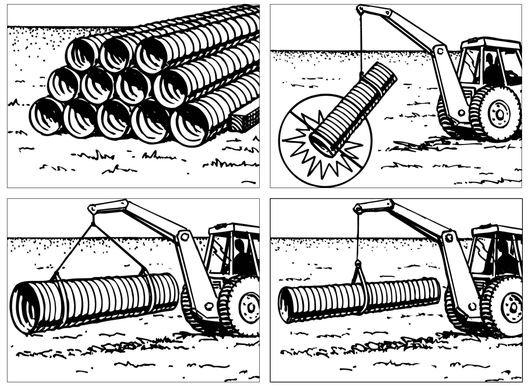


- STACK PIPE ON LEVEL GROUND TO PREVENT WARPING OF PRODUCT.
- DO NOT LIFT PIPE BY INSERTING FORKLIFT INTO THE END OF THE PIPE.
- TO PREVENT DAMAGE TO THE BELL OR SPIGOT WHEN MOVING PIPE SECTIONS, DO NOT DRAG OR STRIKE PIPE ENDS AGAINST ANYTHING
- PIPE CAN BE MOVED WITH A BACKHOE AND A NYLON SLING. LIFT 36" AND LARGER DIAMETER PIPE WITH A SLING AT TWO POINTS, SPACED APPROXIMATELY 10 FEET APART. SMALLER DIAMETERS CAN USE ONE LIFT POINT.

STEP 1 : PIPE HANDLING AND STORAGE

TRENCH MUST BE WIDE ENOUGH TO FIT PIPE, WORKERS, AND COMPACTION EQUIPMENT.

PIPE DIAMETER	MINIMUM BETWEEN PIPES	MINIMUM TRENCH WIDTH
12"	12"	30"
15"	12"	34"
18"	12"	39"
24"	12"	48"
30"	15"	56"
36"	18"	64"
42"	21"	72"
48"	24"	80"
60"	30"	96"

RECOMMENDED MINIMUM TRENCH WIDTHS, WHEN TRENCH WALLS AND FOUNDATION ARE STABLE. FOR ADDITIONAL TRENCH WIDTH OPTIONS REFER TO ADS INSTALLATION STANDARDS AND ASTM D2321.

STEP 2 : TRENCH WIDTH RECOMMENDATIONS

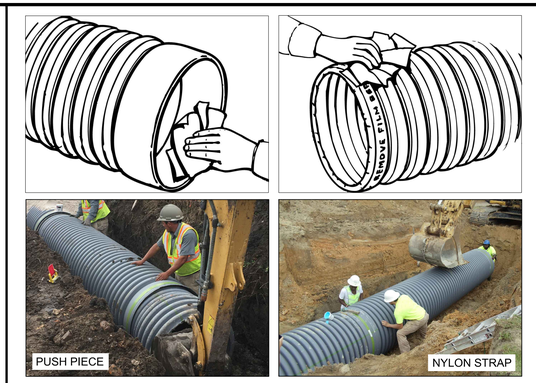
ENSURE BEDDING IS UNIFORM AND TRUE TO LINE AND GRADE. MIDDLE THIRD SHOULD BE LOOSE TO CRADLE PIPE.

EXTEND BEDDING AT LEAST 2 FEET BEYOND THE END OF THE PIPE BEING INSTALLED.

TRENCH SHOULD BE DRY OR PROPERLY DEWATERED BEFORE PLACING BEDDING AND BACKFILL.

IF STONE OR ANY OPEN GRADED BEDDING MATERIAL IS USED, WRAP THE STONE WITH A MIN. 6 OUNCE NON-WOVEN GEOTEXTILE.

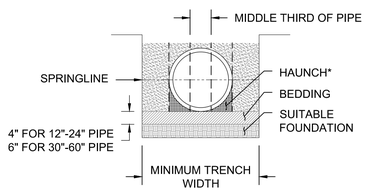
STEP 3 : PREPARATION OF BEDDING MATERIAL



- USE A CLEAN RAG OR BRUSH TO LIGHTLY LUBRICATE INSIDE THE BELL. CLEAN SPIGOT END OF PIPE. REMOVE PLASTIC WRAP FROM GASKET. DO NOT ALLOW LUBRICATED SECTION TO TOUCH DIRT OR BACKFILL.
- THE PIPE BELL SHOULD ALWAYS BE ALIGNED FACING UPSTREAM WITH BEDDING GRADE.
- ALIGN PIPE AND PLACE SPIGOT INTO BELL. USING STRAP OR PUSH PIECE, FULLY INSERT SPIGOT INTO BELL. WHEN LEADING BELL EDGE TOUCHES "HOME" MARK JOINT IS FULLY INSERTED. INSIDE JOINT GAPS SHOULD BE TIGHT ON ALL SIDES. SEE MANUFACTURER FOR JOINT TOLERANCE.

STEP 4 : PIPE JOINT ASSEMBLY

TRACKHOE OPERATOR SHALL UNIFORMLY PLACE A SHALLOW LIFT (NOT TO EXCEED 8"), OVER THE PIPE SO WORKERS CAN DIAGONALLY KNIFE OR BOOT PRESS SOIL UNDER PIPE HAUNCHES. PLACING BACKFILL UNDER THE PIPE HAUNCHES HELPS PREVENT THE PIPE FROM SHIFTING DURING BACKFILL COMPACTION. PLACE BACKFILL EVENLY ON BOTH SIDES OF THE PIPE TO PREVENT PIPE DISPLACEMENT. FOR ADDITIONAL GUIDANCE SEE ASTM D2321.



* HAUNCH BACKFILL PROVIDES SUPPORT FOR SOIL & TRAFFIC LOADS. BACKFILL SHOULD BE WORKED INTO HAUNCH AREA IN 4-6" LIFTS

STEP 5 : PLACING MATERIAL INTO HAUNCH AREA

PLACE BACKFILL AROUND PIPE IN 4"-6" COMPACTED LIFTS OR AS DIRECTED BY THE ONSITE GEOTECHNICAL ENGINEER (LOOSE LIFTS SHALL NOT EXCEED 8"). COMPACT BEDDING AND BACKFILL WITH SMALL TO MEDIUM COMPACTION EQUIPMENT TO SPECIFIED DENSITY. VISUALLY INSPECT THE PIPE TO ENSURE THE APPROPRIATE SHAPE IS MAINTAINED. BACKFILL SHOULD BE NEAR OPTIMUM MOISTURE WHEN COMPACTED. FOR ADDITIONAL GUIDANCE SEE ASTM D2321.

STEP 6 : COMPACT BACKFILL IN LIFTS

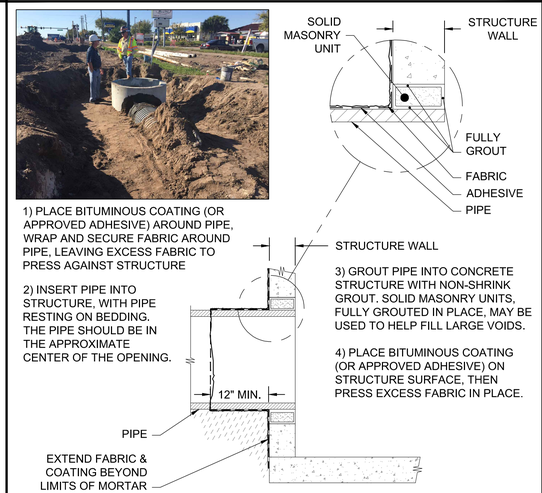
WHEN COMPACTING OVER THE PIPE WITH LIGHT WEIGHT COMPACTION EQUIPMENT, ENSURE THERE IS 6" MINIMUM COVER.

MEDIUM SIZED COMPACTORS MAY BE USED TO COMPACT BACKFILL IN LIFTS UP SIDES OF PIPE.

MEDIUM SIZED COMPACTORS MUST HAVE 12" MINIMUM COVER BEFORE COMPACTING OVER THE PIPE.

SEE TABLE 2 FOR MINIMUM COVER REQUIREMENTS FOR TYPICAL CONSTRUCTION EQUIPMENT.

STEP 7 : COMPACT OVER TOP OF PIPE



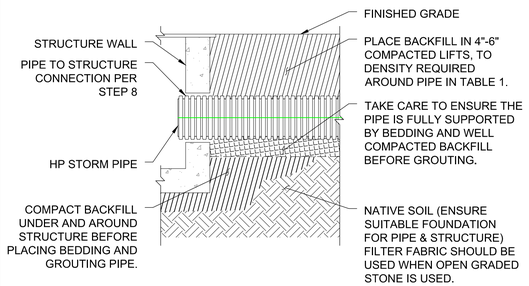
1) PLACE BITUMINOUS COATING (OR APPROVED ADHESIVE) AROUND PIPE, WRAP AND SECURE FABRIC AROUND PIPE, LEAVING EXCESS FABRIC TO PRESS AGAINST STRUCTURE

2) INSERT PIPE INTO STRUCTURE, WITH PIPE RESTING ON BEDDING. THE PIPE SHOULD BE IN THE APPROXIMATE CENTER OF THE OPENING.

3) GROUT PIPE INTO CONCRETE STRUCTURE WITH NON-SHRINK GROUT. SOLID MASONRY UNITS, FULLY GROUTED IN PLACE, MAY BE USED TO HELP FILL LARGE VOIDS.

4) PLACE BITUMINOUS COATING (OR APPROVED ADHESIVE) ON STRUCTURE SURFACE, THEN PRESS EXCESS FABRIC IN PLACE.

STEP 8 : FABRIC & GROUT CONNECTION



STEP 9 : COMPACT BACKFILL AROUND STRUCTURE

	MAXIMUM COVER FOR ADS HP STORM PIPE (FT)					
	CLASS I	CLASS II		CLASS III		CLASS IV
PIPE DIA	COMPACTED	95% SPD	90% SPD	95% SPD	90% SPD	95% SPD
12"	41	28	21	20	16	16
15"	42	29	21	21	16	16
18"	44	30	21	22	17	14
24"	37	26	18	19	14	11
30"	39	27	19	19	15	14
36"	28	20	14	14	11	10
42"	30	21	14	15	11	10
48"	29	20	14	14	10	10
60"	29	20	14	14	10	9

FILL HEIGHTS BASED ON CALCULATIONS SHOWN IN THE STRUCTURES SECTION OF THE ADS DRAINAGE HANDBOOK (V20.7). CALCULATIONS ASSUME NO HYDROSTATIC PRESSURE AND A DENSITY OF 120 PCF FOR OVER BURDEN MATERIAL. INSTALLATION IN ACCORDANCE WITH ASTM D2321, WITH FILL HEIGHTS AS SHOWN. SEE TABLE 3 FOR SOIL DATA. STANDARD PROCTOR DENSITY USED FOR COMPACTION. INCREASE SOIL CLASS AND/OR COMPACTION EFFORT AS NEEDED TO MEET REQUIRED FILL HEIGHTS ON PROJECT PLANS

MINIMUM COVER FOR ADS HP STORM PIPE (IN)			
PIPE DIA	H20 AXLE LOAD (lbs)	CLASS II @ 90% SPD	CLASS III @ 95% SPD
12" - 48"	32000	12	12
60"	32000	24	24

FOR TRAFFIC APPLICATIONS MINIMUM COVER IS 12" UP TO 48" DIAMETER PIPE AND 24" OF COVER FOR 60" DIAMETER PIPE; MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT (ASPHALT) OR TO TOP OF RIGID PAVEMENT (CONCRETE). MINIMUM COVER VALUES DO NOT ACCOUNT FOR RUTTING OR UNSTABLE SOIL OVER THE PIPE. ADDITIONAL COVER MAY BE REQUIRED TO MAINTAIN THE PIPE'S STRUCTURAL INTEGRITY.

TABLE 1 : MAXIMUM & MINIMUM COVER

MINIMUM COVER FOR CONSTRUCTION VEHICLES

CONSTRUCTION VEHICLE	VEHICLE DESCRIPTION	MINIMUM TIRE	AXLE LOAD (lbs)	PIPE DIAMETER	TEMPORARY MINIMUM COVER HEIGHTS (in)				
					CLASS I COMPACTED	CLASS II @ 95% SPD	CLASS II @ 90% SPD	CLASS III @ 95% SPD	CLASS III @ 90% SPD
CAT CT660	DUMP TRUCK	22.5-R11	46000	12"-60"	9	9	12	12	18
CAT 16M3	GRADER	23.5-R25	58753	12"-21"	12	12	15	15	21
				24"-60"					24
CAT 730C	ARTICULATED DUMP TRUCK	23.5-R25	74538	12"-15"	15	15	18	18	24
				18"-60"					27
CAT CS78B[1]	ROLLER	84-IN DRUM	74600	12"-21"	15	15	21	21	24
				24"-60"					27
KOMATSU WA800-3	WHEEL LOADER	45/65-45	158270	12"-30"	15	15	21	21	30
				36"-60"					36

[1]ACCELERATOR (VIBRATOR) TURNED ON

MINIMUM COVER VALUES DO NOT ACCOUNT FOR RUTTING OR UNSTABLE SOIL OVER THE PIPE. ADDITIONAL COVER MAY BE REQUIRED TO MAINTAIN THE PIPE'S STRUCTURAL INTEGRITY.

MINIMUM COVER TO PREVENT PIPE FLOTATION	
NOMINAL DIAMETER (in)	MINIMUM COVER (in)
12	9
15	11
18	13
24	17
30	22
36	25
42	29
48	33
60	40

FLOTATION NOTES:
THE PIPE IS ASSUMED TO BE EMPTY WITH GROUNDWATER TO THE GRADE SURFACE AND SATURATED SOIL DENSITY OF 130 PCF. IF THE PIPE IS FULL OF WATER THESE VALUES MAY BE ADJUSTED BY THE SITE DESIGN ENGINEER. FOR MORE INFORMATION ON FLOTATION, REFER TO ADS TECH NOTE TN 5.05.

TABLE 2 : MIN. COVER FOR CONSTRUCTION VEHICLES & FLOTATION

ASTM D2321 SOIL CLASS[1]	ASTM D2487 SOIL GROUP[1,2]	AASHTO M145 SOIL GROUPS[1]
STONE BACKFILL		
CLASS I[2]	ANGULAR CRUSHED ROCK, WITH 100% PASSING 1-1/2 IN. SIEVE ≤15% PASSING #4 SIEVE ≤25% PASSING 3/8 IN. SIEVE ≤12% PASSING #200 SIEVE ALL PARTICLE SURFACES SHALL BE FRACTURED.	-
GRAVEL AND SAND BACKFILL		
CLASS II	CLEAN, COUARSE GRAINED SOILS; "SW", "SP", "GW", "GP", OR ANY SOIL BEGINNING WITH ONE OF THESE SYMBOLS WITH ≤12% PASSING #200 SIEVE.	A1, A3
COARSE GRAINED SOILS WITH FINES		
CLASS III	COARSE GRAINED SOILS WITH FINES; "GM", "GC", "SM", "SC", OR ANY SOIL BEGINNING WITH ONE OF THESE SYMBOLS, CONTAINING >12% TO <50% PASSING #200 SIEVE; "CL", "ML", OR ANY SOIL BEGINNING WITH ONE OF THESE SYMBOLS, WITH ≥50% TO ≤70% PASSING #200 SIEVE AND LL < 50	A-2-4, A-2-5, A-2-6, OR A-4 OR A-6 SOILS WITH <70% PASSING #200 SIEVE
FINE-GRAINED INORGANIC SOILS		
CLASS IV	FINE-GRAINED INORGANIC SOILS; "CL", "ML", OR ANY SOIL BEGINNING WITH ONE OF THESE SYMBOLS, WITH >70% PASSING #200 SIEVE AND LL < 50	A-2-7 OR A-4 OR A-6 SOILS WITH ≥70% PASSING #200 SIEVE

[1]SEE ASTM D2321 FOR ADDITIONAL GUIDANCE REGARDING THE USE OF LISTED SOIL AS BACKFILL AROUND THERMOPLASTIC PIPE
[2]IT IS HIGHLY RECOMMENDED TO WRAP THIS MATERIAL WITH A GEOTEXTILE TO PREVENT MIGRATION OF FINES INTO AND THROUGH VOIDS IN THE BACKFILL.

BACKFILL AROUND PIPE SHALL MEET ASTM D2321 CLASS I, II, OR III UNLESS SPECIFICALLY APPROVED IN WRITING BY THE PROJECT DESIGN ENGINEER AND MAXIMUM COVER DATA IS PROVIDED.

TABLE 3 : BACKFILL CLASSIFICATIONS

HP STORM INSTALLATION GUIDE

DRAWN: BSW | DATE: 10/1/24
REVISION: 2 | DWG NO: STD-1301F

NOT TO SCALE

PIPE MUST BE INSTALLED IN ACCORDANCE WITH ASTM D2321. IN ADDITION TO ALL SITE CONDITIONS REQUIRED BY STATE AND LOCAL CODES, INDUSTRY STANDARDS AND GUIDELINES, MANUFACTURER'S INSTALLATION RECOMMENDATIONS, OSHA, AND ALL APPLICABLE LAWS.

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SHEET
1 OF 1

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