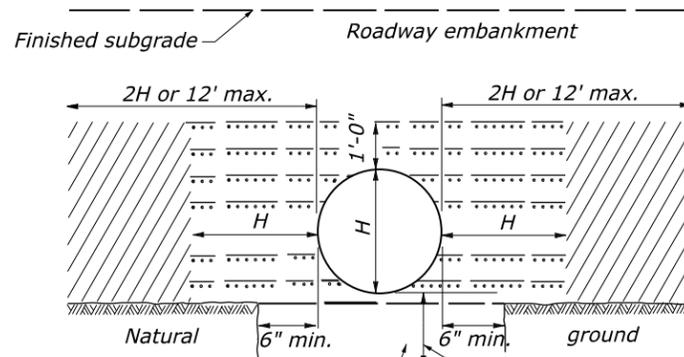


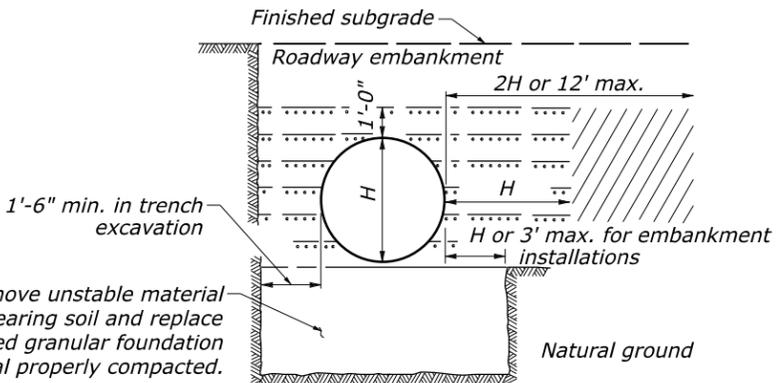
### CONCRETE ROUND PIPE CULVERT

FILL HEIGHT AND PIPE CLASS TABLE

PIPE SIZE DIAMETER INCHES	EMBANKMENT					TRENCH				
	MINIMUM COVER INCHES	CLASS II	CLASS III	CLASS IV	CLASS V	CLASS II	CLASS III	CLASS IV	CLASS V	
		MAXIMUM FILL HEIGHT ABOVE TOP OF PIPE IN FEET								
12	12	11	11	16	23	18	18	26	37	
18	12	10	10	25	39	14	14	31	45	
24	12	11	11	15	31	15	15	22	40	
30	12	9	13	16	35	13	17	20	46	
36	12	9	9	20	41	11	14	26	56	
48	12	12	14	26	44	16	17	31	50	
60	12	15	17	28	44	15	20	32	50	
72	12	13	17	31	41	16	20	35	49	
84	12	13	19	31		15	23	37		
96	12	13	20			16	24			
108	12	16	20			19	26			



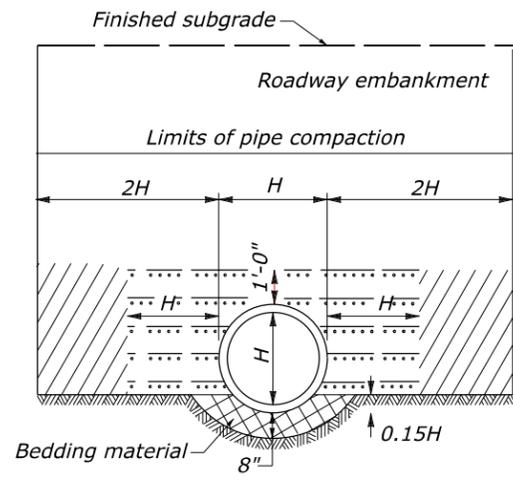
#### ON UNYIELDING MATERIAL



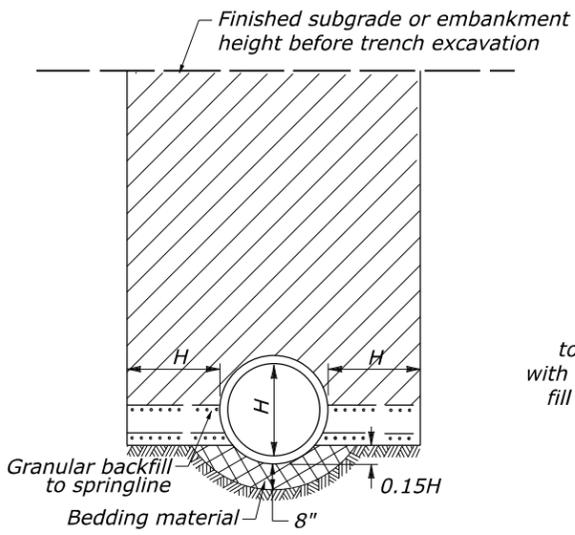
#### ON UNSTABLE MATERIAL

#### NOTES:

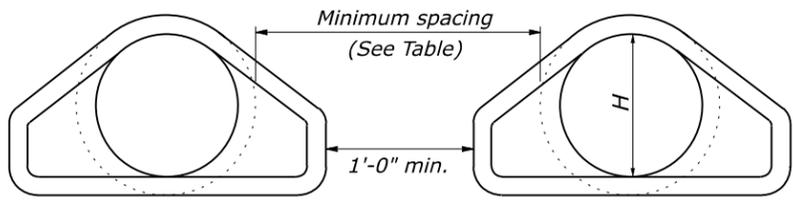
- When directed, camber pipe culverts upward from a chord through the inlet and outlet inverts an ordinate amount equal to 1% of the pipe length. Develop camber on a parabolic curve. If the midpoint elevation on the parabolic curve as designed exceeds the elevation of the inlet invert, reduce the amount of camber or increase the pipe culvert gradient.
- For flexible pavement and aggregate surface roadways, measure minimum cover from the top of the pipe culvert to the bottom of the roadway subgrade. For rigid pavement, measure minimum cover from the top of the pipe culvert to the top of the pavement. For all roadway surface types, measure maximum fill height from the top of the pipe culvert to the top of the pavement.
- Pipe compaction limits shown are for pipe installation in an embankment. For pipe installation in trench, ensure the compaction limits are the walls of the trench.
- When grades exceed 10%, install supplemental concrete pipe ties on pipe culvert or install bell and spigot pipe.
- Maximum fill heights for pipe culvert installations may be increased on approval of site-specific structural pipe designs meeting the criteria of AASHTO Standard Specifications for Highway Bridges.
- Use supplemental concrete pipe ties on last downstream pipe-to-pipe joint and at downstream pipe-to-end section joint, if present. Use elsewhere as specified in the contract documents. Ensure all tie hardware are galvanized and conforming to ASTM A307.



#### EMBANKMENT INSTALLATION



#### TRENCH INSTALLATION

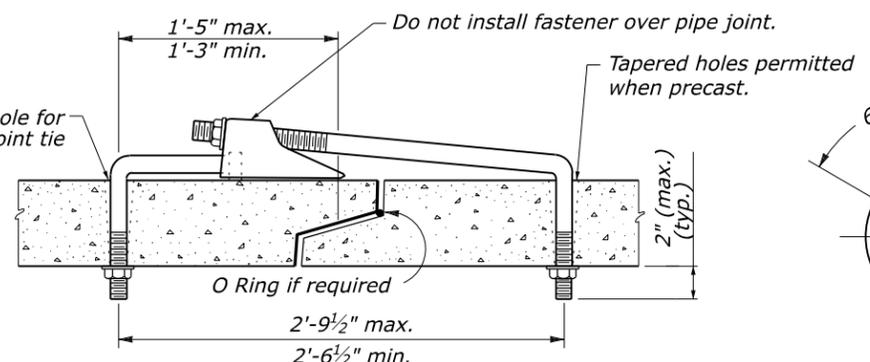


MINIMUM SPACING		
DIAMETER INCHES	EMBANKMENT	TRENCH
12-36	15"	2H
36-96	H/2	72"
OVER 96	48"	72"

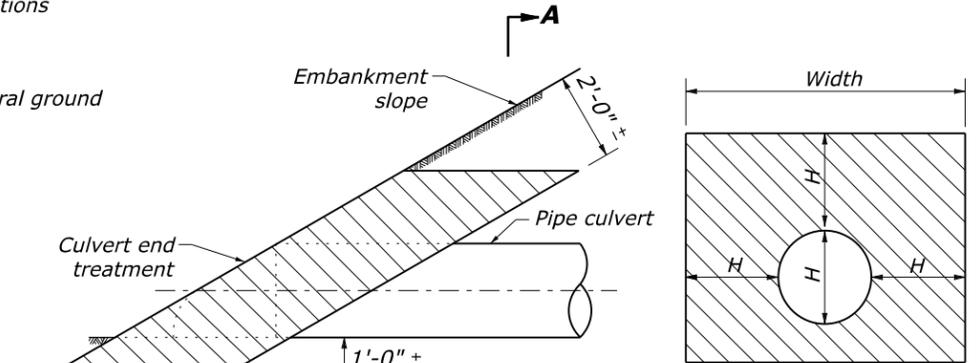
#### MULTIPLE ROUND PIPE INSTALLATION

**LEGEND:**

- Bedding material
- Embankment material placed in layers not exceeding 6" compacted depth.
- Approved granular material or fine compactable soil placed in layers not exceeding 6" compacted depth.



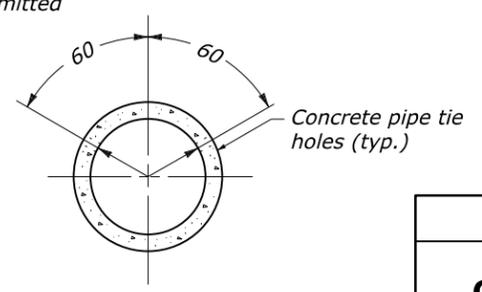
#### SUPPLEMENTAL CONCRETE PIPE TIE



#### SECTION A-A

#### PIPING PLUG

Construct piping plug at culvert inlet when embankment material is classified other than AASHTO A-6 or A-7. Inlets with full-height headwalls or slope paving excluded. Construct plug of A-6 or A-7 material or other approved material with a permeability not to exceed 0.004 in./sec. Width may be adjusted to tie into impervious material.



NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION, FHWA OFFICE OF FEDERAL LANDS HIGHWAY	EFLHD DETAIL E602-07
<b>CONCRETE PIPE CULVERT INSTALLATION</b>	SPECIFICATION FP-24, FP-14 APPROVED FOR USE 05/2024