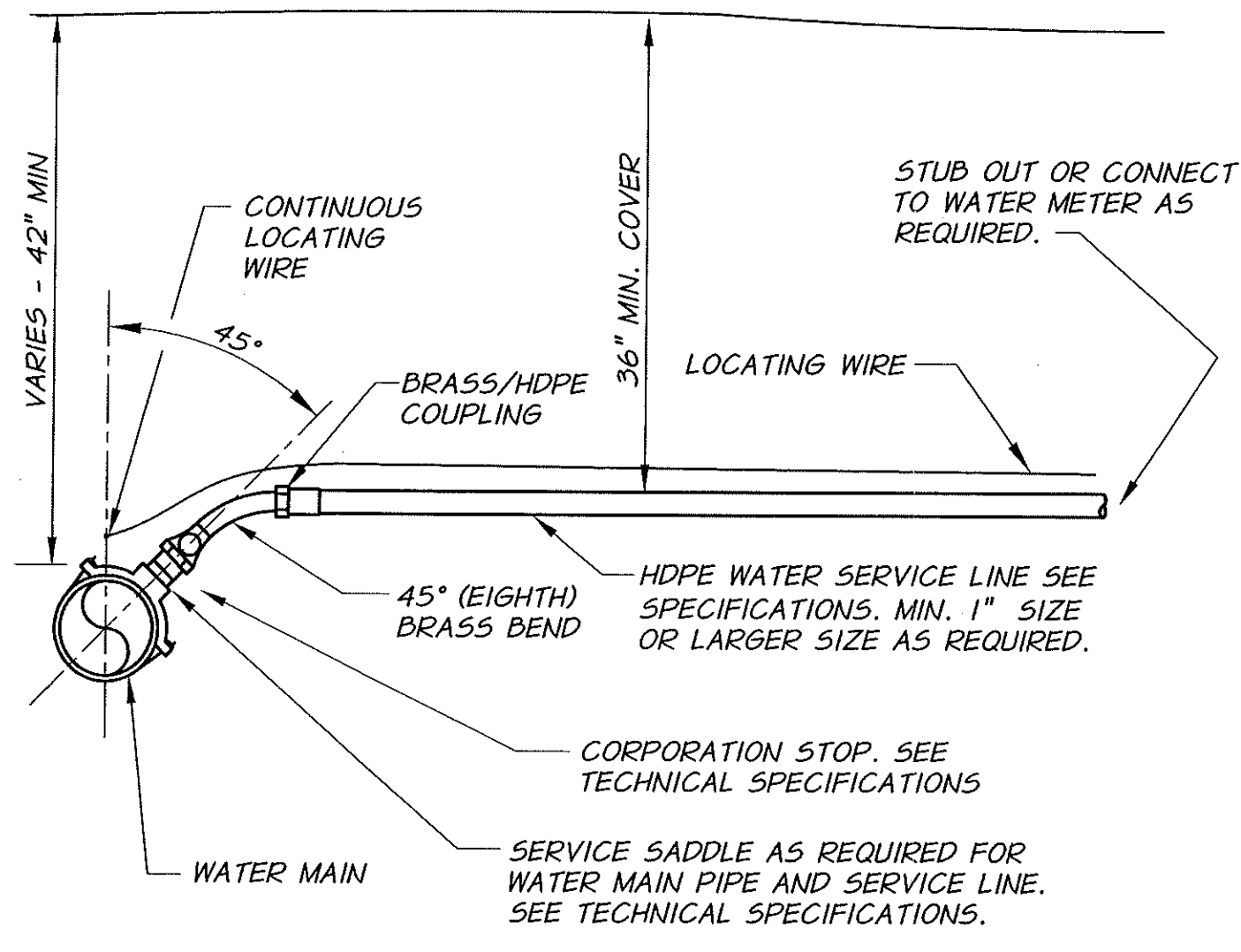


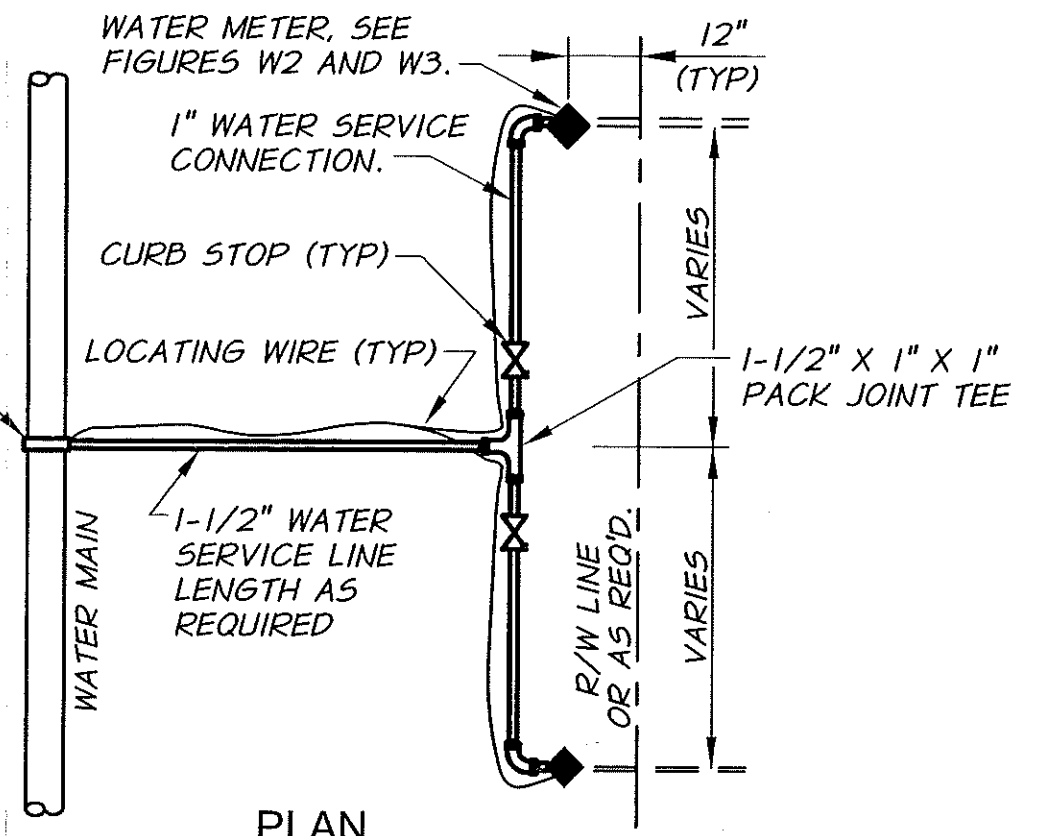
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SECTION
TYPICAL WATER SERVICE LINE
N.T.S.

1-1/2" WATER SERVICE CONNECTION. SEE SECTION DETAIL.

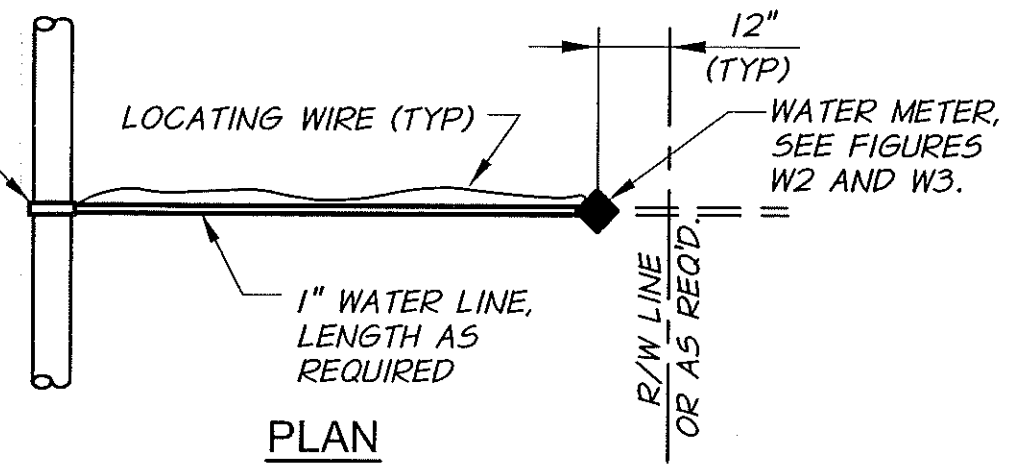
NOTE:
THIS LAYOUT IS SCHEMATIC ONLY. EACH LOCATION WILL REQUIRE SOME VARIATION OF DETAIL SHOWN.



PLAN
MULTIPLE WATER SERVICES
N.T.S.

WATER SERVICE CONNECTION. SEE SECTION DETAIL.

NOTE:
THIS LAYOUT IS SCHEMATIC ONLY. EACH LOCATION WILL REQUIRE SOME VARIATION OF DETAIL SHOWN.



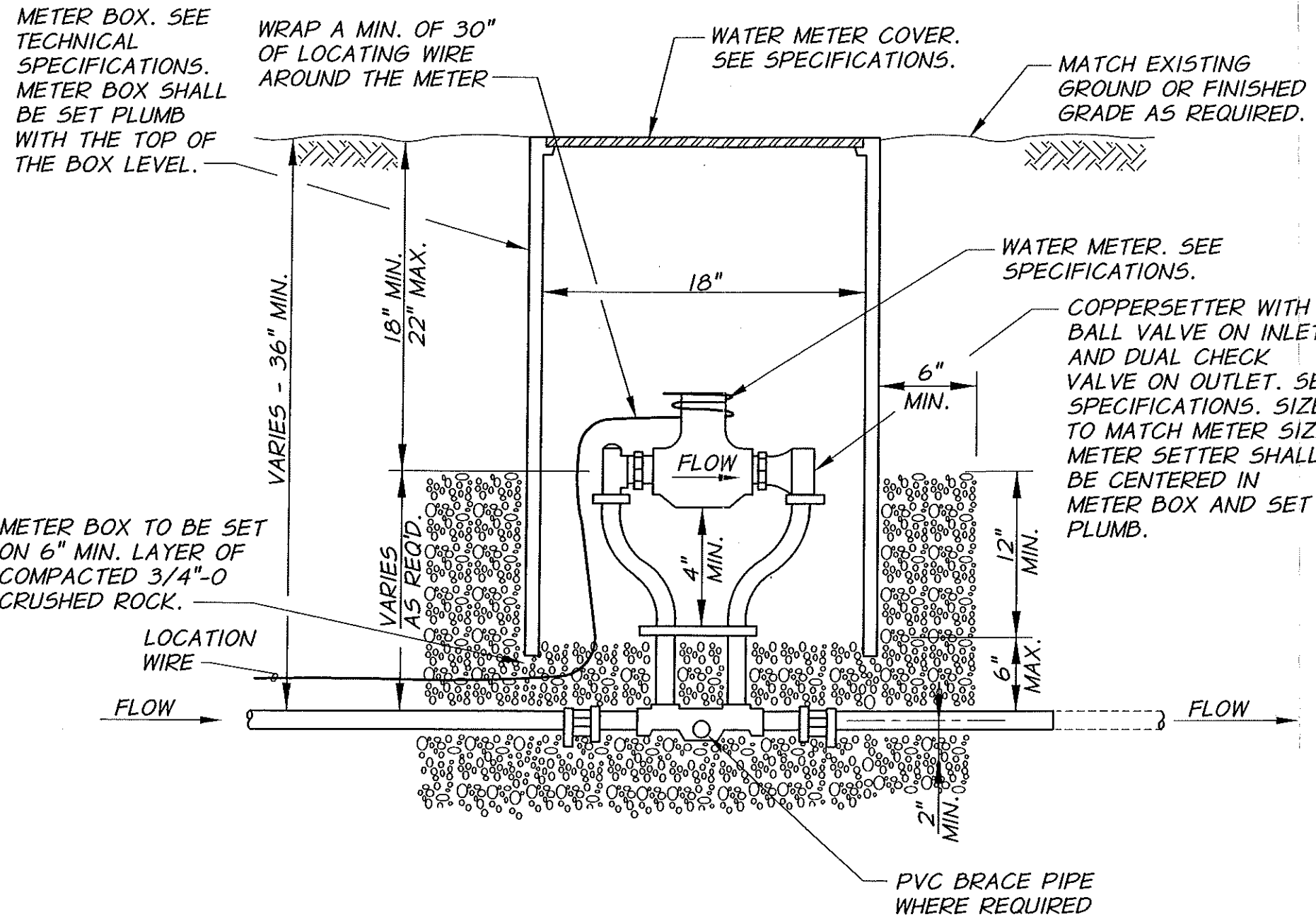
PLAN
SINGLE WATER SERVICE LINE
N.T.S.

REVISION	DATE
ORIGINAL DEVELOPMENT	APRIL 2011

CITY OF
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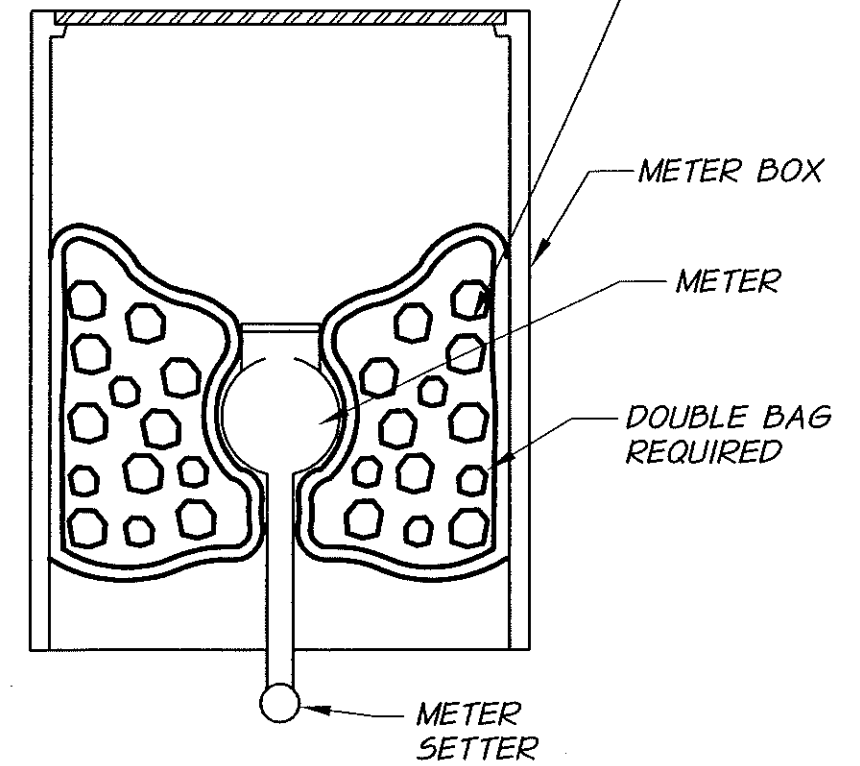
STANDARD WATER DETAILS
WATER SERVICE LINE
SECTION AND PLAN DETAILS

FIGURE
W1



**TYPICAL 1" OR SMALLER
WATER METER INSTALLATION**
N.T.S.

INSTALL THREE BAGS MIN., OR MORE IF REQ'D. BAGS SHALL BE FILLED WITH POLYURETHANE FOAM "PEANUTS". SECURELY HEAT SEAL OR TAPE EACH END OF EACH BAG. DOUBLE BAG EACH BAG UNIT. PLACE BAGS AROUND THE METER SO METER CAN BE READ. PROVIDE PROTOTYPE OF INSULATING BAG FOR APPROVAL BY OWNER BEFORE PROVIDING BAGS FOR PROJECT. CONSOLIDATED PLASTIC CO. INC. (1-800-362-1000) #90349KA 4-MIL. 18" X 20" POLY BAGS OR APPROVED EQUAL.



METER BOX INSULATION DETAIL
(REQUIRED FOR ALL METER INSTALLATIONS)
N.T.S.

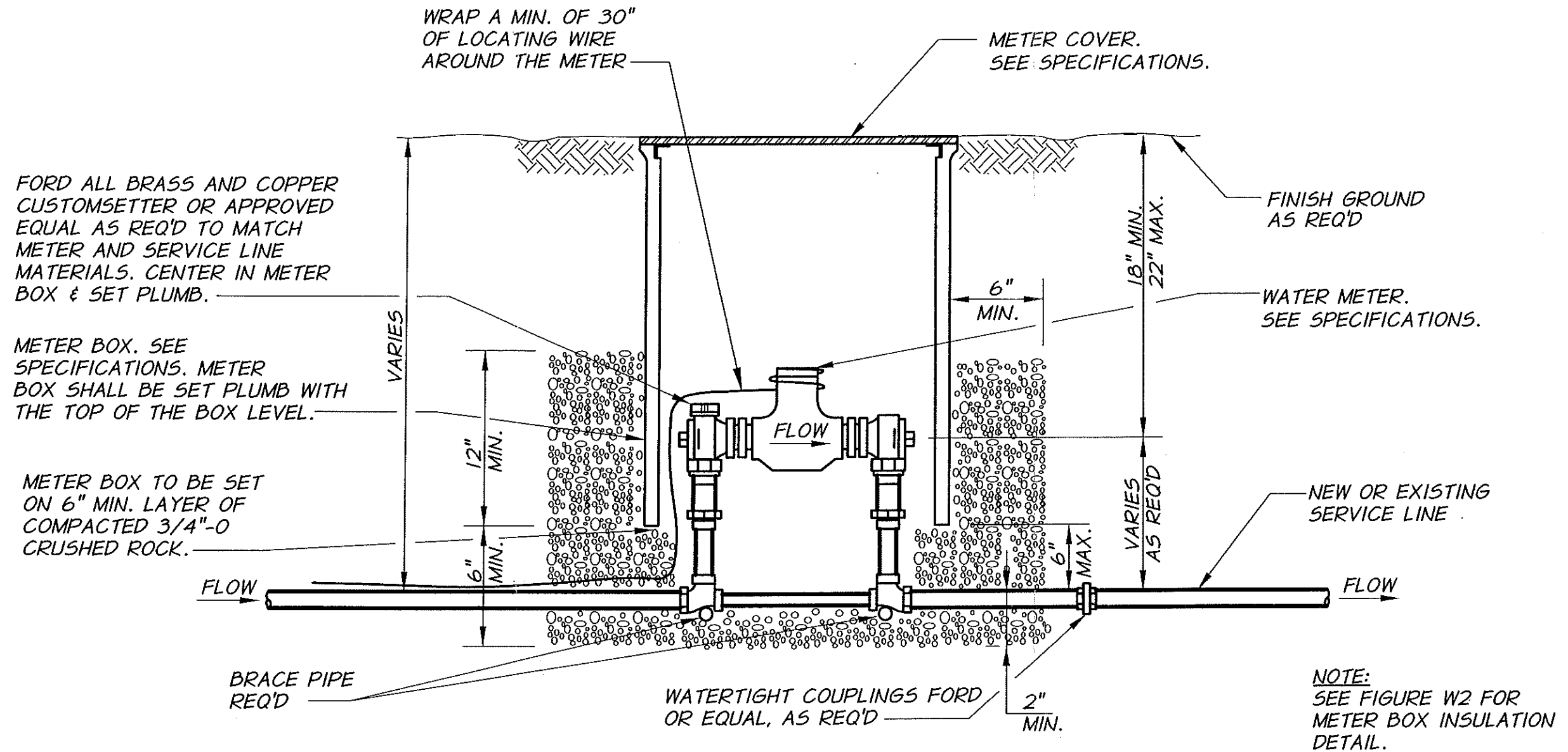
REVISION	DATE
ORIGINAL DEVELOPMENT	APRIL 2011

**CITY OF
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STANDARD WATER DETAILS
WATER METER DETAILS

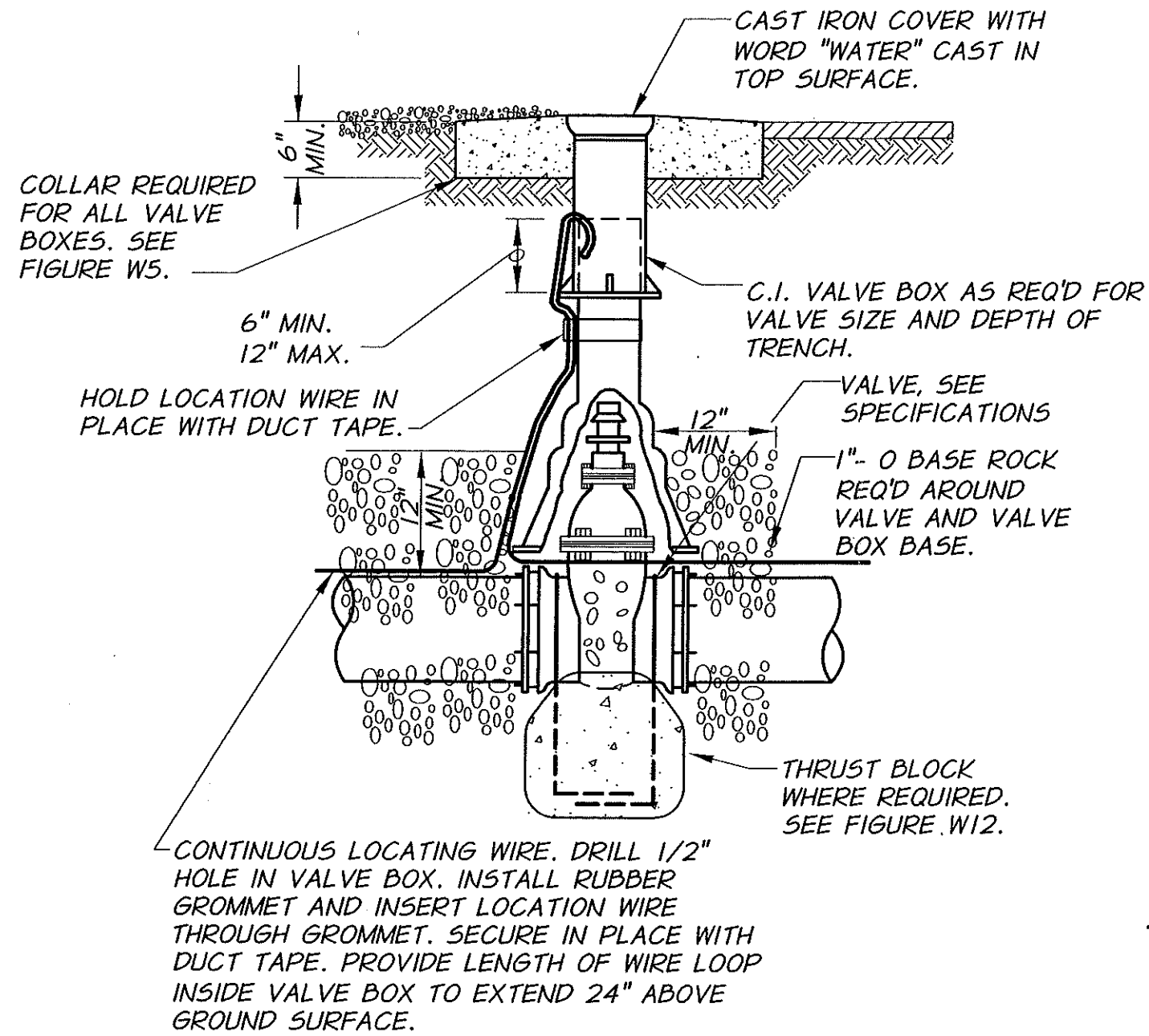
FIGURE
W2

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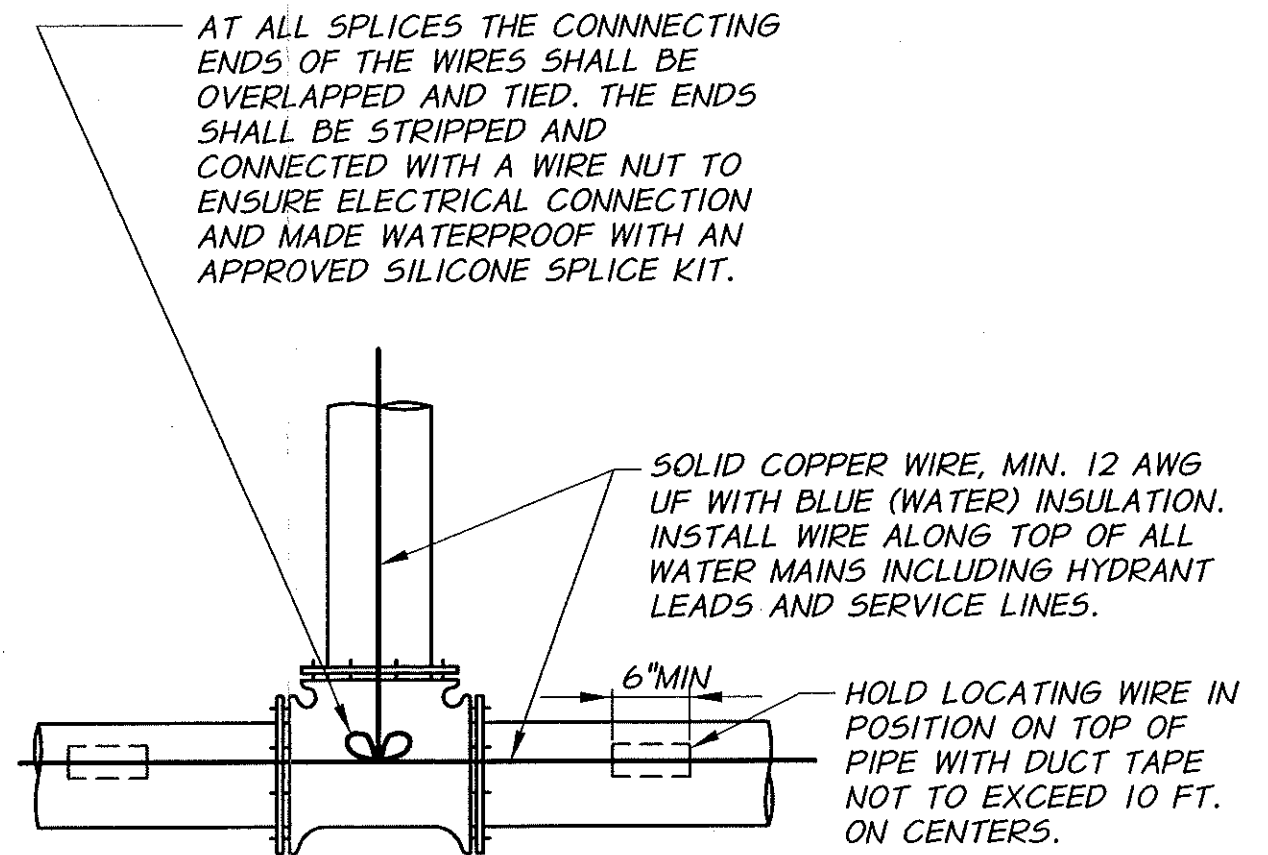


TYPICAL 1 1/2" OR 2" WATER METER INSTALLATION
 (USING COPPER CUSTOMSETTER)
 N.T.S.

REVISION	DATE	CITY OF COVE OREGON	STANDARD WATER DETAILS WATER METER DETAILS	FIGURE W3
ORIGINAL DEVELOPMENT	APRIL 2011			

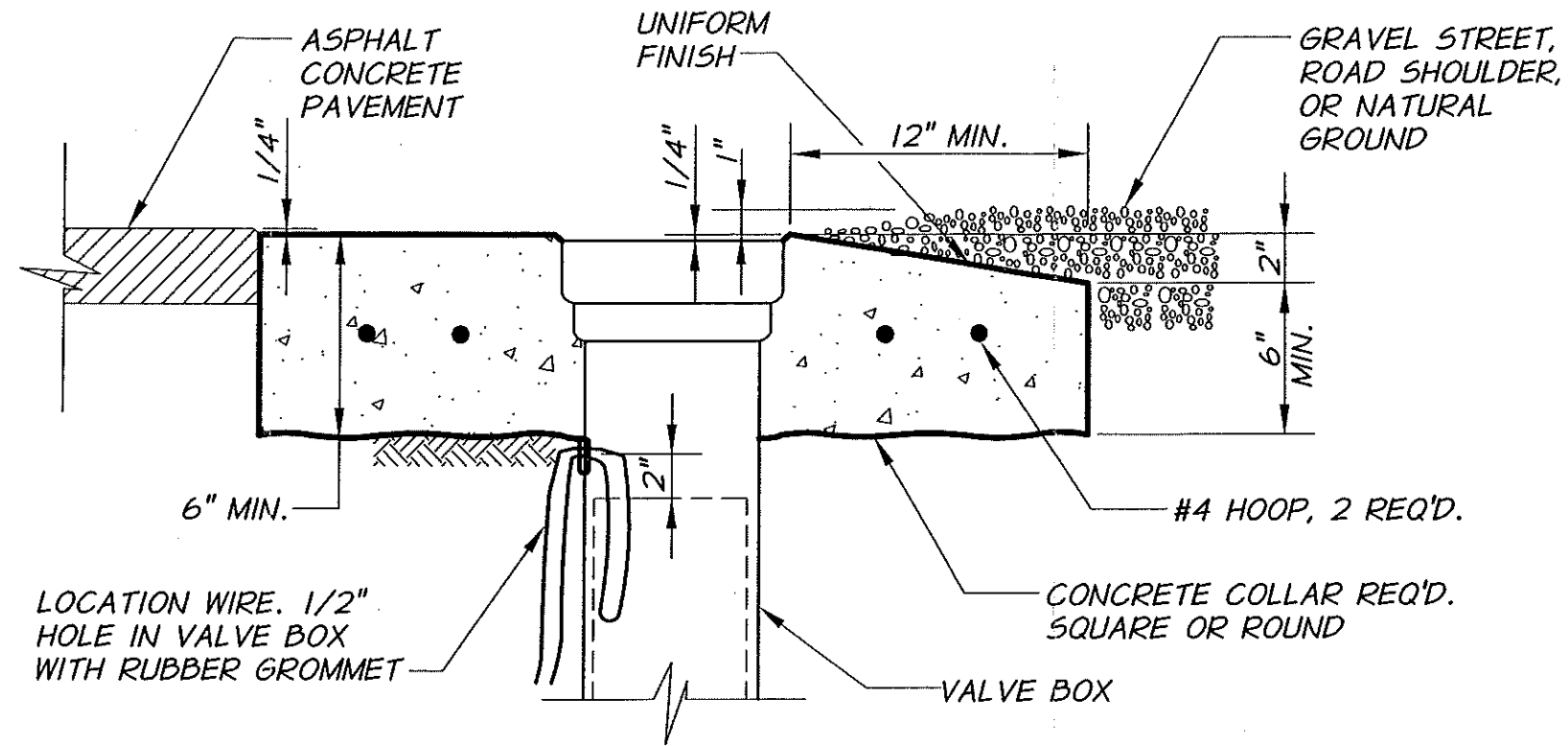


VALVE BOX DETAIL
N.T.S.



CONTINUOUS LOCATING WIRE DETAIL
N.T.S.

REVISION	DATE	CITY OF COVE OREGON	STANDARD WATER DETAILS VALVE BOX AND CONTINUOUS LOCATING WIRE DETAIL	FIGURE W4
ORIGINAL DEVELOPMENT	APRIL 2011			

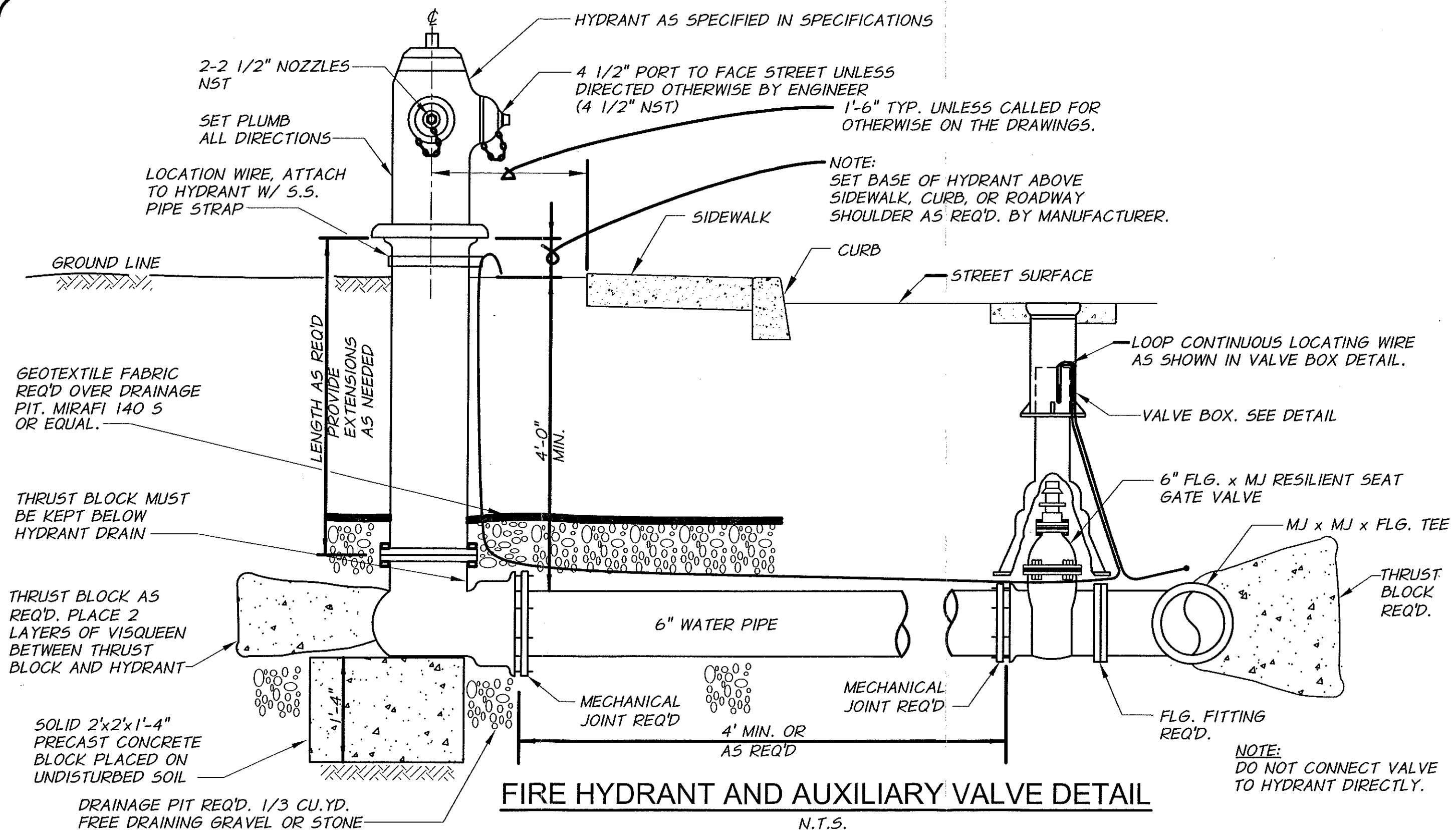


- REQUIREMENTS FOR CONCRETE COLLARS:
1. CONCRETE : 3/4", 7 SACK, 4000 PSI AT 28 DAYS, 2" TO 4" SLUMP, 4-7% AIR.
 2. COLLAR TO BE FORMED AND UNIFORMLY SHAPED.
 3. SMOOTH BROOMED FINISH REQ'D.
 4. APPLY CONCRETE CURING COMPOUND.
 5. PROTECT FROM TRAFFIC FOR 4 DAYS MIN.

VALVE CONCRETE COLLAR DETAIL
 IN ASPHALT STREETS, GRAVEL STREETS, OR NATURAL GROUND
 N.T.S.

REVISION	DATE	CITY OF COVE OREGON	STANDARD WATER DETAILS VALVE CONCRETE COLLAR DETAIL	FIGURE W5
ORIGINAL DEVELOPMENT	APRIL 2011			

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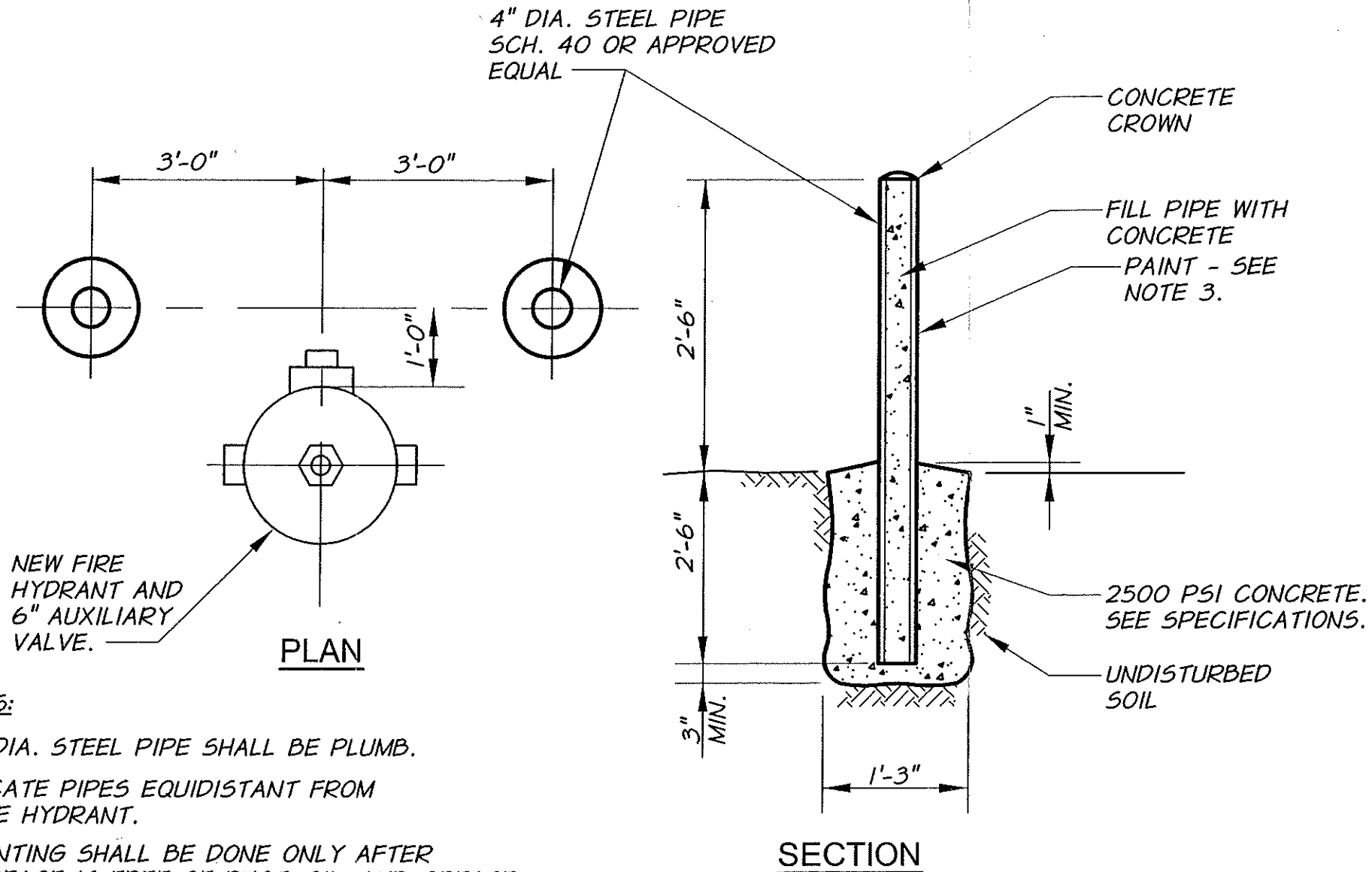


REVISION	DATE
ORIGINAL DEVELOPMENT	APRIL 2011

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STANDARD WATER DETAILS
FIRE HYDRANT AND
AUXILIARY VALVE DETAIL

FIGURE
W6



NOTES:

1. 4" DIA. STEEL PIPE SHALL BE PLUMB.
2. LOCATE PIPES EQUIDISTANT FROM FIRE HYDRANT.
3. PAINTING SHALL BE DONE ONLY AFTER SURFACE IS FREE OF RUST, OIL, AND GREASE. THE METAL SHALL BE PRIMED AND TWO FINISH COATS, YELLOW IN COLOR APPLIED.

FIRE HYDRANT BARRICADE

N.T.S.

REVISION	DATE
ORIGINAL DEVELOPMENT	APRIL 2011

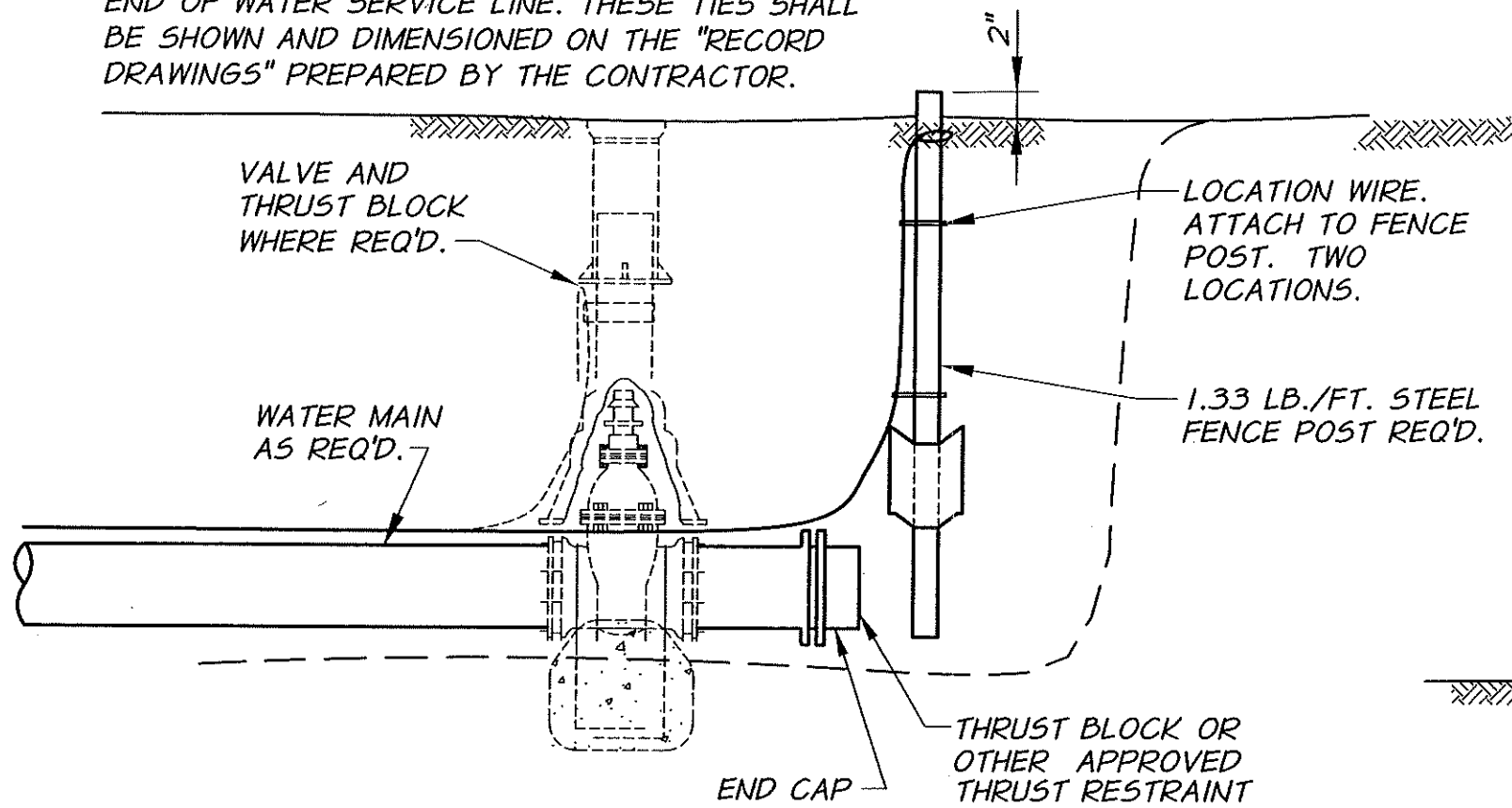
CITY OF
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STANDARD WATER DETAILS
FIRE HYDRANT BARRICADE

FIGURE
W7

NOTE:

THE CONTRACTOR SHALL PROVIDE TWO REFERENCES FROM PERMANENT OBJECTS TO THE END OF WATER SERVICE LINE. THESE TIES SHALL BE SHOWN AND DIMENSIONED ON THE "RECORD DRAWINGS" PREPARED BY THE CONTRACTOR.

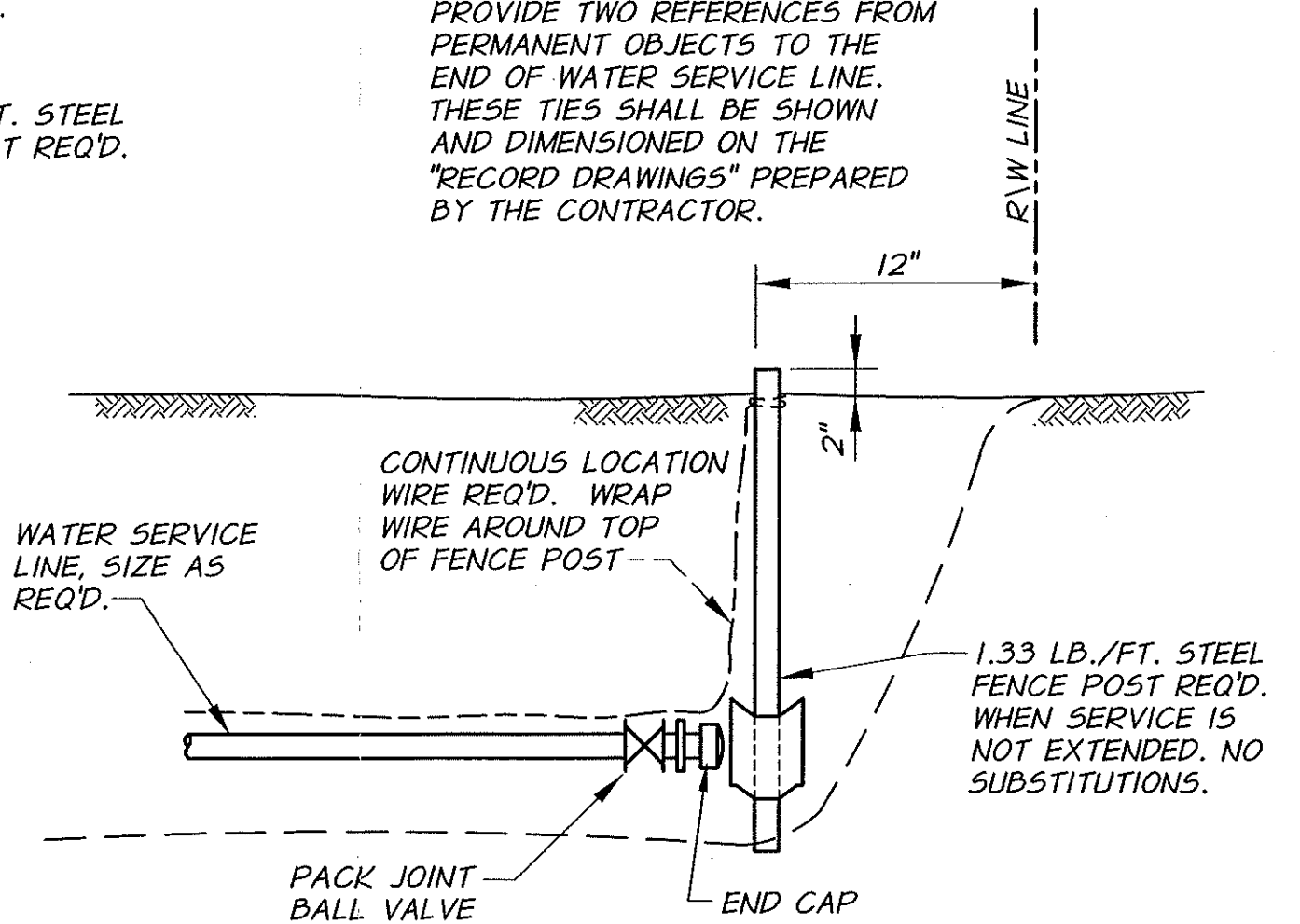


TYPICAL WATER MAIN STUB

SECTION
N.T.S.

NOTE:

THE CONTRACTOR SHALL PROVIDE TWO REFERENCES FROM PERMANENT OBJECTS TO THE END OF WATER SERVICE LINE. THESE TIES SHALL BE SHOWN AND DIMENSIONED ON THE "RECORD DRAWINGS" PREPARED BY THE CONTRACTOR.



TYPICAL WATER SERVICE LINE STUB

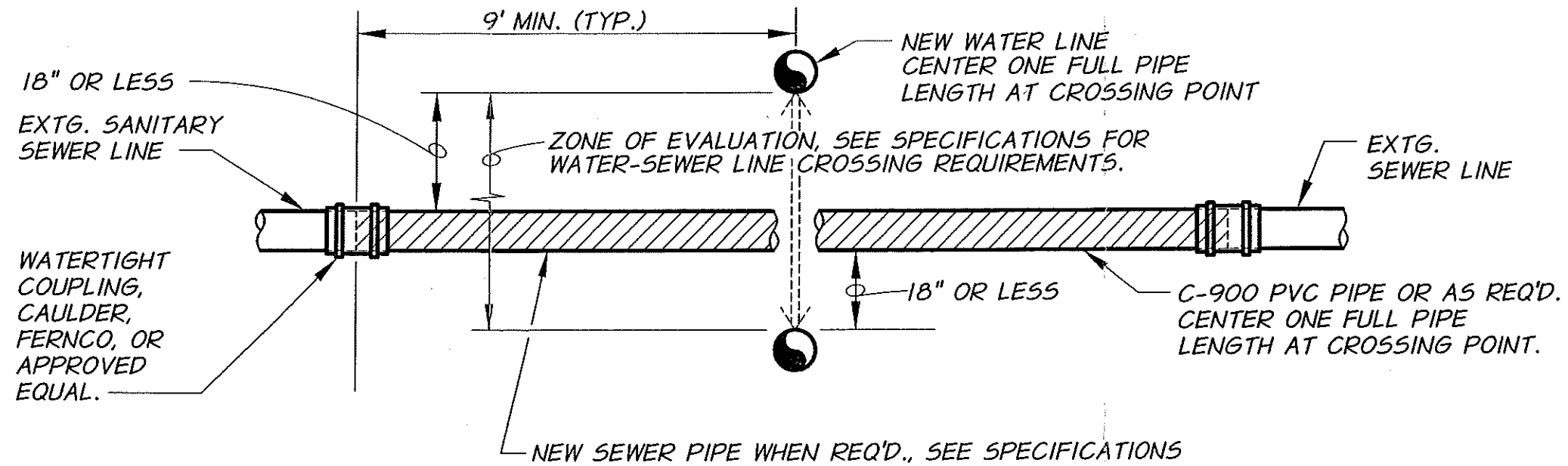
SECTION
N.T.S.

REVISION	DATE
ORIGINAL DEVELOPMENT	APRIL 2011

CITY OF
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STANDARD WATER DETAILS
WATER MAIN AND
SERVICE LINE STUB DETAILS

FIGURE
W8



NOTES:

1. PROVIDE SUPPORT BEAM WHEN REQUIRED. SEE SPECIFICATIONS.
2. ALL BACK FILL IN AREA OF WATER-SEWER CROSSING TO A DEPTH 12" ABOVE THE TOP OF THE HIGHEST PIPE SHALL BE 3/4"-0 BASE ROCK COMPACTED TO 95% OF ASTM D-698 LABORATORY DENSITY.

WATER-SEWER CROSSING
(NEW WATER LINE CONSTRUCTION)

N.T.S.

REVISION	DATE	CITY OF COVE OREGON	STANDARD WATER DETAILS WATER-SEWER CROSSING	FIGURE W9
ORIGINAL DEVELOPMENT	APRIL 2011			

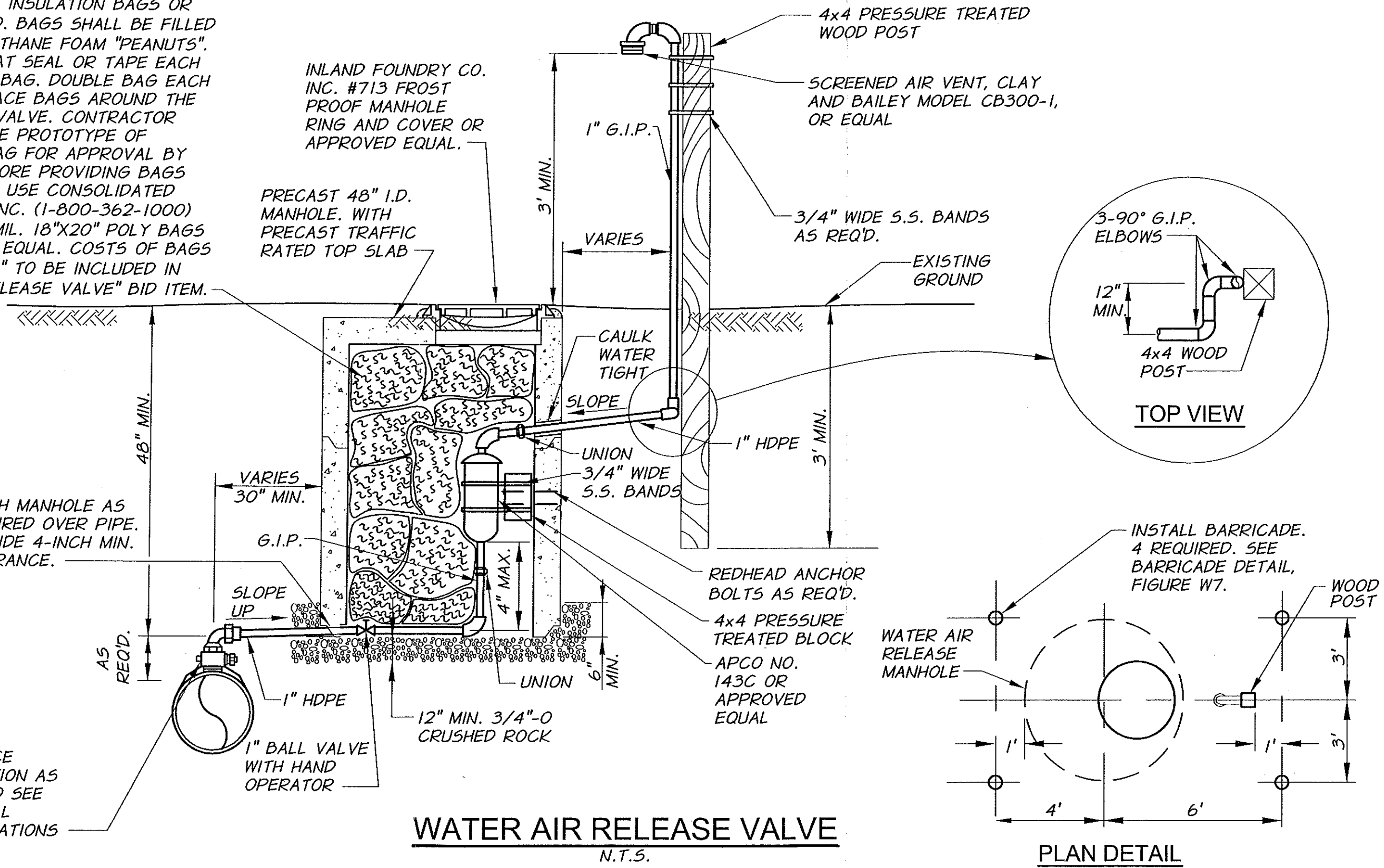
INSTALL 12-14 INSULATION BAGS OR MORE IF REQ'D. BAGS SHALL BE FILLED WITH POLYURETHANE FOAM "PEANUTS". SECURELY HEAT SEAL OR TAPE EACH END OF EACH BAG. DOUBLE BAG EACH BAG UNIT. PLACE BAGS AROUND THE AIR RELEASE VALVE. CONTRACTOR SHALL PROVIDE PROTOTYPE OF INSULATING BAG FOR APPROVAL BY ENGINEER BEFORE PROVIDING BAGS FOR PROJECT. USE CONSOLIDATED PLASTIC CO. INC. (1-800-362-1000) #90349KA 4-MIL. 18"X20" POLY BAGS OR APPROVED EQUAL. COSTS OF BAGS AND "PEANUTS" TO BE INCLUDED IN "WATER AIR RELEASE VALVE" BID ITEM.

INLAND FOUNDRY CO. INC. #713 FROST PROOF MANHOLE RING AND COVER OR APPROVED EQUAL.

PRECAST 48" I.D. MANHOLE. WITH PRECAST TRAFFIC RATED TOP SLAB

NOTCH MANHOLE AS REQUIRED OVER PIPE. PROVIDE 4-INCH MIN. CLEARANCE.

1" SERVICE CONNECTION AS REQUIRED SEE TECHNICAL SPECIFICATIONS



WATER AIR RELEASE VALVE
N.T.S.

PLAN DETAIL

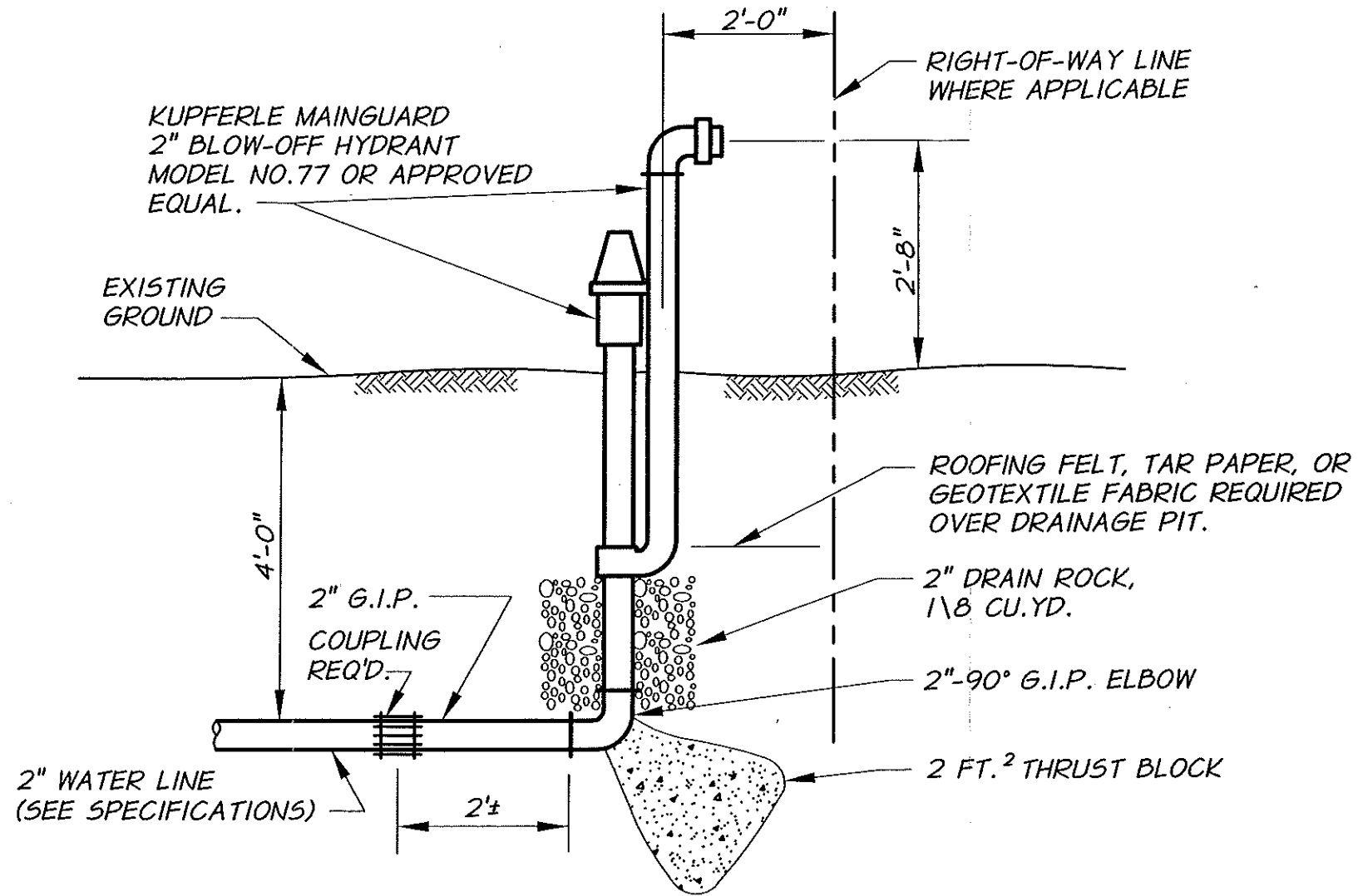
REVISION	DATE
ORIGINAL DEVELOPMENT	APRIL 2011

CITY OF
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STANDARD WATER DETAILS
WATER AIR RELEASE VALVE

FIGURE
W10

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2" WATER LINE BLOW-OFF DETAIL

N.T.S.

REVISION	DATE	CITY OF COVE OREGON	STANDARD WATER DETAILS WATER LINE BLOW-OFF DETAIL	FIGURE W11
ORIGINAL DEVELOPMENT	APRIL 2011			

THRUST BLOCK NOTES

- THRUST BLOCKS SHALL BE REQUIRED AT THE FOLLOWING LOCATIONS:
 - ALL CHANGES IN DIRECTION.
 - ALL DEAD-ENDS.
 - ALL VALVES 10-INCH AND LARGER (SIZE FOR CLOSED CONDITION).
 - AT OTHER LOCATIONS REQUIRED BY THE ENGINEER.
 - AT TEMPORARY DEAD ENDS DURING PIPE INSTALLATION AS REQUIRED FOR TEMPORARY PRESSURE TESTING.
 - AT OTHER LOCATIONS REQUIRED BY THE ENGINEER.
- THRUST BLOCKS SHALL BE SIZED AS REQUIRED BY SOIL CONDITIONS AND DESIGN PRESSURE.
- PLACE CONCRETE AGAINST UNDISTURBED TRENCH WALL.
- CONCRETE SHALL BE 2,500 PSI MINIMUM.
- ALL CONCRETE SHALL BE PLACED SO THAT PIPE, FITTING JOINTS, BOLTS AND NUTS, ETC., WILL BE ACCESSIBLE FOR REPAIRS.
- PLACE ONE LAYER OF VISQUEEN BETWEEN FITTING AND CONCRETE TO FACILITATE FUTURE REMOVAL OF THRUST BLOCK IF REQUIRED.
- ANCHOR RODS SHALL BE 3/4" DIAMETER GALVANIZED STEEL RODS OR #6 EPOXY COATED REINFORCEMENT BAR, AASHTO M284, HAVING AN 18" MINIMUM EMBEDMENT IN CONCRETE.
- THRUST BLOCKING SHALL BE SIZED FOR 150 PSI WATER PRESSURE
- IF THE REQUIRED BEARING AREA IS LESS THAN 1 SQUARE FOOT, A THRUST BLOCK SHALL NOT BE REQUIRED.

DETERMINATION OF THRUST BLOCK BEARING AREA

NOTE: WHEN THRUST BLOCK BEARING AREA IS NOT SPECIFIED ON THE PLANS OR DETERMINED BY THE ENGINEER, THE FOLLOWING PROCEDURE SHALL BE USED TO DETERMINE REQUIRED BEARING AREA.

- DETERMINE THRUST (T) FOR TYPE OF FITTING OR JOINT AND SIZE OF PIPE, FROM TABLE NO. 1 OR TABLE NO. 3.
- DETERMINE BEARING CAPACITY (B) OF SOIL FROM TABLE NO. 2.
- DETERMINE REQUIRED BEARING AREA (A) AS FOLLOWS:
 $A = T + B$

EXAMPLE: DESIGN PRESSURE = 175 PSI
 PIPE = 12"
 FITTING = TEE
 SOIL = SANDY GRAVEL
 FROM TABLE NO. 1: T = 15,310 LB.
 FROM TABLE NO. 2: B = 3000 LB/FT²
 $A = 15,310 \times 1.75 = 8.9 \text{ FT}^2$
 3,000

TABLE NO. 1
 THRUST AT FITTINGS IN POUNDS AT 100 PSI OF WATER PRESSURE

PIPE SIZE	TEES AND DEAD ENDS	90° BEND	45° BEND	22 1/2° BEND	11 1/4° BEND
4"	1,850	2,610	1,420	720	394
6"	3,800	5,370	2,910	1,470	810
8"	6,580	9,300	5,040	2,550	1,372
10"	10,750	15,200	8,240	4,170	2,216
12"	15,310	21,640	11,720	5,940	3,128
14"	20,770	29,360	15,910	8,060	4,241
16"	26,880	38,010	20,590	10,430	5,468
18"	29,865	42,235	22,858	11,653	5,855

NOTE: FOR WATER PRESSURES DIFFERENT THAN 100 PSI, MULTIPLY THRUST FOUND IN TABLE NO. 1 BY REQUIRED PROPORTION.
 EXAMPLE: DESIGN PRESSURE = 175 PSI. MULTIPLY VALUE IN TABLE BY 1.75

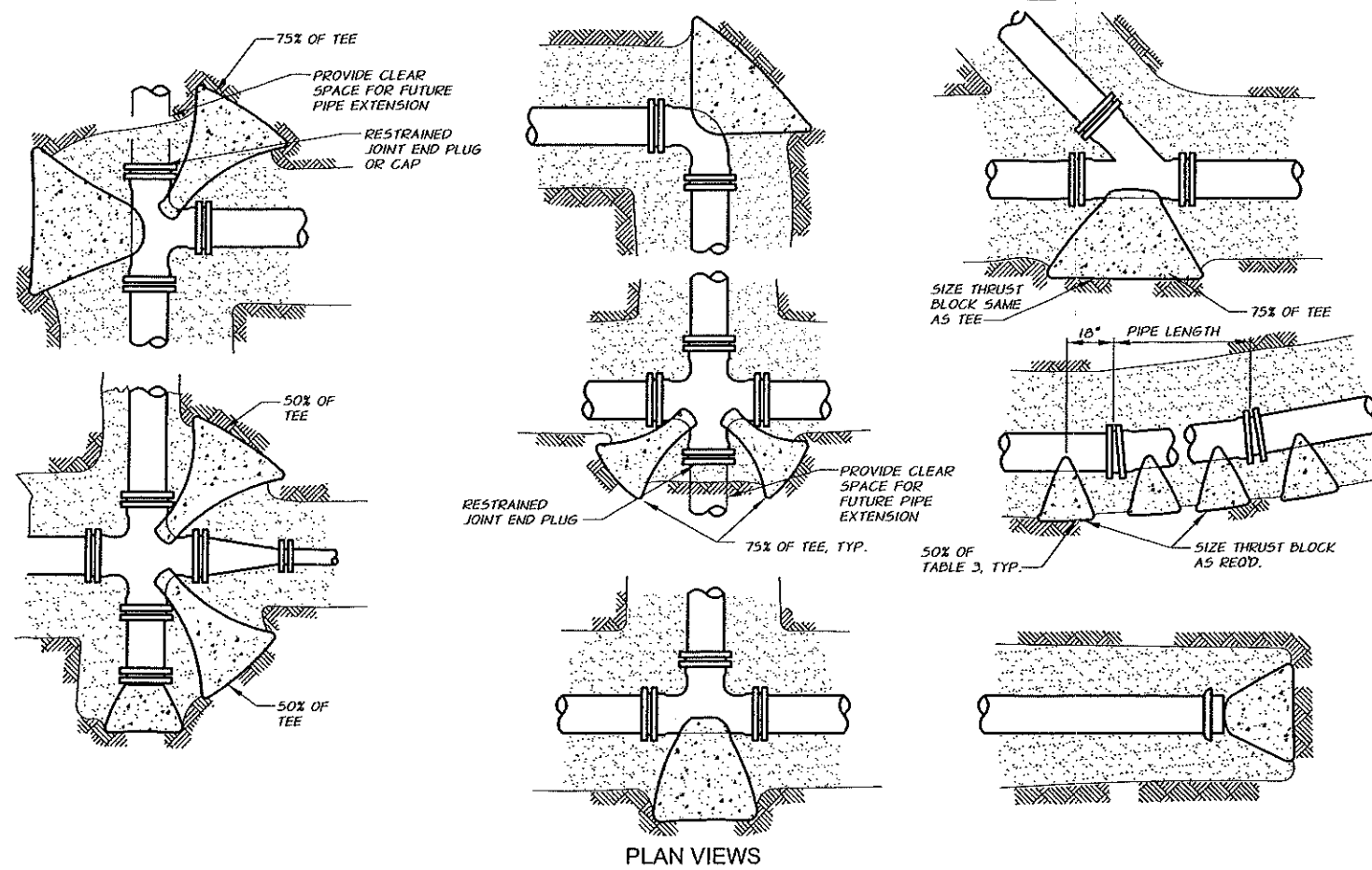
TABLE NO. 2

SOIL	SAFE BEARING LOAD LB/FT ²
SOFT CLAY	500
SILT	1,000
SAND	2,000
SAND AND GRAVEL	3,000
SAND AND GRAVEL CEMENTED WITH CLAY	4,000
HARD CLAY	4,000

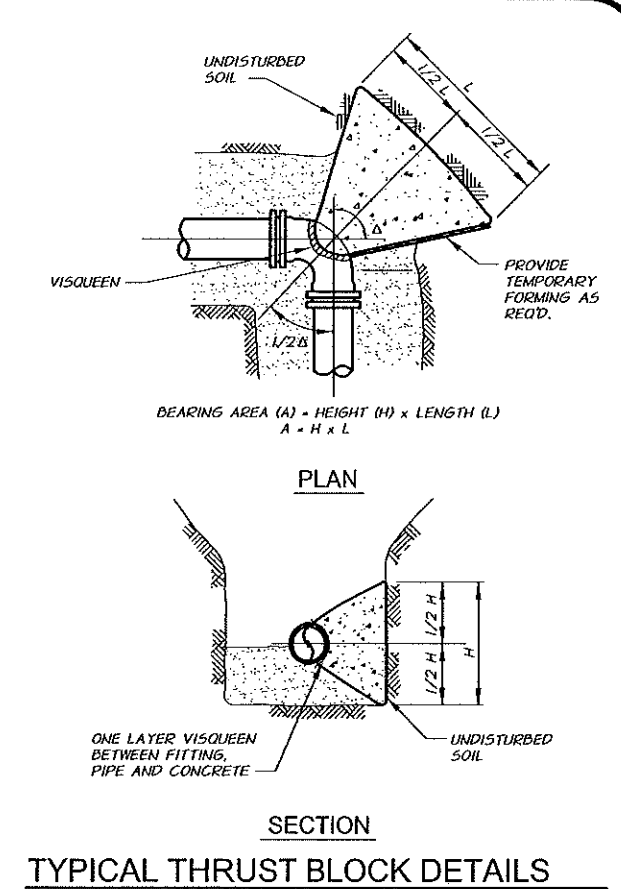
TABLE NO. 3

SIDE THRUST PER 100 LB./SQ. IN. PRESSURE PER DEGREE OF DEFLECTION			
PIPE SIZE	SIDE THRUST-LB	PIPE SIZE	SIDE THRUST-LB
4"	N/A	14	377
6"	N/A	16	486
8"	N/A	18	665
10"	197	20	790
12"	278	24	1,150

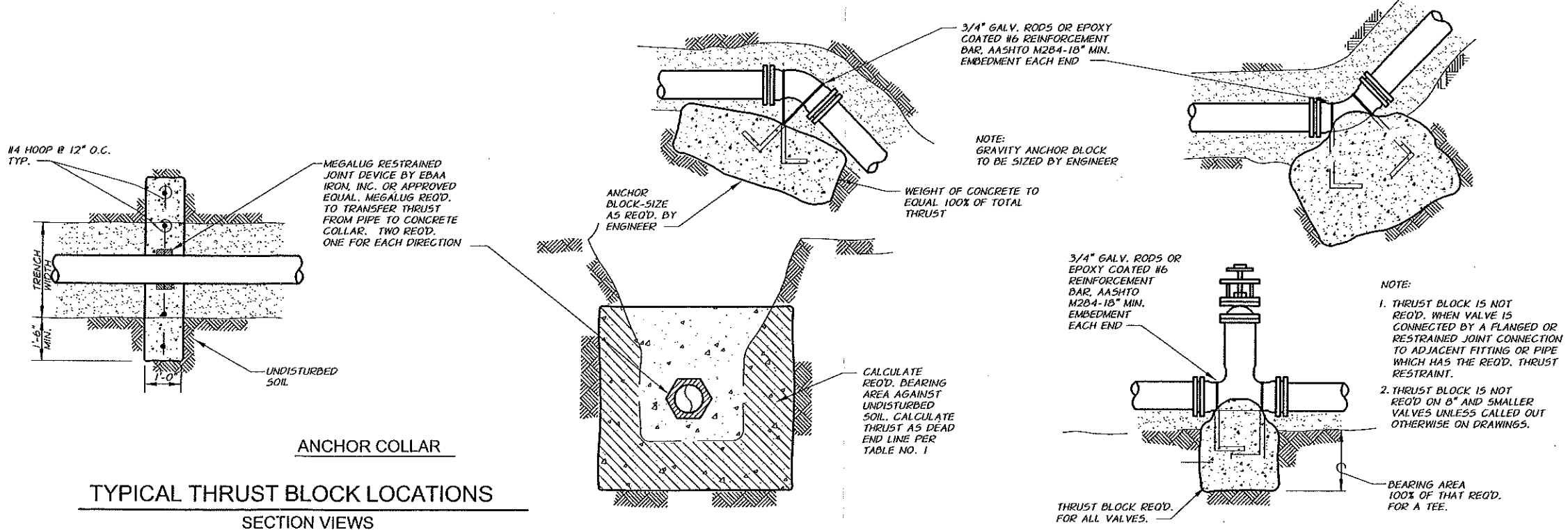
MULTIPLY THRUST BY DEGREE OF DEFLECTION TO OBTAIN TOTAL THRUST



PLAN VIEWS



SECTION TYPICAL THRUST BLOCK DETAILS



REVISION	DATE	CITY OF COVE OREGON	STANDARD WATER DETAILS THRUST BLOCK DETAILS	FIGURE W12
ORIGINAL DEVELOPMENT	APRIL 2011			