| CITY OF NEW HAVEN<br>DEPARTMENT OF ENGINEERING | DRIVE: K:\ENGINEER\DWG<br>FILE: CITYSTD\DETAILS\2009 DETAILS<br>DATE: DEC. 1, 2009<br>DRAWING NO.: STD–NH–38 |
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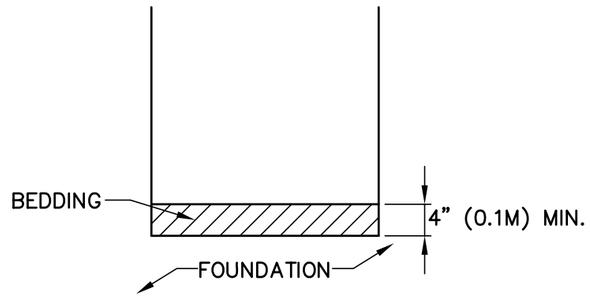
## BEDDING:

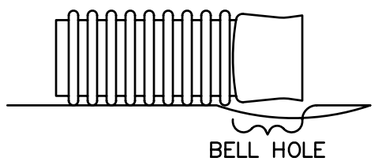
BEDDING IS THE PORTION OF THE BACKFILL THAT IS PLACED DIRECTLY ON THE FOUNDATION; REF. TO FIGURE 1. BEDDING SHOULD BE SUFFICIENT TO PROVIDE UNIFORM SUPPORT FOR THE PIPE AND MAINTAIN PIPE GRADE; COMMONLY REFERENCED MINIMUM BEDDING DEPTH IS 4" (0.1 M).

FIGURE 1: LOCATION OF THE BEDDING AREA OF THE BACKFILL ENVELOPE




IF A PIPE HAS A BELL–AND–SPIGOT JOINT WHERE THE BELL IS SIGNIFICANTLY LARGER THAN THE PIPE, THE MANUFACTURER MAY REQUIRE USE OF "BELL HOLES" IN THE INSTALLATION. BELL HOLES ARE DEPRESSIONS IN THE BEDDING DESIGNED TO ACCOMMODATE THE CONNECTION SO THAT A STRESS POINT NOT OCCUR; FIGURE 2 SHOWS AN EXAMPLE. SINCE JOINT DESIGNS VARY, INDIVIDUAL MANUFACTURERS SHOULD BE CONTACTED REGARDING WHETHER THIS IS AN ESSENTIAL CONSTRUCTION TECHNIQUE FOR A SPECIFIC PRODUCT.

FIGURE 2: BELL HOLE




## LAYING AND JOINING PIPE:

LENGTHS OF PIPE SHOULD BE LOWERED INTO THE TRENCH MANUALLY OR WITH EQUIPMENT DEPENDING ON PIPE SIZE AND TRENCH CONDITIONS. DO NOT DRAG, DROP, OR ROLL PIPE INTO THE TRENCH. COUPLING BANDS, FITTINGS AND SIMILAR PRODUCTS SHOULD BE HANDLED WITH CARE, USING EQUIPMENT AND THE CORRECT STRAPS IF NECESSARY. THESE PRODUCTS SHOULD NOT BE THROWN OR OTHERWISE MISHANDLED.

ALL PIPE AND ACCESSORIES SHOULD BE INSPECTED FOR DAMAGE AFTER THEY HAVE BEEN LOWERED INTO THE TRENCH BUT BEFORE THEY ARE CONNECTED. PIPE AND FITTING ENDS SHOULD BE AS CLEAN AS POSSIBLE TO PERMIT PROPER ASSEMBLY AND OPTIMUM JOINT PERFORMANCE.

SEVERAL JOINING OPTIONS ARE AVAILABLE FROM CPPA MEMBER COMPANIES. THE APPLICATION, MINIMUM JOINT QUALITY, PIPE TYPE AND DIAMETER WILL DETERMINE THE MOST APPROPRIATE JOINT. INDIVIDUAL MANUFACTURERS CAN PROVIDE ADDITIONAL INFORMATION ON THEIR OWN DESIGNS, AS WELL AS PROCEDURES FOR MAKING JOINTS IN THE FIELD.

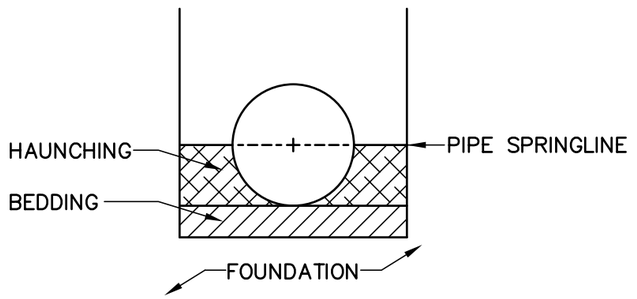
## RIGID CONDUIT BEDDING:

ORDINARY BEDDING, IS THAT METHOD OF BEDDING CONDUITS COMPLETELY BURIED IN DITCHES IN WHICH THE CONDUIT IS BEDDED, WITH "ORDINARY" CARE, IN AN EARTH FOUNDATION SHAPED TO FIT THE LOWER PART OF THE CONDUIT EXTERIOR WITH REASONABLE CLOSENESS FOR A WIDTH OF AT LEAST 50 PER CENT OF THE CONDUIT BREADTH; AND IN WHICH THE REMAINDER OF THE CONDUIT IS SURROUNDED TO A HEIGHT OF AT LEAST 0.5 FEET ABOVE ITS TOP BY GRANULAR MATERIALS, SHOVEL PLACED AND SHOVEL TAMPED TO COMPLETELY FILL ALL SPACES UNDER AND ADJACENT TO THE CONDUIT; ALL UNDER THE GENERAL DIRECTION OF A COMPETENT ENGINEER.

## HAUNCHING:

THE HAUNCHING AREA OF THE BACKFILL ENVELOPE PROVIDES THE MAJORITY OF THE RESISTANCE AGAINST SOIL AND TRAFFIC LOADINGS. THE BACKFILL MATERIAL SHOULD BE INSTALLED IN LAYERS, OR LIFTS, UNIFORMLY ON EACH SIDE OF THE PIPE AS SPECIFIED FOR A PARTICULAR MATERIAL IN THE CPPA TECHNICAL BOOKLET STRUCTURAL DESIGN METHOD FOR CORRUGATED POLYETHYLENE PIPE. LARGER, MORE ANGULAR BACKFILL MATERIAL CAN USUALLY BE PLACED IN THICKER LAYERS THAN CAN MATERIALS WITH SMALLER, ROUNDER PARTICLES. THE BACKFILL SHOULD BE SHOVELED UNDER THE PIPE, TAKING CARE TO FILL VOIDS. IF COMPACTION IS REQUIRED, IT SHOULD BE CONDUCTED IN SUCH A WAY THAT THE PIPE ALIGNMENT IS NOT DISTURBED. BACKFILL CONSTRUCTION SHOULD CONTINUE UP TO THE PIPE SPRINGLINE TO COMPLETE THE HAUNCH AREA, AS SHOWN IN FIGURE 3.

FIGURE 3: LOCATION OF THE HAUNCHING AREA OF THE BACKFILL ENVELOPE




ADDITIONAL ATTENTION SHOULD BE GIVEN TO BACKFILL PLACEMENT AND COMPACTION AROUND PIPE CONNECTIONS AT MANHOLES, CATCH BASINS, FITTINGS, AND OTHER STRUCTURES. SINCE IT CAN BE DIFFICULT TO WORK IN THESE AREAS, THE BACKFILLING PROCESS IS OFTEN NEGLECTED. THIS CAN LEAD TO NON–UNIFORM SETTLEMENT OR PRODUCT DAMAGE. AS A PRECAUTIONARY MEASURE IN CRITICAL APPLICATIONS, A PIPE JOINT CAN BE MADE CLOSE TO THE MANHOLE TO HELP ACCOMMODATE DIFFERENTIAL SETTLEMENT.