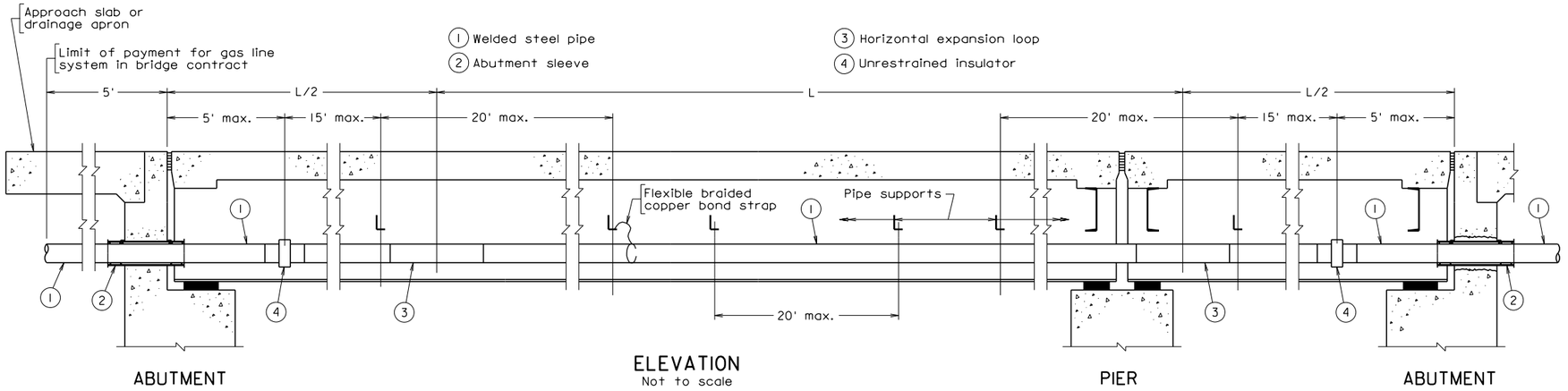
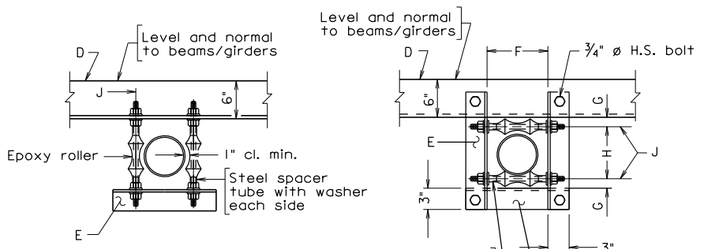
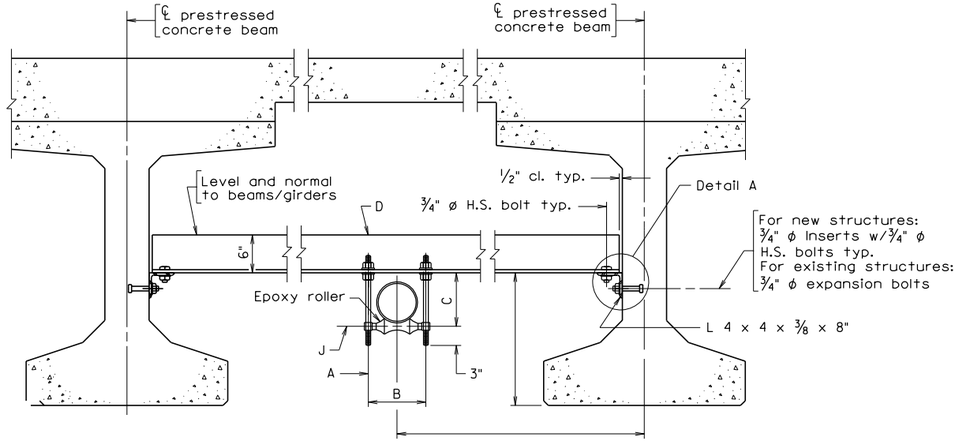
STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—				



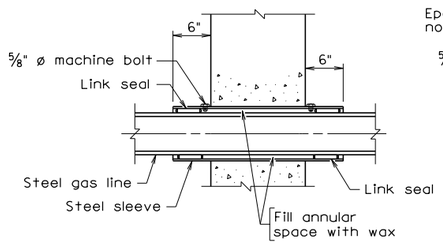
ELEVATION
Not to scale



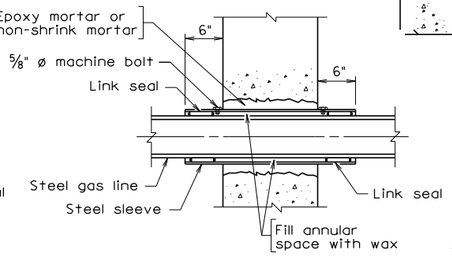
TYPICAL SUPPORT DETAIL AT EXPANSION JOINT
Scale: 1" = 1'-0"



TYPICAL SUPPORT DETAIL
Scale: 1" = 1'-0"

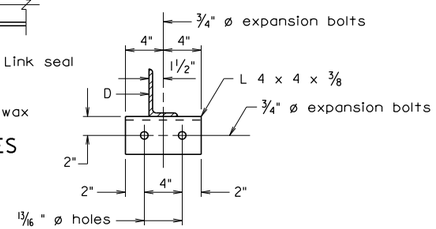


NEW STRUCTURES

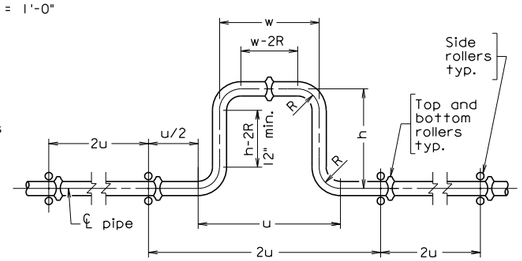


EXISTING STRUCTURES

ABUTMENT SLEEVE DETAIL
Scale: 1" = 1'-0"



DETAIL A
Scale: 1½" = 1'-0"



HORIZONTAL EXPANSION LOOP
Scale: ⅜" = 1'-0"

DIMENSIONS

Pipe ø	A	B	C	D	E	F	G	H	J
4"	⅝"	7"	6¾"	L 6 x 4 x ½	L 3 x 3 x ⅜	7"	1"	5¾"	½"
6"	¾"	9⅝"	9¾"	L 6 x 4 x ½	L 3 x 3 x ⅜	9⅝"	1½"	8¼"	¾"
8"	⅞"	12"	12"	L 6 x 4 x ½	L 3 x 3 ½x ⅜	12"	1½"	10½"	⅞"
10"	⅞"	1'-2"	1'-3"	L 6 x 4 x ½	L 3 x 3 ½x ⅜	1'-2"	2"	1'-1"	⅞"
12"	⅞"	1'-4"	1'-5¼"	L 6 x 4 x ½	L 3 x 4 x ⅜	1'-4"	2¼"	1'-3"	1"
14"	1"	1'-5⅞"	1'-7½"	L 6 x 4 x ½	L 3 x 4 x ⅜	1'-5⅞"	2½"	1'-5"	1⅛"
16"	1"	1'-8"	1'-10"	L 6 x 6 x ½	L 3 x 5 x ⅜	1'-8"	3"	1'-7"	1¼"
18"	1⅛"	1'-10"	2'-0"	L 6 x 6 x ½	L 3 x 5 x ⅜	1'-10"	3"	1'-9"	1¼"
20"	1¼"	2'-0⅜"	2'-2"	L 6 x 6 x ½	L 3 x 5 x ⅜	2'-0⅜"	3½"	1'-10½"	1⅜"

J and A = diameter of rod

HORIZONTAL EXPANSION LOOP

Pipe ø	R	w	h	u	Allow. L
4"	6"	3'-6"	3'-6"	4'-6"	120'
6"	9"	3'-6"	3'-6"	5'-0"	105'
8"	12"	3'-6"	3'-6"	5'-6"	110'
10"	1'-3"	3'-6"	3'-6"	6'-0"	100'
12"	1'-6"	4'-0"	4'-0"	7'-0"	125'
14"	1'-9"	4'-6"	4'-6"	8'-0"	150'
16"	2'-0"	5'-0"	5'-0"	9'-0"	170'

Allow. L = Expansion length per loop.
For bridge lengths less than Allow. L, only one horizontal expansion loop will be required.

Notes:

Material - Seamless Steel Pipe - Welded Joint
Specification - API 5LX
Grade 5LX-42 (5L-35 for 4")
Minimum Wall Thickness:
For 6" and under - Schedule 40
For 8" and over - Schedule 20
Steel Casing - API 5L-B ⅜" wall thickness
Casing pipe size - nom. pipe dia. + 4"

Structural steel for angles shall be ASTM A36. The angles shall be galvanized in accordance with ASTM A123.

H.S. bolts for angles shall be ASTM 325 galvanized.

Pipe Ends - Ends shall be beveled 30 degrees, protected with plastic end caps.

Fittings - Fittings for steel gas main shall conform to API Spec. 6D or ANSI B16.5, B16.9, or B16.11. Bends shall be made only with bending equipment and procedures specifically intended for that purpose. All bends shall be seamless, smooth and free from mechanical damage.

Rollers - Epoxy - Locate rollers at bottom only except at expansion joints/loops where they are required top and bottom and on each side of pipe.

Unrestrained Insulator - Barlow insulator joint or equal.

Drips - Not required unless otherwise specified.

Cathodic Protection - Isolate bridge section from in ground section.

Galvanization - Miscellaneous hardware: Rods, nuts, etc. shall be galvanized in accordance with ASTM A153.

Finish - Coatings shall be marked in compliance with U.S.D.O.T. Section 192.63. The finish shall consist of one of the following alternates:

1. Coating with Tnemec system or equal consisting of three coats: zinc rich primer, polyamide epoxy, and aliphatic polyurethane. Welded joints shall be treated with a similar process.

2. Coating with Plexco Extruded Polyolefin, Pritec or Scotchkote 205 Fusion Bonded Epoxy meeting NAPCA-TGF-3 specifications. Plastic tape (cold applied, Tapecoat 7, Polyken # 932 or approved equal) shall be field applied to pipe joints and damaged areas of coatings. The joint area to be taped shall be clean and free of burrs and rust. Damaged coating shall be smoothed down or cut away if not firmly bonded to the pipe. Wrap spirally with a two-layer wrapping system, overlapping the coating surface at least 3 inches. The tape shall be initially stretched sufficiently to conform to the surface to which it is applied, using one layer half-lapped for tape 2 inches or less in width, or one layer lapped at least one inch for tape more than 2 inches wide. A second layer lapped as above with a tenison as it comes off the roll shall then be applied and pressed to conform to the shape of the component.

Testing Gas Line - Steel gas main, appurtenances and materials shall be tested for leakage after installation. Such testing shall be performed under the observation of the Owner, Contractor to give 48 hour notice prior to test. The Contractor shall provide all plugs, equipment, tools, labor, materials and incidentals necessary to perform the testing. In the event any section of main shows leakage in excess of that specified, the Contractor shall, at no additional cost to the Department, make sure repairs or replacements as are required and testing shall be repeated until satisfactory results are obtained. Pressure test shall be in accordance with ANSI B31.2 with a test pressure of 125 psi. The line shall be pressured with clean, dry air and show no drop in pressurein a two hour period. Contractor shall submit to Engineer a copy of the test report.

Welding - Steel gas pipes shall be field welded and inspected in accordance with ANSI B31.2. Electrodes shall conform to the requirements of API 1104. Welded joints shall be inspected and tested as required by CFR, Title 49, Part 192. Welders shall be qualified for pipeline welding. The Contractor shall submit the welder's qualifications for approval by the Engineer and the utility owner. Welders will be required to weld to the utility owner's specifications prior to being approved unless otherwise waived by the Engineer.

Payment - Gas Line System shall be paid for on a lump sum basis, wherein no measurement shall be made, and shall be paid for at the contract lump sum price, which price shall include furnishing and installing epoxy coated steel gas line, fittings (when required), insulated joints, testing, hangers, rollers, rods, abutment sleeves, link seals, and all miscellaneous hareware; all as detailed on the Gas Line System drawing included herein and within the pay limits shown thereon. Such price shall be full compensation for furnishing all materials, labor, tools, equipment and incidentals necessary to complete the work.

BGL-2.dgn

08-07-2012

Sealed and Signed by:
Julius F.J. Volgyi Jr.
Lic. No. 010487
On the date of
Aug. 7, 2012

A copy of the original sealed and signed standard drawing is on file in the Central Office.

VDOT S&B DIVISION
RICHMOND, VA
STRUCTURAL ENGINEER

BGL-2

No.	Description	Date
	Revisions	

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION

STRUCTURE AND BRIDGE DIVISION

GAS LINE SYSTEM

G. Henderson

Designed: S&B..DIV	Date	Plan No.	Sheet No.
Drawn: ....S&B..DIV		BGL-2	
Checked: S&B..DIV			

Scale as noted

GAS LINE SYSTEM

CONCRETE BEAM SPANS

NOTES TO DESIGNER:

Standard is to be used with concrete beam/girder spans. Maximum beam/girder spacing is limited to 10'-0".

To the extent possible, gas lines shall be placed in the exterior bays of the bridge.

Values in tables on the standard sheet are a composite from several manufacturers/suppliers.

Indicate location and size (diameter) of gas line to be used on the transverse section sheet. Indicate dimension from the bottom of top flange to bottom of angle support at the beam/girder. Indicate dimension from centerline of pipe to centerline of beam/girder. These dimensions must agree with those set on the transverse section sheet. Designer must consider the horizontal expansion loop when setting this dimension. Indicate location of gas line on framing plan. Show centerline and indicate size (diameter) of gas line. Do not show hanger spacing on framing plan.

Utilities Section (R/W) will provide the following information: Size of pipe.

For beam/girder design, the following weights may be used (includes total weight of hangers and pipe). Linear interpolation may be used for actual beam/girder spacing.

Diameter of Pipe (inches)	Weight of Gas Line (lbs./ft.) Beam/Girder Spacing	
	6'-0"	10'-0"
4	29	33
6	34	38
8	50	54
10	58	62
12	65	69
14	70	74
16	79	84
18	86	92
20	94	100

When designing beam/girder, the depth of the beam/girder must be sufficient to insure that the gas line supports at expansion details do not project below the bottom flange.

ADD THE FOLLOWING NOTES, DIMENSIONS, DETAILS, ETC. TO STANDARD:

TYPICAL SUPPORT DETAIL AT EXPANSION JOINT:

Indicate dimension from bottom of top flange (top of web) to bottom of angle support (angle D in Table). Indicate dimension from centerline of pipe to centerline of beam/girder. These dimensions must agree with those set on transverse section sheet.