

TRENCH DETAIL

NOTES:

1. BEDDING MATERIAL SHALL BE GRANULAR, CLEAN, CONCRESE LAYERS NOT TO EXCEED 6" LIFT FOR THE FULL WIDTH OF THE TRENCH.
2. THE SECOND LAYER SHALL BE PROPERLY ROLLED AROUND THE PIPE MANHOLES.
3. BEDDING MATERIAL SHALL EXTEND TO UNDISTURBED TRENCH WALLS AND TRENCH BOTTOM OVERAGE OF BEDDING MATERIAL PROJECT REPRESENTATIVE AND SHALL ONLY BE PAID FOR IN THE AMOUNT OF THE AUTHORIZED QUANTITY.
4. BEDDING MATERIAL SHALL BE PROPERLY ROLLED AROUND THE PIPE MANHOLES.

NOTE:

1. BEDDING MATERIAL QUANTITIES ARE CALCULATED BASED ON THE FOLLOWING TRENCH WIDTHS. BEDDING MATERIAL SHALL BE COMPACTED TO 95% MAX DENSITY AS DETERMINED BY ASTM D1557.

FOR 42" RCP/24" B&P	D=4'-6"
FOR 42" RCP/24" B&P	D=5'-4"
FOR 36" RCP/24" B&P	D=6'-2"
FOR 36" RCP/24" B&P	D=7'-0"
FOR 30" RCP/24" B&P	D=7'-8"
FOR 30" RCP/24" B&P	D=8'-6"
FOR 24" RCP/24" B&P	D=9'-4"
FOR 24" RCP/24" B&P	D=10'-2"

2. BEDDING MATERIAL SHALL BE GRANULAR, CLEAN, CONCRESE LAYERS NOT TO EXCEED 6" LIFT FOR THE FULL WIDTH OF THE TRENCH.

TYPICAL CONFLICT RESOLUTION DETAIL BY DEFLECTION

NOTES:

1. WAKES SHALL BE USED TO AVOID EXCESSIVE DEFLECTIONS AND EXCESSIVE DEFLECTIONS ARE SHOWN ON THE DRAWINGS.
2. PIPE DEFLECTION MUST NOT EXCEED MANUFACTURER'S RECOMMENDATION.

NOTE:

1. WAKES SHALL BE USED TO AVOID EXCESSIVE DEFLECTIONS AND EXCESSIVE DEFLECTIONS ARE SHOWN ON THE DRAWINGS.

UTILITY SEPARATION DETAILS

NOTES:

1. SANITARY GRAVITY FORCE MAIN, HOUSE MAIN, STORM MAIN, AND GAS MAIN SHALL BE SEPARATED BY MINIMUM 18" CLEARANCE.
2. A MINIMUM 18" CLEARANCE SHALL BE MAINTAINED BETWEEN ALL UTILITIES.
3. ALL UTILITIES SHALL BE PROTECTED BY 1/2" THICK POLYETHYLENE GLASS FIBER REINFORCED PLASTIC (FRP) SHEATHING.
4. ALL UTILITIES SHALL BE PROTECTED BY 1/2" THICK POLYETHYLENE GLASS FIBER REINFORCED PLASTIC (FRP) SHEATHING.
5. ALL UTILITIES SHALL BE PROTECTED BY 1/2" THICK POLYETHYLENE GLASS FIBER REINFORCED PLASTIC (FRP) SHEATHING.

UTILITY PIPE LOCATION MATERIALS

NOTES:

1. ALL MAINS INSTALLED BY OPEN CUT SHALL HAVE A TERRY MARKING PROTECTION LINE SHALL BE INSTALLED CONTINUOUSLY ALONG THE ALIGNMENT THE PROTECTION LINE SHALL BE 1/2" WIDE BY 1/4" HIGH AND SHALL BE PAID FOR IN FULL BY THE CONTRACTOR.
2. ALL DUCTILE IRON MAINS SHALL BE MARKED WITH GREEN PAINT.
3. DO NOT SPICE TRUCKS WERE UNDERGROUND.

TYPICAL SERVICE LATERAL DETAIL

NOTES:

1. THE SITE DEVELOPER SHALL LEAVE THE CLEANOUT RISER IN PLACE AND IT SHALL REMAIN SO UNTIL THE SERVICE LATERAL IS INSTALLED.
2. ALL CLEANOUTS TO BE INSTALLED WITH CONCRETE PAD.
3. ALL CLEANOUTS TO BE INSTALLED WITH CONCRETE PAD.
4. ALL CLEANOUTS TO BE INSTALLED WITH CONCRETE PAD.
5. ALL CLEANOUTS TO BE INSTALLED WITH CONCRETE PAD.

INSIDE DROP MANHOLE DETAILS

NOTES:

1. ALL PIPES SHALL BE INSTALLED WITH A MINIMUM 1/4" CLEARANCE FROM THE MANHOLE WALL.
2. ALL PIPES SHALL BE INSTALLED WITH A MINIMUM 1/4" CLEARANCE FROM THE MANHOLE WALL.
3. ALL PIPES SHALL BE INSTALLED WITH A MINIMUM 1/4" CLEARANCE FROM THE MANHOLE WALL.

STANDARD MANHOLE DETAIL

NOTES:

1. PRE-CAST CONCRETE SHALL BE TYPE 2 (4000 PSI).
2. ALL JOINTS SHALL BE REINFORCED WITH PRE-CAST SECTIONS.
3. ALL JOINTS SHALL BE REINFORCED WITH PRE-CAST SECTIONS.
4. ALL JOINTS SHALL BE REINFORCED WITH PRE-CAST SECTIONS.
5. ALL JOINTS SHALL BE REINFORCED WITH PRE-CAST SECTIONS.

TYPICAL PRECAST CONCRETE MANHOLE BOTTOM

NOTES:

1. ALL PRECAST CONCRETE SHALL BE TYPE 2 (4000 PSI).
2. ALL PRECAST CONCRETE SHALL BE TYPE 2 (4000 PSI).
3. ALL PRECAST CONCRETE SHALL BE TYPE 2 (4000 PSI).

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WESTFALL SUBDIVISION

PHASE 2C CONSTRUCTION PLANS

SEWER DETAILS

WILLIAMS TOWNSHIP
CHATHAM COUNTY, NORTH CAROLINA

DATE: APRIL 12, 2013

Scale: N/A

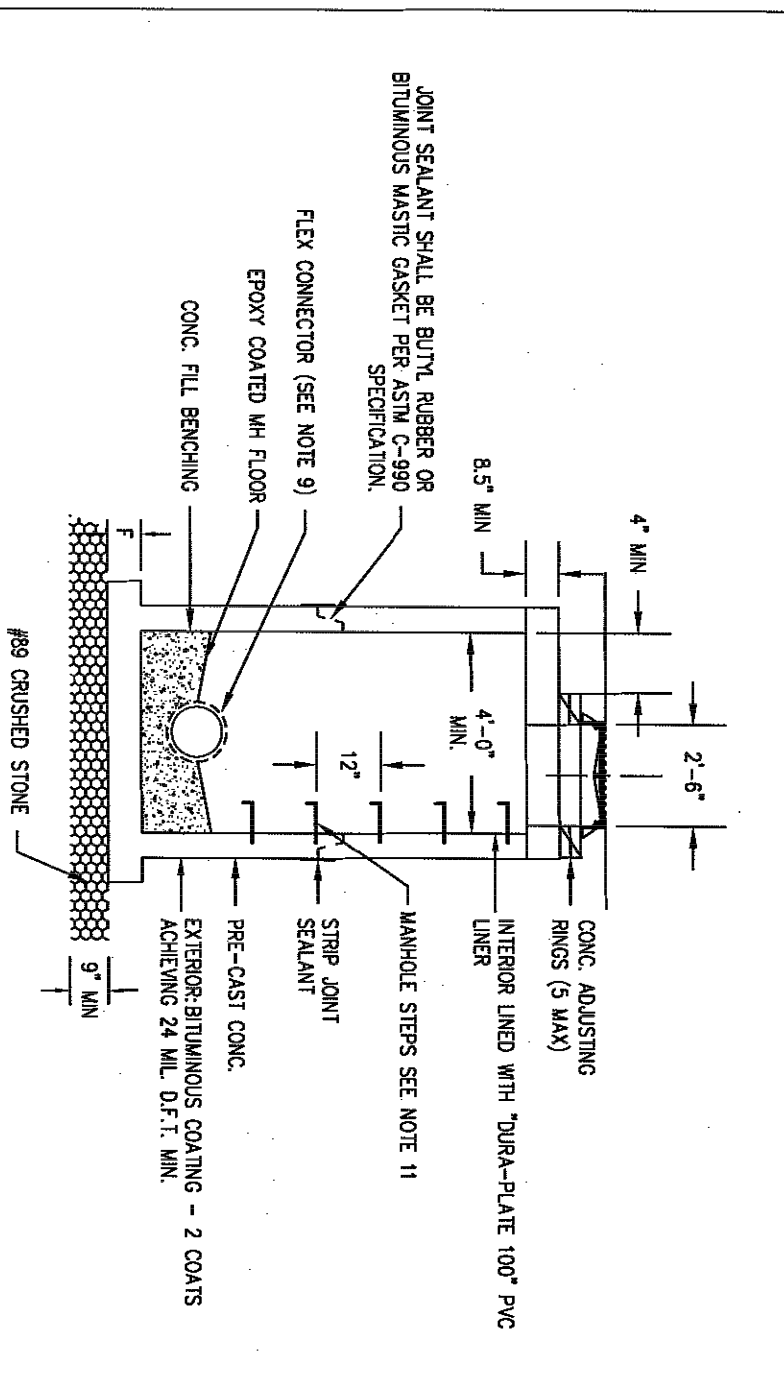
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CHECKED: ALJ

PROJECT NO: 800-12

COMPUTER DWG. NAME: 88712 Area C - 08 Sewer Details.dwg

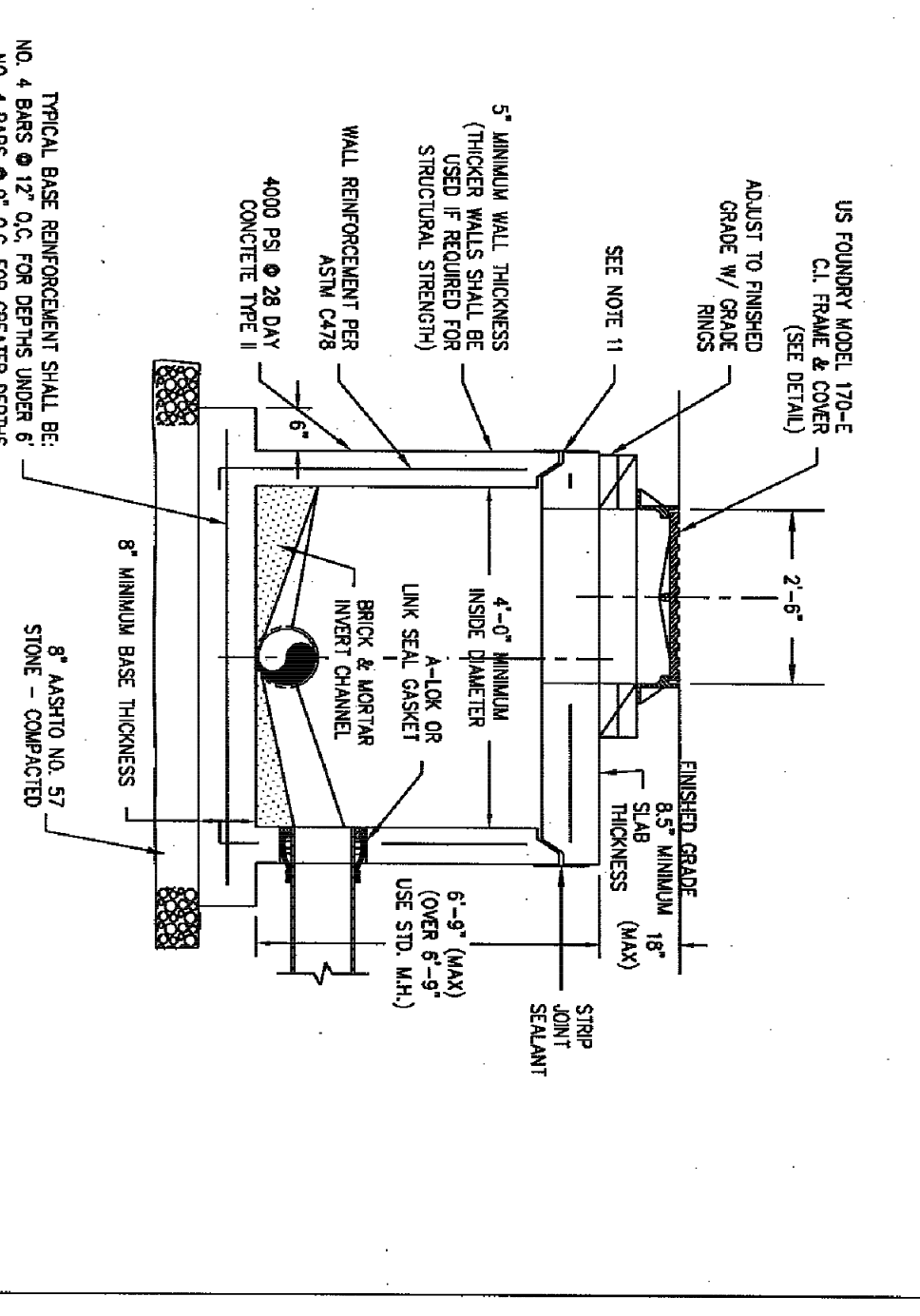
Sheet No: 8 of 8



MANHOLE SIZE
UP TO 24\"/>

- NOTES:
1. PRE-CAST CONCRETE SHALL BE TYPE 2 CONCRETE (4,000 PSI).
 2. LIFT HOLES NOT PERMITTED THROUGH PRE-CAST CONCRETE.
 3. ALL JOINTS SHALL BE SEALED WITH NON-SINK HEAT SINKING SEALANT.
 4. INSTALLED FLOW CHANNEL INSIDE MANHOLES SHALL BE 1/2\"/>

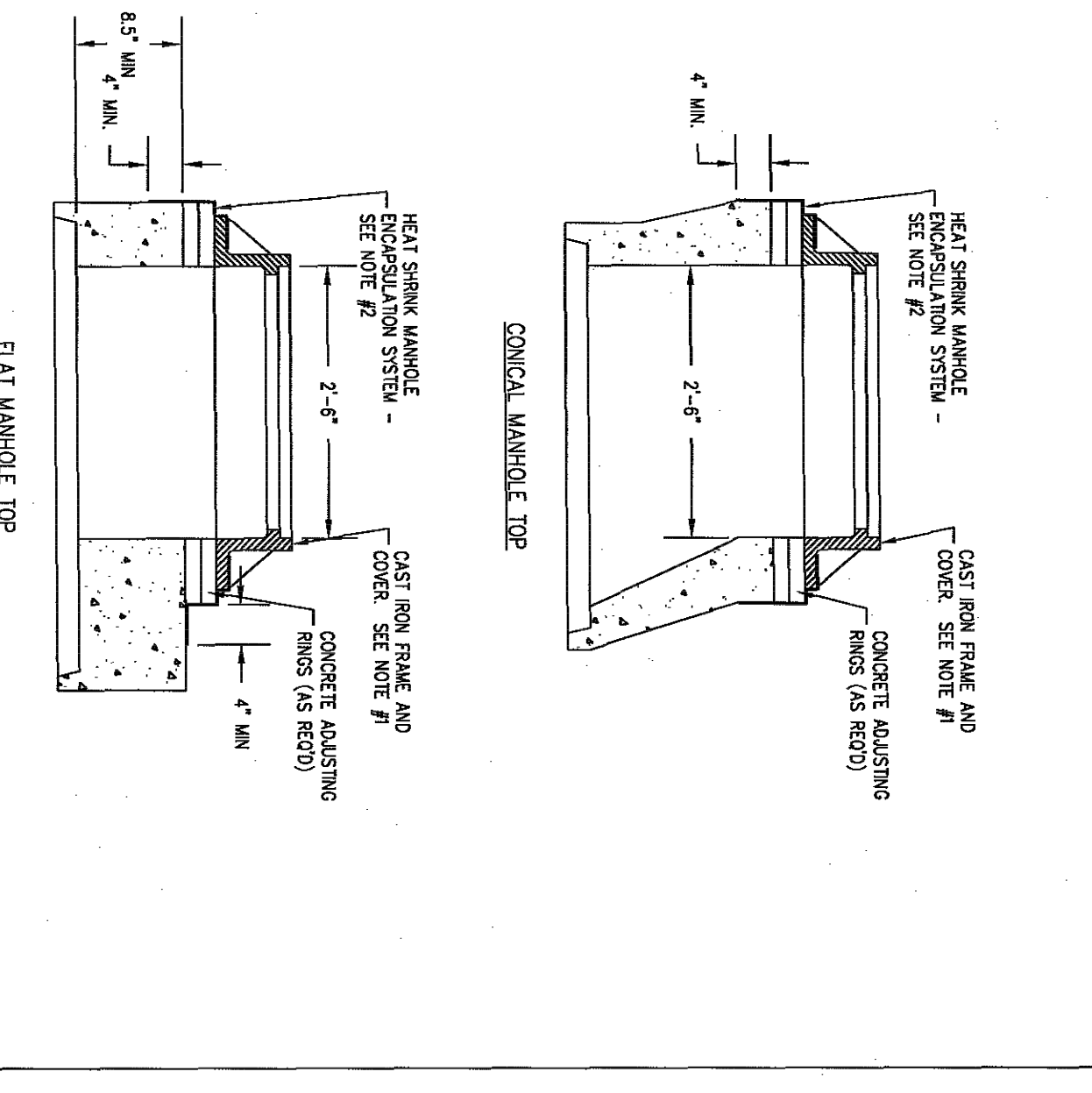
FIGURE MAIN RECEIVING MANHOLE DETAIL
AQUA
April North Carolina, Inc.



NOTE: FORCE MAIN RECEIVING MANHOLE TO BE FIBERGLASS LINED.

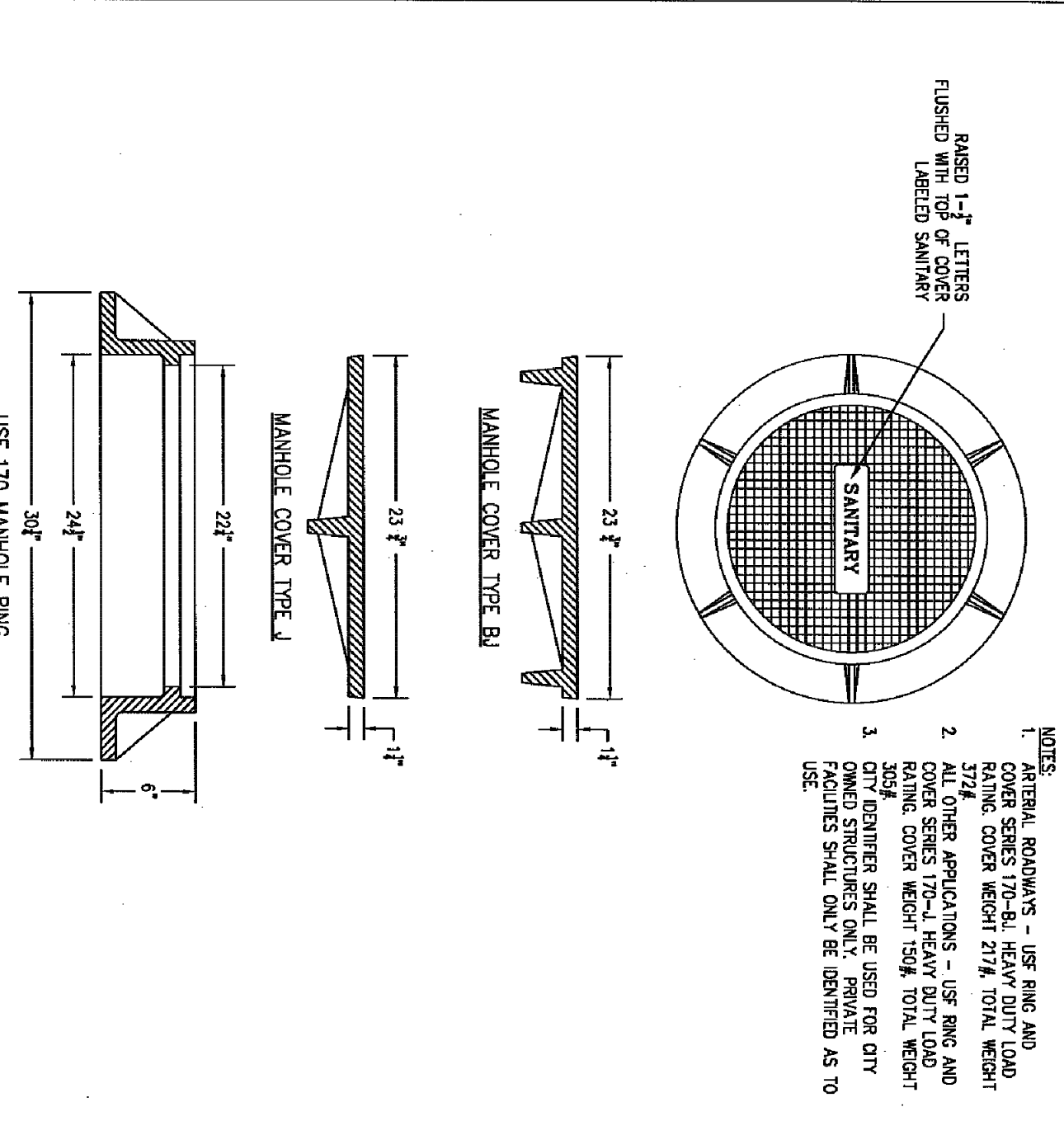
- NOTES:
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FIGURE SHALLOW MANHOLE DETAIL
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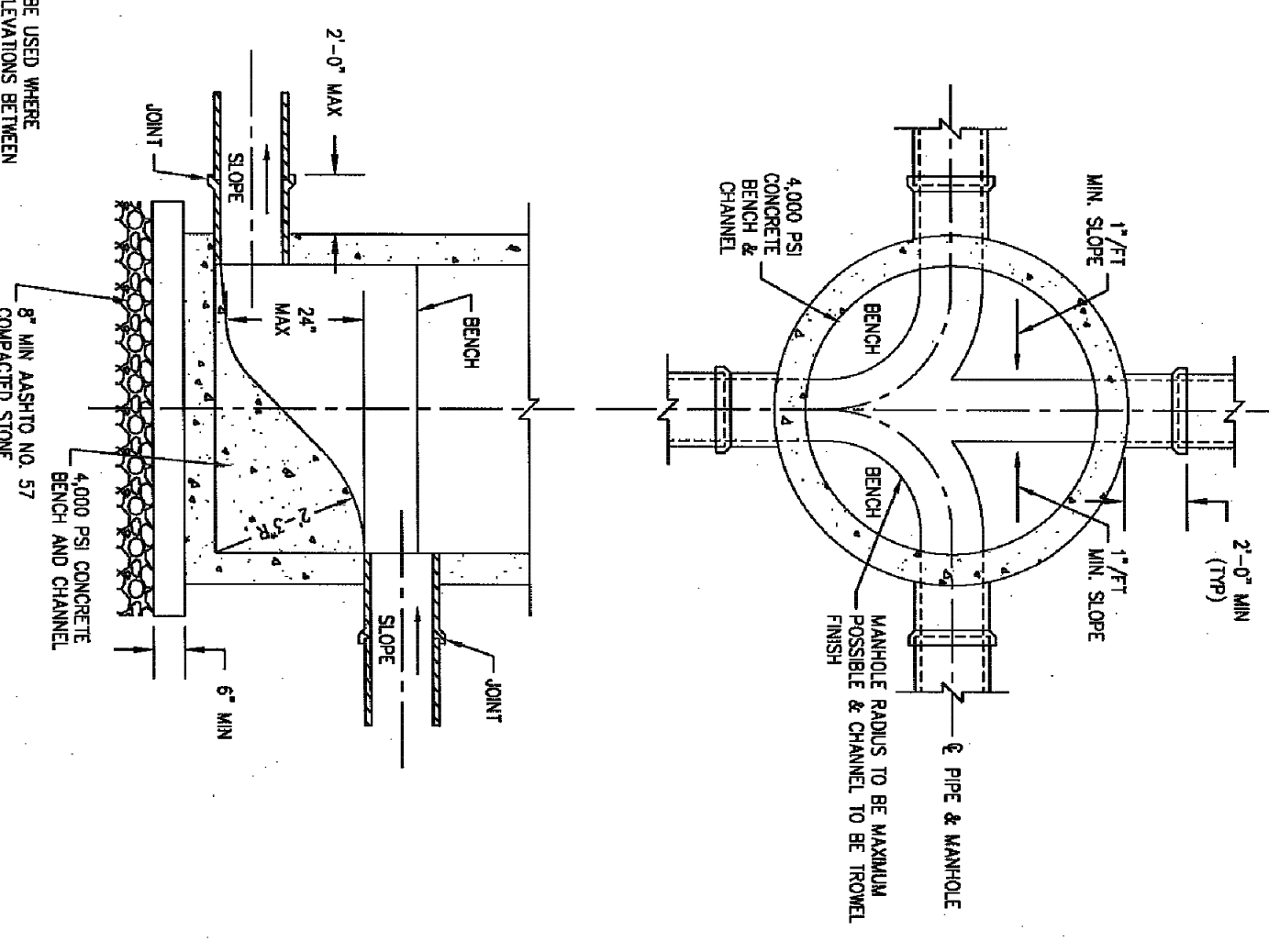
- NOTES:
1. MANHOLE FRAME AND COVERS SHALL INCLUDE C-RING TYPE CASSETTE TO PREVENT INFLOW. PICK HOLES SHALL NOT PENETRATE COVER UNLESS SHOWN OTHERWISE.
 2. ENCLOSURE SYSTEM BY CANISAK-CRS, INC.

FIGURE STANDARD MANHOLE FRAMES AND COVERS
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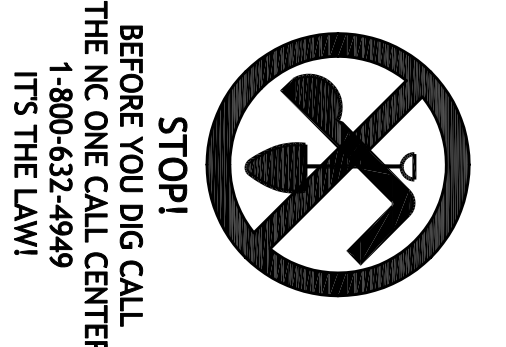
- NOTES:
1. MATERIAL REQUIREMENTS - USE RINGS AND COVERS THAT MEET OR EXCEED ALL APPLICABLE RAINING COVER REEPLY 2174, TOTAL WEIGHT 170 LBS.
 2. FITTING APPLICATIONS - USE RING AND COVER SIZES 170-4 HEAVY DUTY LOAD DUTY DENIERS SHALL BE USED FOR CITY OWNED STRUCTURES ONLY. PRIVATE DUTY DENIERS SHALL ONLY BE INSTALLED AS TO USE.

FIGURE MANHOLE FRAMES AND COVERS DETAILS
AQUA
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NOTE: MANHOLE CHUTE IS TO BE USED WHERE DIFFERENCE IN HEIGHT EXCEEDS 2 FEET. IF THE DIFFERENCE IS 2' OR GREATER, THEN DROP CONNECTION SHALL BE USED.

FIGURE MANHOLE CHUTE
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301 GLENWOOD AVE 220
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FAX: 919-822-0282

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WESTFALL SUBDIVISION

PHASE 2C CONSTRUCTION PLANS

SEWER DETAILS

WILLIAMS TOWNSHIP
CHATHAM COUNTY, NORTH CAROLINA

Date: APRIL 12, 2013

Scale: N/A

Drawn: ACS

Checked: ALJ

Project No: 800-12

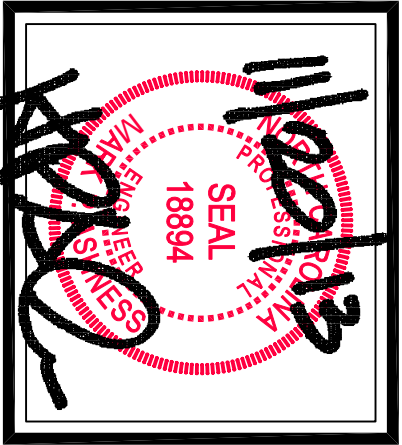
Computer Dwg. Name: 800-12 April C-08 & 09 Sewer Details.dwg

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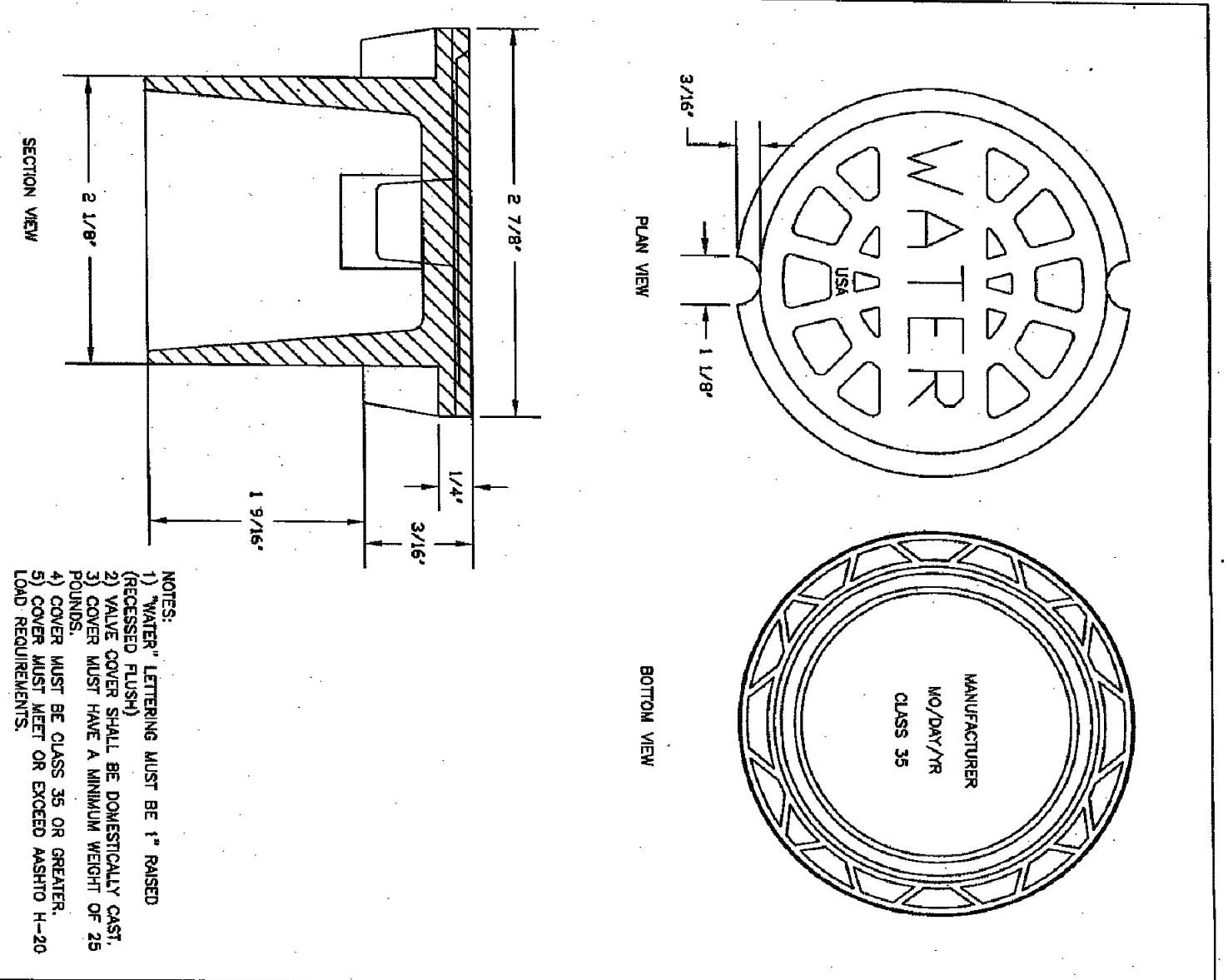


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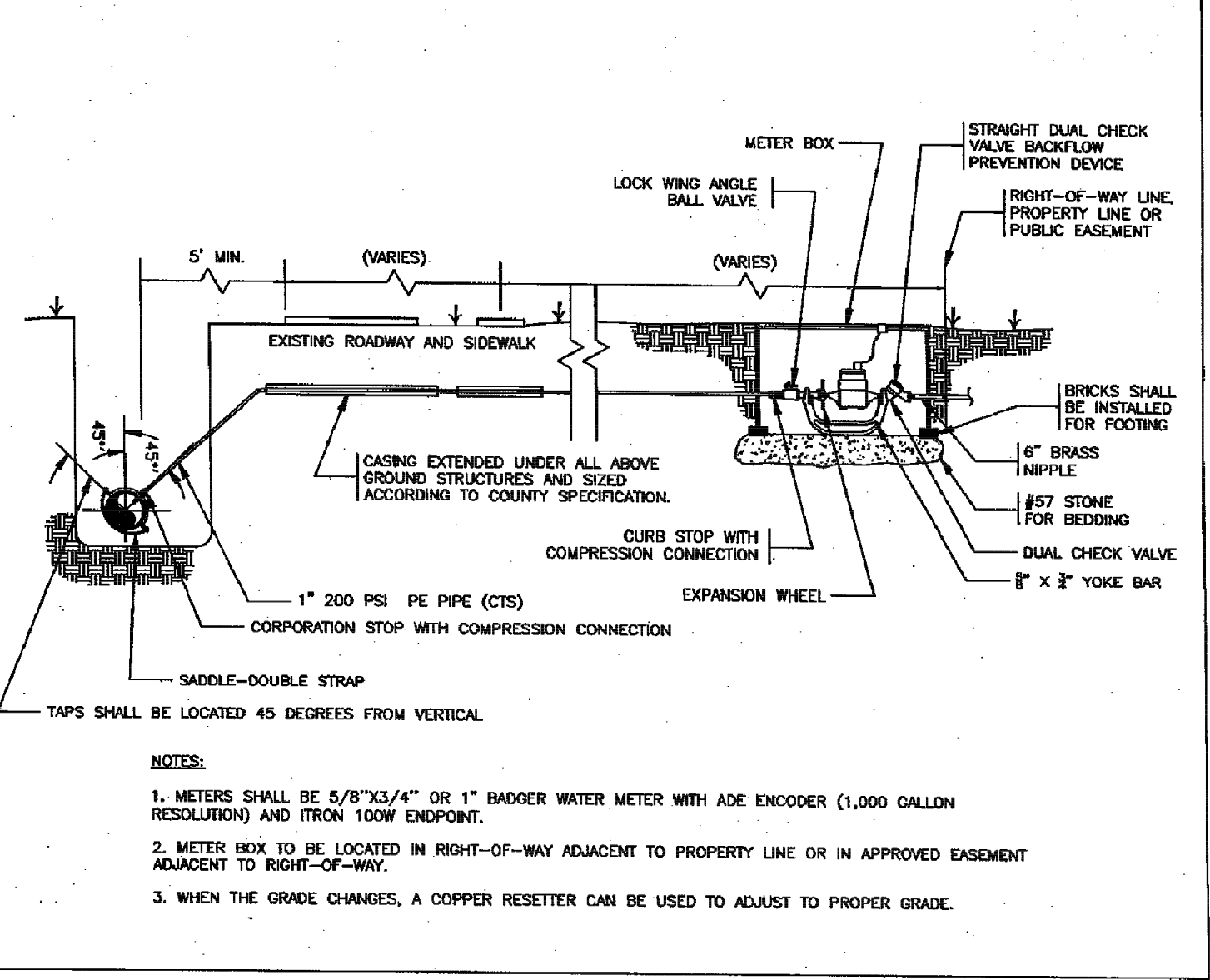
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PHASE 2C CONSTRUCTION PLANS
WATER DETAILS
 WILLIAMS TOWNSHIP
 CHATHAM COUNTY, NORTH CAROLINA

Date: APRIL 12, 2013
 Scale: N/A
 Drawn: ACS
 Checked: ALF
 Project No: 800-12
 Computer Des. Name: 80912.Amch.C - 10.8.11 Water Details



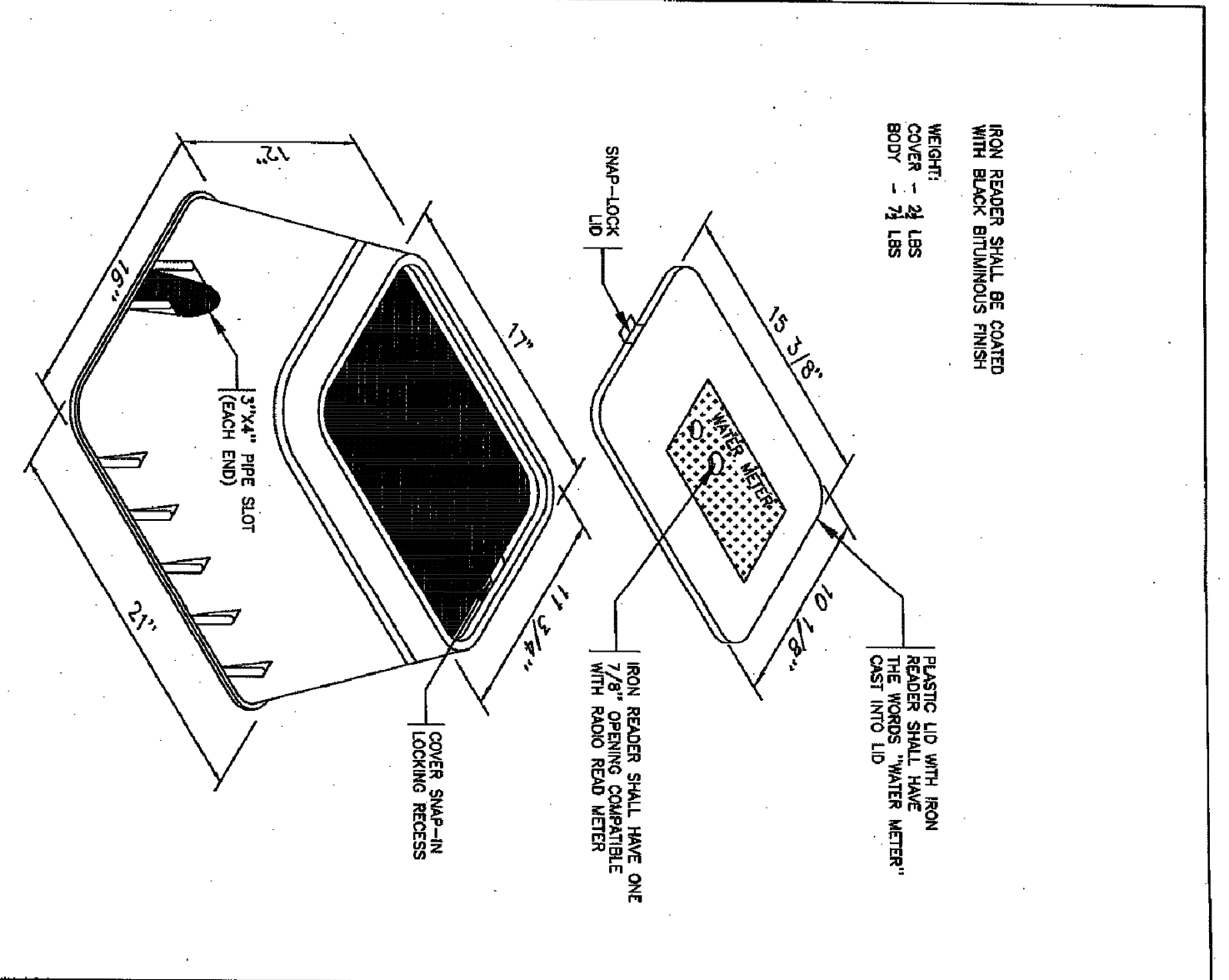
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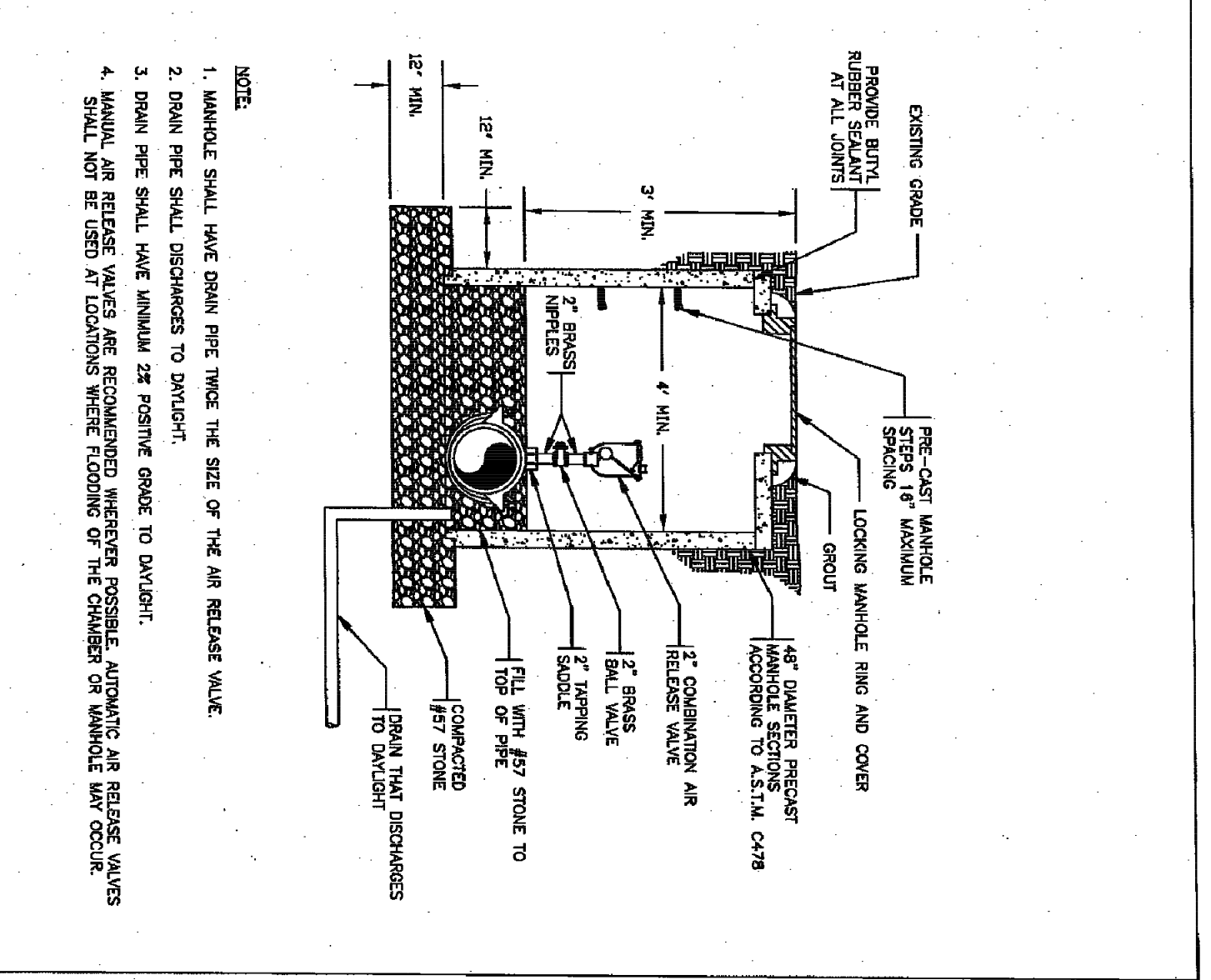
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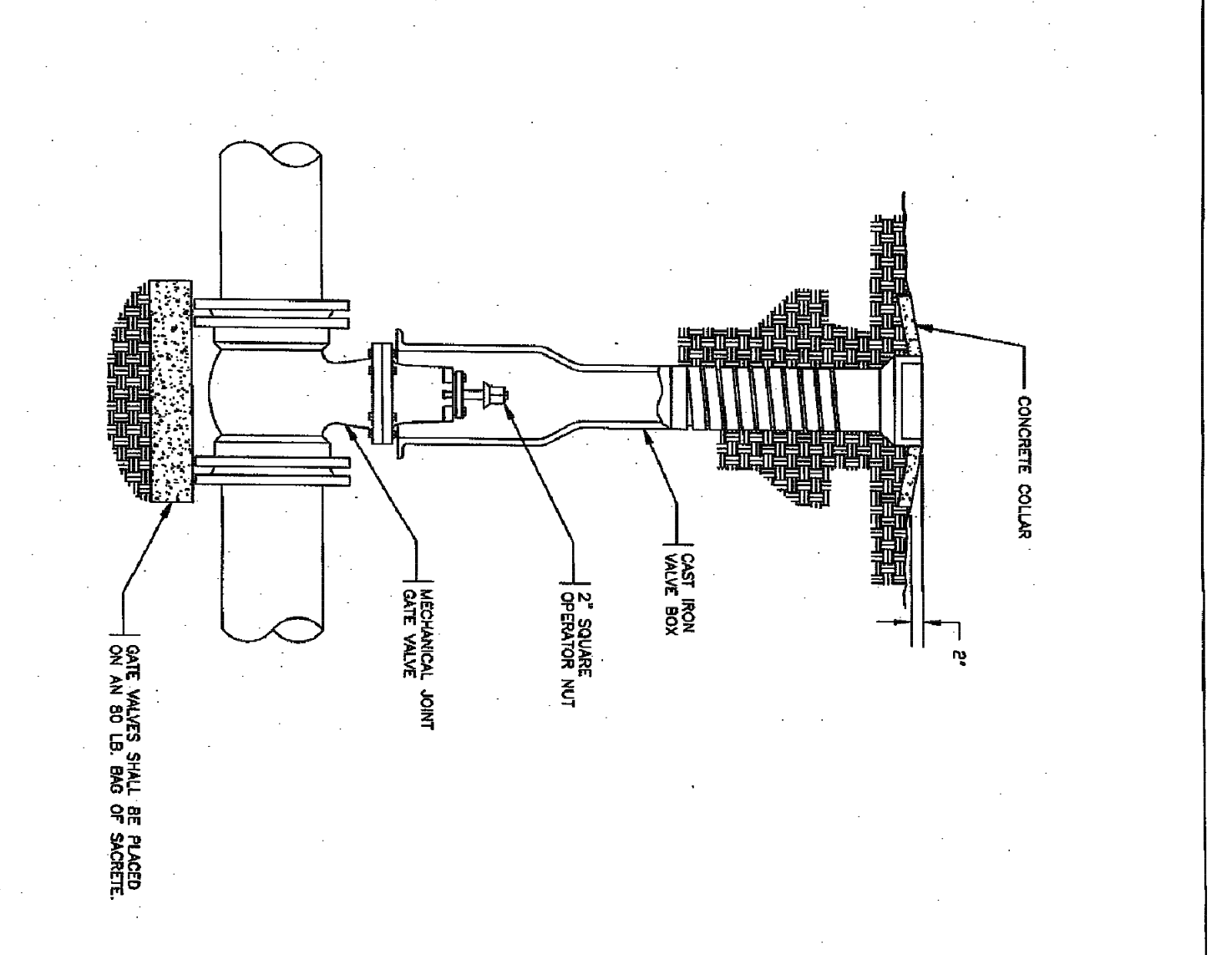
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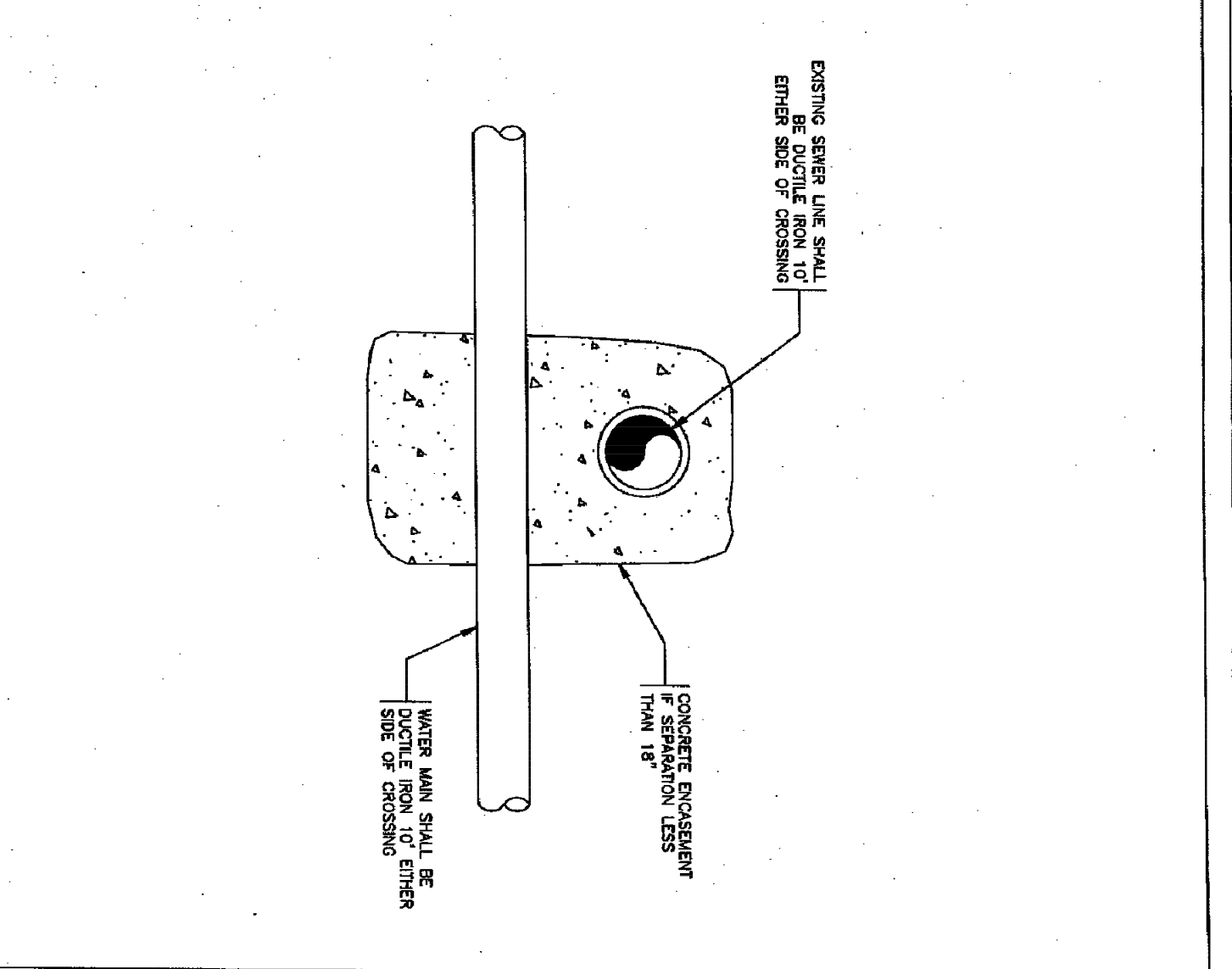
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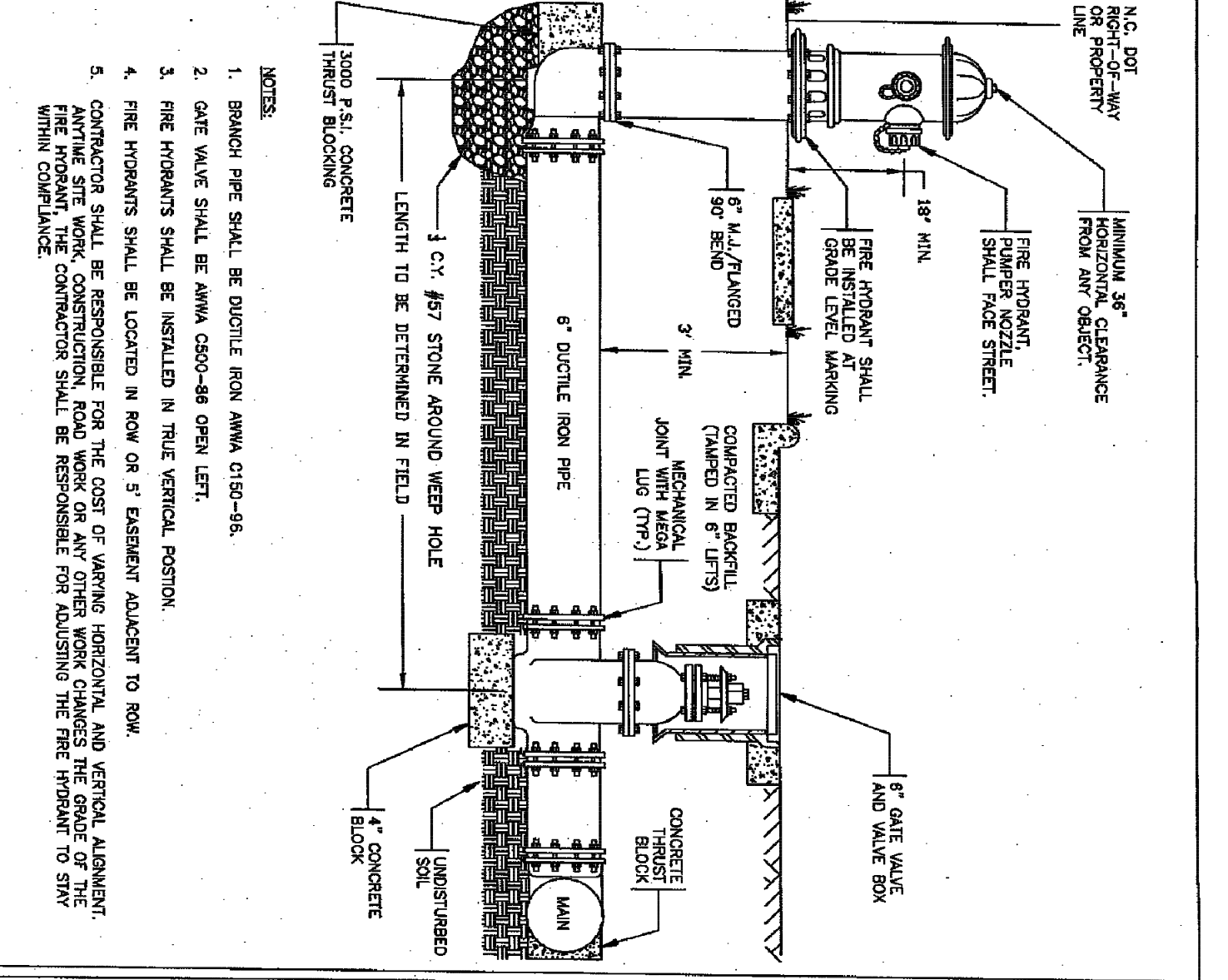
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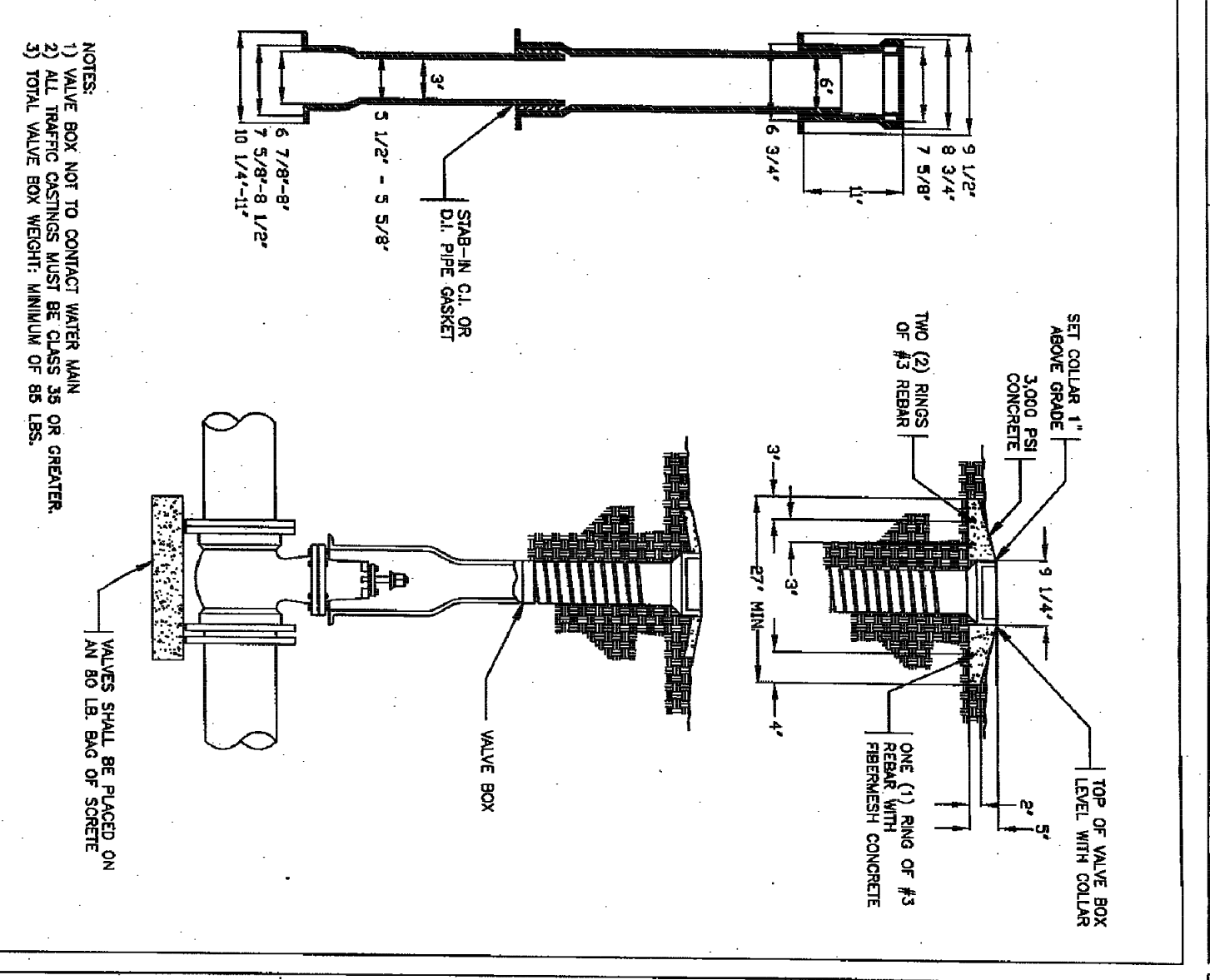
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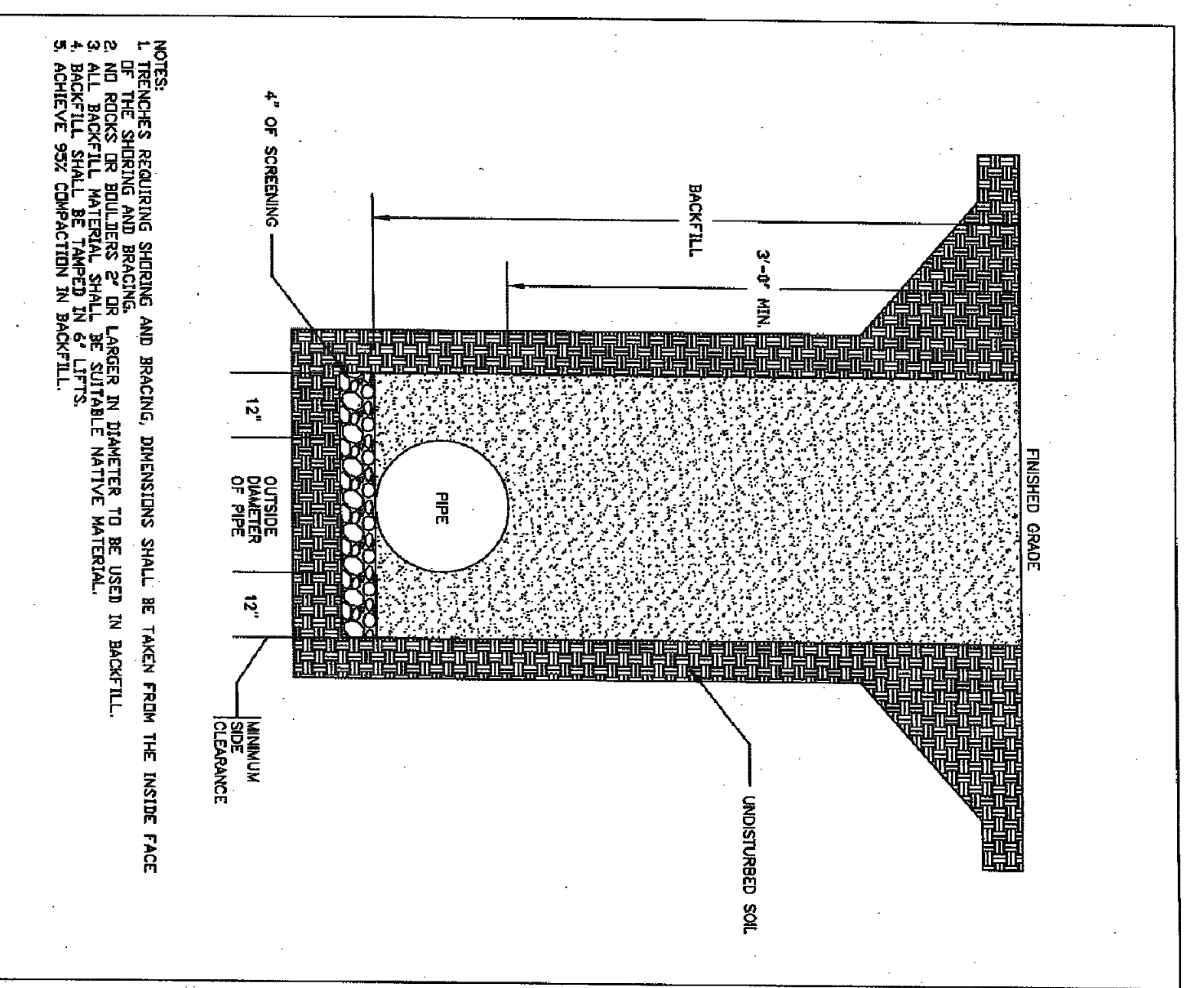
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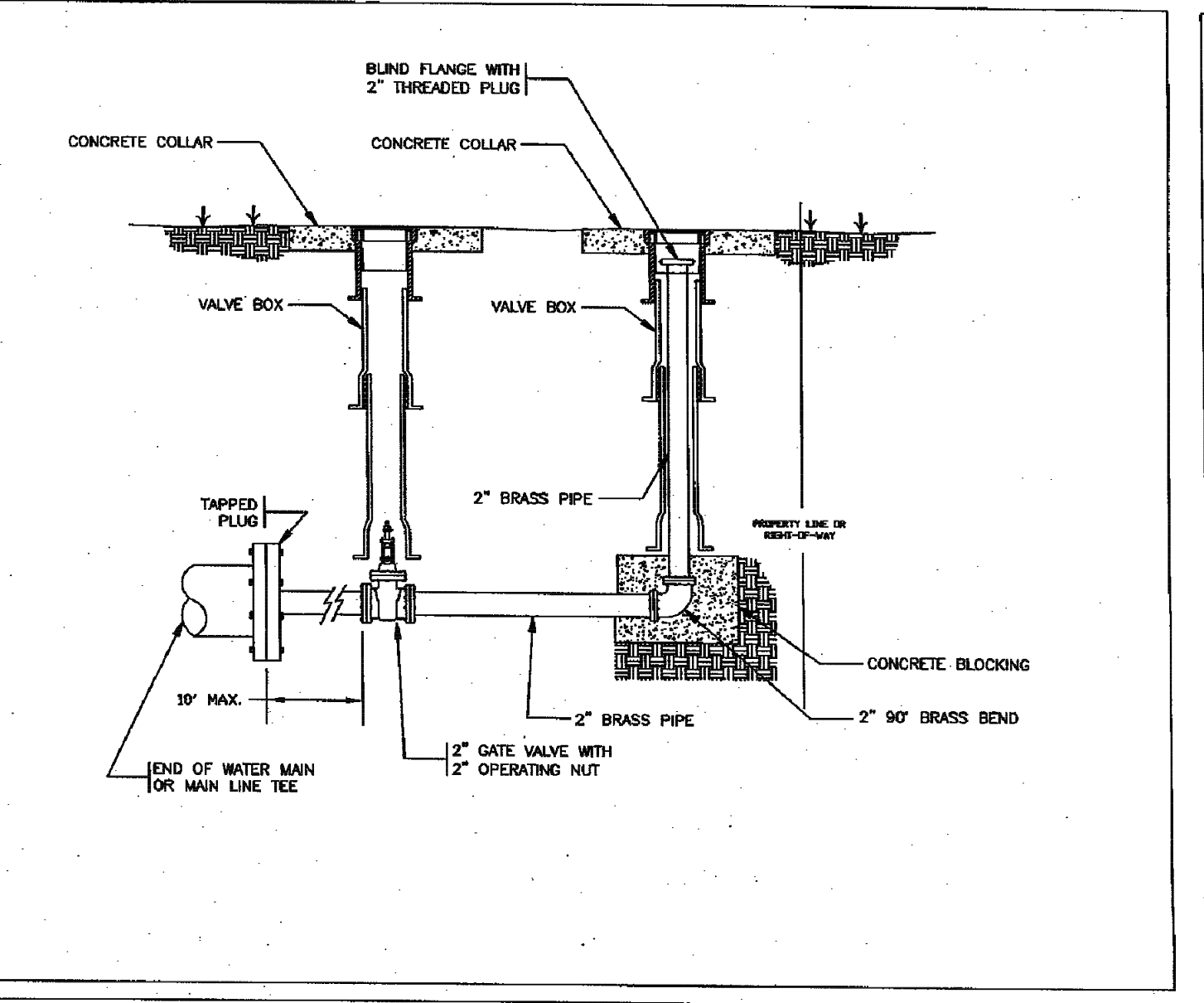
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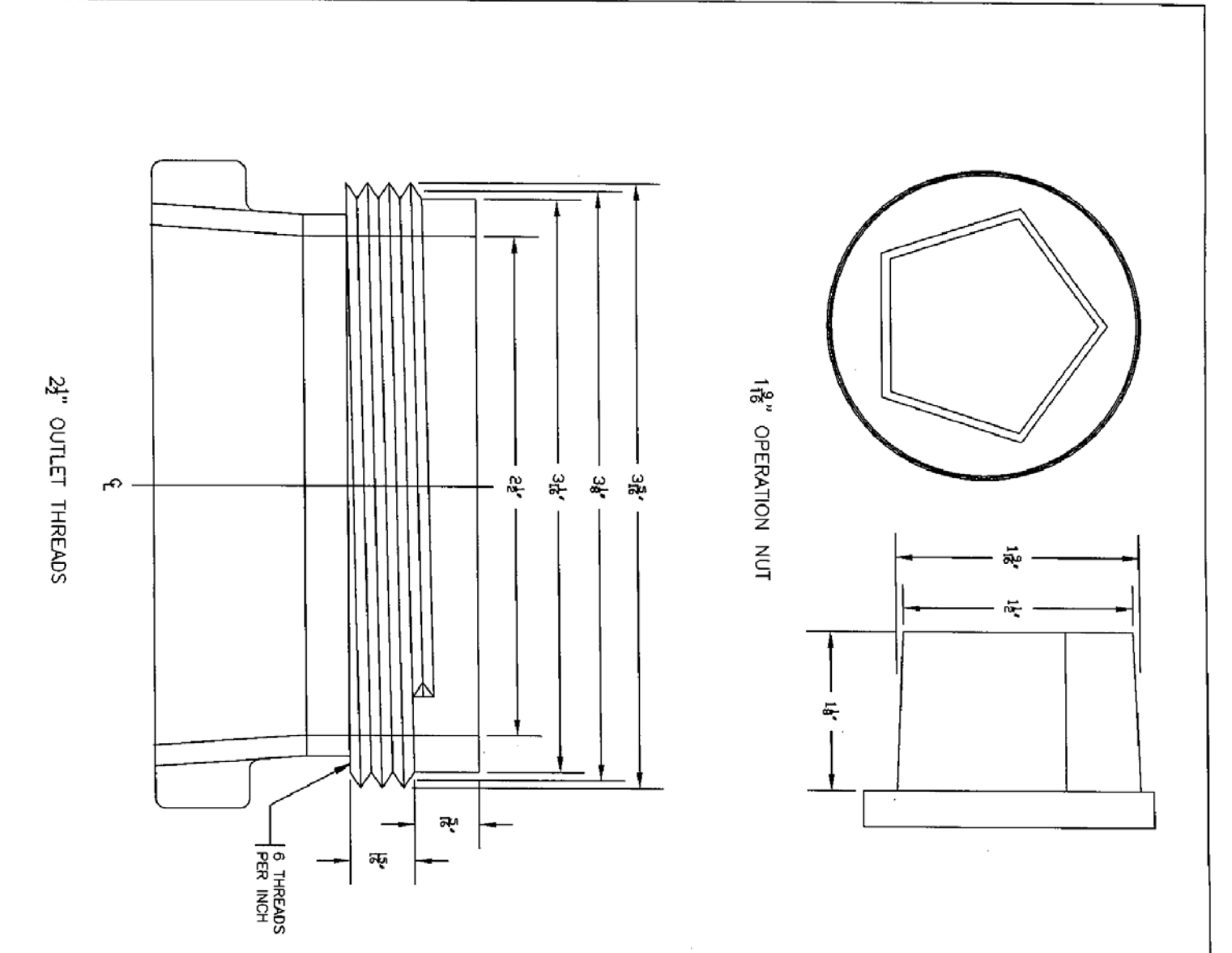
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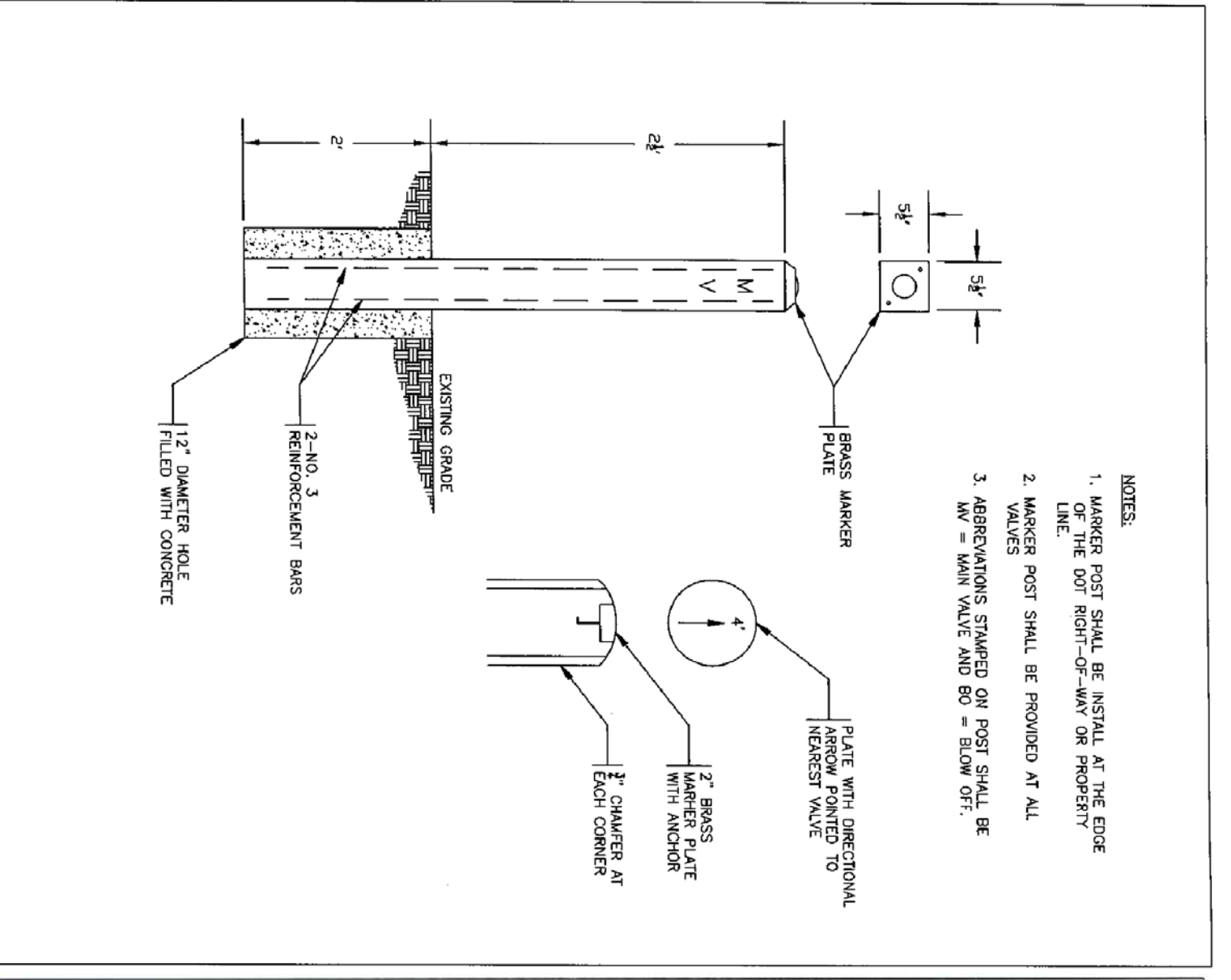
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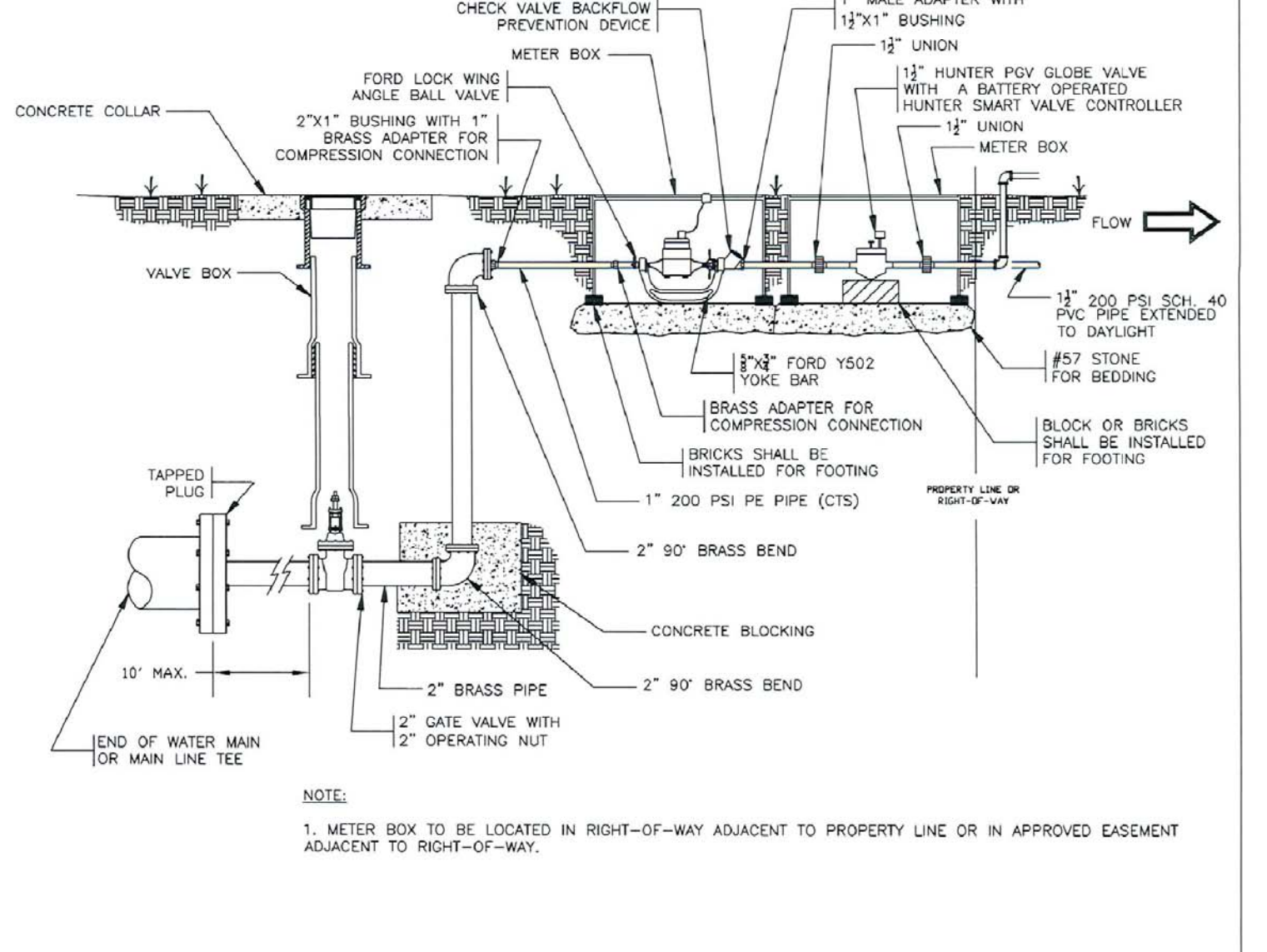
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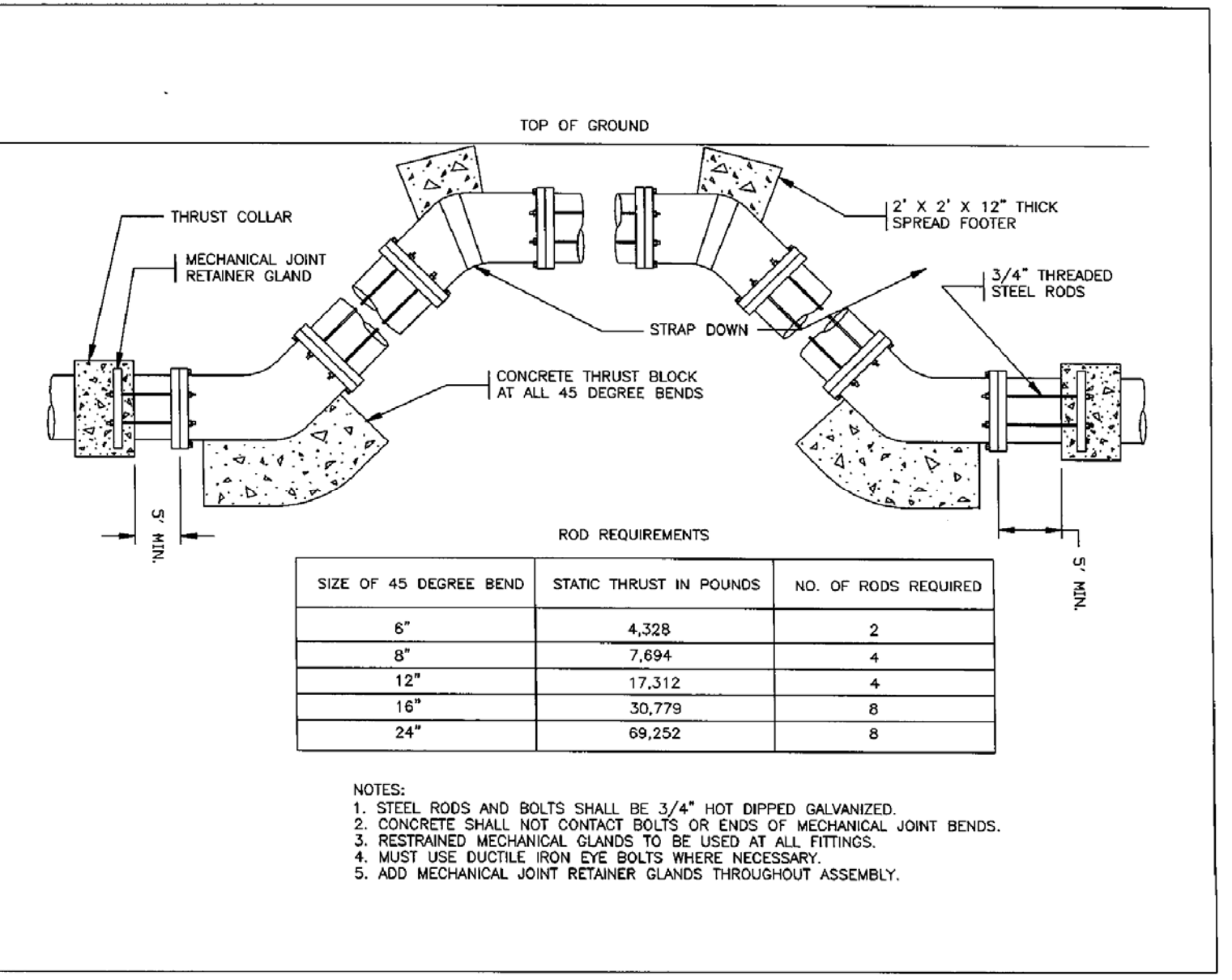
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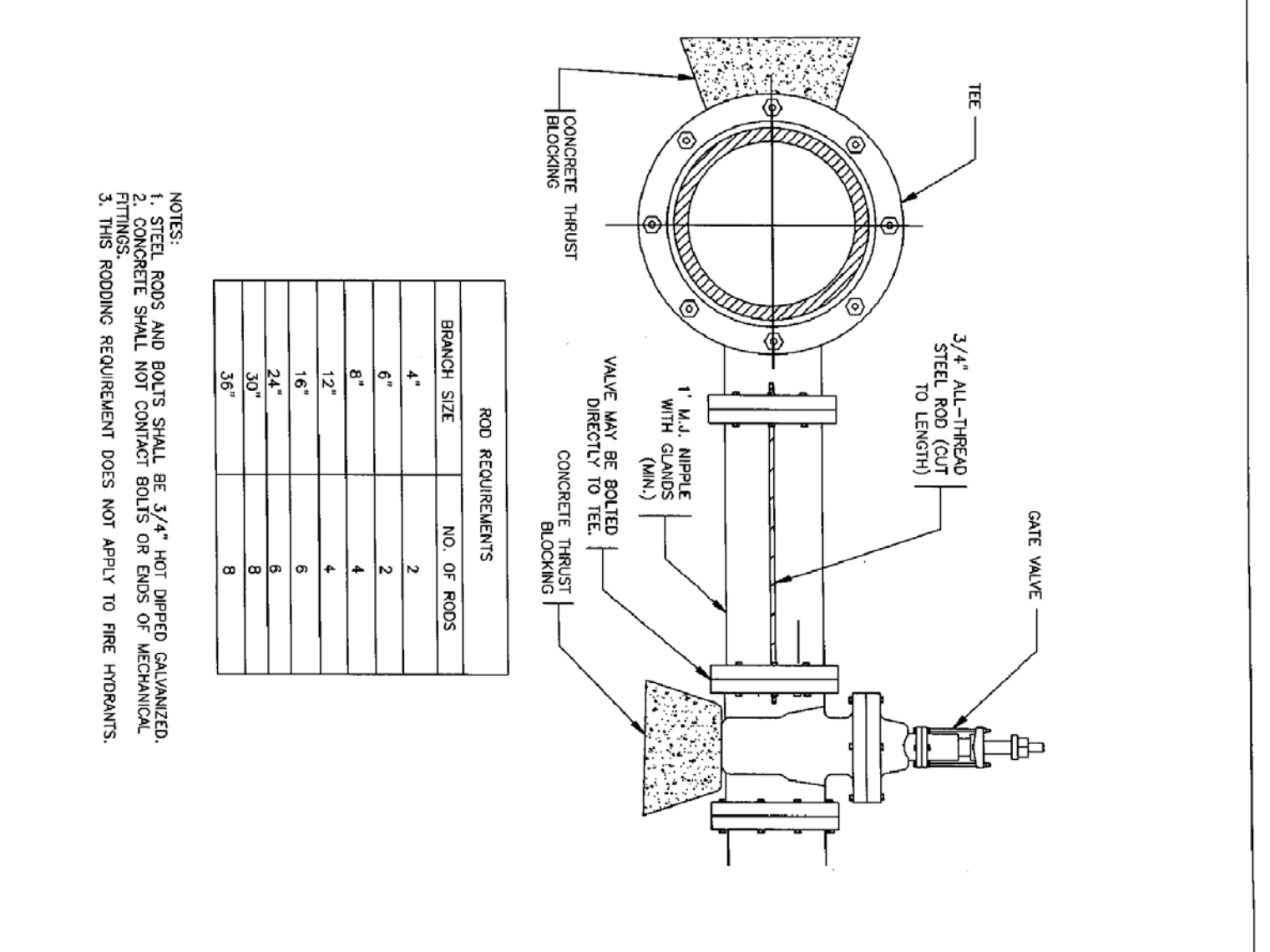
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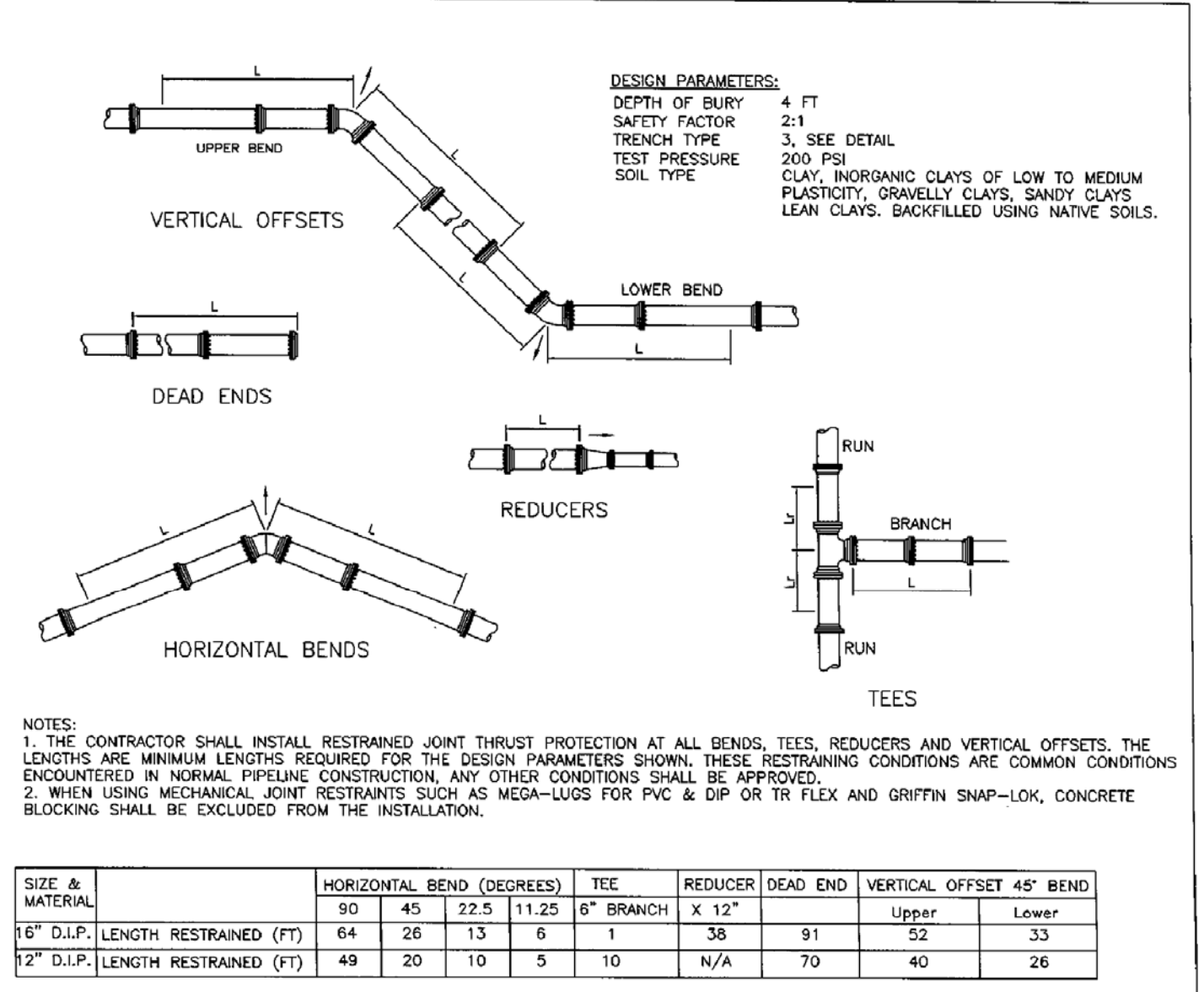
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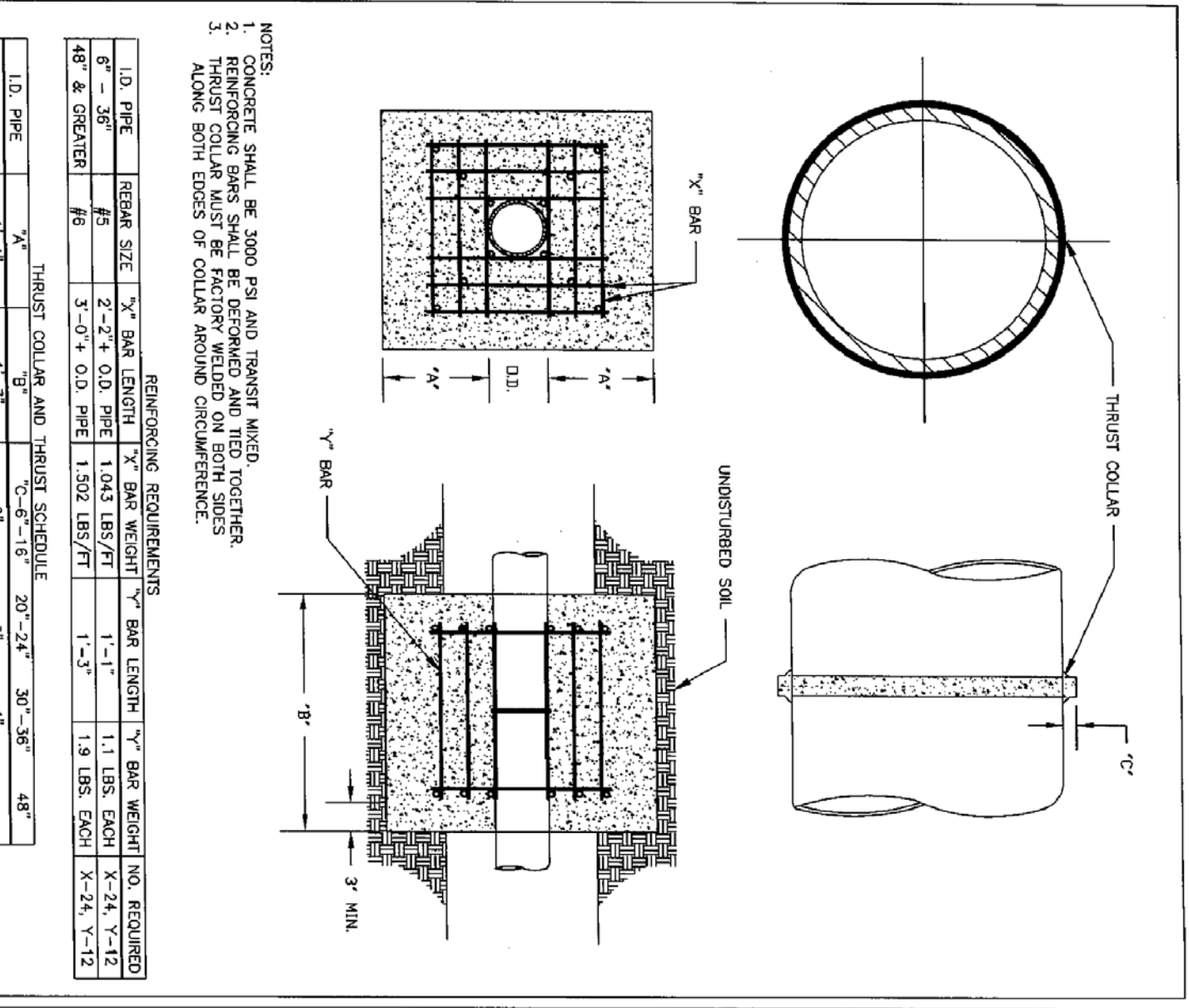
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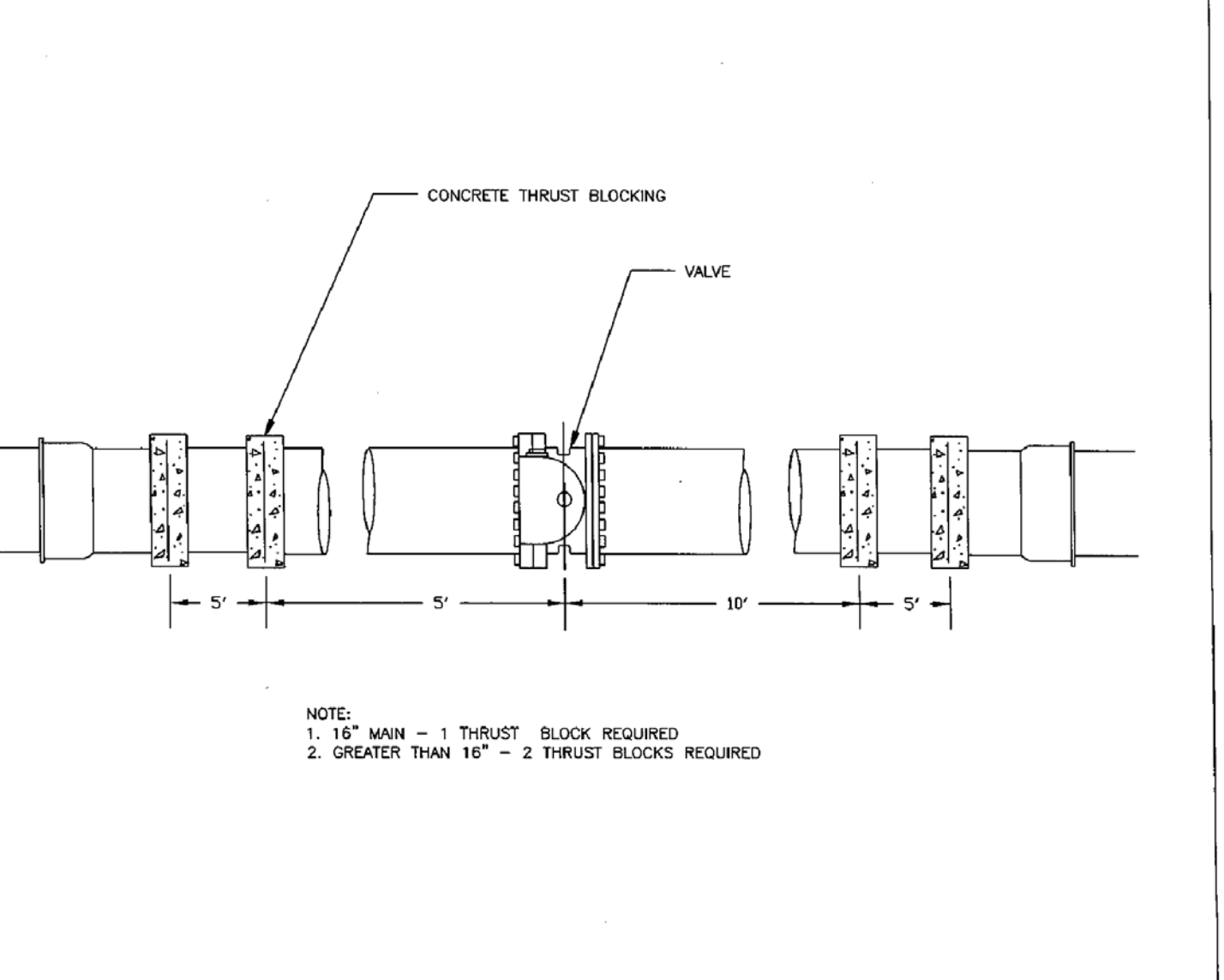
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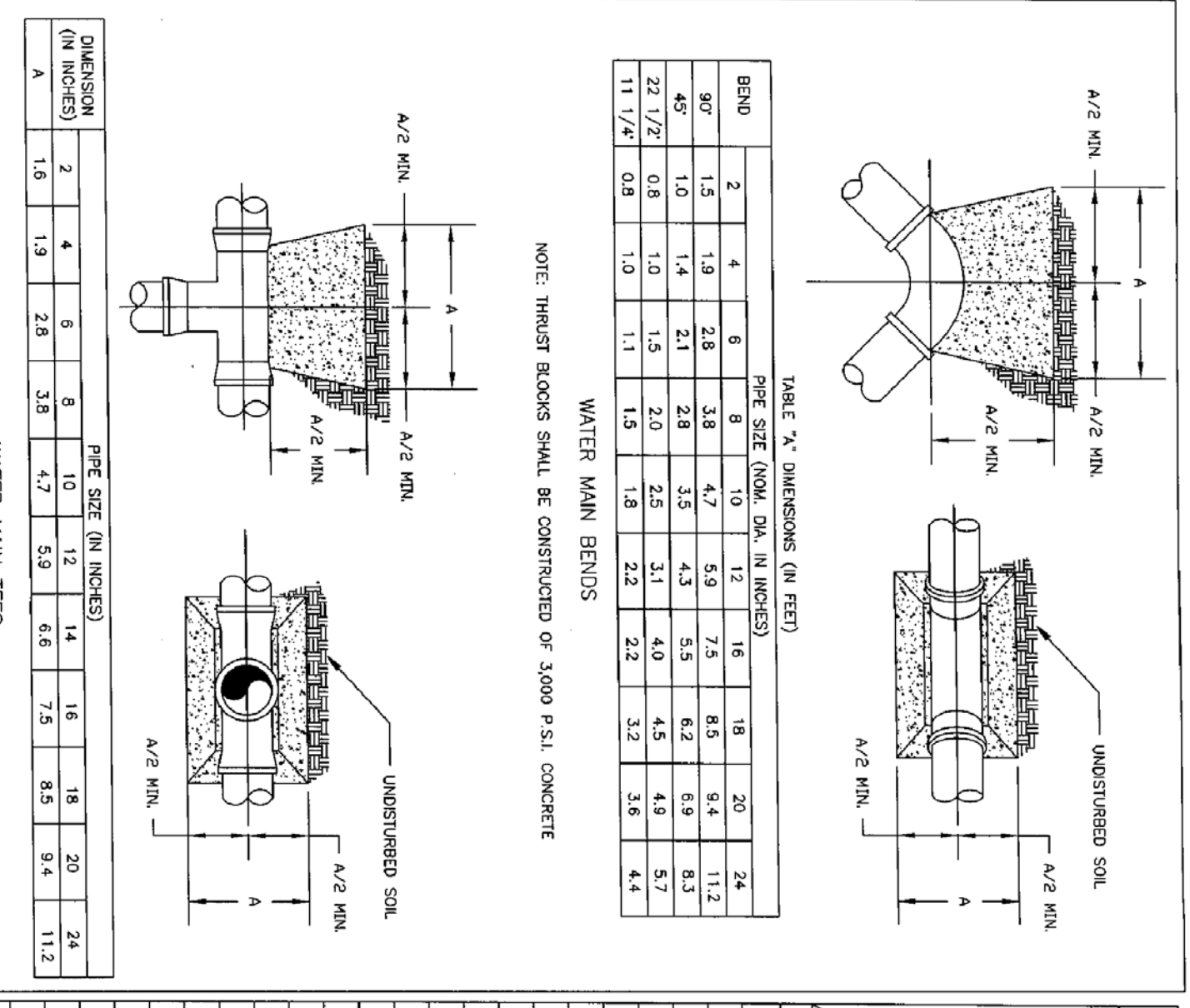
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REACTION BEARING AREAS FOR HORIZONTAL WATER PIPE BENDS

BASED ON TEST RESULTS OF 800 P.S.I.

ALL AREAS GIVEN IN SQUARE FEET

SIZE AND DEGREE OF BEND	STATIC THRUST IN POUNDS	MODERATELY DRY CLAY 4000 LBS./FT.	SOFT CLAY 6000 LBS./FT.	GRAVEL - COARSE SAND 1600 LBS./FT.	DRY CLAY - ALWAYS DRY 6000 LBS./FT.	SAND - CLEAN DRY 4000 LBS./FT.	SAND - VERY FINE 10,000 LBS./FT.	QUICKSAND SOIL 1000 LBS./FT.	ROCK - FIRM 10,000 LBS./FT.
5'	11,108	1	1	1	1	1	1	2	
22 1/2'	2,207	1	2	1	1	1	1	1	
45'	4,328	2	3	1	1	2	5	1	
90'	7,956	2	4	1	1	2	8	1	
PLUG	5,655	2	3	4	1	1	2	6	
8'	11,140	1	1	2	1	1	1	2	
22 1/2'	3,922	1	2	3	1	1	1	4	
45'	7,694	2	4	5	1	1	2	15	
90'	14,615	4	9	9	2	2	4	10	
PLUG	10,053	3	5	6	2	2	3	10	
12'	11,140	4	3	3	1	1	2	5	
22 1/2'	8,856	3	6	2	2	3	9	1	
45'	17,242	5	11	3	3	5	18	4	
90'	31,993	8	16	19	4	4	32	4	
PLUG	22,619	6	12	14	3	3	23	3	
15'	11,140	7	8	2	4	5	1	1	
22 1/2'	15,691	8	10	2	2	4	16	2	
45'	30,779	16	19	4	4	8	31	4	
90'	56,661	15	23	5	8	15	57	6	
PLUG	40,213	10	21	23	5	10	41	5	

CONCRETE THRUST BLOCKING QUANTITY TABLE

CONCRETE THRUST BLOCKING QUANTITY TABLE	CONCRETE THRUST BLOCKING QUANTITY TABLE
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