

TYPICAL DETAILS

FIGURE

1. Fence and Gate Detail
2. Pier Details
3. Tank (Fuel) and Foundation Details
4. Discharge in Cement Pipes
5. Discharge in Circular w/Smooth Slopes
6. Discharge in Circular w/Steep Slopes
7. Hydraulic Elements for Small Pipe (K.F.)
8. Multiples Connections to Avoid Dead ends
9. Multiples Connections to Avoid Dead ends
10. Subdivided House Connection
11. House Connection with Ford Meter box
12. House Connection (Typical Inst.)
13. 2" Dia. Water Meter Box
14. 4" Dia. Water Meter Box
15. Public Fountain
16. Vent and Pipe Installation
17. Air Release Valve and Basin
18. Butterfly Valve 16" or 20"
19. Back Flow Preventer Valve
20. Fire Hydrant (P.R. Type)
21. Drain Detail
22. C.I. Telescopic Valve Box



23. Pumping Station - Weatherproof Motors
24. Horizontal Centrifugal Booster Pump (pit)
25. Pumping Station Weatherproof Inst.
26. Aluminium Frame and Cover - Flockhart
27. Pumping Station Structural Details
- 27A. Pumping Station Structural Details
28. Underground Pumping Station
- 28A. Underground Pumping Station Details
- 28B. Wiring Diagram for Underground Pumping Stations
- 28C. Underground Pumping Station Control Panel
Mounting Details
30. Deep Well Pump
31. Saddle House Connection to Existing Concrete
Sanitary Sewer
32. House Connection and Rungs Details
33. Sanitary House Connection Complete
34. House Connection - Sewer Pipe Plus 2.0 m'
35. Concrete Protection for House Connection
36. Frame and Cover (C.I.)
37. Inspection M.H.
38. Inspection M.H.
39. Drop M.H.
40. Drop M.H.



- 41. Drop M.H.
- 41A. Elevated M.H.
- 41B. Precast M.H.
- 41C. Precast M.H.
- 41D. Precast M.H.
- 42. Typical Details - Inverted Siphon
- 43. Water/Sewer Mains Separation
- 44. Sludge Drying Beds
- 45. Hose Valve Detail
- 46. Spiral Stairs Details
- 47. Laboratory Arrangement #1
- 48. Laboratory Arrangement #1
- 49. Laboratory Arrangement #2
- 50. Laboratory Arrangement #2
- 51. Laboratory Arrangement #3
- 53. Time Required for Sewer Pumps Stops
- 54. Variation in Daily Sewer Flow
- 55. Apartment Water Supply Alt.
- 56. Loading Platform Bumper
- 57. Exhaust Fan (17" unit)
- 58 to 58E Distribution Tank
- 59-59A Vertical Type Pump
- 60 to 60A Submersible Type Pump

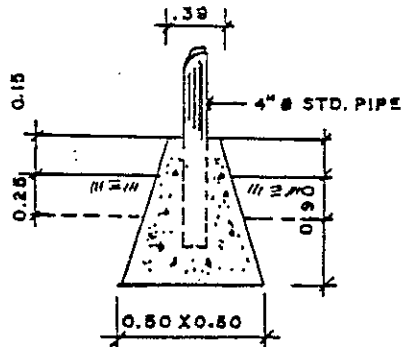
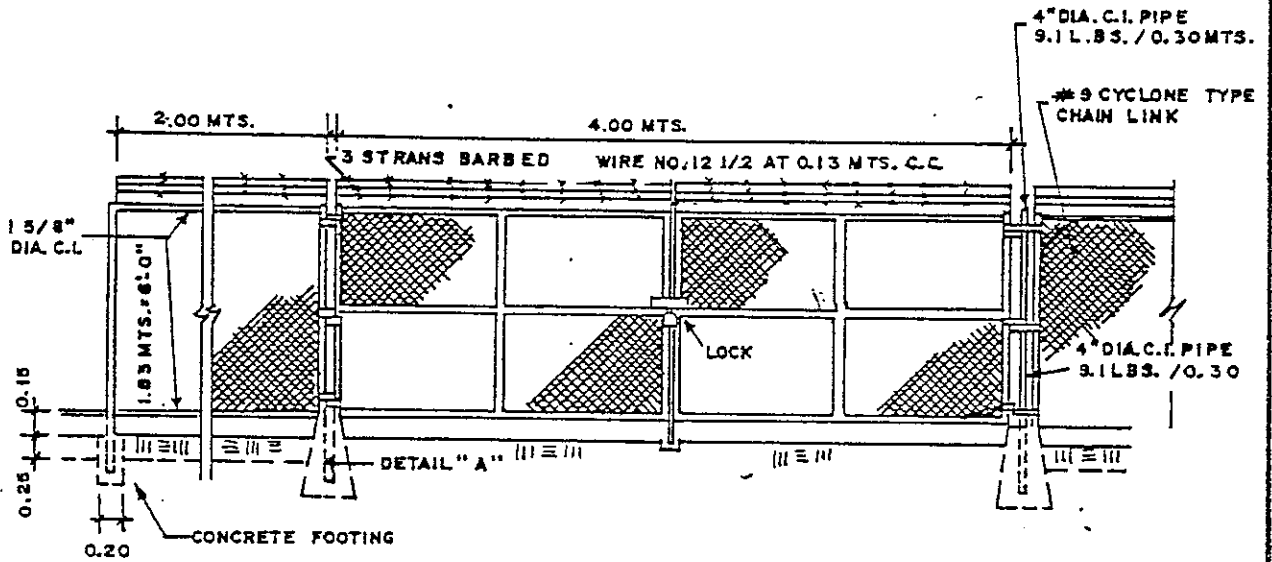


COMMONWEALTH OF PUERTO RICO

PUERTO RICO AQUEDUCT AND SEWER AUTHORITY

TYPICAL DETAIL





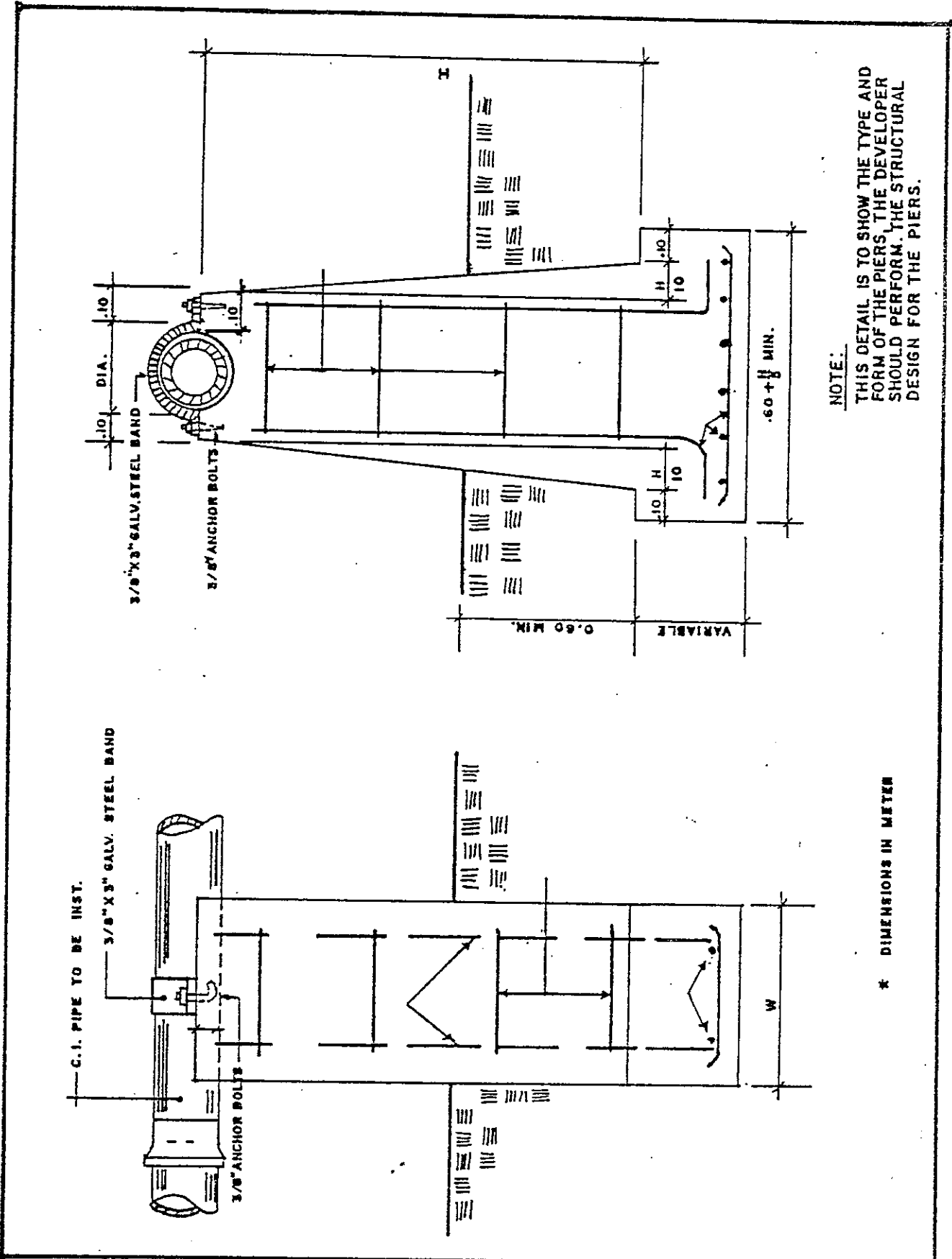
DETAIL "A"

FENCE & GATE DETAIL

FIG. NUM. I

DATE 8/08/80





NOTE:
 THIS DETAIL IS TO SHOW THE TYPE AND FORM OF THE PIERS, THE DEVELOPER SHOULD PERFORM THE STRUCTURAL DESIGN FOR THE PIERS.

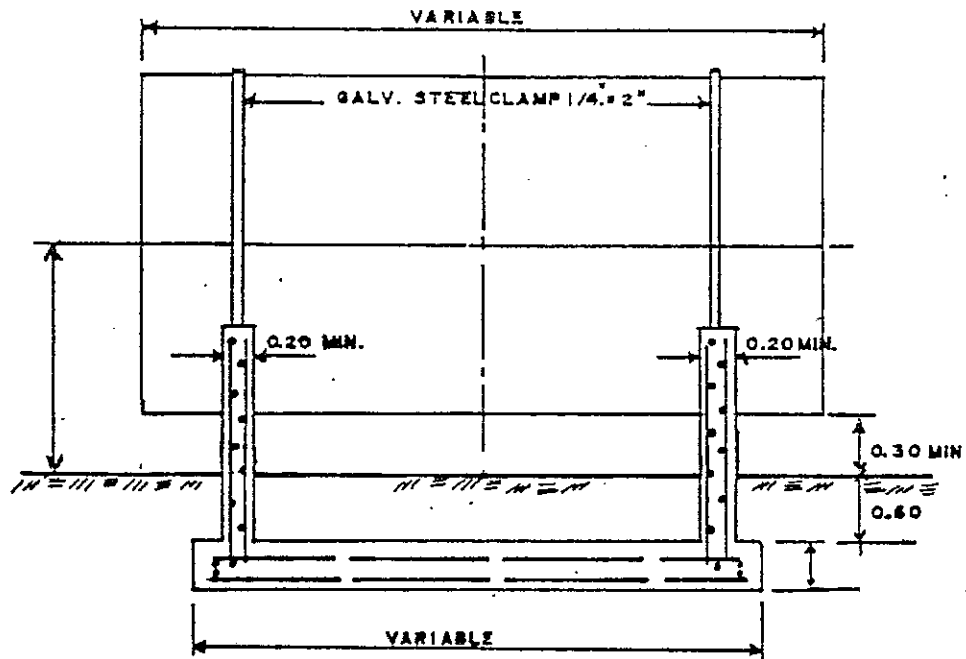
* DIMENSIONS IN METERS

PIER DETAIL

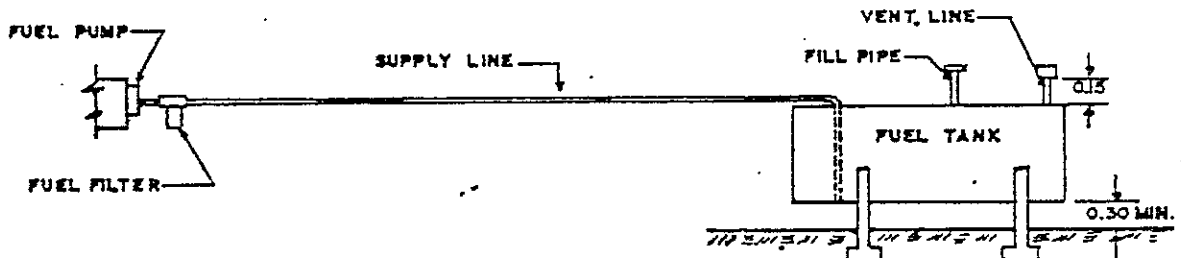
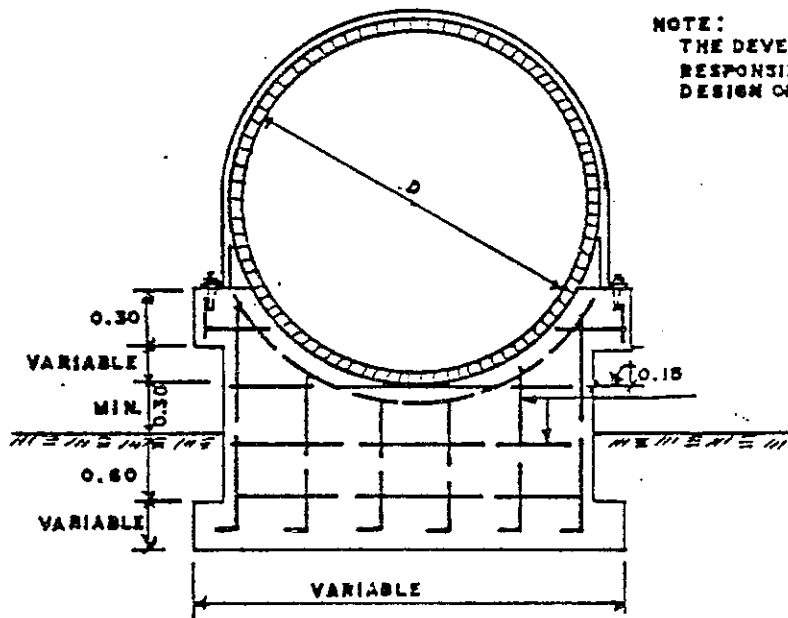
FIG. NUM. 2

DATE 8/08/80





NOTE:
 THE DEVELOPER SHALL BE
 RESPONSIBLE FOR THE STRUCTURAL
 DESIGN OF THE FOUNDATIONS.



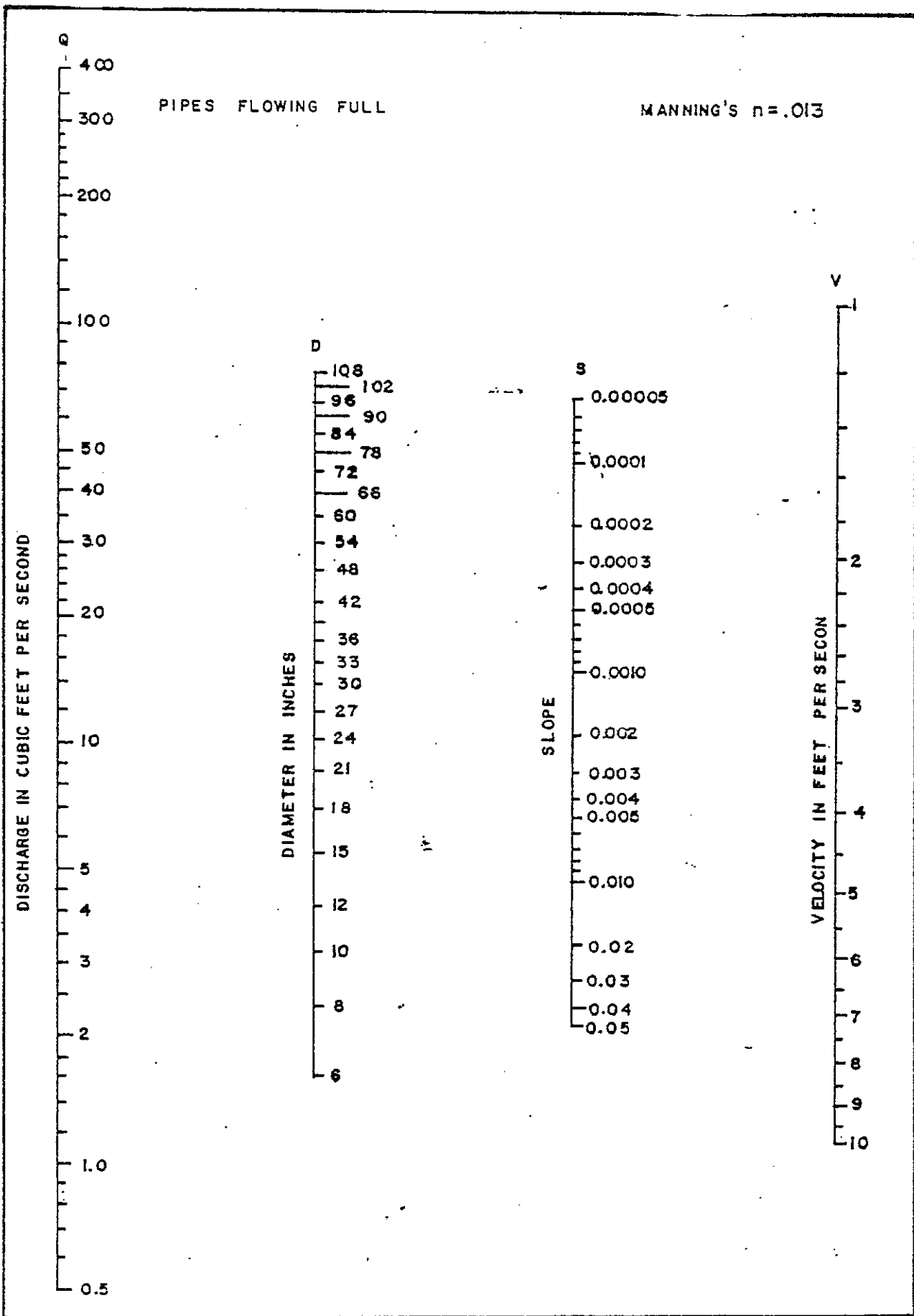
NOT TO SCALE

FUEL TANK AND FOUNDATION DETAIL

FIG. NUM. 3

DATE 8/5/80



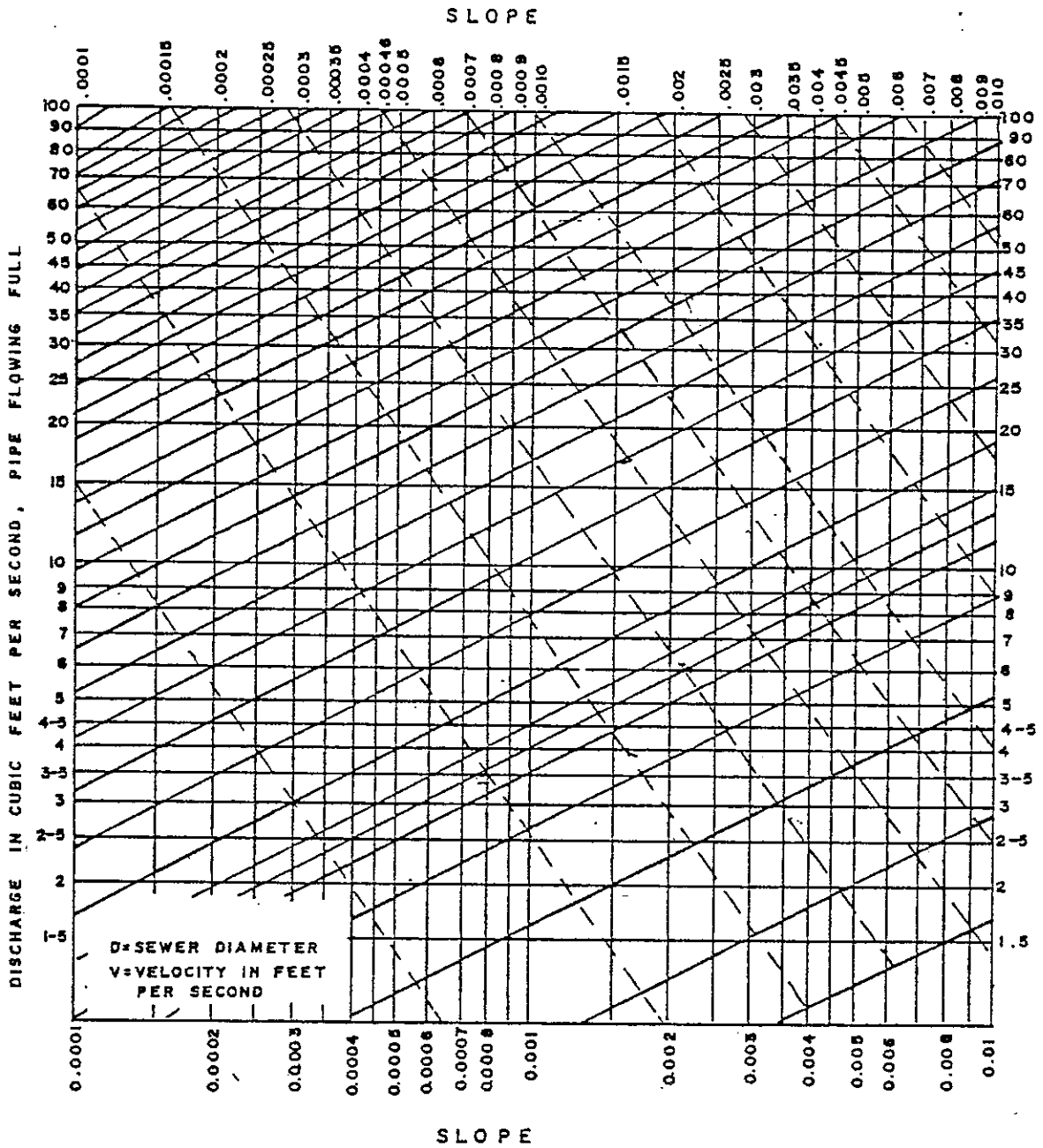


DISCHARGE IN CEMENT PIPES

FIG. NO. 4
DATE: 8/08/80



WATER FLOW IN CEMENT PIPES



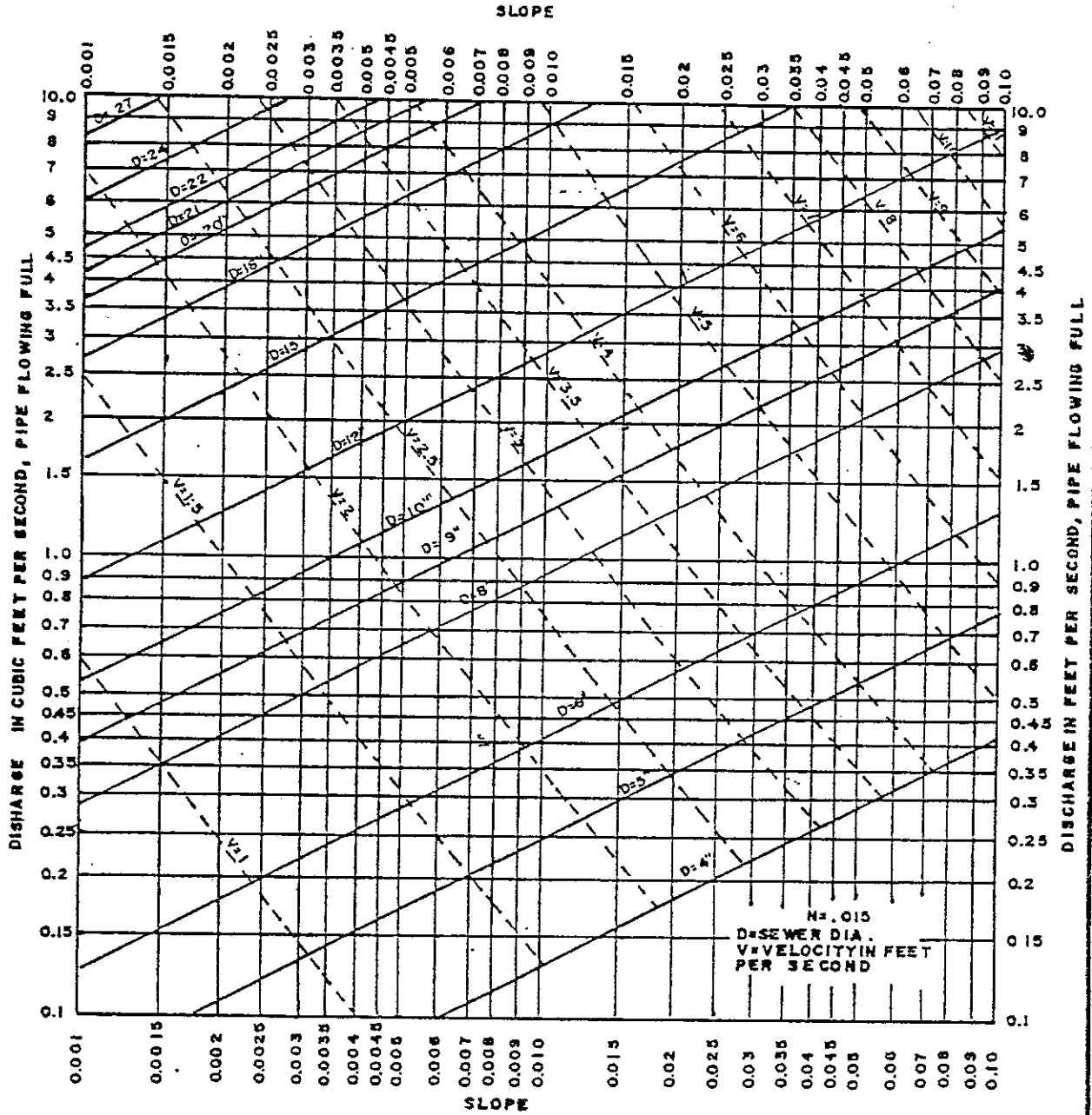
DISCHARGE IN CIRCULAR PIPES WITH SMOOTH SLOPES

FIG. NO. 5

DATE 8/08/80



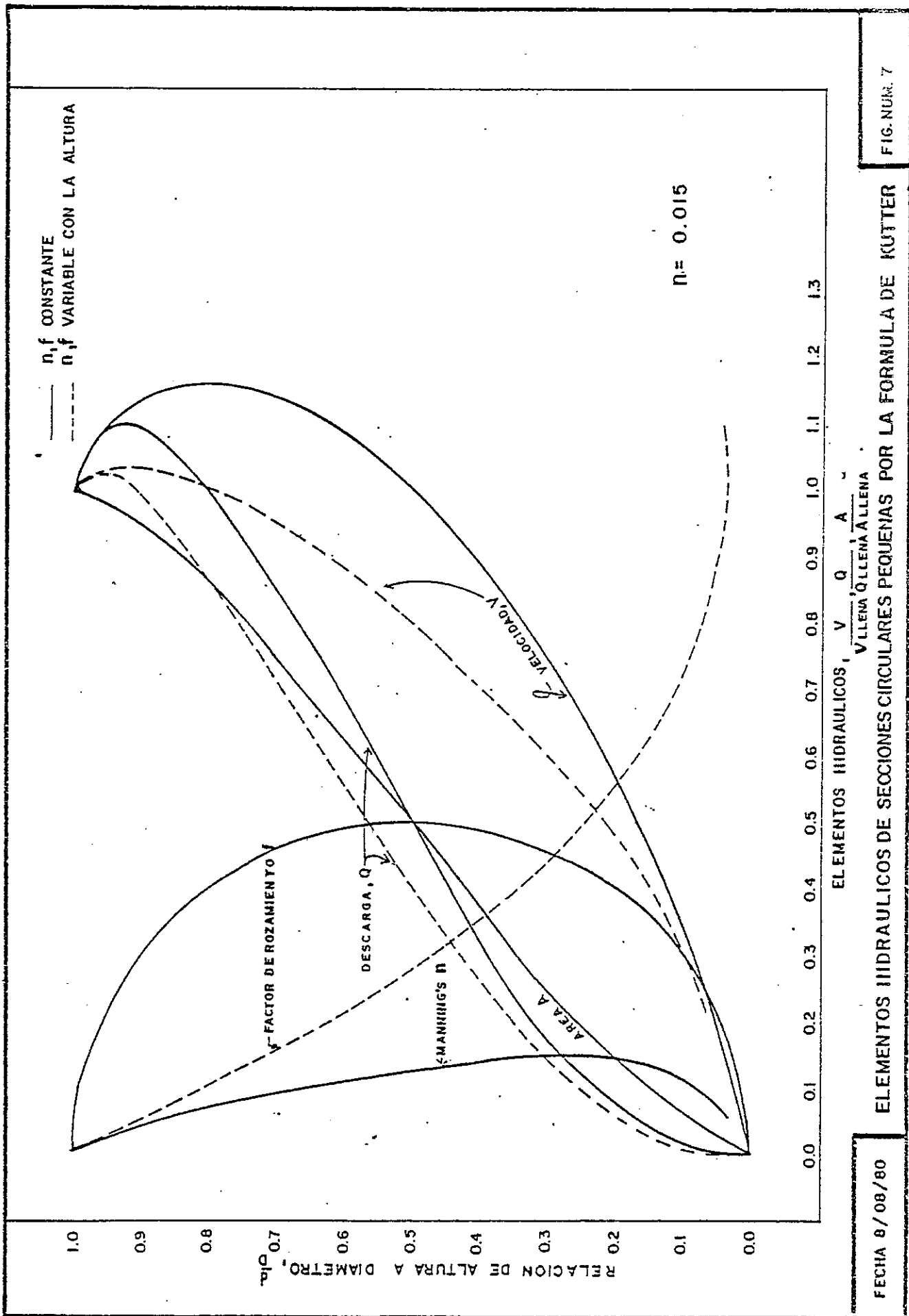
WATER FLOW IN CEMENT PIPES



DISCHARGE IN CIRCULAR PIPES
WITH STEEP SLOPES

FIG. NO. 6
DATE: 8/08/80

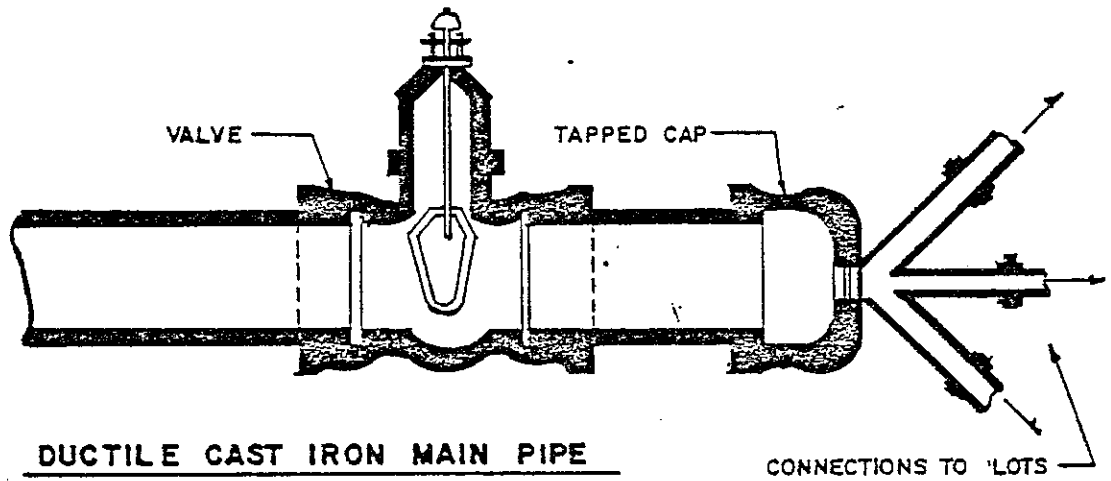




FECHA 8/08/80

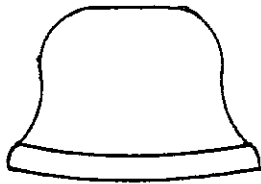
ELEMENTOS HIDRAULICOS DE SECCIONES CIRCULARES PEQUEÑAS POR LA FORMULA DE KUTTER





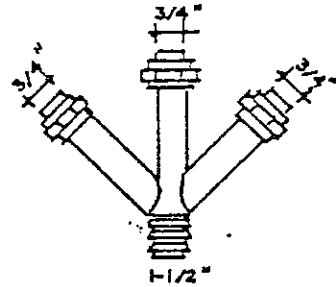
DUCTILE CAST IRON MAIN PIPE

CONNECTIONS TO 'LOTS'



TAPPED CAP

SIMILAR OR EQUAL TO F-1390
"JAMES B CLOW & SONS, INC."



MULTIPLE CONNECTION BRONZE PLUG

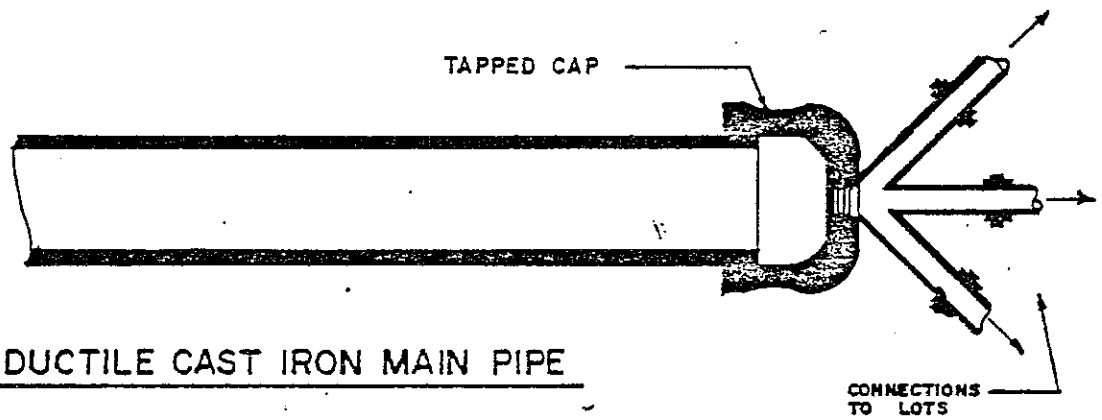
SIMILAR OR EQUAL TO F-4435
"JAMES B CLOW & SONS, INC."

DETAILS OF MULTIPLES CONNECTIONS TO AVOID
DEAD ENDS WHERE POSSIBLE EXTENSION EXISTS

FIG. NUM. 8

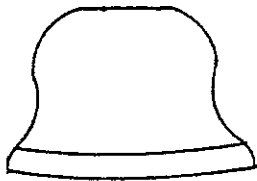
DATE: 8/08/80





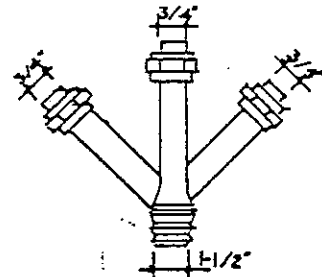
DUCTILE CAST IRON MAIN PIPE

CONNECTIONS
TO LOTS



TAPPED CAP

SIMILAR TO F-1390 DE
"JAMES B. CLOW & SONS, INC."



MULTIPLE CONNECTION BRONZE

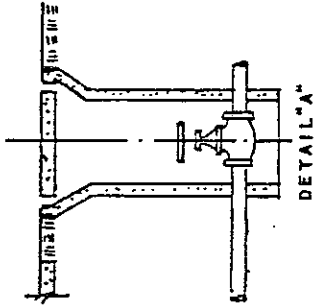
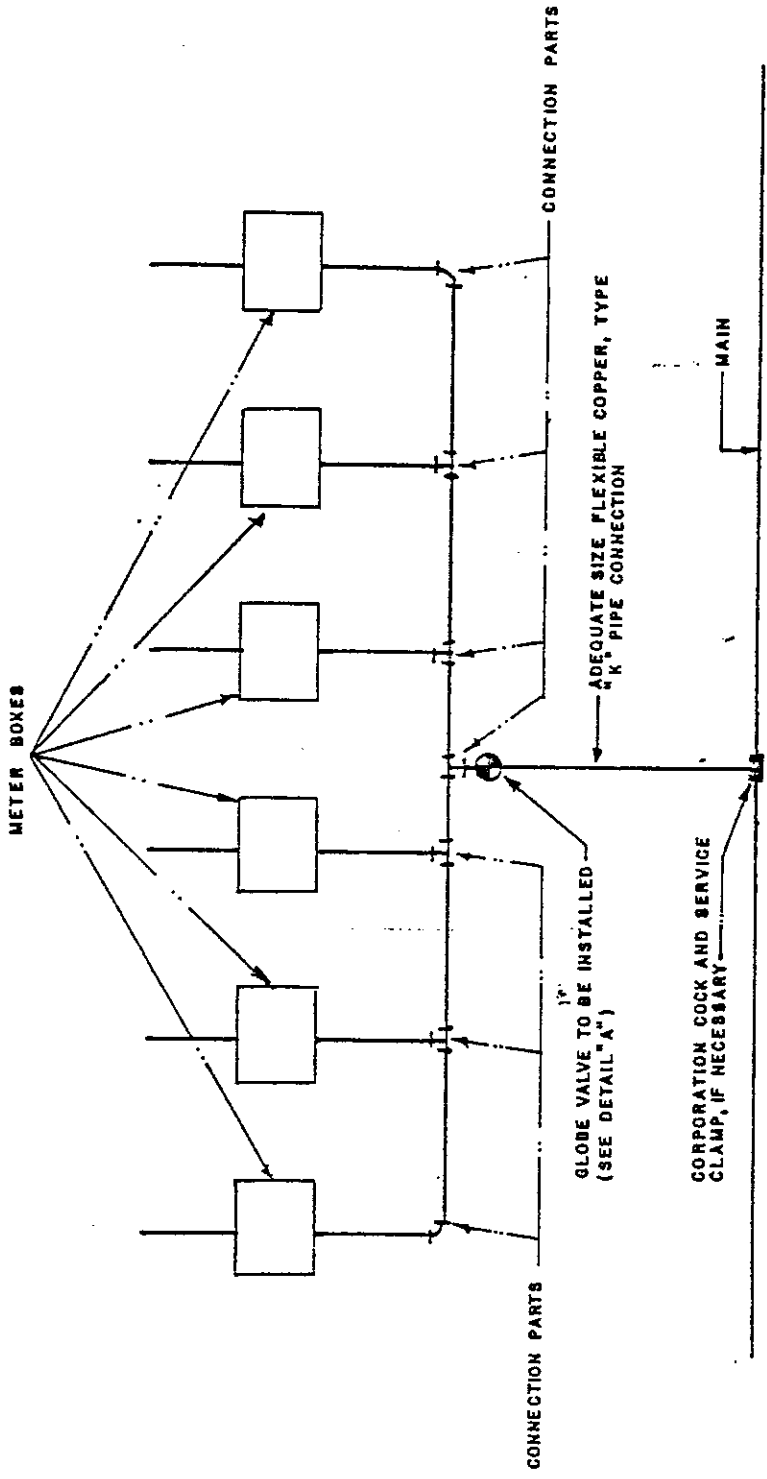
SIMILAR TO F-4435
"JAMES B. CLOW & SONS, INC."

DETAILS OF MULTIPLES CONNECTIONS TO AVOID DEAD
ENDS WHERE POSSIBLE EXTENSION EXISTS

FIG. NUM. 9

DATE: 8/08/80





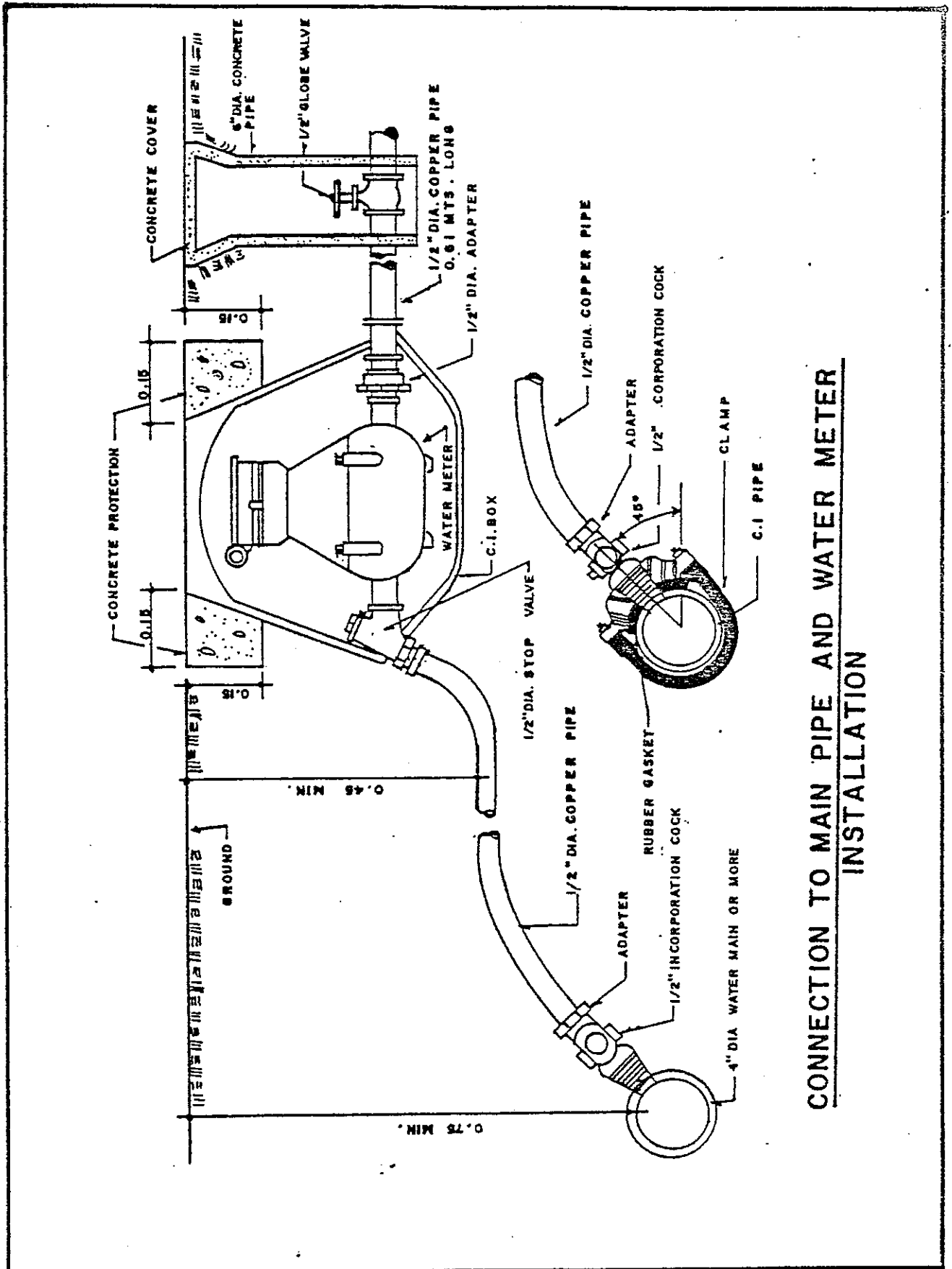
- NOTES:
- 1-FOR 3/4" TO 2" DIA. CONNECTION.
 - 2-FOR FLEXIBLE COPPER PIPE CONNECTION USE FLARE END FILLINGS.
 - 3-THE CONNECTION AND BRANCHES SHALL BE DETERMINED IN ACCORDANCE WITH THE NUMBER OF METERS AND ITS SIZE.
 - 4-SERVICE CLAMP SHALL BE USED WHEN THE RATIO BETWEEN THE CONNECTION AND THE MAIN IS MORE THAN 1/8.
 - 5-ALL FITTINGS SHALL BE THREAD TYPE WHEN BRONZE PIPE IS USED.

SUBDIVDED HOUSE CONNECTION DETAIL

DATE 6/08/80

FIG. NUM. 10





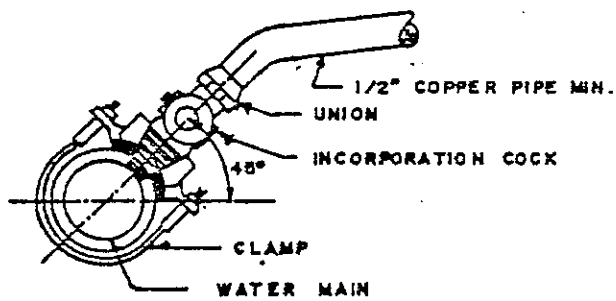
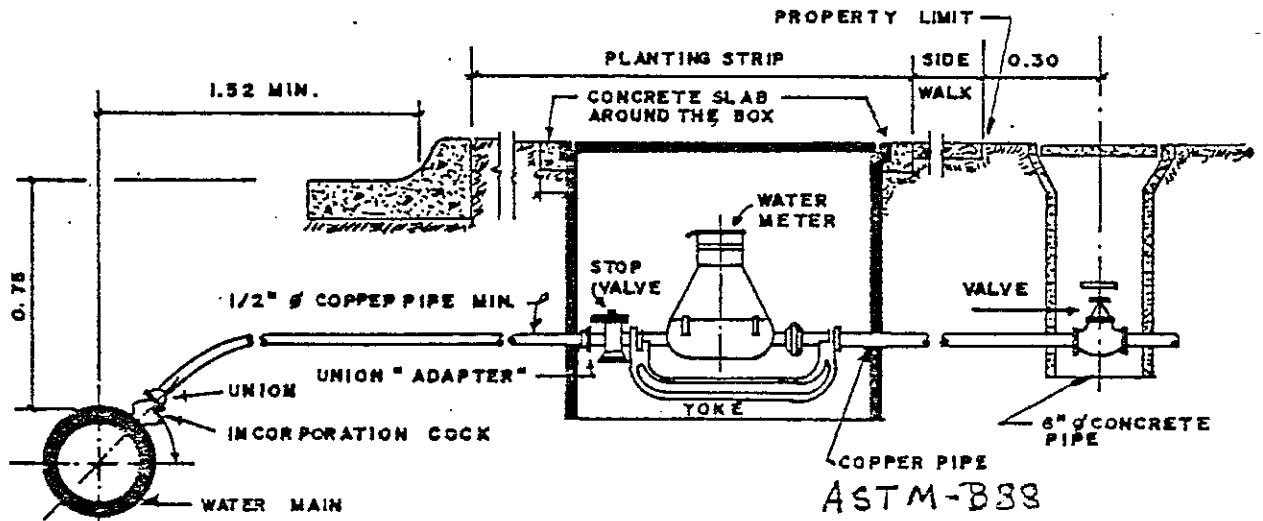
**CONNECTION TO MAIN PIPE AND WATER METER
INSTALLATION**

CONNECTION TO MAIN PIPE

FIG. NUM. 11

DATE 8/08/80





NOTE:

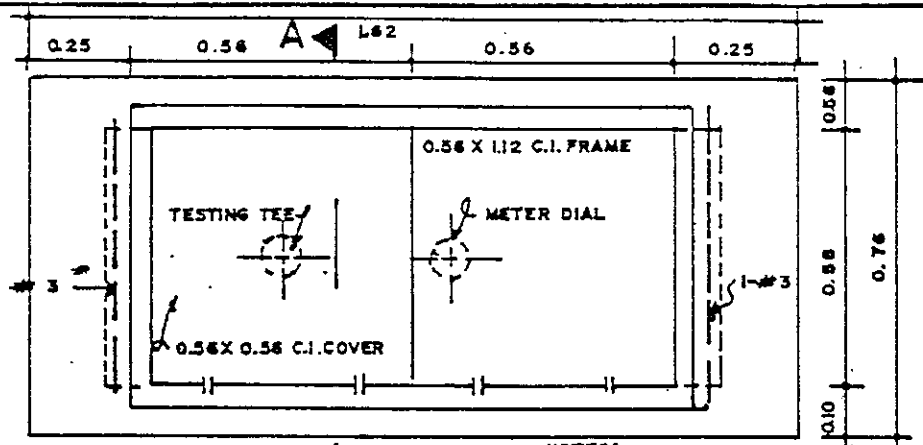
ALL HOUSE CONNECTIONS TO BE
MADE AT CENTER OF PROPERTY

HOUSE CONNECTION AND METER
INSTALLATION TYPICAL DETAIL

FIG. NUM. 12

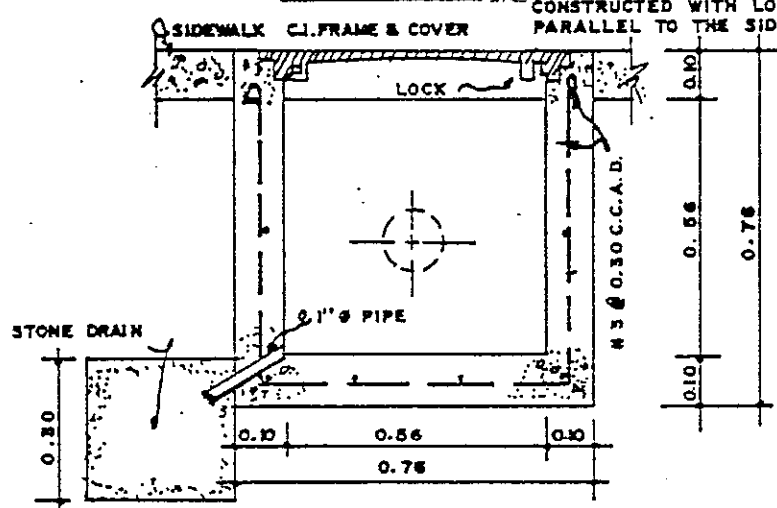
DATE: 8/08/80



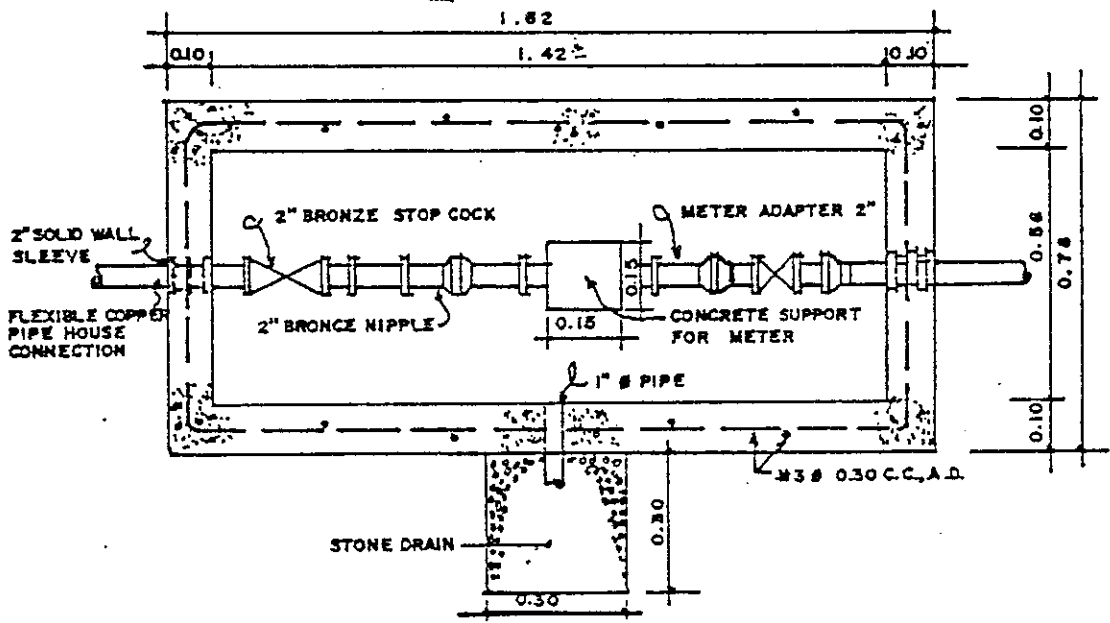


- NOTES:**
- 1- BOX TO BE CONSTRUCTED IN THE SIDEWALK OR PLANTING STRIP.
 - 2- IN NARROW SIDEWALK THE BOX SHALL BE CONSTRUCTED WITH LONGITUDINAL AXIS PARALLEL TO THE SIDEWALK AXIS

PLAN



SECTION A-A



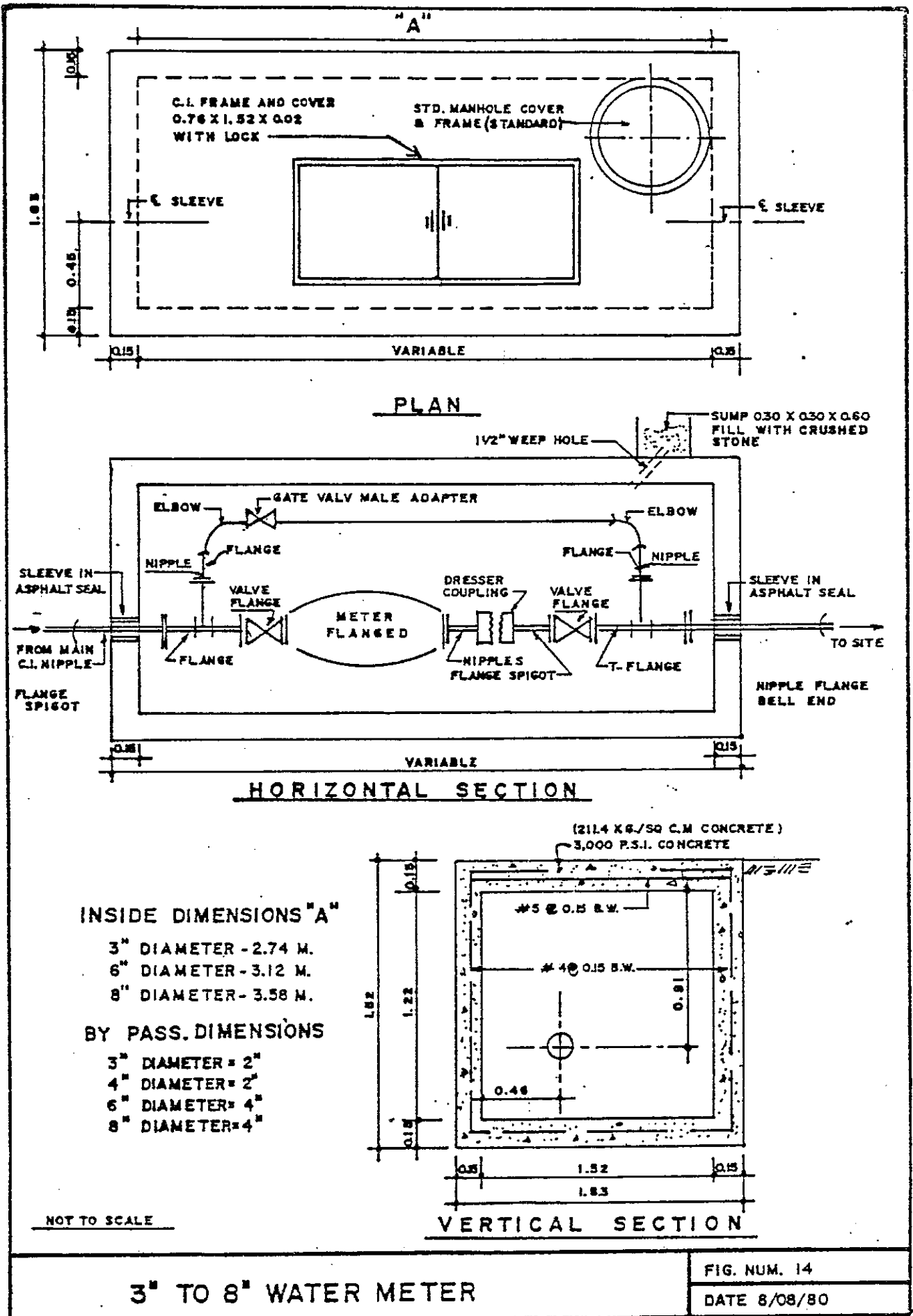
SECTION PLAN

NOT TO SCALE

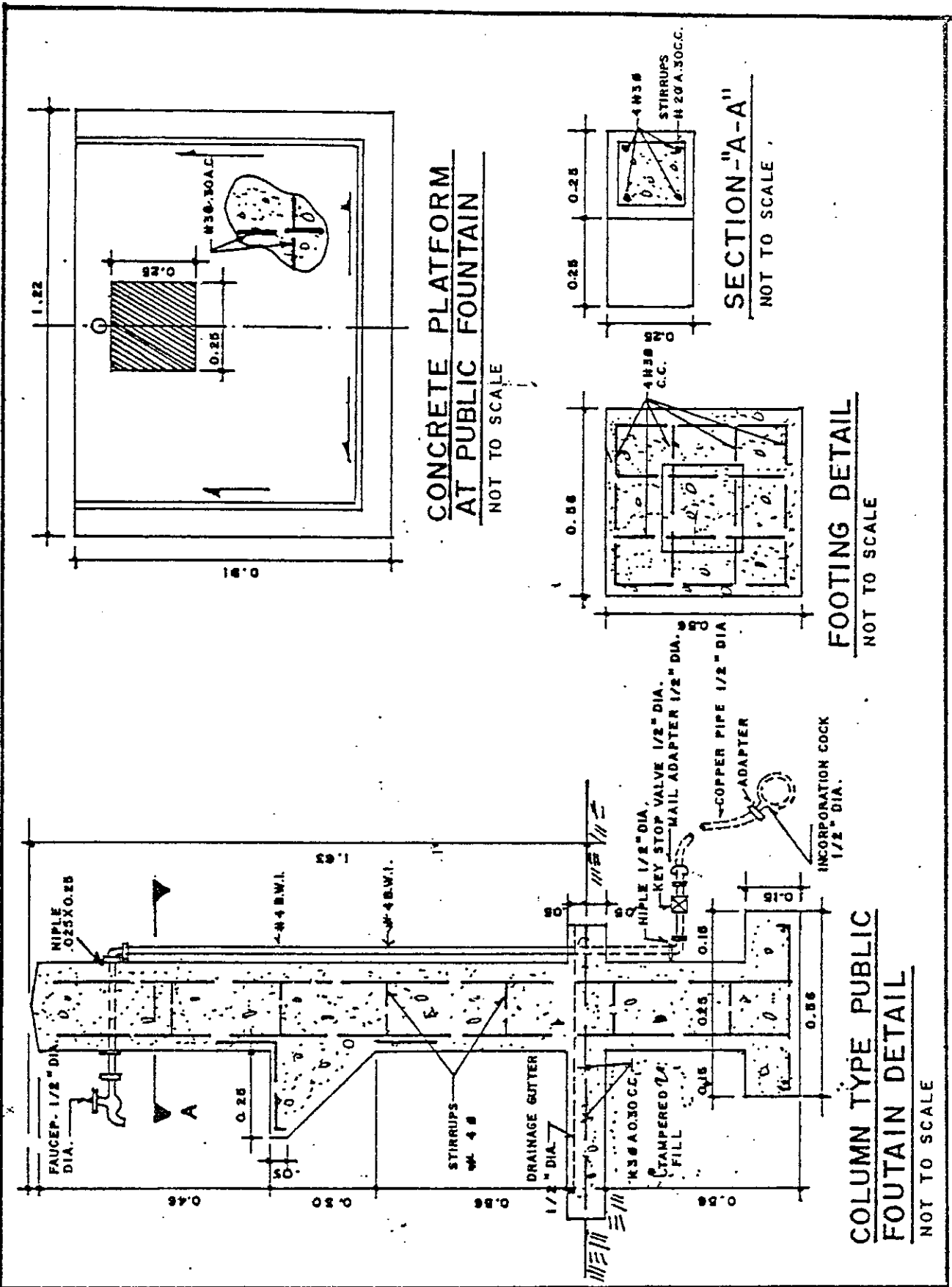
DETAILS FOR 2" DIA. WATER METER BOX

FIG. NUM. 13
DATE 8/08/80









**CONCRETE PLATFORM
AT PUBLIC FOUNTAIN**
NOT TO SCALE

SECTION "A-A"
NOT TO SCALE

FOOTING DETAIL
NOT TO SCALE

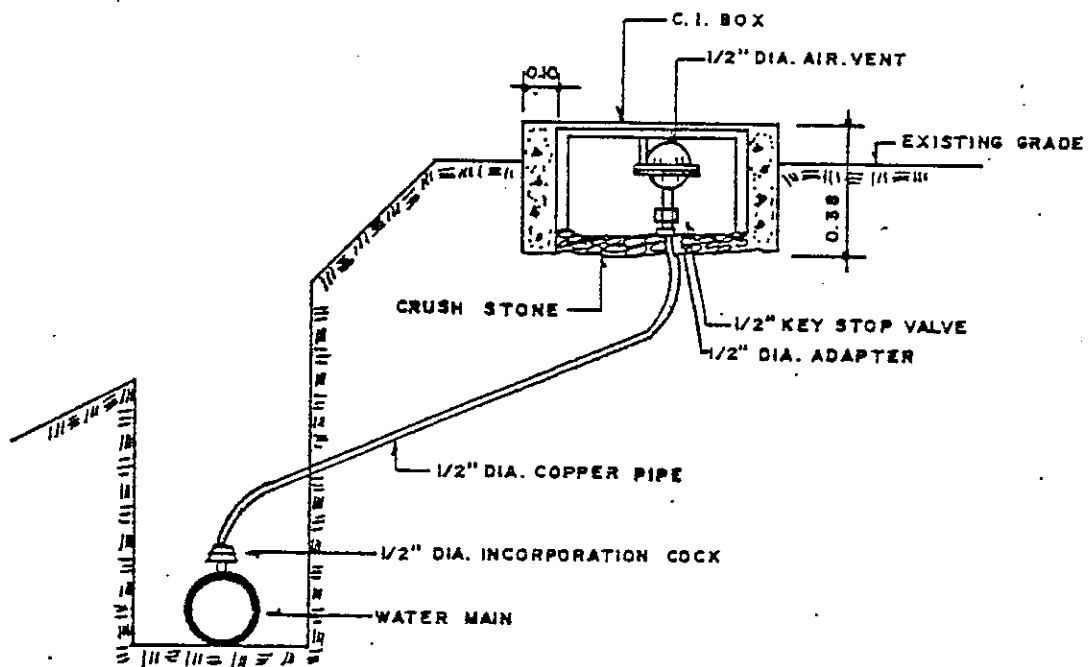
**COLUMN TYPE PUBLIC
FOUNTAIN DETAIL**
NOT TO SCALE

PUBLIC FOUNTAIN

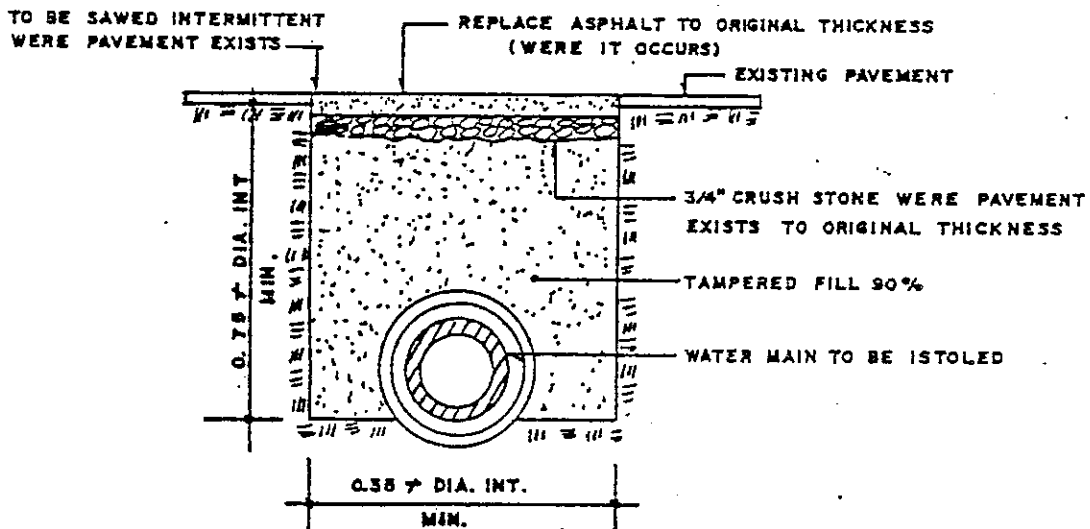
FIG. NO. 15

DATE 8/08/80



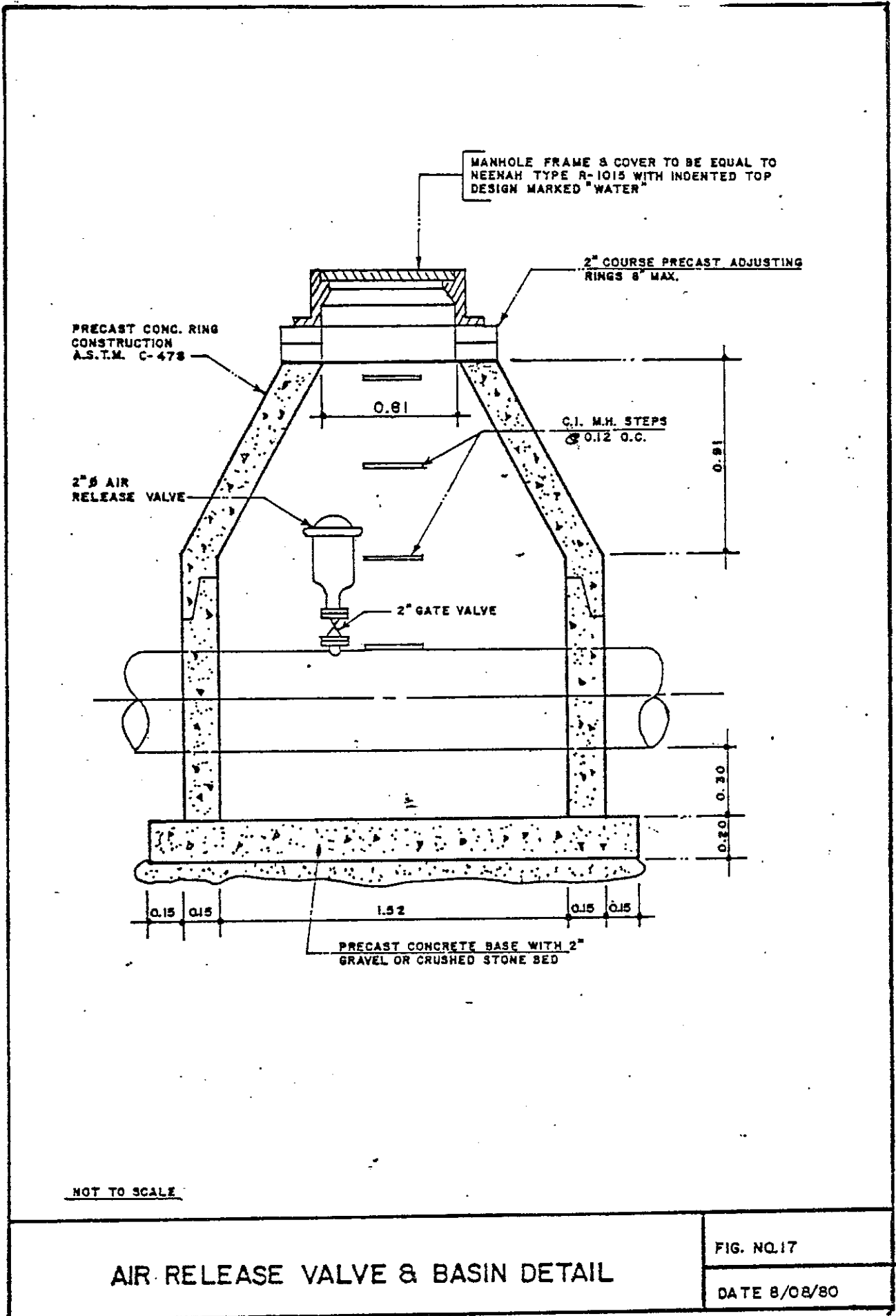


1/2" VENT. & CONCRETE BOX DETAIL
NOT TO SCALE



EXCAVATION & FILL FOR PIPE INSTALLATION
NOT TO SCALE





AIR RELEASE VALVE & BASIN DETAIL

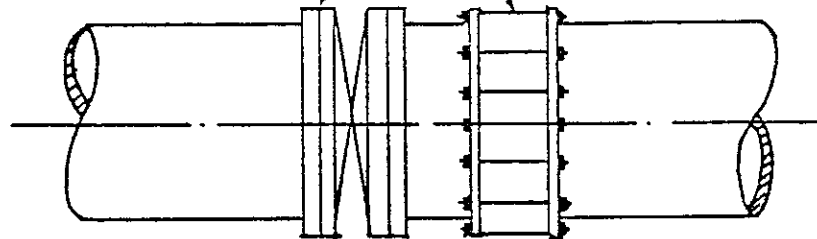
FIG. NO.17

DATE 8/08/80



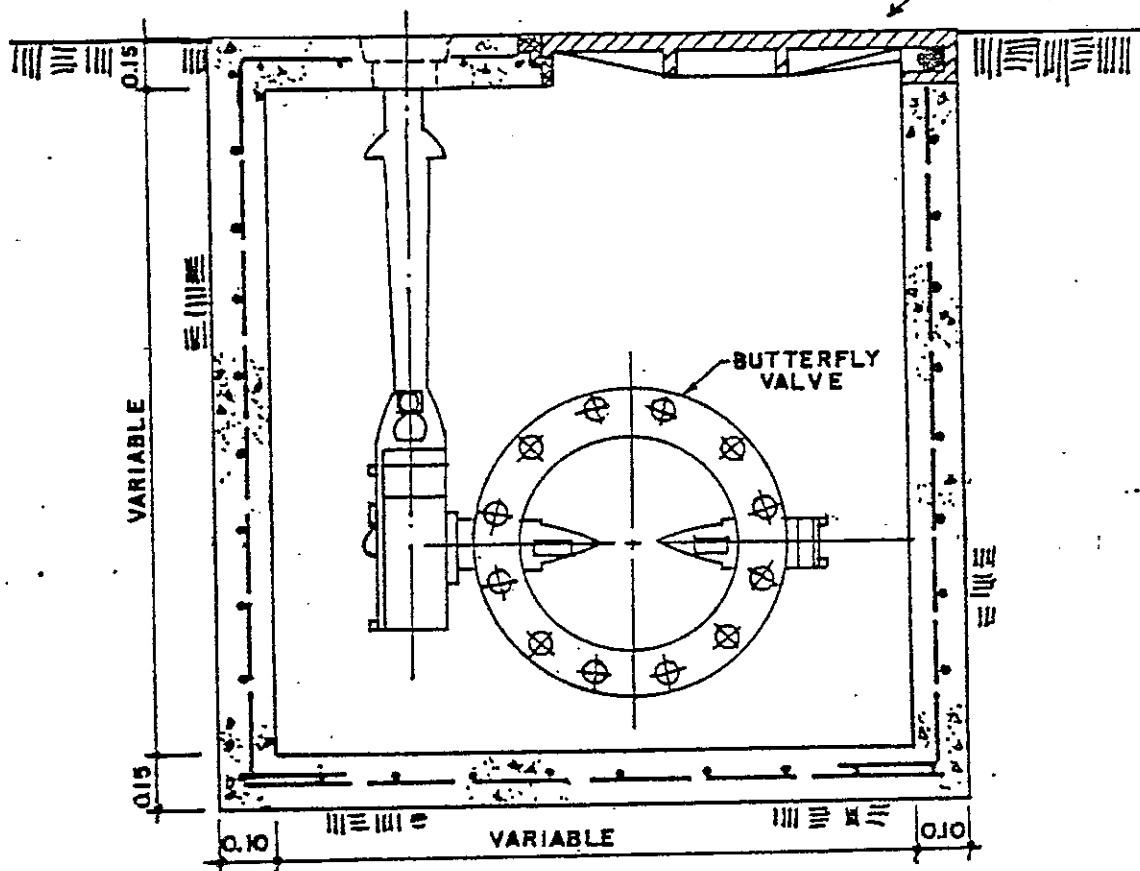
16" OR 20" BUTTERFLY VALVE

16" OR 20" DRESSER COUPLING



PLAN

0.61 x 0.91 C.I., FRAME & COVER



SECTION

NOTE:

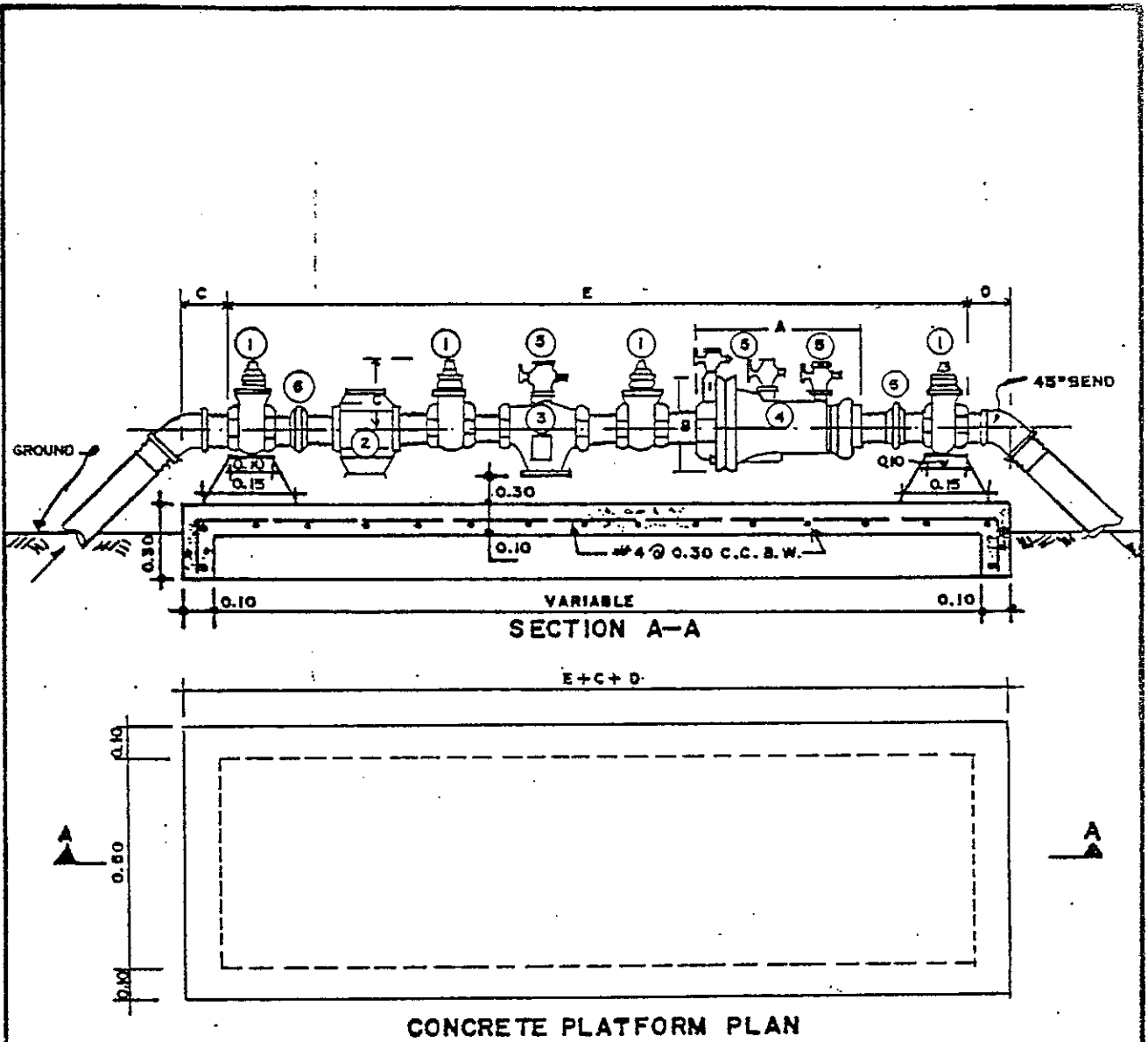
THE DEVELOPER SHALL BE RESPONSIBLE FOR THE STRUCTURAL DESIGN

16" OR 20" DIA. BUTTERFLY VALVE DETAIL

FIG. NUM. 18

FECHA : 8/08/80





SIZES (IN)	DIMENSIONS (INCHES)				
	A	B	C	D	E
3/4	7 7/4	4 7/4	4	4	15 7/4
1	7 7/4	4 7/4	6	6	17 7/2
1 1/4	7 3/8	4 7/4	8	8	19 7/2
1 1/2	12 5/8	7 7/2	10	10	25 7/8
2	12 5/8	7 7/2	12	12	27 7/8

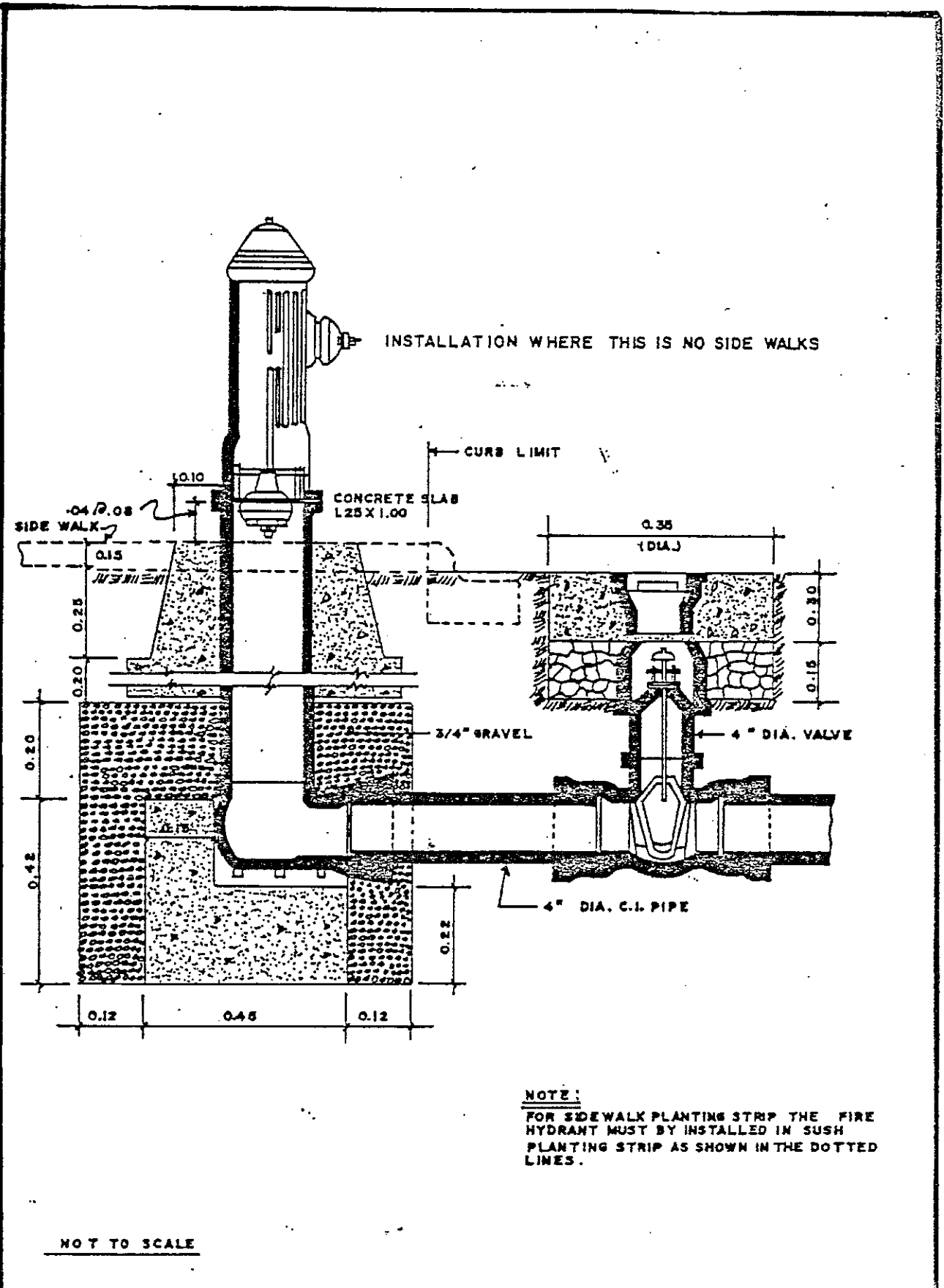
NOTES:

(1) ALL FITTINGS SHALL BE MADE OF BRONZE

(2) THIS EQUIPMENT SHALL BE INSTALLED INSIDE THE LOT

- LEGEND**
- ① GATE VALVE
 - ② WATER METER WITH LOCK CAP
 - ③ STRAINER
 - ④ BACKFLOW PREVENTER VALVE
 - ⑤ TEST COCK
 - ⑥ UNIVERSAL UNION



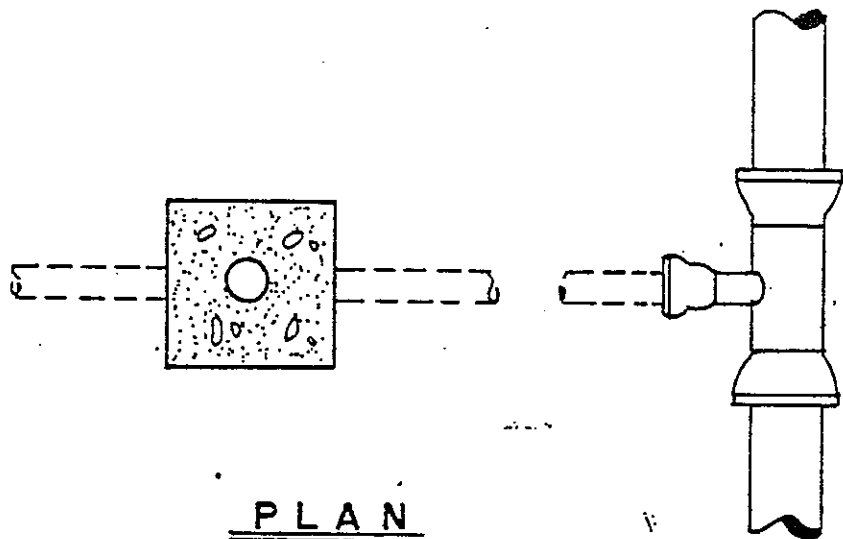


FIRE HYDRANT
 (PUERTO RICO)

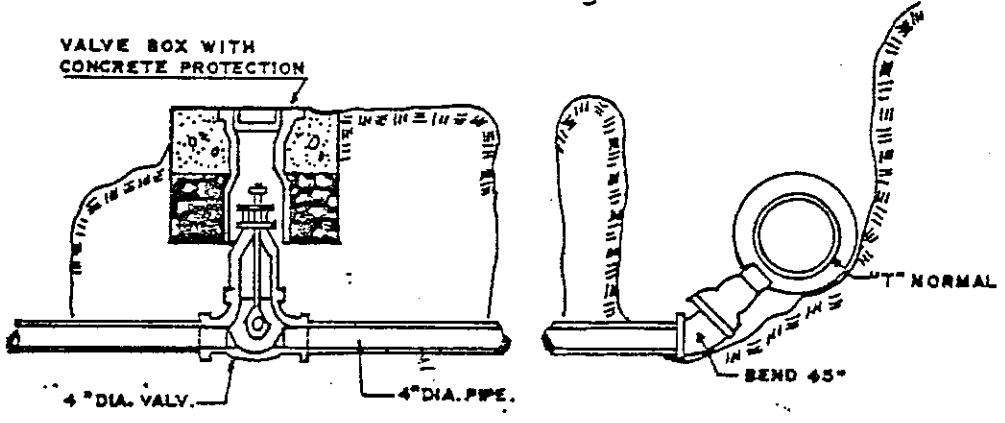
FIG. NO. 20

DATE 8/08/80





PLAN



SECTION

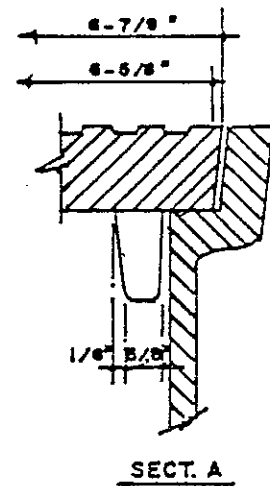
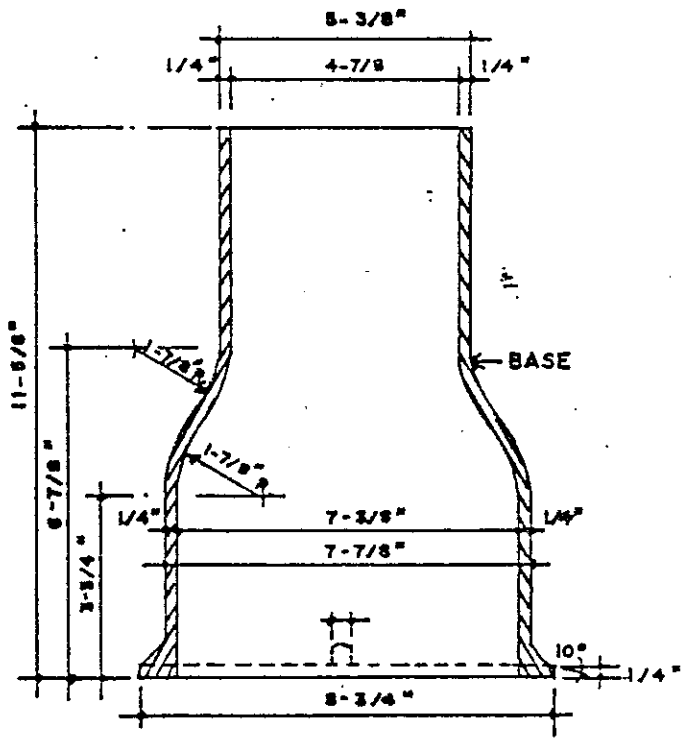
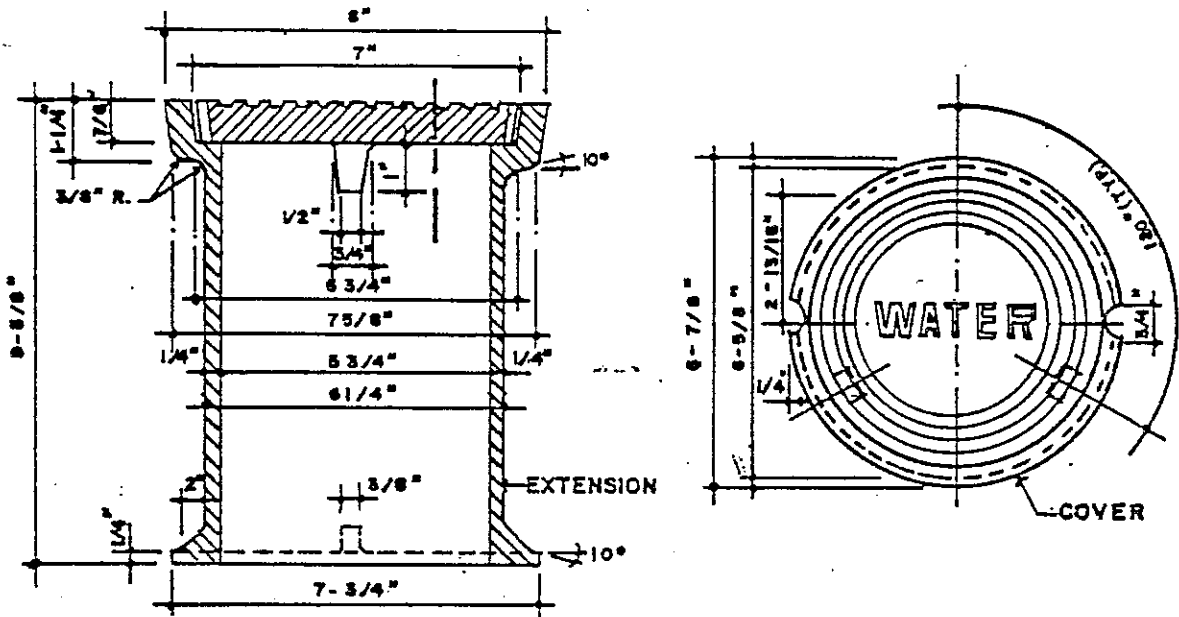
DRAIN DETAIL

C.I. VALV BOX FOR VALVE PROTECTION

FIG. NO. 21

DATE: 8/08/60





CAST IRON TELESCOPIC VALVE BOX
INCLUDING EXTENSION AND COVER

FIG. NO .22

DATE 8/08/80



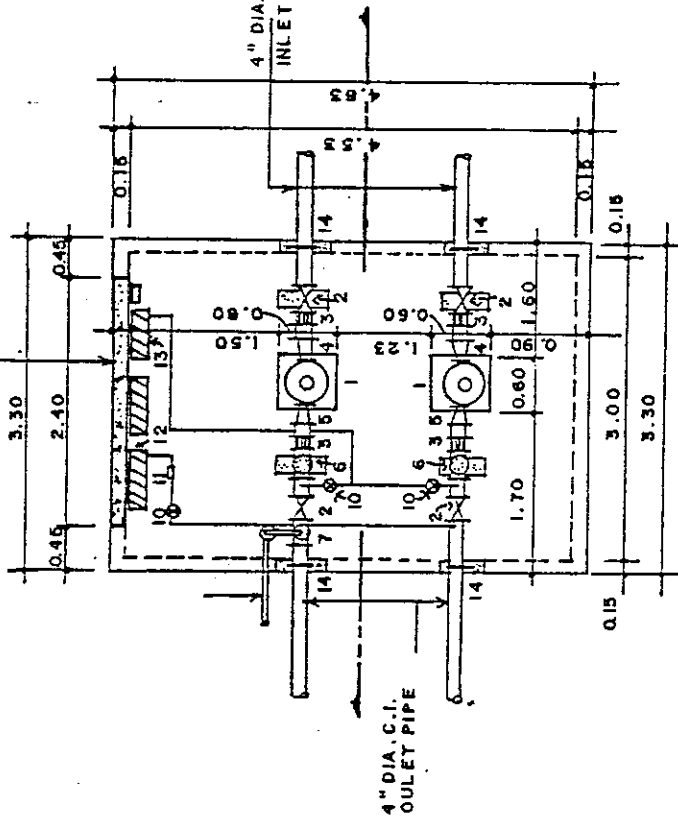
LEGEND

- 1- VERTICAL CENTRIFUGAL PUMP, WEATHERPROOF WITH CAPACITY FOR G.P.M., AGAINST A TOTAL HEAD OF FT., EQUAL OR SIMILAR TO MODEL JOHNSON PUMP CO., STAGES, ATTACHED TO AN ELECTRIC MOTOR OF H.P. R.P.M. PHASES, 60 CYCLES, 220 VOLTS.
- 2- 2" DIA. VALVE C.I., F.F., 150 #
- 3- 4" DIA. C.I., F.F., FLANGED COUPLING ADAPTER
- 4- 5' 4" X 2" DIA. C.I., F.F., CONCENTRIC REDUCER OR 2" NIPPLE
- 5- PRESSURE SUBSTAINING AND CHECK VALVE EQUAR OR SIMILAR T MODEL NUM. 51, CLA - VAL CO. WITH ADJUSTABLE PILOT
- 7- 4" X 4" X 2" C.I., F.F., 150 # SHORTBODY TEE
- 8- LBS. BRONZE, FLANGE PRESSURE CUSHION VALVE
- 8-A- DIA. HAND OPERATED GATE VALVE
- 9- DIA. C.I., F.F., 90° ELBOW
- 10- 1/4" DIA. BRONZE STOP COCK
- 11- PRESSURE SHUBBER
- 12- DUPLEX PRESSURE RECORDING GAUGE WITH 7 DAYS RECORDER
- 13- TANKTROL, RANGE TO
- 14- 3/8" X 3" STEEL STRAP WITH MACHINE EXPANSION AND BOLT.

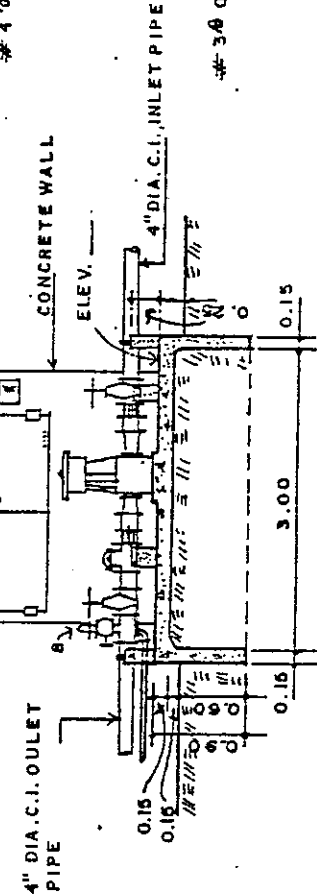
NOTE

PUMPS SHOULD BE INSTALLED DIRECTLY IN FRONT OF THE GATE TO THE STATION LOT AND A STEEL STRUCTURE AND CRANE SHALL BE PROVIDED TO FACILITATE THE REMOVAL OR REPLACEMENT OF THE EQUIPMENT. THE SUCTION AND DISCHARGE PIPE LINES SHOULD NOT INTERFERE WITH THE ACCESS ROAD AND SHOULD BE INSTALLED AT THE SIDES OF THE STATION LOT.

CONCRETE WALL FOR CONTROL PANEL INSTALLATION

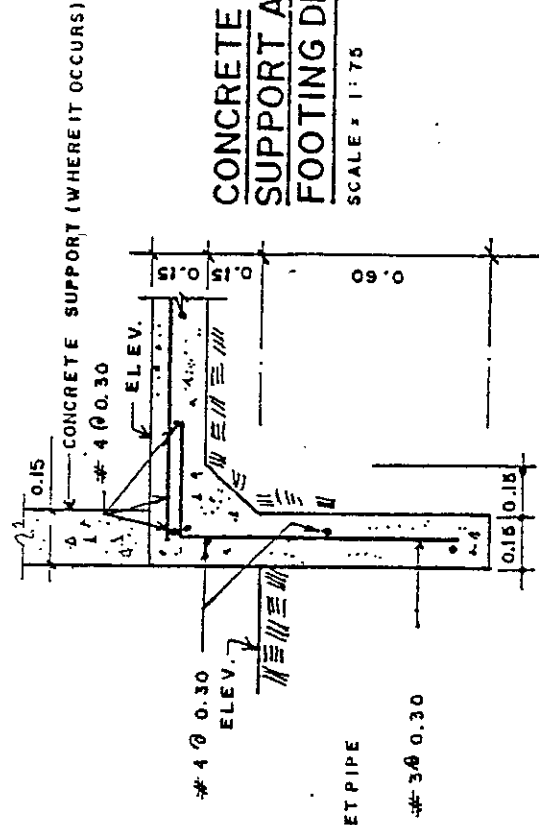


PLAN
SCALE: 1/75

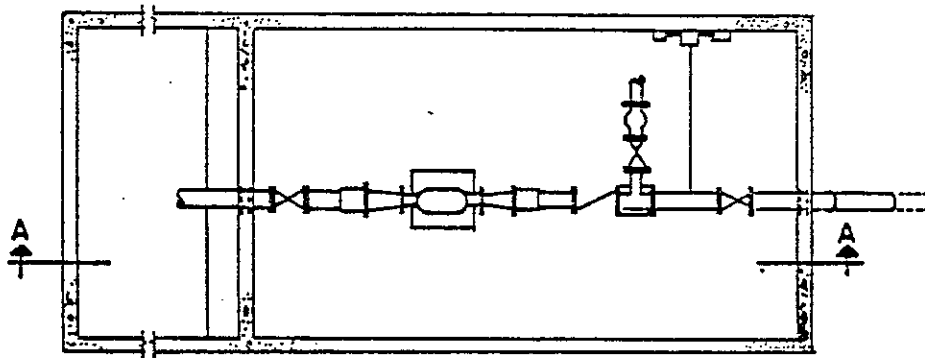


SECTION "A-A"
SCALE: 1/75

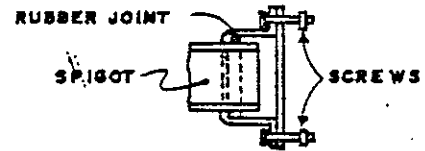
CONCRETE SUPPORT AND FOOTING DETAIL
SCALE: 1/75



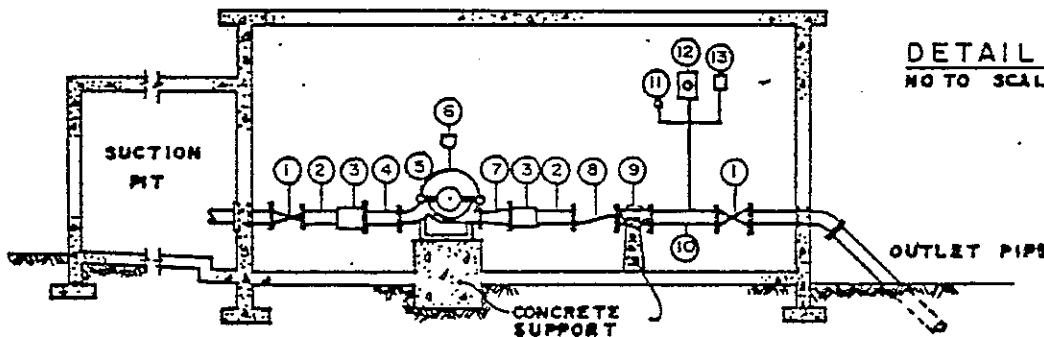




PLAN
NOT TO SCALE



DETAIL "D"
NOT TO SCALE



SECTION "A-A"
NOT TO SCALE

LEGEND

- ① GATE VALVE, HAND WHEEL OPERATED
- ② C.I. NIPPLE, FLANGED & SPIGOT
- ③ DRESSER COUPLING
- ④ REDUCER
- ⑤ HORIZONTAL CENTRIFUGAL BOOSTER PUMP
- ⑥ AIR VENT
- ⑦ PUMP CONCENTRIC REDUCER
- ⑧ COMBINATION BACK PRESSURE & CHECK VALVE
- ⑨ TEE, PRESSURE RELIEF VALVE
- ⑩ C.I. FLANGED NIPPLE
- ⑪ PRESSURE GAUGE
- ⑫ PRESSURE RECORDER
- ⑬ AUTOMATIC PRESSURE SWITCH

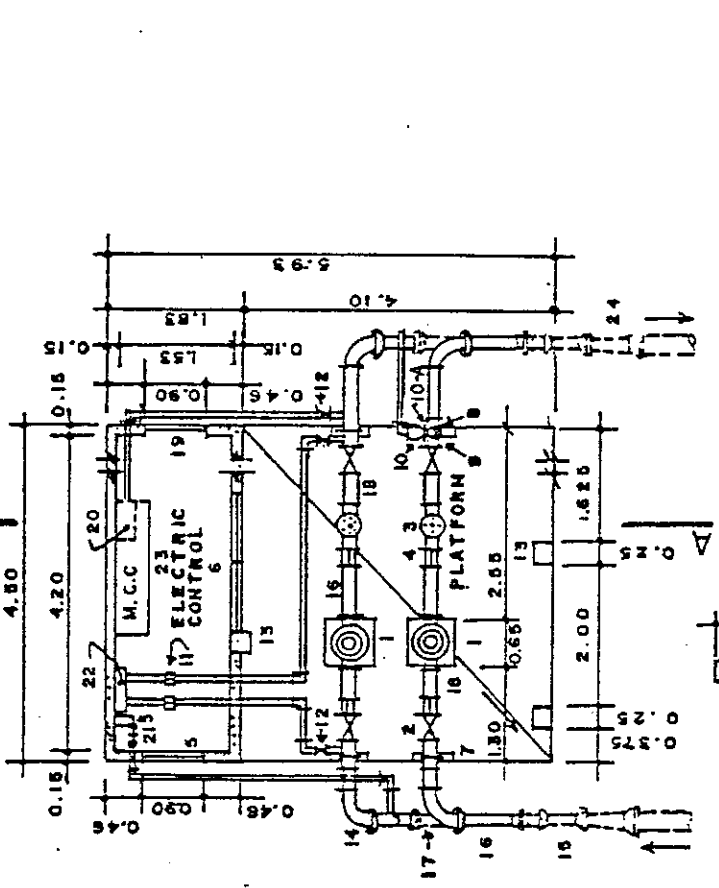
NOTE:
ALL FLANGED FITTINGS

TYPICAL DETAIL OF HORIZONTAL CENTRIFUGAL BOOSTER PUMP CONNECTED TO A SUCTION PIT	FIG. NO. 24
	DATE 8/08/80



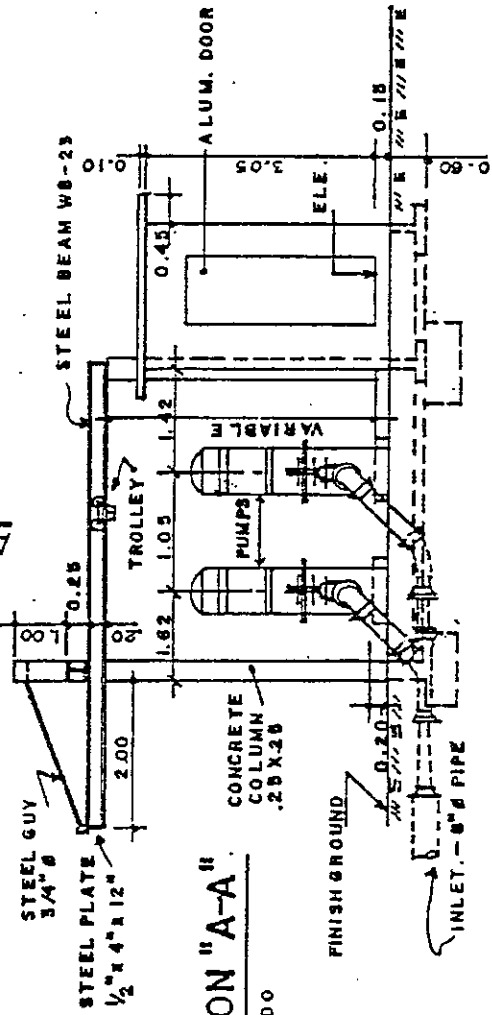
LEGEND

1. VERTICAL CENTRIFUGAL PUMP WEATHERPROOF WITH CAPACITY FOR _____ G.P.M. AGAINST A TOTAL HEAD OF _____ FT. EQUAL OR SIMILAR TO MODEL _____ JOHNSTON PUMP CO., ATTACHED TO _____ H. A. ELECTRIC MOTOR _____ R.P.M. PHASES _____ CYCLES AND _____ VOLTS.
2. # VALVE, 150#, F.F.
3. PRESSURE SUSTAINING AND CHECK VALVE, EQUAL OR SIMILAR TO MODEL NO. SICLA-VAL CO., WITH ADJUSTABLE PILOT.
4. FLANGED COUPLING ADAPTER
5. 3'-0" X 3'-0" ALUMINUM WINDOW (MIAMI)
6. 3'-0" X 5'-0" ALUMINUM WINDOW (MIAMI)
7. CONCRETE SUPPORT AND STEEL BRACKET
8. 90° ELBOW - 2" DIA.
9. "T" _____ C.I., F.F.F., 150#
10. PRESSURE SUSTAINING AND CHECK VALVE, 2" DIA. SIMILAR OR EQUAL TO CLA-VAL CO. SERIE 91 WITH ADJUSTABLE PILOT FROM P.S.F. TO _____ P.S.F. (BRONZE AND THREADED).
11. PRESSURE SNUBBER 1/4" DIA.
12. 1/4" DIA. GATE VALVE
13. CONCRETE COLUMN 0.25 X 0.25
14. DIA 90° ELBOW, C.I., F.F.F., 150#
15. "Y" _____ C.I., B.S.B., 150#
16. NIPPLE DIA. C.I., F.F.S., 150#
17. 45° BEND DIA. C.I., B.S.B., 150#
18. ALUMINUM DOOR 3'-0" X 5'-0"
19. NIPPLE 6" DIA. C.I., F.F. 150#
20. "TANK TROL" RANGE _____
21. ELECTRODE HOLDER
22. DUPLEX PRESSURE RECORDING GAUGE FOR 7 DAY RECORD
23. MOTOR CONTROL CENTER
24. X REDUCER



PLAN VIEW

SCALE: 1:100



SECTION "A-A"

SCALE: 1:100

PUMPING STATION WEATHERPROOF INSTALLATION

FIG. NO. 25

DATE 8/08/80

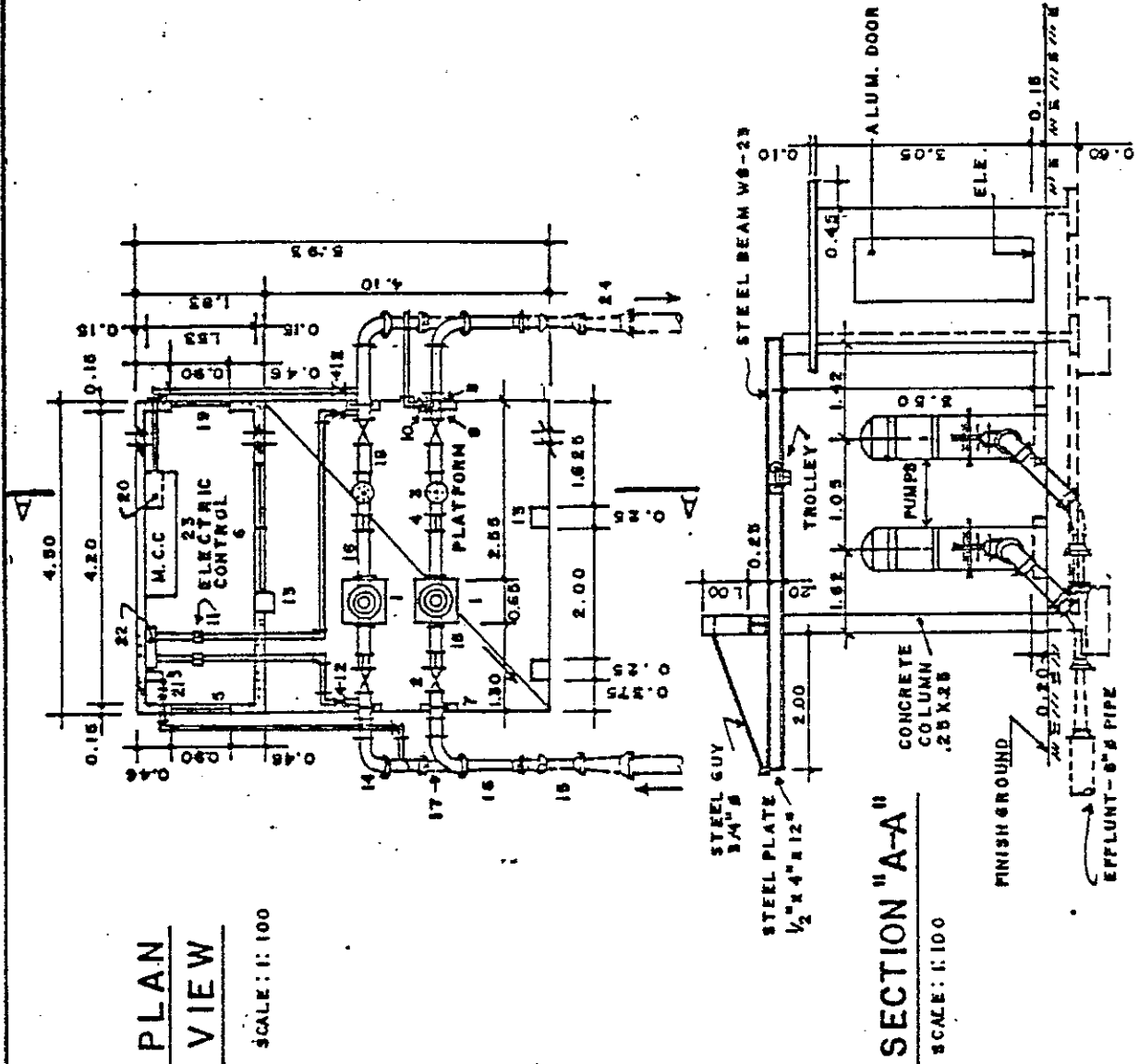


LEGEND

1. VERTICAL CENTRIFUGAL PUMP WEATHER PROOF WITH CAPACITY FOR 6 P.M. AGAINST A TOTAL HEAD OF 100 FT. EQUAL OR SIMILAR TO MODEL NO. JOHNSTON PUMP CO., ATTACHED TO H.P. ELECTRIC MOTOR, R.F.M. PHASES, CYCLES AND VOLTS.
2. 6" VALVE, 100#, F.F.
3. PRESSURE SUSTAINING AND CHECK VALVE, EQUAL OR SIMILAR TO MODEL NO. SICLX-VAL CO., WITH ADJUSTABLE PILOT.
4. 6" FLANGED COUPLING ADAPTER
5. 3'-0" X 3'-0" ALUMINUM WINDOW (MIAMI)
6. 3'-0" X 5'-0" ALUMINUM WINDOW (MIAMI)
7. CONCRETE SUPPORT AND STEEL BRACKET
8. 90° ELBOW - 2" DIA.
9. 1" X 6" X 2" H.F., F.F.F., 150#
10. PRESSURE SUSTAINING AND CHECK VALVE, 2" DIA. SIMILAR OR EQUAL TO CLA-VAL CO. SERIE 91 WITH ADJUSTABLE PILOT FROM P.S.F. TO P.S.F. (BRONZE AND THREADED).
11. PRESSURE SHUTTER 1/4" DIA.
12. 1/4" DIA. GATE VALVE
13. CONCRETE COLUMN 0.25 X 0.25
14. 6" DIA. 90° ELBOW, H.F., F.F., 150#
15. 1/2" X 6" X 6", H.F., B.B.B., 150#
16. NIPPLE 6" DIA. H.F., F.F.S., 150#
17. 45° BEND 6" DIA. H.F. B.B.B., 150#
18. ALUMINUM DOOR 3'-0" X 5'-0"
19. NIPPLE 6" DIA. H.F., F.F. 150#
20. TANK TROL
21. ELECTRODE HOLDER
22. DUPLEX PRESSURE RECORDING GAUGE FOR 7 DAY RECORDER.
23. MOTOR CONTROL CENTER
24. 2" X 6" REDUCER

PUMPING STATION WEATHER PROOF INSTALLATION

FIG. NO. 25-A
DATE 8/08/80

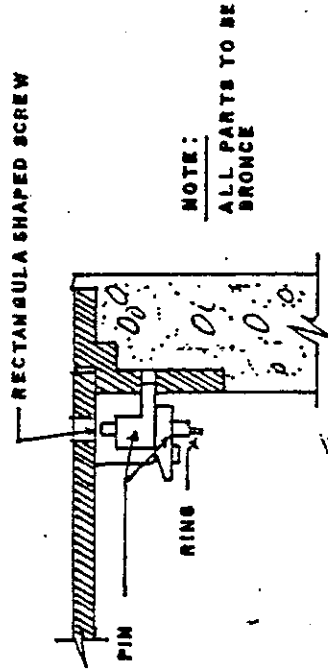
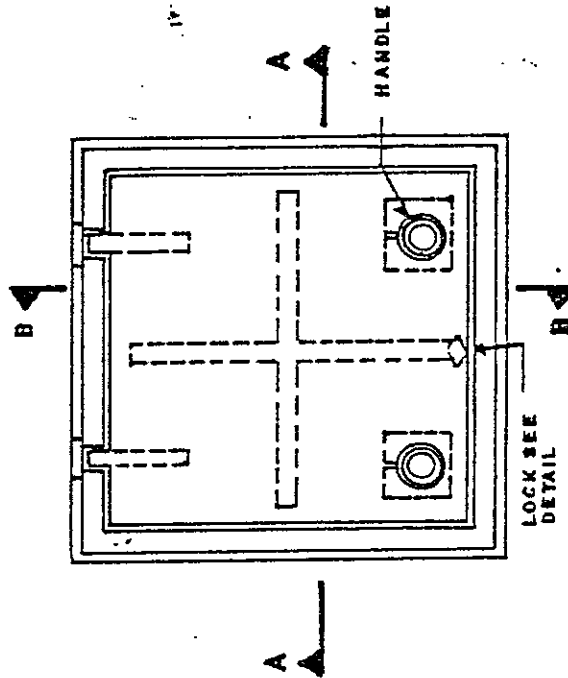


PLAN
VIEW
SCALE: 1:100

SECTION "A-A"
SCALE: 1:100



DESCRIPTION	NUMBER	A	B	C	D
FLOAT VALVE FRAME AND COVER	16225	1.07 MT.	0.97 MT.	0.95 MT.	0.90 M.T.
CHECK VALVE FRAME AND COVER	15181	1.22 MT.	1.12 MT.	1.11 MT.	1.07 MT.
FRAME AND COVER FOR INSPECTION MANHOLE	16213	0.76 MT.	0.66 MT.	0.65 MT.	0.60 MT.



PLANT

LOCK DETAIL

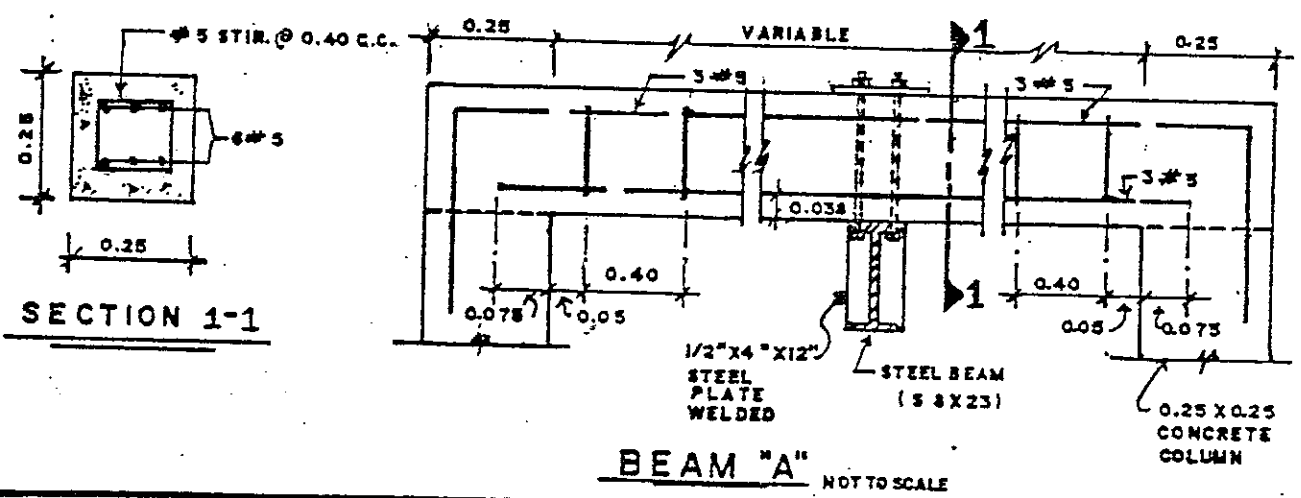
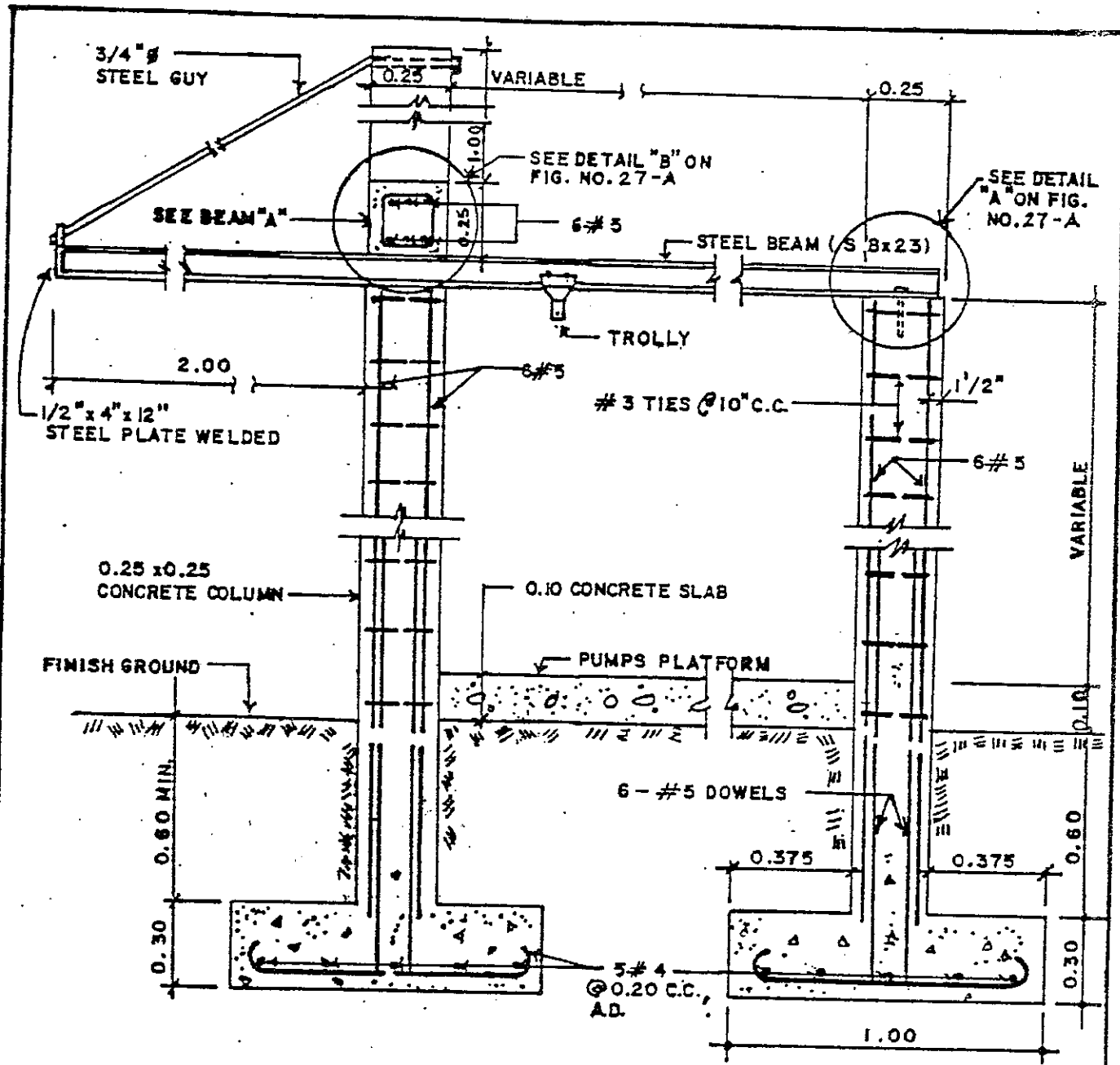
NOT TO SCALE

ALUMINUM FRAME AND COVER
TYPE FLOCKHART 678 WITH LOCK

DATE 8/08/80

FIG. NO. 26

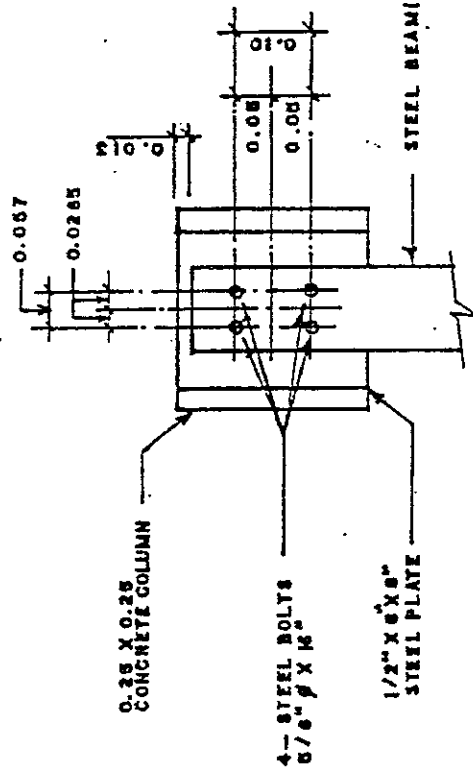
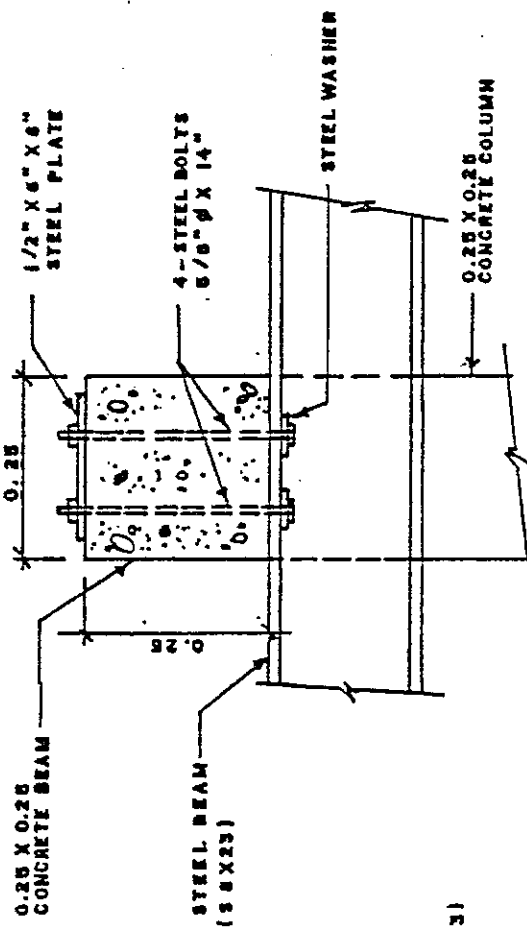
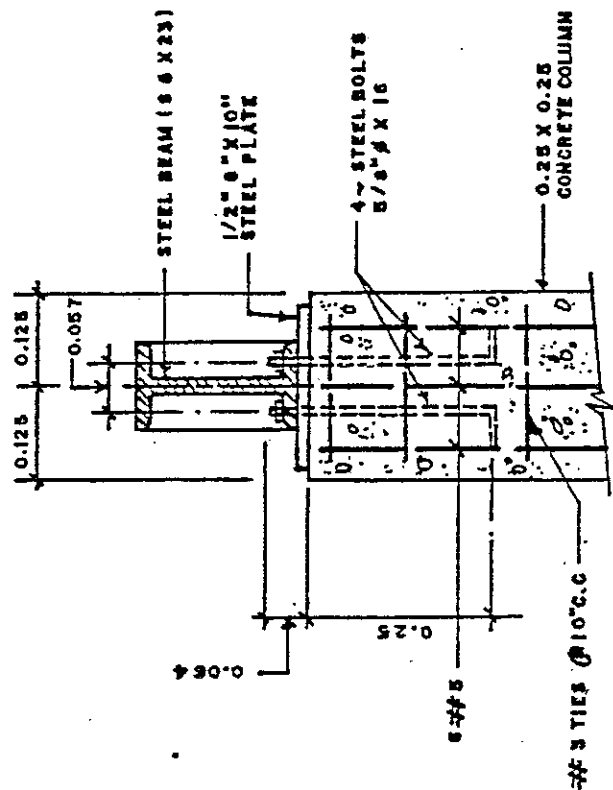
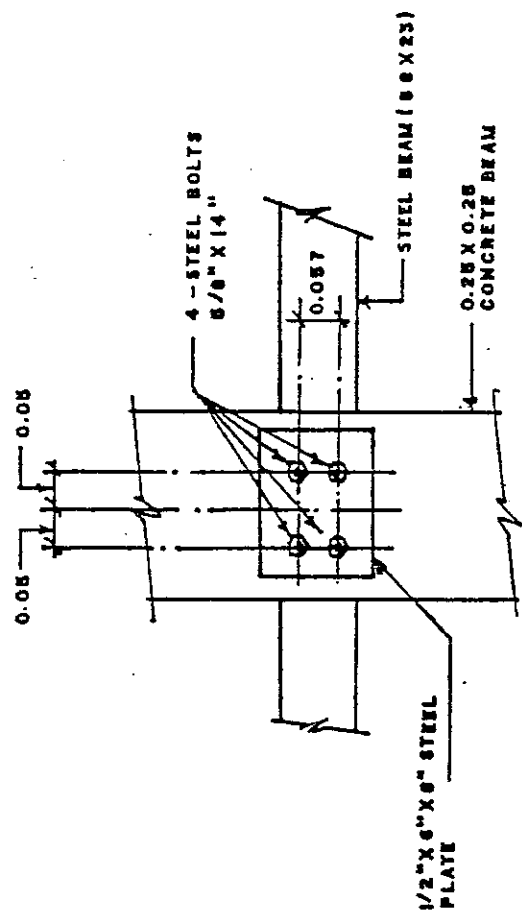




PUMPING STATION INSTALLATION

FIG. NO. 27
DATE 7/11/80

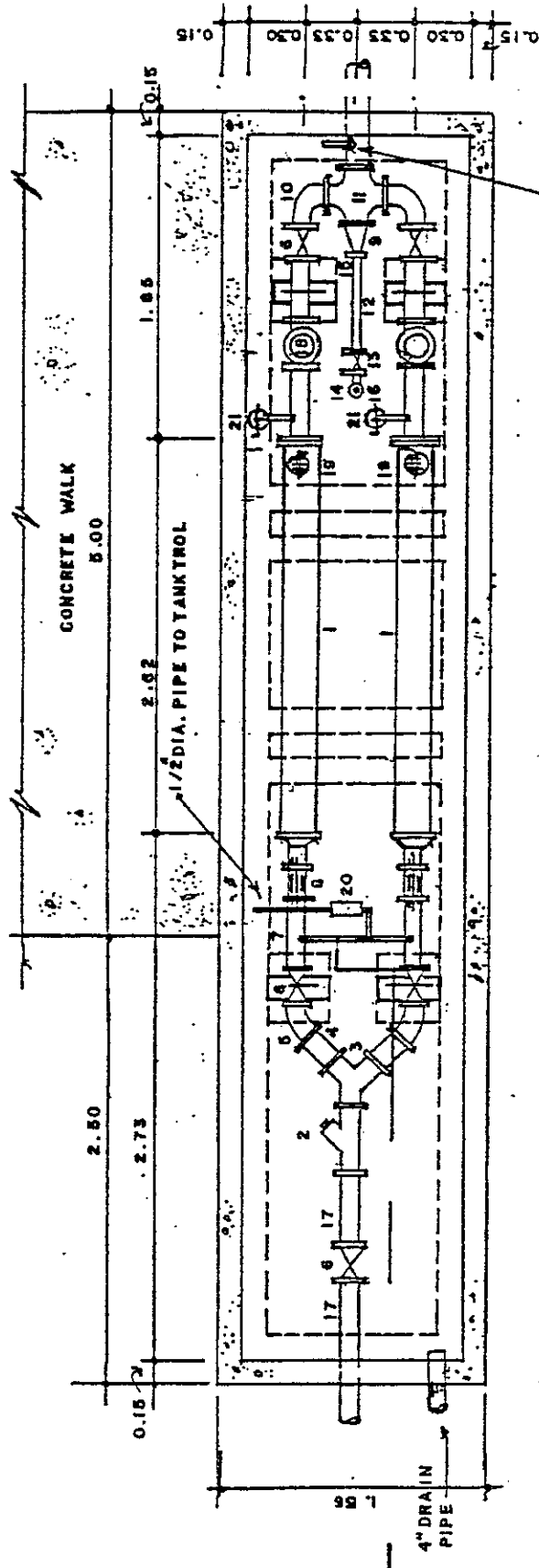




DETAIL "B"

DETAIL "A"





PLAN SCALE 1:40

LEGEND

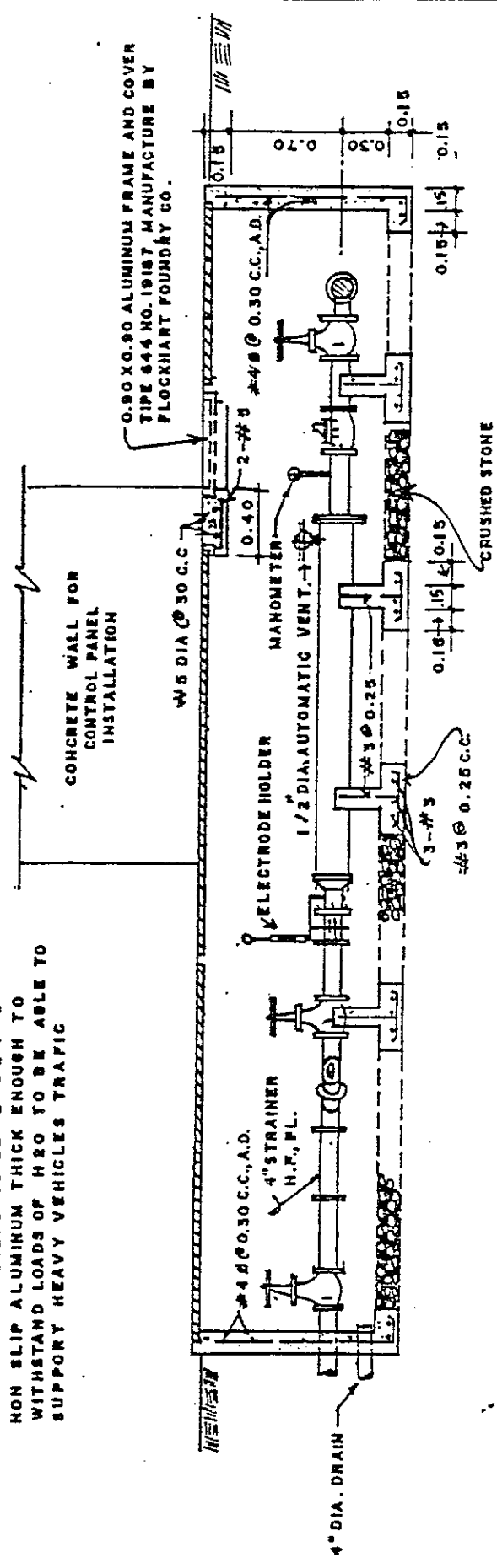
- 1- UNDERGROUND PUMP WITH CAPACITY FOR 6 G.P.M., AGAINST A TOTAL HEAD OF 10 FT. EQUAL OR SIMILAR TO MODEL 508-01 ATTACHED TO A 1/2" H.P. ELECTRIC MOTOR R.P.M. _____ PHASES _____ CICLES AND _____ VOLTS.
- 2- 4" DIA. STRAINER H.F., F.L.
- 3- 4" DIA. TRUE 90° H.F., F.L.
- 4- 4" DIA. NIPPLE H.F., F.L. (8" LENGTH)
- 5- 45° BEND 4" DIA. H.F., F.L. (SHORT BODY)
- 6- 4" DIA. VALVE H.F., F.L.
- 7- 4" DIA. NIPPLE H.F., F.L. (10" LONG)
- 8- FLANGED COUPLING ADAPTER 4" DIA. H.F.
- 9- 4" X 2" REDUCER H.F., F.L.
- 10- 90° ELBOW, 4" DIA. H.F. (SHORT BODY)
- 11- 4" DIA. CROSS H.F., F.L. (SHORT BODY)
- 12- 2" DIA. NIPPLE H.G. (20" LENGTH)
- 13- 2" DIA. VALVE BRONZE AND THREADED
- 14- PRESSURE SUSTAINING VALVE 2" DIA. SIMILAR OR EQUAL TO MODEL 508-01 FROM CLAYTON VALVES.
- 15- FLANGED ADAPTER
- 16- 90° ELBOW 2" DIA. H.G. WITH FLANG
- 17- 4" DIA. NIPPLE H.F., F.L.
- 18- PRESSURE SUSTAINING AND CHECK VALVE EQUAL OR SIMILAR TO MODEL NO. 51 FROM GLA-VAL CO.
- 19- 1/2" DIA. AUTOMATIC VENT.
- 20- ELECTRODE HOLDER, VENT. AND MANOMETER
- 21- MANOMETER.

NOTE:
FOR SECTION "A-A" SEE FIG. NO. 28-A.



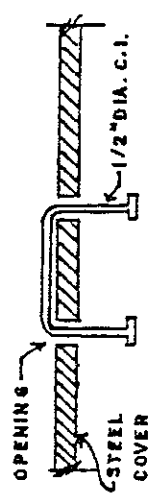
NOTE:

FRAME AND COVERS TO BE 2'-0" X 4'-0" NON SLIP ALUMINUM THICK ENOUGH TO WITHSTAND LOADS OF H₂O TO BE ABLE TO SUPPORT HEAVY VEHICLES TRAFFIC



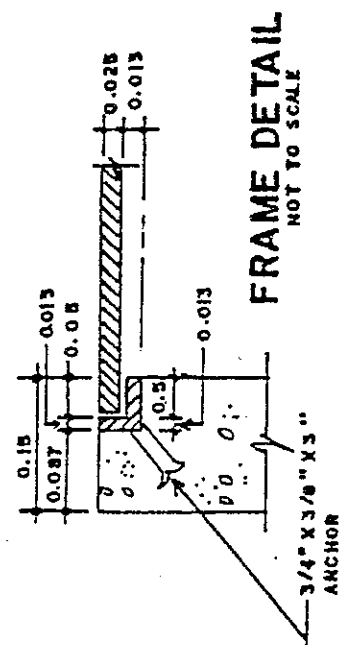
SECTION A-A

SCALE = 1:40



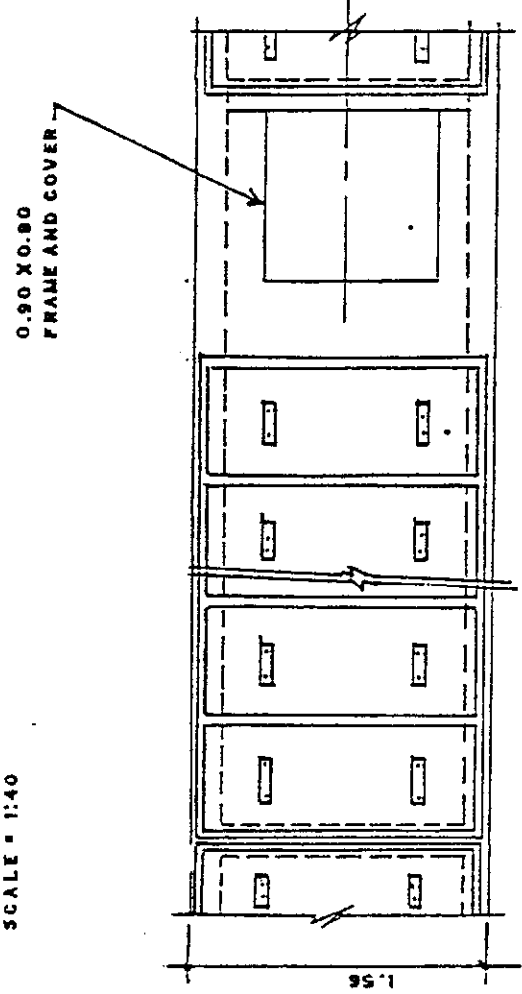
HANDLE DETAIL

SCALE = 1:20



FRAME DETAIL

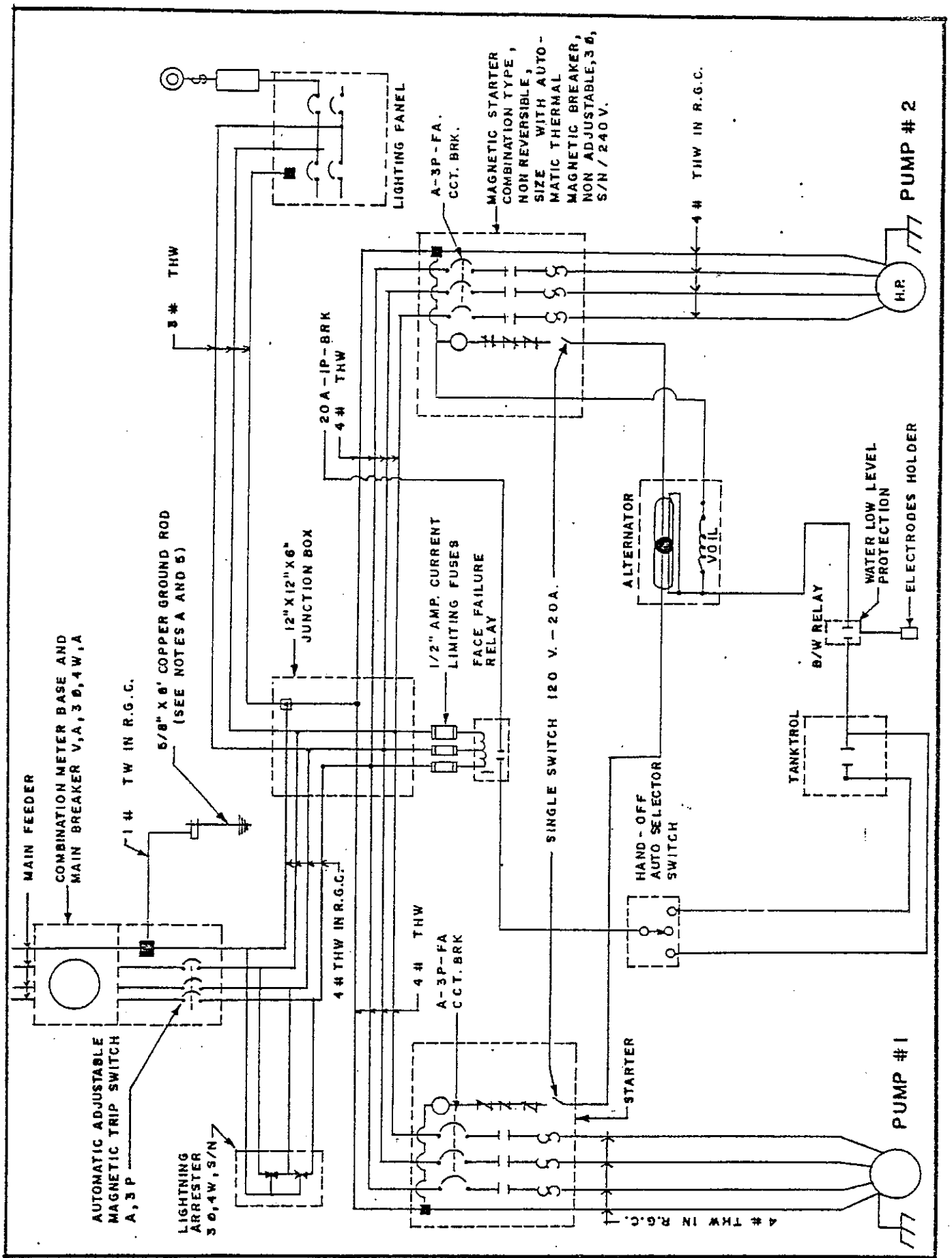
NOT TO SCALE



FRAME AND COVER

SCALE = 1:40



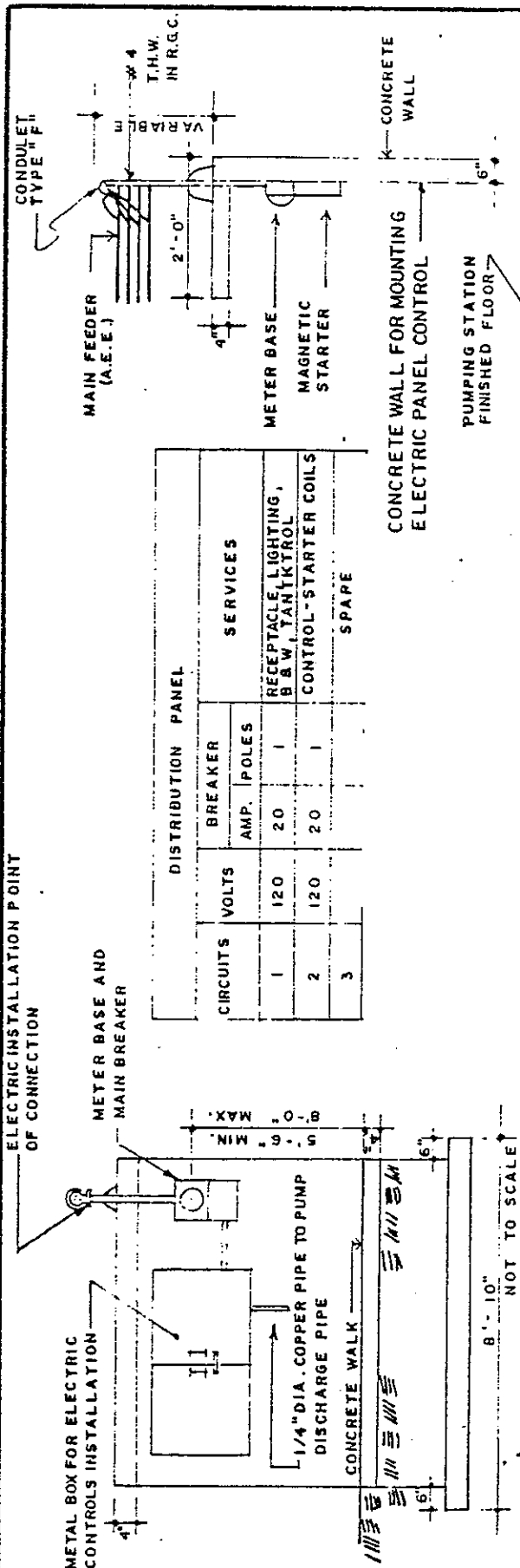


WIRING DIAGRAM FOR UNDERGROUND PUMPING STATION

FIG. NUM. 28 - B
DATE 8-08-80



ELECTRIC INSTALLATION POINT OF CONNECTION



GENERAL NOTES

1. ALL CONDUITS TO BE GALVANIZED STEEL, 3/4" MINIMUM SIZE OR SPECIFIED IN THE DRAWINGS
2. ALL WIRES AND CONDUCTORS TO BE OF COPPER AND MINIMUM SIZE #12 OR AS SPECIFIED IN THE DRAWINGS.
3. ALL POWER AND LIGHTING WIRES AND CONDUCTORS TO HAVE 600 VOLTS TYPE THW INSULATION.
4. ALL PRIMARY LINE WORK TO BE DONE BY P.R.E.P.A. AND PAY FOR BY THE CONTRACTOR
5. GROUND CONNECTION SHALL HAVE A RESISTANCE GREATER THAN 30 OHMS.
6. OVERLOAD RELAYS TO BE OF THE QUICK TRIP ADJUSTABLE TYPE.
7. MOTORS TO BE GROUNDED BY #___ WIRE.
8. MAGNETIC STARTER TO BE OF THE NON-REVERSIBLE TYPE
9. COORDINATE WITH P.R.E.P.A. THE POINT OF CONNECTION, METER BASE AND RISER INSTALLATION.
10. CONTROL PANEL SHALL BE MANUFACTURER WIRED, DEAD FRONT AND NEMA TYPE WITH KEY LOCKING FACILITIES.
11. CONTROL PANEL COVER OR DOORS SHALL BE PROVIDED WITH CORNER ATTACHMENTS TO OPEN AT AN ANGLE NOT GREATER THAN 90°

NOTE "A"

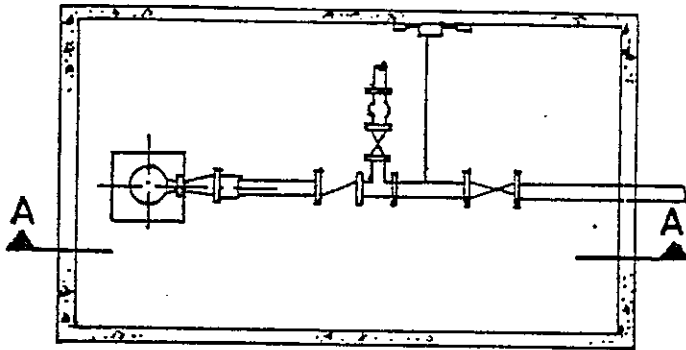
THE CONSTRUCTION DEPARTMENT SHALL BE RESPONSIBLE FOR REJECTING ANY PROJECT WHICH DO NOT REQUIREMENT AS STIPULATED ON GENERAL NOTES#5

UNDERGROUND PUMPING STATION CONTROL PANEL MOUNTING DETAILS

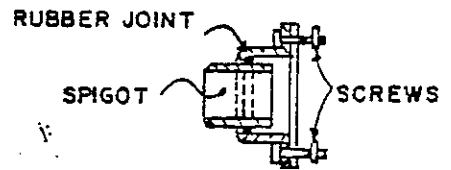
FIG. NUM. 28-C

DATE 8-08-80

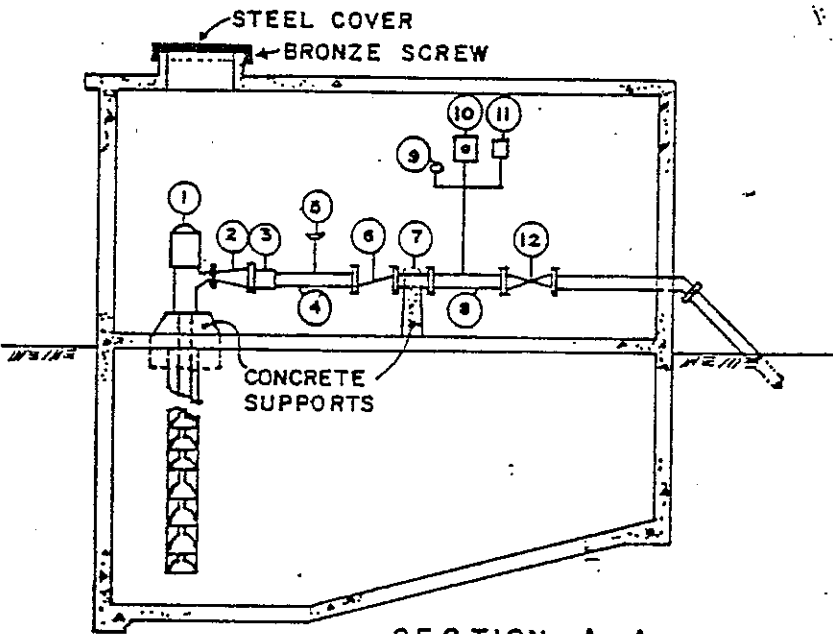




PLAN
NOT TO SCALE



DETAIL "D"
NOT TO SCALE



SECTION A-A
NOT TO SCALE

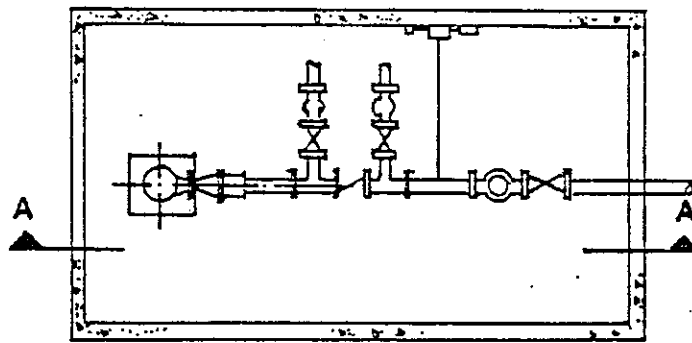
NOTE:
ALL FLANGED FITTINGS

LEGEND:

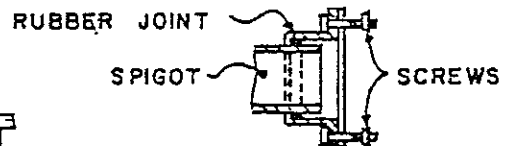
- | | |
|---|-----------------------------------|
| ① VERTICAL TURBINE PUMP | ⑨ PRESSURE GAUGE |
| ② REDUCER | ⑩ PRESSURE RECORDER |
| ③ DRESSER COUPLING (SEE DETAIL "D") | ⑪ AUTOMATIC PRESSURE SWITCH |
| ④ FLANGED SPIGOT C.I. FLANGED NIPPLE | ⑫ GATE VALVE, HAND WHEEL OPERATED |
| ⑤ AIR VENT | |
| ⑥ COMBINATION BALL PRESSURE AND CHECK VALVE | |
| ⑦ TEE PRESSURE RELIEF VALVE | |
| ⑧ C.I. FLANGED NIPPLE | |

INSTALLATION DETAIL OF A VERTICAL TURBINE PUMP TO A WET PIT	FIG. NUM. 29
	DATE 8/5/80

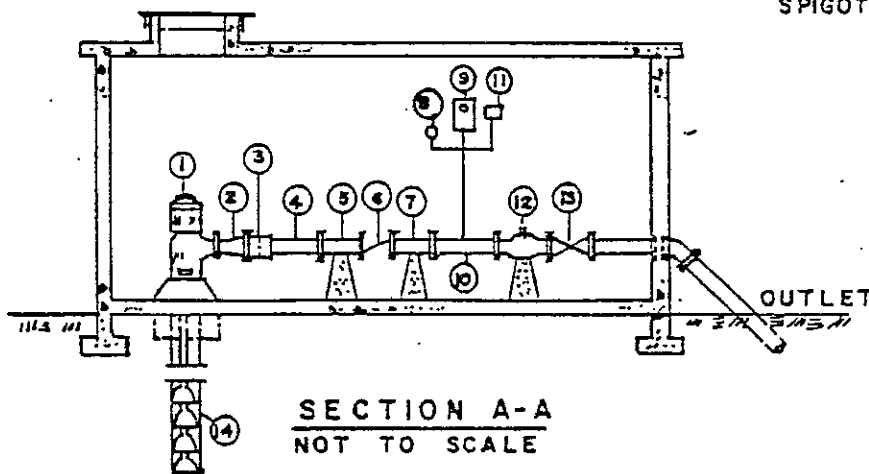




PLAN
NOT TO SCALE



DETAIL "D"
NOT TO SCALE



SECTION A-A
NOT TO SCALE

LEGEND:

- 1 VERTICAL TURBINE DEEP WELL PUMP
- 2 REDUCER
- 3 FLEXIBLE VOINT (SEE DETAIL)
- 4 NIPPLES FLANGE SPIGOT
- 5 TEE AND PRESSURE RELIEF VALVE
- 6 RETENTION VALVE AND OR CONTROLLER OF AUTOMATIC FLOW
- 7 TEE, GATE VALVE, DRAIN PIPE
- 8 PRESSURE GAUGE
- 9 GRAPHIC PRESSURE RECORDER
- 10 PUMP NIPPLE
- 11 GRAPHIC PRESSURE SWITCH
- 12 TURBINE METER OR VENTURI TYPE
- 13 GATE VALVE HANDER HOOK OPERATED
- 14 PUMP COLUMN

NOTE:

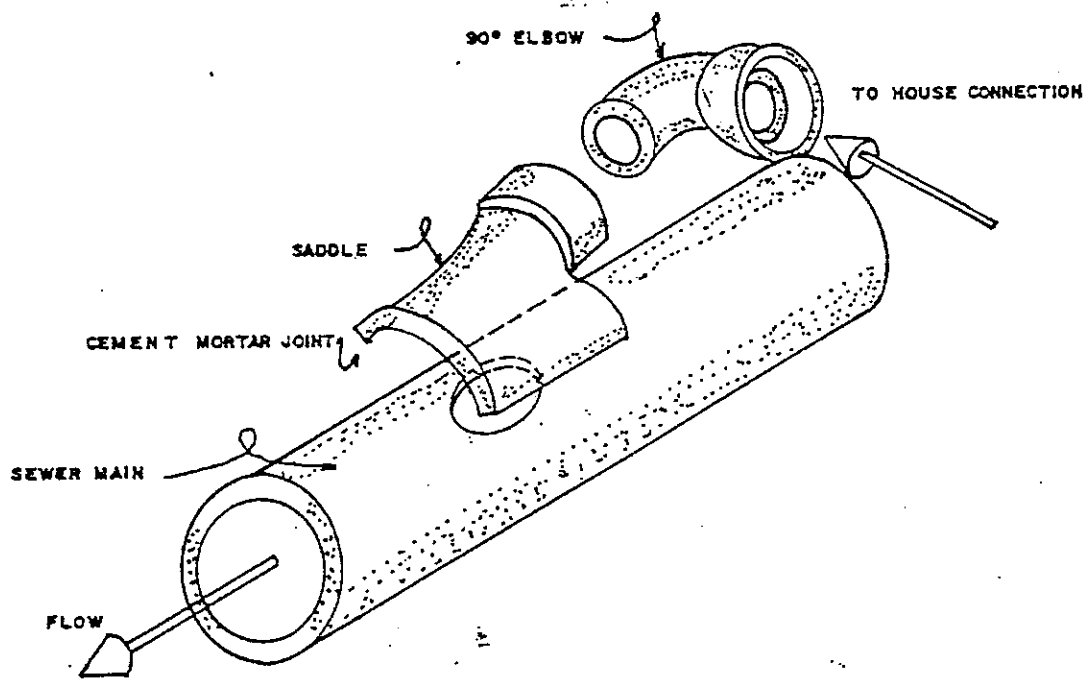
ALL FLANGED FITTINGS

**DETAIL OF A DEEP
WELL PUMP**

FIG. NUM. 30

DATE 8/5/80





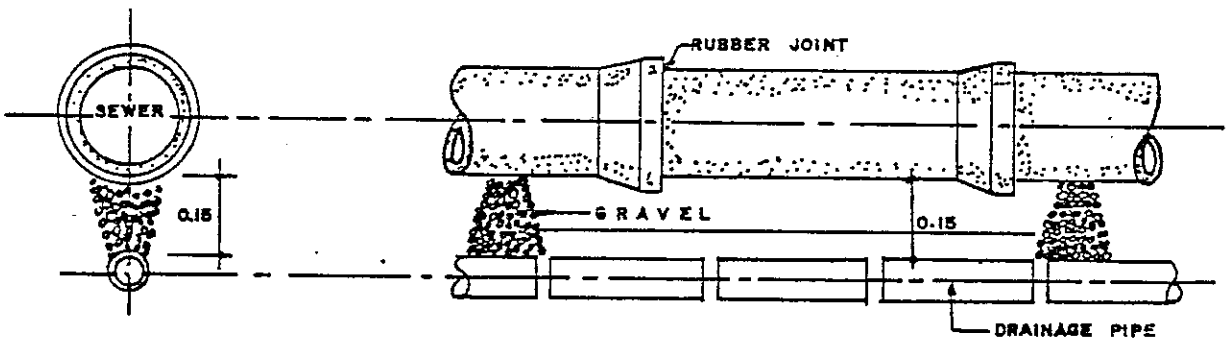
NOT TO SCALE

SADDLE HOUSE CONNECTION TO
EXISTING SANITARY SEWER

FIG. NUM. 31

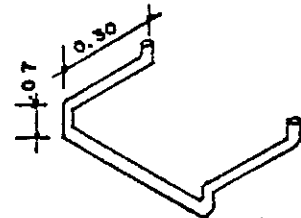
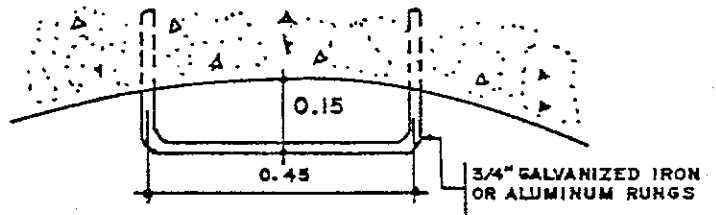
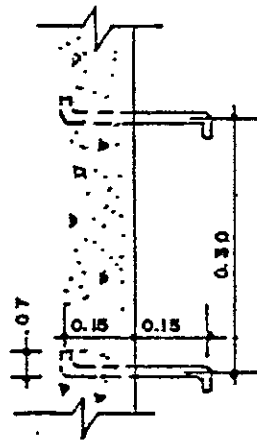
DATE: 8/08/80





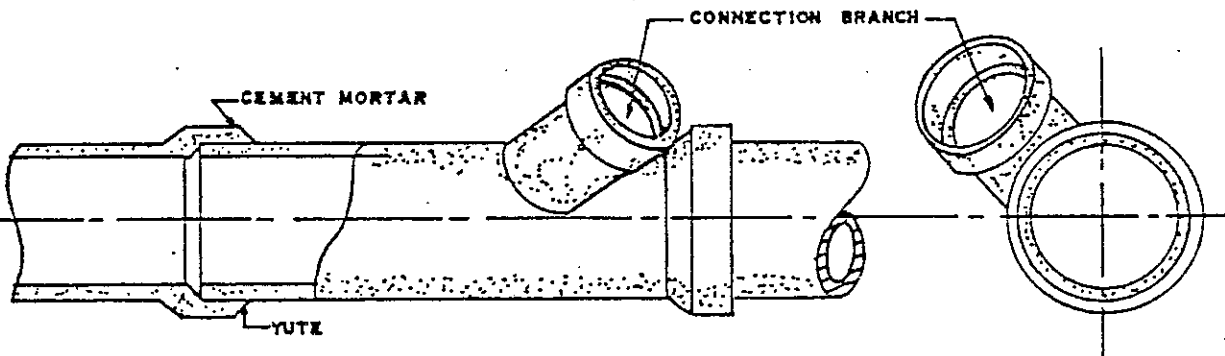
DRAIN DETAIL

SCALE: 1:10



RUNG DETAIL

SCALE: 1:10

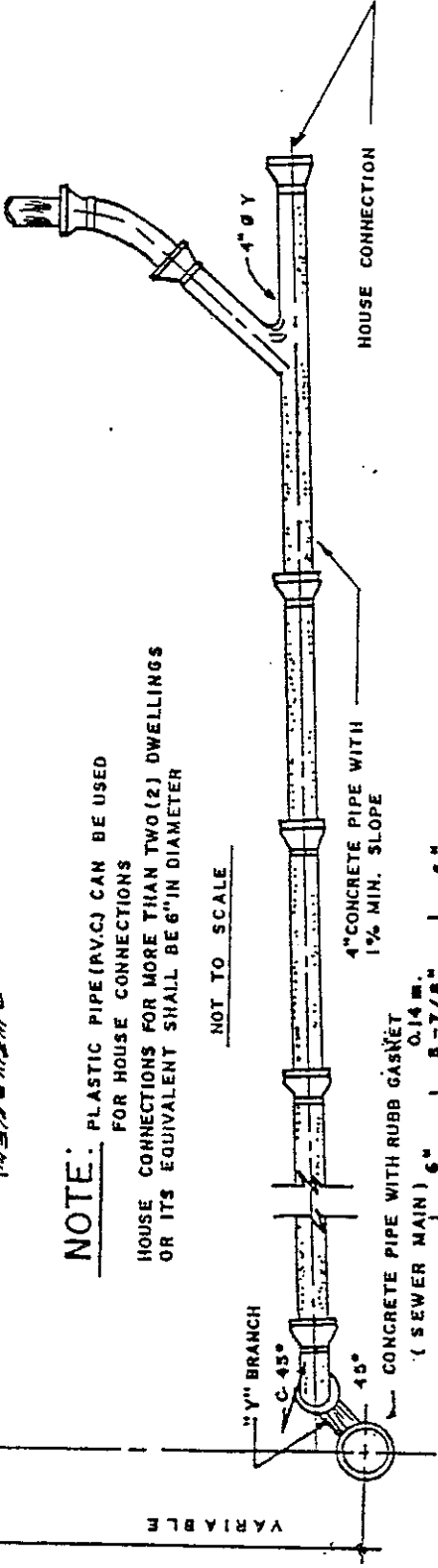
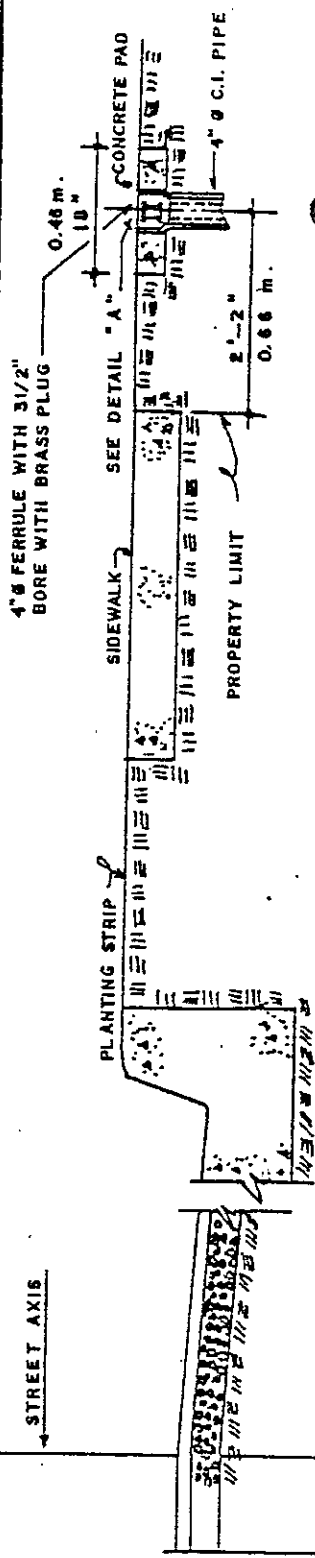


HOUSE CONNECTION DETAIL

NOT TO SCALE

SCALE: 1-1/2" = 1'-0"

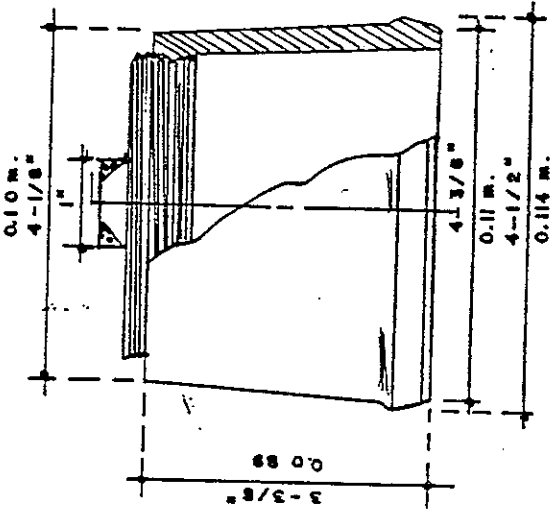




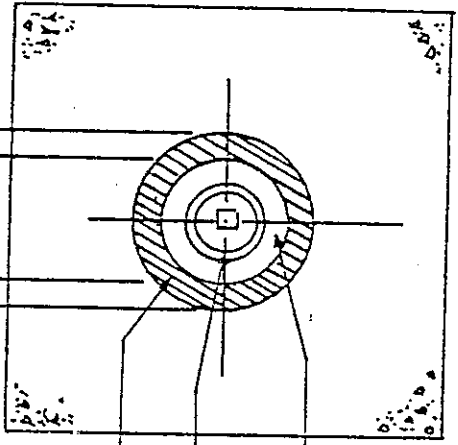
NOTE: PLASTIC PIPE (P.V.C.) CAN BE USED FOR HOUSE CONNECTIONS. HOUSE CONNECTIONS FOR MORE THAN TWO (2) DWELLINGS OR ITS EQUIVALENT SHALL BE 6" IN DIAMETER.

NOT TO SCALE

VARIABLE



DETAIL "A"



PLAN

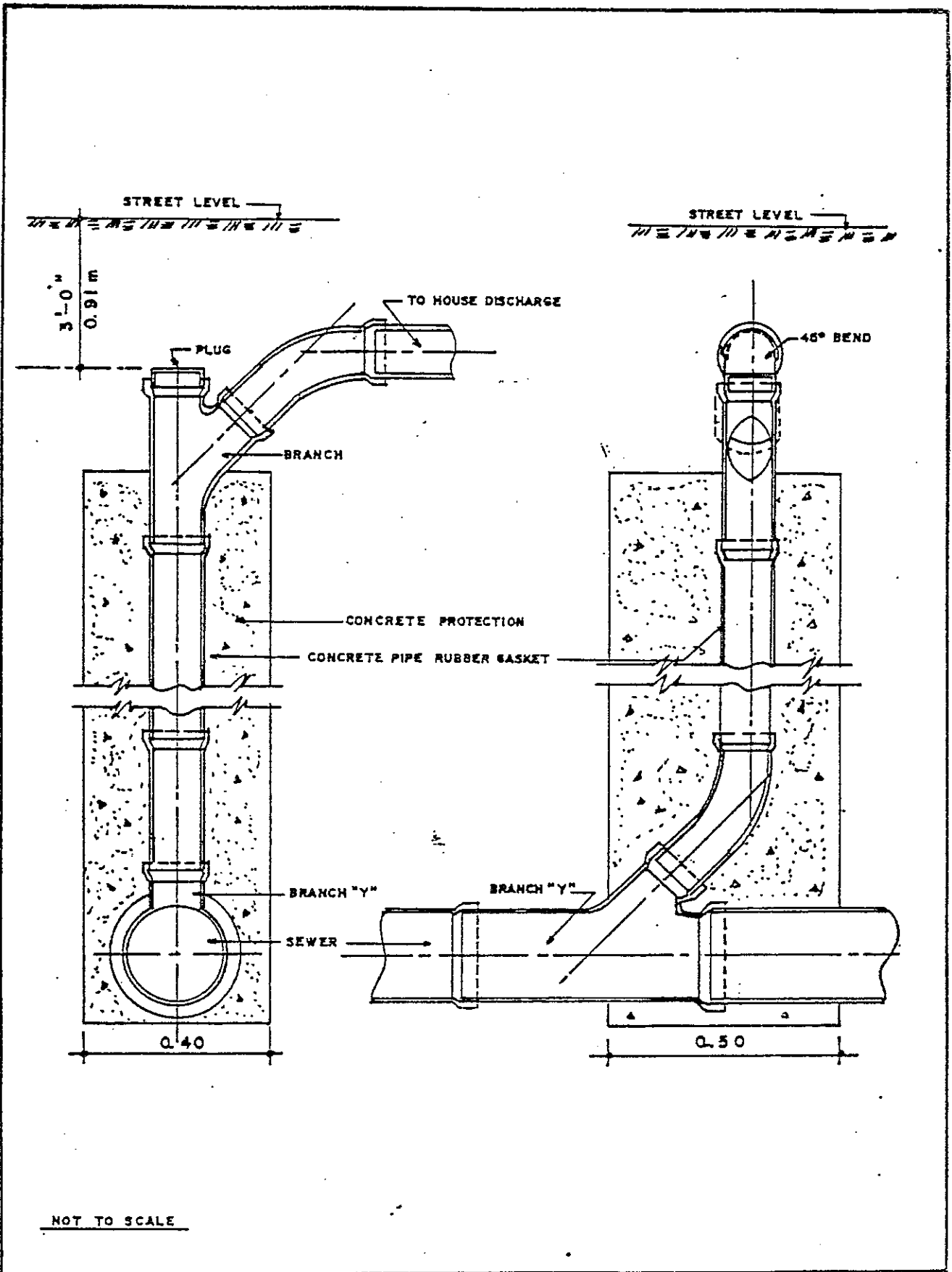
NOT TO SCALE

SANITARY HOUSE CONNECTION DETAIL

FIG. NUM. 33

DATE: 8/08/80



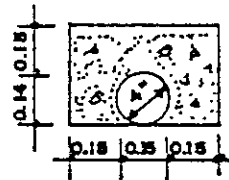


DETAIL OF HOUSE CONNECTION WHEN SEWER IS 2.0 M. DEEP OR MORE

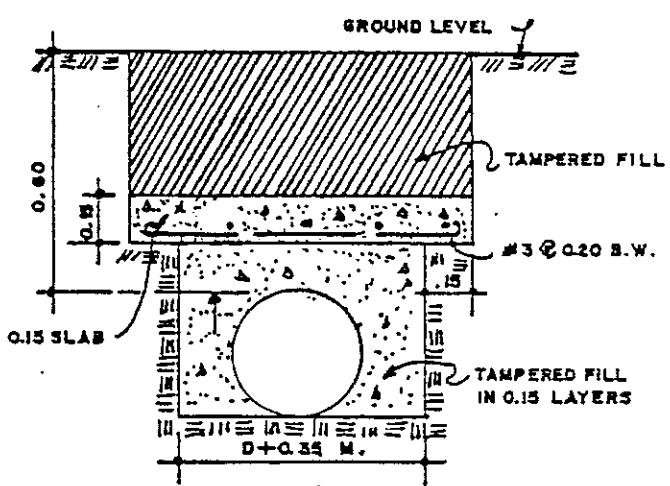
FIG NUM. 34

DATE 8/08/80

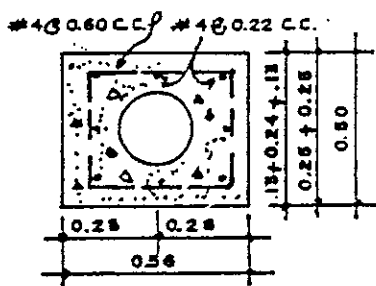
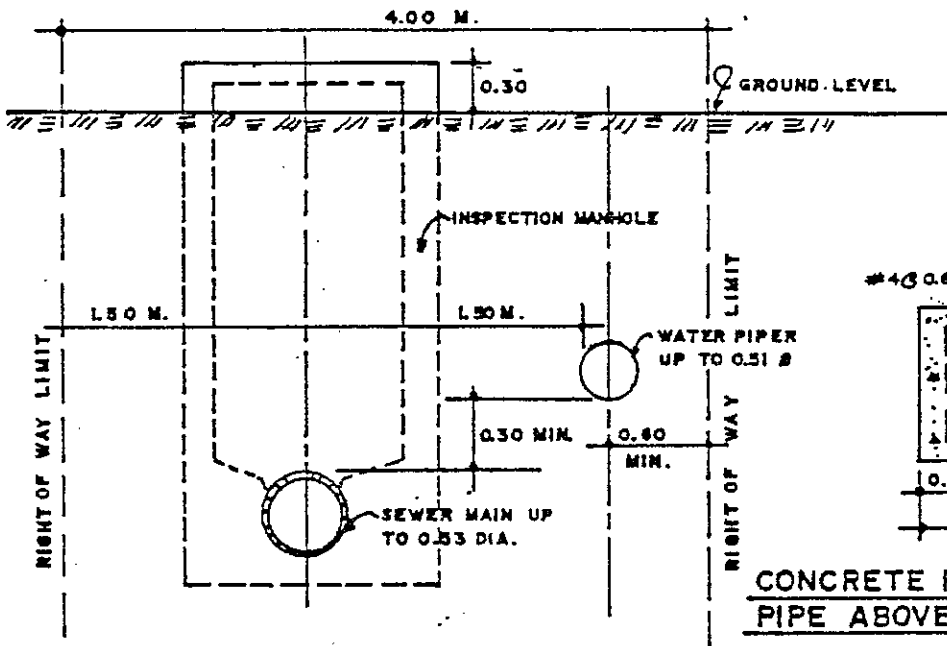




CONCRETE PROTECTION FOR HOUSE CONNECTION DETAIL



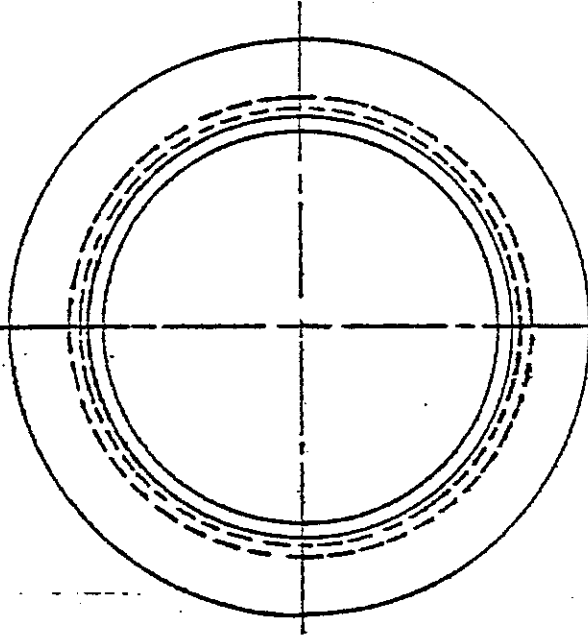
CONCRETE PROTECTION DETAIL FOR PIPES AT DEPTHS LESS THAN 0.60 M



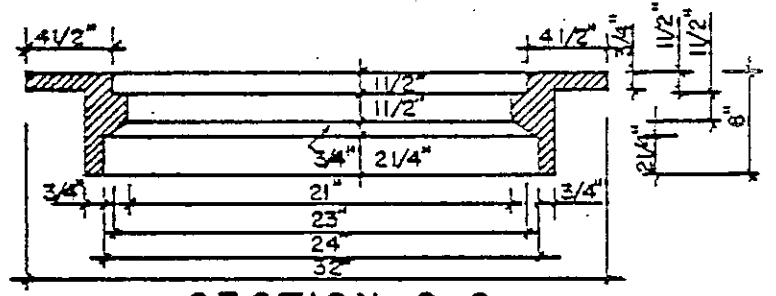
CONCRETE PROTECTION FOR PIPE ABOVE GROUND DETAIL

RIGHT OF WAY WIDTH FOR PARARELL RUNNING SEWER & WATER PIPERS DETAIL

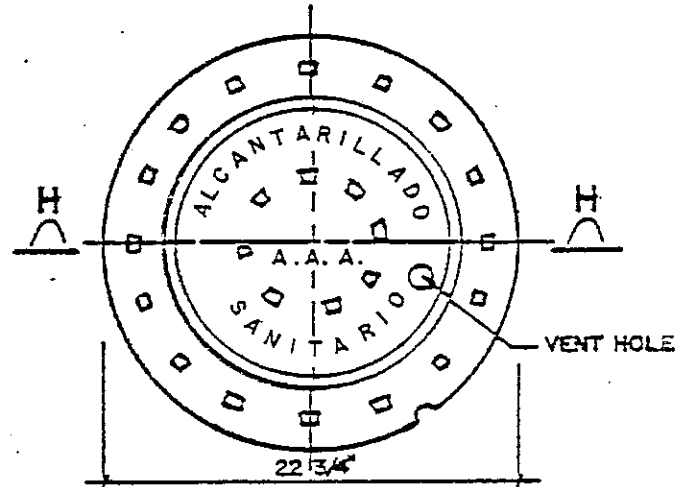




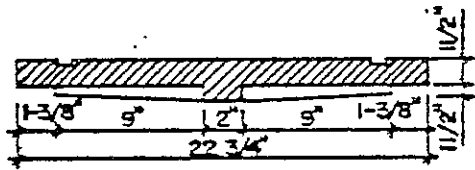
PLAN
SCALE 3/32" = 1"



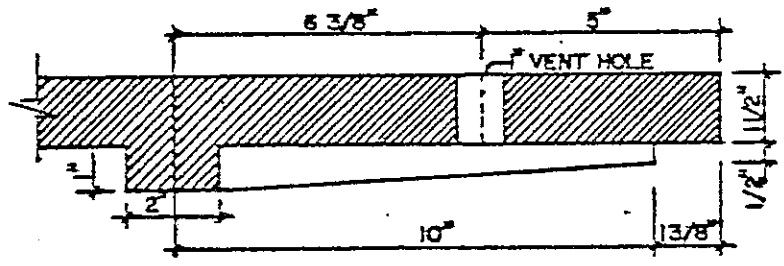
SECTION G-G
SCALE 3/32" = 1"



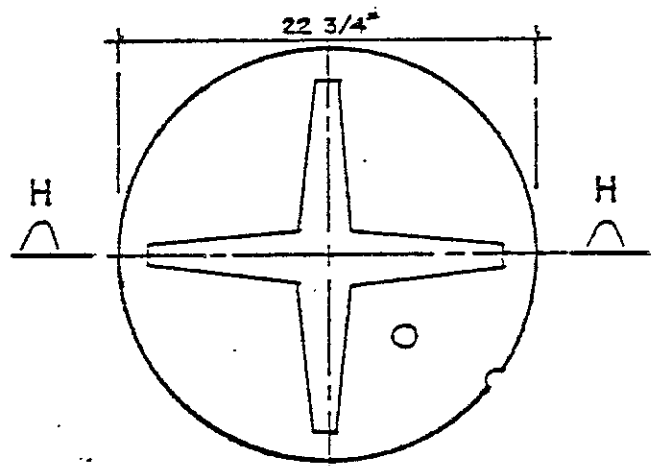
TOP VIEW OF COVER
SCALE 3/32" = 1"



SECTION H-H
SCALE 3/32" = 1"

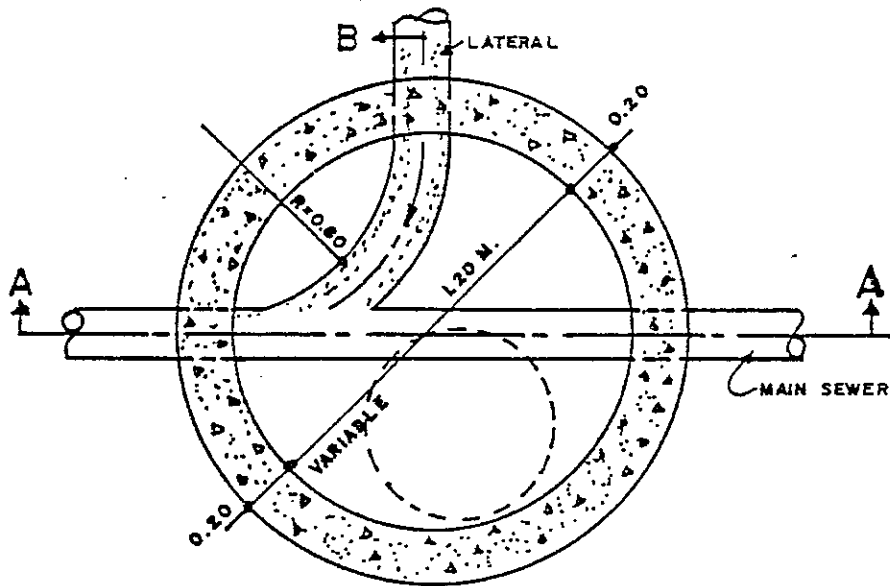


SECTION SHOWING VENT HOLES
SCALE 1/4" = 1"

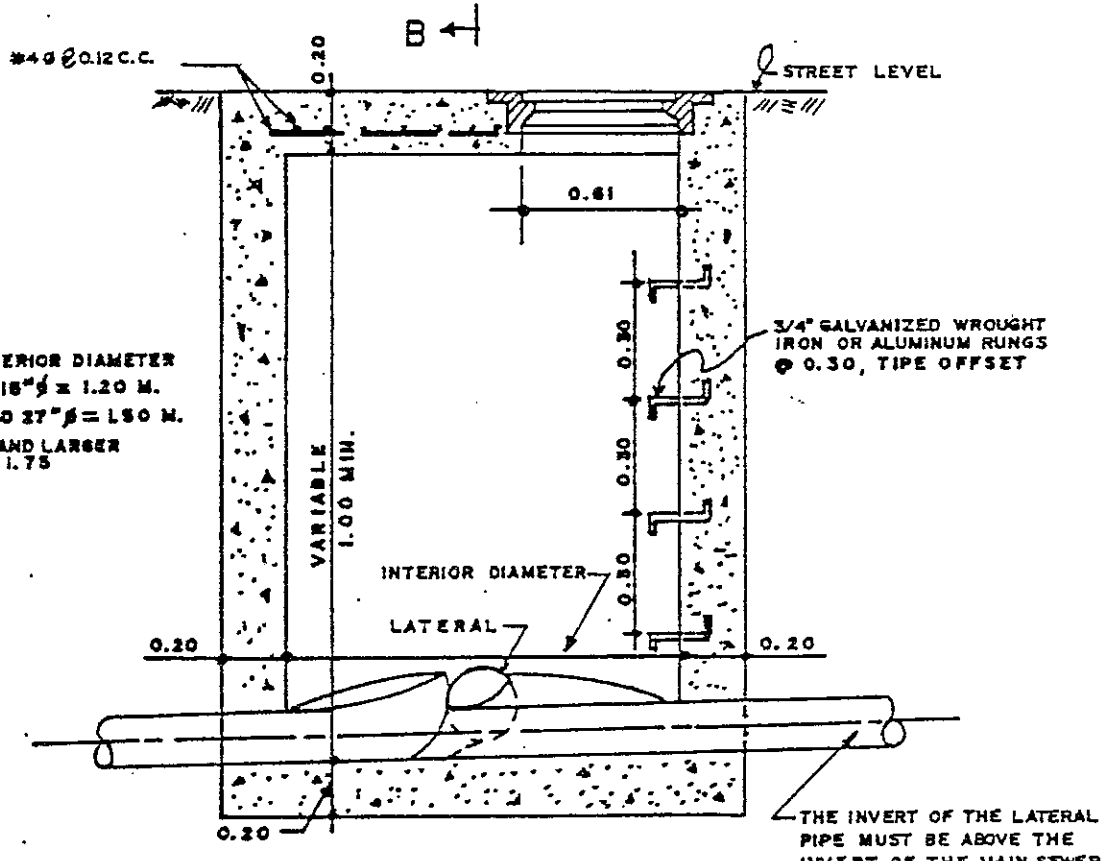


BOTTOM VIEW OF COVER
SCALE 3/32" = 1"





SECTIONAL PLAN



NOTE:
 MANHOLE INTERIOR DIAMETER
 FROM 6" ϕ TO 18" ϕ = 1.20 M.
 FROM 18" ϕ TO 27" ϕ = 1.50 M.
 FROM 30" ϕ AND LARGER
 = 1.00 M. + D 1.75

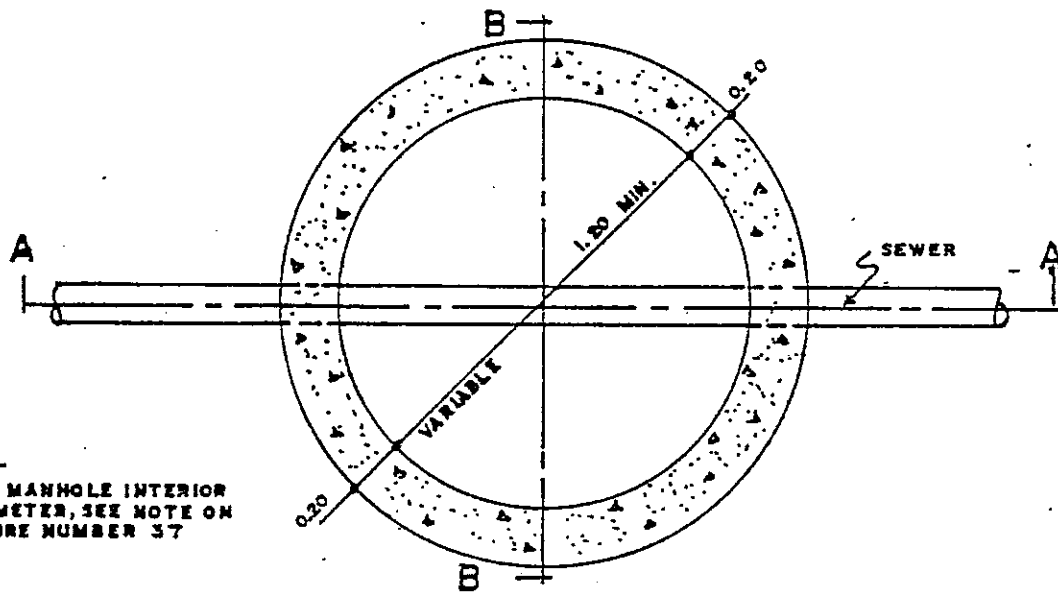
3/4" GALVANIZED WROUGHT
 IRON OR ALUMINUM RUNGS
 ϕ 0.30, TYPE OFFSET

THE INVERT OF THE LATERAL
 PIPE MUST BE ABOVE THE
 INVERT OF THE MAIN SEWER

SECTION- A-A

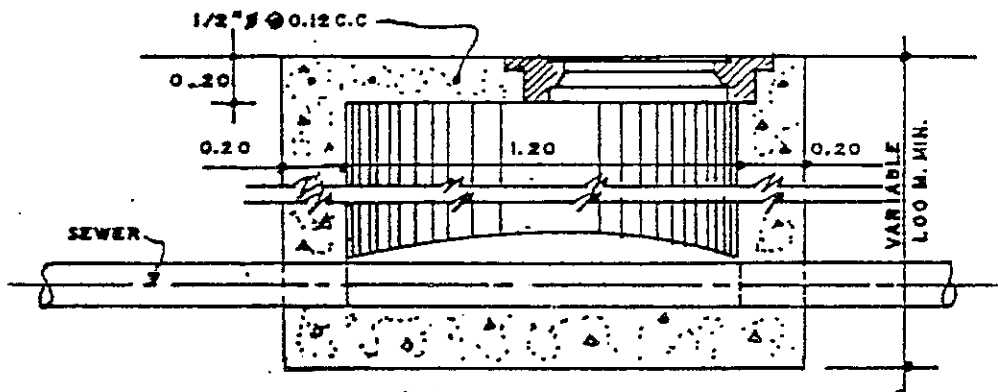
NOT TO SCALE





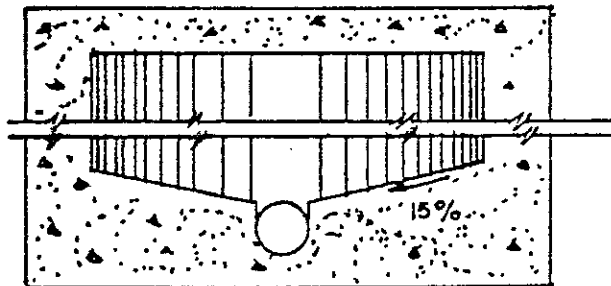
NOTE:
 FOR MANHOLE INTERIOR
 DIAMETER, SEE NOTE ON
 FIGURE NUMBER 37

SECTIONAL PLAN



SECTION A-A

TRANSITION PIPE SHALL HAVE
 THE SAME SLOP AS INLET PIPE.
 RUNGS MUST BE PLACED WHEN
 DEPTH EXCEEDS 0.91M. (3'-0")



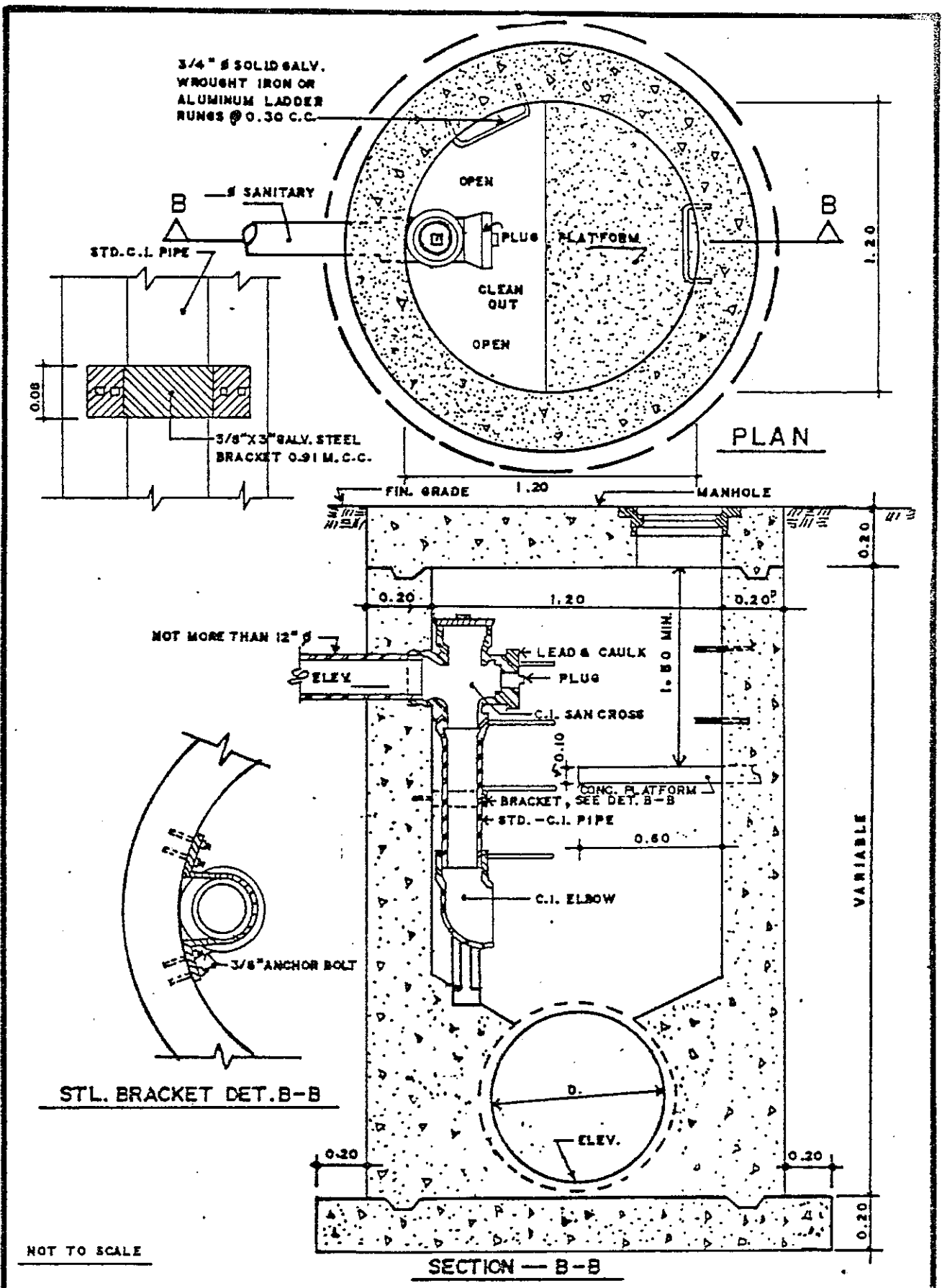
SECTION B-B

INSPECTION MANHOLE DETAIL

FIG. NO. 38

DATE : 8/08/80



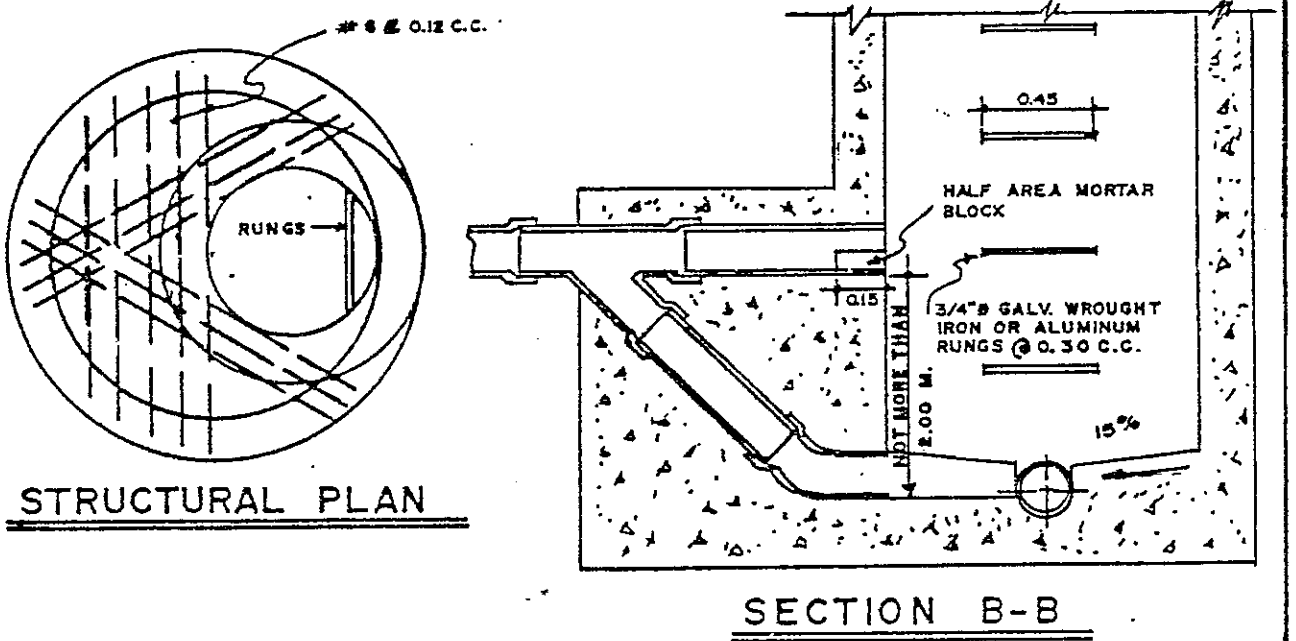
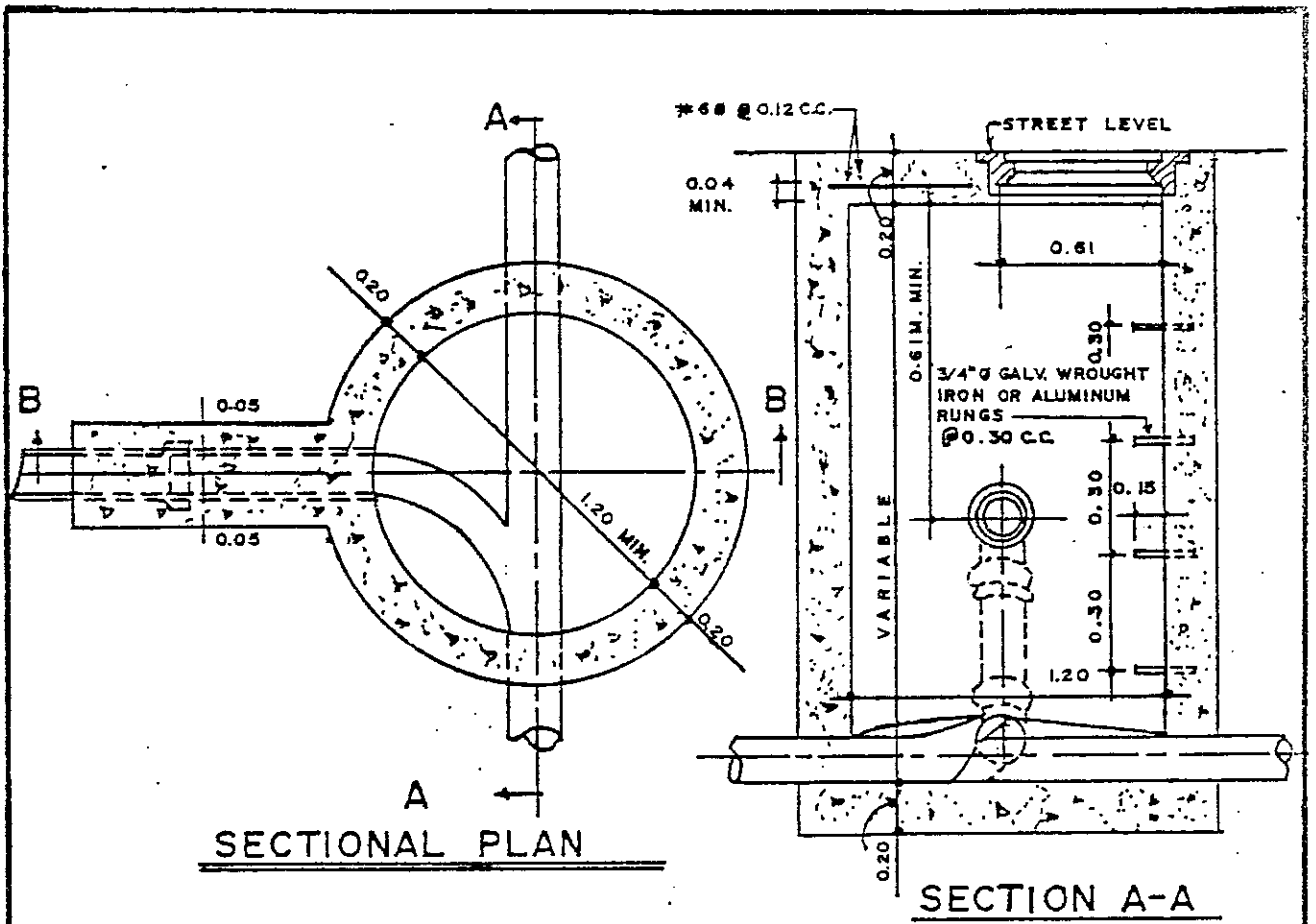


DROP. MANHOLE DETAIL

FIG. NO. 39

DATE 8/08/80





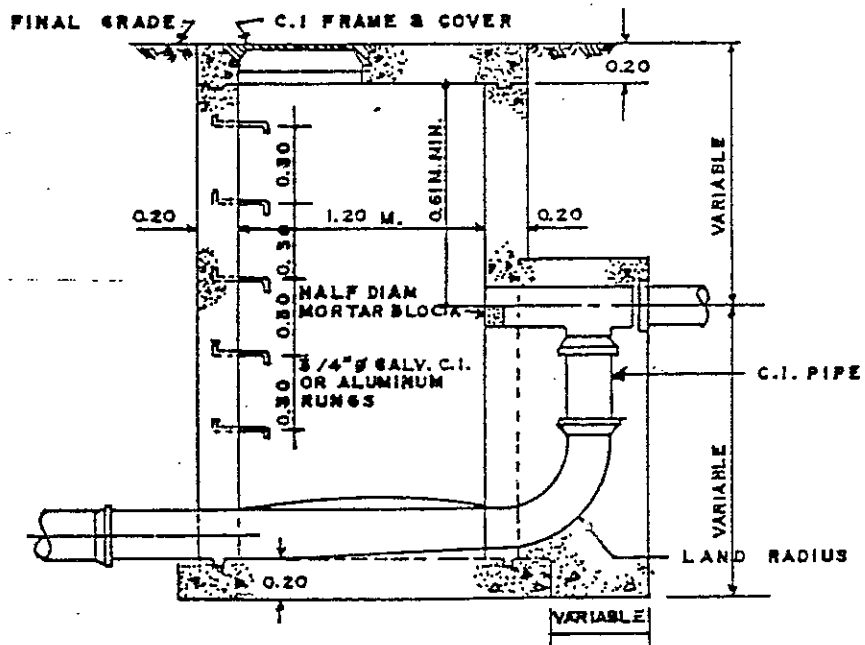
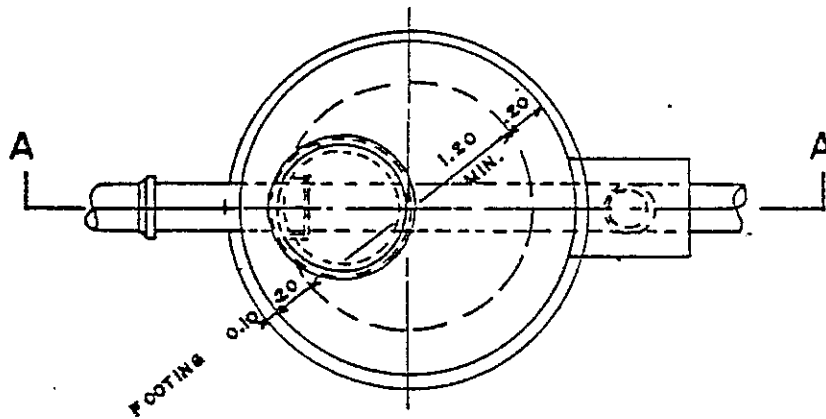
NOT TO SCALE

DROP MANHOLE DETAILS

FIG. NO. 40

DATE 8/08/80





NOT TO SCALE

DROP MANHOLE DETAIL
 (WHEN THE DROP EXCEEDS 1.00M. AND FOR
 THE LINE EXCEEDS 12" ϕ)

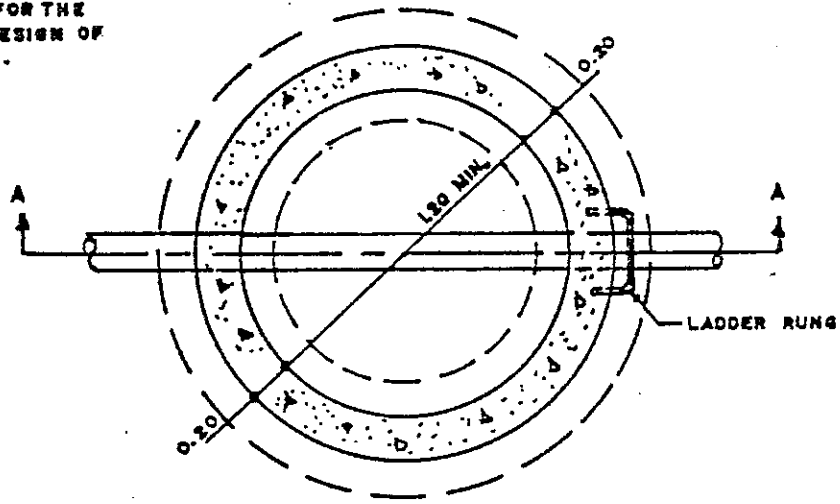
FIG. NO. 41

DATE: 8/08/80

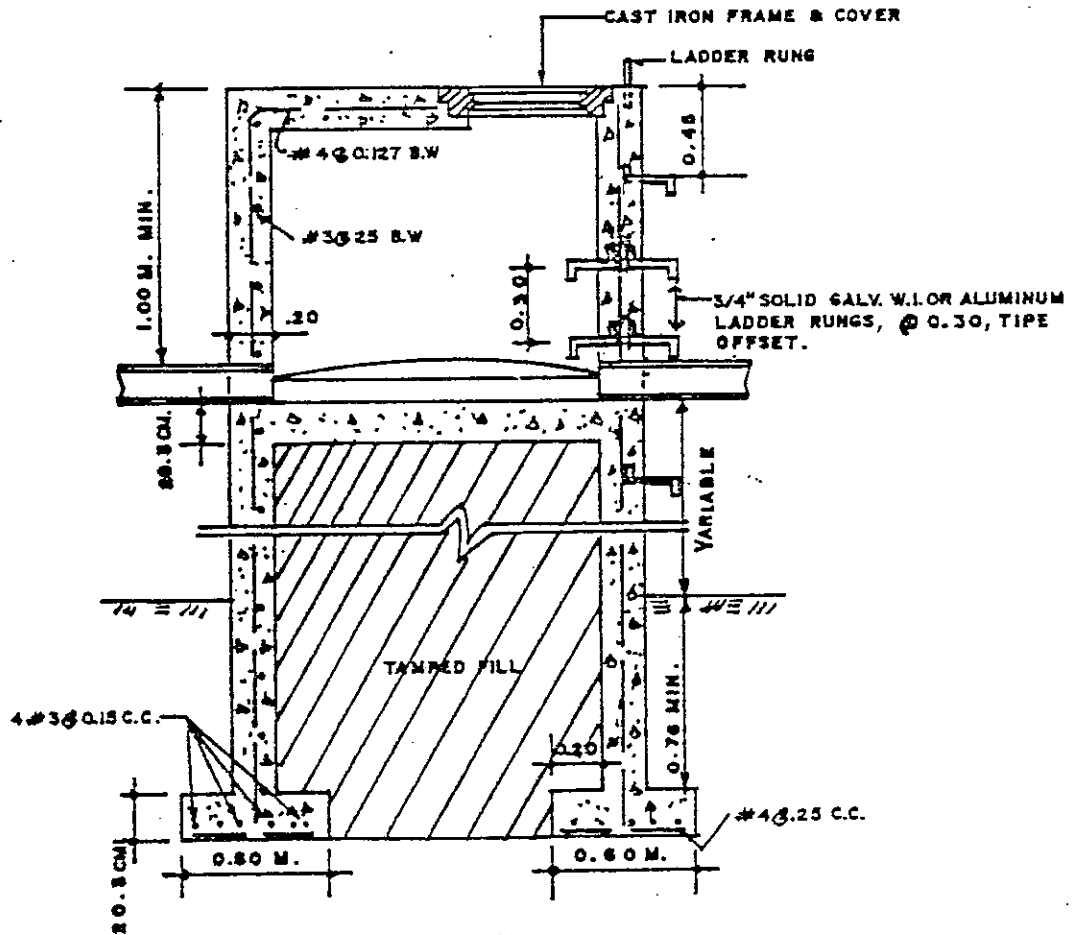


NOTE

THE DEVELOPER SHALL BE RESPONSIBLE FOR THE STRUCTURAL DESIGN OF THE MANHOLE.



SECTIONAL PLAN



SECTION "A"

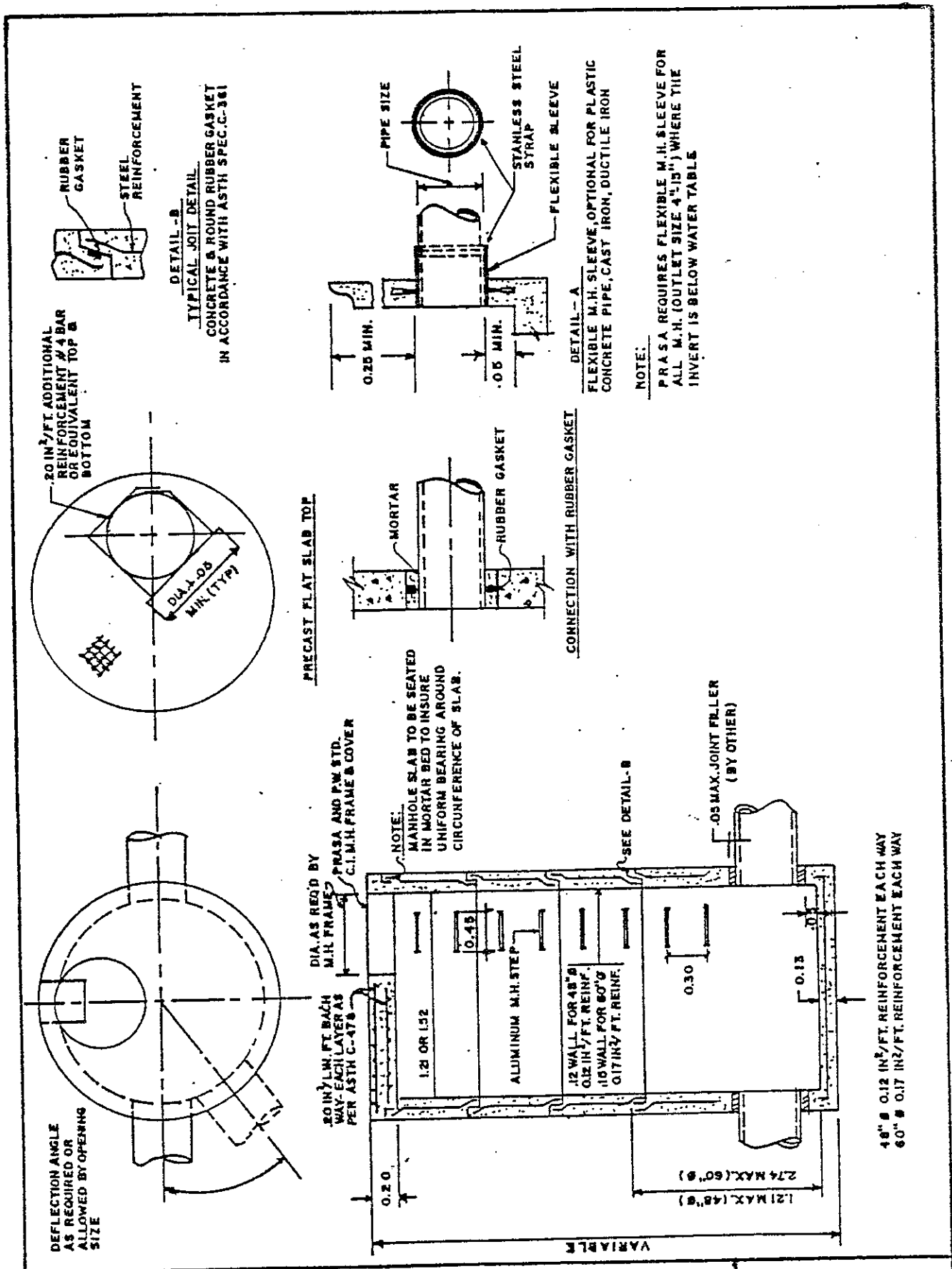
NOT TO SCALE

DETAILS OF ELEVATED MANHOLES

FIG. NO. 41- A

DATE 8/08/80

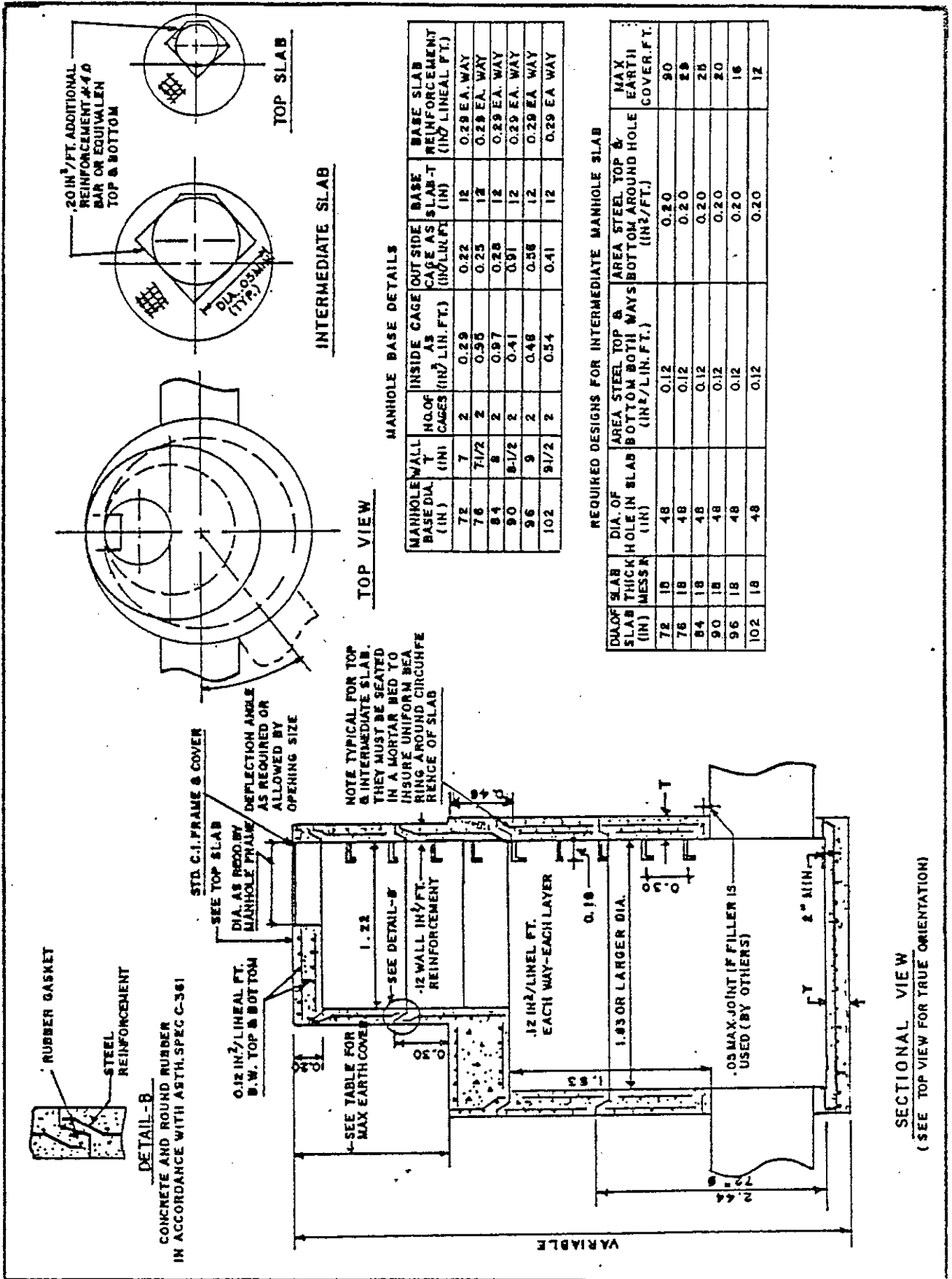




REINFORCED PRECAST CONCRETE MANHOLE
48" Ø FOR 8" DIA. TO 18" DIA. SEWER PIPE
60" Ø FOR 16" DIA. TO 27" DIA. SEWER PIPE

FIG. NO. 41 - B
DATE 8/08/80

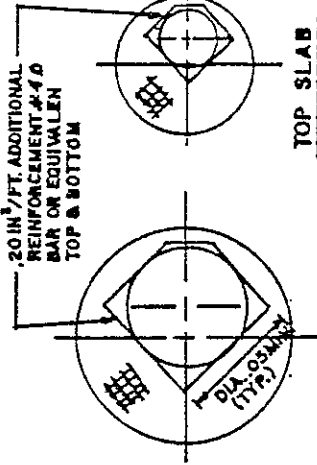




REINFORCED PRECAST CONCRETE MANHOLE FOR TRUNK SEWER 30" DIA. OR LARGER

FIG. NUM. 41-C

DATE: 8/08/80



MANHOLE BASE DETAILS

MANHOLE WALL BASE DIA. (IN)	NO. OF CAGES (IN)	INSIDE CAGE AS (IN²/LIN. FT.)	OUTSIDE CAGE AS (IN²/LIN. FT.)	BASE REINFORCEMENT (IN)	BASE SLAB REINFORCEMENT (IN)	MAX. EARTH COVER (FT.)
72	2	0.29	0.22	12	0.29 EA. WAY	90
76	2	0.35	0.25	12	0.29 EA. WAY	28
84	2	0.41	0.31	12	0.29 EA. WAY	20
90	2	0.48	0.38	12	0.29 EA. WAY	16
102	2	0.54	0.41	12	0.29 EA. WAY	12

REQUIRED DESIGNS FOR INTERMEDIATE MANHOLE SLAB

DIAPHR. SLAB THICKNESS (IN)	DIA. OF HOLE (IN)	AREA STEEL TOP & BOTTOM BOTH WAYS (IN²/LIN. FT.)	AREA STEEL TOP & BOTTOM AROUND HOLE (IN²/FT.)	MAX. EARTH COVER (FT.)
72	48	0.12	0.20	90
76	48	0.12	0.20	28
84	48	0.12	0.20	20
90	48	0.12	0.20	16
102	48	0.12	0.20	12

TOP VIEW

SECTIONAL VIEW
(SEE TOP VIEW FOR TRUE ORIENTATION)

NOTE TYPICAL FOR TOP & INTERMEDIATE SLAB. THEY MUST BE SEATED IN A MORTAR BED TO INSURE UNIFORM SEA RING AROUND CIRCUMFERENCE OF SLAB

DEFLECTION ANGLE AS REQUIRED OR ALLOWED BY OPENING SIZE

DETAIL-B

CONCRETE AND ROUND RUBBER IN ACCORDANCE WITH ASTH. SPEC C-361

SEE TABLE FOR MAX EARTH COVER

SEE DETAIL-B

12 WALL IN/FT. REINFORCEMENT

12 IN²/LINEAL FT. EACH WAY-EACH LAYER

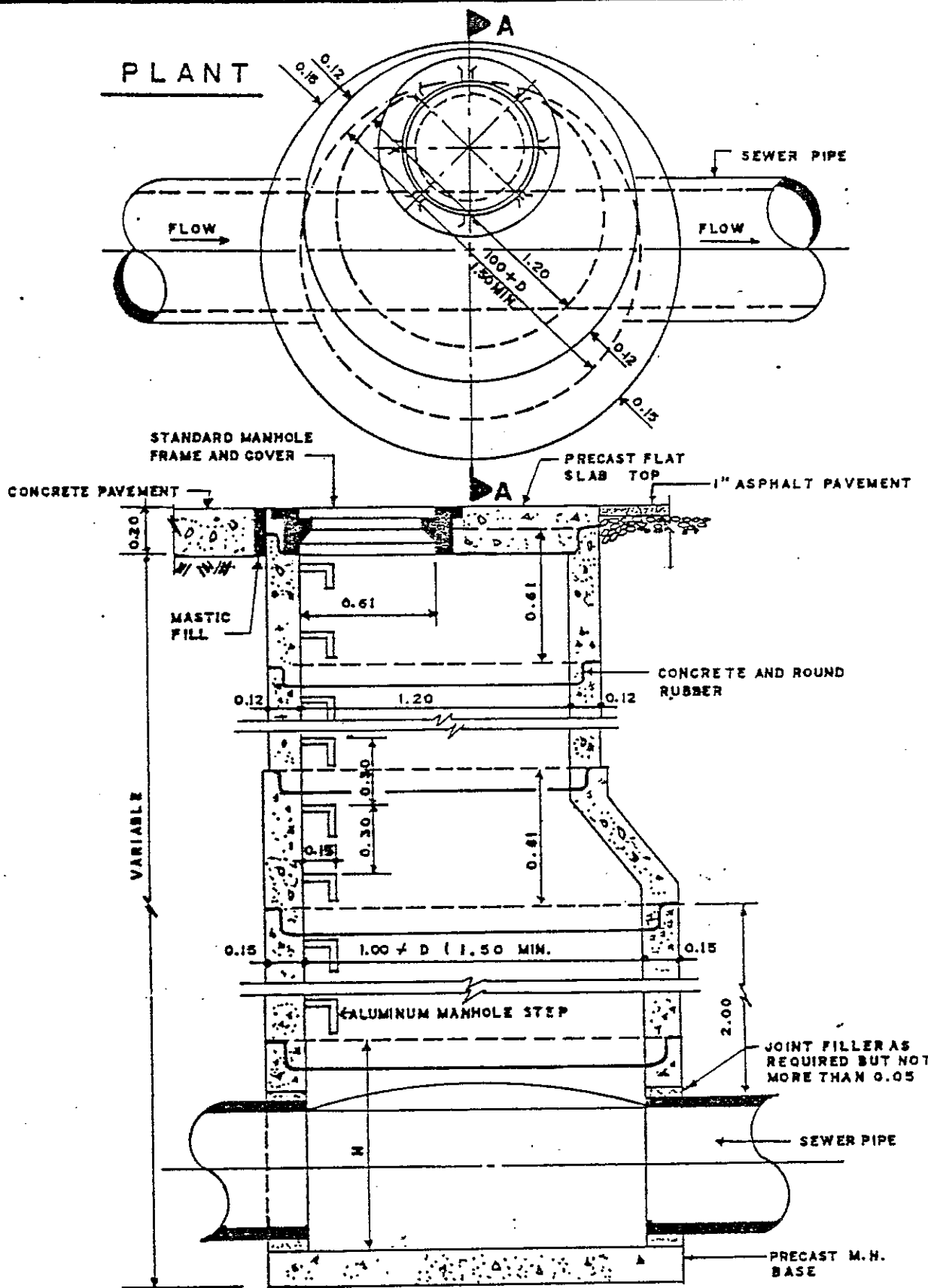
1.03 OR LARGER DIA.

0.5 MAX. JOINT IF FILLER IS USED (BY OTHERS)

2" MIN

VARIABLE





NOT TO SCALE

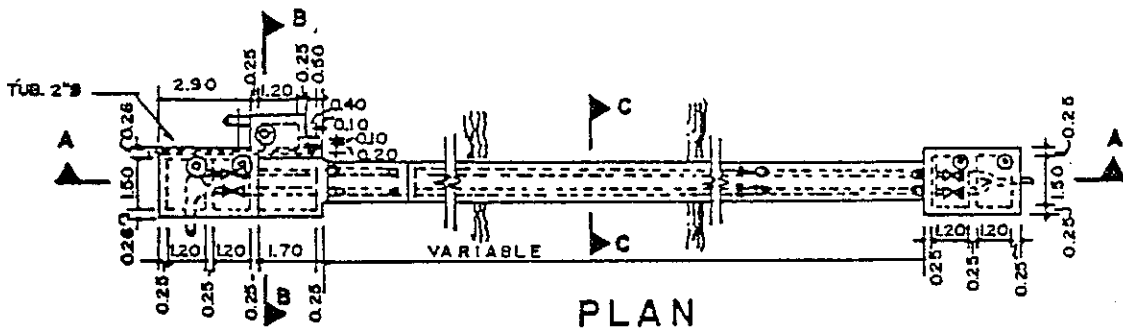
SECTION A - A

DETAIL OF PRECAST STANDARD MANHOLES FOR TRUNK SEWER 30" DIA. AND LARGER

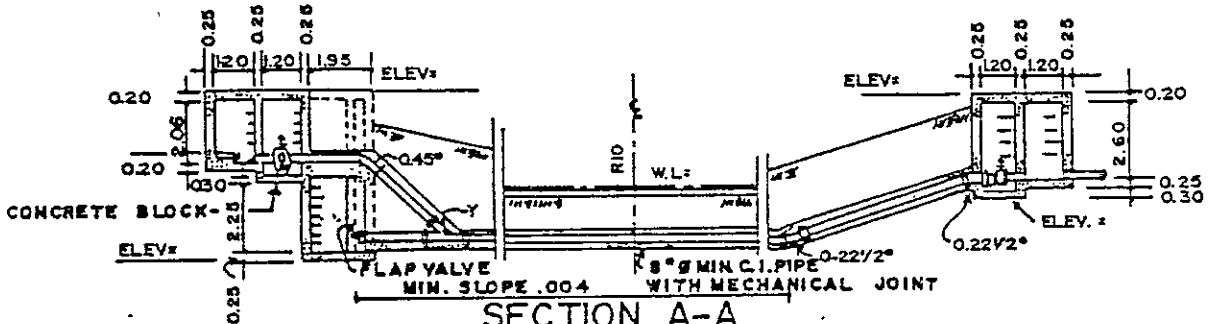
FIG. NO. 41-D

DATE: 7/11/80





PLAN

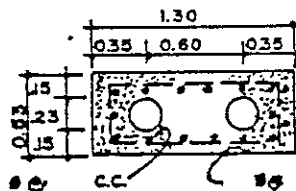


SECTION A-A

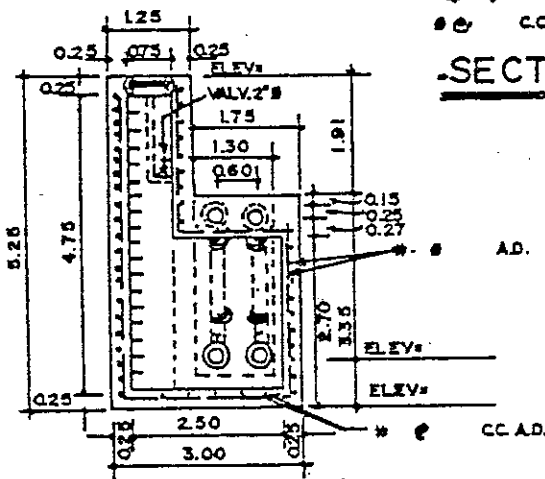
NOTE

THE DEVELOPER SHALL BE RESPONSIBLE FOR THE STRUCTURAL DESIGN.

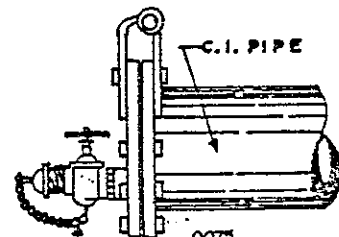
NOTE: THE INLET PIPES OF THE SIPHON CAN BE AT DIFFERENT ELEVATIONS DEPENDING ON THE CRITERIA USED WHEN DESIGNING.



SECTION C-C



SECTION B-B

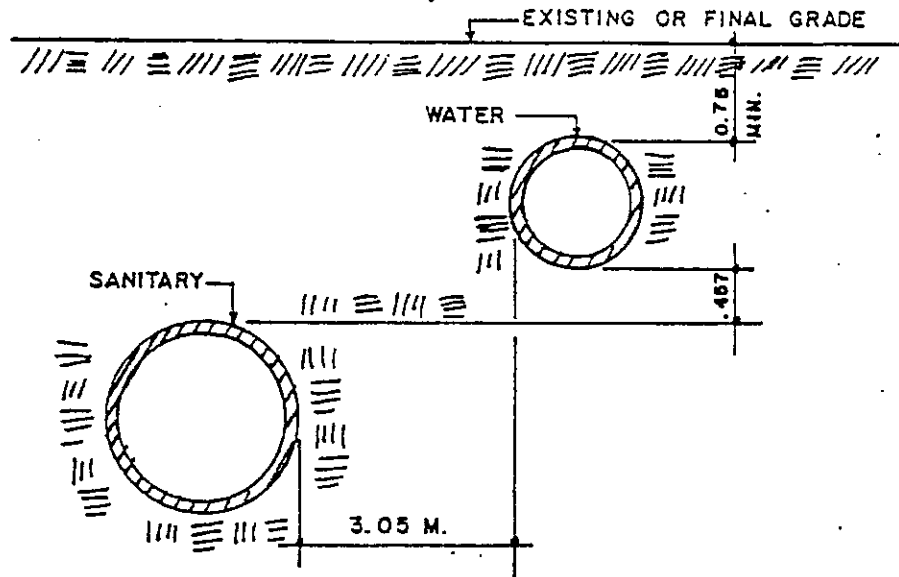


- HOSE CONNECTION & SHUTOFF VALVE
- 3/4" X 12" BOLT, NUT & WASER
- 1/4" X 2" STEEL STRAP
- HOSE CONNECTION & SHUTOFF VALVE

FLAP VALVE DETAIL

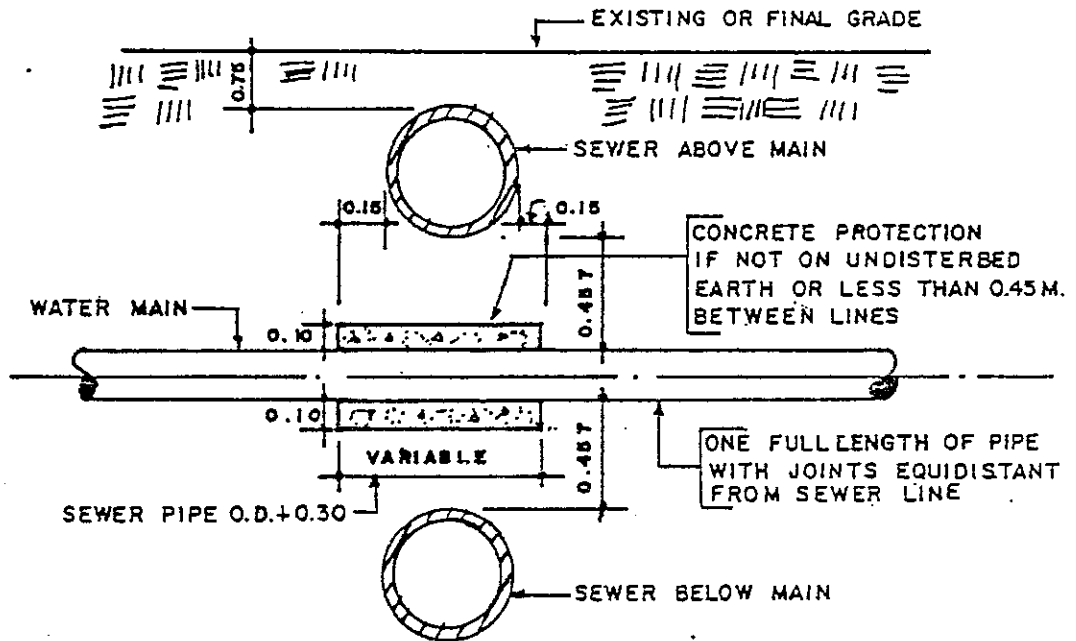
NOT TO SCALE





PARALLEL INSTALLATION

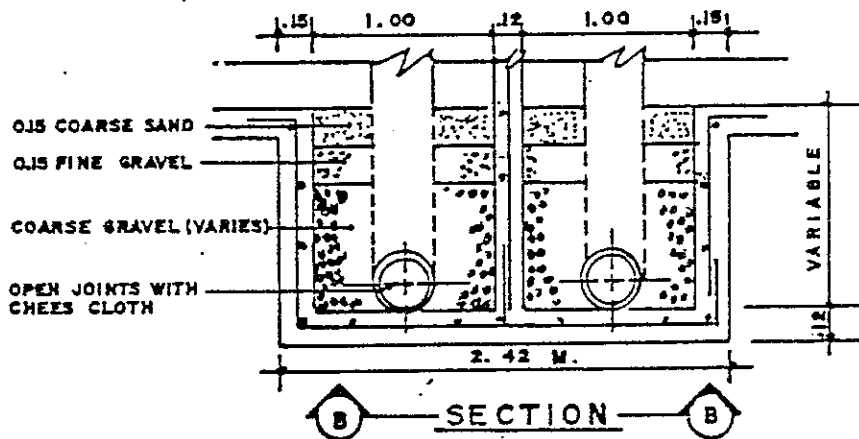
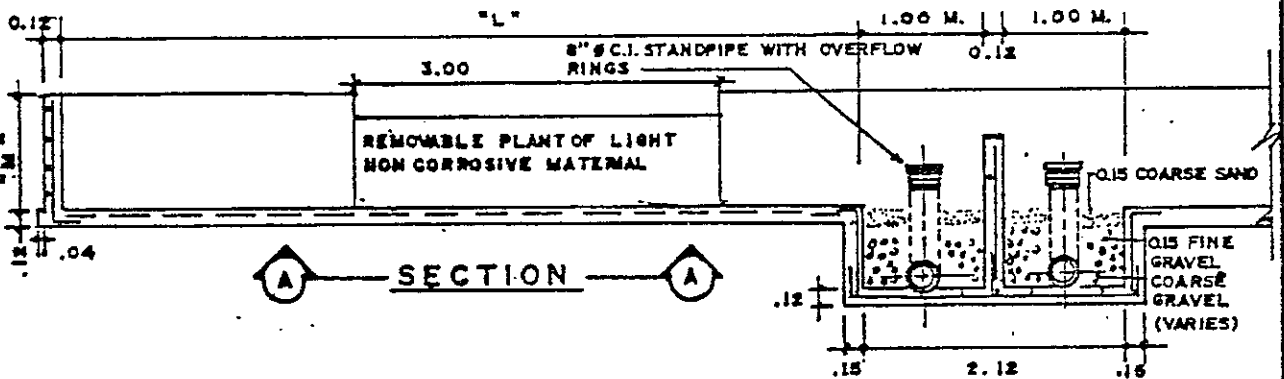
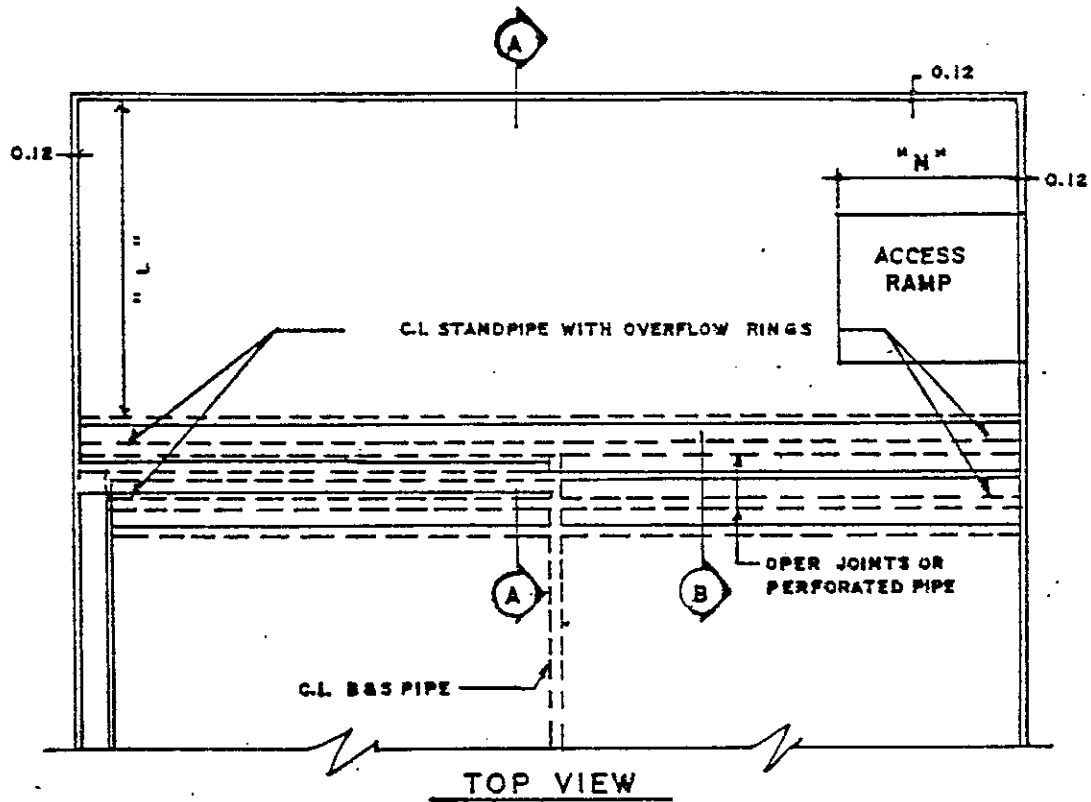
NOT TO SCALE



CROSSING INSTALLATION

NOT TO SCALE





NO TO SCALE

NOTE:

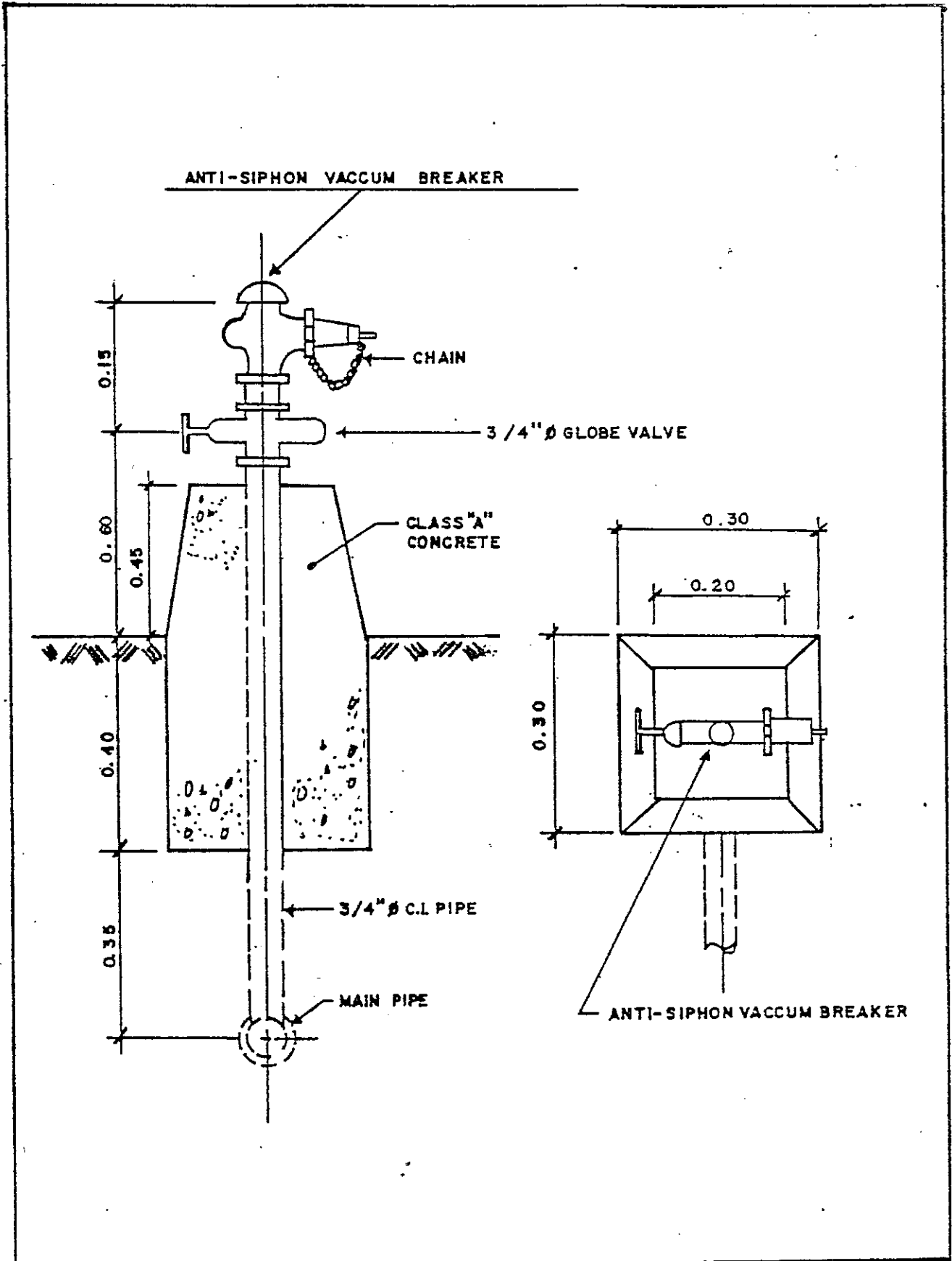
DIMENSIONS SHOWN ARE RECOMMENDED MINIMUM, OTHERS AS REQUIRED

SLUDGE DRYING BEDS

FIG. NUM. 44

DATE 8/08/80



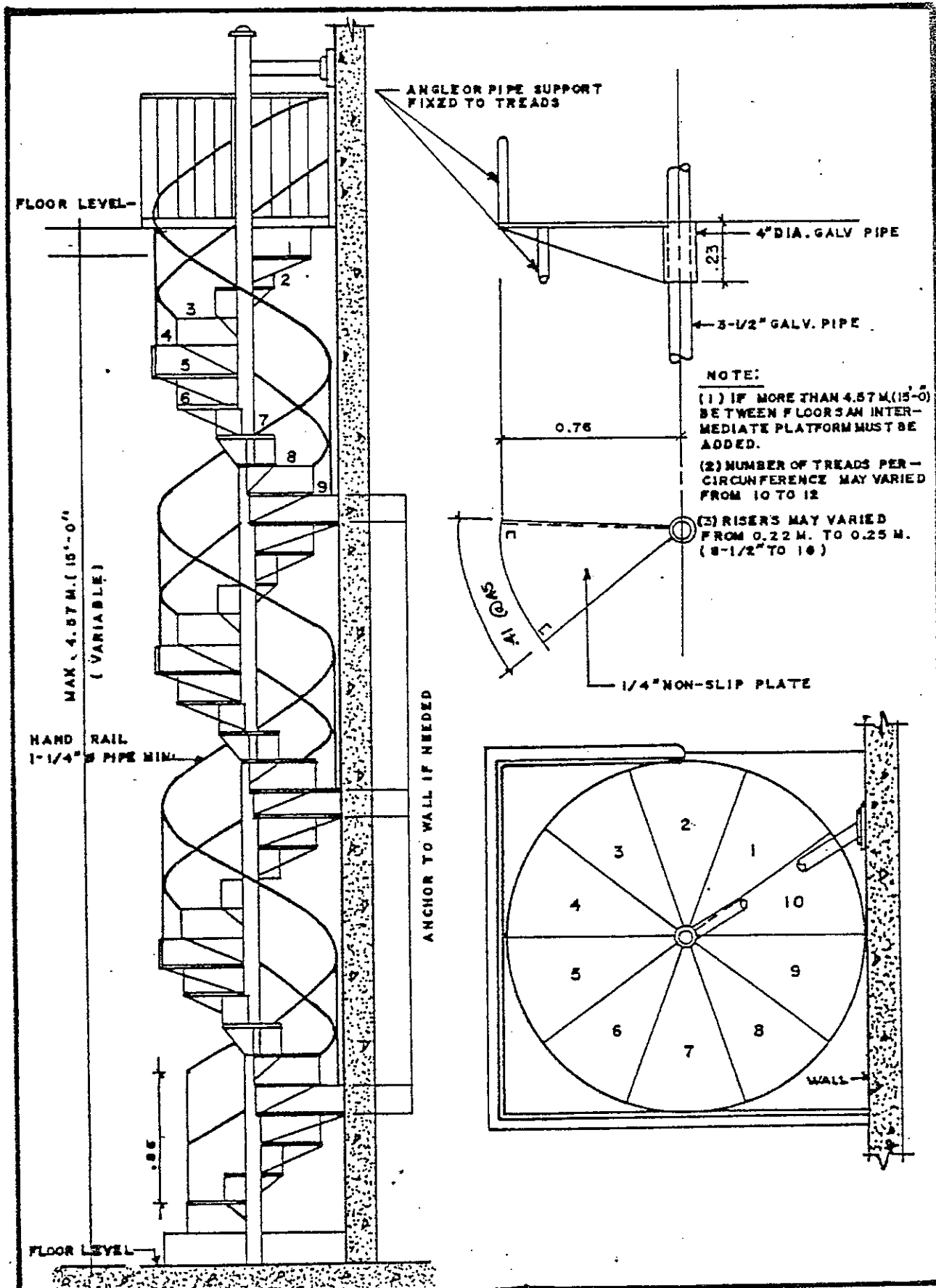


HOSE VALVE DETAIL

FIG. NO. 45

DATE 7/11/80





SPIRAL STAIR DETAIL

FIG. NO. 46

DATE 8/08/80



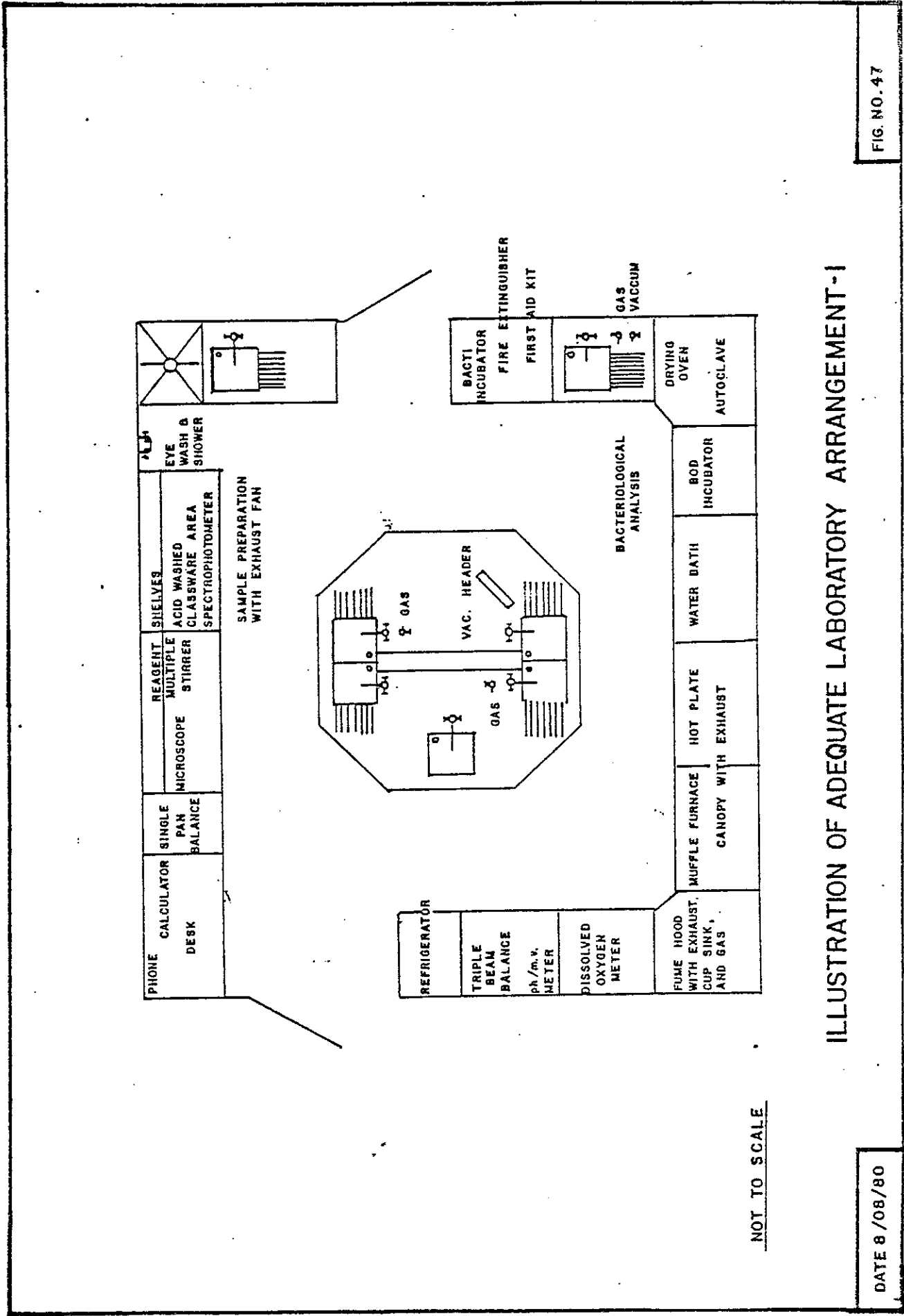


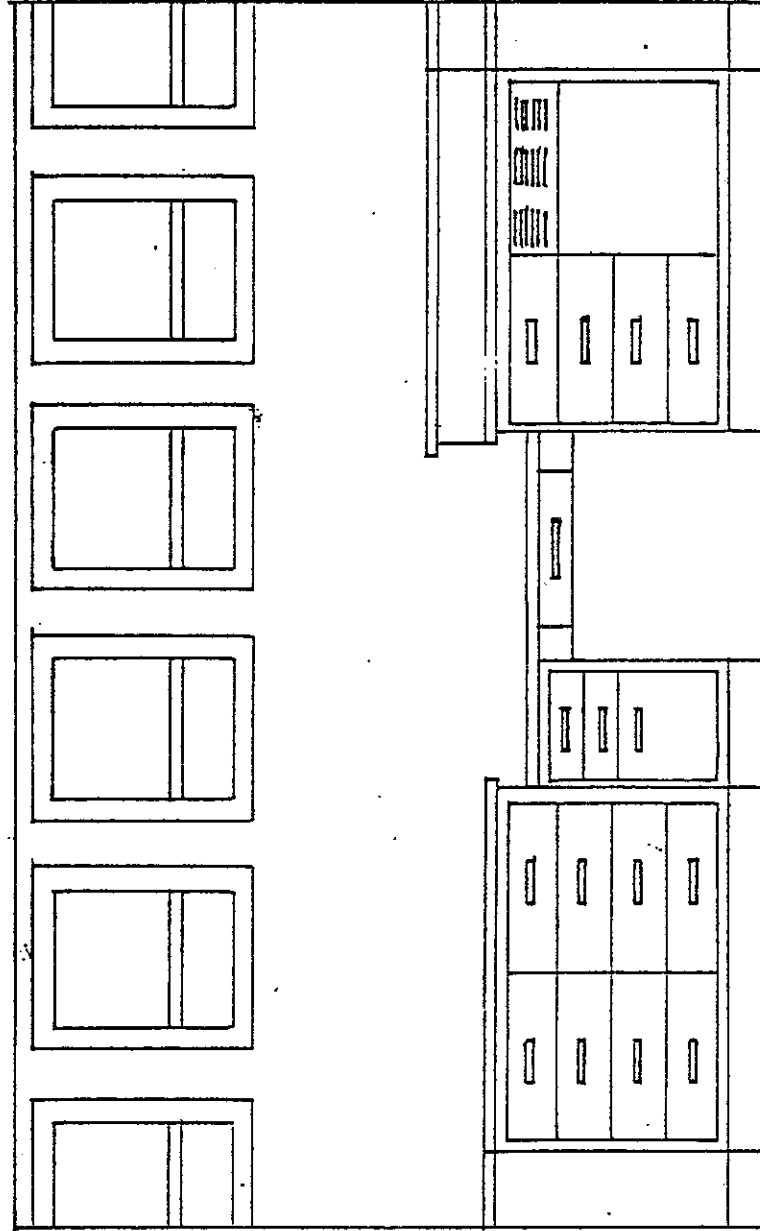
ILLUSTRATION OF ADEQUATE LABORATORY ARRANGEMENT - I

NOT TO SCALE

DATE 8 / 08 / 80

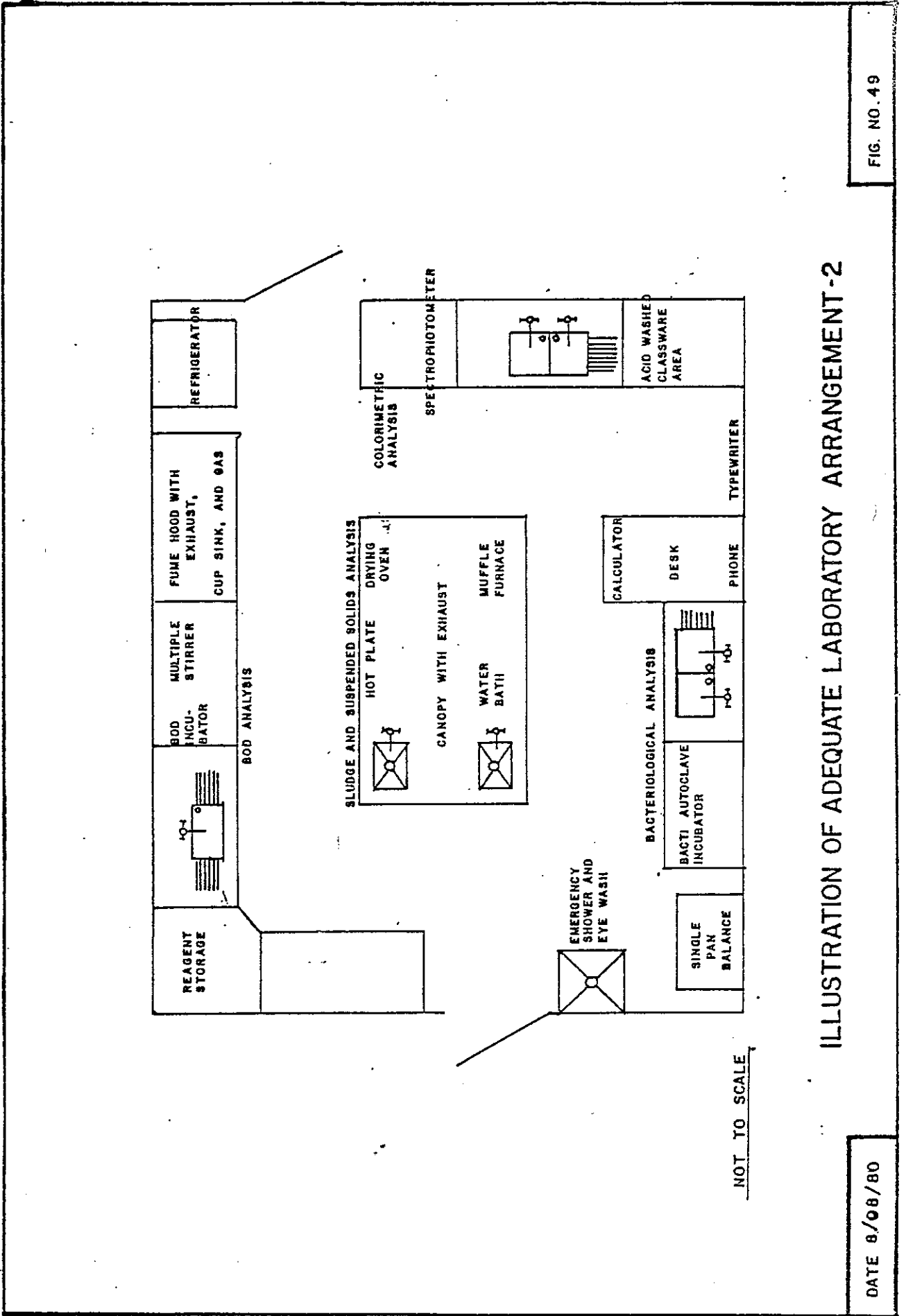
FIG. NO. 47





ELEVATION





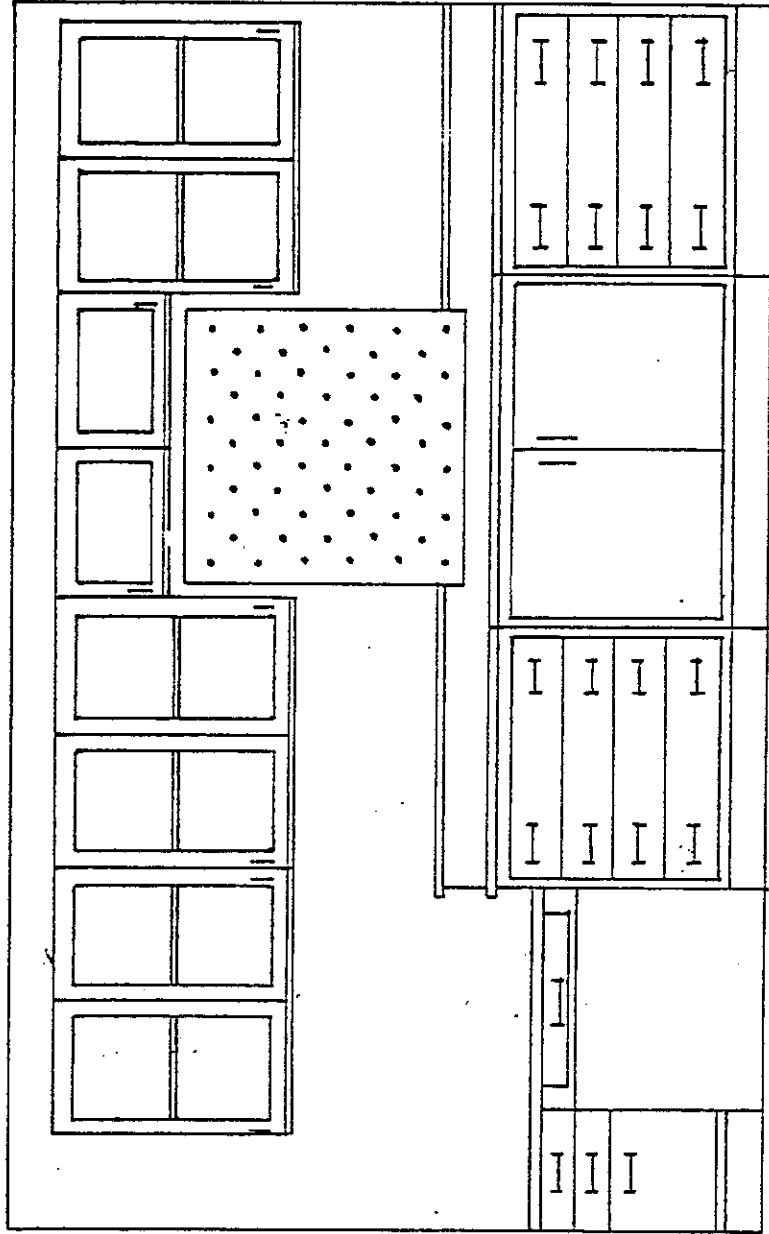
NOT TO SCALE

ILLUSTRATION OF ADEQUATE LABORATORY ARRANGEMENT-2

DATE 8/08/80

FIG. NO. 49





ELEVATION

FIG. NO. 50

DATE 8/08/80



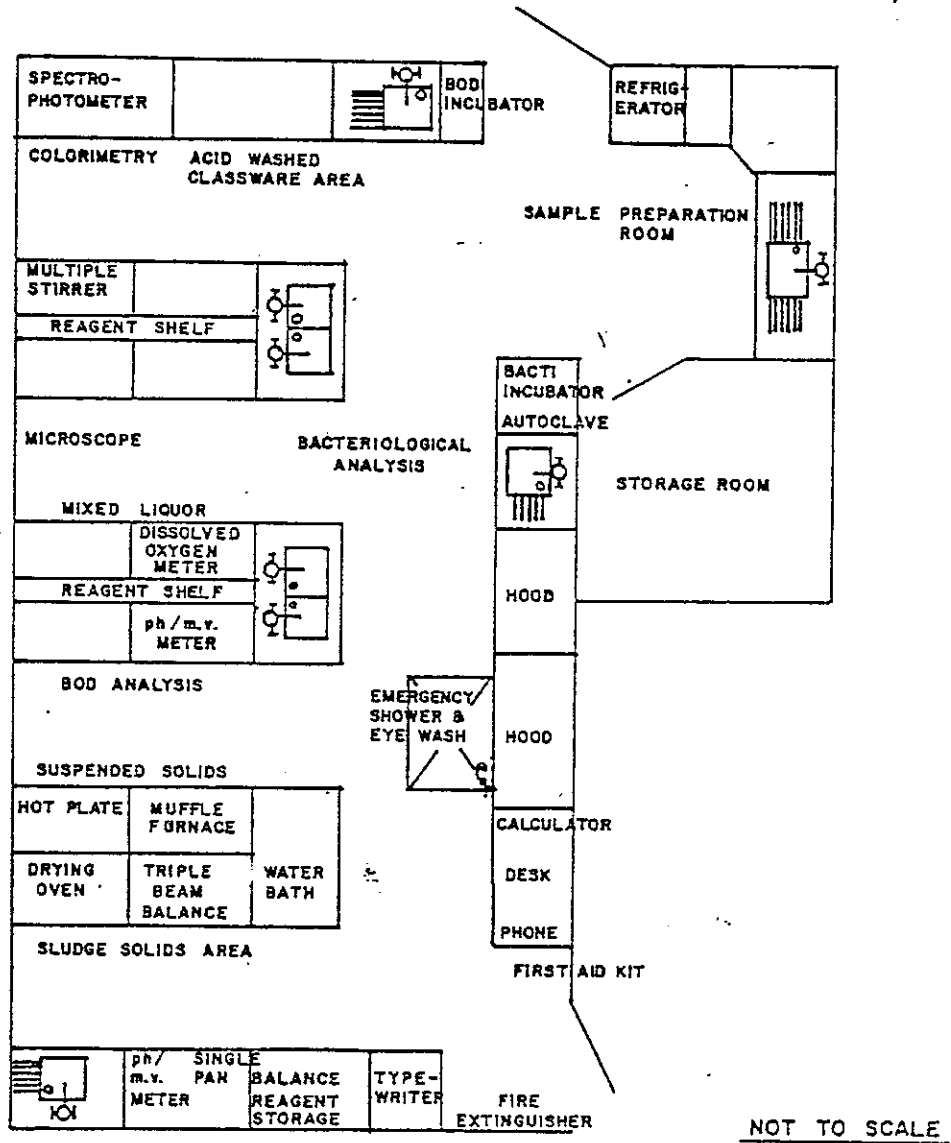


ILLUSTRATION OF ADEQUATE
LABORATORY ARRANGEMENT-3

FIG. NO. 51

DATE 8/08/80



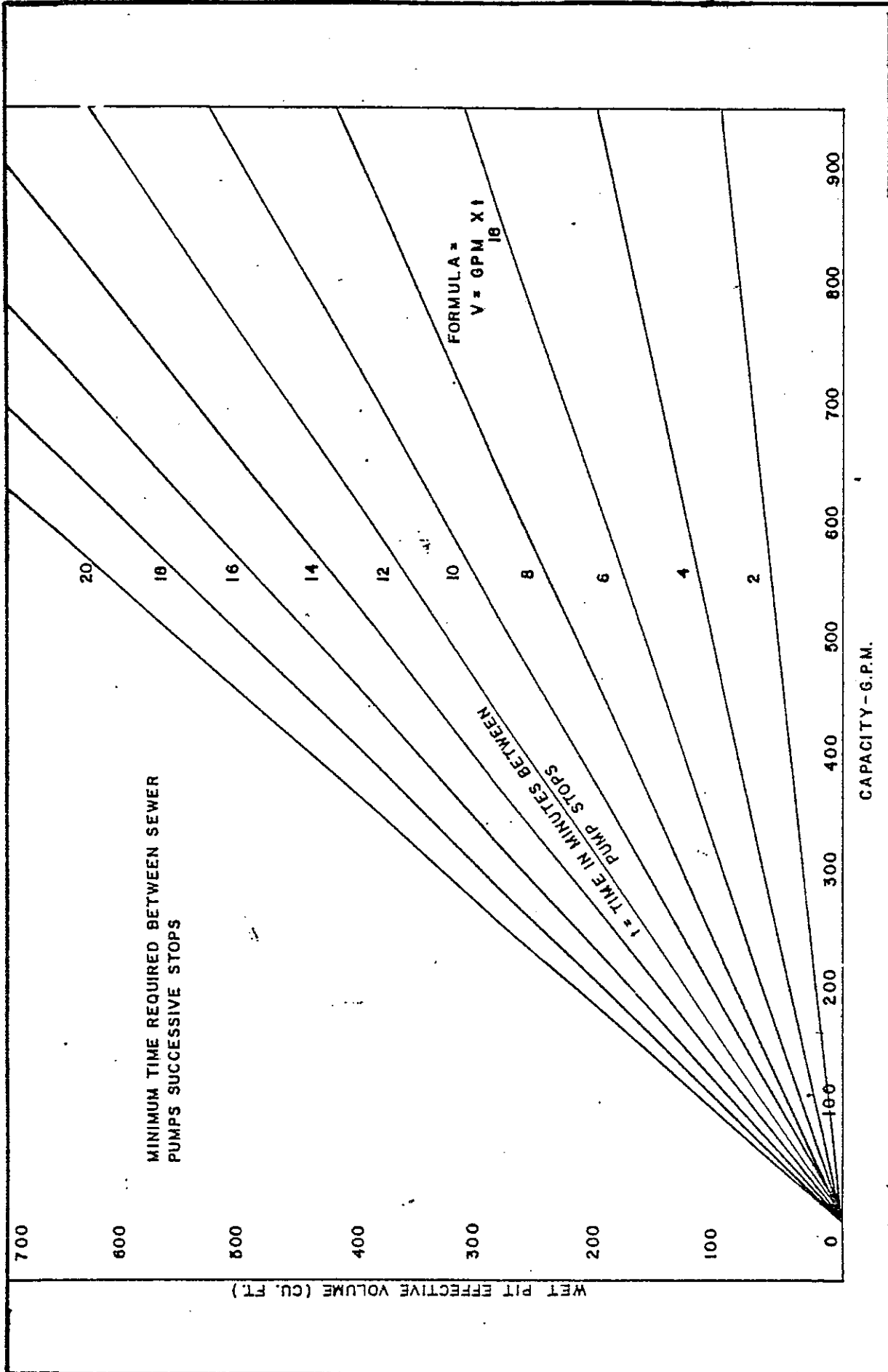
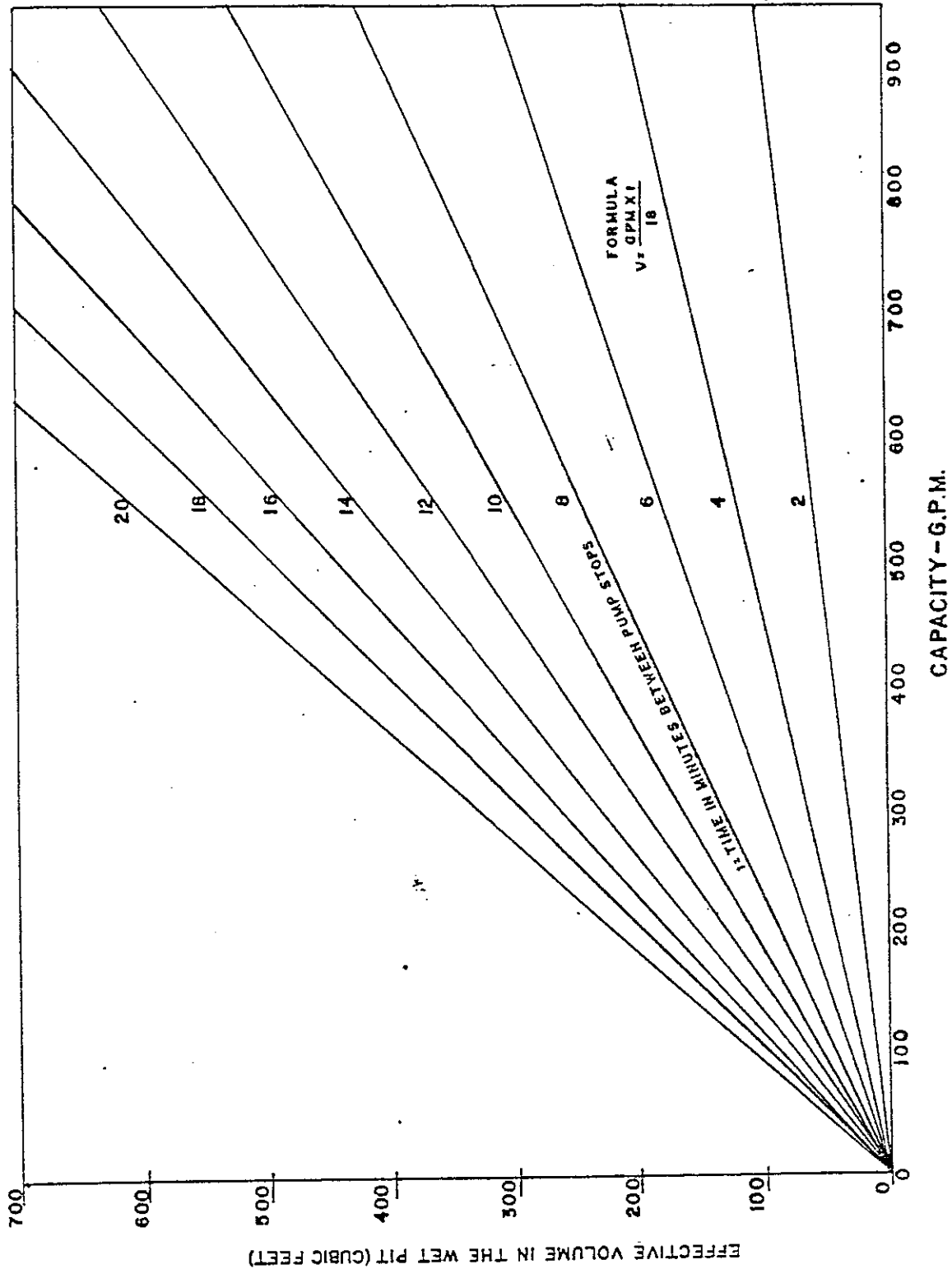


FIG. NO. 52

DATE 8/08/80





MINIMUM TIME REQUIRED BETWEEN SUCCESSIVE
 STOPS OF THE SANITARY SEWER PUMP

FIG. NO. 53

DATE 8/08/80



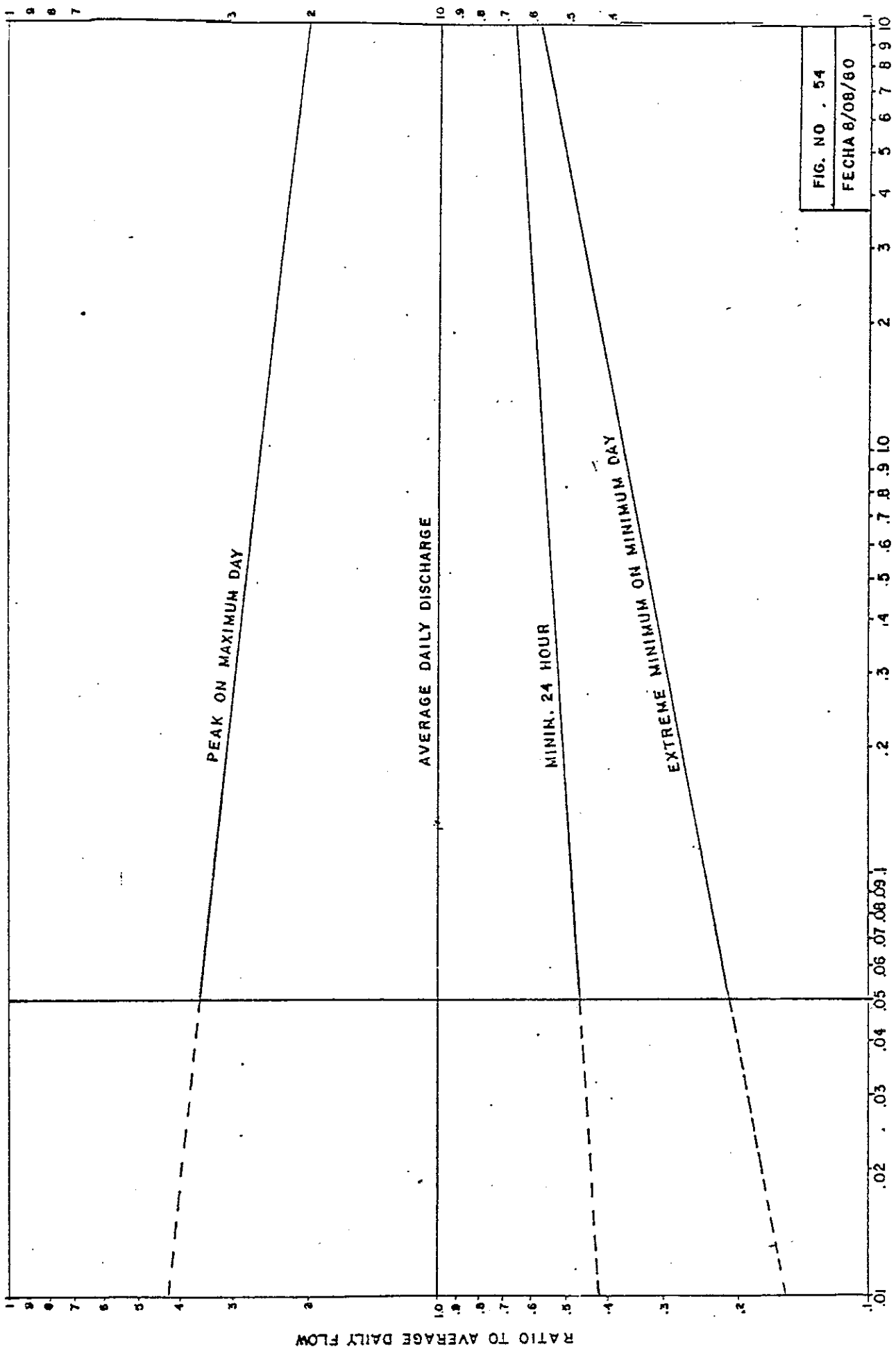
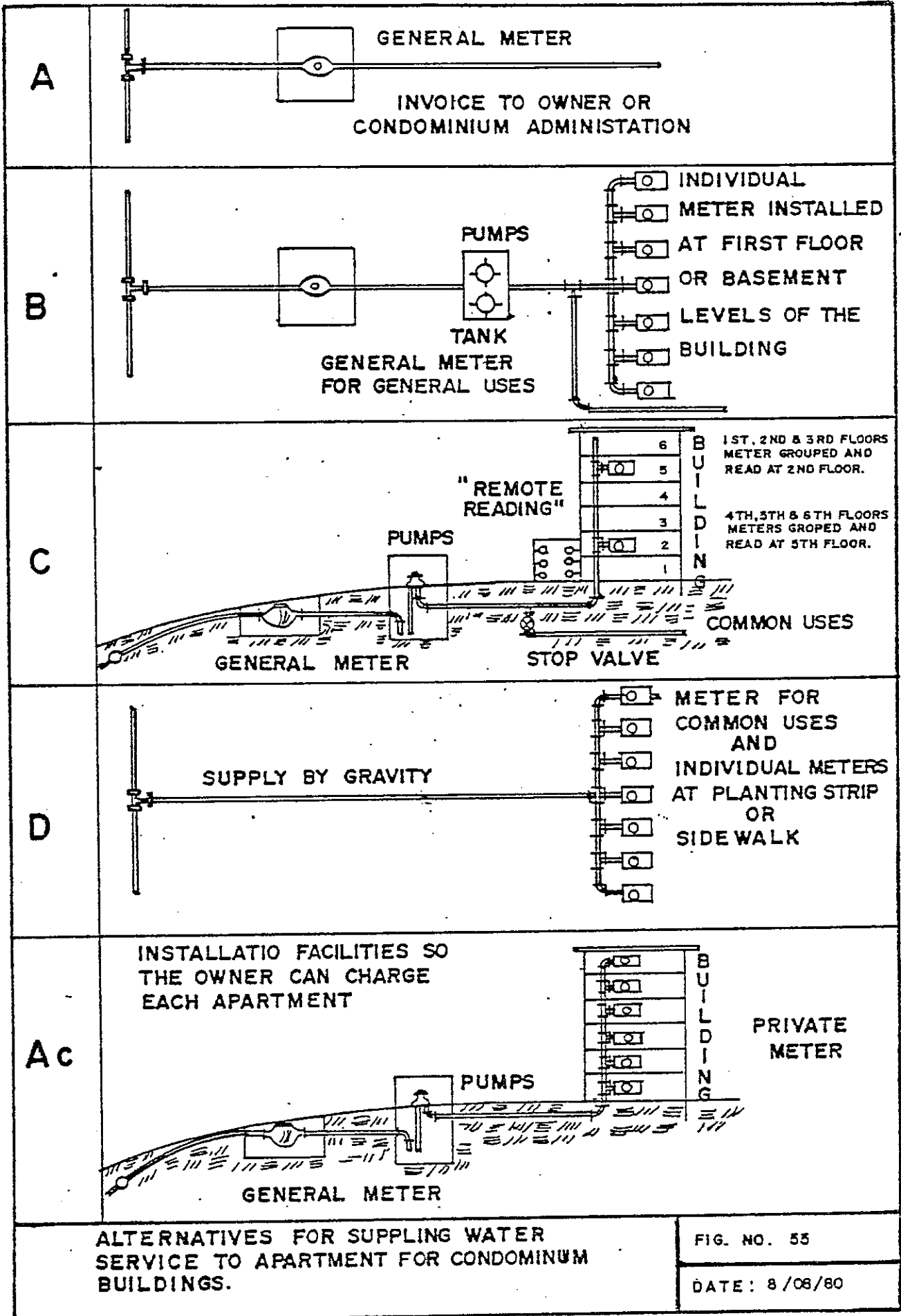


FIG. NO . 54
FECHA 8/08/80

AVERAGE DAILY SEWAGE FLOW (MGD)
VARIATIONS IN DAILY SEWAGE FLOW

RATIO TO AVERAGE DAILY FLOW





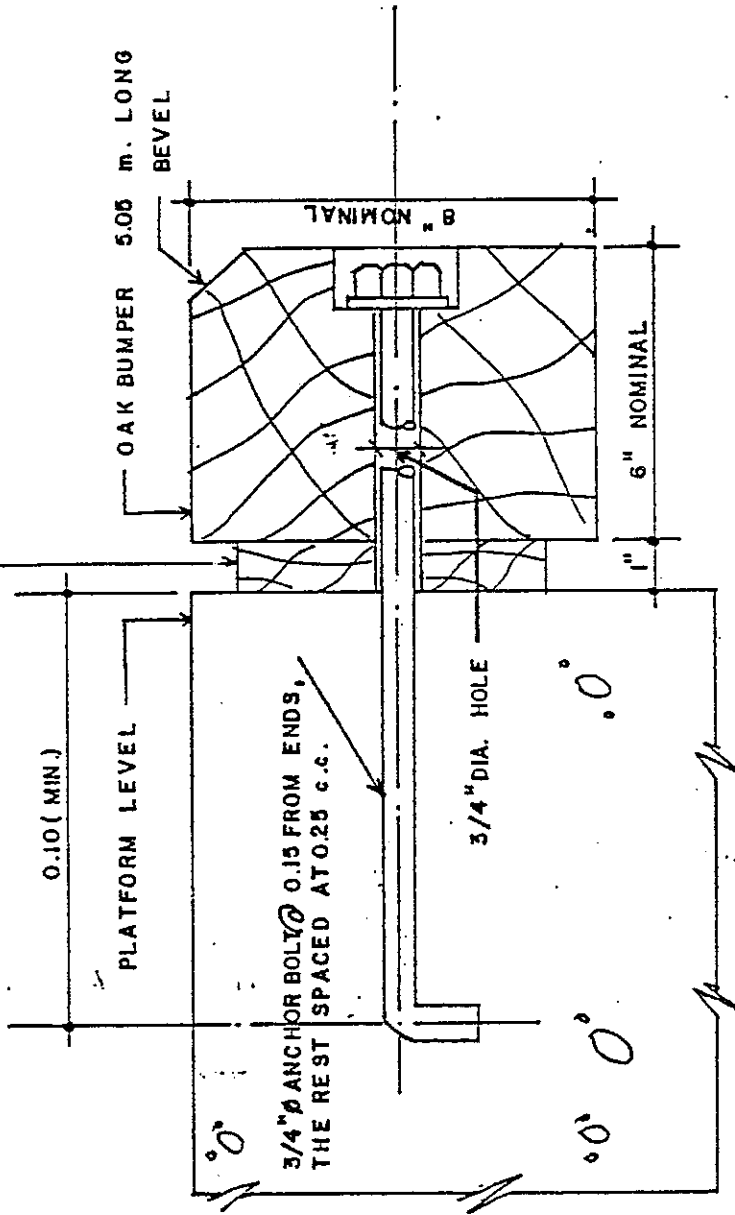
ALTERNATIVES FOR SUPPLYING WATER SERVICE TO APARTMENT FOR CONDOMINIUM BUILDINGS.

FIG. NO. 55

DATE: 8/08/80



4" X 4" OAK STRIP AT EACH BOLT



0.10 (MIN.)

PLATFORM LEVEL

3/4" \varnothing ANCHOR BOLT @ 0.15 FROM ENDS,
THE REST SPACED AT 0.25 C.C.

3/4" DIA. HOLE

OAK BUMPER 5.05 m. LONG
BEVEL

6" NOMINAL

1" NOMINAL

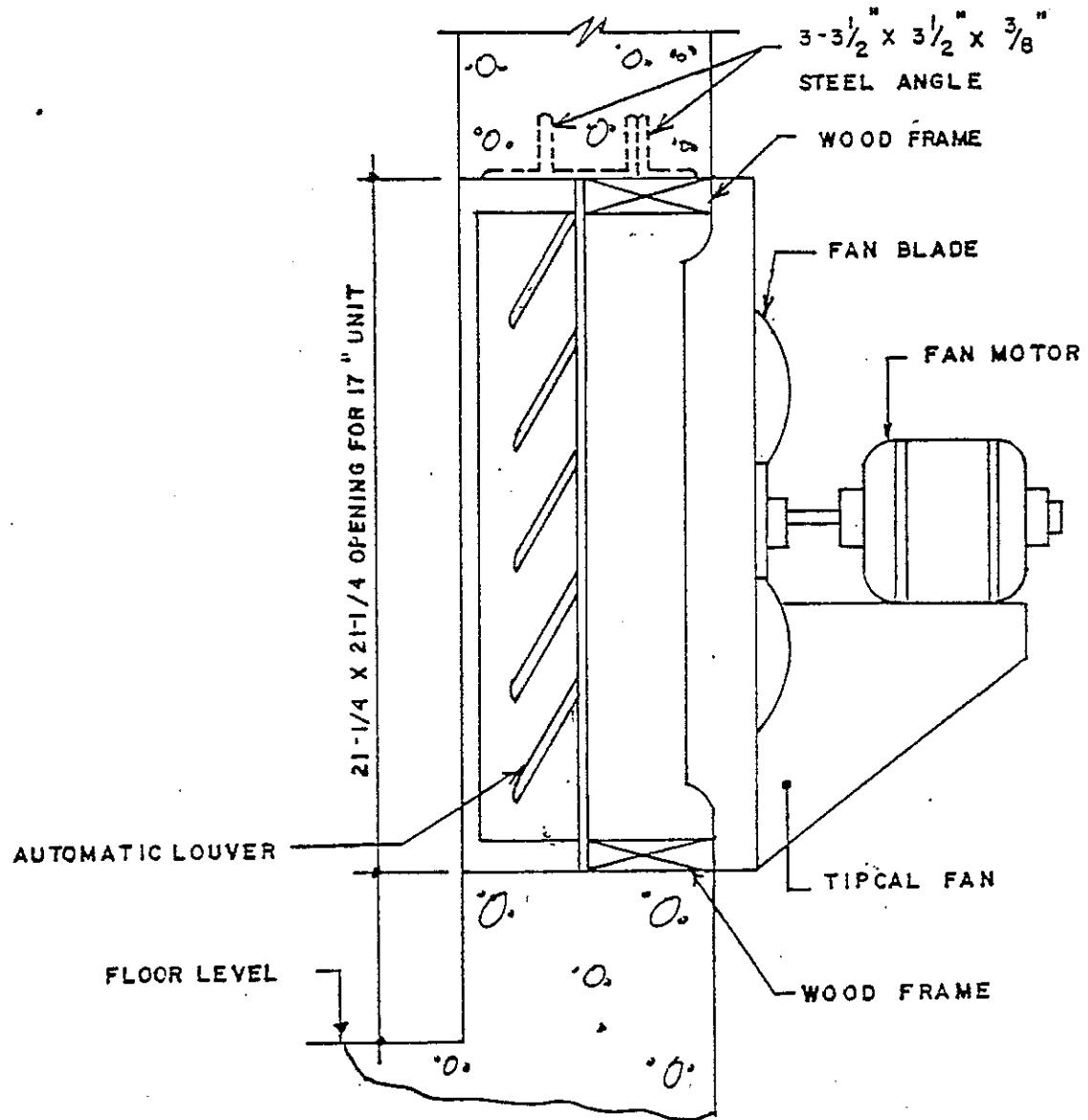
LOADING PLATFORM BUMPER

NOT TO SCALE

FIG. NO. 56

DATE: 8/08/80





SECTION

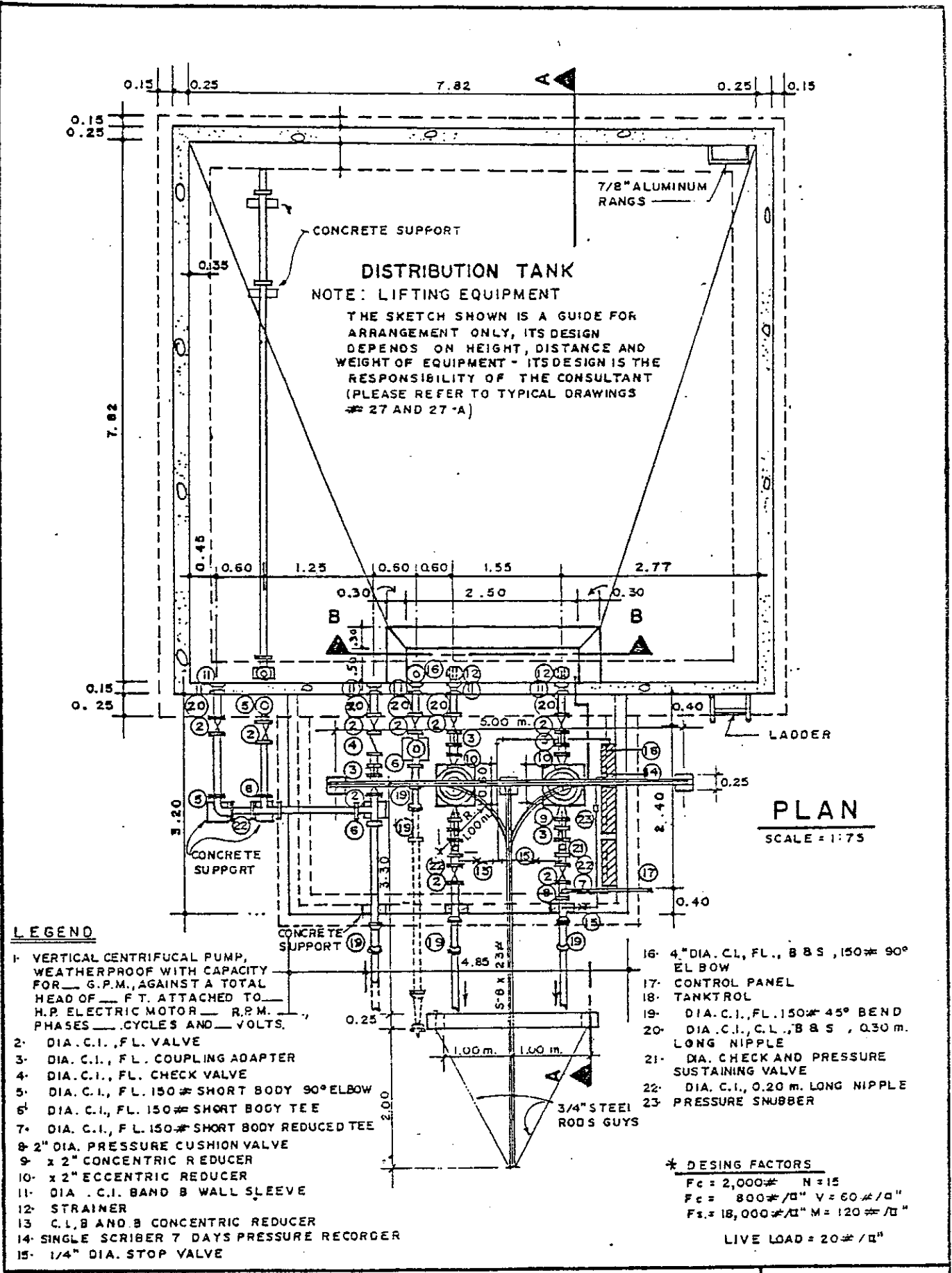
EXHAUST FAN DETAIL
17" UNIT

NOT TO SCALE

FIG. NO. 57

DATE: 8/08/80





DISTRIBUTION TANK
 NOTE: LIFTING EQUIPMENT
 THE SKETCH SHOWN IS A GUIDE FOR
 ARRANGEMENT ONLY, ITS DESIGN
 DEPENDS ON HEIGHT, DISTANCE AND
 WEIGHT OF EQUIPMENT - ITS DESIGN IS THE
 RESPONSIBILITY OF THE CONSULTANT
 (PLEASE REFER TO TYPICAL DRAWINGS
 # 27 AND 27-A)

PLAN
 SCALE = 1:75

LEGEND

- 1- VERTICAL CENTRIFUGAL PUMP, WEATHERPROOF WITH CAPACITY FOR ___ G.P.M., AGAINST A TOTAL HEAD OF ___ FT. ATTACHED TO H.P. ELECTRIC MOTOR ___ R.P.M. PHASES ___ CYCLES AND ___ VOLTS.
- 2- DIA. C.I., FL. VALVE
- 3- DIA. C.I., FL. COUPLING ADAPTER
- 4- DIA. C.I., FL. CHECK VALVE
- 5- DIA. C.I., FL. 150# SHORT BODY 90° ELBOW
- 6- DIA. C.I., FL. 150# SHORT BODY TEE
- 7- DIA. C.I., FL. 150# SHORT BODY REDUCED TEE
- 8- 2" DIA. PRESSURE CUSHION VALVE
- 9- x 2" CONCENTRIC REDUCER
- 10- x 2" ECCENTRIC REDUCER
- 11- DIA. C.I. BAND B WALL SLEEVE
- 12- STRAINER
- 13- C.I. B AND B CONCENTRIC REDUCER
- 14- SINGLE SCRIBER 7 DAYS PRESSURE RECORDER
- 15- 1/4" DIA. STOP VALVE

- 16- 4" DIA. C.I., FL., B & S, 150# 90° EL BOW
- 17- CONTROL PANEL
- 18- TANK TROL
- 19- DIA. C.I., FL. 150# 45° BEND
- 20- DIA. C.I., C.L., B & S, 0.30 m. LONG NIPPLE
- 21- DIA. CHECK AND PRESSURE SUSTAINING VALVE
- 22- DIA. C.I., 0.20 m. LONG NIPPLE
- 23- PRESSURE SNUBBER

*** DESIGN FACTORS**
 $F_c = 2,000 \#$ $N = 15$
 $F_v = 800 \# / \text{sq}''$ $V = 60 \# / \text{sq}''$
 $F_s = 18,000 \# / \text{sq}''$ $M = 120 \# / \text{sq}''$
 LIVE LOAD = $20 \# / \text{sq}''$

DISTRIBUTION TANK & PUMPING STATION (50,000 GALS)

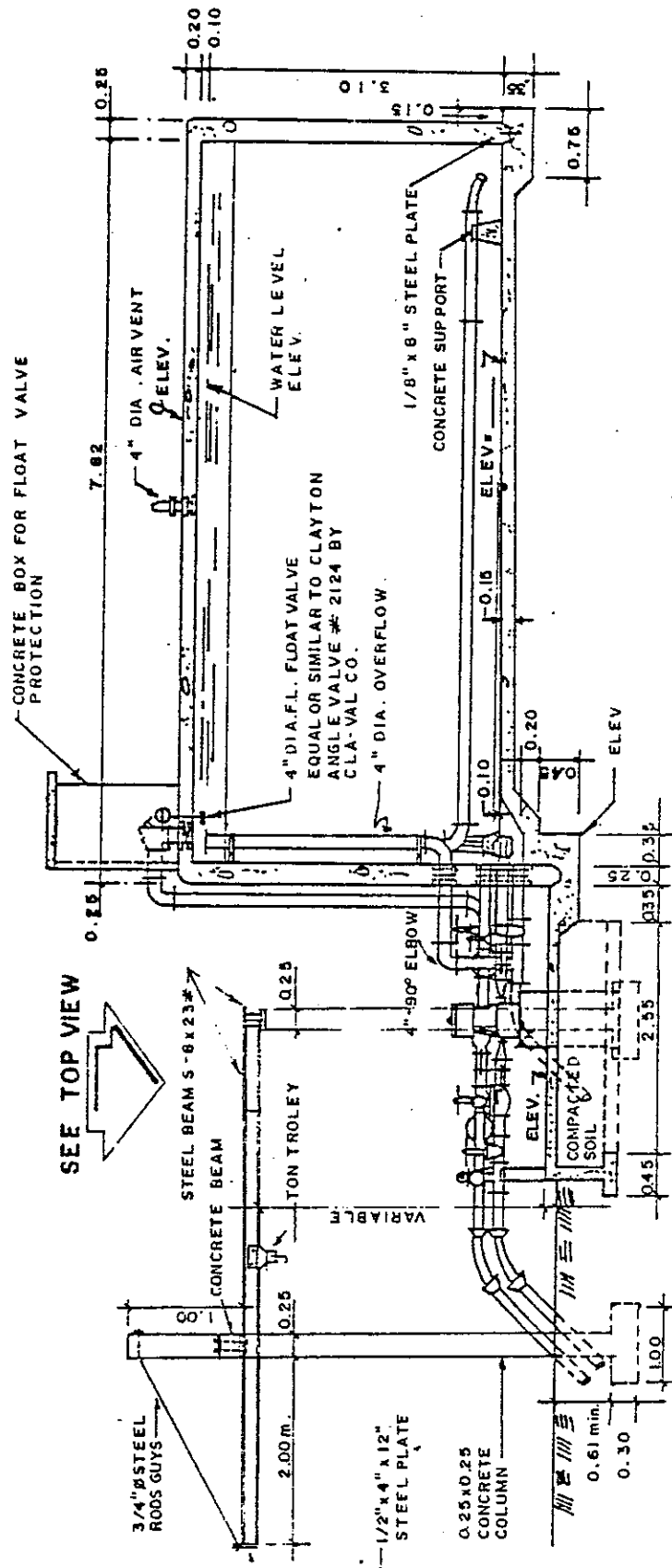
FIG. NUM. 58
 DATE 8-08-81



DISTRIBUTION TANK SECTION CAP. 50,000 GALS.

FIG. NUM. 58-A

DATE 8-08-80

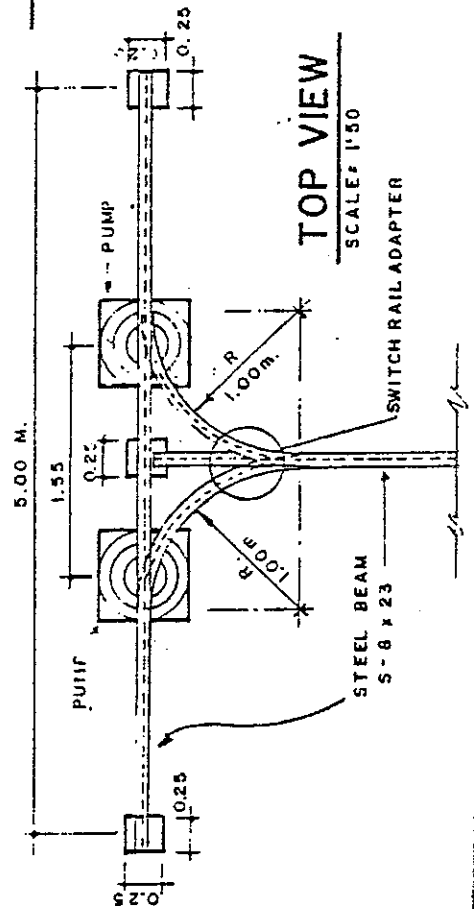


SECTION "A-A"

SCALE: 1:75

NOTE: LIFTING EQUIPMENT

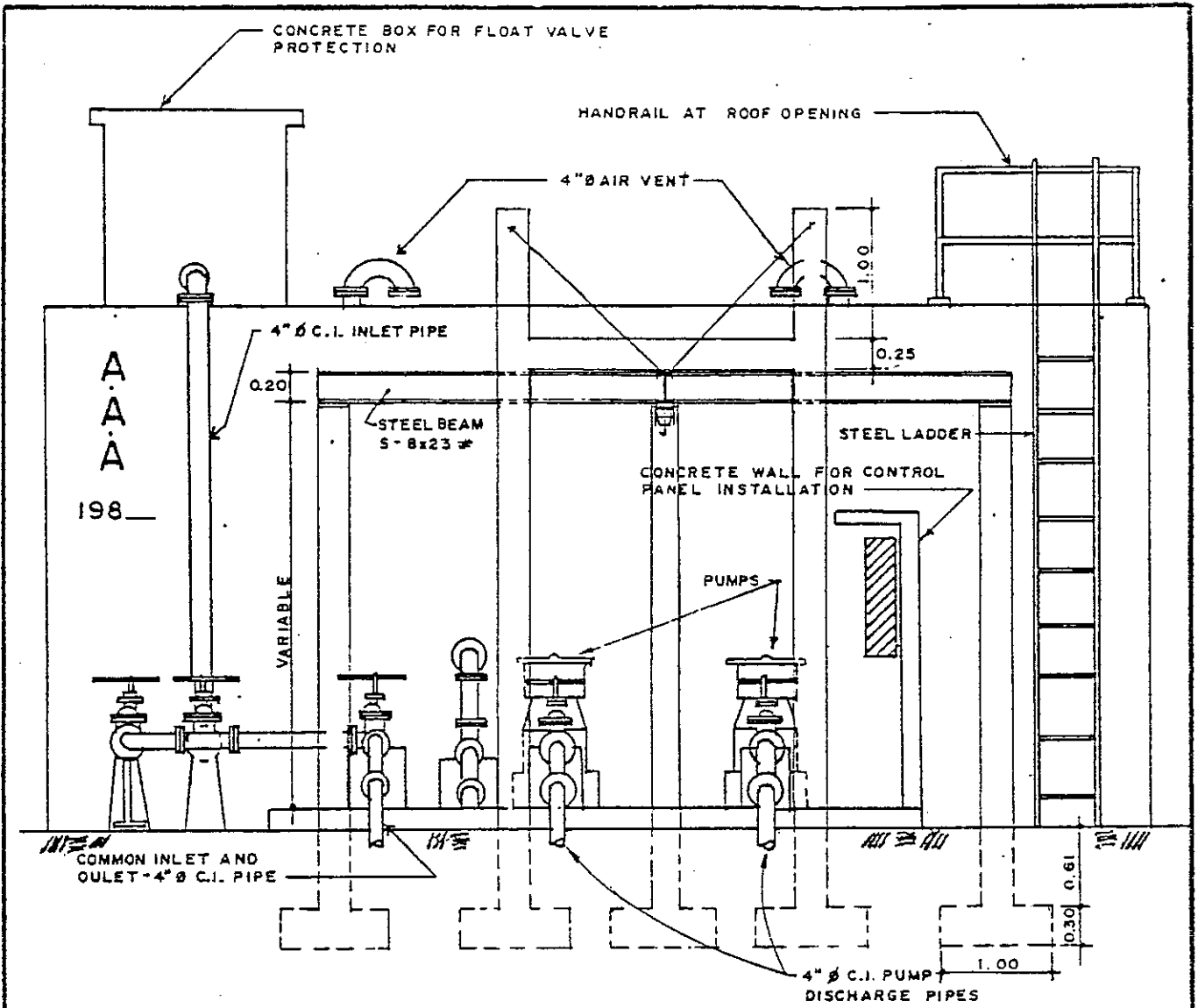
THE SKETCH SHOWN IS A GUIDE FOR ARRANGEMENT ONLY, ITS DESIGN DEPENDS ON HEIGHT, DISTANCE AND WEIGHT OF EQUIPMENT - ITS DESIGN IS THE RESPONSIBILITY OF THE CONSULTANT (PLEASE REFER TO TYPICAL DRAWINGS # 27 AND 27-A)



TOP VIEW

SCALE: 1:50





FRONT ELEVATION

SCALE : 1"=50

NOTE: LIFTING EQUIPMENT

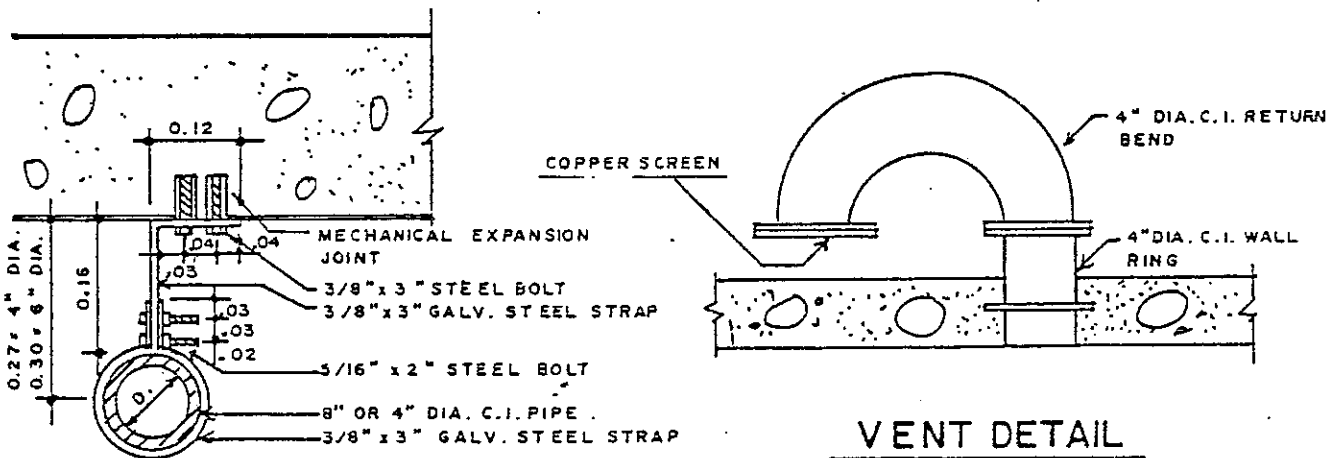
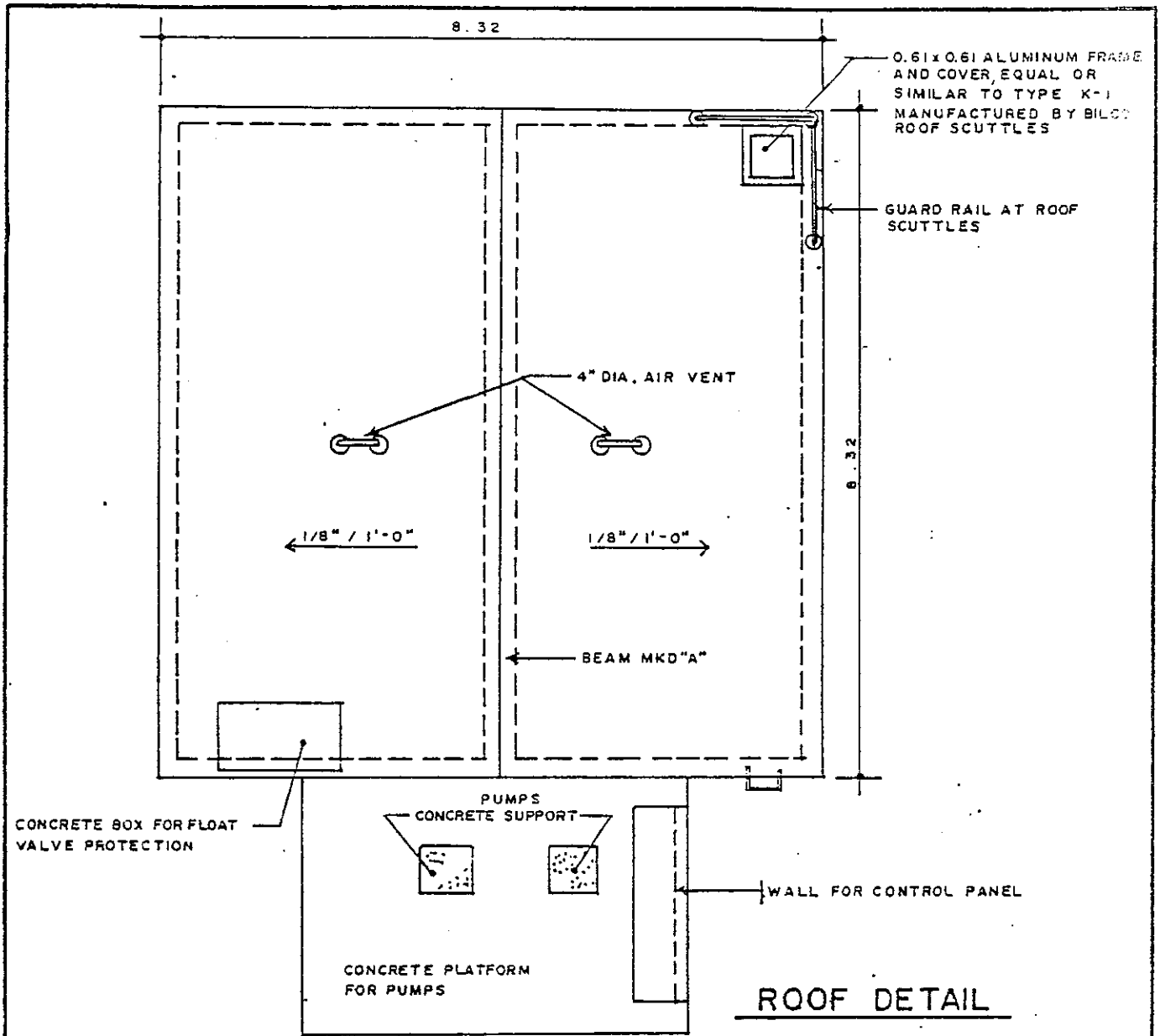
THE SKETCH SHOWN IS A GUIDE FOR ARRANGEMENT ONLY, ITS DESIGN DEPENDS ON HEIGHT, DISTANCE AND WEIGHT OF EQUIPMENT - ITS DESIGN IS THE RESPONSIBILITY OF THE CONSULTANT (PLEASE REFER TO TYPICAL DRAWINGS # 27 AND 27-A)

DISTRIBUTION TANK CAPACITY 50,000 GALS.

FIG. NUM. 58-B

DATE 8-08-81





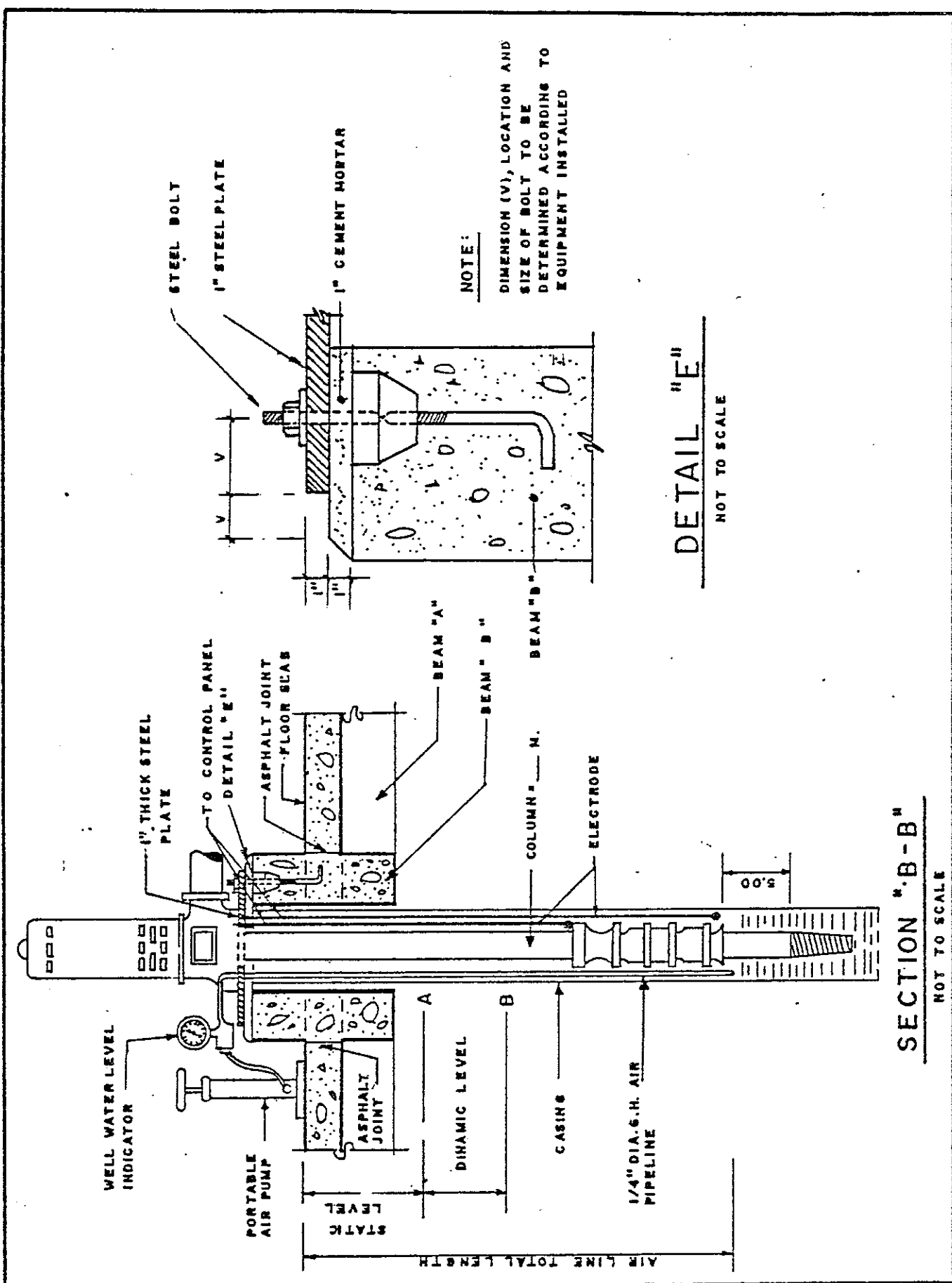
DISTRIBUTION TANK CAP. = 50,000 GALS.

FIG. NUM. 58-C

DATE 8-08-81







VERTICAL TYPE PUMP (100 GALS. OR MORE)

FIG. NUM. 59-A

DATE 8-08-80

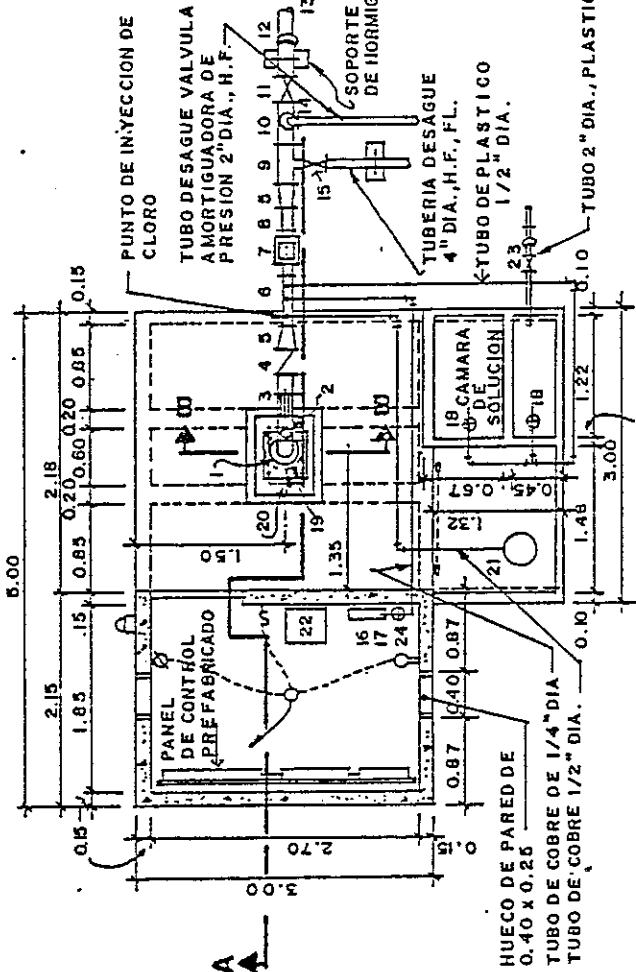


- LEYENDA -

- 1- BOMBA TIPO SUMERGIBLE PARA POZO PROFUNDO CON CAPACIDAD PARA BOMBLEAR 6 G.P.M. CONTRA UNA CARGA TOTAL DE PIES Y UN LARGO DE PIES, ACCIONADA POR UN MOTOR ELECTRICO A PRUEBA DE HUMEDAD DE R.P.M., 3 FACES, 60 CICLOS, 220 VOLTIOS, VENTOSA 1/2" DIA.
- 2- JUNTA DE EXPANSION 6" DIA., H.F., FL. (FLANGED COUPLING ADAPTER)
- 3- VALVULA DE RETENCION Y MANTENEDORA DE PRESION DIA., H.F., FL., IGUAL O SIMILAR A LA CLAYTON NUM. 51 DE LA CLA-VAL CO.
- 4- REDUCIDO 6" X 4" H.F., FL.
- 5- NIPLE 4" DIA., H.F., FL. (LARGO IGUAL A 5 VECES EL DIA. DEL CONTADOR)
- 6- NIPLE 4" DIA., H.F., FL. (LARGO IGUAL A 5 VECES EL DIA. DEL CONTADOR)
- 7- CONTADOR 4" DIA. TIPO PROPELO - FLOW IGUAL O SIMILAR AL FABRICADO POR LA BUILDERS PROVIDENCE CO.
- 8- NIPLE 4" DIA., H.F., FL. (LARGO IGUAL A 2 VECES EL DIAMETRO DEL CONTADOR).
- 9- T-6" X 6" X 4" H.F., FL.
- 10- T-6" X 6" X 2" H.F., FL.
- 11- VALVULA 6" DIA., H.F., FL.
- 12- CURVA 45° - 6" DIA., H.F., FL.
- 13- NIPLE 6" DIA., H.F., FL.
- 14- VALVULA AMORTIGUADORA DE PRESION 2" DIA., H.F., FL.
- 15- VALVULA 4" DIA., H.F., FL.
- 16- RELOJ DE PRESION "SIMPLEX" PARA REGISTRAR PRESIONES DE 0 A LBS. POR 7 DIAS
- 17- PRESSURE SNUBBER "
- 18- LLAVE DE CHORRO 1/2" DIA.
- 19- PLANCHUELA DE ACERO 1" ESPESOR
- 20- CONDUCTO ELECTRICO
- 21- HIPOCLORADOR IGUAL O SIMILAR AL MODELO 1220 CHLOR-O-FEEDER FABRICADO POR LA B.I.F. INDUSTRIES, PARA APLICAR 5 GALONES POR HORA DE SOLUCION DE HIPOCLORITO AL %
- 22- GABINETE DE MADERA (VEA. DET. EN HOJA NUM. ---)
- 23- LLAVE DE BRONCE DE 2" DIA.
- 24- LLAVE DE PASO 1/4" DIA.

- NOTAS -

- 1- EL HIPOCLORADOR Y CAMARA DE SOLUCION DEBEN UTILIZARSE PARA UNA PRODUCCION HASTA 200 G.P.M., Y SOBRE ESTA CAPACIDAD DEBE PROVEERSE PARA CLOKO GAS EN CUARTO SEPARADO DEL CONTROL ELECTRICO.
- 2- SI SE USAN LOS REDUCIDOS CONCENTRICOS NO ES NECESARIO LOS NIPLES ANTES Y DESPUES DEL CONTADOR O VICEVERSA.
- 3- EL PORTON DE ACCESO DEBE LOCALIZARSE DE MANERA QUE EL TRUCK - GRUA PUEDA LLEGAR HASTA LA BOMBA.

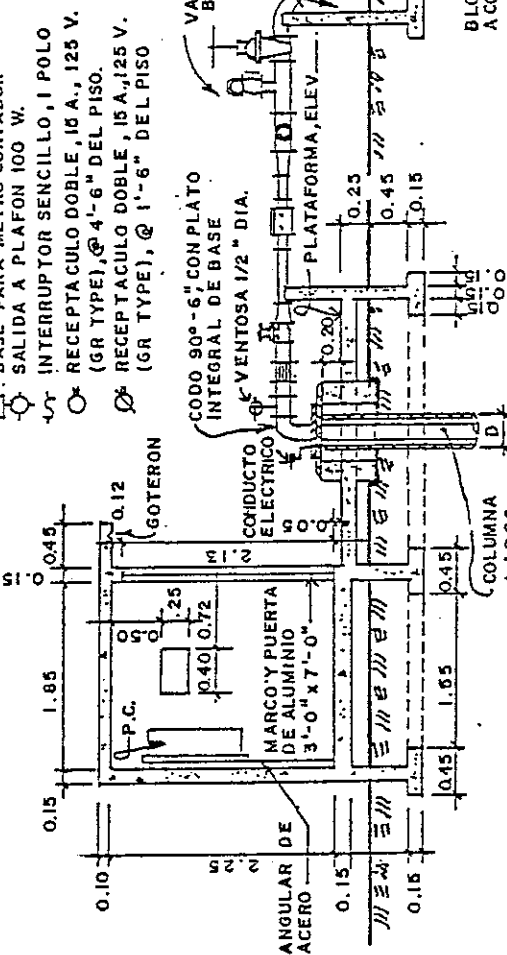


SIMBOLOS ELECT.

- BASE PARA METRO CONTADOR
- SALIDA A PLAFON 100 W.
- ⊕ INTERRUPTOR SENCILLO, 1 POLO
- ⊖ RECEPTACULO DOBLE, 15 A., 125 V. (GR TYPE), @ 4'-6" DEL PISO.
- ⊙ RECEPTACULO DOBLE, 15 A., 125 V. (GR TYPE), @ 1'-6" DEL PISO

PLANTA

ESCALA = 1/175



SECCION

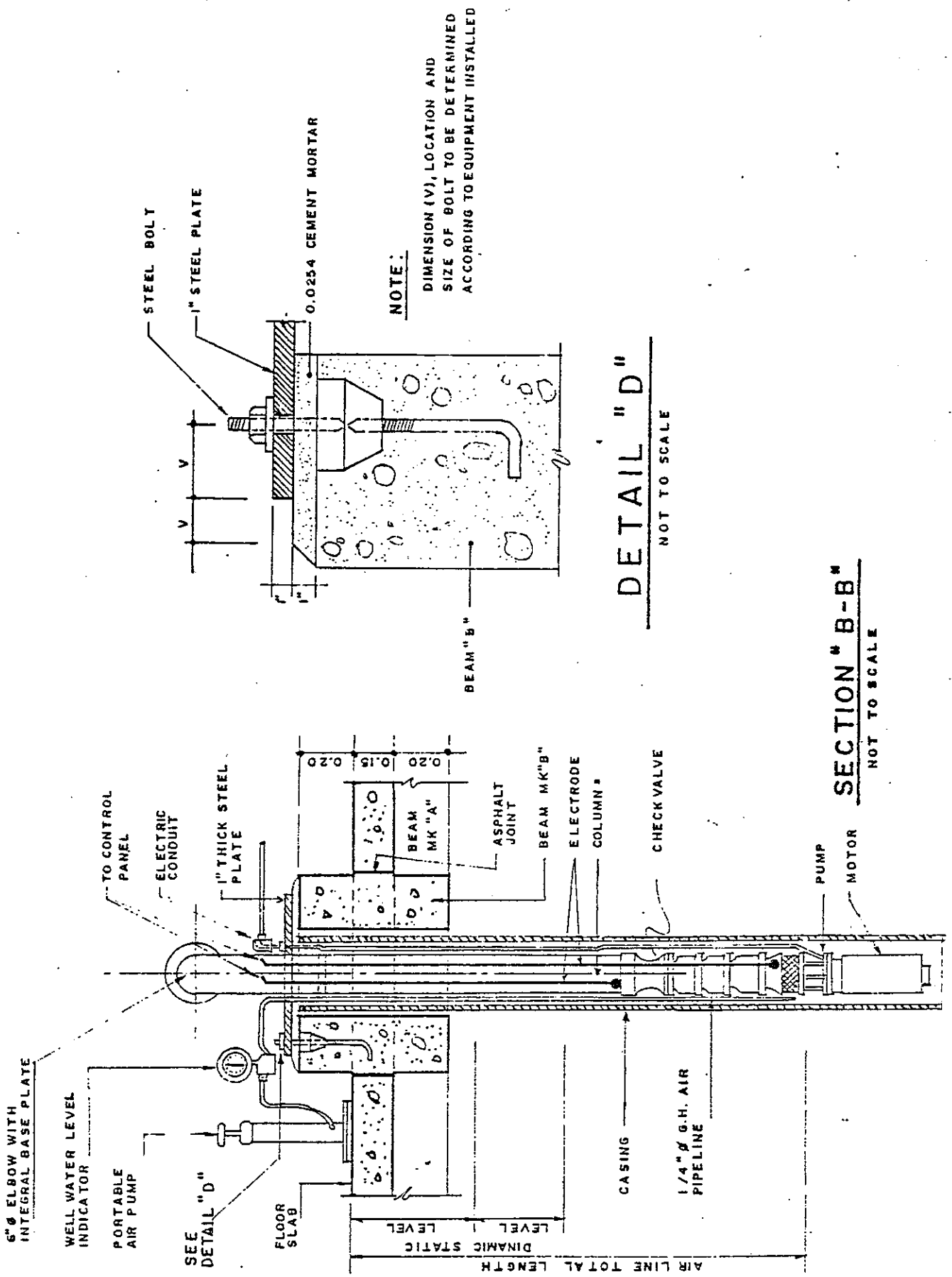
ESCALA = 1/170

**BOMBA TIPO SUMERGIBLE (100 G.P.M. O MAS)
PARA TUBERIA DE 6" DIA.**

FIG. NUM. 60

FECHA 8-08-80





NOTE:
 DIMENSION (V), LOCATION AND
 SIZE OF BOLT TO BE DETERMINED
 ACCORDING TO EQUIPMENT INSTALLED

DETAIL "D"
 NOT TO SCALE

SECTION "B-B"
 NOT TO SCALE

**SUBMERSIBLE TYPE PUMP (100 G.P.M. OR MORE)
 FOR 6" DIA. PIPE**

FIG. NUM. 60-A
 DATE 8-08-80

