

GENERAL NOTES

- ALL CONSTRUCTION AND MATERIAL REQUIREMENTS SHALL BE IN ACCORDANCE WITH SECTIONS 613 AND 726.02 OF THE 2019 ODOT STANDARD SPECIFICATIONS.
- TRENCH EXCAVATION AND STANDARD BEDDING WILL NOT BE REQUIRED FOR PIPE INSTALLATIONS ON SIDE DRAINS, UNLESS OTHERWISE SPECIFIED IN THE PLANS.
- METAL PIPE FILL HEIGHT DESIGNS ARE BASED ON HS-20 LIVE LOADING AND 120 LBS/CF SOIL WEIGHT.
- TRENCHING REQUIREMENTS FOR DEPTHS OVER 5 FEET SHALL BE IN ACCORDANCE WITH AND DEFINED BY, O.S.H.A. REGULATIONS, TITLE 29 CFR, STANDARDS 1926.650, 1926.651 AND 1926.652. SEE DETAIL IN LOWER LEFT.
- IN THE EVENT LOADS IN EXCESS OF HL-93 ARE TO BE OPERATED OVER OR ADJACENT TO THE PIPE INSTALLATION DURING THE CONSTRUCTION PHASE, THE CONTRACTOR SHALL PROVIDE AND MAINTAIN A MINIMUM OF 3 FEET OF COVER OVER THE PIPE AT WHEEL OR TRACK PATHS. SEE TABLE ON ROADWAY STANDARD MCI-3.
- PROPER INSTALLATION PRACTICE MUST BE ADHERED TO AS SHOWN ON ROADWAY STANDARD PBB-1 AND THIS STANDARD. IN NO CASE SHALL A PIPE INSTALLATION, SUBJECT TO SUDDEN FLOW DEVELOPMENT, BE LEFT WITHOUT SUFFICIENT BACKFILL TO RESTRAIN THE CONDUIT AND PREVENT JOINT SEPARATION AND/OR PIPING SCOUR. PHYSICALLY RESTRAINING THE CONDUIT MAY BE USED TO AUGMENT OR REPLACE THIS IMMEDIATE BACKFILL REQUIREMENT.
- ANY EXCESS EXCAVATION NOT USED FOR BACKFILL WILL BECOME THE PROPERTY, AND DISPOSED OF BY THE CONTRACTOR IN A MANNER APPROVED BY THE ENGINEER.
- CORRUGATED GALVANIZED STEEL PIPE (CGSP) IS ZINC COATED (GALVANIZED). MILL PRECOATED CGSP HAS A COATING OF POLYMER OVER THE GALVANIZED LAYER. THE ALUMINIZED TYPE 2 CORRUGATED STEEL PIPE (CSP) HAS A PURE ALUMINUM COATING OVER THE CORRUGATED STEEL BASE PIPE AND DOES NOT HAVE A ZINC COATING. ALUMINIZED TYPE 2 CSP IS NOT AN ALUMINUM ALLOY PIPE.
- JOINTS IN METAL PIPES SHALL CONFORM TO SECTION 26.4.2.4 OF AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS. IF A WATERTIGHT JOINT IS SPECIFIED IN THE PLANS, A 12 INCHES WIDE BY 3/4 INCH THICK NEOPRENE SLEEVE GASKET MEETING ASTM D1056 REQUIREMENT SHALL BE USED. ALTERNATIVES MAY BE USED AT THE DISCRETION OF THE ENGINEER.
- BEDDING MATERIAL SHALL BE CLASS 'B' BEDDING MATERIAL, IF PIPE IS INSTALLED UNDER PAVEMENT. OTHERWISE, CLASS C OR D BEDDING IS USED. REFER TO ROADWAY STANDARD PBB-1 FOR MORE DETAILS.
- FOR INSTALLATION AND PAYMENT DETAILS OF TYPICAL END SECTIONS, SEE ROADWAY STANDARDS CET4D-4, CET6D-4, CET4S-4, CET6S-4 AND PCES-5. OTHER END SECTIONS MAY BE USED AT THE DISCRETION OF THE ENGINEER.
- METAL PIPE SHALL HAVE A MINIMUM COVER OF 1 FOOT. SEE ROADWAY STANDARD MCI-2.
- FOUNDATION SHALL BE MADE OF STABLE IN-SITU SOIL. IF THE FOUNDATION AREA IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH SUITABLE MATERIAL AS SPECIFIED BY THE ENGINEER.

BASIS OF PAYMENT		
ITEM NO.	ITEM	UNIT
613 (B)	■ CORR. GALV. STEEL PIPE	LF
613 (B)	▣ CORR. GALV. STEEL PIPE ARCH	LF
613 (C)	▲ MILL PRECOATED CGSP	LF
613 (C)	▣ TYPE II ALUMINIZED CORR. STEEL PIPE, ARCH	LF
613 (C)	■ TYPE II ALUMINIZED CORR. STEEL PIPE, ROUND	LF
613 (D)	■ CORR. ALUMINUM PIPE	LF
613 (D)	▣ CORR. ALUMINUM PIPE ARCH	LF
613 (S)	STANDARD BEDDING MATERIAL, CLASS B	CY
613 (T)	STANDARD BEDDING MATERIAL, CLASS C	CY
613 (V)	TRENCH EXCAVATION	CY

- SPECIFY SPAN AND RISE OF ARCH PIPE
- ▣ SPECIFY DIAMETER OF ROUND PIPE
- ▲ SPECIFY SIZE AND SHAPE OF PIPE

APPROVED BY ROADWAY ENGINEER:  DATE: 12/20/2024

ROADWAY DESIGN DIVISION STANDARD

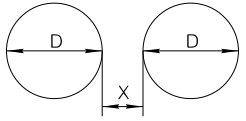
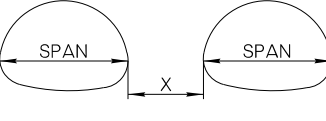


METAL CULVERT INSTALLATION
(1 OF 3 SHEETS)

2019 SPECIFICATIONS

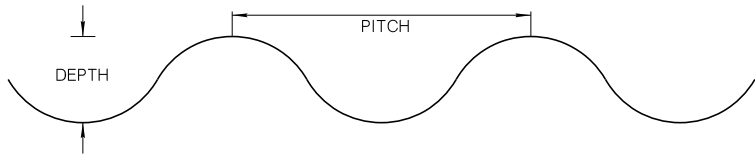
MCI-1 0

R-59

	
PIPE DIAMETER	"X" SPACING
UP TO AND INCLUDING 24"	12"
>24" TO 72"	1/2 D
OVER 72"	36"

PIPE SPAN	"X" SPACING
UP TO AND INCLUDING 36"	12"
>36" TO 108"	1/3 ARCH SPAN
OVER 108"	36"




MULTIPLE PIPE INSTALLATION



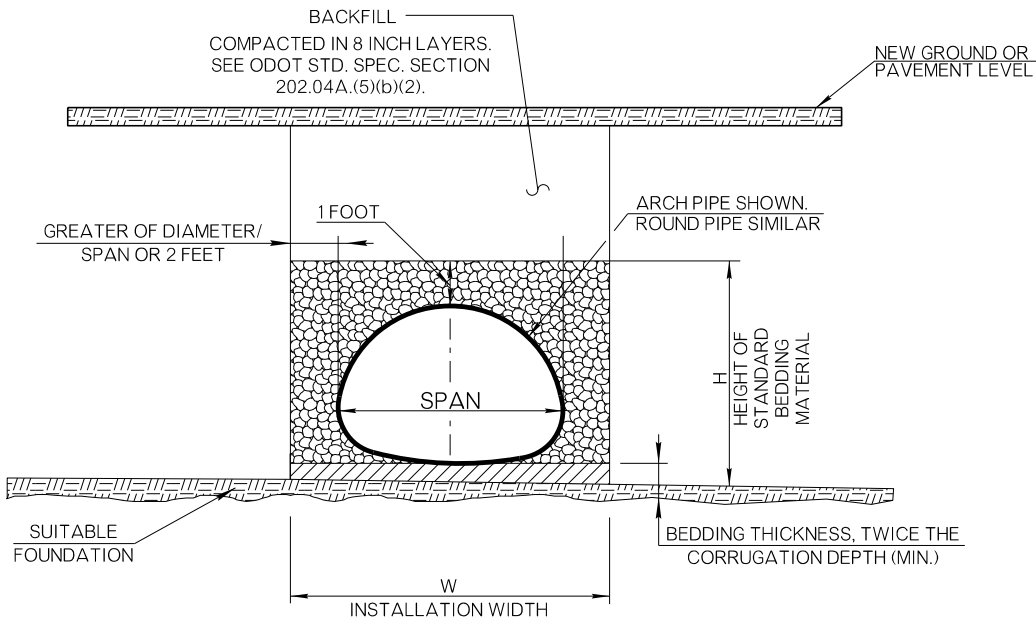
CORRUGATION PROFILE

LEGEND

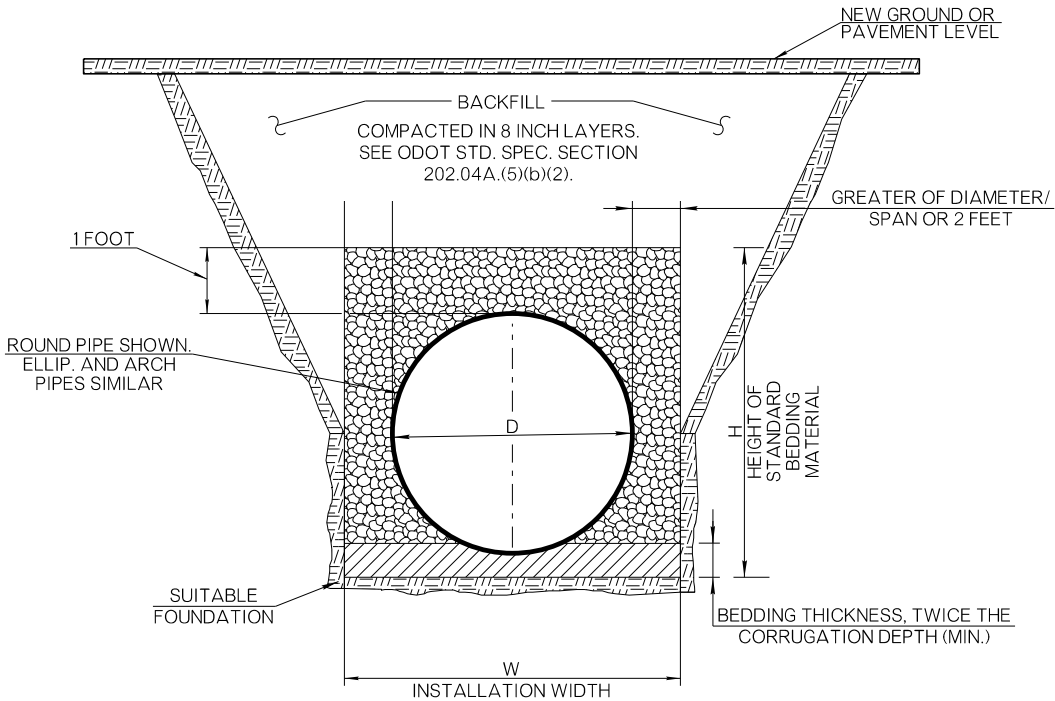
D = DIAMETER

-  STANDARD BEDDING MATERIAL, COMPACTED IN 6" LAYERS 95% MAXIMUM DENSITY
-  SUITABLE FOUNDATION, FREE OF DEBRIS OR LOOSE SOIL
-  BEDDING LOOSELY PLACED

TYPE OF MATERIAL	PITCH	DEPTH
CORRUGATED ALUMINUM ALLOY	2 2/3"	1/2"
CORRUGATED STEEL	2 2/3"	1/2"
CORRUGATED STEEL	3"	1"
CORRUGATED STEEL	5"	1"
STRUCTURAL PLATE CORR.	6"	2"



EMBANKMENT INSTALLATION
(INSTALLATION ON OR ABOVE EXISTING GROUND)



TRENCH INSTALLATION
(INSTALLATION BELOW EXISTING GROUND)

PIPE MATERIAL FABRICATION SPECIFICATIONS			PIPE DESCRIPTIONS
TYPE OF MATERIAL	AASHTO	ASTM	
CORRUGATED ALUMINUM PIPE	M 196	B 745	PIPE IS MADE OF PURE ALUMINUM ALLOY
CORRUGATED STEEL (GALVANIZED)	M 36	A 760	CORRUGATED STEEL PIPE IS GALVANIZED WITH A ZINC COATING
STRUCTURAL PLATE CORR. STEEL	M 167	A 761	STEEL PLATES ARE BOLTED TOGETHER TO FORM THE REQUIRED PIPE SHAPE
MILL PRECOATED CGSP	M 245	A 762	CORR. STEEL PIPE IS GALVANIZED WITH A ZINC COATING, THEN COATED WITH A POLYMER COATING
ALUMINUM COATED, TYPE 2 (ALUMINIZED)	M 36	A 760	CORR. STEEL PIPE IS COATED WITH A TYPE 2 ALUMINUM COATING

APPROXIMATE ANGLE OF REPOSE FOR SLOPING OF SIDES OF EXCAVATIONS IN TRENCHES WITH DEPTH GREATER THAN 5 FEET AND LESS THAN 20 FEET, AS A METHOD TO PROTECT PERSONNEL WORKING IN EXCAVATIONS FROM CAVE-INS. ♦

NOTE: THE PRESENCE OF GROUND WATER REQUIRES SPECIAL TREATMENT.

OPTIONAL TRENCHES WITH DEPTH GREATER THAN 5.0 FEET

EXCAVATION AND BEDDING MATERIAL WILL BE MEASURED AND PAID FOR AS IF SHEETING & SHORING WAS USED. (SPECIAL TRENCHING = STD. WIDTH TRENCH + 12 INCHES)

▼ NATURAL SOLID MINERAL MATTER THAN CAN BE EXCAVATED WITH VERTICAL SIDES AND REMAIN INTACT WHILE EXPOSED.

♦ SOIL CLASSIFICATION - SOIL AND ROCK DEPOSITS SHALL BE CLASSIFIED IN ACCORDANCE WITH APPENDIX A UNDER SUBPART P 'EXCAVATIONS' OF 29 CFR 1926.