

**CONCRETE PIER**

S-17

**WATERLINE VALVE INSTALLATION**

W-08

**IN-LINE BLOW-OFF ASSEMBLY**

W-11

**AUTOMATIC AIR RELEASE ASSEMBLY**

W-12

**FIRE HYDRANT ASSEMBLY**

W-18

**NOTES**

- FOR VERT. BEND DOWN IN EXCESS OF 11 1/4" BEND, ANCHORAGE SHALL BE DESIGNED BY ENGINEER.
- FOR VERT. BEND UPWARD, BLOCKING TO BE SIMILAR TO THAT FOR HORIZ. BEND.
- GLANDS & BOLTS SHALL BE PROTECTED FROM CONC. BY PLASTIC SHEETING WHEN POURING THRUST BLOCKS.
- ALL THRUST BLOCK & SUPPORT CONC. SHALL BE 3000 PSI READY MIX CONC.
- THRUST BLOCKS WITH "B" DIMENSION GREATER THAN 30" SHALL HAVE THE RESTRAINED PIPE INSTALLED WITH A MINIMUM OF 4' OF COVER.

PIPE SIZE	1/2" BEND	1/4" BEND	1/2" BEND	1/4" BEND	TEE	REDUCER	VERT. BEND	VERT. BEND
4"	8"	12"	8"	8"	8"	8"	11"	10"
6"	12"	18"	12"	12"	12"	12"	15"	14"
8"	18"	24"	18"	18"	18"	18"	21"	20"
10"	24"	30"	24"	24"	24"	24"	27"	26"
12"	30"	36"	30"	30"	30"	30"	33"	32"
14"	36"	42"	36"	36"	36"	36"	39"	38"
16"	42"	48"	42"	42"	42"	42"	45"	44"
18"	48"	54"	48"	48"	48"	48"	51"	50"
20"	54"	60"	54"	54"	54"	54"	57"	56"
22"	60"	66"	60"	60"	60"	60"	63"	62"
24"	66"	72"	66"	66"	66"	66"	69"	68"
26"	72"	78"	72"	72"	72"	72"	75"	74"
28"	78"	84"	78"	78"	78"	78"	81"	80"
30"	84"	90"	84"	84"	84"	84"	87"	86"

**THRUST BLOCK CONSTRUCTION**

W-19

**W-20**

**THRUST RESTRAINT OF PIPE JOINTS—DESIGN LENGTH**

**BEDDING AND BACKFILL OUTSIDE OF PAVED AREAS**

G-01

**BEDDING AND BACKFILL UNDER PAVEMENT**

G-02

**TRACER WIRE FOR NON-METALLIC PRESSURE PIPE**

G-05

**NOTES**

- FOR VERT. BEND DOWN IN EXCESS OF 11 1/4" BEND, ANCHORAGE SHALL BE DESIGNED BY ENGINEER.
- FOR VERT. BEND UPWARD, BLOCKING TO BE SIMILAR TO THAT FOR HORIZ. BEND.
- GLANDS & BOLTS SHALL BE PROTECTED FROM CONC. BY PLASTIC SHEETING WHEN POURING THRUST BLOCKS.
- ALL THRUST BLOCK & SUPPORT CONC. SHALL BE 3000 PSI READY MIX CONC.
- THRUST BLOCKS WITH "B" DIMENSION GREATER THAN 30" SHALL HAVE THE RESTRAINED PIPE INSTALLED WITH A MINIMUM OF 4' OF COVER.

PIPE SIZE	1/2" BEND	1/4" BEND	1/2" BEND	1/4" BEND	TEE	REDUCER	VERT. BEND	VERT. BEND
4"	8"	12"	8"	8"	8"	8"	11"	10"
6"	12"	18"	12"	12"	12"	12"	15"	14"
8"	18"	24"	18"	18"	18"	18"	21"	20"
10"	24"	30"	24"	24"	24"	24"	27"	26"
12"	30"	36"	30"	30"	30"	30"	33"	32"
14"	36"	42"	36"	36"	36"	36"	39"	38"
16"	42"	48"	42"	42"	42"	42"	45"	44"
18"	48"	54"	48"	48"	48"	48"	51"	50"
20"	54"	60"	54"	54"	54"	54"	57"	56"
22"	60"	66"	60"	60"	60"	60"	63"	62"
24"	66"	72"	66"	66"	66"	66"	69"	68"
26"	72"	78"	72"	72"	72"	72"	75"	74"
28"	78"	84"	78"	78"	78"	78"	81"	80"
30"	84"	90"	84"	84"	84"	84"	87"	86"

**THRUST BLOCK CONSTRUCTION**

W-19

**W-20**

**THRUST RESTRAINT OF PIPE JOINTS—DESIGN LENGTH**

**BEDDING AND BACKFILL OUTSIDE OF PAVED AREAS**

G-01

**BEDDING AND BACKFILL UNDER PAVEMENT**

G-02

**TRACER WIRE FOR NON-METALLIC PRESSURE PIPE**

G-05

**NOTES**

- FOR VERT. BEND DOWN IN EXCESS OF 11 1/4" BEND, ANCHORAGE SHALL BE DESIGNED BY ENGINEER.
- FOR VERT. BEND UPWARD, BLOCKING TO BE SIMILAR TO THAT FOR HORIZ. BEND.
- GLANDS & BOLTS SHALL BE PROTECTED FROM CONC. BY PLASTIC SHEETING WHEN POURING THRUST BLOCKS.
- ALL THRUST BLOCK & SUPPORT CONC. SHALL BE 3000 PSI READY MIX CONC.
- THRUST BLOCKS WITH "B" DIMENSION GREATER THAN 30" SHALL HAVE THE RESTRAINED PIPE INSTALLED WITH A MINIMUM OF 4' OF COVER.

PIPE SIZE	1/2" BEND	1/4" BEND	1/2" BEND	1/4" BEND	TEE	REDUCER	VERT. BEND	VERT. BEND
4"	8"	12"	8"	8"	8"	8"	11"	10"
6"	12"	18"	12"	12"	12"	12"	15"	14"
8"	18"	24"	18"	18"	18"	18"	21"	20"
10"	24"	30"	24"	24"	24"	24"	27"	26"
12"	30"	36"	30"	30"	30"	30"	33"	32"
14"	36"	42"	36"	36"	36"	36"	39"	38"
16"	42"	48"	42"	42"	42"	42"	45"	44"
18"	48"	54"	48"	48"	48"	48"	51"	50"
20"	54"	60"	54"	54"	54"	54"	57"	56"
22"	60"	66"	60"	60"	60"	60"	63"	62"
24"	66"	72"	66"	66"	66"	66"	69"	68"
26"	72"	78"	72"	72"	72"	72"	75"	74"
28"	78"	84"	78"	78"	78"	78"	81"	80"
30"	84"	90"	84"	84"	84"	84"	87"	86"

**THRUST BLOCK CONSTRUCTION**

W-19

**W-20**

**THRUST RESTRAINT OF PIPE JOINTS—DESIGN LENGTH**

**BEDDING AND BACKFILL OUTSIDE OF PAVED AREAS**

G-01

**BEDDING AND BACKFILL UNDER PAVEMENT**

G-02

**TRACER WIRE FOR NON-METALLIC PRESSURE PIPE**

G-05

**PERKINS + WILL**

1382 Peachtree St. NE  
Atlanta, GA 30309  
404.572.2000  
404.572.2000  
www.perkinswill.com

**Rife + Wood ARCHITECTS**

1324 Georgia Road, Atlanta, Georgia 30309  
(404) 524-1111 fax (404) 524-0982

In association with:

**Caldwell White Associates**  
Civil Consultant  
4033 Metcalf Avenue  
Roanoke, Virginia 24017  
540-366-3400 (p) 540-366-8702 (f)

**Fasson & Associates**  
Food Service Consultant  
8528 Sunflower Drive  
Charlotte, North Carolina 28227  
704-536-9234 (p) 704-535-4020 (f)

**Lawrence Perry & Associates**  
Mechanical & Electrical Consultants  
30A West Church Avenue  
Roanoke, Virginia 24011  
540-342-1816 (p) 540-342-3610 (f)

**RA Mader**  
Landscape Consultant  
P.O. Box 372  
Hardy, Virginia 24011  
540-893-4333 (p)

**Stewart Acoustical Consultants**  
Acoustical Consultant  
1025 L. Chapel Hill Road  
Raleigh, North Carolina 27607  
919-858-0889 (p) 919-858-0878 (f)

**Utson & Case Engineers**  
Structural Consultant  
1180 West Peachtree Street - Suite 120  
Atlanta, Georgia 30309  
678-553-5200 (p) 678-553-5270 (f)

**CWA**  
ENGINEERS / SURVEYORS / PLANNERS  
CWA REG. NO. 06-0089 NE Reg. City Schools

**WILLIAM FLEMING HIGH SCHOOL**  
School Site Project No. 124-40A  
Library Loan No. 11255

NUMBER	ISSUE	DATE
1	PER CITY AND ADDEND 2	08/13/07

Revisions

Copyright © 2007 PERKINS + WILL

**Sheet Information**

Date: May 15, 2007  
Job Number: 800372.000  
Scale: As Shown  
Drawn: WYWA / C.L. White  
Checked:  
Approved:

**DETAILS—WATERLINE CONSTRUCTION**

**Sheet C-402**

**ISSUED FOR CONSTRUCTION**