PVC PIPE RESTRAINT NOTES.

1. THIS SCHEDULE SHALL BE UTILIZED ON ALL WATER, SEWER FORCE MAIN OR RECLAIMED WATER SYSTEMS. ALL FITTINGS SHALL BE RESTRAINED TO LENGTHS INDICATED ON THE ABOVE SCHEDULE, AT A MINIMUM.
2. ASSUMPTIONS: PVC PIPE, SAFETY FACTOR=1.5, TEST PRESSURE=150PSI, SOIL=GM OR SM, TRENCH TYPE 3, DEPTH OF COVER=30 INCHES FOR 20" AND SMALLER PIPE SIZE OR 36 INCHES FOR 24" AND LARGER PIPE SIZE.
3. BENDS AND VALVES: SHALL BE RESTRAINED ON EACH SIDE OF FITTING.
4. VERTICAL OFFSETS: ARE APPROX. 3 FEET COVER ON TOP AND APPROX. 8 FEET COVER ON BOTTOM. PER THE DETAILS, $L_U$ IS THE RESTRAINED LENGTH FOR THE UPPER (TOP) LEVEL. $L_I$ IS THE RESTRAINED LENGTH FOR THE LOWER (DEEPER) LEVEL. ASSUME 45 DEGREE BENDS.
5. TEES: TOTAL LENGTH BETWEEN FIRST JOINTS OR RESTRAINED LENGTH ON EITHER SIDE OF TEE (RUN) SHALL BE A TOTAL DISTANCE OF 30 FEET (MIN). SEE SCHEDULE ABOVE FOR RESTRAINT LENGTH ON TEE "BRANCH" LINE.
6. HDPE TO PVC TRANSITIONS: THE PVC PIPE SIDE SHALL BE RESTRAINED 36 FT (MIN).
7. THE INSTALLATION OF BELL HARNESS RESTRAINTS AT PVC JOINTS (DR-18 & 25 PIPE) SHALL BE COMPLETED PER THE MANUFACTURERS RECOMMENDATION, WHICH INCLUDES NOT OVER TIGHTENING THE PARALLEL RODS/NUTS. THESE NUTS SHOULD ONLY BE SNUG TIGHT. THE HOME MARKS ON THE PIPE SHOULD ALWAYS BE VISIBLE AFTER THE RESTRAINT IS INSTALLED. OVERHOMING THE JOINT MAY CAUSE A FAILURE AT THE BELL RESULTING IN A SERVICE OUTAGE.

LENGTH (L) TO BE RESTRAINED (SEE PLATE Nos. 38C & 38D FOR ADDITIONAL DETAILS)

| NOMINAL PIPE SIZE (IN.) | HORIZONTAL BENDS 90° BENDS L (FT.) | 45° BENDS L (FT.) | 22.5° BENDS L (FT.) | 11.25° BENDS L (FT.) | VERTICAL OFFSETS 45° BENDS (SEE NOTE 4) UPPER L (FT.) | LOWER L (FT.) | VALVES OR DEAD ENDS L (FT.) |
|---|---|---|---|---|---|---|---|
| 4 | 21 | 9 | 5 | 3 | 17 | 3 | 47 |
| 6 | 30 | 13 | 6 | 3 | 23 | 4 | 65 |
| 8 | 38 | 16 | 8 | 4 | 30 | 6 | 85 |
| 10 | 45 | 19 | 9 | 5 | 36 | 7 | 103 |
| 12 | 53 | 22 | 11 | 6 | 43 | 8 | 121 |
| 14 | 61 | 26 | 13 | 6 | 50 | 9 | 140 |
| 16 | 66 | 28 | 14 | 7 | 55 | 10 | 154 |
| 18 | 73 | 30 | 15 | 8 | 60 | 11 | 170 |
| 20 | 79 | 33 | 16 | 8 | 66 | 12 | 186 |
| 24 | 79 | 33 | 16 | 8 | 77 | 15 | 185 |
| 30 | 93 | 39 | 19 | 10 | 97 | 17 | 222 |
| 36 | 106 | 39 | 21 | 11 | 107 | 20 | 257 |
| 42 | 117 | 49 | 24 | 12 | 120 | 24 | 289 |
| 48 | 144 | 53 | 26 | 13 | 133 | 25 | 321 |

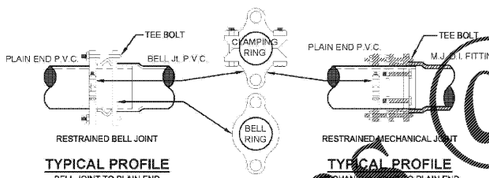
| REDUCERS SIZE (IN.) | L (FT.) |
|---|---|
| 6x4 | 34 |
| 8x6 | 36 |
| 8x4 | 62 |
| 10x8 | 35 |
| 10x6 | 63 |
| 12x10 | 36 |
| 12x8 | 64 |
| 16x12 | 66 |
| 16x10 | 92 |
| 20x18 | 35 |
| 20x16 | 66 |
| 20x12 | 117 |
| 24x20 | 56 |
| 24x18 | 80 |
| 24x16 | 101 |
| 30x24 | 78 |
| 30x20 | 121 |
| 36x30 | 78 |
| 36x24 | 141 |
| 42x36 | 75 |
| 42x30 | 140 |
| 48x42 | 75 |
| 48x36 | 139 |

| TEES SEE NOTE 5 RUN SIZE (IN.) | BRANCH SIZE (IN.) | L (FT.) |
|---|---|---|
| 4 | 4 | F.O. |
| 4 | 6 | 10 |
| | 4 < LESS | F.O. |
| 6 | 6 | 29 |
| | 6 < LESS | F.O. |
| 10 | 10 | 45 |
| | 8 | 13 |
| | 6 < LESS | F.O. |
| 12 | 12 | 62 |
| | 10 | 32 |
| | 8 < LESS | F.O. |
| 16 | 16 | 94 |
| | 12 | 39 |
| | 10 | 5 |
| | 10 < LESS | F.O. |
| 20 | 20 | 125 |
| | 16 | 76 |
| | 12 | 14 |
| | 10 < LESS | F.O. |
| 24 | 24 | 124 |
| | 20 | 84 |
| | 16 | 36 |
| | 12 < LESS | F.O. |
| 30 | 30 | 159 |
| | 24 | 104 |
| | 20 | 60 |
| | 16 | 5 |
| | 16 < LESS | F.O. |
| 36 | 36 | 192 |
| | 30 | 142 |
| | 24 | 83 |
| | 20 | 33 |
| | 16 < LESS | F.O. |
| 42 | 42 | 223 |
| | 36 | 178 |
| | 30 | 124 |
| | 24 | 69 |
| | 20 | 5 |
| | 16 < LESS | F.O. |
| 48 | 48 | 253 |
| | 42 | 209 |
| | 36 | 162 |
| | 30 | 104 |
| | 24 | 34 |
| | 20 < LESS | F.O. |

F.O. = FITTING ONLY

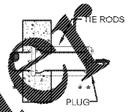
# PVC PIPE RESTRAINT JOINT SCHEDULE

JANUARY 2020 PLATE S-38A




SECTION

REDUCER MECHANICAL JOINT SLEEVES




NO. OF TIE RODS REQUIRED

| | |
|---|---|
| 3" - 8" | DIAMETER MAIN - 2 TIE RODS REQUIRED PER JOINT (3/4" ROD) |
| 10" - 12" | DIAMETER MAIN - 4 TIE RODS REQUIRED PER JOINT (3/4" ROD) |
| 14" - 16" | DIAMETER MAIN - 6 TIE RODS REQUIRED PER JOINT (3/4" ROD) |
| 18" - 20" | DIAMETER MAIN - 8 TIE RODS REQUIRED PER JOINT (3/4" ROD) |
| 24" | DIAMETER MAIN - 12 TIE RODS REQUIRED PER JOINT (3/4" ROD) |
| 30" - 36" | DIAMETER MAIN - 14 TIE RODS REQUIRED PER JOINT (1" ROD) |
| 42" - 48" | DIAMETER MAIN - 16 TIE RODS REQUIRED PER JOINT (1 1/4" ROD) |
| 54" | DIAMETER MAIN - 18 TIE RODS REQUIRED PER JOINT (1 1/4" ROD) |

DEAD - END THRUST COLLAR ANCHOR

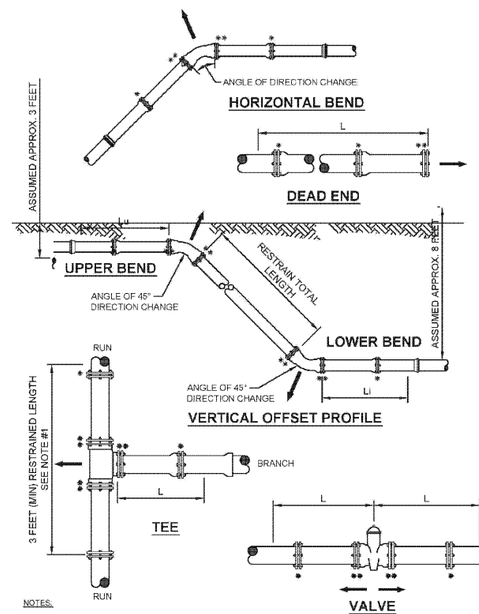
TO BE USED INSTEAD OF TOTAL RESTRAINED LENGTH (OPTIONAL) SIZE AS PER THRUST BLOCK DETAIL (W-38). SEE DETAILS W-38 & W-37.

GENERAL NOTE:

1. PAY ITEM " * " DENOTES A RESTRAINT WHICH IS PAID FOR ON A PER EACH BASIS.
2. PAY ITEM " ** " DENOTES A RESTRAINT WHICH IS INCLUDED IN THE UNIT PRICE BID FOR FITTING OR VALVE.
3. ⟶ INDICATES DIRECTION OF THRUST FORCE.

## MECHANICAL RESTRAINT DETAILS - I

JANUARY 2020 PLATE S-38C




NOTES:

1. TOTAL LENGTH BETWEEN FIRST JOINTS OR RESTRAINED LENGTH ON EITHER SIDE OF TEE (RUN) SHALL BE A TOTAL DISTANCE OF 6 FEET (MIN.). THE PROJECT ENGINEER CAN INCREASE THIS LENGTH TO REDUCE THE NUMBER OF RESTRAINS REQUIRED. ANY CHANGES TO THIS TABLE MUST BE SUMMITTED TO JEA FOR APPROVAL.
2. PAY ITEM "*" DENOTES A RESTRAINT WHICH IS PAID FOR ON A PER EACH BASIC.
3. PAY ITEM "**" DENOTES A RESTRAINT WHICH IS INCLUDED IN THE UNIT PRICE BID FOR FITTING OR VALVE.

## MECHANICAL RESTRAINT DETAILS - II

JANUARY 2020 PLATE S-38D

Order Plans @ www.LDILine.com

| NO. | BY | DATE | REVISIONS |
|---|---|---|---|
| 5. | | | |
| 4. | | | |
| 3. | | | |
| 2. | | | |
| 1. | | | |

DESIGNED BY:
DRAWN BY:
DATE:
CHECKED BY:
DATE:

DESIGN ENGINEER
FLORIDA REGISTRATION NO.

JEA Building Community

JEA STANDARD
SANITARY SEWER DETAILS

PROJ. NO.
DATE: JANUARY 2020
SCALE: AS NOTED

NO. SHEETS IN SET: 5
SHEET NO.: 5
DRAWING NO.: S-STD-1

C-22

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