

A diagram of a cross-shaped structure, likely a vehicle's chassis or a mounting frame. It consists of a central vertical shaft and a horizontal shaft intersecting at a central point. Three circular components, each labeled "TS19-C", are mounted on the shafts. One is mounted on the top of the vertical shaft, and two are mounted on the ends of the horizontal shaft. Each circular component contains a detailed internal mechanism, possibly a sensor or a camera, with various lenses and internal structures visible. Arrows point from the labels "TS19-C" to each of the three components.

1. BEDDING, HAUNCHING AND INITIAL BACKFILL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THIS DETAIL AND MANUFACTURER'S RECOMMENDATION.

2. ALL PVC PIPE SHALL BE BEDDED IN COMPACTED VDOT #807 OR #818 STONE, OR CRUSHER RUN. D 88A SUBJECTED TO VEHICULAR TRAFFIC. BEDDING STONE AND FILL SHALL BE BEDDED IN 10" LIFTS FROM BOTTOM OF TRENCH TO 1" ABOVE THE PIPE AND THE REMAINING SHALL BE PLACED IN 10" LIFTS AND SHALL BE COMPACTED TO AT LEAST 90% OF MAXIMUM DENSITY AS DETERMINED BY ASTM D 1556.

3. BEDDING REQUIREMENTS FOR DUCTILE IRON WATER LINE ARE DEPENDENT ON MANUFACTURER'S BEDDING CRITERIA.

4. ALL EXCAVATIONS SHALL COMPLY WITH OSHA TECHNICAL MANUAL, CHAPTER 2, TITLED "EXCAVATIONS: HAZARD RECOGNITION IN TRENCHING AND SHORING."

5. THE EXCAVATION SHALL BE PLACED ALONG THE LOWER QUADRANT OF THE PIPE. THE WIRE SHALL NOT TOUCH THE PIPE, BUT SHALL BE A MAXIMUM OF 6" FROM THE PIPE. NON-METALLIC SPACERS MAY BE USED TO MAINTAIN A SET DISTANCE FROM THE UTILITY.

FINISHED GRADE

NORMAL SOIL CONDITIONS

NON-DETECTABLE WARNING TAPE, 3 TO 5 MILS IN THICKNESS, TO BE INSTALLED APPROX. 24" ABOVE PIPE AND AT A MINIMUM OF 9" BELOW GRADE (ALL PIPE)

BACKFILL ONLY WITH APPROVED

1. BEDDING, HAUNCHING AND INITIAL BACKFILL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THIS DETAIL AND MANUFACTURER'S RECOMMENDATION.
2. ALL PVC PIPE SHALL BE BEDDED IN COMPACTED VDOT #67 OR #68 STONE.
3. IN VDOT ROAD THE CONTRACTOR SHALL REPLACE THE PAVEMENT AS REQUIRED AND SPECIFIED BY VDOT. IN ROANOKE CITY, CONTRACTOR SHALL REPLACE PAVEMENT AS REQUIRED BY CITY OF ROANOKE RIGHT OF WAY EXCAVATION AND RESTORATION STANDARDS, LATEST EDITION.
4. ALL CONSTRUCTION WITHIN THE PUBLIC RIGHT-OF-WAY SHALL BE AS SPECIFIED BY VDOT OR APPLICABLE LOCALITY.
5. PRIOR TO CONSTRUCTION, CONTRACTOR IS RESPONSIBLE FOR SECURING ALL REQUIRED PERMITS FROM VDOT AND/OR APPLICABLE LOCALITY.
6. IN AREAS SUBJECTED TO VEHICULAR TRAFFIC, BEDDING STONE AND FILL SHALL BE PLACED IN LIPS AND SHALL BE COMPACTED TO AT LEAST 90% OF MAXIMUM DENSITY AS DETERMINED BY ASTM D 158.
7. ALL SEVERE LINE PIPE SHALL BE BEDDED IN COMPACTED GRANULAR MATERIAL. BEDDING STONE SHALL BE PLACED UNDER THE PIPE. THE DEPTH OF BEDDING STONE SHALL BE DETERMINED BY VDOT OR APPLICABLE LOCALITY.
8. BEDDING CUT ON EACH SIDE OF PAVEMENT SHALL BE IN ACCORDANCE WITH VDOT OR APPLICABLE LOCALITY.
9. ALL EXCAVATIONS SHALL COMPLY WITH OSHA TECHNICAL MANUAL, CHAPTER 7, TITLED "EXCAVATIONS: HAZARD RECOGNITION IN FRENCHING AND SHORING".
10. THE PIPE SURFACE SHALL BE PLACED ALONG THE LOWER QUADRANT OF THE PIPE. THE WIRE SHALL NOT TOUCH THE PIPE, BUT SHALL BE A MAXIMUM OF 6" FROM THE PIPE. NON-METALLIC SPACERS MAY BE USED TO MAINTAIN A SET DISTANCE FROM THE UTILITY.

LOCATING CLIP FRONT VIEW
(TS19-IL-LC-C)

GROUND BAR (TYP.)

LOCATING CLIP (TYP.)
(TS19-IL-LC-C)

Diagram illustrating the trench excavation and bedding requirements for a pipe installation. The diagram shows a cross-section of a trench with a pipe at the bottom. The trench is filled with bedding material, and the pipe is surrounded by a layer of bedding. The trench is excavated to a depth of 3' MIN. and a width of 6" MIN. to 18" (ROCK CONDITIONS). The bedding material is specified as MATERIAL PER APPLICABLE LOCALITY OR VDOT STANDARDS. The pipe size is MATERIAL AS SHOWN ON PLAN. For water lines, the bedding stone is to be SPRING LINE OF PIPE, AT A MINIMUM, OR PER MANUFACTURER'S RECOMMENDATION. For sewer lines, the bedding shall be MIN. 6" ABOVE PIPE. The width of the trench excavation is specified as PIPE DIA. + 6" EACH SIDE (MINIMUM). The location of the tracer wire with non-metallic pressure pipe is indicated, noting that tracer wire is not required for typical gravity sanitary sewer. See Detail G-4 for additional requirements.

3' MIN.

MATERIAL PER APPLICABLE LOCALITY OR VDOT STANDARDS

PIPE SIZE A MATERIAL AS SHOWN ON PLAN

FOR WATER LINES INSTALL BEDDING STONE TO SPRING LINE OF PIPE, AT A MINIMUM, OR PER MANUFACTURER'S RECOMMENDATION

FOR SEWER LINES BEDDING SHALL BE MIN. 6" ABOVE PIPE

6" MIN. TO 18" (ROCK CONDITIONS)

WIDTH OF TRENCH EXCAVATION PIPE DIA. + 6" EACH SIDE (MINIMUM)

LOCATION OF TRACER WIRE WITH NON-METALLIC PRESSURE PIPE. TRACER WIRE NOT REQUIRED FOR TYPICAL GRAVITY SANITARY SEWER. SEE DETAIL G-4 FOR ADDITIONAL REQUIREMENTS

BACKFILL ONLY WITH APPROVED MATERIAL, PER APPLICABLE LOCALITY OR GOVT STANDARDS

PIPE SIZE & MATERIAL AS SHOWN ON PLAN

SEE BEDDING NOTE BELOW

8" IN ROCK (CONDITIONS)

4"

WIDTH OF TRENCH EXCAVATION
PIPE DIA. + 6" EACH SIDE (MINIMUM)

NON-DETECTABLE WARNING TAPE: 3 TO 5 MILS IN THICKNESS, TO BE INSTALLED APPROX. 24" ABOVE PIPE AND AT A MINIMUM OF 6" BELOW GRADE (ALL PIPE)

DEPTH VARIES

LOCATION OF TRACER WIRE WITH NONMAGNETIC PRESSURE PIPE. TRACER WIRE NOT REQUIRED FOR SPECIAL GRAVITY STANDARD SEWER. SEE DETAIL G-4

BEDDING: FOR WATERLINES, INSTALL BEDDING STONE TO SPRING LINE OF PIPE AT MINIMUM, OR PER MANUFACTURER'S RECOMMENDATION. FOR SEWER LINES, BEDDING SHALL BE MINIMUM 6" ABOVE PIPE.

WESTERN VIRGINIA REGIONAL - CONSTRUCTION DETAIL	
TRACER WIRE FOR NON-METALLIC PRESSURE PIPE	G-4 08/06/16

WESTERN VIRGINIA REGIONAL - CONSTRUCTION DETAIL	
BEDDING AND BACKFILL OUTSIDE OF PAVED AREAS	G- 08/01/15

WESTERN VIRGINIA REGIONAL - CONSTRUCTION DETAIL		
BEDDING AND BACKFILL UNDER PAVEMENT AND IN RIGHT-OF-WAY		G-1
		08/01/15

TRAFFIC BEARING BOX AND LID REQUIRED IN TRAFFIC AREAS (CAPTOL FINDER VBS-9S).

SERVICE LATERAL AND CLEANOUT HIPS SHALL BE ASTM D3000 SDR 26. SERVICE LATERAL FITTINGS SHALL BE OF SAME OR BETTER RATING AS THE SEWER MAIN. SCHEDULE 40 SOLVENT WELD PIPE AND FITTINGS MAY BE USED FOR THE SERVICE LATERAL AND CLEANOUT ASSEMBLY WITH APPROVAL FROM THE PARTICIPATING UTILITY.

ALL PIPE SHALL BE OF SAME SIZE.

NO BENDS ARE ALLOWED IN THE LATERAL FROM THE MAIN TO THE CLEANOUT STACK WYE. (EXCEPT FOR DEEP SEWER, AS SHOWN BELOW).

ALL MAIN LINE TIES ON ACTIVE MAINS SHALL BE PERFORMED BY PARTICIPATING UTILITY.

PIPPING ON PRIVATE SIDE OF CLEANOUT TO BE INSTALLED PER GOVERNING JURISDICTION REQUIREMENTS.

MINIMUM LATERAL SIZE: 4" FOR RESIDENTIAL SERVICE; 8" FOR NON-RESIDENTIAL SERVICE.

SEWER CLEANOUTS SHALL BE SAME SIZE AS SEWER LATERALS.

MINIMUM COVER FOR ALL SEWER LATERALS SHALL BE THREE (3) FEET.

PROPERTY OWNER RESPONSIBLE FOR INSTALLING CLEANOUT ON PROPERTY LINE (IN ACCORDANCE WITH THESE DETAILS) WHEN MAINTENANCE OCCURS.

LLOWEST SERVICE LATERAL CONNECTION SHALL BE A MINIMUM OF THREE FEET (3') ABOVE THE TOP OF THE MAIN AT THE POINT WHERE THE SERVICE LATERAL CONNECTS TO THE MAIN.

WHEN CONNECTING TO EXISTING LATERAL USE PERMCO FLEXIBLE COUPLER.

LEFT OF WAY OR LIMITS OF EASEMENT

CLEAN OUT BOX AND LID (BET TO FINISHED GRADE)

FINISHED GRADE

PRIVATE PROPERTY

SOIL GLUE CAP ROUGH

PLASTIC BODY CLEANOUT & CAP

CLEAN-OUT STACK (SEE NOTE #2 & #3)

45° OR 22.5° BELL & SPIGOT BEND (IF NEEDED)

45° WYE (NOT ACCEPTABLE)

45° MAX. SEE MAIN

CLEAN-OUT TO EXTEND ABOVE GROUND A MIN. OF 3 FEET DURING INSTALLATION OF MAIN LINE. PLUMBER SHALL CUT STACK TO FINISHED GRADE AS SHOWN WHEN BUILDING SEWER IS CONNECTE TO LATERAL.

HORIZONTAL SECTION SHALL EXCEED A MINIMUM OF 5' OR AS DIRECTED BY THE PARTICIPATING UTILITY

4" MINIMUM GRAVEL EQUIVALENT #57 OR EQUIVANT

TIE WYE, TWEEVE OR COMBINATION OF WYE & 45° BEND FITTINGS SHALL BE SIZED AS REQUIRED

2'-0" MIN.

2'-0" MIN.

11.25" OR 22.5"

45° MAX.

(SEE NOTE #2)

SANITARY LATERAL FOR DEEP SEWER

1. THE "P" PIPING AND "STREET EL" SHALL BE LEAD FREE BRASS OR DUCTILE IRON.

2. PIPE JOINTS SHALL BE RESTRAINED BEFORE GATE VALVE IN ACCORDANCE WITH DISTANCE SHOWN IN THE "MINIMUM THRUST RESTRAINT OF PIPE JOINTS DESIGN LENGTHS" DETAIL FOR VALVE / PLUG. PIPE JOINTS BETWEEN GATE VALVE AND BLOWOFF SHALL ALSO BE RESTRAINED.

Diagram labels and dimensions include:

- CENTERLINE OF VAULT
- PAVEMENT
- ADJUSTMENT RING (WHEN REQUIRED)
- 2" THREADED NIPPLE WITH FINGER TIGHT CAP DRILL 1/8" HOLE IN CAP
- 2" CLEARANCE FROM TOP OF PIPE TO BOTTOM OF VAULT CUT-OUT
- 2" BLOW OFF
- "STREET EL"
- 3" MIN. EXTENSION
- GROUND ROD SEE GENERAL DETAIL
- 3/4" TAPPED RESTRAINED M.J. PLUG
- MAIN LINE VALVE (SEE WATER LINE VALVE & VAULT DETAIL)
- WATER MAIN
- CAPITOL FOUNDRY MH 001 NON-WATERTIGHT FRAME & COVER LABELED "WATER"
- FINISHED GRADE
- 12" MAX. VERTICAL
- GROUND BAR SEE GENERAL DETAIL
- PRECAST WATER VALVE VAULT OR PRECAST MANHOLE SECTIONS WHEN DEPTH EXCEEDS
- TRACER & GROUND WIRES SEE GENERAL DETAIL
- 6" MINIMUM VDOT ST

WESTERN VIRGINIA REGIONAL - CONSTRUCTION DETAIL		
SANITARY SEWER LATERAL		S-
		01/01/14

WESTERN VIRGINIA REGIONAL - CONSTRUCTION DETAIL	
<p>WATER LINE VALVE & VAULT</p>	<p>W-</p> <p>01/01/14</p>

WESTERN VIRGINIA REGIONAL - CONSTRUCTION DETAIL	
TEMPORARY END OF LINE BLOW-OFF ASSEMBLY	W- 01/01/14

PUBLIC HYDRANTS SHALL BE PAINTED SILVER WITH AN OIL-BASED PAINT. PRIVATE/HYDRANTS SHALL ALSO BE PAINTED SILVER WITH AN OIL-BASED PAINT UNLESS OTHERWISE SPECIFIED BY THE JURISDICTIONAL FIRE MARSHAL.

2. FIRE HYDRANT SHALL BE INSTALLED 2 MIN. AND 4 MAX. FROM BACK OF CURB OR 8 MIN. AND 12 MAX. FROM EDGE OF PAVEMENT WHEN CURB IS NOT PRESENT. FIRE HYDRANT TO BE INSTALLED WITH BIGHT-OF-WAY OR EASEMENT LINE.
3. AREA AROUND HYDRANT AT 2' DIAMUS OF 0' TO LEVEL AND UNDISTURBED.
4. WATERPROOF MANS OR OUT OF SERVICE RINGS SHALL BE PLACED OVER ALL NEWLY INSTALLED FIRE HYDRANT ASSEMBLIES SHALL BE ROODED AND RESTRAINED WITH APPROVED J-GATE RESTRAINTS. HIGH PRESSURE UNDER .125 PSI ALSO REQUIRED CONCRETE THRUCHUCKS AS SHOWN BELOW.
- IF DURING CONSTRUCTION THE SEASONAL WATER LEVEL IS NOTED TO BE ABOVE THE DRAIN OUTLETS OF THE PROPOSED HYDRANT, THE PARTICIPATING UTILITY WILL BE NOTIFIED IMMEDIATELY SO THAT THE HYDRANT CAN BE RELOCATED TO A SATURABLE LOCATION, OMITTED, OR THE DRAIN HOLES PUGHED.
- 2) WIRING OF TRACER WIRE SHALL BE WRAPPED AROUND BASE OF HYDRANT

APPROVED MODELS - AVM MODEL 2780, AFV MODEL 84-8-RS, MELLIEMER CULBERT 423, KENNEDY K810 OR EQUIVALENT

WHERE HYDRANT LATERALS ARE APPROVED BY THE PARTICIPATING UTILITY TO BE LONGER IN LENGTH, MAKING THE CONTINUOUS SECTION OF PIPE ON EACH SIDE OF THE GATE VALVE UNFEASIBLE, RESTRAINED JOINTS SHALL BE INSTALLED BETWEEN THE TELE AND GATE VALVE. IN LIEU OF RODGING, HOWEVER, A ROODED CONTINUOUS SECTION OF PIPE SHALL ALWAYS BE INSTALLED BETWEEN THE GATE VALVE AND HYDRANT.

VARIATIONS (NO EXCEPTIONS)

- 2 - 1/2" NOZZLES
- AFV MODEL 2780
- AFV MODEL 84-8-RS
- MELLIEMER CENTURION
- K810, KENNEDY K810 OR EQUIVALENT.
- FINISHED GRADE
- 1 - 4 1/2" PUMPER NOZZLE (FACING THE ROAD)
- 2'-0" TO 2'-6" DEPTH OF EXCAVATION
- 2'-0" TO 2'-6" DEPTH OF EXCAVATION
- ZZZZ CONCRETE PAD
- CONTINUOUS SECTION OF PIPE
- CONTINUOUS SECTION OF PIPE
- WATER MAIN
- VALVE BOX (NO ADAPTORS IF CUTTING PAVEMENT OR PAVING UNDER PAVEMENT)
- STANDARD INSTALLATION INCLUDES FOSTER ADAPTER OR APPROVED ALTERN.
- CONCRETE THRUCHUCK (IF REQUIRED)
- TIE - MAN LINE SIZE * TO VALVE & HYDRANT
- 1/2" FITTINGS SHALL NOT BE ENCASED IN CONCRETE
- DRAIN

0.5% CLEAN EXCAVATION FOR DRAINAGE

J-GATE "J" RESTRAINT

THREADED RODS AND NUTS

TRACER WIRE SEE GENERAL DETAIL

APPROVED M.J. GLAND RESTRAINT (E.G. MELLAGUE, GRIP RINGS OR UNIFORM) SHALL BE USED AT ALL M.J. FITTINGS

FACTOR OF SAFETY = 1.5

PIPE SIZE	PFC MATL.	9" BEND	45° BEND	22 1/2° BEND	11 1/2° BEND	VALUE/PISTON (REDUCER 1/2")	TEE BRANCH (REDUCER 1/2")	REDUCER (4")	45° VENT.	21° VENT.	11 1/2° VENT.
6"	D.I.	28'	21'	6'	3'	50'	28'	26'	21'	10'	5'
8"	D.I.	36'	21'	8'	4'	65'	41'	27'	23'	13'	7'
10"	D.I.	43'	21'	9'	5'	77'	53'	28'	32'	16'	9'
12"	D.I.	51'	21'	10'	5'	91'	67'	27'	38'	18'	9'
6"	PVC	28'	21'	6'	3'	78'	25'	40'	32'	16'	8'
8"	PVC	37'	21'	8'	4'	102'	48'	43'	42'	21'	10'
10"	PVC	44'	21'	9'	5'	122'	68'	41'	51'	25'	12'
12"	PVC	51'	21'	11'	6'	143'	89'	42'	60'	29'	15'

1. ALL JOINTS SHALL BE RESTRAINED ON BOTH SIDES OF THE FITTING AND DOCUMENTED BY THE INSPECTOR FOR THE LENGTH SHOWN UNLESS OTHERWISE INDICATED.
2. RESTRAINED LENGTH SHOWN REFERS TO ANY DESIGNED OR POTENTIAL LINE STOP, INCLUDING ALL CLAY VALVES.
3. RESTRAINED LENGTH SHOWN REFERS TO THE BRANCH LINE ONLY. THE CONTINUOUS PIPE LENGTH OF THE MAIN RUN SHALL BE A MINIMUM OF 10' ON EACH SIDE OF THE FITTING.
4. RESTRAINED LENGTH SHOWN IS BASED ON REDUCING PIPE DIAMETER TO ONE SIZE SMALLER THAN PIPE LISTED. ANY OTHER DIAMETER REDUCTION WILL REQUIRE ADDITIONAL CALCULATIONS BEFORE INSTALLATION. RESTRAINED LENGTH SHOWN IS UPSTREAM ON THE LARGE SIDE OF THE REDUCER.

12" AND SMALLER DIAMETER: IF UNDER 150 PSI WORKING PRESSURE, RESTRAINED JOINT(S) ARE TO BE USED. IF EQUAL TO OR OVER 150 PSI WORKING PRESSURE, BOTH THURST BLOCK(S) AND RESTRAINED JOINT(S) SHALL BE USED.

LARGER THAN 12" DIAMETER: IF UNDER 100 PSI WORKING PRESSURE, RESTRAINED JOINTS ARE TO BE USED. IF EQUAL TO OR OVER 100 PSI WORKING PRESSURE, BOTH THURST BLOCK(S) AND RESTRAINED JOINT(S) SHALL BE USED (UNLESS OTHERWISE APPROVED BY THE PARTICIPATING UTILITY).

6. FOR RESTRAINED JOINT PIPE REQUIREMENTS AT FITTING R.J. AND DIP BELL AND SPLIT JOINT DIMENSIONS, INTERCHANGEABILITY WITH ANCHORAGE FROM PARTICIPATING UTILITY. CONTRACTOR MUST PLAN ACCORDINGLY FOR THE DIFFERENCE IN PVC AND DIP BELL AND SPLIT JOINT DIMENSIONS.

1. TAPPING SLEEVE SHALL BE POWERLESS MODEL 3490 TYPE 304 STAINLESS STEEL WITH CARBON STEEL FLANGE, ROMAC'S MODEL SST III, FORD MODEL FTSS WITH CARBON STEEL FLANGE OR APPROVED EQUIVALENT. SLEEVE SHALL BE RATED AT 100 PSI OVER WORKING PRESSURE AND MUST HAVE A TEST PLUG.
2. TAPPING VALVE SHALL BE A/KK RESILIENT SEATED GATE VALVE SERIES 25 M.F.L., MUELLER T-2300 RESILIENT WEDGE TAPPING VALVE WITH M.F.L. OR A/C1 SERIES 2500 RESILIENT WEDGE TAPPING VALVE WITH M.F.L. VALVE SHALL BE RATED AT 250 PSI.
3. TAPPING SLEEVE AND VALVE SHALL BE FULL PORT TO ACCEPT FULL SIZE SHELL CUTTER.
4. STEEL FLANGE SHALL MEET ANWIA C207.
5. SIZE-ON-SIZE TAPPING NOT ALLOWED UNLESS APPROVED BY PARTICIPATING UTILITY.

WESTERN VIRGINIA REGIONAL - CONSTRUCTION DETAIL		
FIRE HYDRANT ASSEMBLY		W-
		02/10/15

WESTERN VIRGINIA REGIONAL - CONSTRUCTION DETAIL	
MINIMUM THRUST RESTRAINT OF PIPE JOINTS DESIGN LENGTHS	W- 02/10/15

WESTERN VIRGINIA REGIONAL - CONSTRUCTION DETAIL	
TAPPING SLEEVE AND VALVE	W- 01/01/14

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WENDOVER OFFICE DEVELOPMENT
11 WENDOVER ROAD
W.V.WA. WATER & SEWER DETAILS
AMSTERDAM DISTRICT
BOTETOURT COUNTY, VIRGINIA

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DESIGNED BY CPB
CHECKED BY BTC
DATE 9/27/2017
SCALE AS NOTED

REVISIONS:
10/31/2017

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