

**City of Milwaukee  
Department of Public Works**

**Milwaukee Water Works**

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



**City of Milwaukee Specification No. 30-C-1  
Revised April 26, 2023**

- I. **GENERAL REQUIREMENTS:** Vendors bidding through the Department of Administration – Business Operation Division, Procurement Services Section, shall comply with the latest version of City of Milwaukee Specification No. 70b-D-7, except as modified herein. **MATERIALS FURNISHED UNDER THIS SPECIFICATION SHALL COMPLY WITH AND BE CERTIFIED WITH THE PROVISIONS OF THE CITY OF MILWAUKEE ORDINANCE 310-18.9 AND THE REQUIREMENTS OF THE STATE OF WISCONSIN DRINKING WATER STATE REVOLVING FUND (DWSRF).**

**MATERIALS FURNISHED UNDER THIS SPECIFICATION SHALL COMPLY WITH AND BE CERTIFIED WITH THE PROVISIONS OF BUILD AMERICA, BUY AMERICA (BABA) PROVISIONS UNLESS A WAIVER OF REQUIREMENTS HAS BEEN APPROVED BY THE USEPA.**

**ADDITIONAL INFORMATION REGARDING BUILD AMERICA, AMERICA (BABA) CAN BE FOUND AT THE FOLLOWING LINK: <HTTPS://WWW.EPA.GOV/CWSRF/BUILD-AMERICA-BUY-AMERICA-BABA>**

II. **TECHNICAL REQUIREMENTS**

- A. **Description:** A service box is installed to provide access to the operator of a direct buried curb stop. Service boxes specified herein shall be screw type.

A Service Box – Complete, shall consist of a base section, top section with cover and if necessary, one intermediate extension section to achieve a nominal length of seven feet.

The top section shall be designed to thread onto the base or extension section so that the length of the unit can be continuously variable within the range specified. Additional extension sections designed to fit on the base shall be used to achieve a service box length in excess of seven feet. The top section shall be designed to receive a circular cover, which is bolted in place.

- B. **Material:** The service box and component parts shall be cast iron in accordance with ASTM-A48 Class 20, 30, 35 or approved equal.
- C. **Service Box Design:** The service box and component parts shall be of the "Buffalo Pattern" design in substantial accordance with drawings SB-1 thru SB-5 and SB-11 thru SB-15. The service box shall be a 2-1/2 inch or 3 inch diameter unit, screw type, cast iron, in accordance with the following requirements:
1. The 2-1/2 inch diameter base section shall be constructed in accord with drawing SB-2. An enlarged base adapter, for ball curb stops up to 2", shall be constructed in accord with drawing SB-10. The 3 inch diameter base section shall be constructed in accord with drawing SB-12.
  2. The standard service box retracted length shall be 66" maximum and the extended length shall be 78" minimum. The 30" long nominal top section shall be between 28" and 32" in length. The base section may be composed of two castings to provide the overall length required. The intermediate extension section, if furnished, shall be of

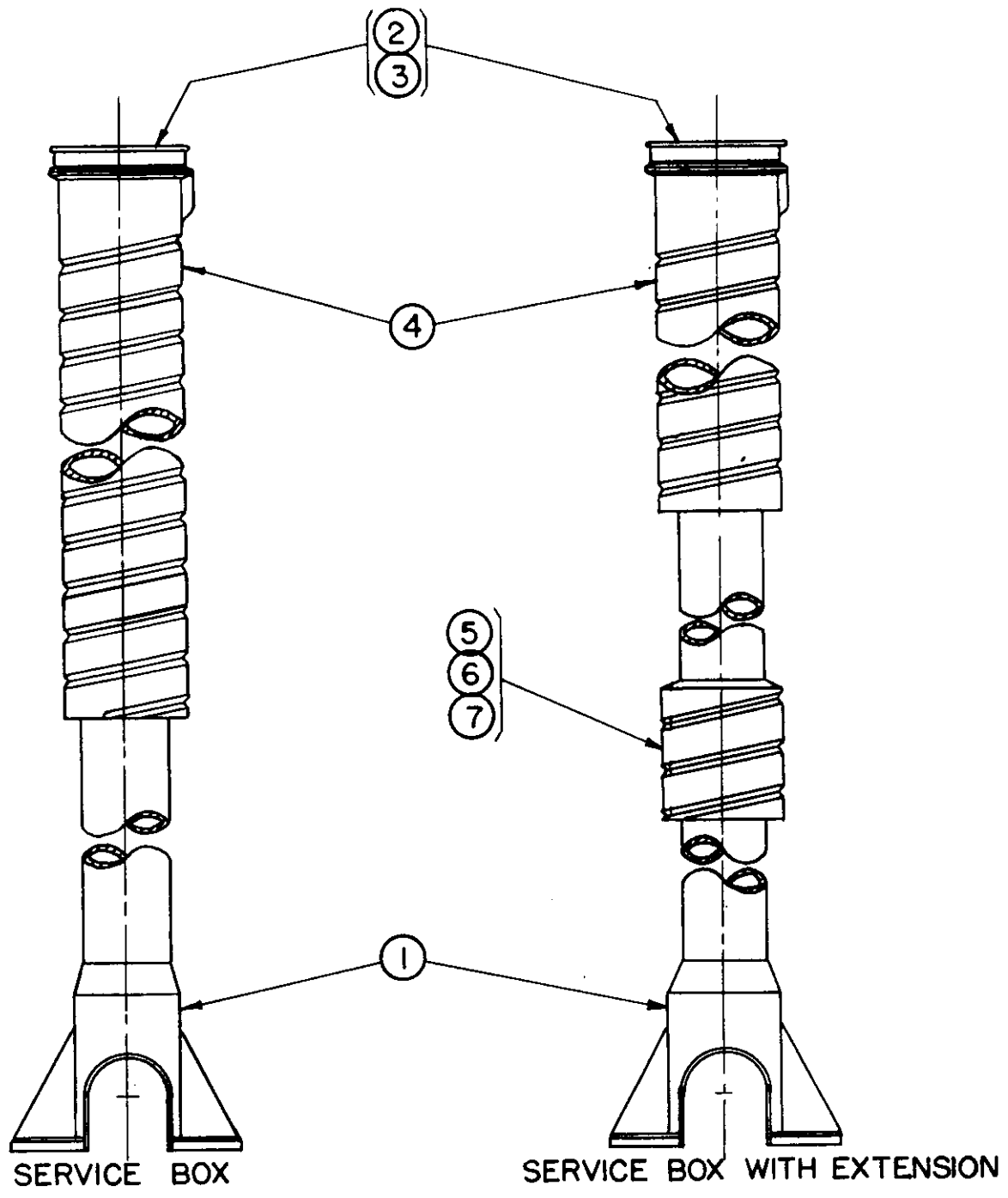
sufficient length to allow the top section to be turned down the required distance without interruption.

3. The nominal length of service box extensions shall be the length specified on the bid form.
  4. The cover shall be the standard drop type with locking plate and bolt. The word "WATER" shall be cast in the top of the service box cover. The cover bolt shall be brass with a standard 27/32" pentagon head, 1/2" – 13 threads, and sufficient length.
- D. Tolerances:** The service box and component parts shall be constructed within dimensional tolerances that will assure interchangeability with service boxes manufactured in accord with the drawings. The minus tolerance for metal thickness shall not be more than 0.10 inch. An additional tolerance of 0.02 inch shall be permitted over areas not exceeding 8 inches in any direction.
- E. Enlarged Base Adapter:** The service box adapter as shown in drawing SB-10 is to adapt 2-1/2" service boxes for use over 2" ball curb stops. The adapter shall be furnished with the 3" maximum O.D. of the stem portion and the 3-3/4" minimum base clear opening as shown.
- F. Workmanship and Finish:** The cast iron service box and components shall be free from blowholes, cold shots, shrinkage defects, cracks, other injurious defects and shall have a normal smooth casting finish.
- G. Coating:** All cast iron service box component parts and cover shall be thoroughly coated with asphaltum pitch varnish or approved equal.
- H. Certification:** Certification of compliance with provisions of the Build America, Buy America (BABA) shall be furnished with every order.

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

**Bingham & Taylor** – All component parts except E-14 enlarged base

**Tyler** – All component parts 6500 Series



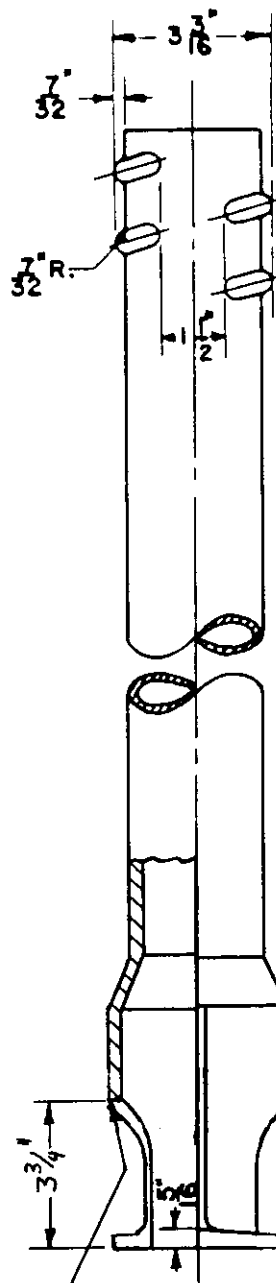
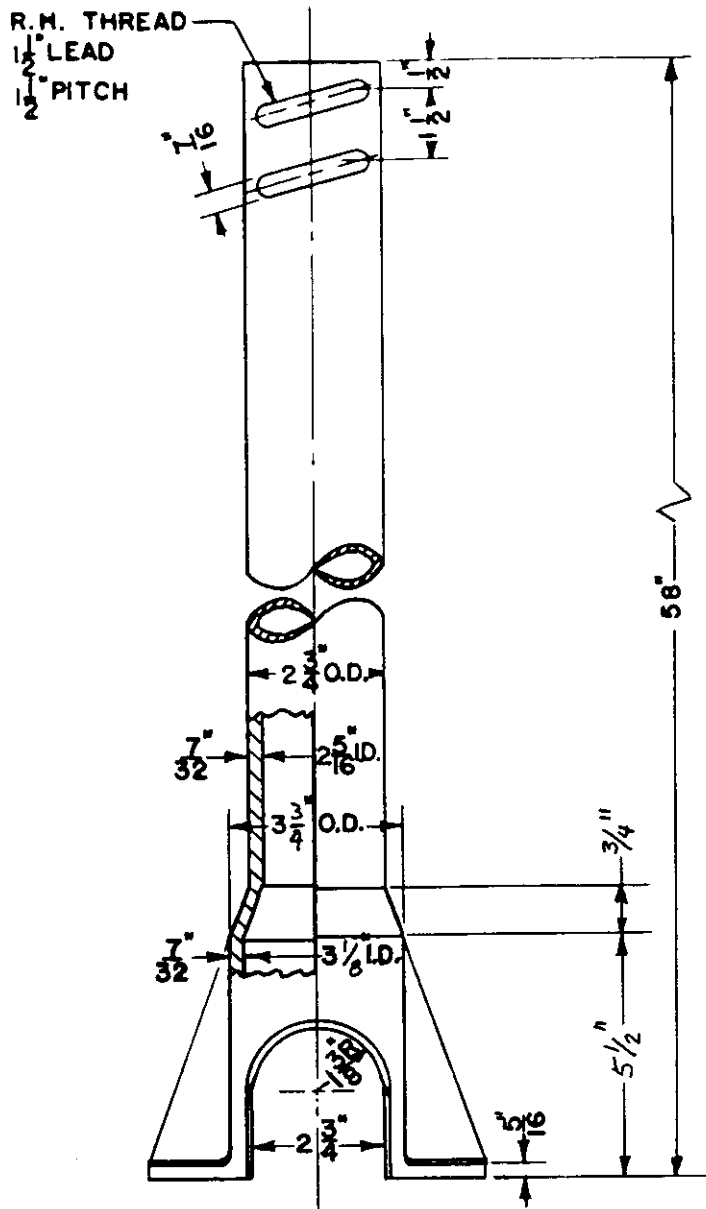
- ① BASE
- ② COVER
- ③ BOLT
- ④ TOP SECTION
- ⑤ ⑥ ⑦ EXTENSIONS

ENVIRONMENTAL ENGINEERING SECTION  
 DIVISION OF ENGINEERS  
 MILWAUKEE WATER WORKS  
 DEPARTMENT OF PUBLIC WORKS

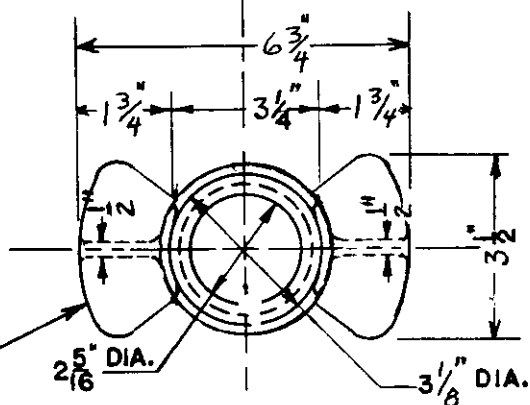
**SERVICE BOX ASSEMBLY (2 1/2")**

*Richard A. DeLor* / *Mariano Schifano*  
 ENGINEER-IN-CHARGE CITY ENGINEER

DRAWN	RWB	DATE	1-23-95
CHECKED	DPS	SCALE	3/16"=1"
FILE	A-4-7B	DWG.	SB-1



REMOVE ALL SHARP EDGES ON BASE



① **BASE**  
WEIGHT - 21 LBS.

ENVIRONMENTAL ENGINEERING SECTION  
DIVISION OF ENGINEERS  
MILWAUKEE WATER WORKS  
DEPARTMENT OF PUBLIC WORKS

**SERVICE BOX BASE (2 1/2")**

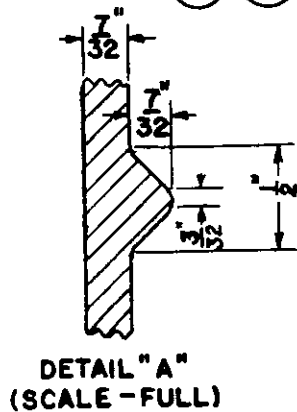
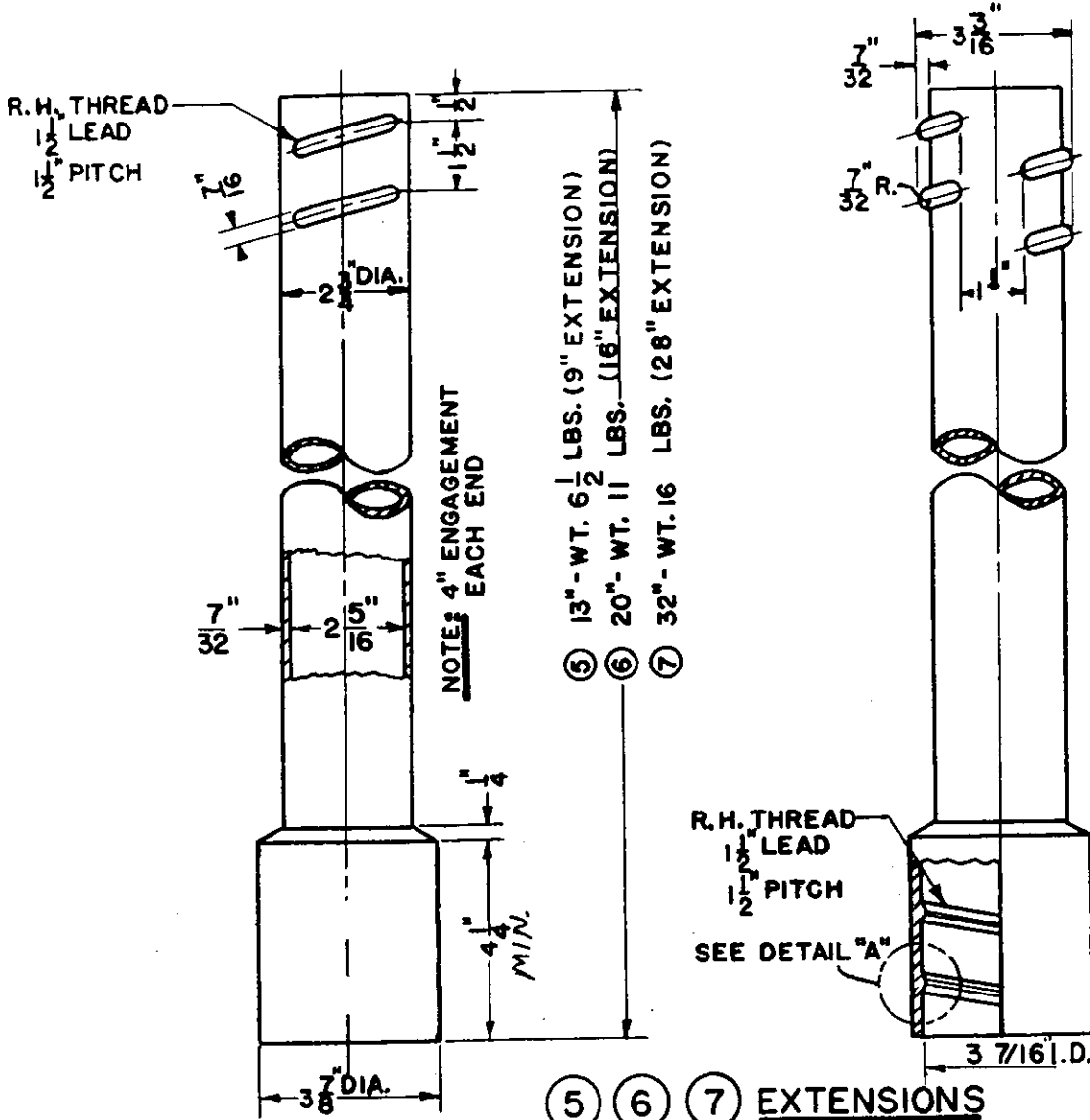
BASE SUPPORT MAY BE OF MANUFACTURER'S DESIGN

MATERIAL: CAST IRON A.S.T.M. A 48 CL.20  
TO BE COATED WITH ASPHALTUM PITCH VARNISH

*Richard J. Beckler* 1/24/95 *Mariano Schifalacqua*  
ENGINEER-IN-CHARGE CITY ENGINEER

DRAWN RWB DATE 1-23-95  
CHECKED DPS SCALE 1/4"=1"  
FILE A-4-7B DWG. SB-2

MATERIAL: CAST IRON A.S.T.M. A 48 CL.20  
 TO BE COATED WITH ASPHALTUM PITCH VARNISH

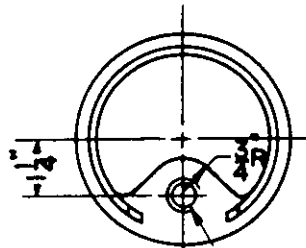


ENVIRONMENTAL ENGINEERING SECTION  
 DIVISION OF ENGINEERS  
 MILWAUKEE WATER WORKS  
 DEPARTMENT OF PUBLIC WORKS

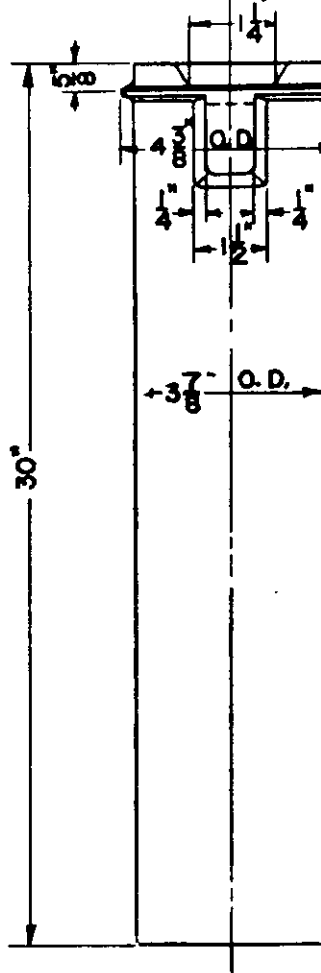
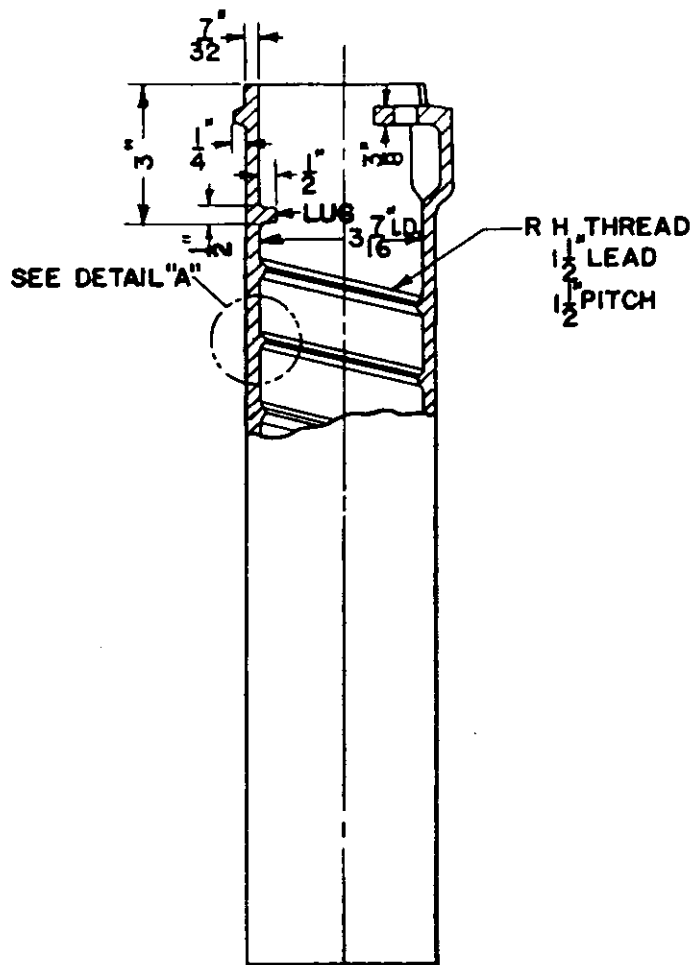
SERVICE BOX EXTENSION (2 1/2")

*Richard H. Beckler* 1/24/95 *Mariano Schifalacqua*  
 ENGINEER-IN-CHARGE CITY ENGINEER

DRAWN RWB DATE 1-23-95  
 CHECKED DPS SCALE 1/4"=1"  
 FILE A-4-7B DWG. SB-3



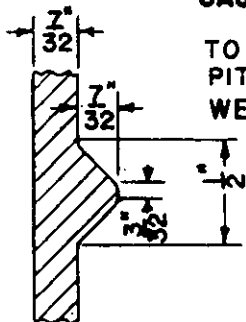
TAP 1/4"-13 UNC OR FOR  
MANUFACTURER'S BRASS  
BOLT



④ TOP SECTION

CAST IRON-A.S.T.M. A 48 CL. 20

TO BE COATED WITH ASPHALTUM  
PITCH VARNISH.  
WEIGHT 21 LBS.



DETAIL "A"  
(SCALE - FULL)

ENVIRONMENTAL ENGINEERING SECTION  
DIVISION OF ENGINEERS  
MILWAUKEE WATER WORKS  
DEPARTMENT OF PUBLIC WORKS

SERVICE BOX TOP SECTION (2 1/2")

*Richard L. Seelow* 1/24/95 *Mariano Schifalacqua*  
ENGINEER-IN-CHARGE CITY ENGINEER

DRAWN RWB

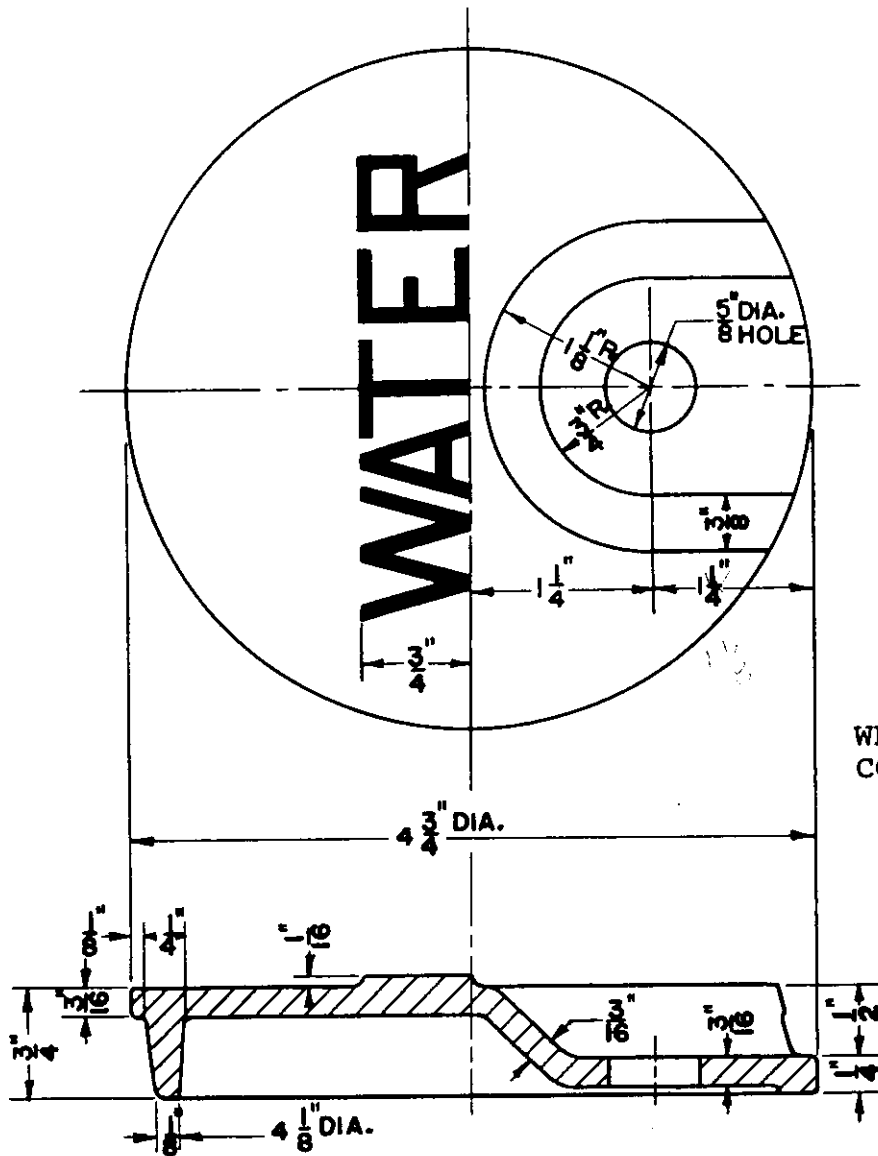
DATE 1-23-95

CHECKED DPS

SCALE 1/4"=1"

FILE A-4-7B

DWG. SB-4



WEIGHT -  
COVER & BOLT 1 1/2 LBS.

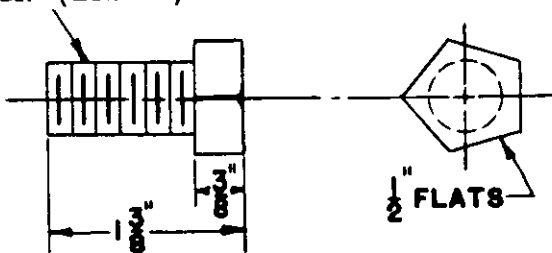
② COVER

MATERIAL: CAST IRON A.S.T.M. A 48 CL.20,  
TO BE COATED WITH ASPHALTUM PITCH VARNISH

1/2"-13 UNC OR  
MANUFACTURER'S  
DESIGN (BRASS)

ENVIRONMENTAL ENGINEERING SECTION  
DIVISION OF ENGINEERS  
MILWAUKEE WATER WORKS  
DEPARTMENT OF PUBLIC WORKS

**SERVICE BOX (2 1/2")  
COVER AND BOLT**

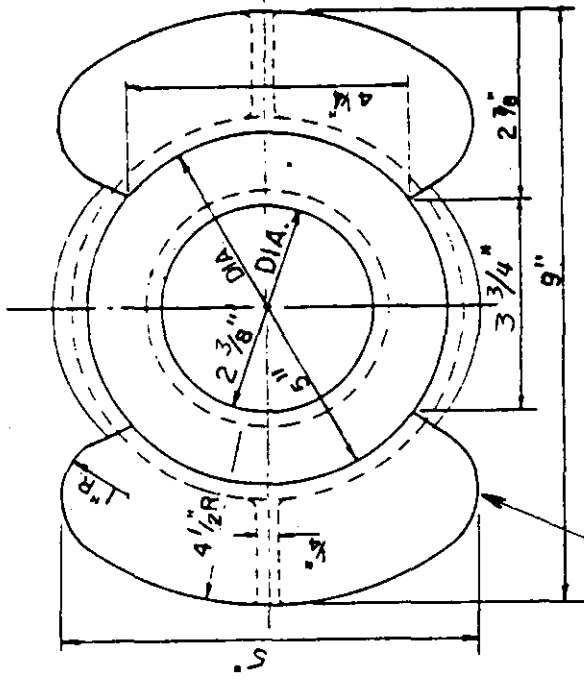


③ PENTAGON HEAD BOLT

*Richard H. Seelow* 1/24/95 *Maiano Schifalacqua*  
ENGINEER-IN-CHARGE CITY ENGINEER

DRAWN	RWB	DATE	1-23-95
CHECKED	DPS	SCALE	3/4"=1"
FILE	A-4-7B	DWG.	SB-5



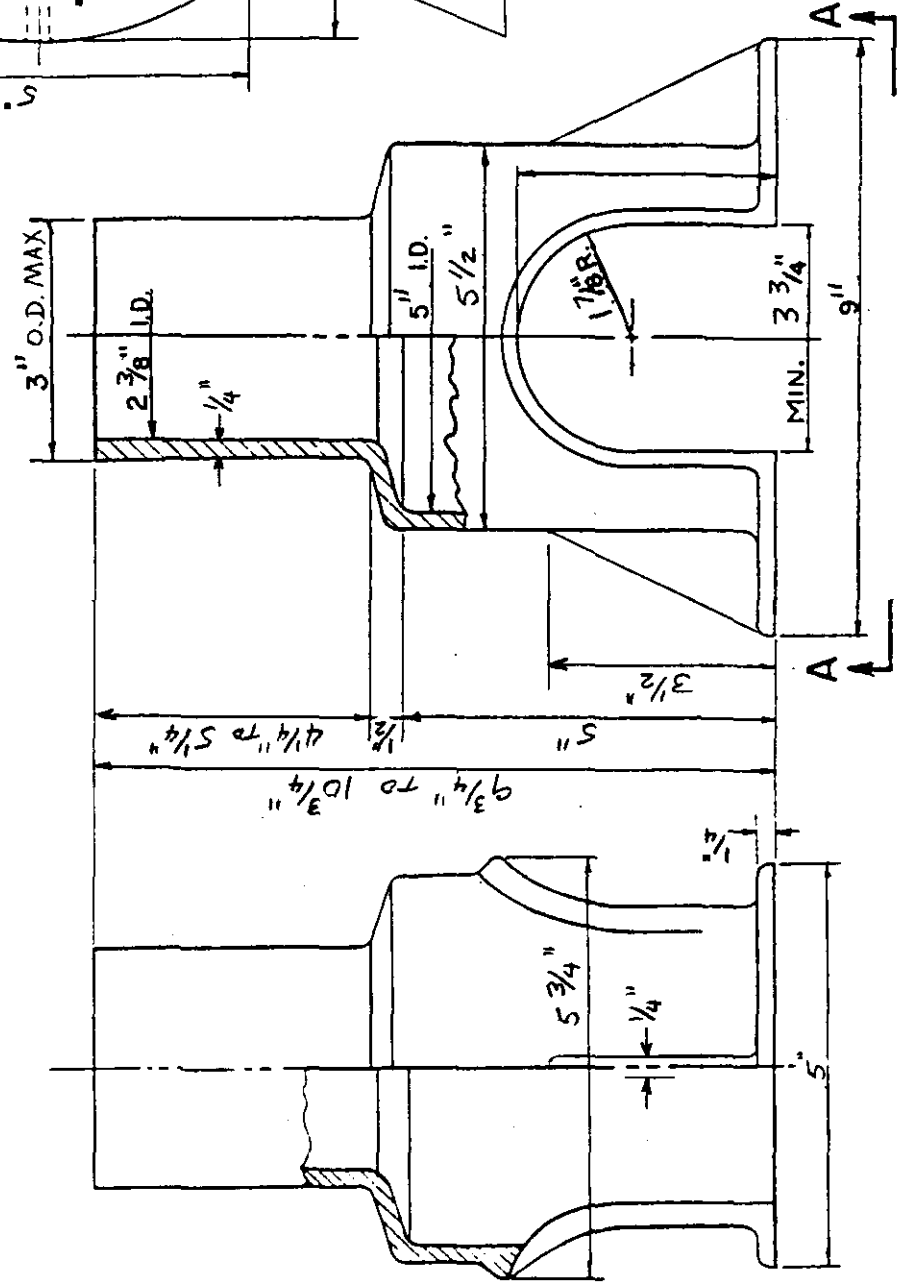


**VIEW A-A**

BASE SUPPORT WINGS MAY BE OF MANUFACTURER'S DESIGN

ENVIRONMENTAL ENGINEERING SECTION  
 DIVISION OF ENGINEERS  
 MILWAUKEE WATER WORKS  
 DEPARTMENT OF PUBLIC WORKS

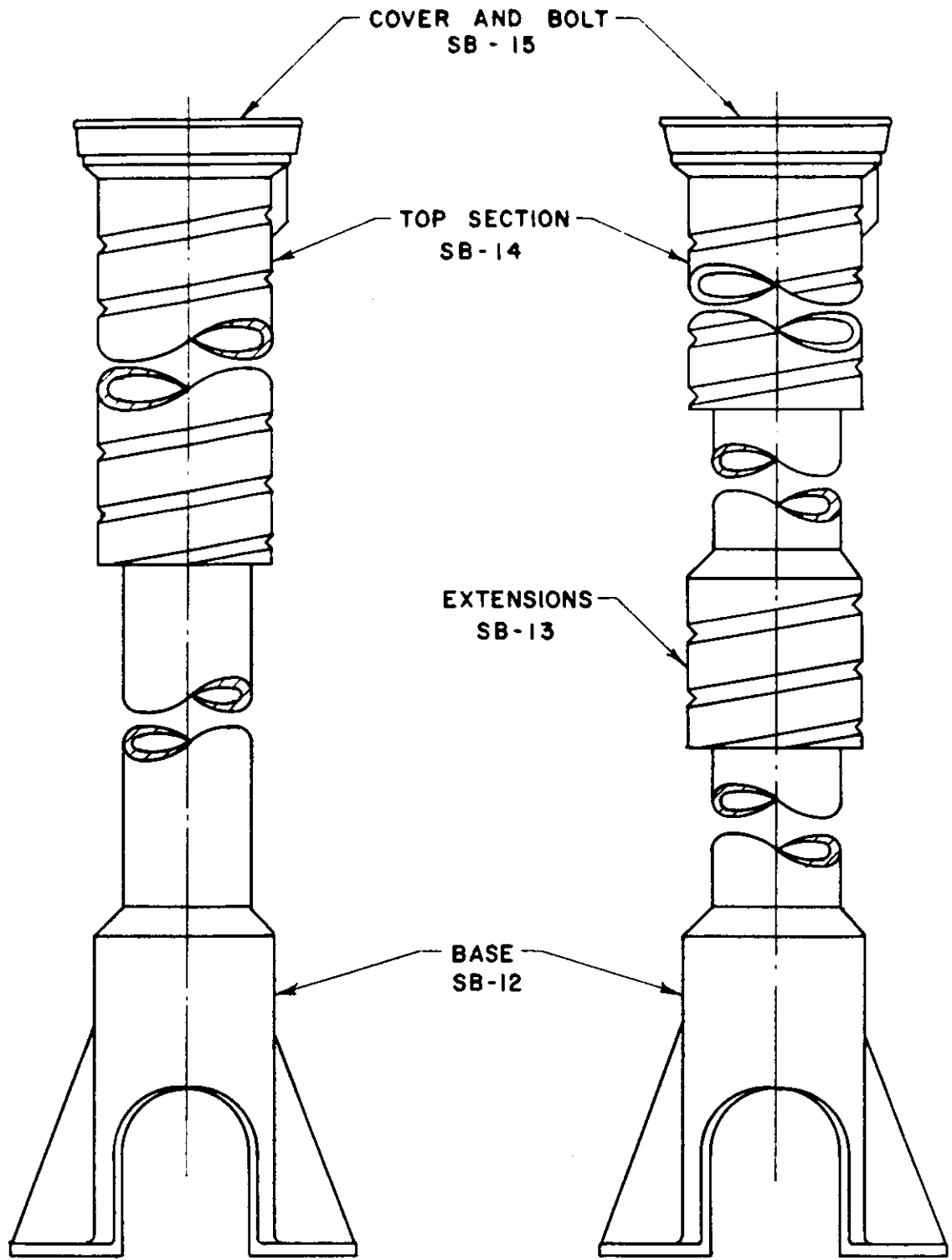
**ENLARGED BASE ADAPTER  
 FOR USE WITH 2 1/2" SERVICE BOX  
 OVER 2" CURB STOPS**



MATERIAL: CAST IRON A.S.T.M. A 48 CL.20,  
 TO BE COATED WITH ASPHALTUM PITCH VARNISH

*Richard E. ...*  
 ENGINEER-IN-CHARGE  
 CITY ENGINEER

DATE 1-23-95  
 SCALE None  
 DRAWN RMB  
 CHECKED DFS  
 FILE A-4-7B  
 DWG. SB-10



STANDARD SERVICE BOX

SERVICE BOX WITH EXTENSION

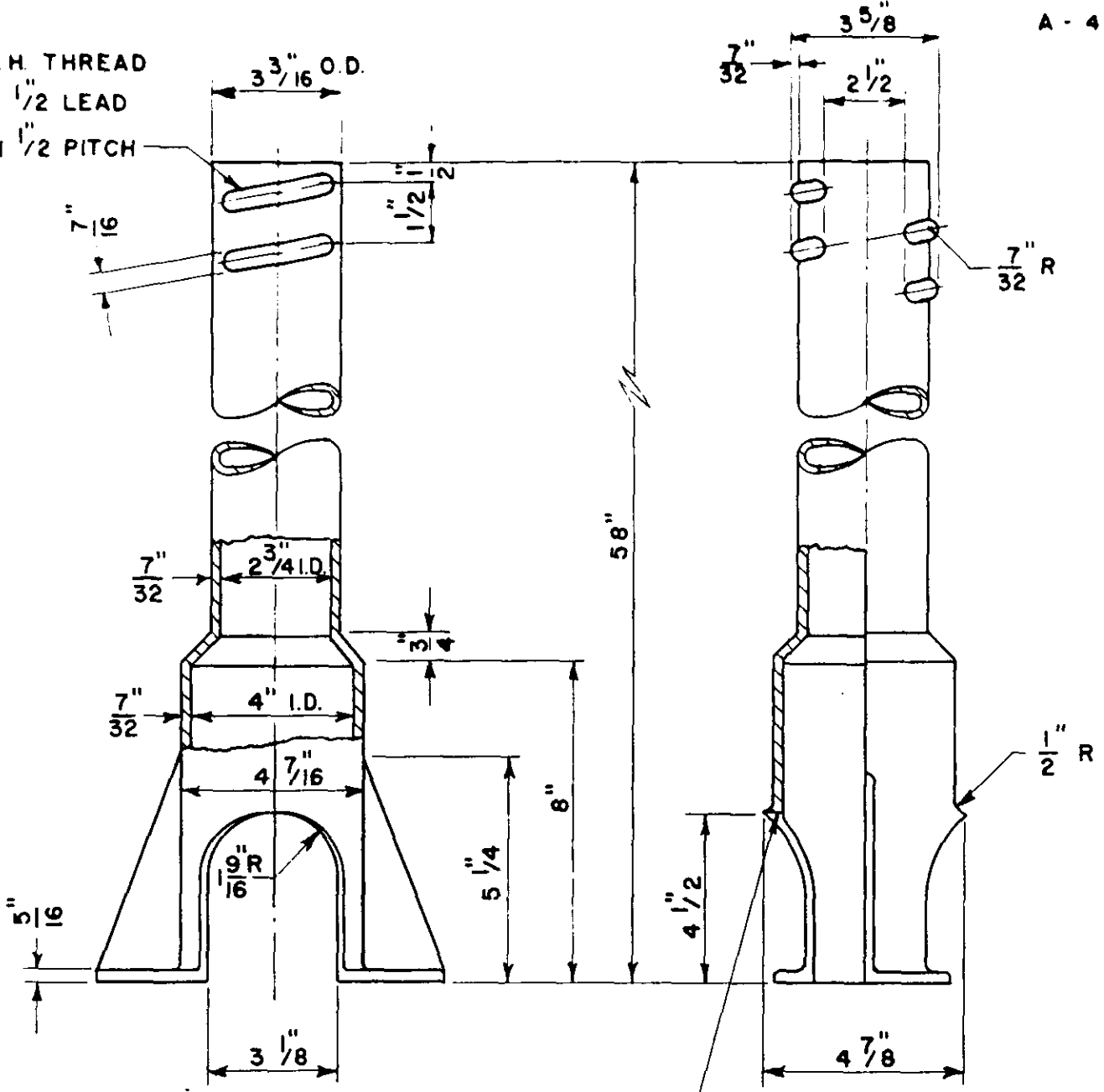
ENVIRONMENTAL ENGINEERING SECTION  
DIVISION OF ENGINEERS  
MILWAUKEE WATER WORKS  
DEPARTMENT OF PUBLIC WORKS

**SERVICE BOX ASSEMBLY (3")**

*Richard L. Kelow* 1/24/95 - *Mariano Schifano*  
 ENGINEER-IN-CHARGE CITY ENGINEER

DRAWN RWB DATE 1-23-95  
 CHECKED DPS SCALE 1/4"=1"  
 FILE A-4-7B DWG. SB-11

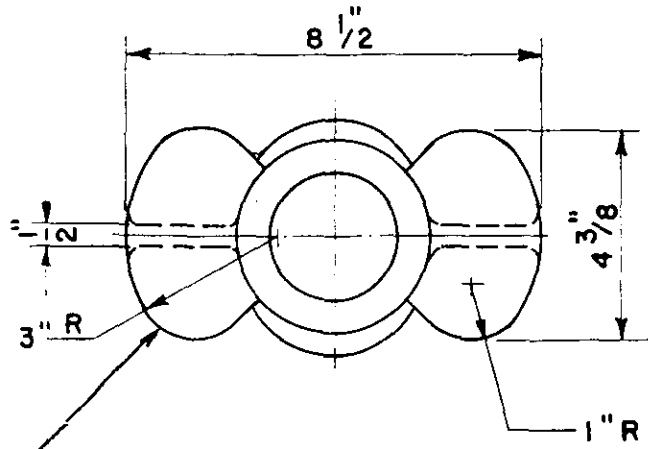
R. H. THREAD  
 1 1/2" LEAD  
 1 1/2" PITCH



**BASE**  
 WEIGHT 40 LBS.

REMOVE ALL SHARP EDGES ON BASE

MATERIAL :-  
 CAST IRON - A.S.T.M. A48 CL. 20  
 TO BE COATED WITH ASPHALTUM  
 PITCH VARNISH.



BASE SUPPORT MAY BE OF  
 MANUFACTURER'S DESIGN

ENVIRONMENTAL ENGINEERING SECTION  
 DIVISION OF ENGINEERS  
 MILWAUKEE WATER WORKS  
 DEPARTMENT OF PUBLIC WORKS

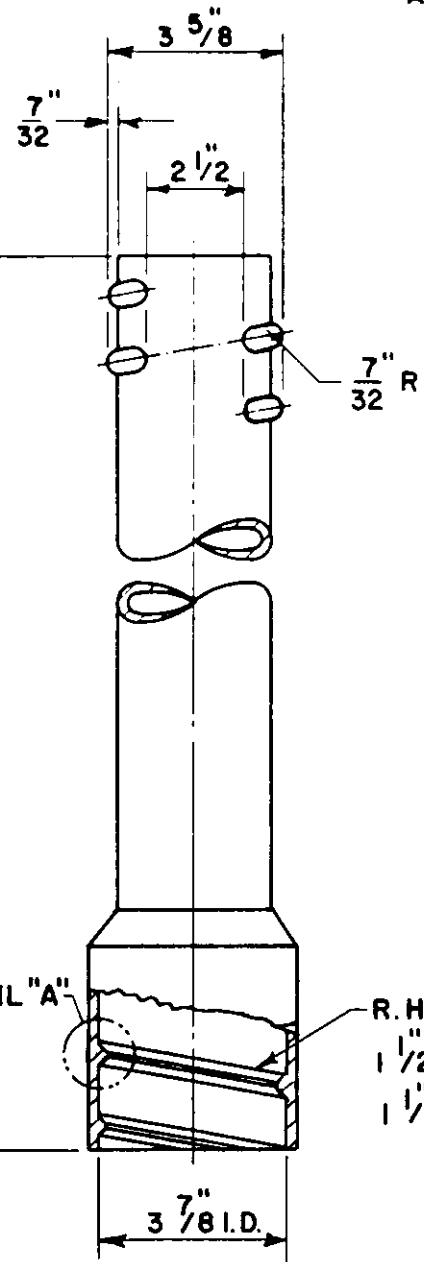
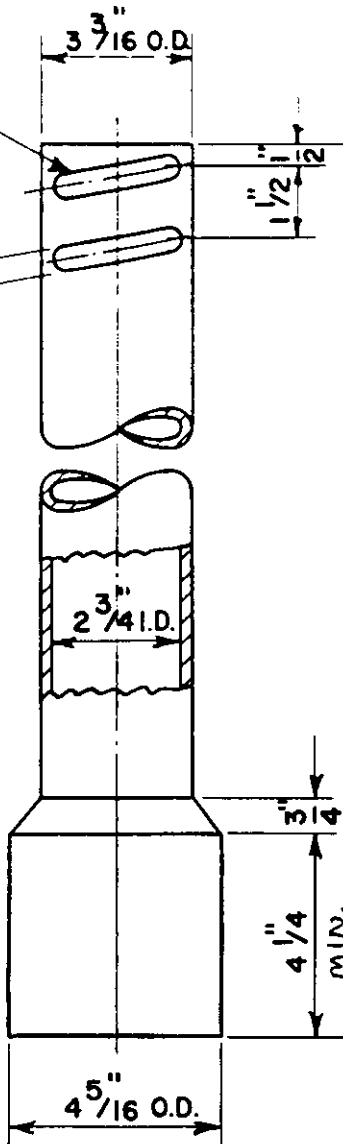
**SERVICE BOX BASE (3")**

*Richard K. Schow* 1/24/95, *Mariano S. Delacruz*  
 ENGINEER-IN-CHARGE CITY ENGINEER

DRAWN	RWB	DATE	1-23-95
CHECKED	DPS	SCALE	1/4"=1"
FILE	A-4-7B	DWG.	SB-12

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

7/16"



EXTENSION

SEE DETAIL "A"

NOTE :-

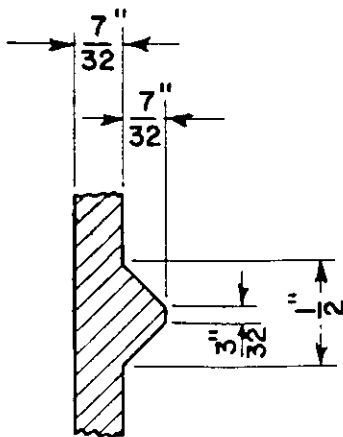
4" ENGAGEMENT EACH END

MATERIAL :-

CAST IRON - A.S.T.M. A 48 CL. 20  
 TO BE COATED WITH ASPHALTUM  
 PITCH VARNISH.

ENVIRONMENTAL ENGINEERING SECTION  
 DIVISION OF ENGINEERS  
 MILWAUKEE WATER WORKS  
 DEPARTMENT OF PUBLIC WORKS

**SERVICE BOX EXTENSION (3")**

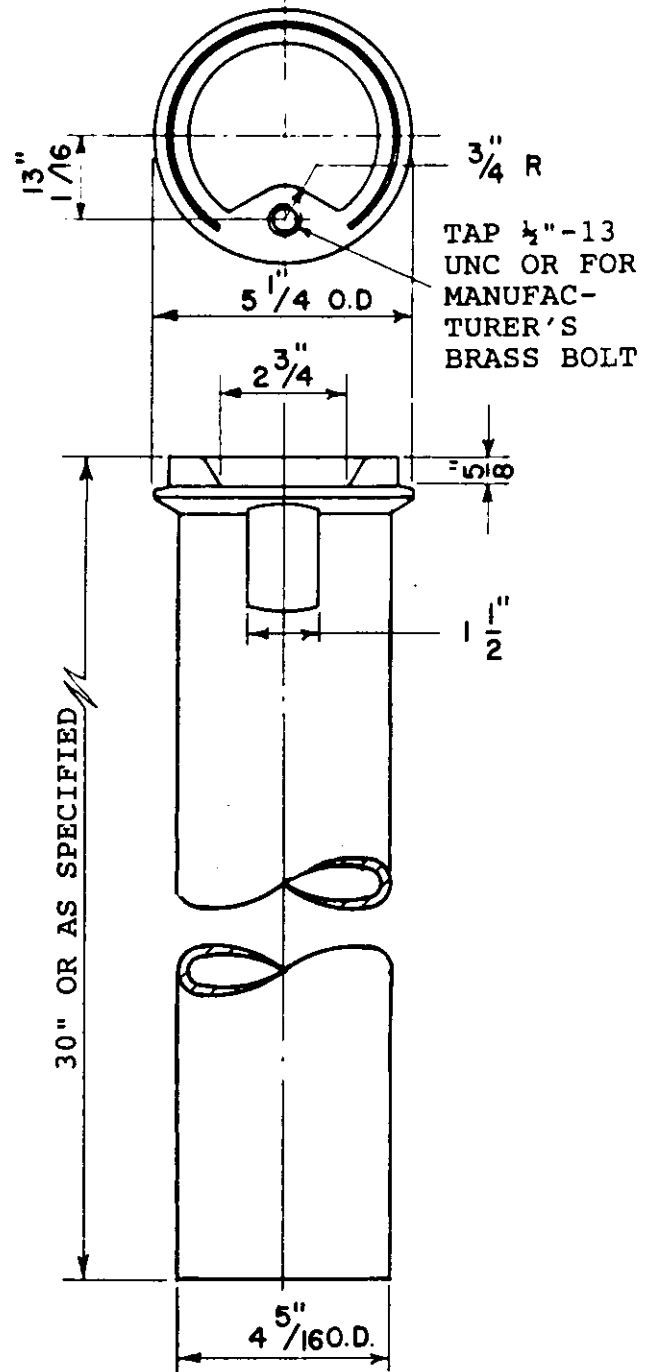
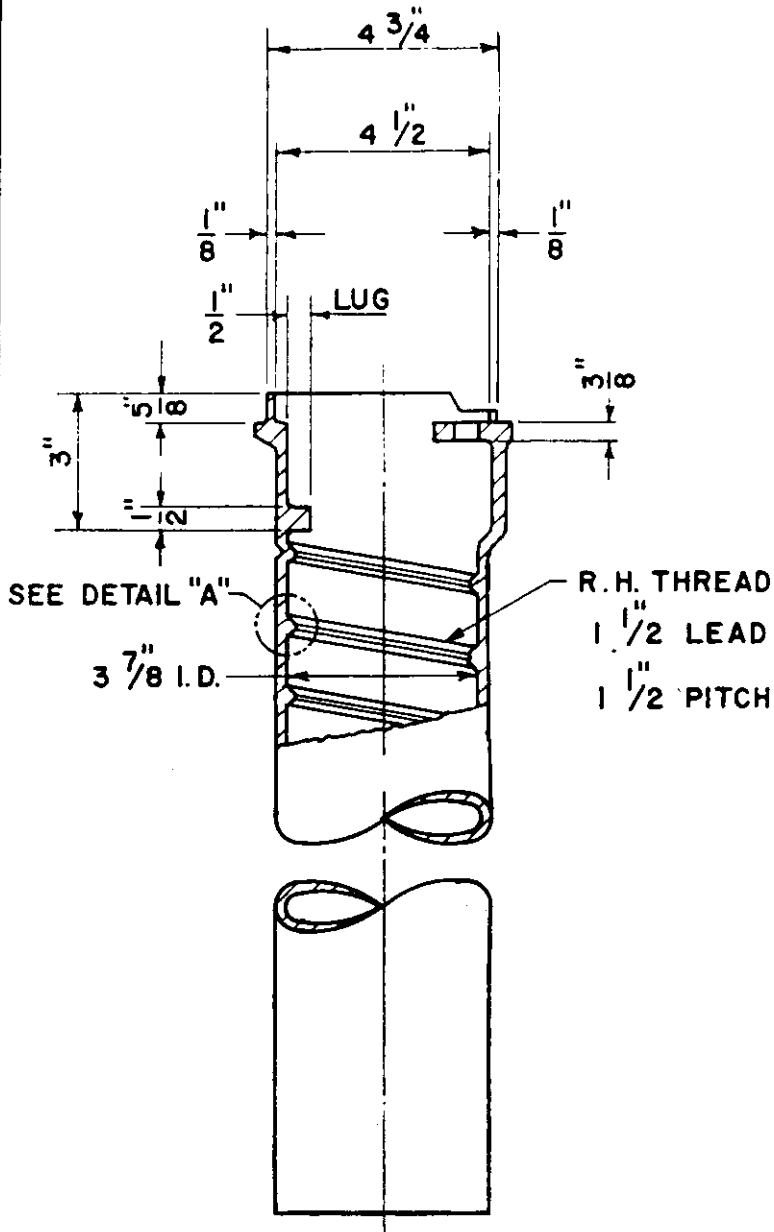


DETAIL "A"  
 SCALE FULL

*Richard Schulz 1/24/91* *Mariano Schiffalacqua*  
 ENGINEER-IN-CHARGE CITY ENGINEER

DRAWN RWB  
 CHECKED DPS  
 FILE A-4-7B

DATE 1-23-95  
 SCALE 1/4"=1"  
 DWG. SB-13



**TOP SECTION**

WEIGHT 27 LBS.

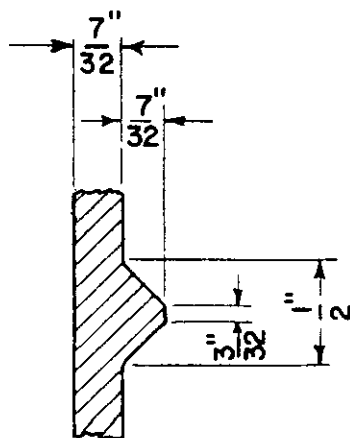
MATERIAL: CAST IRON A.S.T.M. A 48 CL.20  
 TO BE COATED WITH ASPHALTUM PITCH VARNISH

ENVIRONMENTAL ENGINEERING SECTION  
 DIVISION OF ENGINEERS  
 MILWAUKEE WATER WORKS  
 DEPARTMENT OF PUBLIC WORKS

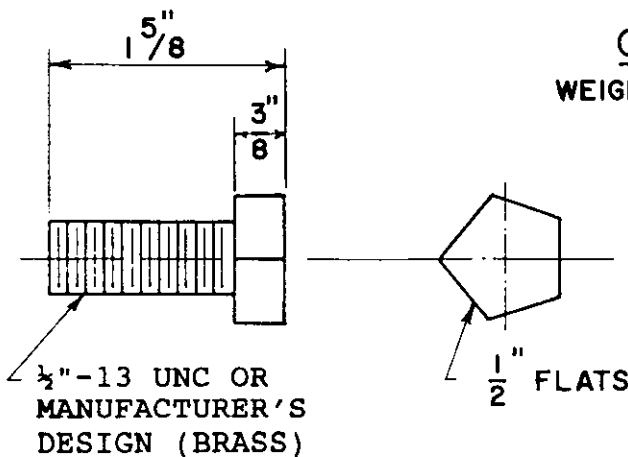
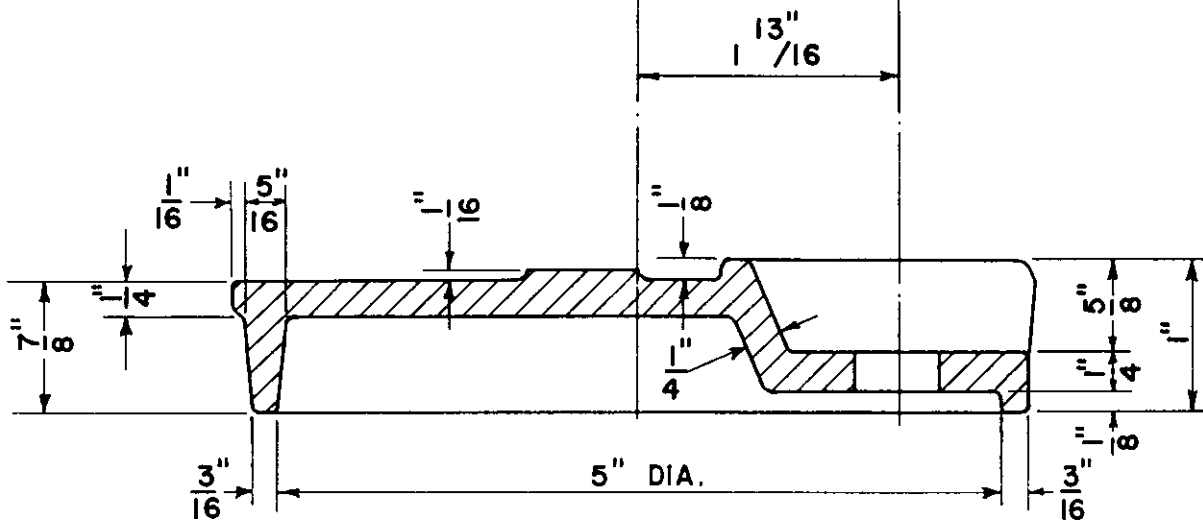
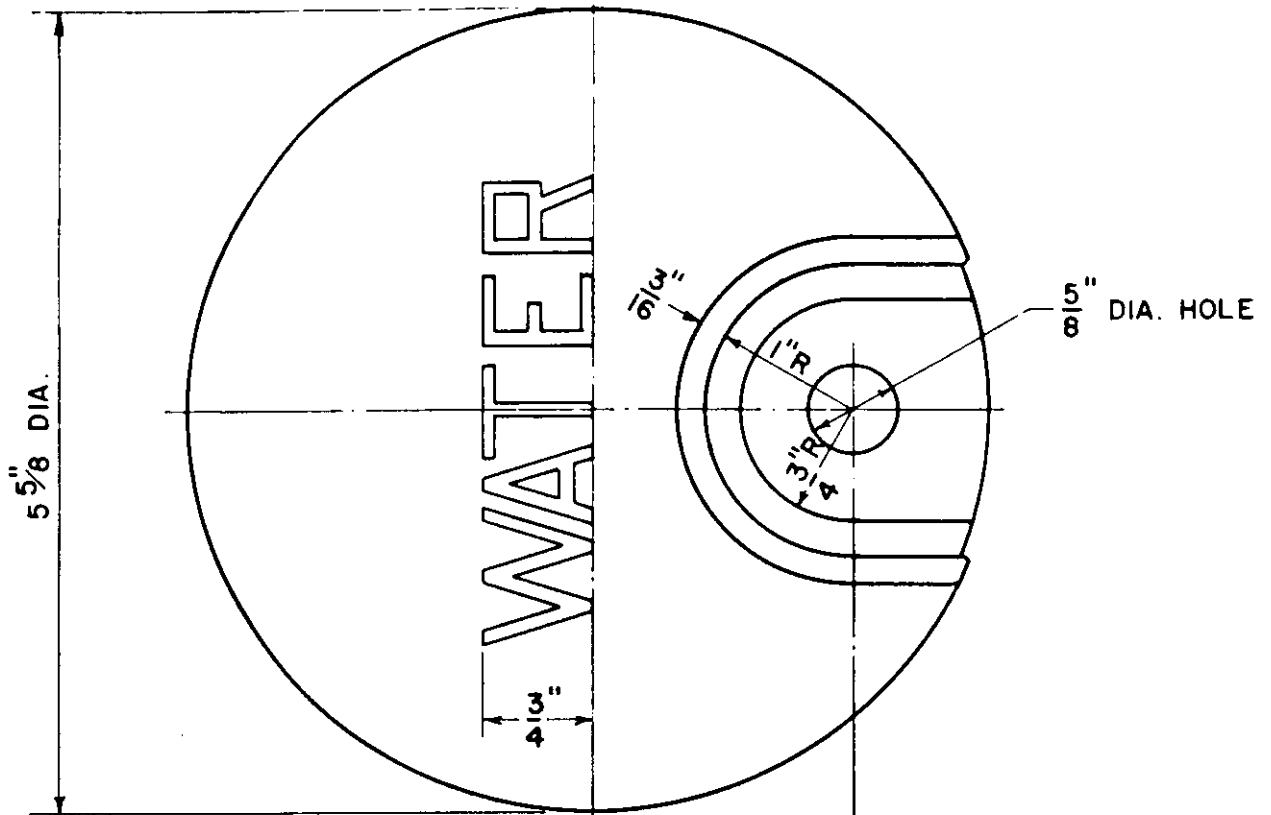
**SERVICE BOX TOP SECTION (3")**

*Richard S. Sulow* 1/24/91 *Mariano S. Palacquin*  
 ENGINEER-IN-CHARGE CITY ENGINEER

DRAWN RWB DATE 1-23-95  
 CHECKED DPS SCALE 1/4"=1"  
 FILE A-4-7B DWG. SB-14



**DETAIL "A"**  
 SCALE FULL



**COVER**  
WEIGHT 2 LBS.

MATERIAL: CAST IRON  
A.S.T.M. A 48 CL.20,  
TO BE COATED WITH  
ASPHALTUM PITCH VARNISH

ENVIRONMENTAL ENGINEERING SECTION  
DIVISION OF ENGINEERS  
MILWAUKEE WATER WORKS  
DEPARTMENT OF PUBLIC WORKS

**SERVICE BOX (3")  
COVER AND BOLT**

*Richard Wilson* 1/24/95 *Mariano Schifano*  
ENGINEER-IN-CHARGE CITY ENGINEER

DRAWN   RWB  

DATE   1-23-95  

CHECKED   DPS  

SCALE   3/4"=1"  

FILE   A-4-7B  

DWG.   SB-15  

**PENTAGON HEAD BOLT**