELLIPTICAL PIPE**



**TRENCH INSTALLATION
ROUND PIPE**

TABLE 1. SOILS AND MINIMUM COMPACTION REQUIREMENTS FOR EMBANKMENT AND TRENCH INSTALLATIONS.

INSTALLATION TYPE	BEDDING THICKNESS	PIPE BACKFILL		
		MINIMUM COMPACTION	AASHTO SOIL CLASS	USCS
TYPE 1	SOIL FOUNDATIONS: OD/24 IN. MIN., NOT LESS THAN 3 IN. ROCK FOUNDATIONS: OD/12 IN. MIN., NOT LESS THAN 6 IN.	95%	A1,A3	SW

TABLE 5: MINIMUM TRENCH WIDTH

PIPE DIA INCH	TRENCH WIDTH
	FT
18	3.9
24	4.5
30	5.1
36	5.7
42	6.3
48	6.8
54	7.4
60	8.0

PIPE DIAMETERS ARE BASED ON INTERNAL DIMENSION.
TRENCH WIDTH FOR ELLIPTICAL PIPE IS BASED ON THE
SPAN WIDTH USING THE NEXT GREATER PIPE DIAMETER.

TABLE 2: REINFORCED CIRCULAR
PIPE MAX FILL HEIGHT

PIPE DIA. INCH	PIPE CLASSES			
	II FT	III FT	IV FT	V FT
18	16	22	34	52
21	16	22	34	52
24	16	22	34	52
27	16	22	34	52
30	15	22	34	52
33	15	22	34	52
36	15	22	33	51
42	15	22	33	51
48	15	22	33	51
54	15	21	33	51
60	14	21	32	51
66	14	21	32	50
72	14	20	32	50
78	14	20	31	49
84	13	20	31	49
90	13	20	31	49
96	13	19	31	49
102	13	19	30	48
108	12	19	30	48

SEE NOTES 12 AND 13

TABLE 3: REINFORCED ELLIPTICAL
PIPE MAX FILL HEIGHT

PIPE DIM. SPAN X RISE INCH X INCH	PIPE CLASSES			
	II FT	III FT	IV FT	V FT
14 x 23	-	12	20	30
19 x 30	-	13	21	30
22 x 34	-	13	21	30
24 x 38	9	14	21	30
27 x 42	9	14	21	30
29 x 45	9	14	21	30
32 x 49	10	14	21	30
34 x 53	10	14	21	30
38 x 60	10	14	21	30
43 x 68	10	14	21	30
48 x 76	10	14	21	30
53 x 83	10	14	21	30
58 x 91	10	15	21	30

SEE NOTES 12 AND 13

TABLE 4: NON-REINFORCED CIRCULAR
PIPE MAX FILL HEIGHT

PIPE DIA. INCH	PIPE CLASSES		
	1 FT	2 FT	3 FT
18	15	22	24
21	14	21	25
24	13	20	25
27	12	19	23
30	12	18	21
33	11	17	19
36	10	15	17

SEE NOTE 12

NOTES:

- REFER TO STD DWG DG 4 FOR MINIMUM FILL HEIGHT REQUIREMENTS.
- FOLLOW STANDARD SPECIFICATION 00820 AND THE UDOT CONSTRUCTION SAFETY AND HEALTH MANUAL FOR MINIMUM TRENCH SAFETY REQUIREMENTS.
- PIPES THAT SHOW DAMAGE OR CRACKS WIDER THAN 0.01 INCHES PRIOR TO INSTALLATION ARE NOT TO BE USED.
- FOLLOW STANDARD SPECIFICATION 02317 AND 02056 USING AASHTO T 99 ACCORDING TO TABLE 1 FOR COMPACTION ACCEPTANCE OF FOUNDATION, BEDDING AND BACKFILL MATERIALS. REMOVE BOULDERS OR ROCKS WITHIN BEDDING AREA.
- EXCAVATE A TRENCH OF EQUAL OR GREATER WIDTH THAN SHOWN IN TABLE 5. INCREASE THE TRENCH WIDTH TO 2 FT MINIMUM ON EACH SIDE OF THE PIPE WHEN THE UNDISTURBED NATIVE MATERIAL IN THE LOWER SIDE ZONE IS UNSUITABLE OR DOES NOT HAVE A FIRMNESS EQUIVALENT TO THE PIPE BACKFILL.
- OVER-EXCAVATE UNSUITABLE PIPE FOUNDATION MATERIAL AS DIRECTED BY THE ENGINEER. REPLACE WITH SUITABLE MATERIAL.
- RECESS THE BEDDING TO RECEIVE PIPE JOINTS WHERE APPLICABLE.
- DO NOT DISTURB THE INSTALLED PIPE OR EMBEDMENT OR LEAVE VOIDS WHEN USING TRENCH BOXES AND SHIELDS.
- SEAL THE OPENING AROUND THE PIPE AND THE DRAINAGE STRUCTURE. REFER TO STANDARD SPECIFICATION 02633.
- REFER TO THE PROJECT PLANS FOR MATERIAL OUTSIDE OF PIPE BACKFILL AREA.
- PROTECT PIPE DURING CONSTRUCTION. DO NOT EXCEED DESIGN STRENGTH.
- MEASURE MAXIMUM FILL HEIGHT FROM TOP OF PIPE TO TOP OF PAVEMENT SURFACE AT HIGHEST FILL SECTION.
- ENGINEER TO VERIFY DESIGN FOR LARGER SIZES.
- USE THE ROUND PIPE EMBANKMENT DETAIL FOR ELLIPTICAL PIPE PLACED IN AN EMBANKMENT CONDITION.

NO.	DATE	APPR.	REMARKS

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

RECOMMENDED FOR APPROVAL
[Signature]
CHAIRMAN STANDARDS COMMITTEE

DATE: JAN.01.2012
DATE: JAN.01.2012

DEPUTY DIRECTOR

**PRECAST CONCRETE
PIPE CULVERT
INSTALLATION**

STANDARD DRAWING TITLE

STD. DWG. NO.
DG 5C

16-DEC-2011 D:\F:\15\Standard\Drawings\Imp\15\2012\Approved\06-11-12\06095C.dgn