

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

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

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

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

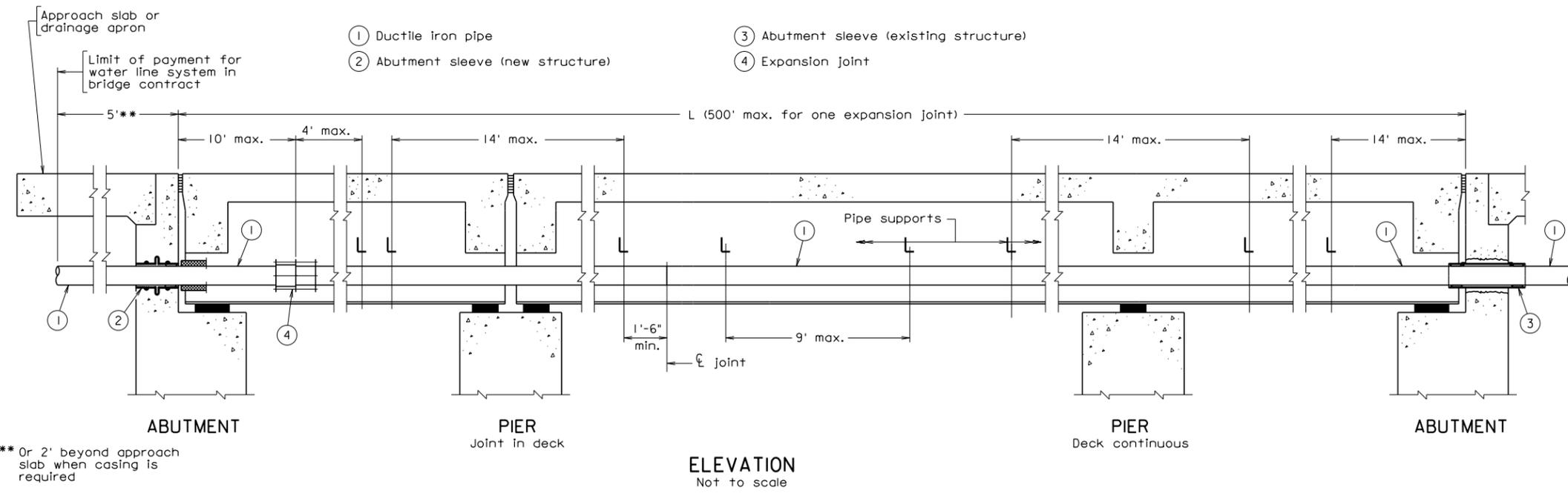
Expansion Joint - Dresser style 63, Type 3

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

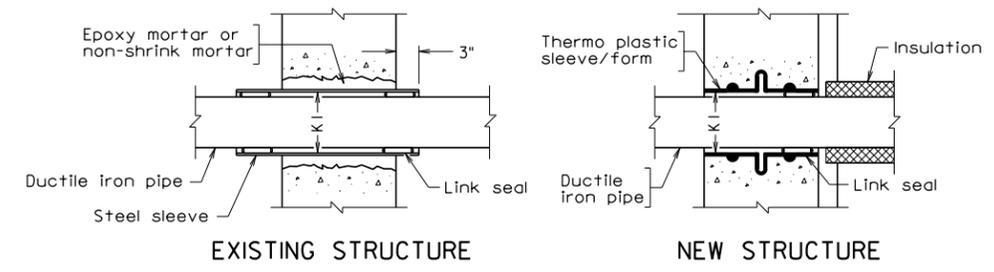
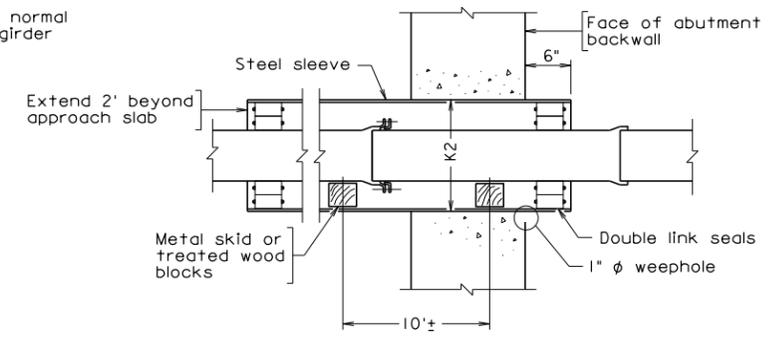
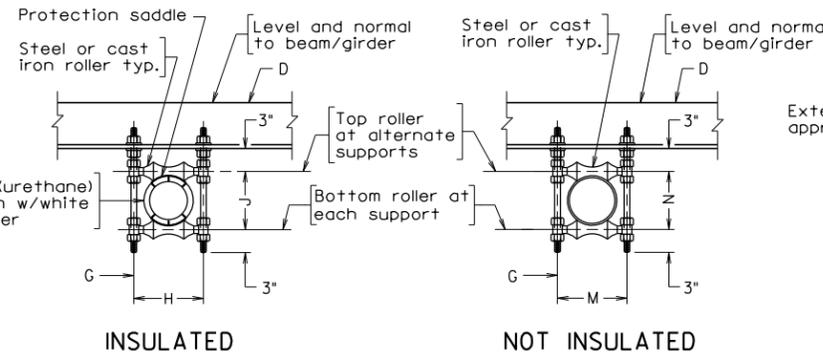
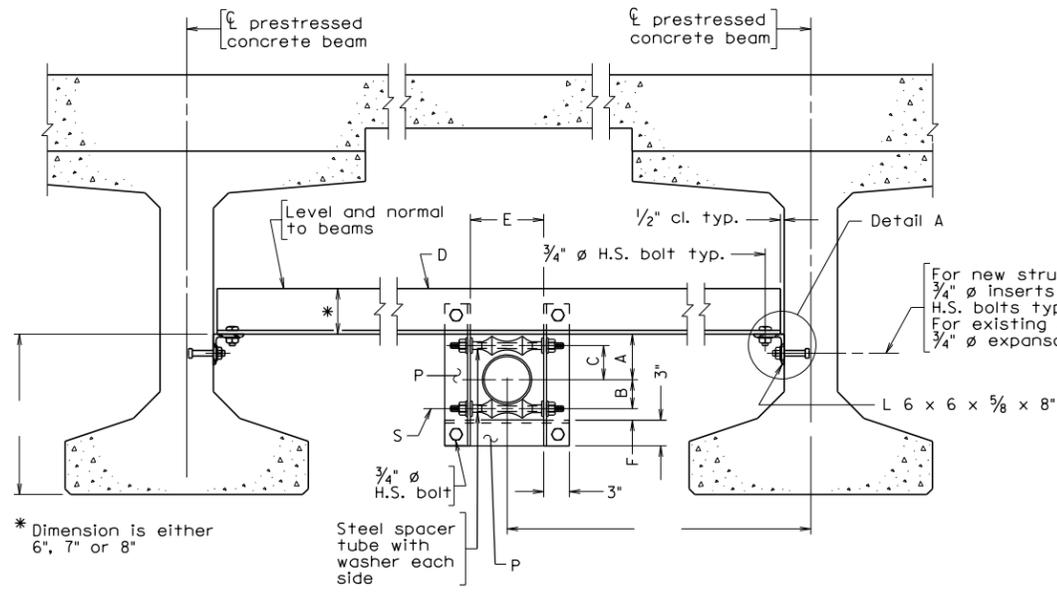
Insulation will \_\_\_ wil not \_\_\_ be required.

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.

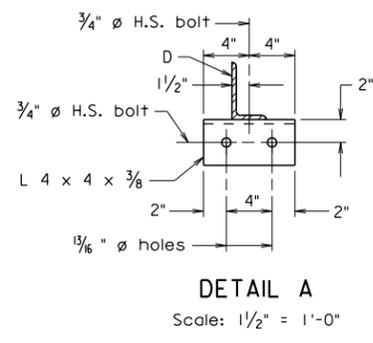


\*\* Or 2' beyond approach slab when casing is required



DIMENSIONS															
Pipe $\phi$	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 1/8"	L 8 x 4 x 1/2	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 1/2	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



Scale as noted. © 2012, Commonwealth of Virginia

COMMONWEALTH OF VIRGINIA DEPARTMENT OF TRANSPORTATION STRUCTURE AND BRIDGE DIVISION					
<b>WATER LINE SYSTEM</b>					
G. Henderson					
No.	Description	Date	Designed: S&B, DIV	Date	Plan No.
			Drawn: S&B, DIV		BWL-2
			Checked: S&B, DIV		
Revisions					

BWL-2.dgn  
08-07-2012  
BWL-2

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

**WATER 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".

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 beam 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. Indicate location of water line on framing plan (erection diagram). Show centerline and indicate size of water line. Do not show hanger spacing on framing plan (erection diagram).

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 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 Spacing	
	6'-0"	10'-0"
6	57	64
8	75	81
10	97	103
12	122	128
14	143	150
16	174	181
18	211	218
20	253	265
24	340	351

**WATER LINE SYSTEM  
CONCRETE BEAM SPANS**

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

TYPICAL SUPPORT DETAIL AT EXPANSION JOINT:

Enter dimension from bottom of beam 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-2: NOTES TO DESIGNER**

VOL. V - PART 3  
DATE: 29May2009  
SHEET 3 of 3  
FILE NO. BWL-2-3