

**City of Milwaukee**  
**Department of Public Works**

**Milwaukee Water Works**

**Material Specifications for**  
**Cast Iron Valve Boxes**  
**(Buffalo Pattern)**



City of Milwaukee Specification No. 30-B-7  
Revised June 16, 2010

841 N. Broadway  
Zeidler Municipal Building  
Room 409  
Milwaukee, Wisconsin 53202  
[www.milwaukee.gov/water](http://www.milwaukee.gov/water)

I. **GENERAL REQUIREMENTS:** Vendors bidding through the Department of Administration - Business Operations Division, Procurement Services Section shall comply with the latest version of City of Milwaukee Specification No. 70b-D-7, except as modified herein. **MATERIAL FURNISHED UNDER THIS SPECIFICATION SHALL BE MANUFACTURED IN THE UNITED STATES.**

II. **TECHNICAL REQUIREMENTS**

A. **Description:** Valve boxes specified herein shall be screw type and shall consist of a base, middle section, top section with cover and intermediate extension sections. The top section shall be designed to thread onto the middle section so that the unit can be adjusted to a variable length. The top section shall be designed to receive a circular drop cover. Valve boxes may have extension sections designed to fit between the middle and top section to achieve the required length. A valve box is installed to provide access to the operator of a direct buried valve.

B. **Material:** The valve box and component parts shall be cast iron in accordance with ASTM-A48 class 20, 30, 35 or approved equal.

C. **Valve Box Design:** The valve box and component parts shall be the "Buffalo Pattern" in substantial accordance with drawings VB-1 thru VB-13 and shall be constructed within dimensional tolerances that will assure interchangeability with valve boxes manufactured in accord with these drawings as specified in Section III – Acceptable Brands.

1. The valve box shall be a three piece 5-1/4" diameter unit, screw type, cast iron, in accordance with the following requirements:
2. The inside diameter of the base section as shown on drawing VB-6 shall be 14" minimum.
3. Overall height of the box shall be in accordance with the table below.

Standard Box		
Size Identification	Retracted Maximum	Extended Minimum
D	47"	65"
DD	53"	71"
F	69"	82"

4. The 27" nominal top section as shown on drawing VB-3 shall be between 25" and 29" in length.
5. One extension section may be used to achieve the "Standard" overall height of the "F" middle section as shown on Drawing VB-4.

6. The height increase of the extension section as shown on drawing VB-5 shall be 14", 18" or 20".
7. Fixed risers (rings) as shown on drawings VB-7, VB-10 and VB-11 shall fit the "Buffalo Pattern" valve box and shall be the circular drop type capable of 1", 2", 2-1/2" or 3" height increase as required.
8. Adjusting riser (section) shall fit the "Buffalo Pattern" valve box, with screw type design (drawings VB-8 or VB-12) or slip type (Drawing VB-13) as required, and shall be capable of 9" minimum height increase.
9. Covers as shown on drawings VB-2 and VB-9 shall be the standard circular drop type with the word "Water" cast flush with the top of the cover. When covers are required with fixed or adjustable risers, the cover shall fit the risers specified.

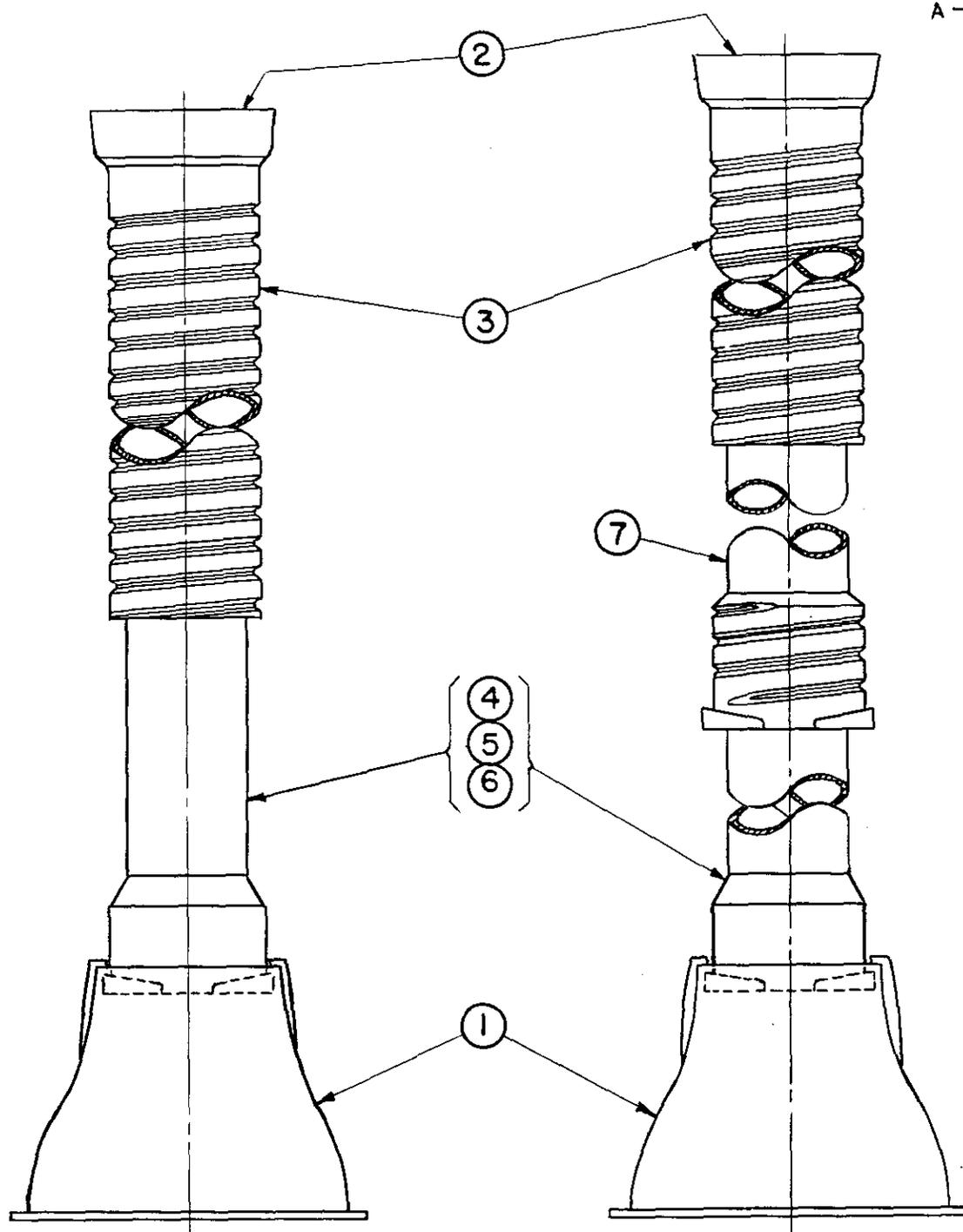
- D. Workmanship and Finish:** The cast iron valve box and components shall be free from blowholes, cold shots, shrinkage defects, cracks or other injurious defects and shall have a normal smooth casting finish.
- E. Coating:** All cast iron valve boxes and components shall be thoroughly coated with asphaltic pitch varnish or approved equal.

**III. ACCEPTABLE BRANDS:** Following brands are acceptable to the City of Milwaukee

**Bingham & Taylor** – 4906 Series Valve Box castings (All component parts)

**Tyler** – 6860 Series Valve Box castings (All component parts except lid)

**East Jordan Iron Works** – Series 8560 Valve Box castings; Lid must be 2½" skirt (All component parts except Valve Box Base)



VALVE BOX

VALVE BOX WITH EXTENSION

- ① BASE
- ② COVER
- ③ TOP SECTION
- ④ "D" SECTION
- ⑤ "D D" SECTION
- ⑥ "F" SECTION
- ⑦ EXTENSION

BOX	STANDARD	
	RETRACTED	EXTENDED
"D"	47"	65"
"D D"	53"	71"
"F"	69"	82"

WATER ENGINEERING DIVISION  
 BUREAU OF ENGINEERS  
 MILWAUKEE WATER WORKS  
 DEPARTMENT OF PUBLIC WORKS

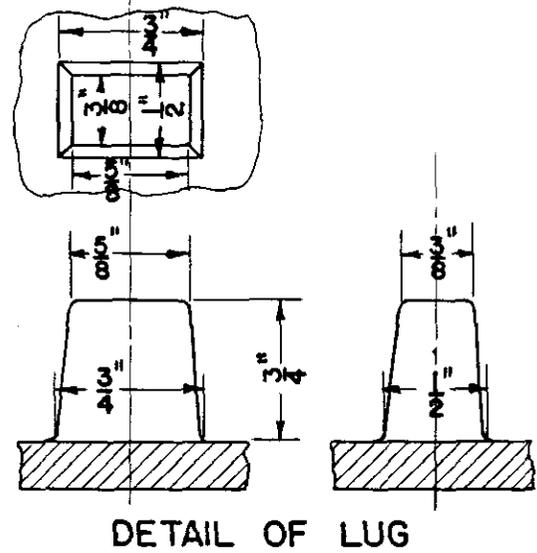
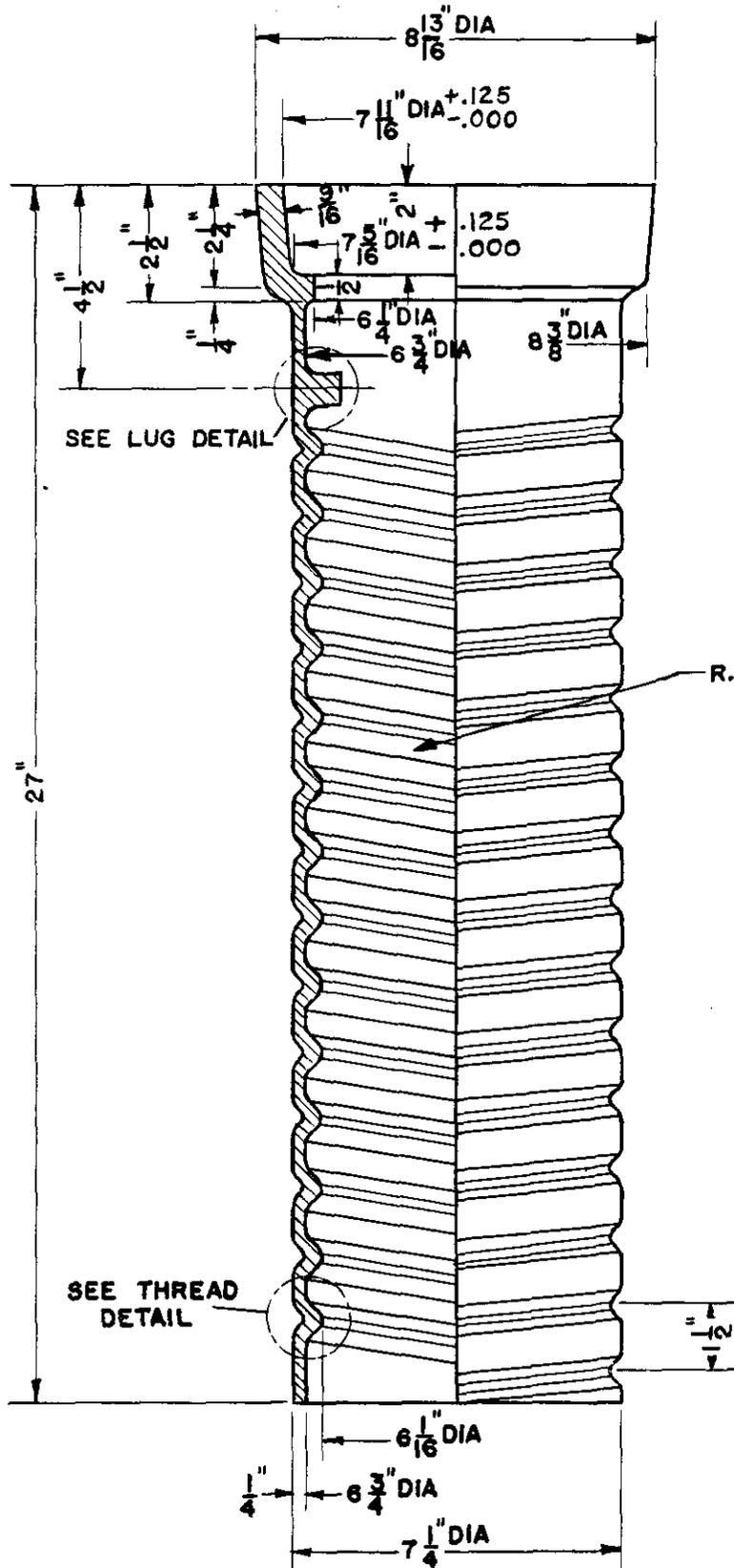
VALVE BOX  
 ASSEMBLY

*R. J. Kord Chief Engineer*

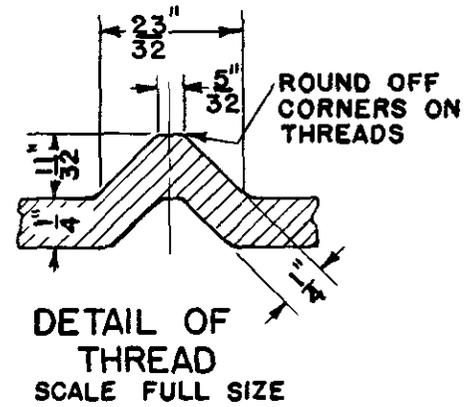
ENGINEER  
 DRAWN J.R.S.  
 CHECKER W.E.P.  
 FILE A-4-7A

CITY ENGINEER  
 DATE 9-10-82  
 SCALE 1/8"=1"  
 DWG. VB-1





R.H. THREAD  
 1 1/2" LEAD  
 1 1/2" PITCH



③ TOP SECTION

MATERIAL: CAST IRON  
 A. S. T. M. A48 CL20  
 PAINT COATING:  
 TO BE THOROUGHLY COATED  
 WITH ASPHALTUM PITCH  
 VARNISH  
 WEIGHT 53LBS.

WATER ENGINEERING DIVISION  
 BUREAU OF ENGINEERS  
 MILWAUKEE WATER WORKS  
 DEPARTMENT OF PUBLIC WORKS

VALVE BOX  
 TOP SECTION

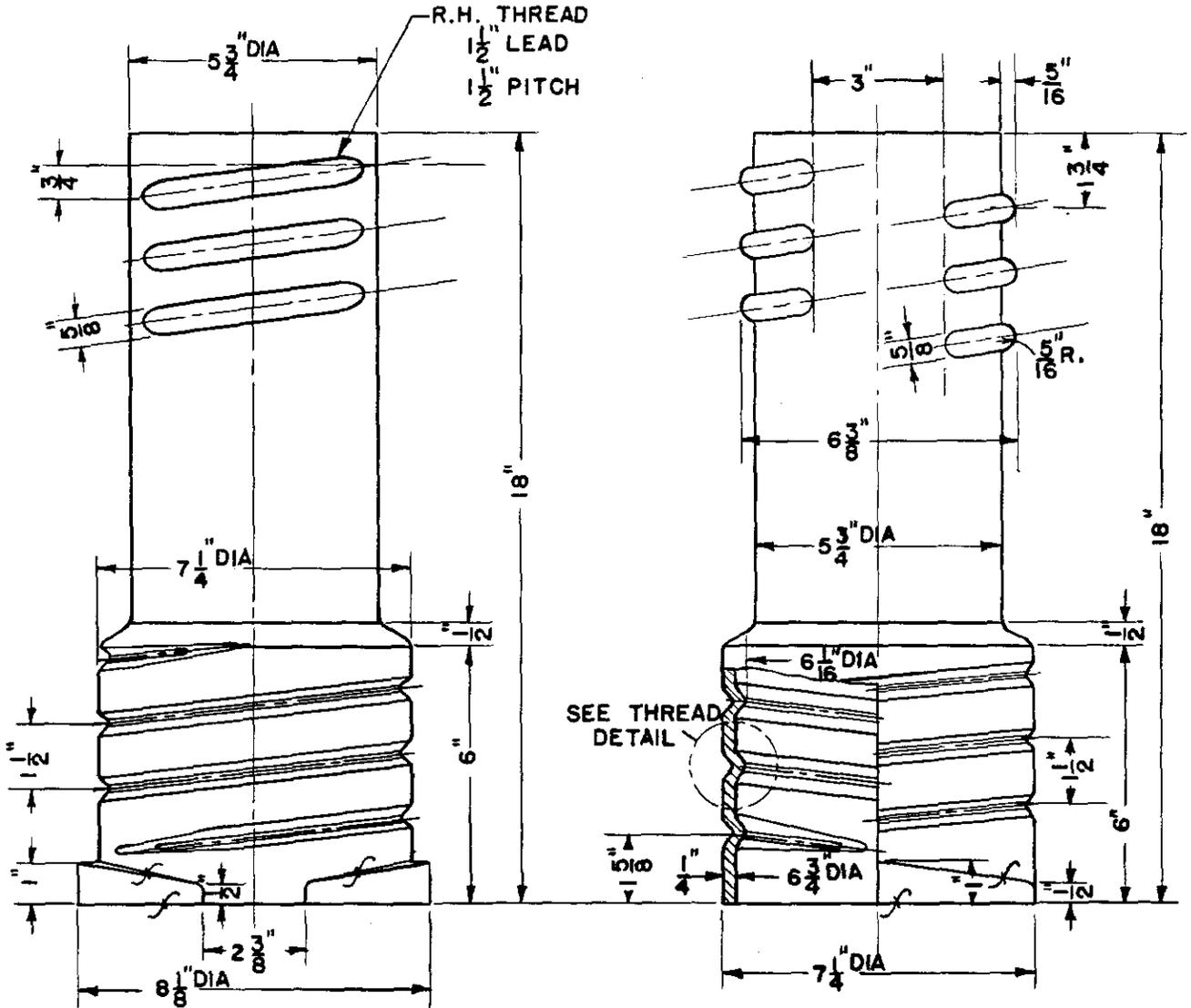
*R. J. Kaul* *C. J. Laszewski*  
 ENGINEER CITY ENGINEER  
 DRAWN J. R. S. DATE 9-10-82  
 CHECKED W. E. P. SCALE 1/4"=1"  
 FILE A-4-7A DWG. VB-3



MATERIAL: CAST IRON  
 A. S. T. M. A 48 CL 20

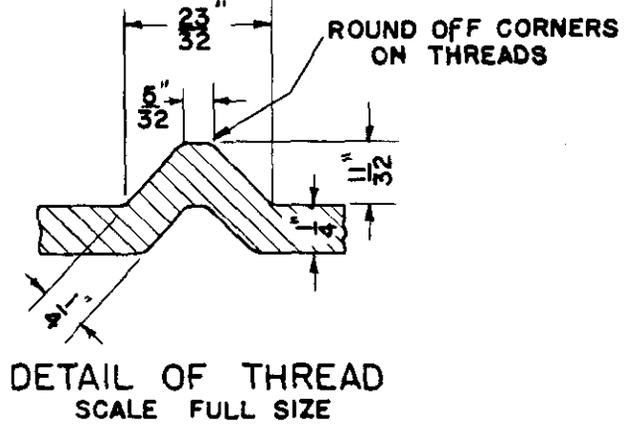
PAINT COATING:  
 TO BE THOROUGHLY COATED  
 WITH ASPHALTUM PITCH  
 VARNISH

WEIGHT-25LBS.



SEE THREAD  
 DETAIL

$\zeta$  = GROUND FINISH



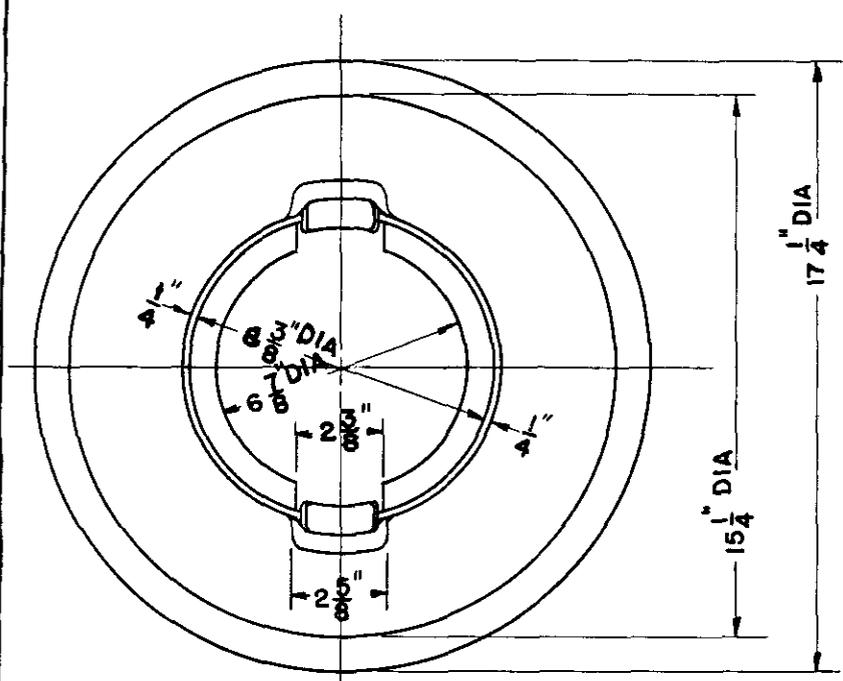
⑦ EXTENSION

WATER ENGINEERING DIVISION  
 BUREAU OF ENGINEERS  
 MILWAUKEE WATER WORKS  
 DEPARTMENT OF PUBLIC WORKS

VALVE BOX  
 EXTENSION

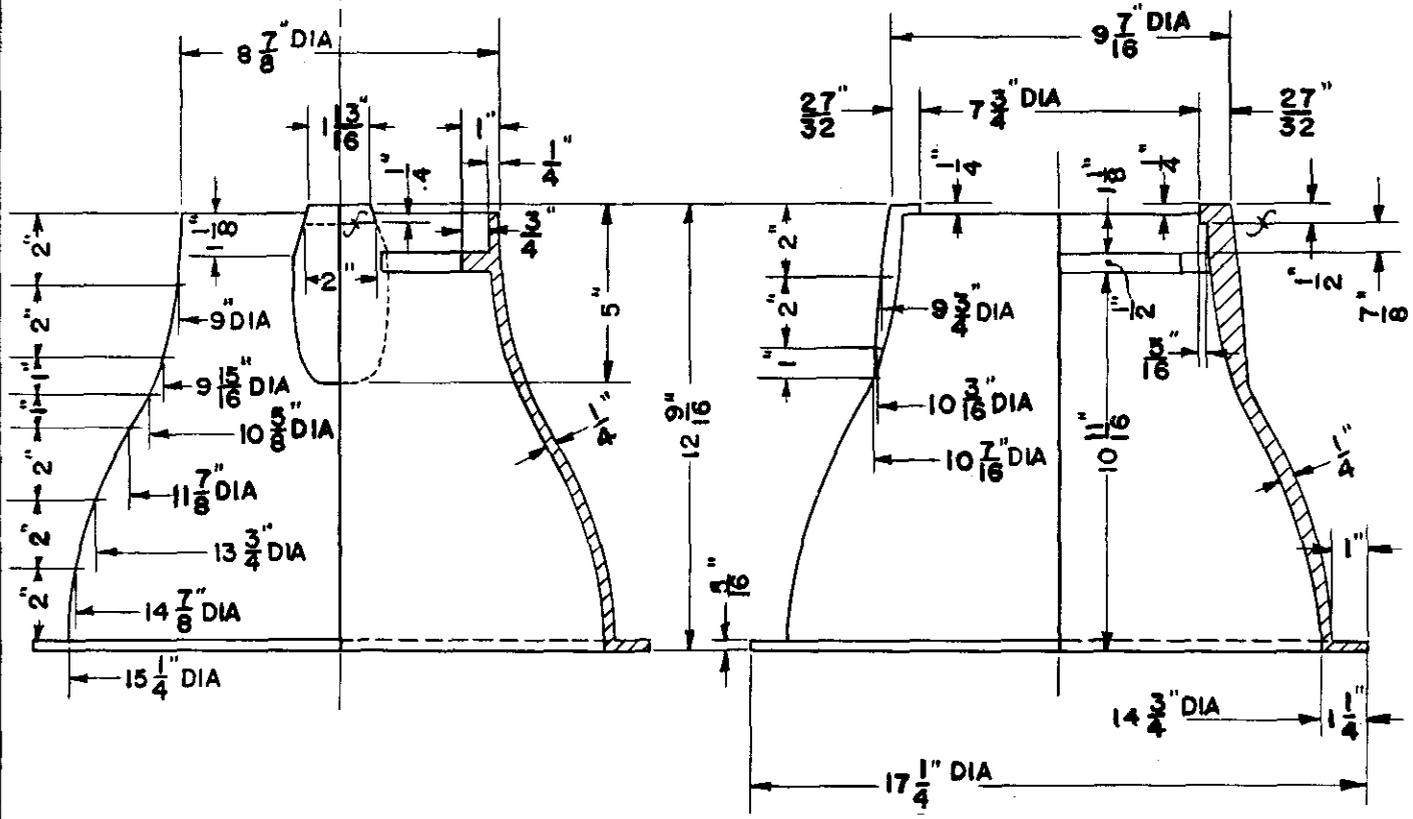
*Ref. Koal E. J. Lynch*  
 ENGINEER CITY ENGINEER

DRAWN J. R. S. DATE 9-10-02  
 CHECKED W. E. P. SCALE 1/4" = 1"  
 FILE A-4-7A DWG. VB-5



MATERIAL : CAST IRON  
 A. S. T. M. A48 CL 20  
 PAINT COATING:  
 TO BE THOROUGHLY COATED  
 WITH ASPHALTUM PITCH  
 VARNISH  
 WEIGHT-45LB.

f = GROUND FINISH



A-4-7A

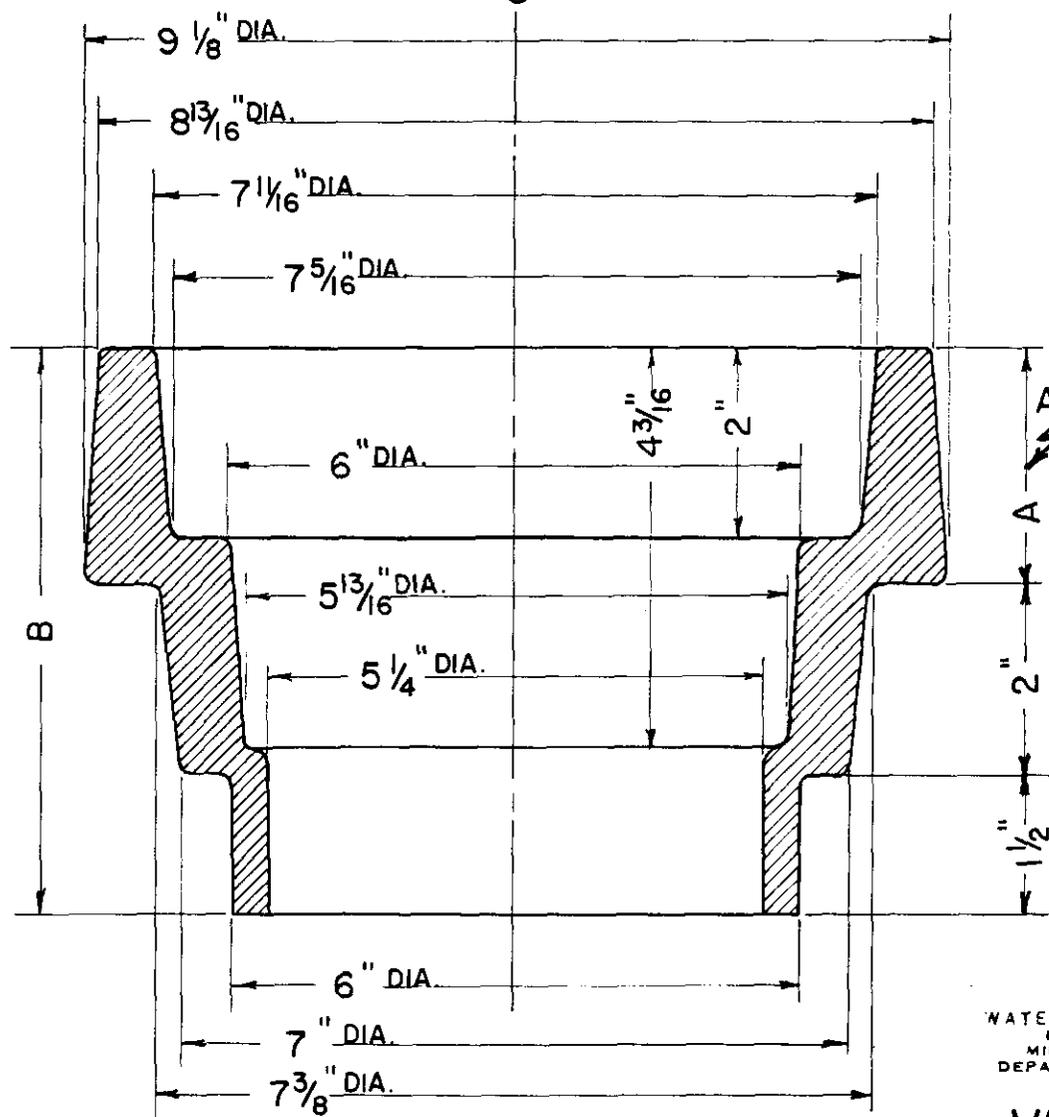
COVER A-4-7A  
DWG. VB-2

NEW PAVEMENT

ORIGINAL PAVEMENT

TOP SECTION  
A-4-7A  
DWG. VB-3

PACK WITH ASPHALTIC CEMENT OR EQUAL



ADJUSTMENT HEIGHT

A	B	WT.
2 1/2"	6"	25 #
3"	6 1/2"	29 #

WATER ENGINEERING DIVISION  
BUREAU OF ENGINEERS  
MILWAUKEE WATER WORKS  
DEPARTMENT OF PUBLIC WORKS

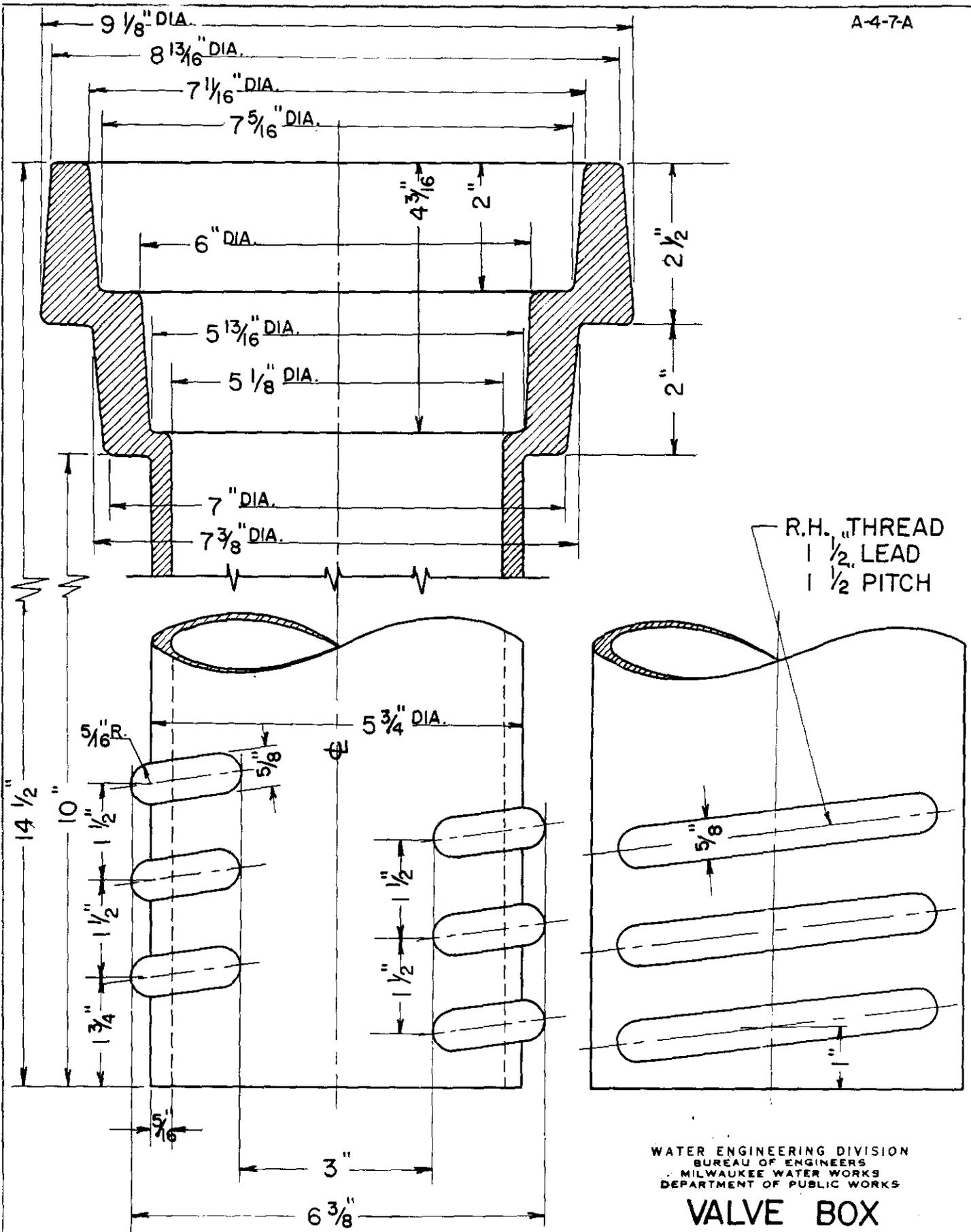
VALVE BOX  
ADJUSTING RING

*R. F. Kocak* *E. J. Lynch*  
ENGINEER CITY ENGINEER

DRAWN H. B. - J. S. DATE 9-10-82  
CHECKED W. E. P. SCALE N. T. S.  
FILE A-4-7A DWG VB-7

PAINT COATING:  
TO BE THOROUGHLY COATED  
WITH ASPHALTUM PITCH  
VARNISH

MATERIAL: CAST IRON  
A.S.T.M. A48-CLASS NO. 20.



R.H. 1/2" THREAD  
 1 1/2" LEAD  
 1 1/2" PITCH

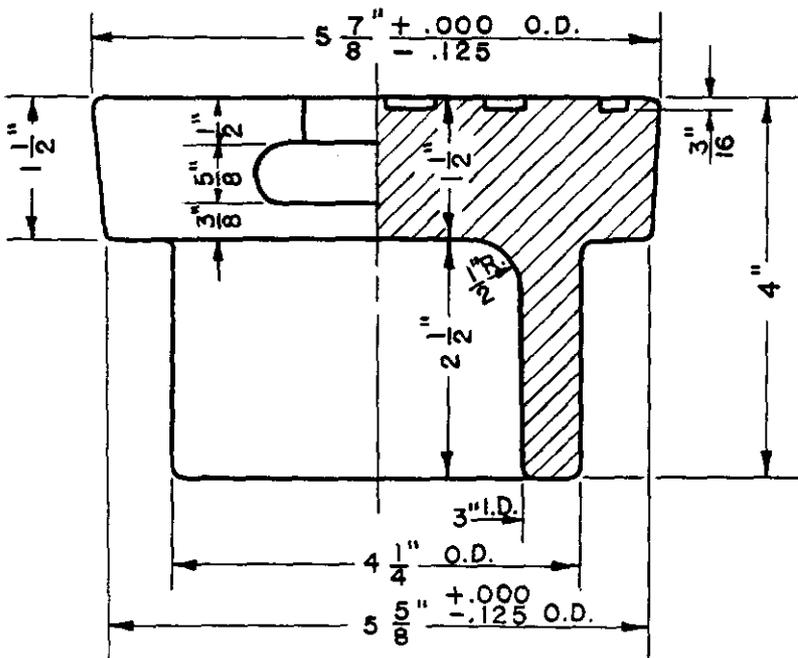
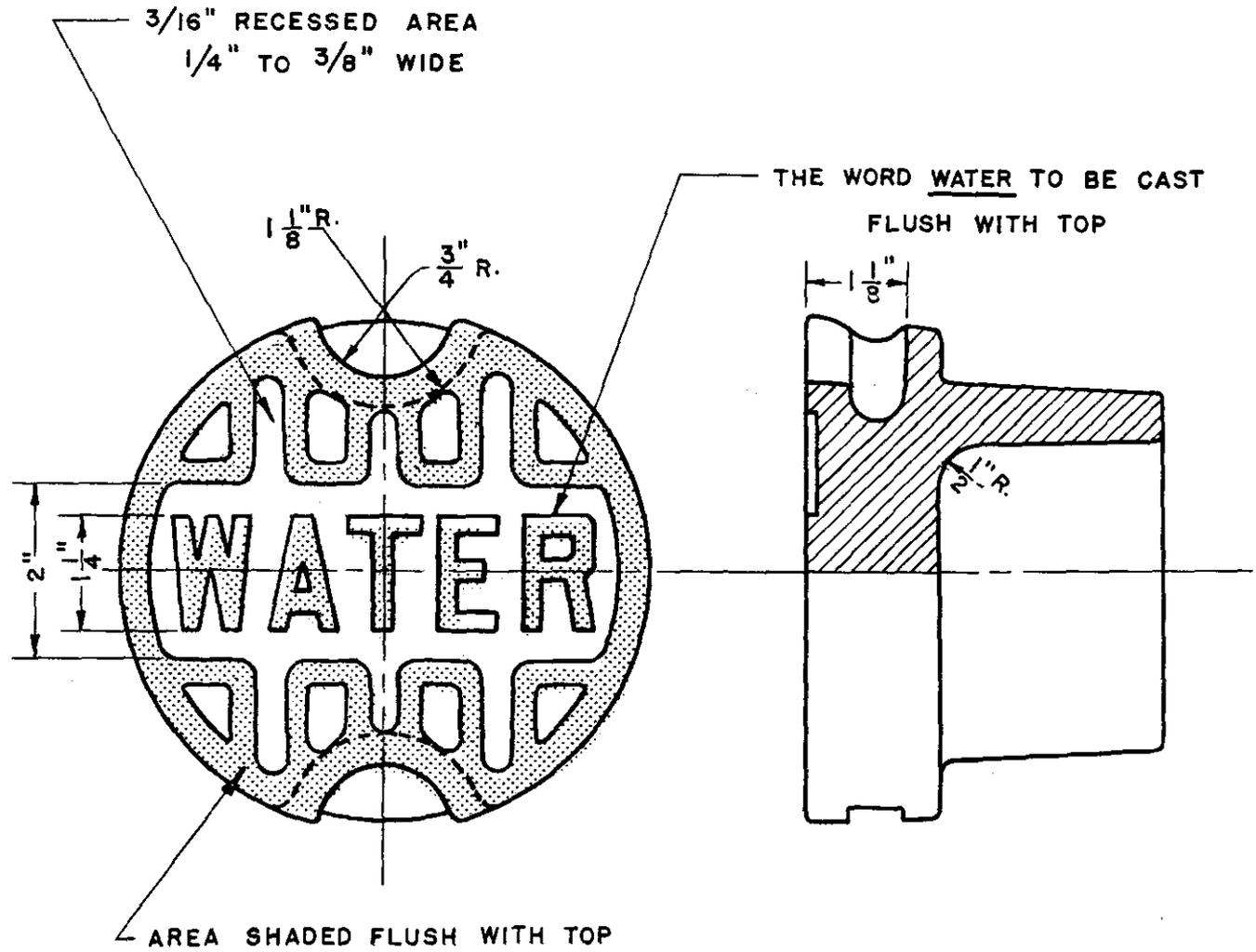
PAINT COATING:  
 TO BE THOROUGHLY COATED WITH  
 ASPHALTUM PITCH VARNISH  
 MATERIAL: CAST IRON  
 A.S.T.M. A48-CLASS NO. 20.  
 WEIGHT - 40 LBS.

WATER ENGINEERING DIVISION  
 BUREAU OF ENGINEERS  
 MILWAUKEE WATER WORKS  
 DEPARTMENT OF PUBLIC WORKS

**VALVE BOX  
 ADJUSTING TOP SECTION**

*R.F. Koval* ENGINEER  
*E.J. Ferguson* ENGINEER

DRAWN H.B.-J.S. DATE 9-10-82  
 CHECKED W.E.P. SCALE N.T.S.  
 FILE A-4-7A DWG VB-8

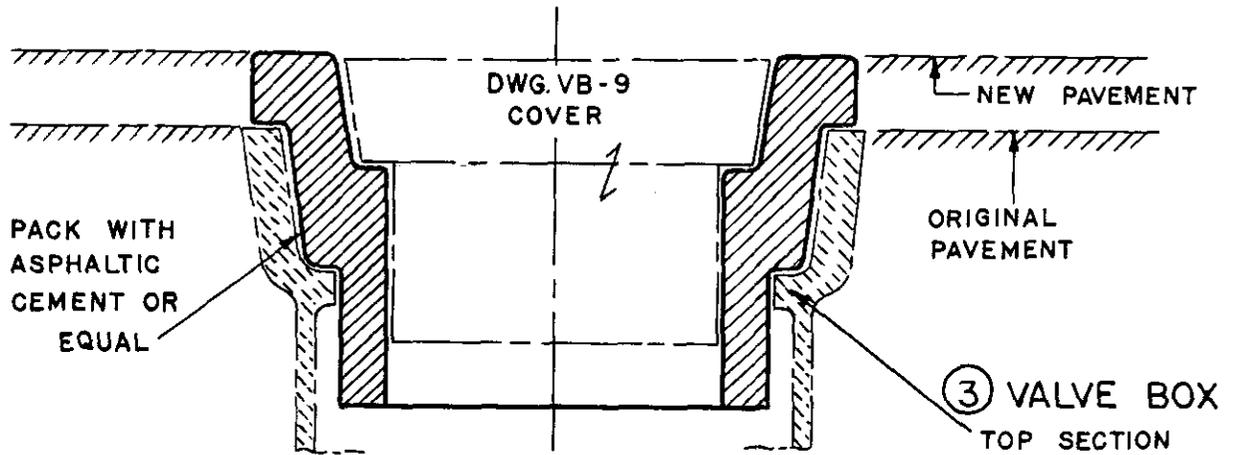


MATERIAL: CAST IRON  
A.S.T.M. A48 CLASS-20  
PAINT COATING:  
TO BE THOROUGHLY  
COATED WITH ASPHALTUM  
PITCH VARNISH  
WEIGHT - 13 LBS.

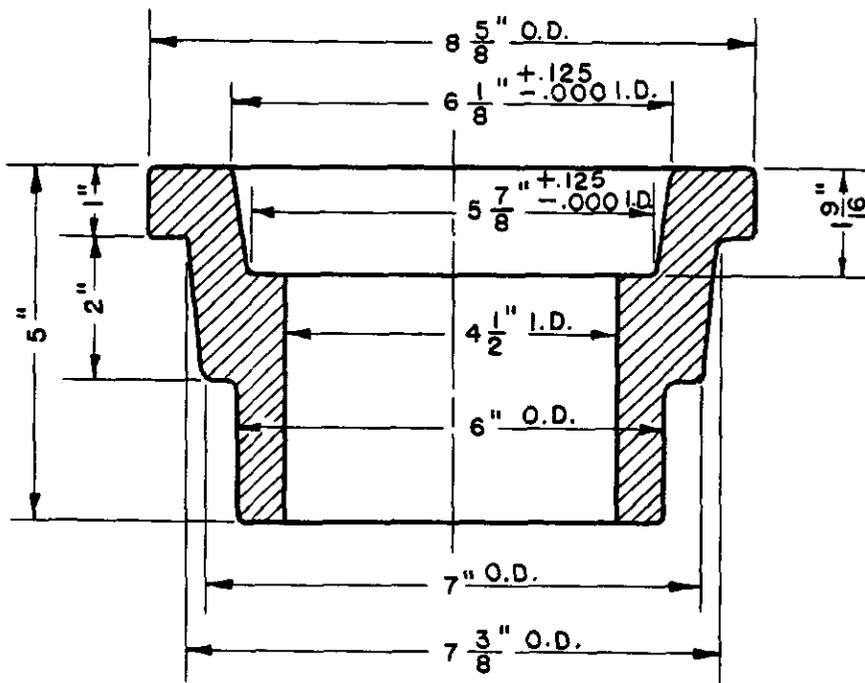
WATER ENGINEERING DIVISION  
BUREAU OF ENGINEERS  
MILWAUKEE WATER WORKS  
DEPARTMENT OF PUBLIC WORKS

VALVE BOX (SM.)  
COVER

*Ref. Koval* *E. J. Jozynski*  
ENGINEER CITY ENGINEER  
DRAWN W. M. DATE 9-10-82  
CHECKED W. E. P. SCALE 1/2" = 1"  
FILE A-4-7A DWG. VB-9



TYPICAL INSTALLATION



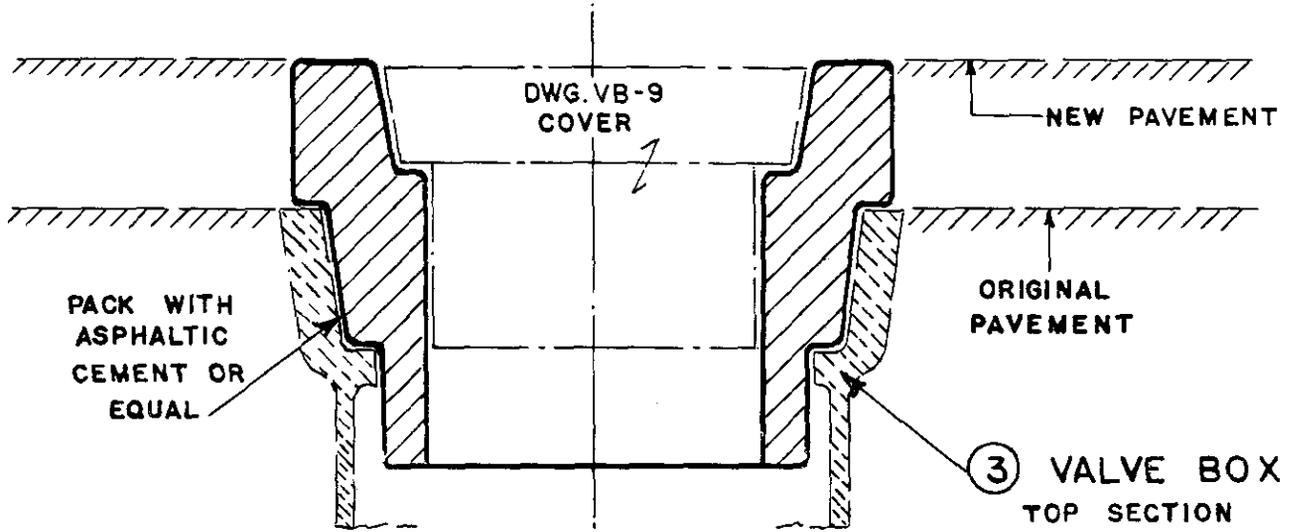
WATER ENGINEERING DIVISION  
 BUREAU OF ENGINEERS  
 MILWAUKEE WATER WORKS  
 DEPARTMENT OF PUBLIC WORKS

MATERIAL: CAST IRON  
 A.S.T.M. A 48 CLASS-20

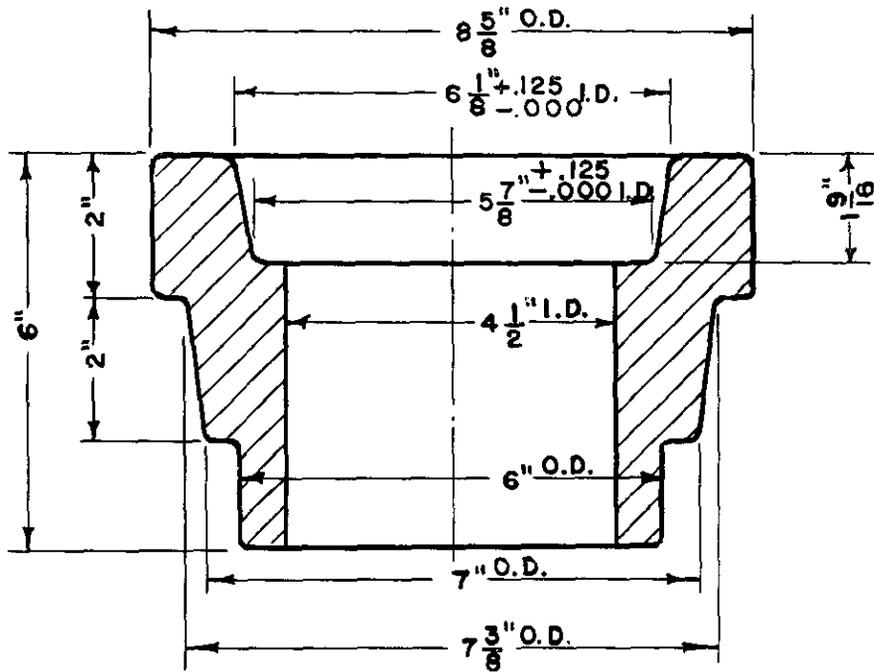
PAINT COATING:  
 TO BE THOROUGHLY COATED  
 WITH ASPHALTUM PITCH  
 VARNISH  
 WEIGHT 25 1/2 LBS.

VALVE BOX  
 ADJUSTING RING

*R.F. Koral* ENGINEER  
*E.J. Jurgens* CITY ENGINEER  
 DRAWN W.M.  
 CHECKED W.E.P.  
 FILE A-4-7A  
 DATE 9-10-82  
 SCALE 3/8" = 1"  
 DWG. VB-10



TYPICAL INSTALLATION



WATER ENGINEERING DIVISION  
 BUREAU OF ENGINEERS  
 MILWAUKEE WATER WORKS  
 DEPARTMENT OF PUBLIC WORKS

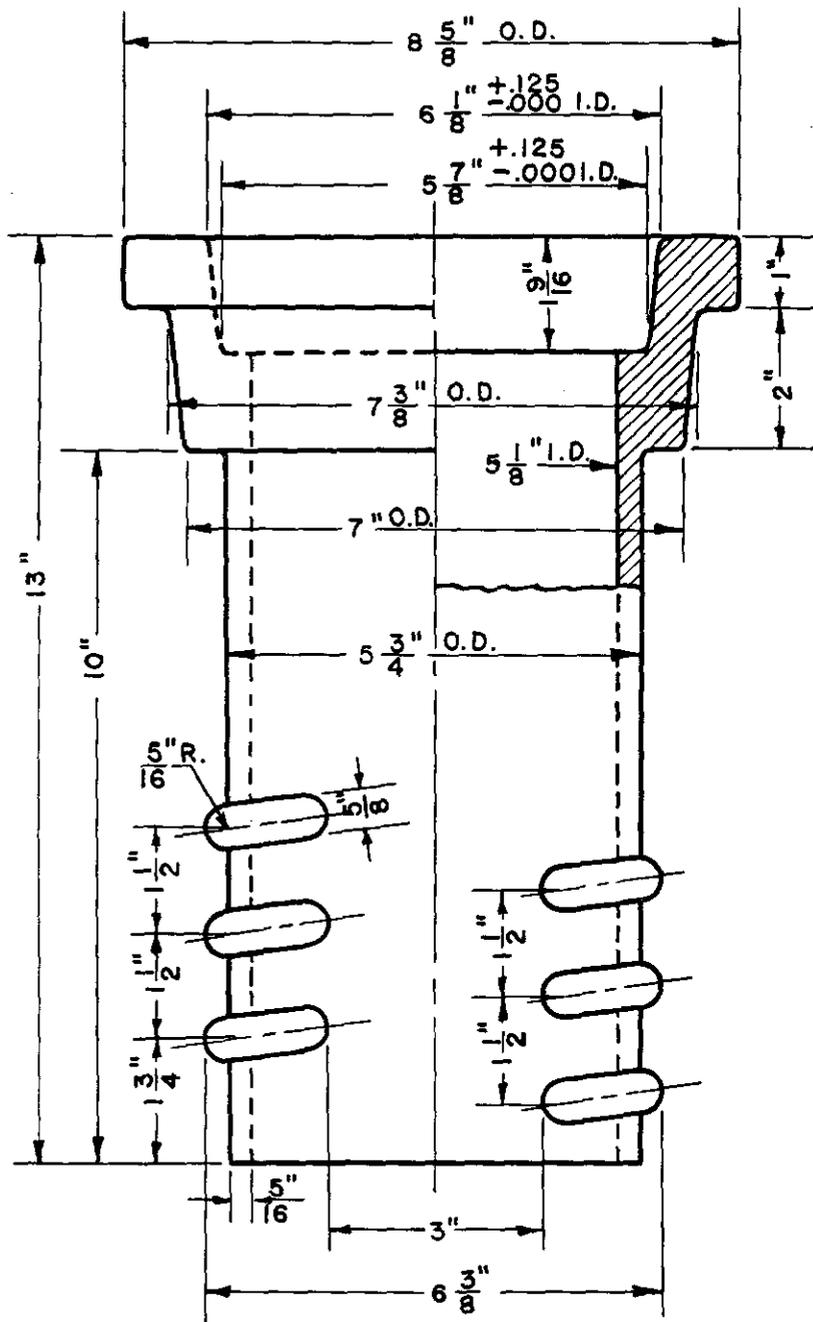
MATERIAL: CAST IRON  
 A.S.T.M. A48 CLASS-20

PAINT COATING:  
 TO BE THOROUGHLY COATED  
 WITH ASPHALTUM PITCH  
 VARNISH

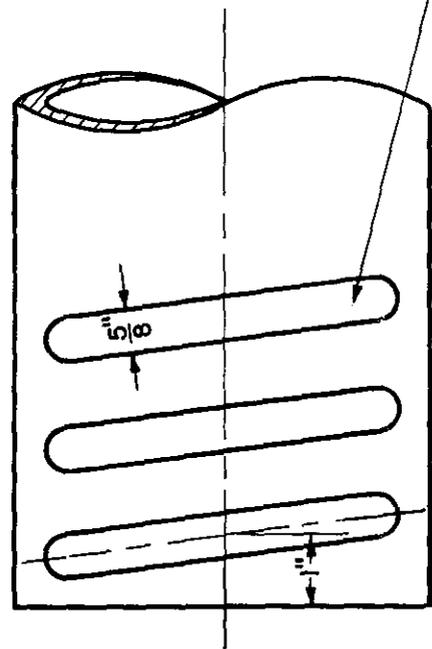
WEIGHT 35 LBS.

VALVE BOX  
 ADJUSTING RING

*R. J. Koval* ENGINEER  
*E. J. Lutz* CITY ENGINEER  
 DRAWN M.C.K.  
 CHECKED W.E.P.  
 FILE A-4-7A  
 DATE 9-10-82  
 SCALE 3/8" = 1"  
 DWG VB-11



R.H. THREAD  
 1 1/2" LEAD  
 1 1/2" PITCH



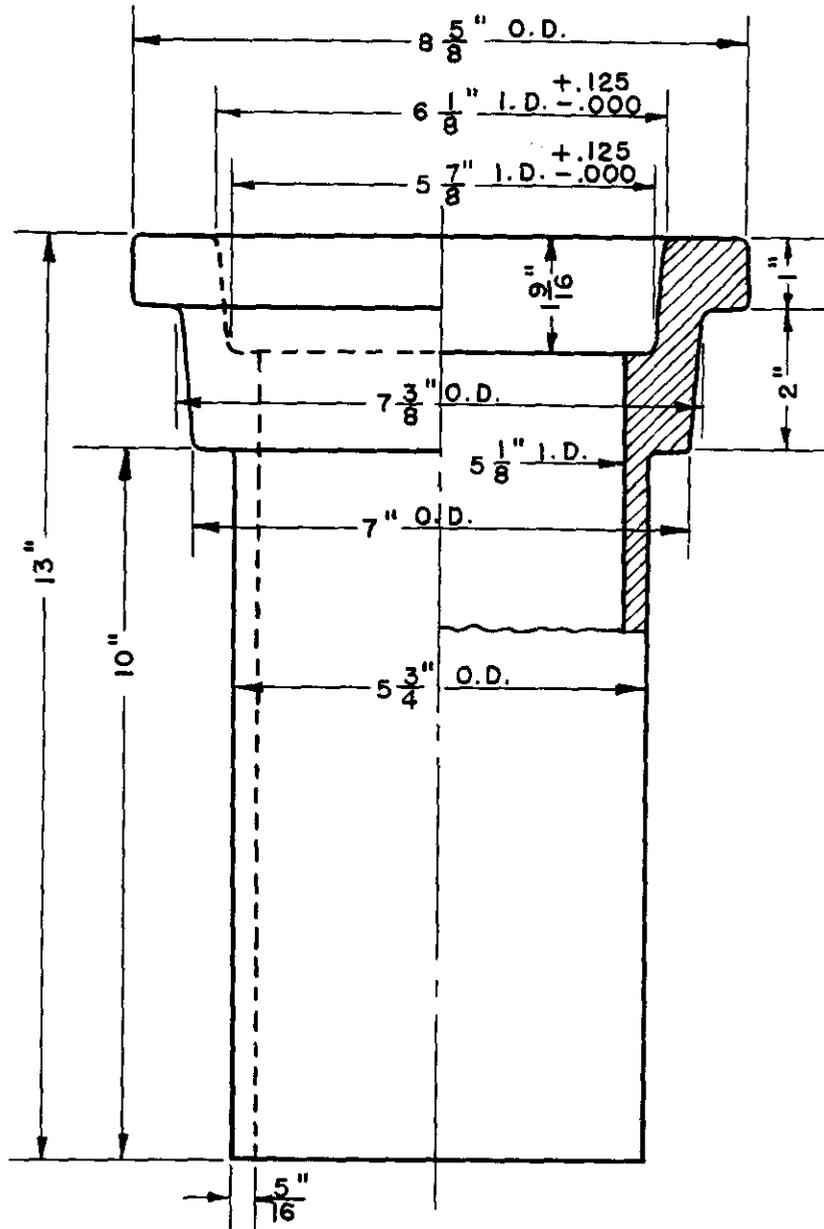
WATER ENGINEERING DIVISION  
 BUREAU OF ENGINEERS  
 MILWAUKEE WATER WORKS  
 DEPARTMENT OF PUBLIC WORKS

MATERIAL: CAST IRON  
 A.S.T.M. A48 CLASS-20

PAINT COATING:  
 TO BE THOROUGHLY COATED  
 WITH ASPHALTUM PITCH  
 VARNISH  
 WEIGHT 28LBS.

VALVE BOX  
 ADJUSTING TOP SECTION

*R. J. Koel* ENGINEER  
*E. J. Janyok* CIVIL ENGINEER  
 DRAWN W. M. DATE 9-10-82  
 CHECKED W. E. P. SCALE 3/8" = 1"  
 FILE A-4-7A DWG. VB-12



WATER ENGINEERING DIVISION  
 BUREAU OF ENGINEERS  
 MILWAUKEE WATER WORKS  
 DEPARTMENT OF PUBLIC WORKS

MATERIAL: CAST IRON  
 A.S.T.M. A 48 CLASS-20

PAINT COATING:  
 TO BE THOROUGHLY COATED  
 WITH ASPHALTUM PITCH  
 VARNISH

WEIGHT 30 LBS.

VALVE BOX  
 ADJUSTING TOP SECTION  
*Ref. Kool* *E.J. Jarczyk*  
 ENGINEER CITY ENGINEER  
 DRAWN W. M. DATE 9-10-82  
 CHECKED W. E. P. SCALE  $\frac{3}{8}'' = 1''$   
 FILE A-4-7A DWG VB-13