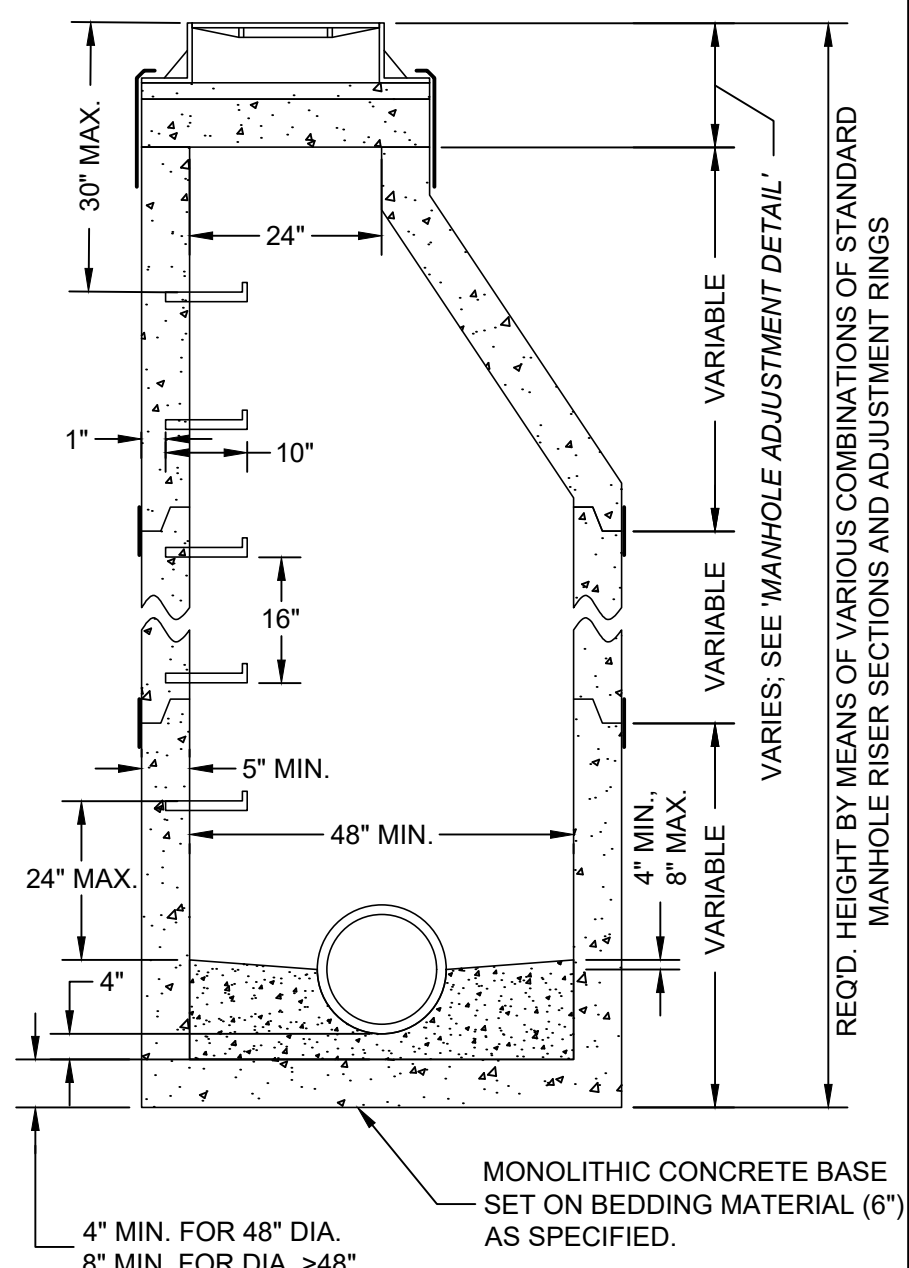


- NOTES:**
1. THE MAX. DROP FROM THE INVERT OF ANY PIPE TO THE CONCRETE CHANNEL UNDER THAT PIPE SHALL BE 8".
  2. MANHOLES LOCATED OUTSIDE OF PUBLIC RIGHT-OF-WAY SHALL BE MARKED WITH A STEEL FENCE POST AS DIRECTED.
  3. ALL NEW MANHOLES SHALL BE VACUUM TESTED PER A.S.T.M. C-1244 PRIOR TO ACCEPTANCE.
  4. ALL BARREL JOINTS SHALL BE SEALED WITH 3 1/2" x 3/8" PRE-FORMED RUBBER BUTYL JOINT SEALANT ON THE LOWER SHIPLAP.
  5. ALL BARREL JOINTS SHALL BE SEALED WITH AN EXTERNAL BARREL SEAL CENTERED ON THE JOINT (MAR MAC MACWRAP, OR APPROVED EQUAL).
  6. MANHOLE STRUCTURE SHALL BE CONSTRUCTED OF PRECAST REINFORCED CONCRETE MANHOLE RISER SECTIONS IN ACCORDANCE WITH A.S.T.M. C478-90 OR THE LATEST DESIGNATION.
  7. PRECAST FLAT TOPS ARE NOT APPROVED FOR USE.
  8. SEE 'MANHOLE ADJUSTMENT DETAIL' FOR ADJUSTMENT REQUIREMENTS.
  9. PIPE CONNECTIONS TO NEW MANHOLES SHALL BE MADE BY MEANS OF EITHER RUBBER GASKET SEAL (A-LOK OR APPROVED EQUAL) CONFORMING TO ASTM C-923 CAST INTEGRALLY IN MANHOLE WALL, OR RUBBER GASKET SEAL AND STAINLESS STEEL CLAMP (PSX SERIES SIX OR APPROVED EQUAL) CONFORMING TO ASTM C-923. FOR PIPE CONNECTIONS WITH A DEPTH OF >20 FT., A RUBBER GASKET SEAL (A-LOK OR APPROVED EQUAL) CONFORMING TO ASTM C-923 CAST INTEGRALLY IN MANHOLE WALL SHALL BE USED.
  10. PIPE CONNECTIONS TO EXISTING MANHOLES SHALL BE MADE BY MEANS OF CORE DRILLING MANHOLE WALL AND INSTALLING RUBBER GASKET SEAL AND STAINLESS STEEL CLAMP (PSX SERIES SIX OR APPROVED EQUAL) CONFORMING TO ASTM C-923.
  11. THE MAXIMUM DISTANCE FROM ANY INLET PIPE INVERT TO THE OUTLET PIPE INVERT SHALL BE 2'. DISTANCES GREATER THAN 2' WILL REQUIRE AN INSIDE DROP CONNECTION PER 'INSIDE DROP CONNECTION DETAIL'.
  12. MANHOLE STEPS SHALL BE NEENAH R-1982-F OR M.A. IND. PS-1 OR APPROVED EQUAL INSTALLED AT 16" CENTERS, ORIENTED ABOVE THE OUTLET PIPE UNLESS OTHERWISE SPECIFIED. FOR MANHOLES WITH INSIDE DROP ASSEMBLIES, STEPS IN THE MANHOLE BASE SECTION SHALL BE INSTALLED IN THE FIELD AND NOT CAST IN PLACE. IN THIS CASE, THE ORIENTATION OF THE CONE SHALL BE AS DIRECTED BY FRSA.

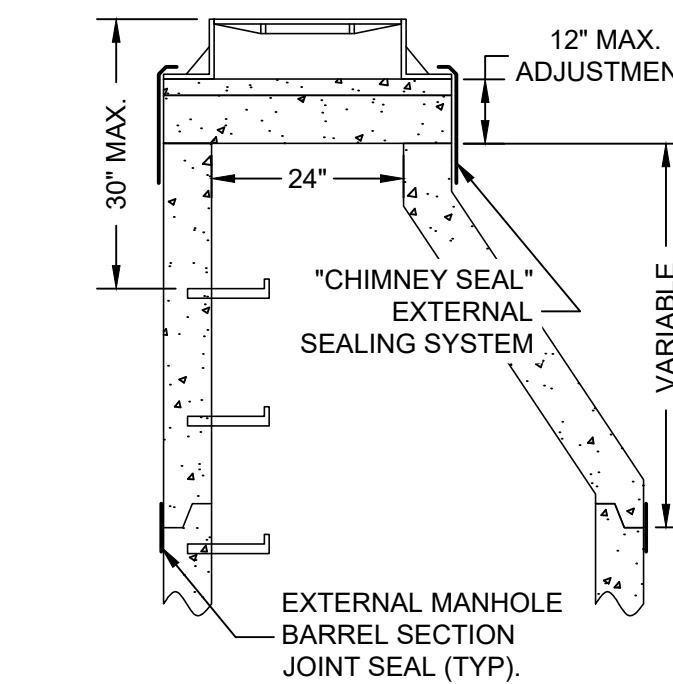


**STANDARD MANHOLE DETAIL**  
(\*MANHOLE ADJUSTMENT DETAIL\* SHALL APPLY)

- NOTES:**
1. MANHOLE FRAMES & LIDS SHALL BE PER THE TABLE BELOW.
  2. FOR MANHOLES CONNECTED TO MAINS 18" DIAMETER OR LARGER, OR FOR MANHOLES LOCATED IN FLOOD PRONE AREAS, FRAMES & LIDS SHALL BE THE BOLT DOWN TYPE.
  3. ALLOWABLE TYPES OF ADJUSTING RINGS INCLUDE PRECAST CONCRETE (4" HEIGHT MIN.), & EXPANDED POLYPROPYLENE (EPP). THESE CAN BE USED IN CONJUNCTION WITH EACH OTHER, EXCEPT THAT A PRECAST RING SHALL NOT BE PLACED OVER AN EPP RING.
  4. FOR PRECAST ADJUSTING RINGS, ALL ADJUSTING RING JOINTS AS WELL AS THE FRAME TO ADJUSTING RING JOINT SHALL BE SEALED WITH TWO 1" BEADS OF PRE-FORMED RUBBER BUTYL JOINT SEALANT. WHEN A FRAME REQUIRES PITCHING, EPP TAPER RINGS SHALL BE USED PER NOTE 5.
  5. FOR EPP ADJUSTING RINGS, RINGS SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S INSTRUCTIONS. WHEN A FRAME REQUIRES PITCHING, THE TOP RING SHALL BE A TAPERED ADJUSTMENT RING PER MANUFACTURER'S INSTRUCTIONS.
  6. NO TARRING OR GROUTING IS ALLOWED ON THE INSIDE OF MANHOLE OR ADJUSTMENT JOINTS.
  7. MAXIMUM MANHOLE ADJUSTMENT IS 12". MINIMUM ADJUSTMENT IS 4" UNLESS OFF-ROAD OR IN CURB & GUTTER ROADWAY.
  8. MANHOLE FRAMES SHALL BE SET 1/4" MIN. TO 3/8" MAX. BELOW PAVED SURFACES, AND AT FINAL GRADE IN TURF AREAS.
  9. WHEN ADJUSTING EXISTING MANHOLES, THE ENTIRE EXISTING ADJUSTMENT SHALL BE REMOVED AND REPLACED.
  10. THE COMBINATION OF NEW ADJUSTING RINGS

**APPROVED FRAME & LID TABLE**

| TYPE        | NEENAH FRAME | NEENAH LID  | EAST JORDAN FRAME | EAST JORDAN LID |
|-------------|--------------|-------------|-------------------|-----------------|
| REGULAR     | 1670-2004    | R-1670-0358 | 00111711          | 00111732        |
| LOW PROFILE | 1670-2008    | R-1670-0358 | ---               | ---             |
| BOLT DOWN   | 1915JT08     | ---         | ---               | ---             |

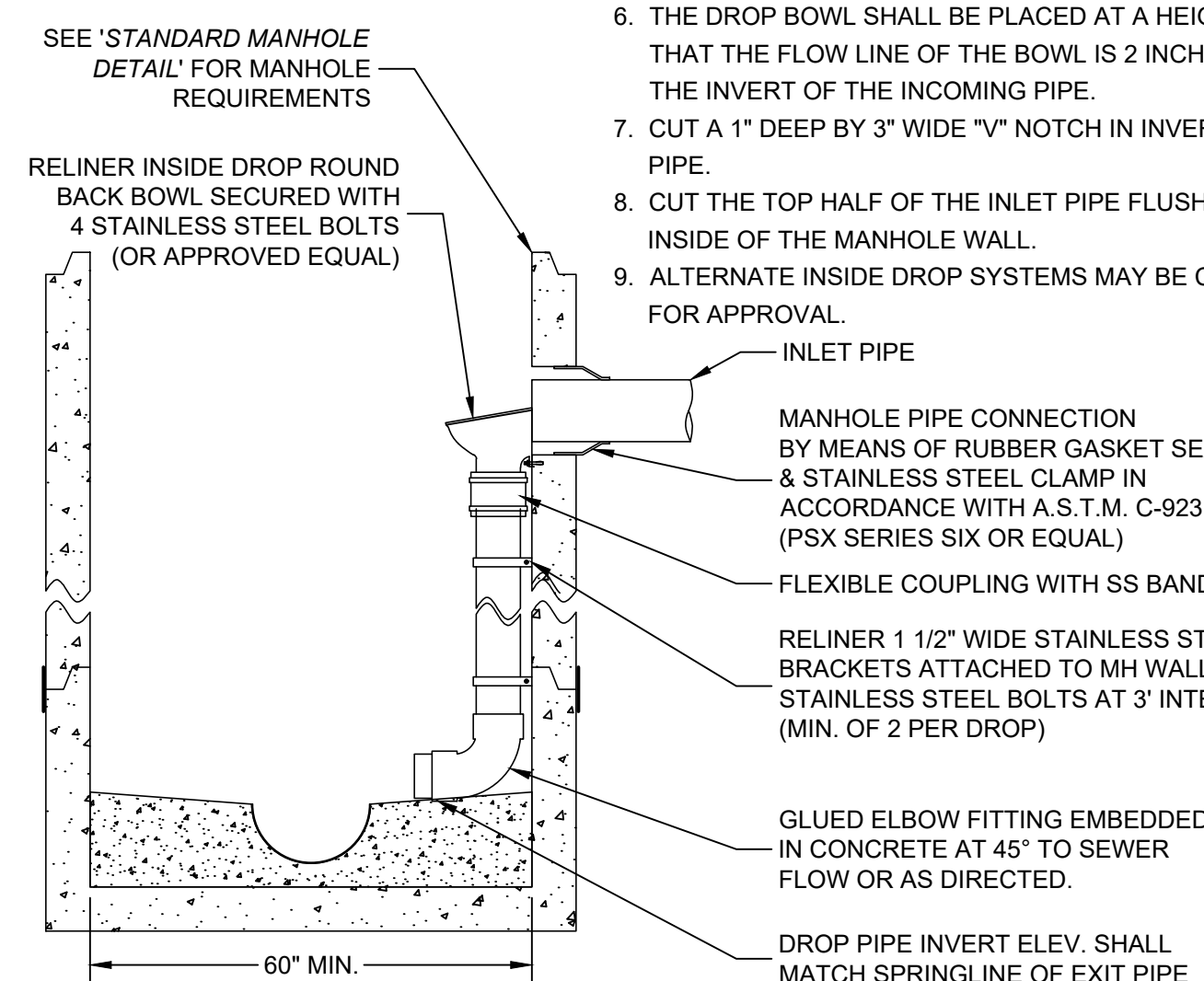


**MANHOLE ADJUSTMENT DETAIL**  
(FOR ADJUSTMENT OF BOTH NEW & EXISTING MANHOLES)

**DROP BOWL & DROP PIPE SIZING TABLE**

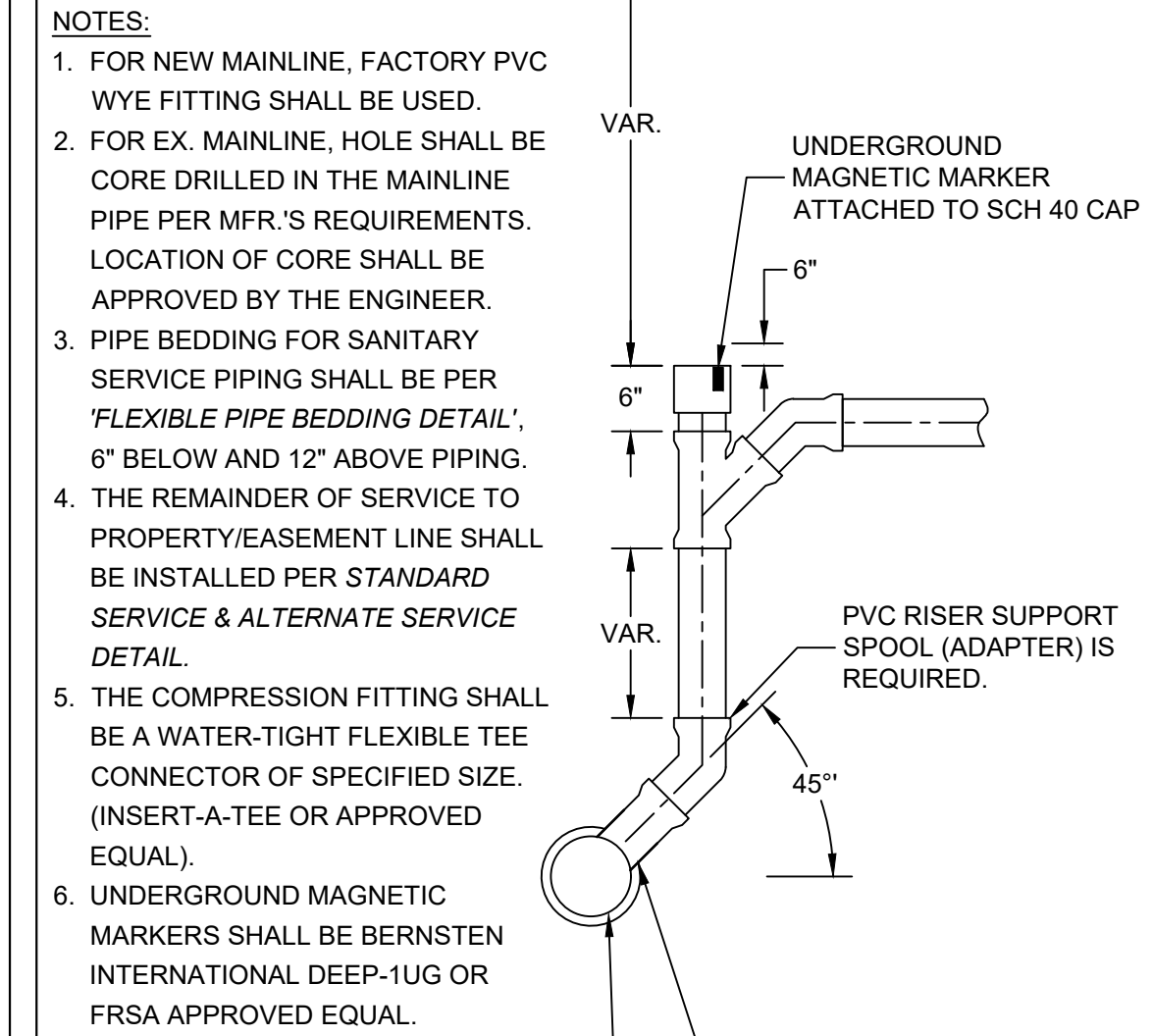
| INLET PIPE DIA. | DROP PIPE DIA. (MIN.) |
|-----------------|-----------------------|
| 4-6 INCH        | 4 INCH                |
| 8 INCH          | 6 INCH                |
| 10 INCH         | 8 INCH                |
| >10 INCH        | *                     |

\* PER MFG. OR AS DIRECTED BY FRSA



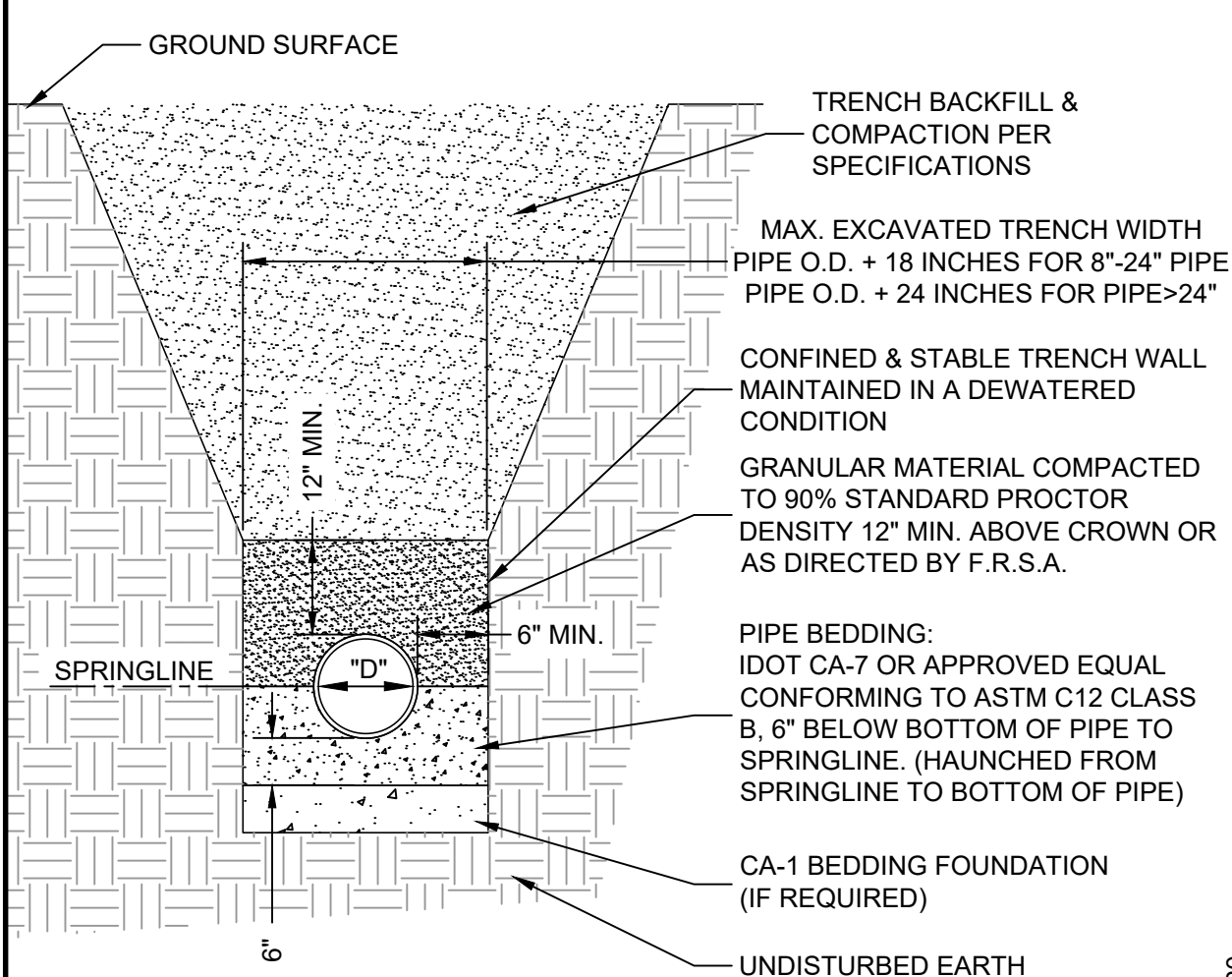
**INSIDE DROP CONNECTION DETAIL**  
(\*STANDARD MANHOLE DETAIL\* SHALL APPLY)

- NOTES:**
1. INSIDE DROP TYPE MANHOLES SHALL BE 5' MIN. INSIDE DIA.
  2. ALL INSIDE DROP CONNECTIONS FOR SERVICES AND COLLECTOR SEWERS SHALL USE THE DROP AS MFG. BY RELINER-DURAN INC., OR EQUAL.
  3. SEE TABLE FOR DROP BOWL AND DROP PIPE SIZES.
  4. ALL INSIDE DROP PIPING SHALL BE PVC SDR35 ASTM-D3034.
  5. ATTACH THE ROUND BACK DROP BOWL AND EACH CLAMPING BRACKET TO THE MANHOLE WALL WITH 3/8" x 1" MIN. STAINLESS STEEL BOLTS AND EPOXY IMPREGNATED LUGS PER MFR.'S RECOMMENDATIONS.
  6. THE DROP BOWL SHALL BE PLACED AT A HEIGHT SO THAT THE FLOW LINE OF THE BOWL IS 2 INCHES BELOW THE INVERT OF THE INCOMING PIPE.
  7. CUT A 1" DEEP BY 3" WIDE "V" NOTCH IN INVERT OF INLET PIPE.
  8. CUT THE TOP HALF OF THE INLET PIPE FLUSH WITH THE INSIDE OF THE MANHOLE WALL.
  9. ALTERNATE INSIDE DROP SYSTEMS MAY BE CONSIDERED FOR APPROVAL.



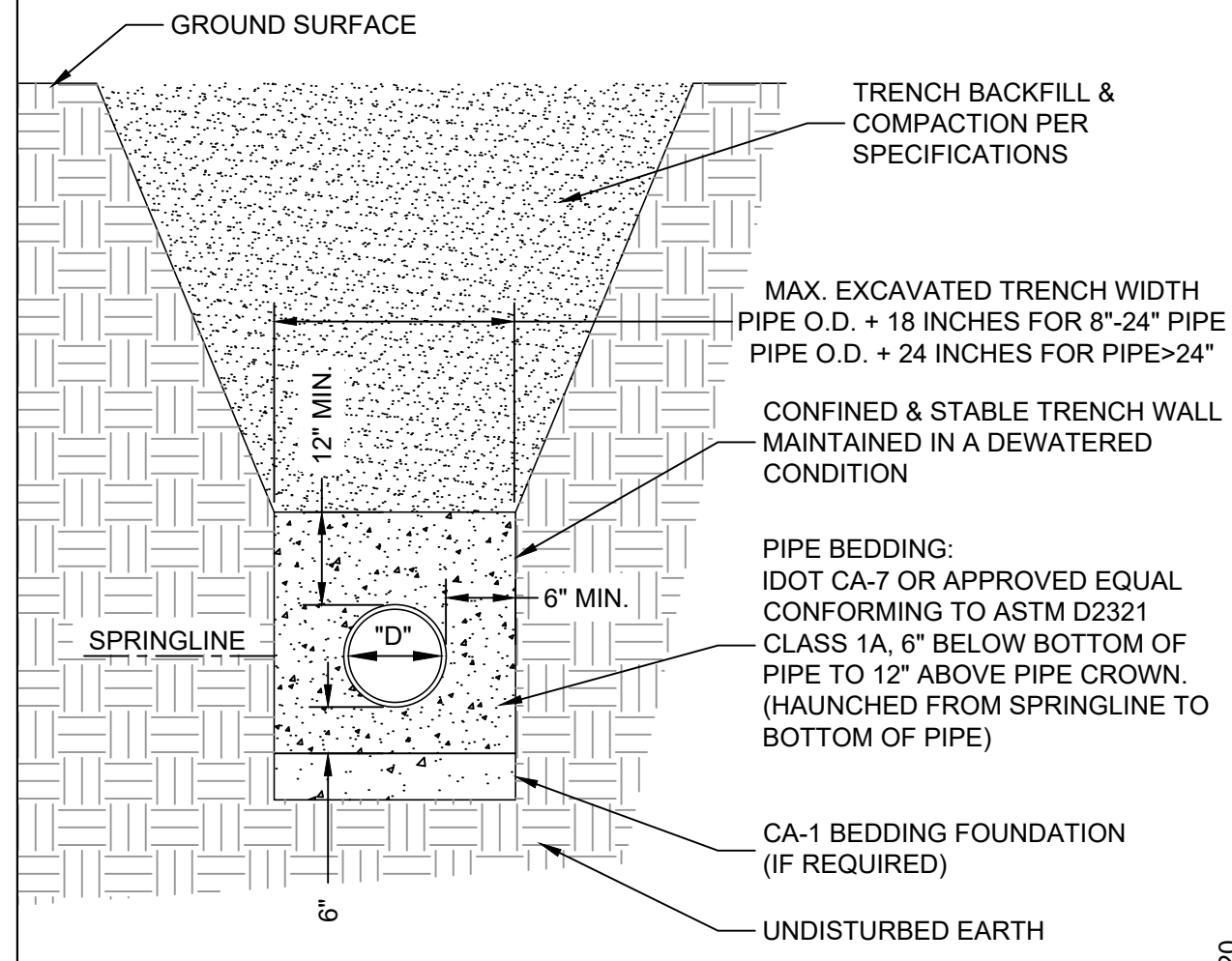
**VERTICAL SERVICE RISER DETAIL**  
(FOR MAINLINE DIA. 8" - 18"; CONNECTION TO >18" MAIN PROHIBITED)

- NOTES:**
1. REASONABLE CARE SHALL BE USED WHEN BACKFILLING OVER SEWER. NO MATERIALS SUCH AS ROCKS OR BOULDERS SHALL BE PLACED WITHIN 24" OF THE CROWN OF THE PIPE. NO MATERIAL LARGER THAN 8" DIA. SHALL BE USED IN THE BACKFILL.
  2. LOOSE MATERIAL SHALL BE REMOVED OR COMPACTED PRIOR TO PLACING PIPE BEDDING.
  3. BEDDING SHALL BE WELL HAUNCHED ALONG PIPE TO ENSURE VOIDS ARE ELIMINATED.

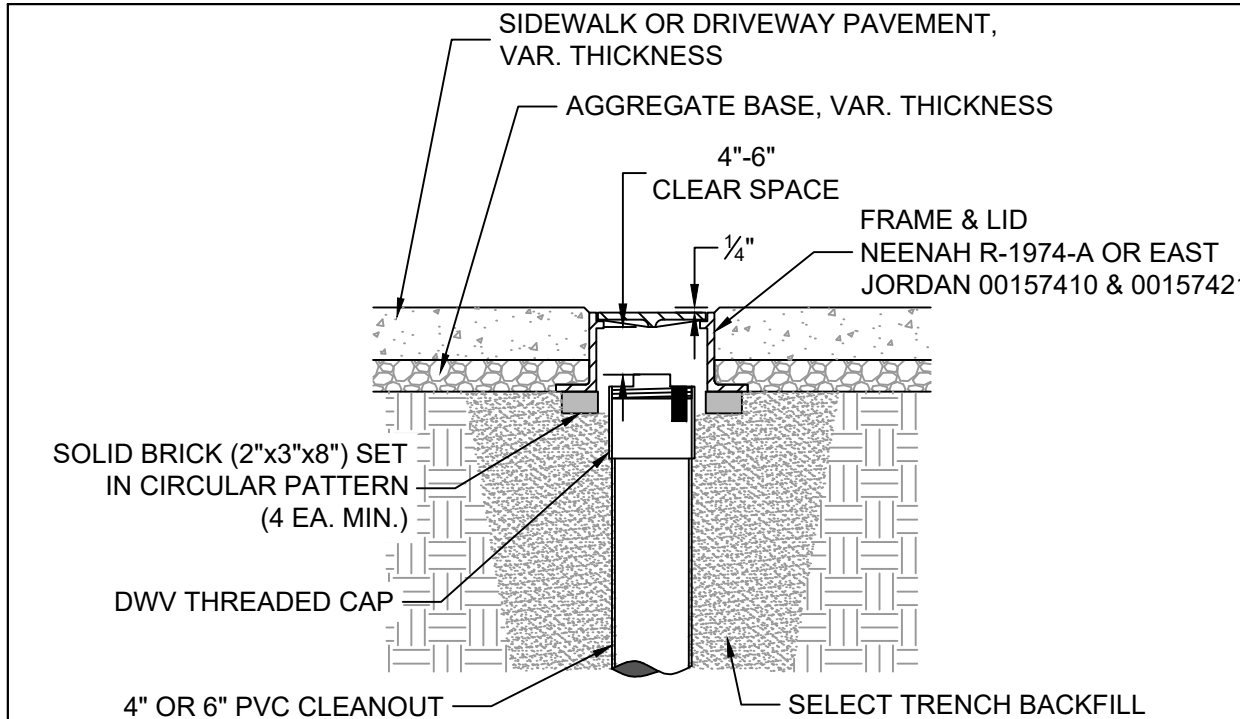


**RIGID PIPE BEDDING DETAIL**

- NOTES:**
1. REASONABLE CARE SHALL BE USED WHEN BACKFILLING OVER SEWER. NO MATERIALS SUCH AS ROCKS OR BOULDERS SHALL BE PLACED WITHIN 24" OF THE CROWN OF THE PIPE. NO MATERIAL LARGER THAN 8" DIA. SHALL BE USED IN THE BACKFILL.
  2. LOOSE MATERIAL TO BE REMOVED OR COMPACTED PRIOR TO PLACING PIPE BEDDING.
  3. BEDDING SHALL BE WELL HAUNCHED ALONG PIPE TO ENSURE VOIDS ARE ELIMINATED.



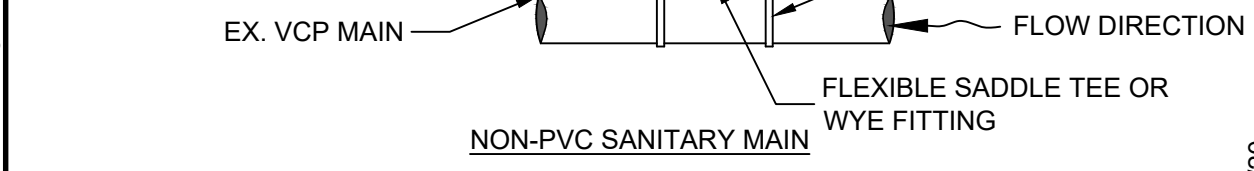
**FLEXIBLE PIPE BEDDING DETAIL**



- NOTES:**
1. SERVICE CLEANOUT CASTINGS ARE REQUIRED FOR ALL CLEANOUTS LOCATED IN PAVED AREAS, DRIVEWAYS, OR SIDEWALKS.
  2. THE LOCATION OF THE CLEANOUT SHALL BE APPROVED BY FOUR RIVERS SANITATION AUTHORITY (FRSA).
  3. THE FRAME SHALL BE SET ON BRICKS THAT ARE PLACED IN A CIRCULAR PATTERN THE ENTIRE CIRCUMFERENCE OF THE FRAME. THE BRICKS SHALL BE SET ON COMPACTED TRENCH BACKFILL.
  4. THE FRAME SHALL BE SET TO AN ELEVATION THAT PROVIDES 4"-6" CLEAR SPACE BETWEEN THE TOP OF THE CLEANOUT CAP AND THE BOTTOM OF THE CASTING LID.
  5. THE CONTRACTOR SHALL ENSURE THAT THE CLEANOUT CAP CAN BE UNSCREWED AND REMOVED AND REPLACED WITHOUT HINDRANCE.
  6. THE FRAME SHALL BE SET 1/4" MIN. TO 3/8" MAX. BELOW FINAL PAVEMENT ELEVATION.

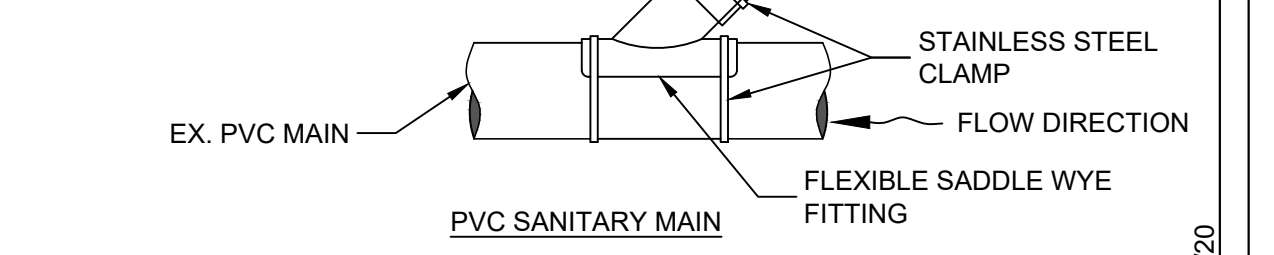
**SERVICE CLEANOUT CASTING DETAIL**

- NOTES:**
1. SADDLE TEE OR SADDLE WYE ARE BOTH ACCEPTABLE FOR VCP MAIN.
  2. CORE DRILL HOLE IN MAIN OR MODIFY EX. VCP FITTING FOR SADDLE DIMENSIONS.
  3. APPLY 2 BEADS OF SILICONE CAULK TO UNDERSIDE OF SADDLE AROUND OPENING.

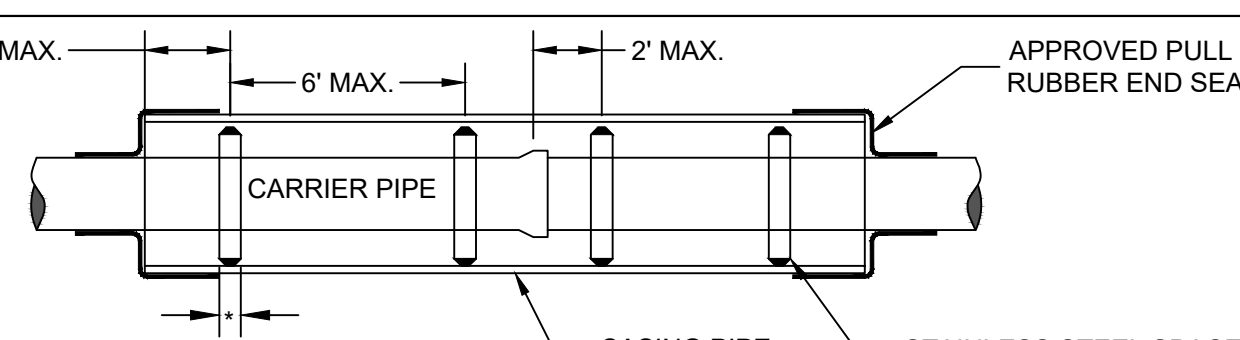


**FLEXIBLE SADDLE CONNECTION DETAIL**  
(FOR SERVICE CONNECTIONS TO NON-PVC SANITARY MAINS LESS THAN 18" DIA.)

- NOTES:**
1. ONLY A SADDLE WYE IS ACCEPTABLE FOR A PVC MAIN.
  2. CORE DRILL HOLE IN MAIN FOR SADDLE DIMENSIONS.
  3. APPLY 2 BEADS OF SILICONE CAULK TO UNDERSIDE OF SADDLE AROUND OPENING.



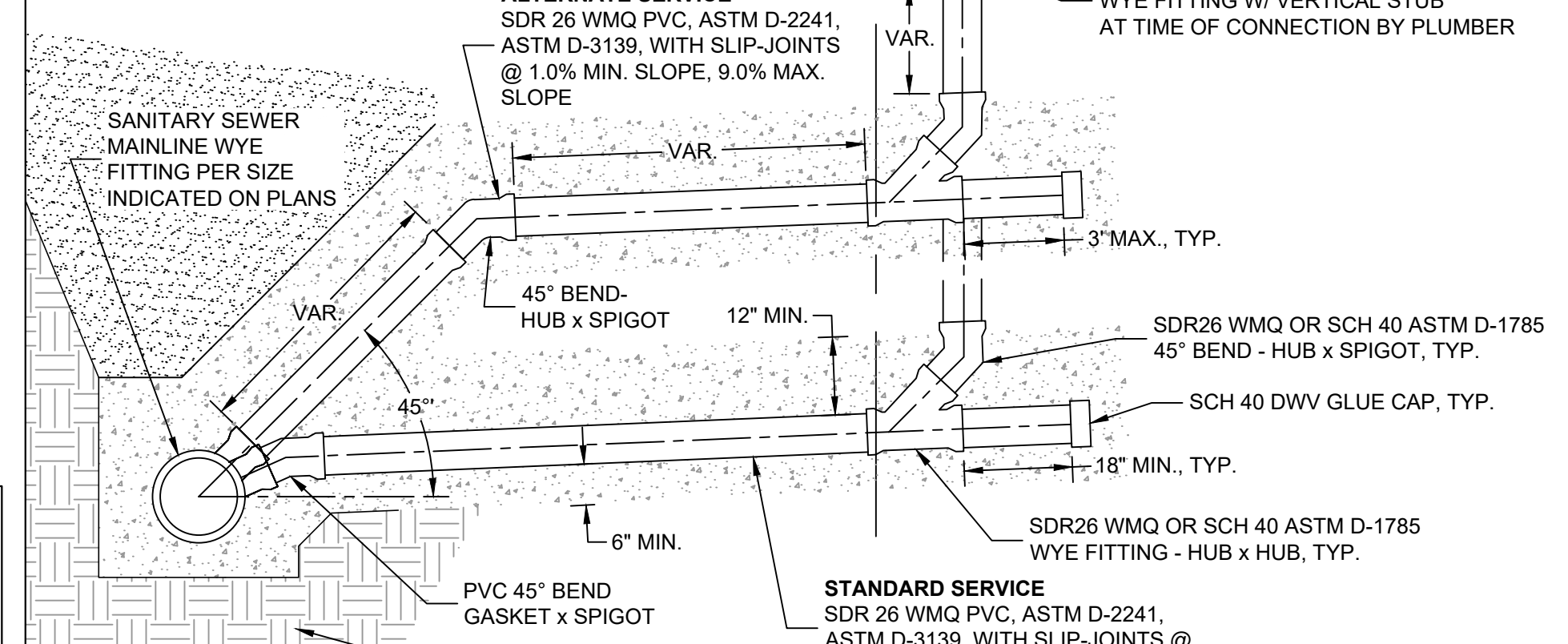
**FLEXIBLE SADDLE CONNECTION DETAIL**  
(FOR SERVICE CONNECTIONS TO PVC SANITARY MAINS LESS THAN 18" DIA.)



**CASING & SPACER DETAIL**

- NOTES:**
1. CASING END SEALS & SPACERS SHALL BE AS MFD. BY CASCADE MFG., OR APPROVED EQUAL.
  2. FOR FLEXIBLE CARRIER PIPE, SPACING OF SPACERS TO BE AS SHOWN, OR PER MFR.'S RECOMMENDATION.
  3. FOR RIGID CARRIER PIPE, SPACING SHALL BE PER MFR.'S RECOMMENDATION.

- NOTES:**
1. SANITARY SEWER MAINLINE SHALL BE INSTALLED PER 'FLEXIBLE PIPE BEDDING DETAIL' OR 'RIGID PIPE BEDDING DETAIL'.
  2. PIPE BEDDING FOR SANITARY SERVICE PIPING SHALL BE PER 'FLEXIBLE PIPE BEDDING DETAIL', 6" BELOW AND 12" ABOVE PIPING.
  3. ALL SCH 40 PVC PIPE & FITTINGS SHALL BE PER ASTM D-1785/D-2665.
  4. ALL SDR26 WMQ PVC PIPE & FITTINGS SHALL BE PER ASTM D-2241/D-3139.
  5. ALL DWV FITTINGS SHALL BE CLEANED, PRIMED, & GLUED.
  6. MIN. DEPTH OF COVER SHALL BE 5'.
  7. CLEANOUT CAP SHALL BE SCH 40 DWV GLUED CAP FOR NEW DEVELOPMENT OR SCH 40 GLUED SCREW CAP FOR EX. DEVELOPMENT.
  8. CLEANOUT RISERS LOCATED IN PAVED AREAS, DRIVEWAYS, OR SIDEWALKS SHALL WILL REQUIRE A CLEANOUT FRAME & LID PER THE FRSA 'SERVICE CLEANOUT CASTING DETAIL'.



**STANDARD SERVICE & ALTERNATE SERVICE DETAIL**  
(FOR MAINLINE DIA. 8" - 18"; CONNECTION TO >18" MAIN PROHIBITED)

**FOUR RIVERS SANITATION AUTHORITY (FRSA) STANDARD DETAIL SHEET**  
(NOT TO SCALE)

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ISSUE 05/01/2023

01/01/2021 Revisions:  
 Manhole Adjustment Detail: Revised notes 1 & 2 with acceptable frames & lids. Modified notes 3, 5, & 7. Added note 8.  
 Inside Drop Connection Detail: Revised notes 6 & 7. Added note 8.  
 Service Cleanout Casting Detail: Added this section.