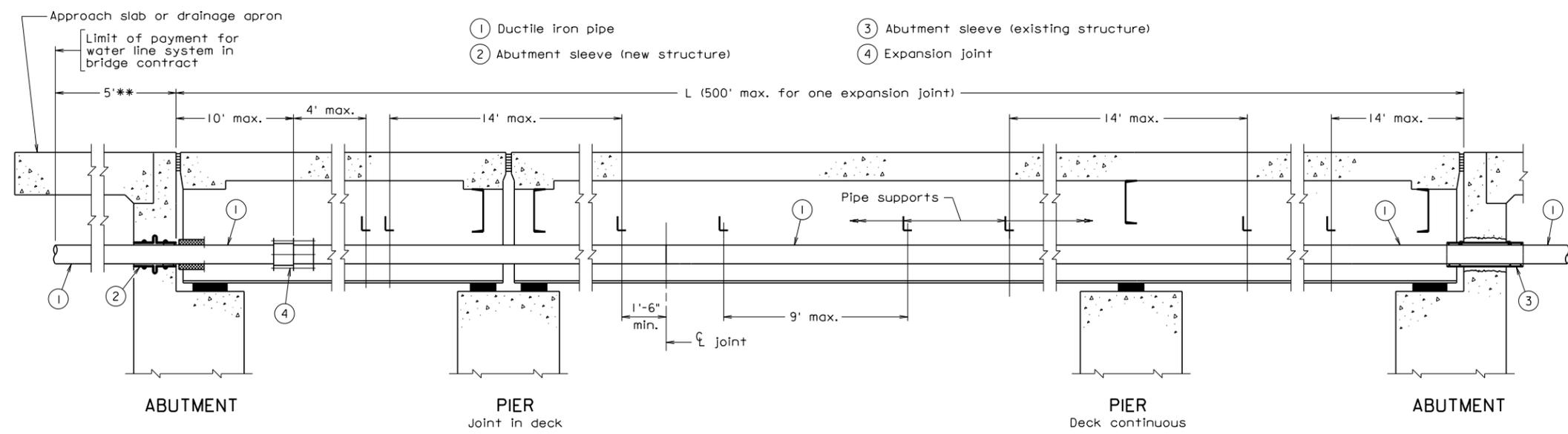


STATE	FEDERAL AID	STATE	SHEET NO.
ROUTE	PROJECT	ROUTE	PROJECT
VA.			



ELEVATION
Not to scale

Notes:

Material - Ductile iron with mechanical joint
 Minimum thickness - Class 52 (rated pressure 300 psi)
 Hydrostatic test pressure shall be 200 psi minimum.
 Specification: ANSI A 21.51/AWWA C151
 Finish - Cement lined; bituminous outer coat
 Steel casing - API 5L-B 3/8" wall

Structural steel for angles shall be the same as that for the beams/girders. If the beams/girders are painted, the angles shall be galvanized in accordance with ASTM A123.

If the angle is galvanized, the H.S. bolts shall be ASTM A325 galvanized. If the angle is not painted (unpainted weathering steel), the H.S. bolts shall be ASTM A325, Type 3.

Abutment - Casing as detailed or Century-Line sleeve to be used for proposed structure only.
 Seal - one link-seal at each face.

Expansion Joint - Dresser style 63, Type 3

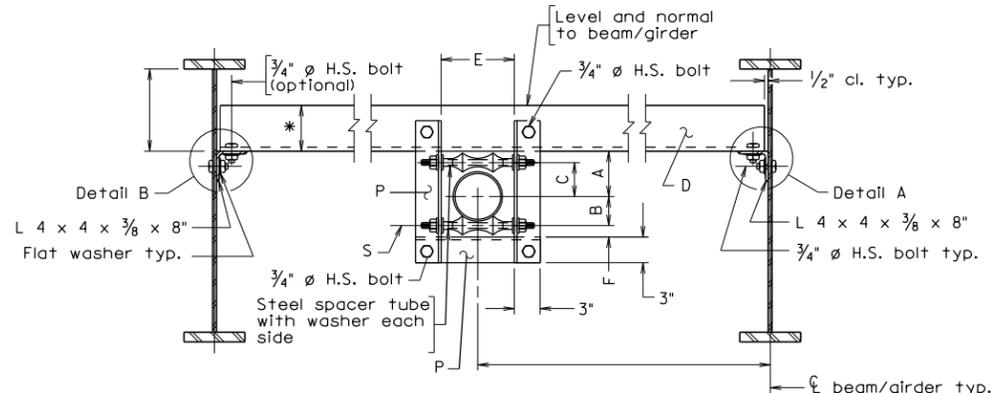
Galvanization - Miscellaneous hardware: Rods, nuts, etc. shall be galvanized in accordance with ASTM A153. When the supporting angles to which the rods are attached are weathering steel, a neoprene or vinyl washer shall be placed between the angle surface (on both sides) and the nut/washer to isolate the contact between the two surfaces.

Insulation will ___ will not ___ be required.

Casing under approach slab will ___ will not ___ be required.

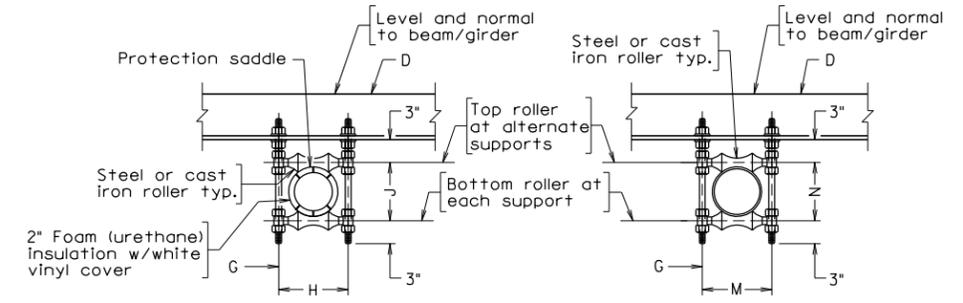
Payment - Water Line System shall be paid for on a lump sum basis, wherein no measurement shall be made, and shall be paid for at the contract lump sum price, which price shall include furnishing and installing ductile iron water main, expansion joints, testing, disinfecting (when required), insulation and cover (when required), hangers, rollers, rods, abutment sleeves, link seals, casing under approach slab (when required) and miscellaneous hardware; all as detailed on the Water 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.

** Or 2' beyond approach slab when casing is required



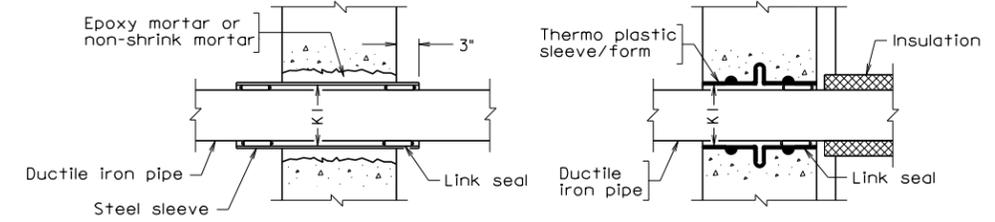
TYPICAL SUPPORT DETAIL AT EXPANSION JOINT
Scale: 1" = 1'-0"

For insulation, use 2" foam (urethane) insulation with white vinyl cover and protection saddles. Provide support detail on both sides of expansion joint for bridges over 500'.

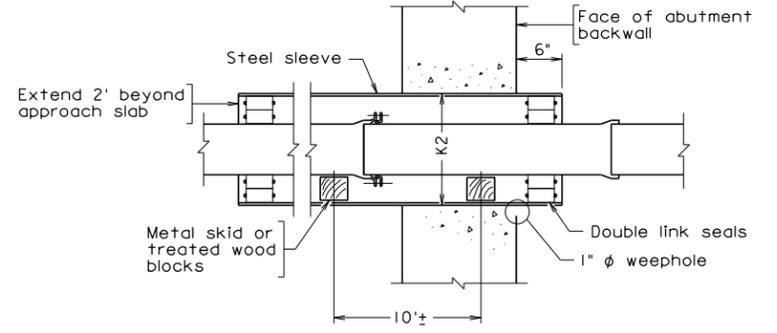


TYPICAL SUPPORT DETAIL
Scale: 1" = 1'-0"

For details not shown, see Typical Support Detail at Expansion Joint.



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

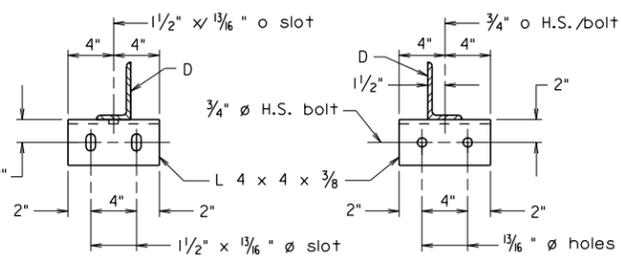


ABUTMENT SLEEVE DETAIL NEW STRUCTURE
Scale: 1" = 1'-0"

Note: Water line casing detail when line is under approach slab.

DIMENSIONS															
Pipe ø	A	B	C	D	E	F	G	H	J	K1	K2	M	N	P	S
6"	8 1/2"	6 1/2"	6 3/4"	L 6 x 4 x 1/2	1'-1"	2 3/4"	7/8"	1'-2"	1'-1 1/8"	0'-10"	1'-2"	9 1/16"	8 1/8"	L 3 x 3 x 3/8	7/8"
8"	9 3/4"	7 1/2"	7 3/4"	L 6 x 4 x 1/2	1'-3"	2 3/4"	7/8"	1'-3 3/4"	1'-3 5/8"	1'-0"	1'-4"	1'-0 1/8"	10 5/8"	L 3 x 3 x 3/8	1"
10"	11 1/2"	8 3/4"	9"	L 6 x 4 x 1/2	1'-5"	2 3/4"	1"	1'-5 3/4"	1'-6 3/4"	1'-2"	1'-6"	1'-2 1/8"	1'-0 5/8"	L 3 x 3 1/2 x 3/8	1 1/8"
12"	1'-0 3/4"	10"	10 1/4"	L 6 x 4 x 1/2	1'-7"	2 3/4"	1"	1'-7 3/4"	1'-8 1/4"	1'-4"	1'-8"	1'-4"	1'-3"	L 3 x 3 1/2 x 3/8	1 1/4"
14"	11"	8 3/8"	8 5/8"	L 7 x 4 x 1/2	1'-9"	4"	1"	1'-9 1/2"	1'-9 5/8"	1'-6"	1'-10"	1'-5 3/4"	1'-4 3/4"	L 3 x 4 x 3/8	1 1/8"
16"	1'-0 1/4"	9 1/2"	9 3/4"	L 7 x 4 x 1/2	1'-11"	4"	1"	1'-11 1/2"	1'-11 3/8"	1'-8"	2'-0"	1'-7 3/4"	1'-7"	L 3 x 4 x 3/8	1 1/4"
18"	1'-1 1/2"	10 1/2"	10 3/4"	L 8 x 4 x 1/2	2'-1"	4"	1 1/8"	2'-1 3/4"	2'-2 1/8"	1'-10"	2'-2"	1'-9 7/8"	1'-9"	L 3 x 5 x 3/8	1 1/4"
20"	1'-3"	11 5/8"	11 7/8"	L 8 x 4 x 3/4	2'-3"	4"	1 1/4"	2'-4"	2'-4 1/8"	2'-0"	2'-4"	2'-0 1/4"	1'-11 1/4"	L 3 x 5 x 3/8	1 1/4"
24"	1'-7"	1'-2"	1'-2 1/4"	L 8 x 4 x 3/4	2'-7"	4"	1 1/2"	2'-8 3/8"	2'-9 1/8"	2'-6"	2'-10"	2'-4 5/8"	2'-4"	L 3 x 5 x 3/8	1 1/2"

G = diameter of rod
 S = diameter of shaft



DETAIL A and **DETAIL B**
Scale: 1 1/2" = 1'-0"

Scale as noted. © 2012, Commonwealth of Virginia

BWL-1.dgn
08-07-2012
BWL-1

Sealed and Signed by:
 Julius F.J. Volgyt 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

COMMONWEALTH OF VIRGINIA DEPARTMENT OF TRANSPORTATION					
STRUCTURE AND BRIDGE DIVISION					
WATER LINE SYSTEM					
G. Henderson					
No.	Description	Date	Designed: S&B, DIV	Date	Plan No.
			Drawn: S&B, DIV		BWL-1
			Checked: S&B, DIV		
Revisions					

**WATER LINE SYSTEM
STEEL BEAM/GIRDER SPANS**

NOTES TO DESIGNER:

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

Utilities shall be placed in the exterior bays of the bridge if possible.

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

Designer is required to check clearances at abutments if pipe is placed under approach slab. Minimum clearance varies linearly from 6" for a 6" diameter pipe to 12" for a 24" diameter pipe.

Indicate location and size (diameter) of water line to be used on the transverse section sheet. Show dimension from bottom of top flange (top of web) to bottom of angle support at the beam/girder the dimension is set on the transverse section sheet. When setting the dimension, allow for a minimum of 1" (2" to 3" preferred) clearance to diaphragms, cross frames, etc. Include insulation requirements when setting clearances. Normally critical clearances are at the ends of spans (at supports). Indicate location of water line on framing plan. Show centerline and indicate size of water line. Do not show hanger spacing on framing plan.

Utilities Section (R/W) will provide the following information.

1. Size of pipe
2. Requirement for insulation of pipe
3. Requirement for casing under approach slab

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

Diameter of Pipe (inches)	Weight of Water Line (lbs./ft.)	
	Beam/Girder Spacing	
	6'-0"	10'-0"
6	47	54
8	66	72
10	90	95
12	115	121
14	136	144
16	168	175
18	202	210
20	248	259
24	336	348

**WATER LINE SYSTEM
STEEL BEAM/GIRDER SPANS**

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

TYPICAL SUPPORT DETAIL AT EXPANSION JOINT:

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

NOTES:

Indicate if insulation will/will not be required. Indicate if casing under approach slab will/will not be required.

STANDARD BWL-1: NOTES TO DESIGNER

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DATE: 29May2009
SHEET 3 of 3
FILE NO. BWL-1-3