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### WATER STANDARD DETAIL

SECTION VIEW

PLAN VIEW

**HORIZONTAL THRUST BLOCK - TEES, PLUGS, VALVES** 1 OF 2

APPROVED BY: *Eric J. Wenger* DATE: 8/7/14 W-44  
 DATE: 06/13/14 ERIC J. WENGER, P.E., CITY ENGINEER MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR

### WATER STANDARD DETAIL

SECTION VIEW

PLAN VIEW

**HORIZONTAL THRUST BLOCK - TEES, PLUGS, VALVES** 1 OF 2

APPROVED BY: *Eric J. Wenger* DATE: 8/7/14 W-44  
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### WATER STANDARD DETAIL

Member	By-Prod. Size	Design No.	Depth (feet)	A	B	Wall Thickness	Floor Thickness	Vertical Bars	Horizontal Bars	Top Thickness	Top Spacing
6"	3"	11	5	15'-0"	9'-6"	8	10	4	12	4	12
8"	4"	12	5	15'-0"	9'-6"	8	10	4	12	4	12
10"	6"	13	5	15'-0"	9'-6"	8	10	4	12	4	12
12"	8"	14	5	15'-0"	9'-6"	8	10	4	12	4	12
14"	10"	15	5	15'-0"	9'-6"	8	10	4	12	4	12
16"	12"	16	5	15'-0"	9'-6"	8	10	4	12	4	12
18"	14"	17	5	15'-0"	9'-6"	8	10	4	12	4	12
20"	16"	18	5	15'-0"	9'-6"	8	10	4	12	4	12
24"	20"	19	5	15'-0"	9'-6"	8	10	4	12	4	12
30"	24"	20	5	15'-0"	9'-6"	8	10	4	12	4	12

**FIRE FLOW METER VAULT INSTALLATION** 5 OF 5

APPROVED BY: *Eric J. Wenger* DATE: 8/7/14 W-40  
 DATE: 06/13/14 ERIC J. WENGER, P.E., CITY ENGINEER MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR

### WATER STANDARD DETAIL

SECTION VIEW

PLAN VIEW

**HORIZONTAL THRUST BLOCK - BENDS** 1 OF 3

APPROVED BY: *Eric J. Wenger* DATE: 8/7/14 W-41  
 DATE: 06/13/14 ERIC J. WENGER, P.E., CITY ENGINEER MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR

### WATER STANDARD DETAIL

NOTES:

- SIZING OF THRUST BLOCK BASED ON THE FOLLOWING CONDITIONS:  
 SOIL BEARING: 1500 PSI  
 WORKING PRESSURE: 150 PSI  
 TOTAL DESIGN PRESSURE: 300 PSI  
 FACTOR OF SAFETY: 1.5
- THRUST BLOCK CONCRETE TO BE 3000 PSI 7 DAY HIGH EARLY STRENGTH CONCRETE.
- WRAP FITTINGS AND PIPE WITH 8 MIL POLYETHYLENE WRAPPING PRIOR TO POURING THRUST BLOCK.
- THRUST BLOCK TO BE POURED AGAINST UNDISTURBED EARTH. IF FILL IS REQUIRED, 95% COMPACTION IS REQUIRED FOR FILL MATERIAL.
- BEARING AREAS, VOLUMES, AND SPECIAL THRUST BLOCKING DETAILS SHOWN ON DRAWINGS TAKE PRECEDENCE OVER THIS PLAN.
- MAINTAIN THE SURFACE AREA FOOTPRINT AGAINST THE SOIL.
- LEAVE ALL PIPE JOINTS COMPLETELY ACCESSIBLE. DO NOT POUR CONCRETE OVER ANY PIPE JOINTS.
- FITTINGS GREATER THAN 3-INCH REQUIRE CALCULATIONS FROM ENGINEER TO BE SUBMITTED FOR REVIEW.

Pipe Dia (in)	Thrust (Tons)	Dim "A" (ft)	Dim "B" (ft)	Dim "C" (ft)	Area (sq ft)	Volume (cu ft)
4	3.4	3.00	1.50	1.00	4.52	0.04
6	7.0	4.25	2.25	1.00	9.35	0.13
8	12.1	5.50	3.00	1.25	16.08	0.31
10	18.1	7.00	3.50	1.50	24.19	0.53
12	25.7	8.00	4.25	1.75	34.21	0.89
14	34.5	9.25	5.00	2.00	45.98	1.43
16	44.6	11.00	5.50	2.25	58.45	2.05
18	56.0	12.00	6.25	2.50	74.86	2.89
20	68.7	14.00	6.50	2.75	91.61	3.95
24	98.0	18.75	7.00	3.25	130.70	5.67
30	150.8	27.00	7.50	3.75	201.06	9.38

**HORIZONTAL THRUST BLOCK - TEES, PLUGS, VALVES** 2 OF 2

APPROVED BY: *Eric J. Wenger* DATE: 8/7/14 W-45  
 DATE: 06/13/14 ERIC J. WENGER, P.E., CITY ENGINEER MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR

### WATER STANDARD DETAIL

SECTION VIEW

PLAN VIEW

**HORIZONTAL THRUST BLOCK - BENDS** 2 OF 3

APPROVED BY: *Eric J. Wenger* DATE: 8/7/14 W-42  
 DATE: 06/13/14 ERIC J. WENGER, P.E., CITY ENGINEER MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR

### WATER STANDARD DETAIL

SECTION VIEW

PLAN VIEW

**HORIZONTAL THRUST BLOCK - BENDS** 1 OF 3

APPROVED BY: *Eric J. Wenger* DATE: 8/7/14 W-41  
 DATE: 06/13/14 ERIC J. WENGER, P.E., CITY ENGINEER MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR

### WATER STANDARD DETAIL

SECTION VIEW

PLAN VIEW

**HORIZONTAL THRUST BLOCK - BENDS** 1 OF 2

APPROVED BY: *Eric J. Wenger* DATE: 8/7/14 W-46  
 DATE: 06/13/14 ERIC J. WENGER, P.E., CITY ENGINEER MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR

### WATER STANDARD DETAIL

SECTION VIEW

PLAN VIEW

**HORIZONTAL THRUST BLOCK - BENDS** 2 OF 3

APPROVED BY: *Eric J. Wenger* DATE: 8/7/14 W-42  
 DATE: 06/13/14 ERIC J. WENGER, P.E., CITY ENGINEER MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR

### WATER STANDARD DETAIL

SECTION VIEW

PLAN VIEW

**HORIZONTAL THRUST BLOCK - BENDS** 3 OF 3

APPROVED BY: *Eric J. Wenger* DATE: 8/7/14 W-43  
 DATE: 06/13/14 ERIC J. WENGER, P.E., CITY ENGINEER MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR

### WATER STANDARD DETAIL

SECTION VIEW

PLAN VIEW

**VERTICAL THRUST BLOCK - BENDS** 2 OF 2

APPROVED BY: *Eric J. Wenger* DATE: 8/7/14 W-47  
 DATE: 06/13/14 ERIC J. WENGER, P.E., CITY ENGINEER MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR

### WATER STANDARD DETAIL

SECTION VIEW

PLAN VIEW

**VERTICAL THRUST BLOCK - BENDS** 1 OF 2

APPROVED BY: *Eric J. Wenger* DATE: 8/7/14 W-46  
 DATE: 06/13/14 ERIC J. WENGER, P.E., CITY ENGINEER MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR

### WATER STANDARD DETAIL

SECTION VIEW

PLAN VIEW

**VERTICAL THRUST BLOCK - BENDS** 2 OF 2

APPROVED BY: *Eric J. Wenger* DATE: 8/7/14 W-47  
 DATE: 06/13/14 ERIC J. WENGER, P.E., CITY ENGINEER MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR

### WATER STANDARD DETAILS

DATE: 08/07/14  
 DRAWN BY: JDS  
 CHECKED BY: MWS/EJW

SCALE: AS SHOWN

SHEET NUMBER: W-STD-06

### WATER STANDARD DETAIL

The City of Oklahoma City  
Utilities Department  
Engineering Division