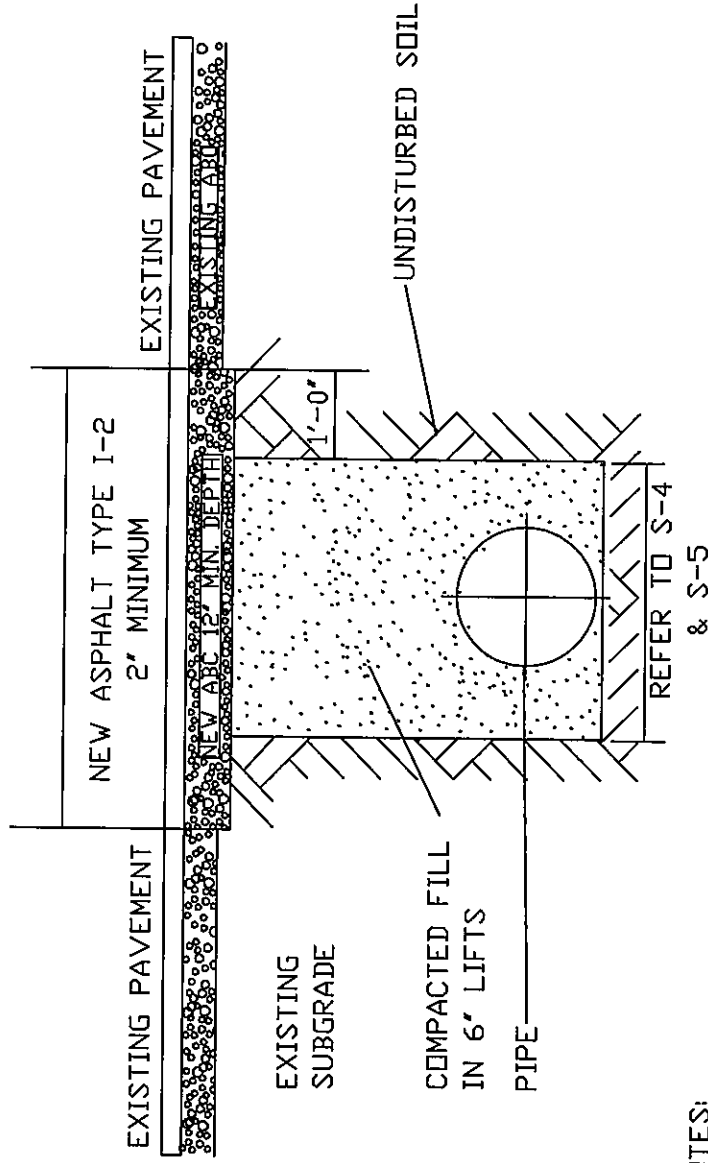


NOTE: SEE STANDARD DETAIL S-4 AND S-5 FOR TRENCH BOTTOM DIMENSIONS FOR VARIOUS TYPES OF PIPE.

SGWASA	
UTILITY DEPARTMENT	
STANDARD BEDDING DETAILS	
FOR R.C. PIPES	
DWG. NO.	REVISIONS
DATE	REVISIONS
DATE	DATE
S-1	



NOTES:

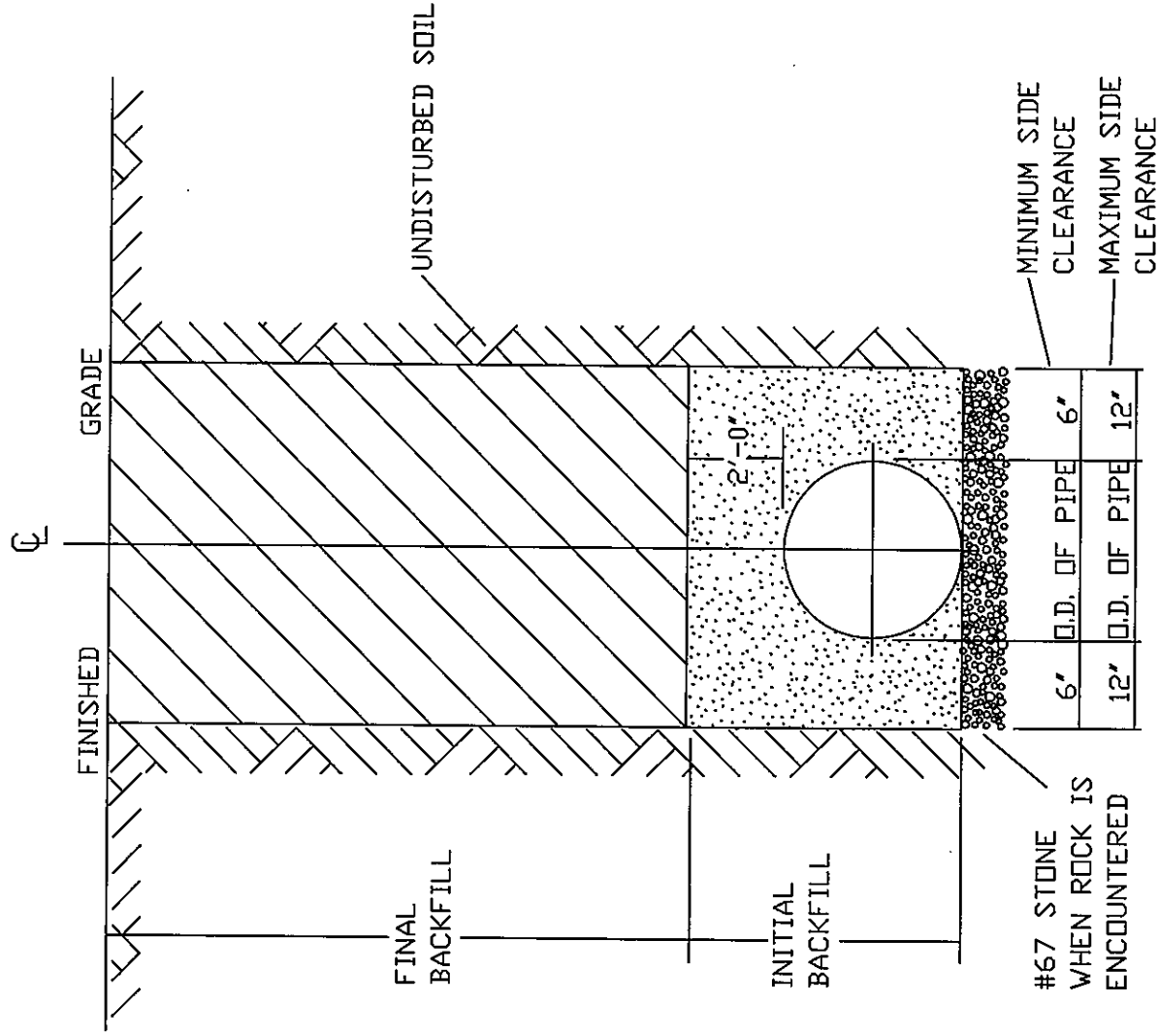
1. The pavement cut shall be defined by a straight edge preferably a machine saw cut.
2. The trench subgrade material shall be backfilled with suitable material and compacted to a density of at least 95% of that obtained by compacting a sample of the material in accordance with AASHTO T-99 as modified by NCDDT.
3. The final 1' of fill shall consist of ABC material compacted to a density equal to 100% of that obtained by compacting a sample of the material in accordance with AASHTO T-80 as modified by NCDDT.
4. The entire thickness and vertical edge of cut shall be tacked.
5. The same depth of pavement material which exists shall be reinstalled, but in no case shall the asphalt be less than 2" thick.
6. The asphalt pavement material shall be installed and compacted thoroughly to achieve a smooth level patch.
7. Refer to SGWASA standards for trenches and pipe bedding (S-4 & S-5) for additional details.

SGWASA

UTILITY DEPARTMENT

STANDARD ASPHALT
PAVEMENT PATCH DETAIL

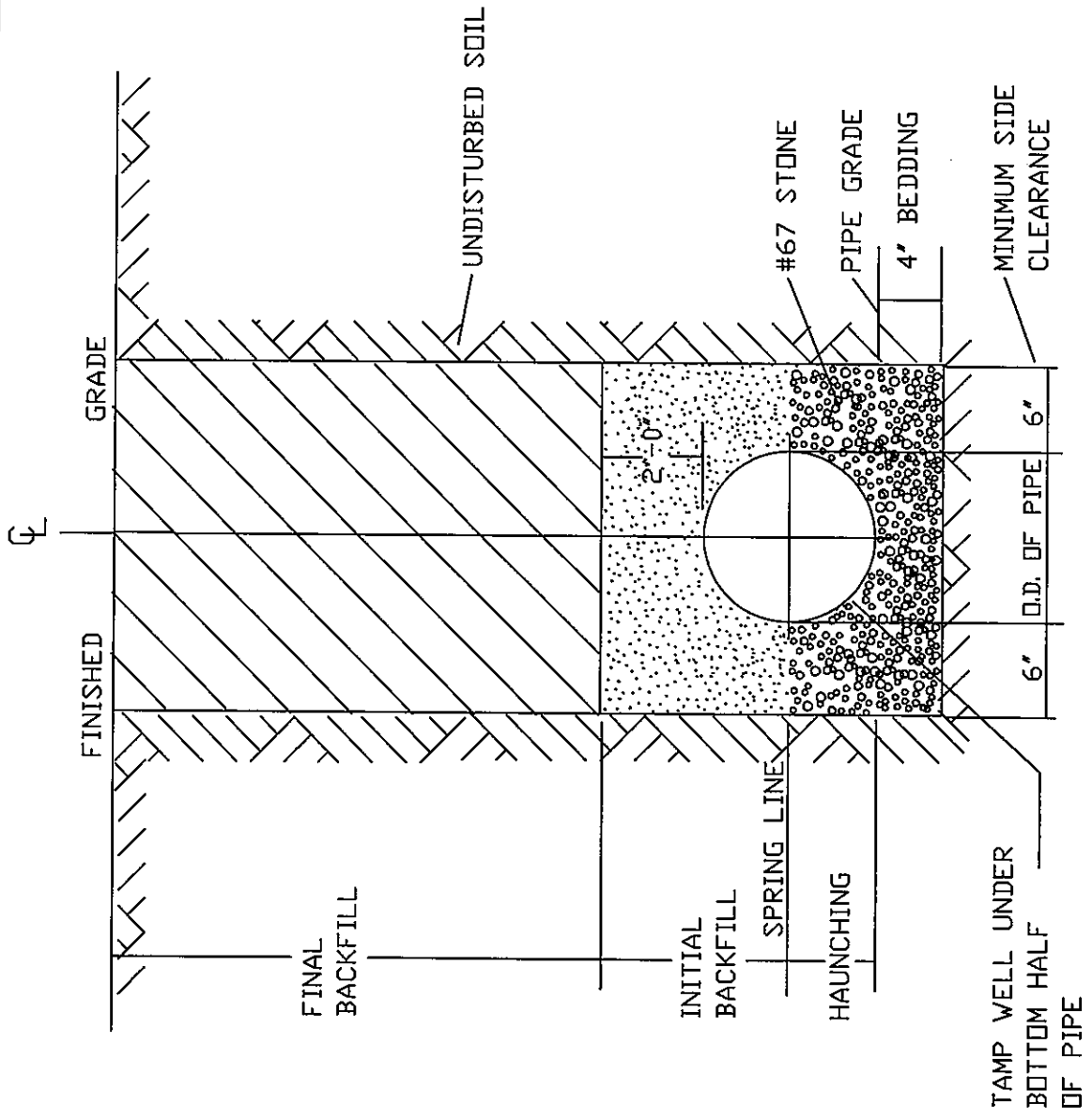
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-3				



NOTES:

1. Trenches requiring shoring and bracing, dimensions shall be taken from the inside face of the shoring and bracing.
2. No rocks or boulders 4" or larger to be used in initial backfill.
3. All backfill material shall be suitable native material.
4. Backfill shall be tamped in 6" lifts in traffic areas, 12" in non-traffic areas.
5. Achieve 80% compaction in non-traffic areas, and 95% compaction in traffic areas.
6. If in easement 4" topsoil, and 12" clean select fill is required.
7. No boulders 8" in diameter or greater allowed.

SGWASA	
UTILITY DEPARTMENT	
TRENCH BOTTOM DIMENSIONS & BACKFILLING REQUIREMENTS FOR DUCTILE IRON AND REINFORCED CONCRETE PIPE.	
DWG. NO.	REVISIONS
S-4	DATE
	REVISIONS
	DATE
	REVISIONS
	DATE

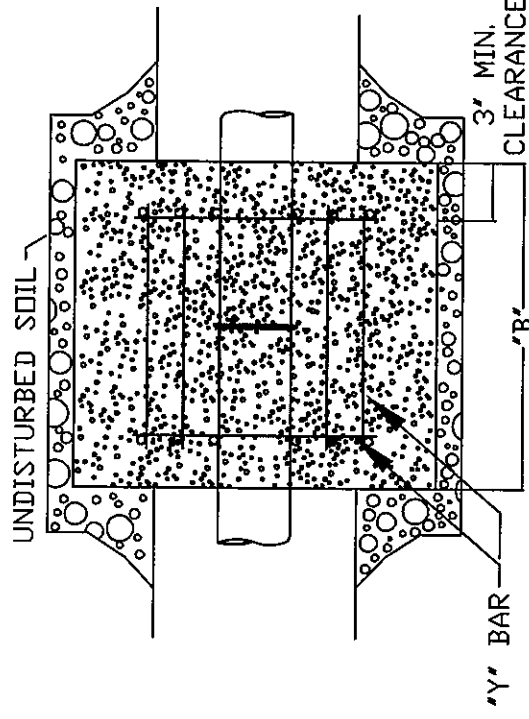
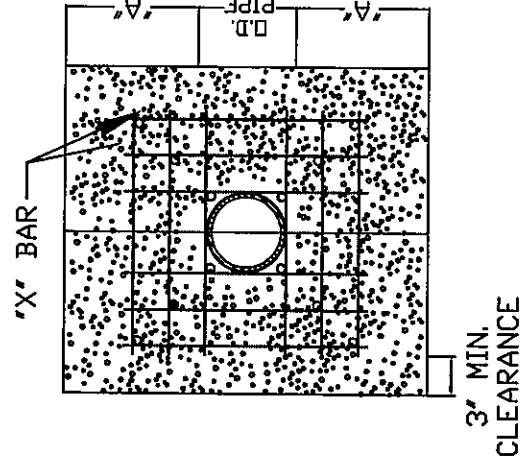
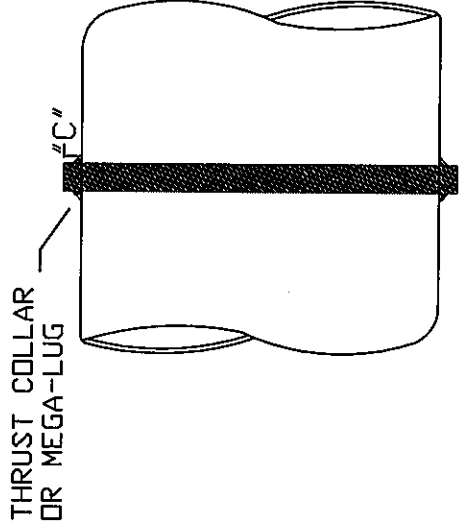
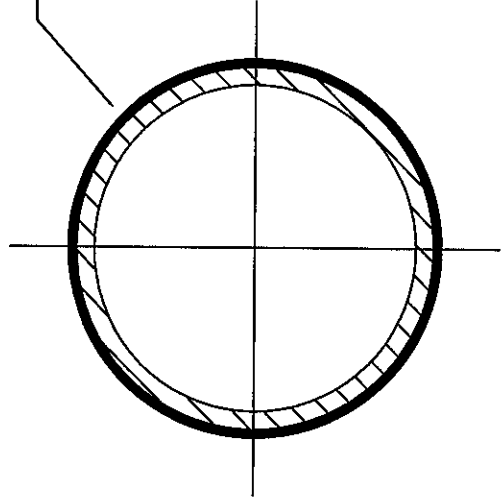


TYPICAL TRENCH BOTTOM DIMENSIONS FOR
SDR 35 PVC GRAVITY PIPE

NOTES:

1. For trenches requiring shoring and bracing, dimensions shall be taken from the inside face of the shoring and bracing.
2. No rocks or boulders 4' or larger to be used in initial backfill.
3. All backfill material shall be suitable native material.
4. Backfill shall be tamped in 6" lifts in traffic areas, 12" in non-traffic areas.

SGWASA	
UTILITY DEPARTMENT	
TRENCH BOTTOM DIMENSIONS AND BACKFILLING REQUIREMENTS FOR PVC GRAVITY SEWER MAIN	
DWG. NO.	REVISIONS
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DATE	REVISIONS
DATE	REVISIONS



REINFORCING REQUIREMENTS

I.D. PIPE	REBAR SIZE	"X" BAR LENGTH	"X" BAR WEIGHT	"Y" BAR LENGTH	"Y" BAR WEIGHT	NO. REQUIRED
6' - 36'	#5	2'-2"+ D.D. PIPE	1,043 LBS/FT	1'-1'	1.1 LBS. EACH	X-24, Y-12
48" & greater	#6	3'-0"+ D.D. PIPE	1,502 LBS/FT	1'-3"	1.9 LBS. EACH	X-24, Y-12

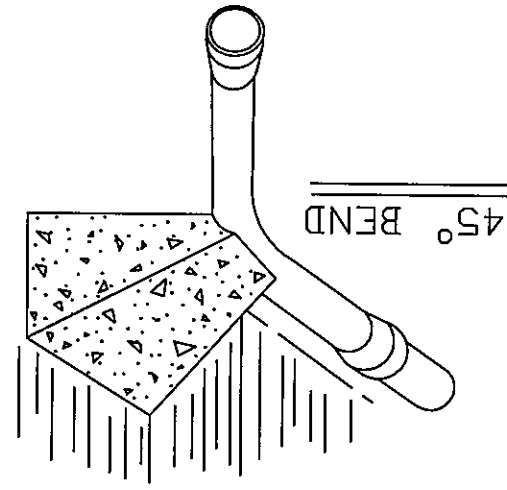
THRUST COLLAR, AND THRUST SCHEDULE

I.D. PIPE	"A"	"B"	"C-6"-16', 20'-24', 30'-36', 48'
6' - 36'	1'-4"	1'-7"	3'
48" & greater	1'-8"	1'-9"	6'

NOTES:

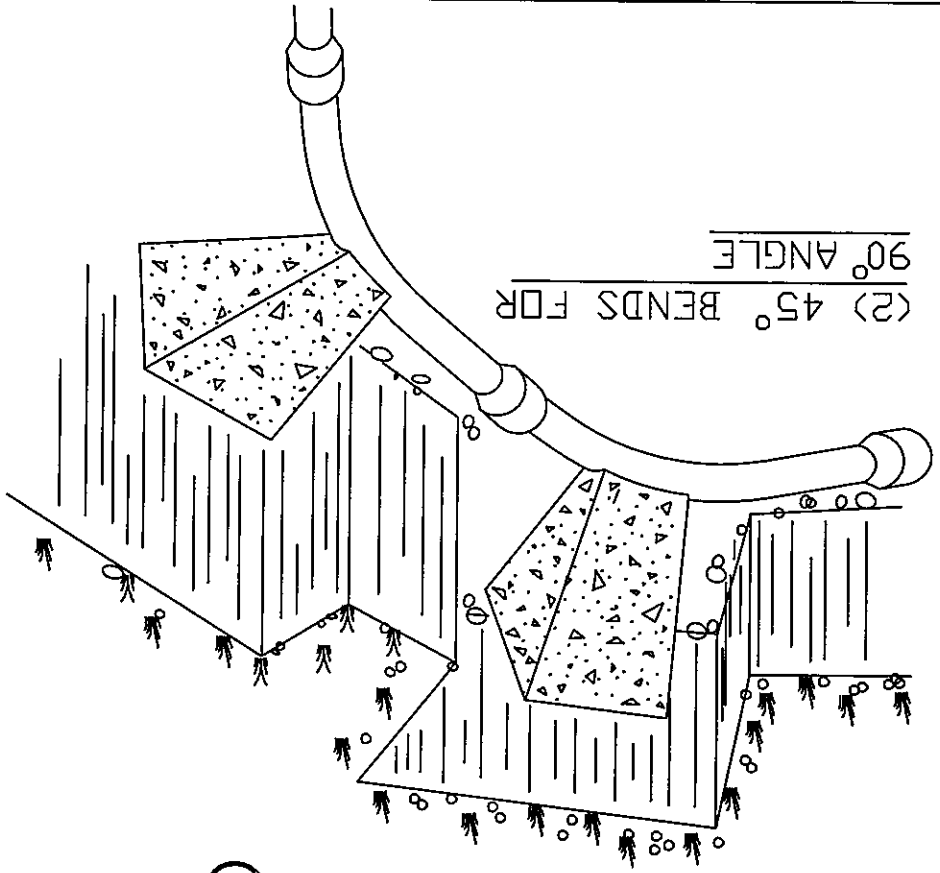
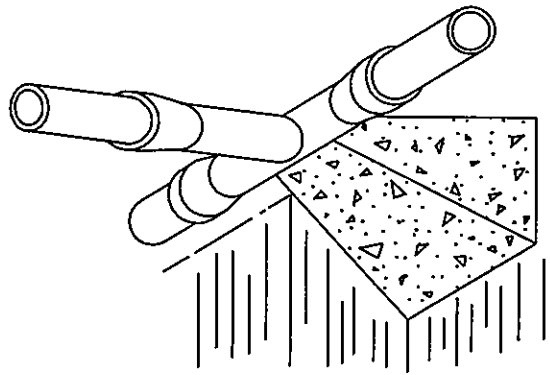
- SEE STANDARD DETAIL S-7 FOR THRUST BLOCK LOCATIONS.
- CONCRETE SHALL BE 3000 PSI AND TRANSIT MIXED.
- REINFORCING BARS SHALL BE DEFORMED AND TIED TOGETHER.
- TRENCH BOTTOM WIDTH IN VICINITY OF THRUST BLOCK INSTALLATION SHALL BE THE MINIMUM WIDTH AS SHOWN ON STANDARD DETAIL S-4 & S-5.
- BACKFILL TAMPED IN 6' LIFTS PER STANDARD DETAIL S-4 & S-5.
- THRUST COLLAR MUST BE FACTORY WELDED ON BOTH SIDES ALONG BOTH EDGES OF COLLAR AROUND CIRCUMFERENCE, OR A MEGA-LUG

SGWASA			
UTILITY DEPARTMENT			
THRUST BLOCKING DESIGN DATA FOR SEWER FORCE MAIN			
DWG. NO.	REVISIONS	DATE	REVISIONS
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			DATE



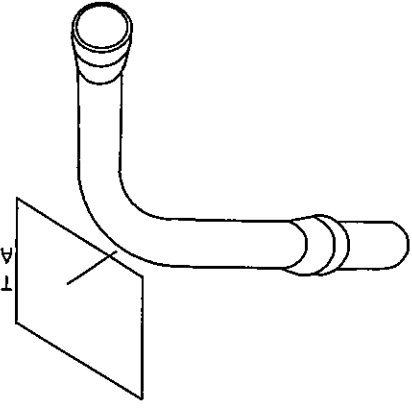
THRUST BLOCKING

TEE INTERSECTION



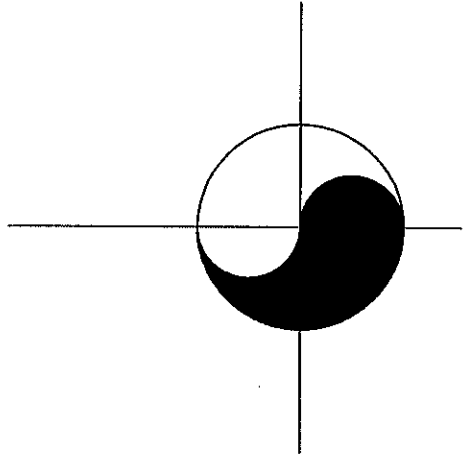
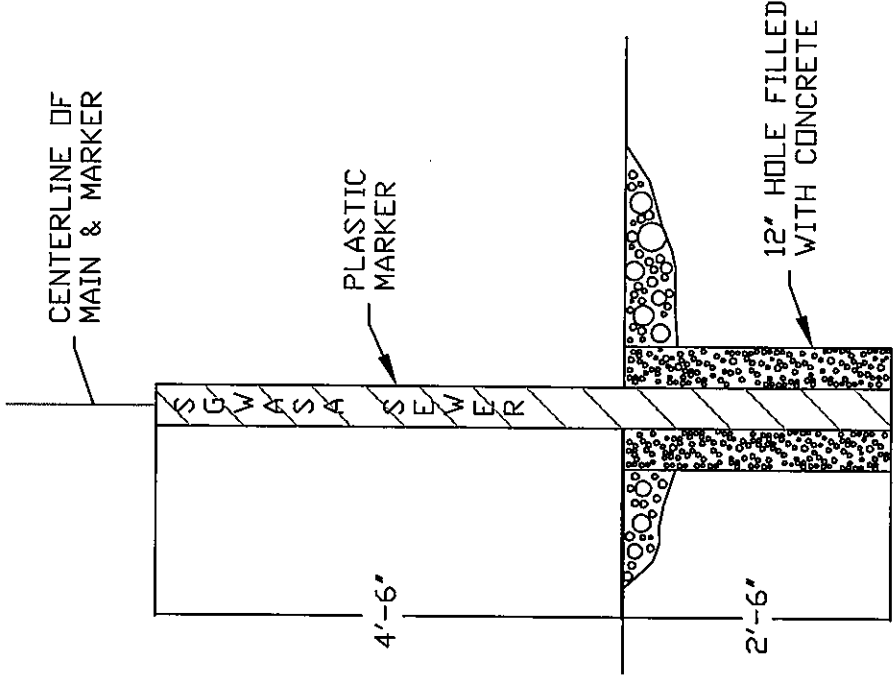
(2) 45° BENDS FOR 90° ANGLE

THRUST BLOCK AREA



- NOTES:
1. CONCRETE SHALL BE 3000 PSI
 2. CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL JOINT FITTINGS.
 3. TRENCHES SHALL CONFORM TO STANDARD DETAIL S-4 & S-5.
 4. SEE STANDARD THRUST BLOCK TABLES, W-10 THRU W-11, FOR AREA OF CONCRETE REQUIRED.
 5. ALL BENDS AND INTERSECTIONS SHALL HAVE CONCRETE THRUST BLOCKING.

SGWASA		UTILITY DEPARTMENT	
STANDARD THRUST BLOCKING VIEWS			
DWG. NO.	REVISIONS	DATE	REVISIONS
S-7			

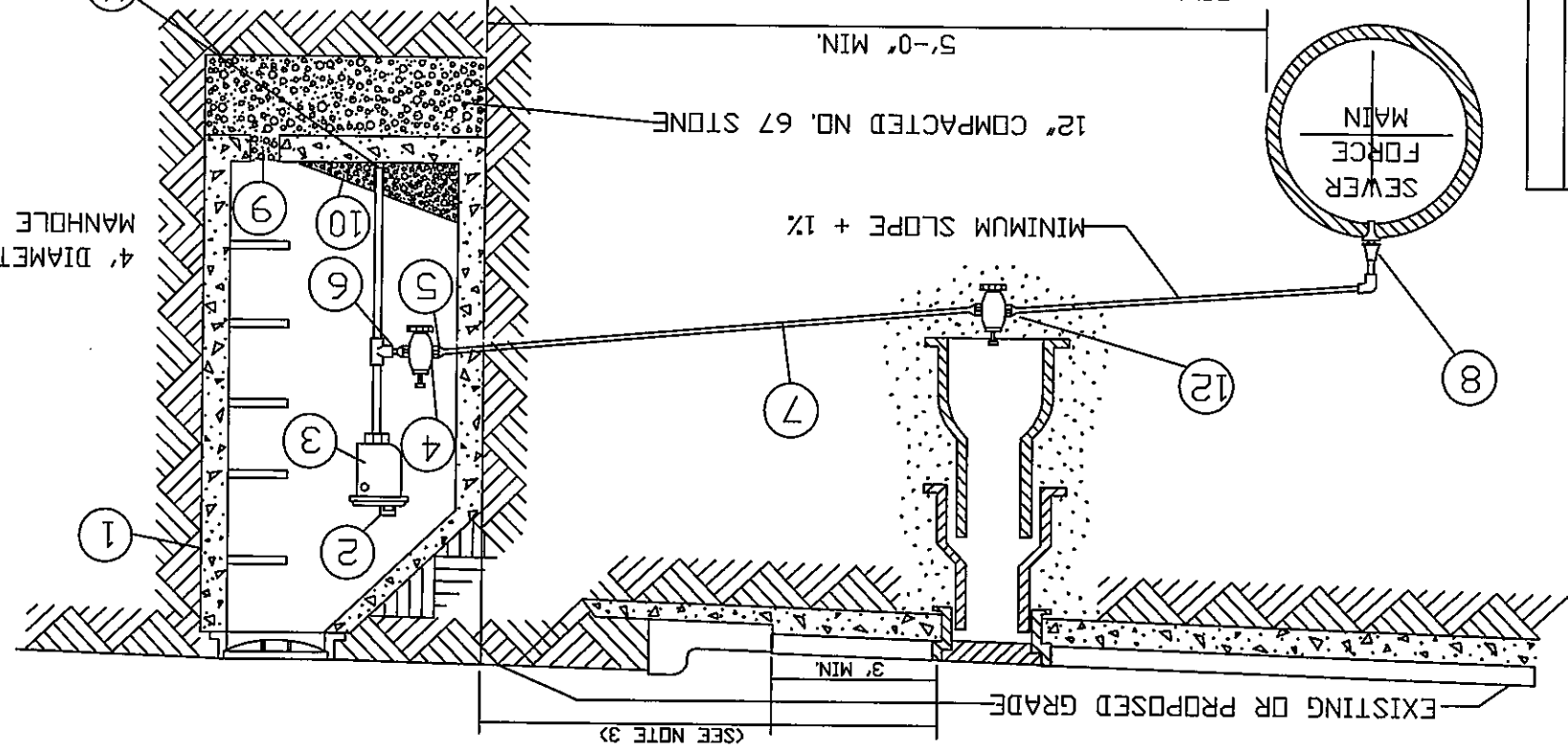


NOTES:

1. PLASTIC MARKER NEEDS TO BE RED IN COLOR.
2. IT SHALL BE LABELED "SGWASA SEWER"
3. TO BE SPACED EVERY 300 FEET ON EACH SIDE OF ANY ROADWAY OR JUNCTION.

SGWASA			
UTILITY DEPARTMENT			
STANDARD MAIN MARKER FOR SEWER FORCE MAINS IN EASEMENTS			
DWG. NO.	REVISIONS	DATE	REVISIONS
S-8			
		DATE	DATE

4' DIAMETER
MANHOLE



BILL OF MATERIALS

1	PRECAST MANHOLE, SEE STANDARD DETAIL S-20
2	TRASH HOOD
3	2" AIR RELEASE VALVE
4	2" AIR RELEASE VALVE
5	ADAPTER
6	2" MECHANICAL JOINT BRASS PIPE AND FITTINGS
7	2" TYPE "K", SOFT COPPER WITH FLARED ELBOW
8	CORPORATION COCK
9	6" DIAMETER DRAIN
10	GROUT, 1/8" TO 1'-0" MIN. SLOPE TO DRAIN
11	PIPE CAP
12	2" GATE VALVE

SEE STANDARD DETAIL S-4 & S-5 TO INSURE PROPER BACKFILL.

- NOTE:
1. AIR RELEASE/VACUUM VALVE TO BE P-20 WITH VACUUM CHECK BY CRISPIN UL 20, OR VAL MATIC 881 BW.
 2. THE AIR RELEASE MANHOLE SHALL BE INSTALLED IN THE SHOULDER OR AS DIRECTED BY THE ENGINEER.
 3. FOR MAINS LOCATED OUTSIDE OF STREET RIGHT-OF-WAYS THE MAXIMUM DISTANCE BETWEEN THE MANHOLE AND THE VALVE BOX SHOULD BE THREE (3) FEET.
 4. MAIN SHALL BE DEEP ENOUGH TO ACCOMMODATE INSTALLATION AS SHOWN

(SEE NOTE 3)

EXISTING OR PROPOSED GRADE

3' MIN.

MINIMUM SLOPE + 1%

12" COMPACTED NO. 67 STONE

5'-0" MIN.

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STANDARD SEWER FORCE
MAIN AIR RELEASE VALVE

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-9				

AERIAL PIPE CROSSING

GENERAL NOTES:

1. ALL MATERIALS UTILIZED ON THESE DETAIL SHEETS SHALL CONFORM TO THE APPROPRIATE SECTIONS OF THE CITY OF ROXBORO PUBLIC SERVICES' STANDARDS UNLESS OTHERWISE NOTED.
2. RESTRAINED JOINT PIPE AND FITTINGS SHALL CONSIST OF BOLTED RETAINER RINGS AND WELDED RETAINER BARS OR BOLTLISS TYPE WHICH INCLUDE DUCTILE IRON LOCKING SEGMENTS AND RUBBER RETAINERS. BOLTS FOR RESTRAINED JOINTS (IF APPLICABLE) SHALL CONFORM TO ANSI B18.2. RESTRAINED PIPE AND FITTINGS SHALL BE FLEX-RING OR LOK-RING TYPE JOINTS AS MANUFACTURED BY AMERICAN CAST IRON CO.; TR FLEX AS MANUFACTURED BY US PIPE, BOLT-LOK AS MANUFACTURED BY GRIFFIN PIPE PRODUCTS, OR EQUAL.
3. CONCRETE PROPERTIES SHALL BE AS FOLLOWS:
CONCRETE COMPRESSIVE STRENGTH = 4000 PSI
NORMAL SLUMP = 4 INCHES
WATER/CEMENTITIOUS MATERIALS RATIO = 0.45 (MAX)
AIR CONTENT = 6% +/- 1.5%
CONCRETE SHALL BE COMPOSED OF CEMENT, WATER, COARSE AGGREGATES, FINE AGGREGATES AND AIR. CEMENT SHALL BE TYPE I/II OR II IN ACCORDANCE WITH ASTM C-150. MATERIAL REQUIREMENTS FOR ALL FINE AND COARSE AGGREGATES SHALL CONFORM TO ASTM C-33. COARSE AGGREGATE SHALL BE SIZE No. 57 OR 67. AN APPROVED CLASS 'F' FLYASH MAY BE SUBSTITUTED FOR AN EQUAL AMOUNT OF CEMENT BY WEIGHT UP TO 25%.
4. ALL EXPOSED CONCRETE CORNERS SHALL BE CHAMFERED 3/4".
5. CONVENTIONAL REINFORCING STEEL SHALL CONFORM TO ASTM A615 GRADE 60 AND SHALL BE PLACED IN ACCORDANCE WITH "RECOMMENDED PRACTICE FOR PLACING REINFORCING BARS" (LATEST EDITION) AS PUBLISHED BY THE CONCRETE REINFORCING INSTITUTE. SPLICES SHALL BE CLASS 'B' CONFORMAING TO THE PROVISIONS OF ACI 318 - "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE".
6. NEOPRENE BEARING PADS SHALL BE FORMED FROM PREVIOUSLY UNVULCANIZED, 100% VIRGIN NEOPRENE, WITH DUROMETER HARDNESS = 50.
7. PILES SHALL BE STRUCTURAL STEEL HP12x53 PILES AND SHALL CONFORM TO THE REQUIREMENTS OF ASTM A36. PILES SHALL BE DRIVEN TO DEPTHS REQUIRED TO OBTAIN AN ULTIMATE BEARING CAPACITY OF NOT LESS THAT TWO TIMES THE DESIGN LOADING OF 30 TONS. PILES SHALL PENETRATE A MINIMUM OF FIFTEEN FEET INTO UNDISTURBED SOIL. IN DRIVING PILES, A METHOD APPROVED BY THE ENGINEER SHALL BE USED WHEREBY THE HEAD OF THE PILE IS NOT DAMAGED. IF REQUESTED BY THE ENGINEER, PILES SHALL BE TESTED TO DETERMINE THE ULTIMATE CAPACITY OF THE PILES. THE METHOD OF LOAD TESTING SHALL CONFORM TO ASTM D1143 AND THE NORTH CAROLINA STATE BUILDING CODE OR US BUILDING CODE. WHERE PILES ARE EXPOSED, PILES SHALL BE PAINTED AND/OR COATED IN ACCORDANCE WITH THE AUTHORITY SPECIFICATIONS.

SCWASA

UTILITY DEPARTMENT

AERIAL PIPE CROSSING
GENERAL NOTES

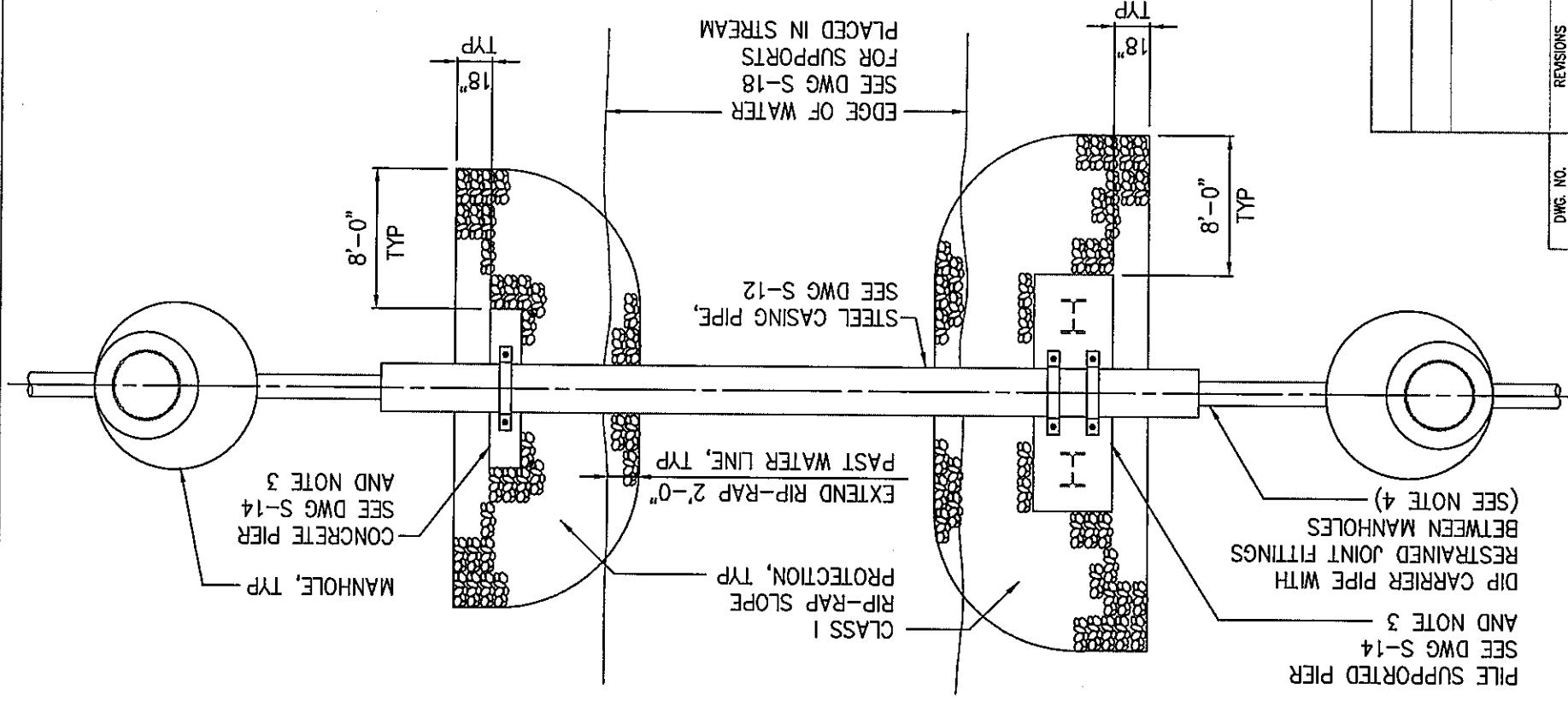
DWG. NO.
S-10

REVISIONS

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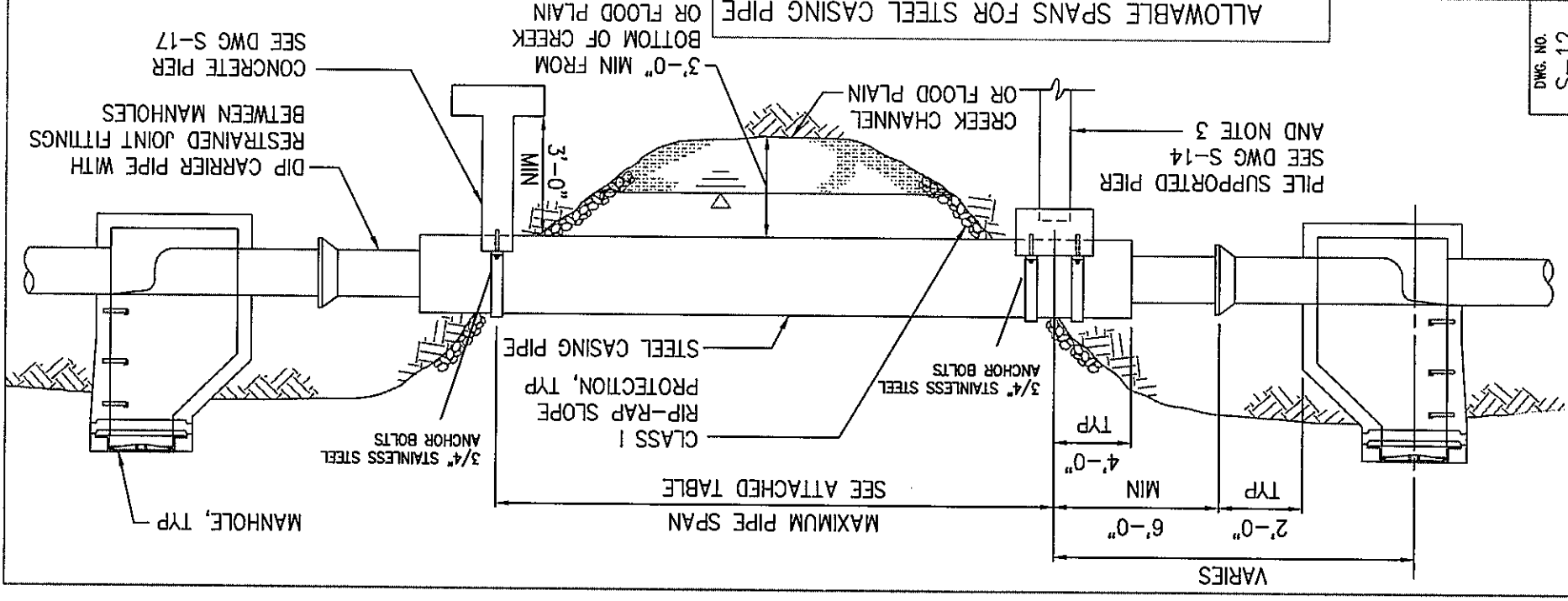
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- NOTES:
1. RIP RAP FOR SLOPE PROTECTION SHALL BE CLASS 1 RIP RAP IN ACCORDANCE WITH SECTION 868 OF THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION'S "STANDARD SPECIFICATIONS FOR ROADS AND BRIDGES".
 2. RIP RAP SHALL BE PLACED IN ACCORDANCE WITH DRAWING 868.01 OF THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION'S "ROADWAY STANDARD DRAWINGS".
 3. SUPPORT TYPE FOR PIERS SHALL BE DETERMINED BY ENGINEER BASED ON SUBGRADE CONDITIONS AT SITE. SEE DRAWING S-13 AND S-14 FOR SUBGRADE PARAMETERS FOR EACH TYPE OF FOUNDATION.
 4. WHERE STEEL PIPE IS USED FOR CARRIER PIPE, STEEL CARRIER PIPE SHALL BE INSTALLED UTILIZING PIPE ALIGNMENT GUIDES SPACED WITHIN PIPE AT DISTANCES NOT TO EXCEED 25 FEET. JOINT INDICATED 2 FEET FROM MANHOLE IS NOT REQUIRED FOR STEEL CARRIER PIPE.

SGWASA
 UTILITY DEPARTMENT
**AERIAL PIPE CROSSING
 TYPICAL PLAN**

DWG. NO. S-11	REVISIONS	DATE	DATE



ALLOWABLE SPANS FOR STEEL CASING PIPE

ALLOWABLE SPAN (FT.)	MINIMUM CASING PIPE WALL THICKNESS (IN.)	CASING PIPE, STEEL DIAMETER (IN.)	CARRIER PIPE, DIP DIAMETER (IN.)
40	0.2500	14	6
45	0.2500	16	8
50	0.3125	18	10
50	0.3125	20	12
55	0.3125	24	14
55	0.3750	26	16
60	0.3750	30	18
60	0.3750	32	20
65	0.4375	36	24
65	0.4375	42	30
65	0.4375	48	36
65	0.5000	56	42

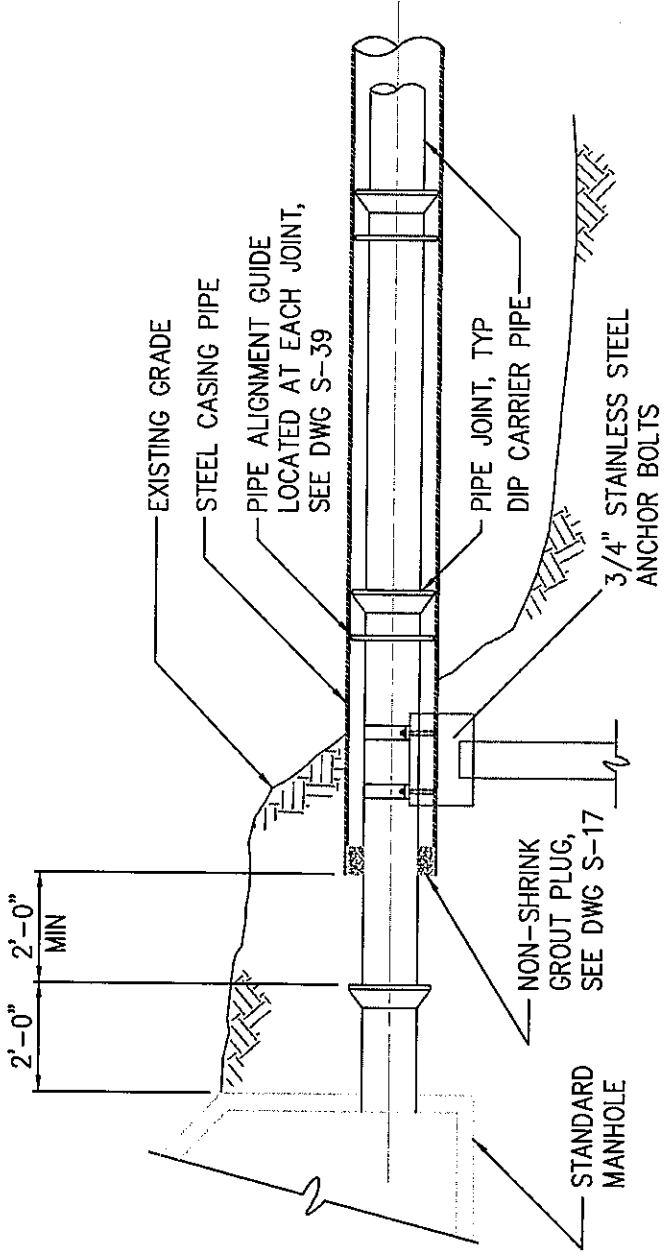
NOTES:

1. STEEL PIPE SHALL BE EITHER SPIRAL WELDED OR SMOOTH WALL SEAMLESS WITH A MINIMUM YIELD STRENGTH OF 35,000 PSI. PAINTING AND LINING SHALL BE AS REQUIRED
2. DUCTILE IRON PIPE SHALL BE SUPPORTED WITH TWO SPIDERS AT EVERY JOINT WITHIN THE CASING PIPE USING APPROVED PIPE ALIGNMENT GUIDE. SEE DRAWING S-39. ALL JOINTS SHALL BE RESTRAINED JOINT. SEE NOTE 2, DWG S-10.
3. SUPPORT TYPE FOR PIERS SHALL BE DETERMINED BY ENGINEER BASED ON SUBGRADE CONDITIONS AT SITE. SEE DRAWING S-13 AND S-14 FOR SUBGRADE PARAMETERS FOR EACH TYPE OF FOUNDATION. SEE DRAWING S-18 FOR SUPPORTS PLACED WITHIN STREAM.
4. BOTTOM OF PIPE TO BE AT A MINIMUM OF 1' ABOVE THE 25 YEAR FLOOD ELEVATION.

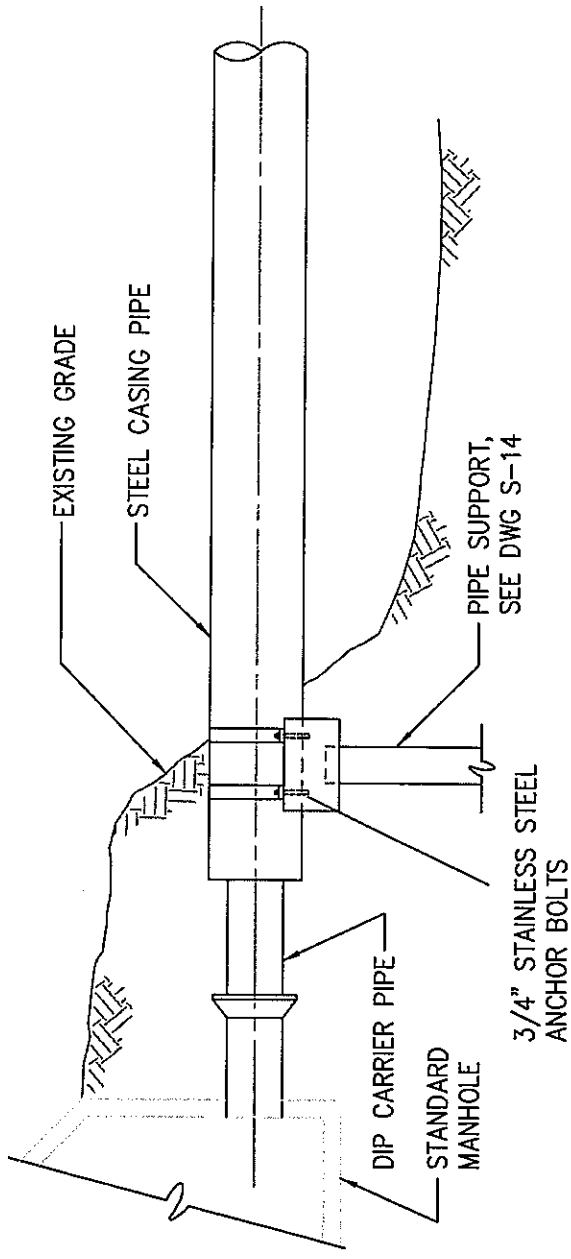
SGWASA
UTILITY DEPARTMENT
AERIAL PIPE CROSSING
STEEL CASING PIPE ELEVATION

REVISIONS	DATE
REVISIONS	DATE

DWG. NO. S-12



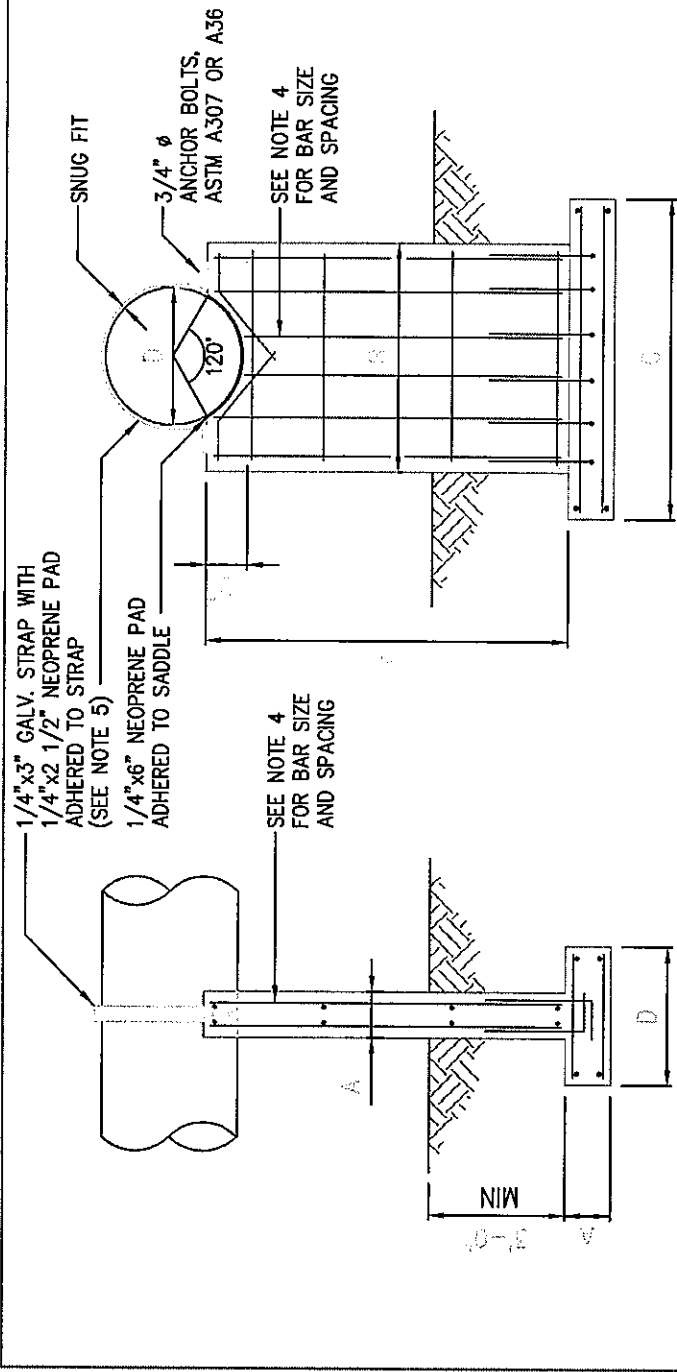
SECTION



ELEVATION

NOTE:
SEE NOTE 4 ON DWG S-11 IF STEEL
PIPE IS USED IN LIEU OF DUCTILE IRON
PIPE FOR CARRIER PIPE.

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UTILITY DEPARTMENT	
AERIAL PIPE CROSSING	
TYPICAL PIPE SECTION AND ELEVATION	
DWG. NO.	DATE
S-13	
REVISIONS	REVISIONS



CASING PIPE DIA. "D" (IN.)	"H" (FT.)	THICKNESS "A" (IN.)	PIER WIDTH "B" (FT.)	FOOTING LENGTH "C" (FT.)	FOOTING WIDTH "D" (FT.)
6-12	≤ 6	12	2'-4"	5'-6"	3'-0"
	8	12	2'-4"	6'-3"	3'-0"
	10	12	2'-4"	6'-8"	3'-0"
	12	12	2'-4"	7'-2"	3'-0"
14-20	≤ 6	12	3'-0"	8'-0"	3'-0"
	8	12	3'-0"	9'-0"	3'-0"
	10	12	3'-0"	9'-10"	3'-0"
	12	14	3'-0"	10'-6"	3'-0"
22-28	≤ 6	14	3'-8"	8'-9"	4'-0"
	8	14	3'-8"	10'-0"	4'-0"
	10	14	3'-8"	11'-0"	4'-0"
	12	14	3'-8"	11'-10"	4'-0"
30-36	≤ 6	18	4'-4"	9'-0"	4'-0"
	8	18	4'-4"	10'-6"	4'-0"
	10	18	4'-4"	11'-6"	4'-0"
	12	18	4'-4"	12'-4"	4'-0"
38-48	≤ 6	18	5'-4"	9'-6"	5'-0"
	8	18	5'-4"	11'-0"	5'-0"
	10	18	5'-4"	12'-0"	5'-0"
	12	18	5'-4"	12'-10"	5'-0"
51-56	≤ 6	18	6'-4"	9'-10"	5'-0"
	8	18	6'-4"	11'-4"	5'-0"
	10	18	6'-4"	12'-4"	5'-0"
	12	18	6'-4"	13'-2"	5'-0"

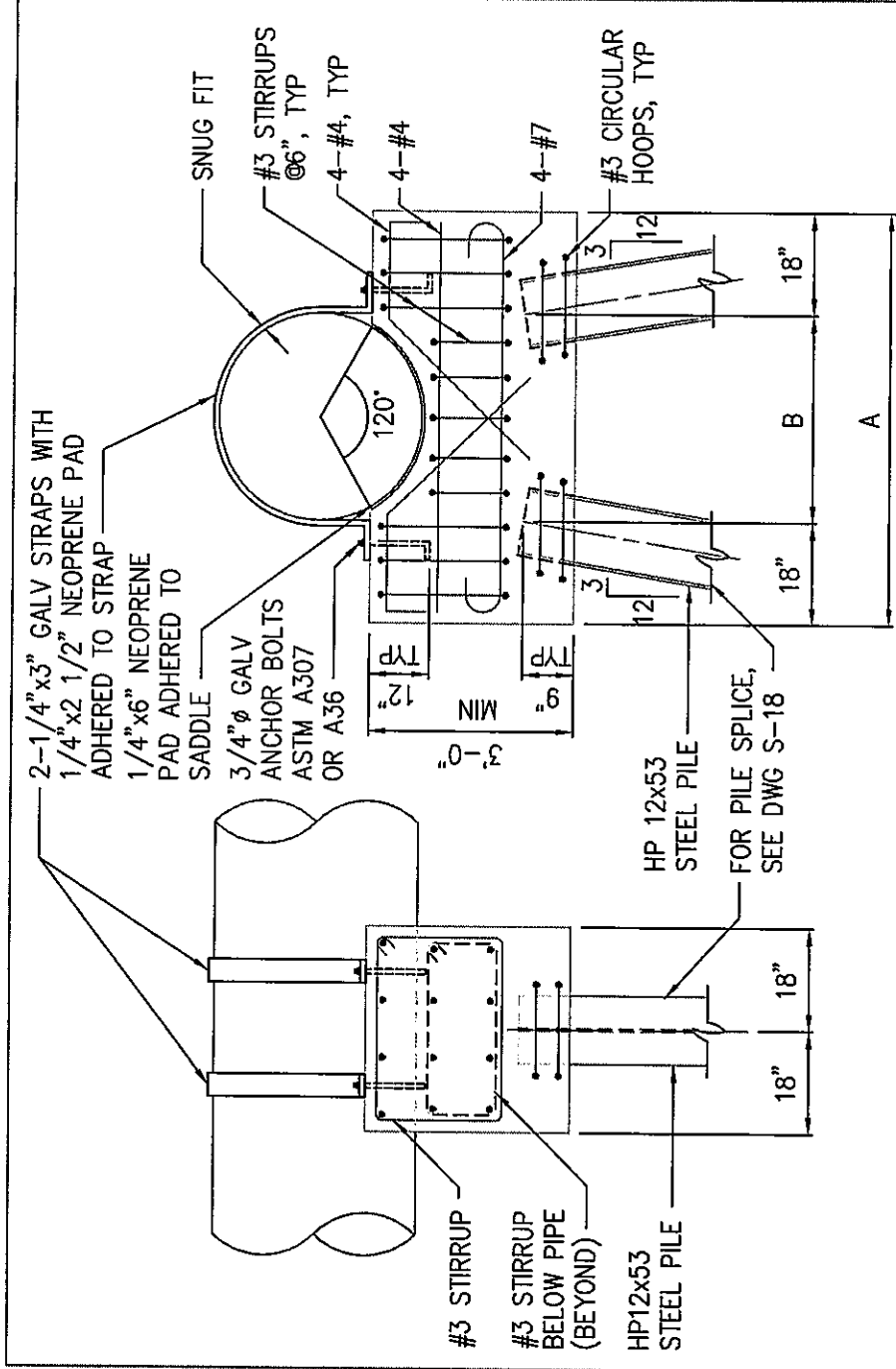
NOTES:

- SHALLOW FOUNDATION DESIGN SHOWN ON THIS DETAIL IS BASED ON THE FOLLOWING PARAMETERS:
 ALLOWABLE SOIL BEARING CAPACITY = 2000 PSF
 CONCRETE COMPRESSIVE STRENGTH = 4000 PSI
 GRADE 60 REINFORCING STEEL
 MAXIMUM STREAM VELOCITY = 10 FT/SEC
 MAXIMUM SUPPORT HEIGHT (H) = 12'-0"
 IF FIELD CONDITIONS REQUIRE ANY DEVIATION FROM THESE PARAMETERS, THE FOUNDATION DESIGN SHALL BE REVIEWED BY THE ENGINEER.
- IF SUBGRADE AT LOCATION OF SUPPORTS IS DEEMED UNABLE TO WITHSTAND 2000 PSF BEARING PRESSURE, A PILE SUPPORTED FOUNDATION SHALL BE UTILIZED AS PER DRAWING S-15.
- IF BEDROCK IS ENCOUNTERED WHICH WILL PREVENT 3-FOOT MINIMUM COVER OVER FOOTING, DOWELS SHALL BE DRILLED INTO BEDROCK PRIOR TO PLACING FOUNDATION. SEE DRAWING S-16.
- TWELVE-INCH AND FOURTEEN-INCH WIDE PIERS AND FOOTINGS SHALL BE REINFORCED WITH #5 BARS AT 12 INCHES OC IN EACH DIRECTION ON EACH FACE. EIGHTEEN-INCH WIDE PIERS AND FOOTINGS SHALL BE REINFORCED WITH #7 BARS AT 12 INCHES OC IN EACH DIRECTION ON EACH FACE.
- EIGHTEEN-INCH WIDE PIERS SHALL REQUIRE TWO STRAPS OVER THE PIPE INSTEAD OF ONE (AS SHOWN).
- WHEN CONCRETE SUPPORTS ARE REQUIRED TO BE LOCATED WITHIN A STREAM AND ARE NOT COVERED WITH BACKFILL, SEE DRAWING S-18 FOR MODIFICATIONS TO UPSTREAM FACE OF SUPPORT.

SGWASA
 UTILITY DEPARTMENT
 AERIAL PIPE CROSSING
 CONCRETE PIER DETAIL

REVISONS	DATE	REVISIONS	DATE

DWG. NO.
S-14

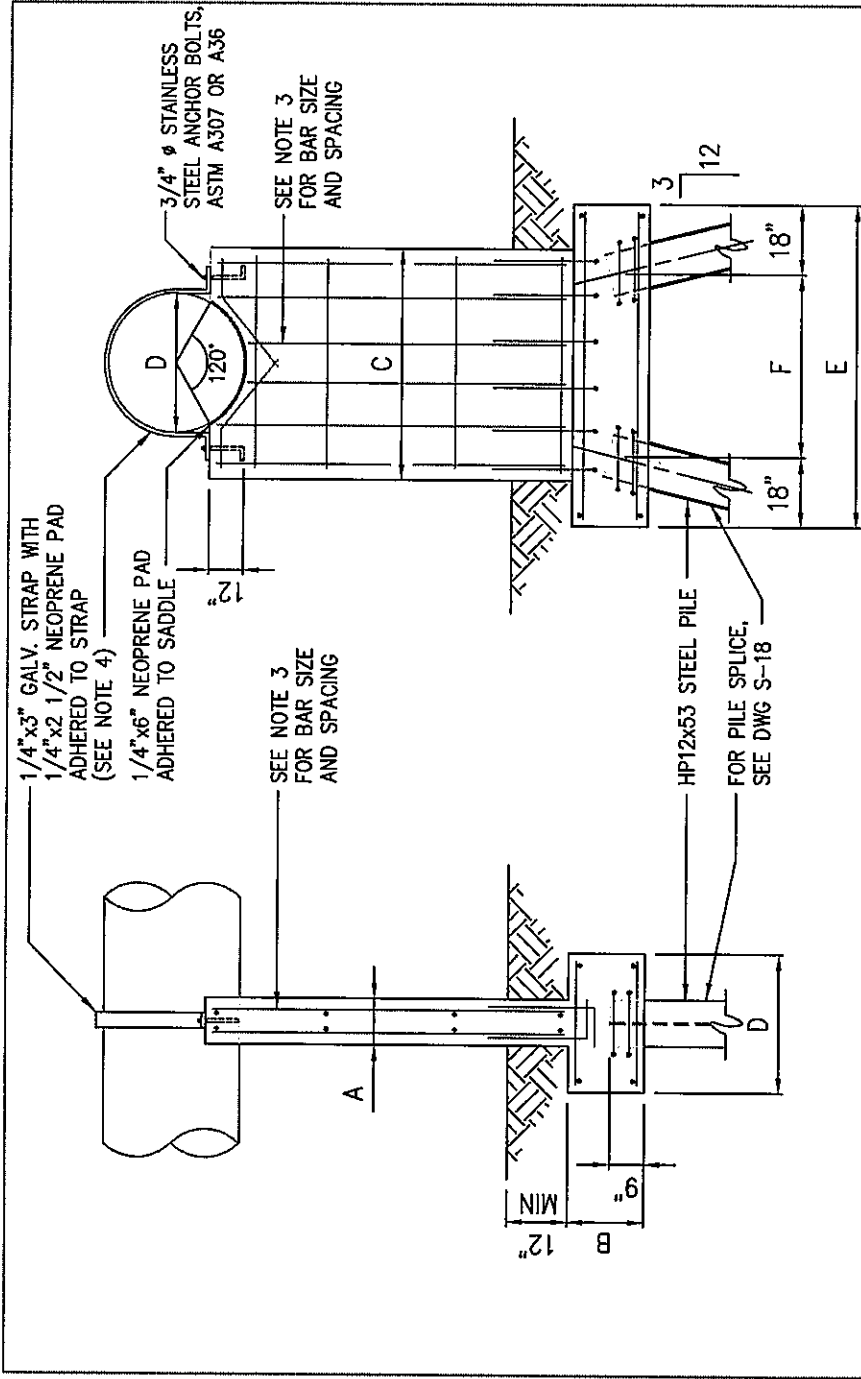


WIDTH OF PILE CAP	
CASING PIPE DIAMETER (IN.)	PILE SPACING "B" (FT.)
≤ 36	3'-0"
38-42	3'-6"
45-51	4'-3"
54-60	5'-0"

NOTES:

- PILE SUPPORTED FOUNDATION DESIGN SHOWN ON THIS DETAIL IS BASED UPON THE FOLLOWING PARAMETERS:
 MINIMUM CAPACITY OF HP12x53 PILE = 30 TONS
 CONCRETE COMPRESSIVE STRENGTH = 4000 PSI
 GRADE 60 REINFORCING STEEL
 MAXIMUM STREAM VELOCITY = 10 FT/SEC
 IF FIELD CONDITIONS REQUIRE ANY DEVIATION FROM THESE PARAMETERS, FOUNDATION DESIGN SHALL BE REVIEWED BY THE ENGINEER.
- LENGTH OF PILES SHALL BE AS REQUIRED TO DEVELOP 30 TON CAPACITY BY EITHER END BEARING, FRICTION OR A COMBINATION OF END BEARING AND FRICTION. AS A MINIMUM, PILES SHALL BE DRIVEN AT LEAST 15 FEET INTO UNDISTURBED SOIL.

SGWASA	
UTILITY DEPARTMENT	
AERIAL PIPE CROSSING PILE CAP DETAIL	
DWG. NO. S-15	REVISIONS
DATE	DATE
REVISIONS	DATE



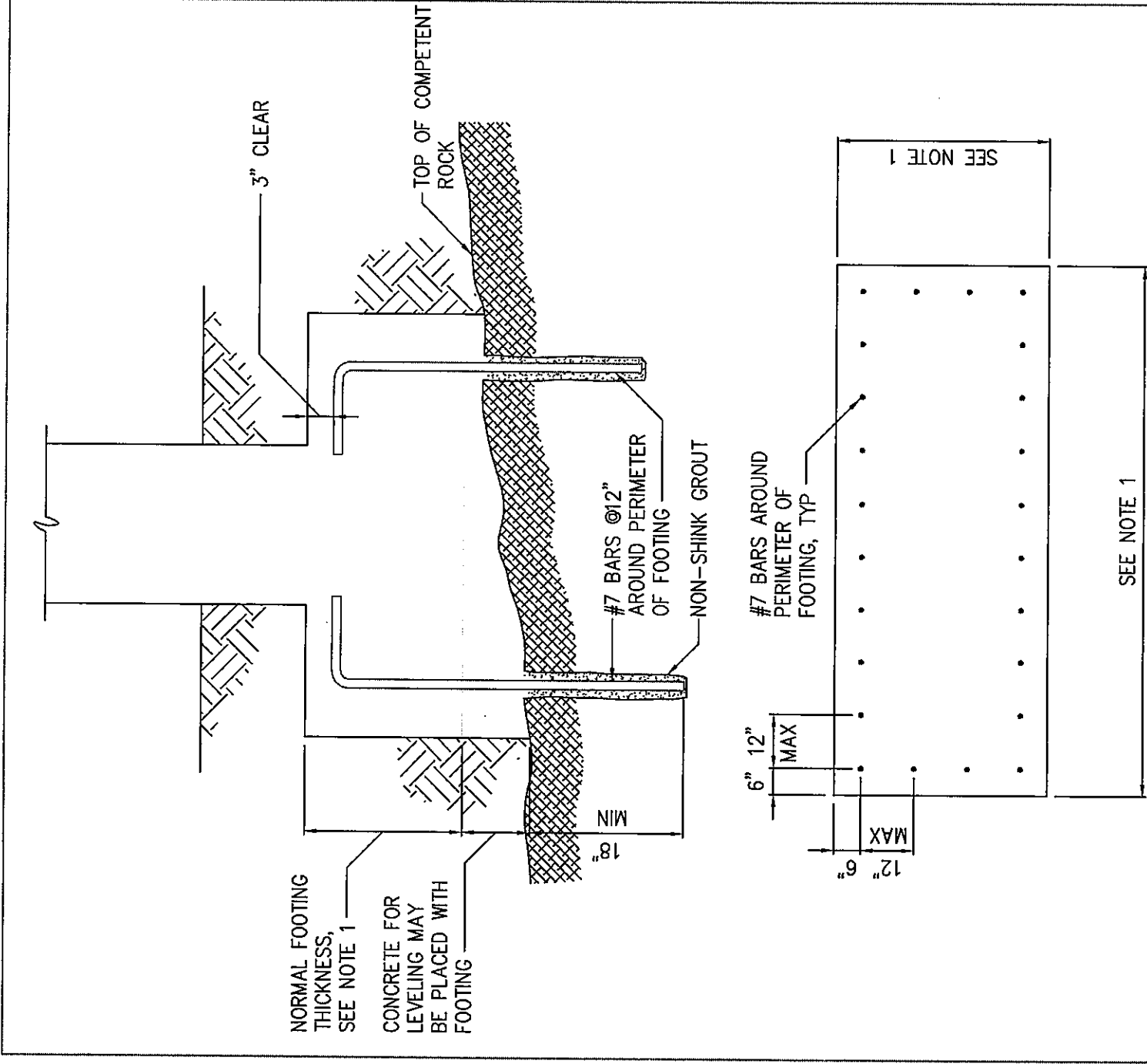
NOTES:

1. PILE SUPPORTED PIER FOUNDATION DESIGN SHOWN ON THIS DETAIL IS BASED ON THE FOLLOWING PARAMETERS:
 MINIMUM CAPACITY OF HP12x53 PILE = 30 TONS
 CONCRETE COMPRESSIVE STRENGTH = 4000 PSI
 GRADE 60 REINFORCING STEEL
 MAXIMUM STREAM VELOCITY = 10 FT/SEC
 IF FIELD CONDITIONS REQUIRE ANY DEVIATION FROM THESE PARAMETERS, THE FOUNDATION DESIGN SHALL BE REVIEWED BY THE ENGINEER.
2. LENGTH OF PILES SHALL BE AS REQUIRED TO DEVELOP 30 TON CAPACITY BY EITHER END BEARING, FRICTION OR A COMBINATION OF END BEARING AND FRICTION. AS A MINIMUM, PILES SHALL BE DRIVEN AT LEAST 15 FEET INTO UNDISTURBED SOIL.
3. TWELVE-INCH AND FOURTEEN-INCH WIDE PIERS SHALL BE REINFORCED WITH #5 BARS AT 12 INCHES OC IN EACH DIRECTION ON EACH FACE. EIGHTEEN-INCH WIDE PIERS SHALL BE REINFORCED WITH #7 BARS AT 12 INCHES OC IN EACH DIRECTION ON EACH FACE. FOOTINGS SHALL BE REINFORCED TYPICALLY TO PIERS.
4. EIGHTEEN-INCH WIDE PIERS SHALL REQUIRE TWO STRAPS OVER THE PIPE INSTEAD OF ONE (AS SHOWN).
5. WHEN CONCRETE SUPPORTS ARE REQUIRED TO BE LOCATED WITHIN A STREAM AND ARE NOT COVERED WITH BACKFILL, SEE DRAWING S-18 FOR MODIFICATIONS TO UPSTREAM FACE OF SUPPORT.

CASING PIPE DIA THICKNESS "D" (IN.)	PIER THICKNESS "A" (IN.)	FOOTING THICKNESS "B" (IN.)	FOOTING WIDTH "C" (FT.)	PIER WIDTH "D" (FT.)	FOOTING LENGTH "E" (FT.)	PILE SPACING "F" (FT.)
6-12	12	20	2'-4"	3'-0"	6'-0"	3'-0"
14-20	12	20	3'-0"	3'-0"	8'-0"	5'-0"
22-28	18	26	3'-8"	4'-0"	8'-9"	5'-9"
30-36	18	26	4'-4"	4'-0"	9'-0"	6'-0"
38-48	18	26	5'-4"	5'-0"	9'-6"	6'-6"
51-60	18	26	6'-4"	5'-0"	9'-10"	6'-10"

SGWASA
 UTILITY DEPARTMENT
 AERIAL PIPE CROSSING
 PILE SUPPORTED PIER DETAIL

DWG. NO. S-16	REVISIONS	DATE
	REVISIONS	DATE

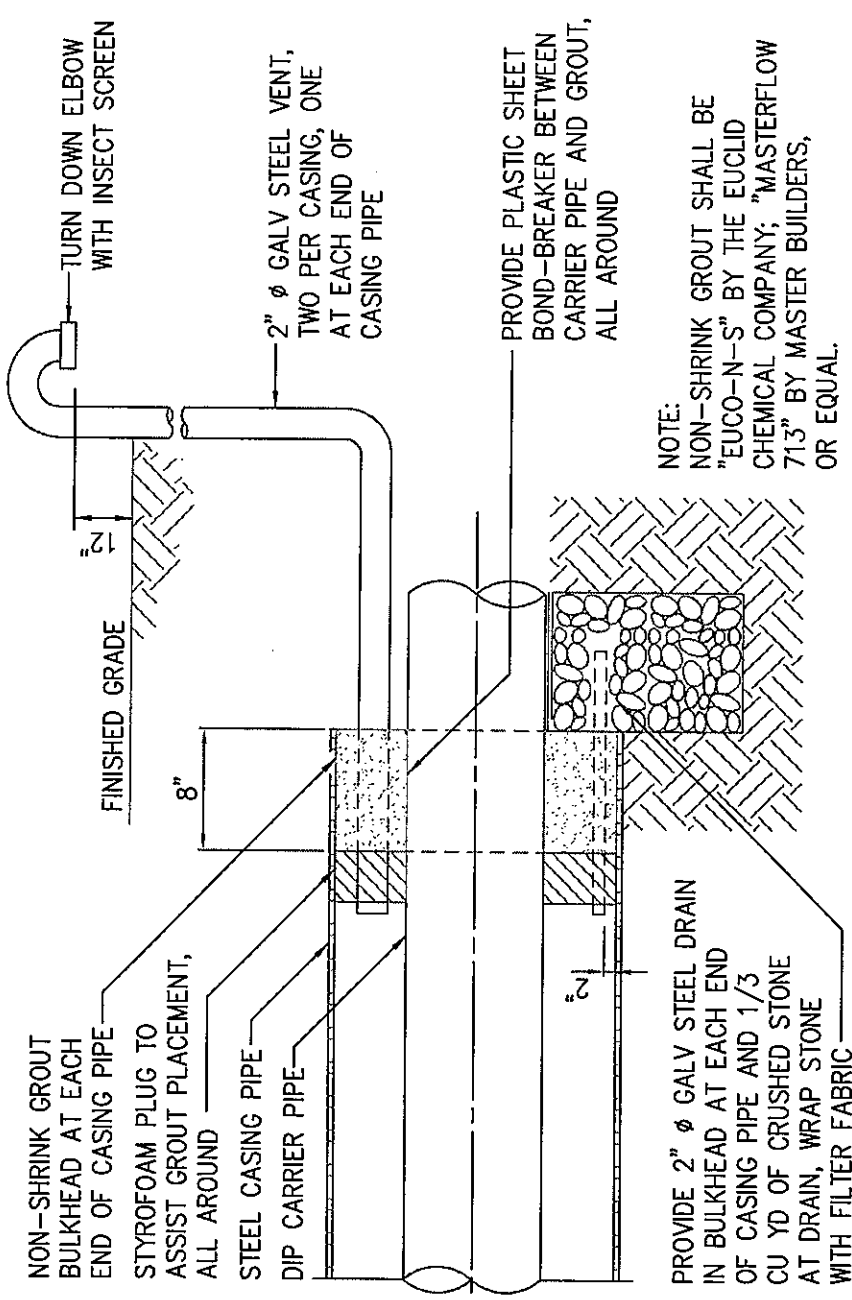


NOTES:

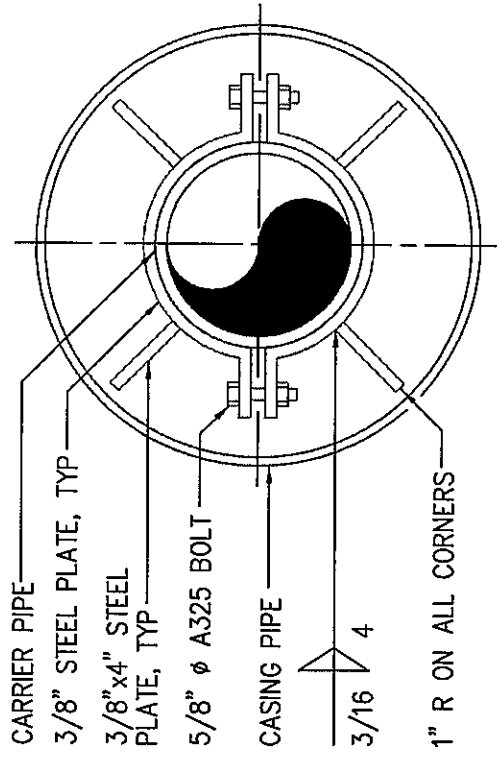
1. GEOMETRY OF FOOTING SHALL MATCH GEOMETRY OF CONCRETE PIERS WITH HEIGHT OF 6 FEET OR LESS AS PER DRAWING S-14.
2. NON-SHRINK GROUT SHALL BE "EUCCO-N-S" BY THE EUCLID CHEMICAL COMPANY; "MASTERFLOW 713" BY MASTER BUILDERS, OR EQUAL.

SGWASA		REVISIONS	DATE	REVISIONS	DATE
UTILITY DEPARTMENT					
AERIAL PIPE CROSSING					
CONCRETE PIER ON BEDROCK					

DWG. NO.
S-17



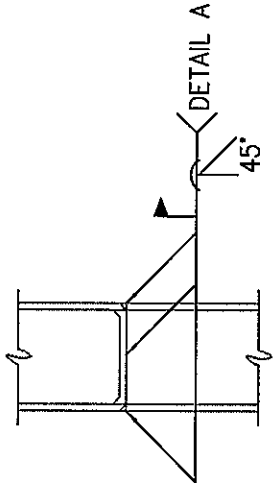
TYPICAL CASING PIPE PLUG



PIPE ALIGNMENT GUIDE

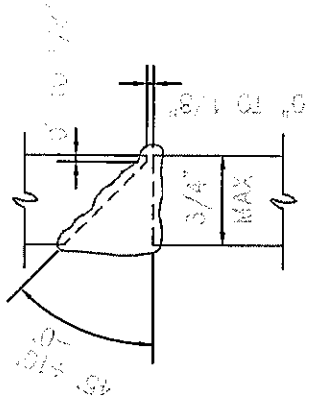
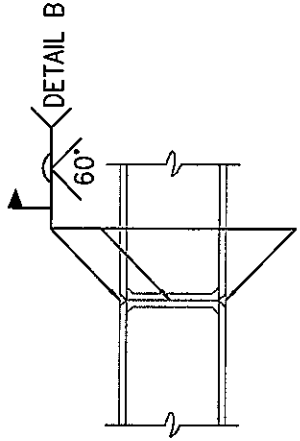
SGWASA	
UTILITY DEPARTMENT	
AERIAL PIPE CROSSING	
CASING PIPE DETAILS	
REVISIONS	DATE
REVISIONS	DATE
REVISIONS	DATE

DWG. NO.
S-18

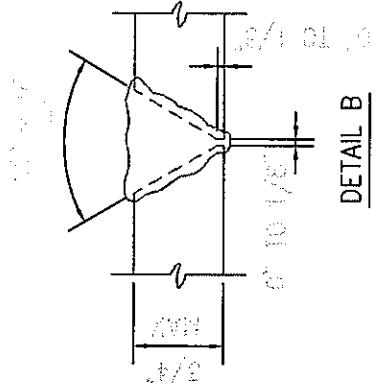


COLUMN VERTICAL

* COLUMN HORIZONTAL OR VERTICAL



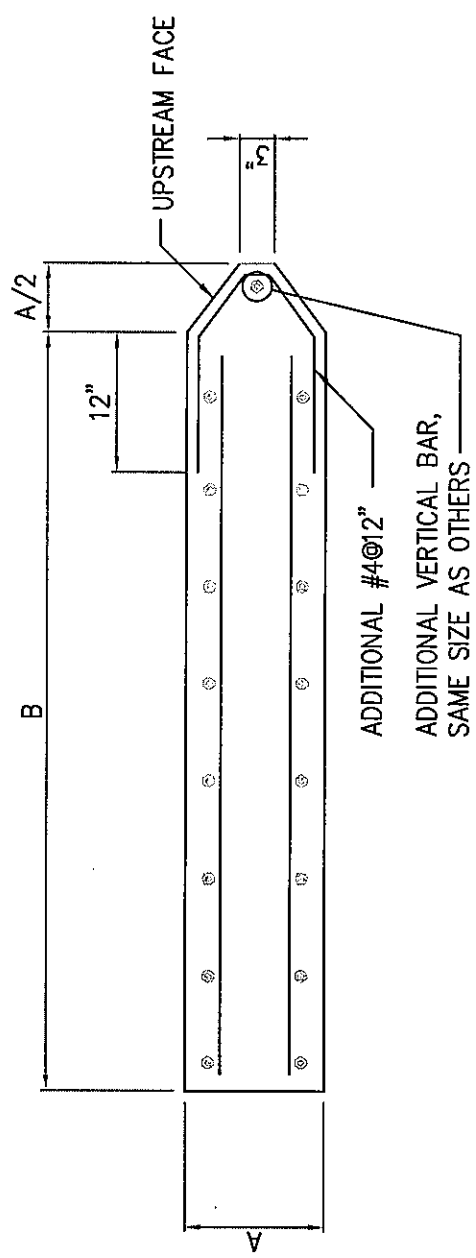
DETAIL A



DETAIL B

* POSITION OF COLUMN DURING WELDING

STEEL PILE SPlice



ADDITIONAL #4@12"
ADDITIONAL VERTICAL BAR,
SAME SIZE AS OTHERS

PLAN - CONCRETE SUPPORT NOSING
(WHEN EXPOSED TO STEAM FLOW)

SGWASA	
UTILITY DEPARTMENT	
AERIAL PIPE CROSSING	
CONCRETE SUPPORT DETAILS	
DWG. NO.	DATE
S-19	
REVISIONS	REVISIONS
	DATE

NEW MANHOLES USE AN APPROVED BITUMINOUS BASE SEALANT THAT SHALL BE APPLIED TO THE TOP OF THE CONE SECTION TO PROVIDE A WATER TIGHT SEAL.

SEE C.O.R. STANDARD S-25 FOR MANHOLE FRAME AND COVER

24" MAX

EACH JOINT SHALL BE WRAPPED WITH A 6" WIDE BITUMINOUS WRAP

R'-6" MIN.

4'-6' DIA. AS REQUIRED

VARIABLE

4" TYP.

4" RING SEAL OR RAM-NECK

RUBBER BOOT

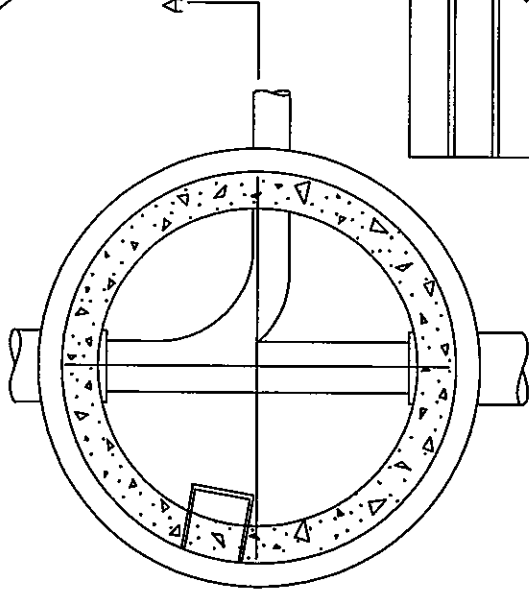
LATERAL INVERT SHALL NOT BE LOWER THAN MAIN SPRING-LINE. MANHOLE NEEDS TO BE ABOVE 10 YEAR FLOOD PLAIN AND VENT TO BE 1' ABOVE 100 YEAR FLOOD PLAIN. WHEN MANHOLE TOPS ARE IN EXCESS OF 3' ABOVE GRADE, OUTSIDE STEPS MUST BE PROVIDED. SEE STANDARD S-28 FOR STEP DETAIL. IN NON TRAFFIC AREAS, TOP OF FRAME AND COVER SHALL BE INSTALLED A MIN. OF 1' ABOVE FINISHED GROUND SURFACE.

SEE SEWER DESIGN SECTION

MIN. 9" COMPACTED #67 STONE BASE TO BE INSTALLED UNDER NEW MANHOLE.

IN NON-TRAFFIC AREAS, TOP OF FRAME AND COVER SHALL BE INSTALLED A MIN. OF 1' ABOVE FINISHED GROUND SURFACE.

SECTION A-A

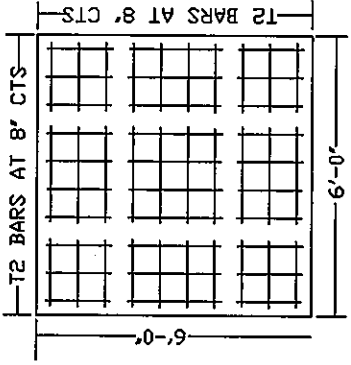


SGWASA

UTILITY DEPARTMENT

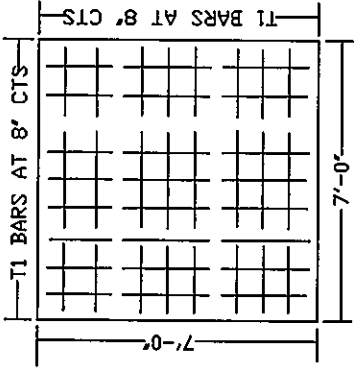
STANDARD PRECAST SANITARY SEWER MANHOLE

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-20				



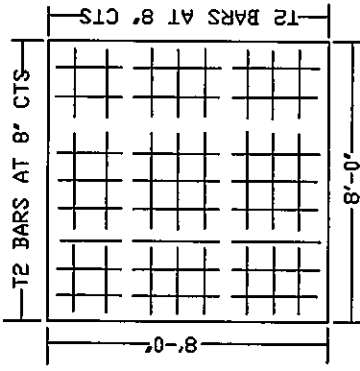
REINFORCED CONC. FOOTING FOR
4' PRECAST MANHOLE

BILL OF MATERIAL FOR 4' MANHOLE				
BAR	SIZE	LENGTH	NO.	WT. LBS.
T2	#5	5'-6"	18	103
CL. 'A' CONCRETE TOTAL CU. YDS				1,000



REINFORCED CONC. FOOTING FOR
5' PRECAST MANHOLE

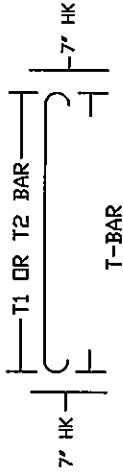
BILL OF MATERIAL FOR 4' MANHOLE				
BAR	SIZE	LENGTH	NO.	WT. LBS.
T1	#5	6'-6"	20	136
CL. 'A' CONCRETE TOTAL CU. YDS				1,361



REINFORCED CONC. FOOTING FOR
6' PRECAST MANHOLE

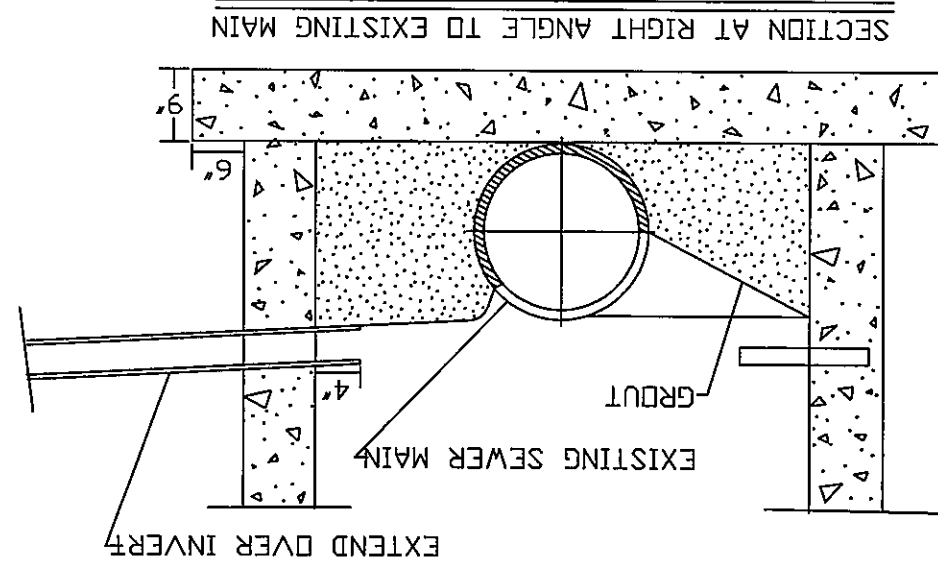
BILL OF MATERIAL FOR 4' MANHOLE				
BAR	SIZE	LENGTH	NO.	WT. LBS.
T2	#5	7'-6"	24	165
CL. 'A' CONCRETE TOTAL CU. YDS				1,778

* ALL BASES ARE MINIMUM 9" THICK

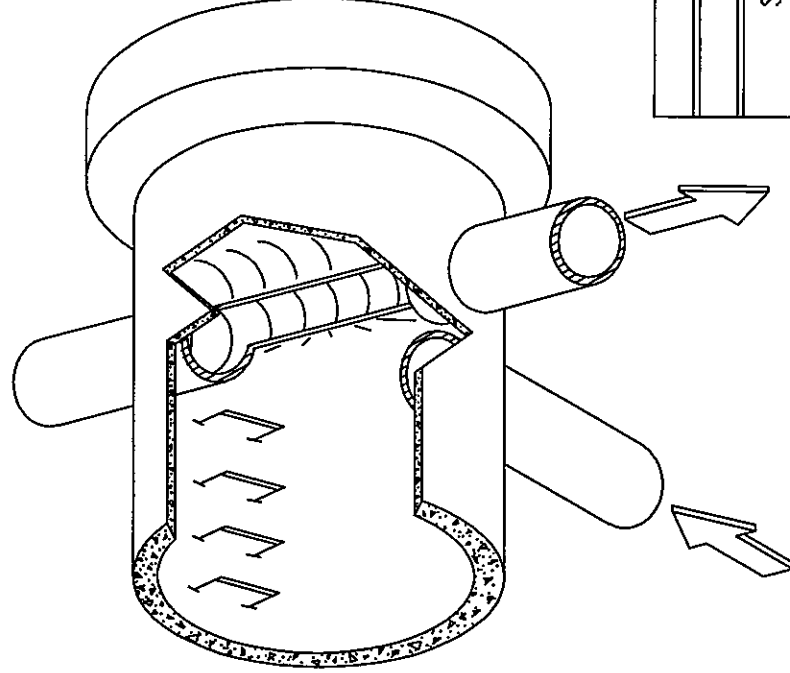
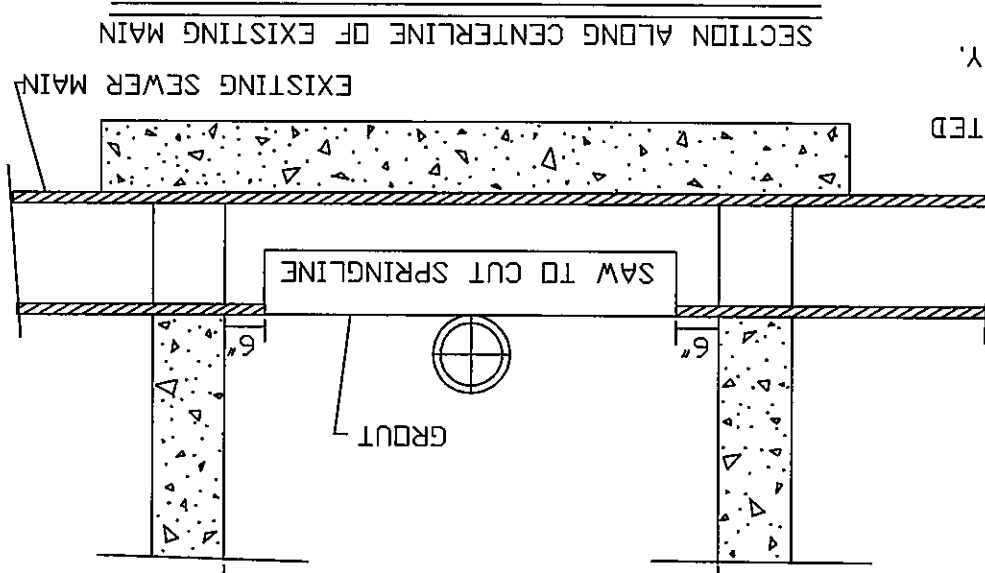


SGWASA
UTILITY DEPARTMENT
EXTENDED BASE OR CAST-IN-PLACE
REINFORCED CONCRETE BASE

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-21				

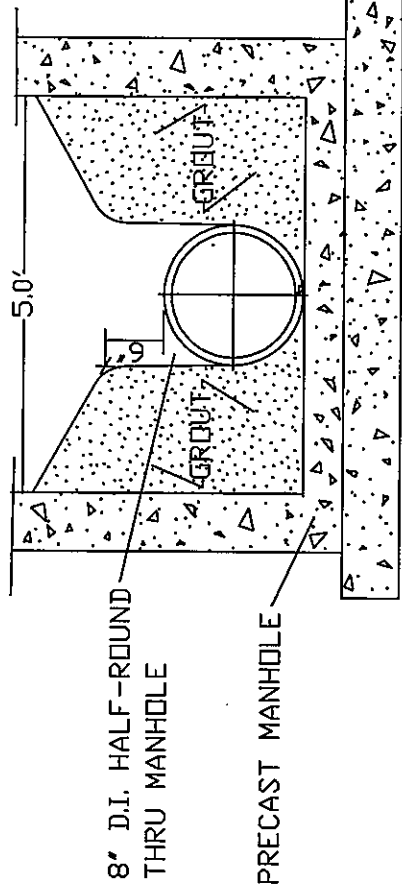


4'-0" FOR 8" TO 12" MAINS
5'-0" FOR 15" TO 30" MAINS
6'-0" FOR 36" TO 54" MAINS



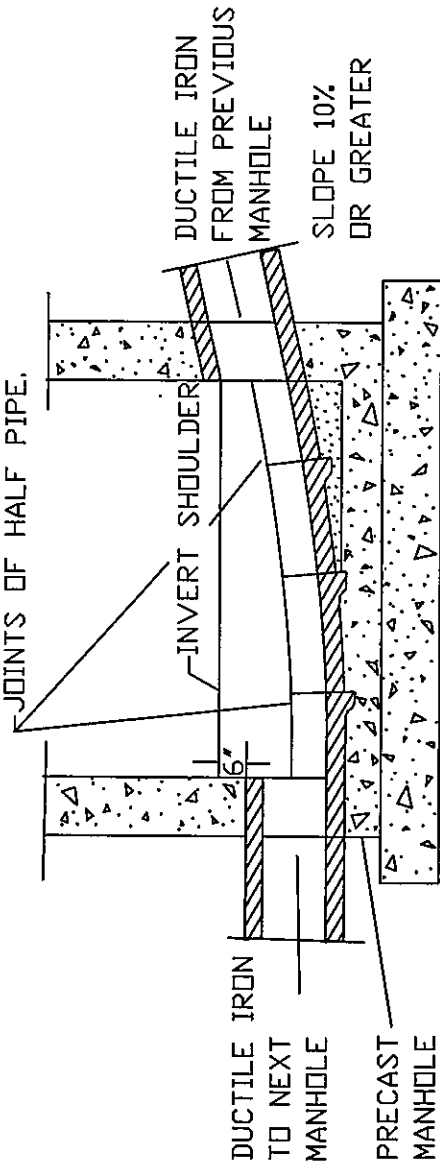
- NOTES:
1. FLOW SHALL BE MAINTAINED DURING CONSTRUCTION.
 2. THIS DETAIL TO BE USED WHEN A 6" OR LARGER LATERAL NECESSITATES CONSTRUCTION OF A NEW MANHOLE.
 3. SEE STANDARD DETAIL S-20, FOR PRECAST MANHOLES.
 4. THE CONTRACTOR SHALL PROVIDE A MINIMUM 6" COMPACTED # 67 STONE BASE.
 5. FOR USE ON DIP AND PVC ONLY.

SGWASA	
UTILITY DEPARTMENT	
STANDARD MANHOLE INSTALLATION OVER EXISTING SEWER MAIN	
DWG. NO.	REVISIONS
DATE	REVISIONS
DATE	DATE
S-22	



SECTION AT RIGHT ANGLE TO CENTER LINE OF PIPE

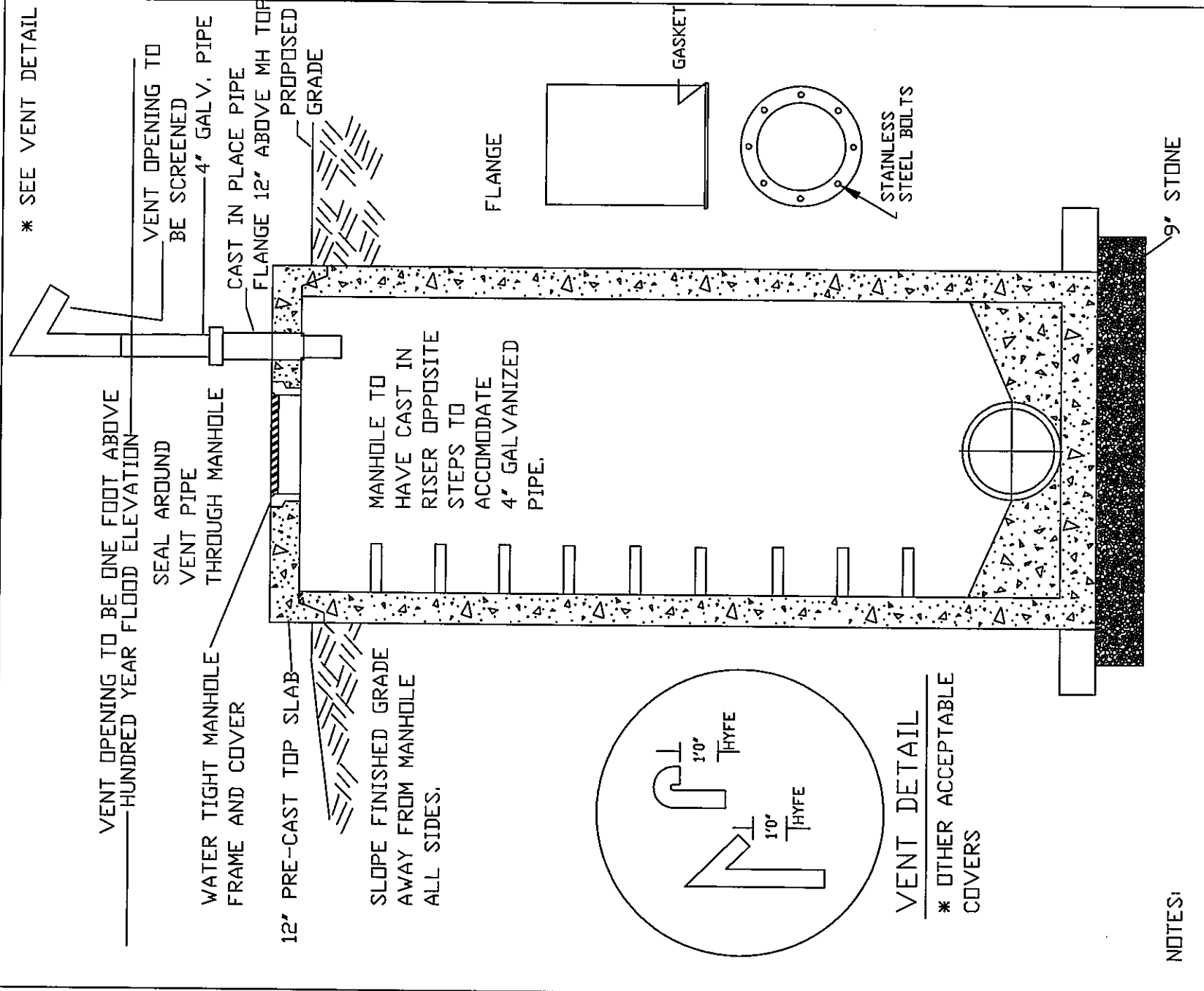
DUCTILE IRON PIPE AND
 DUCTILE IRON
 BENDS AS NEEDED, WITH
 NO MORE THAN THREE
 JOINTS OF HALF PIPE.



SECTION ALONG CENTER LINE OF PIPE

NOTE:
 NO HORIZONTAL ALIGNMENT CHANGE
 CAN BE MADE WITH IN THIS MANHOLE
 TYPE. USE ON GRADES 10% OR GREATER.

SGWASA			
UTILITY DEPARTMENT			
STANDARD HIGH VELOCITY MANHOLE INVERT			
DWG. NO.	REVISIONS	DATE	REVISIONS
S-23			
			DATE



* SEE VENT DETAIL

VENT OPENING TO BE ONE FOOT ABOVE
HUNDRED YEAR FLOOD ELEVATION

SEAL AROUND
VENT PIPE
THROUGH MANHOLE
FRAME AND COVER

VENT OPENING TO
BE SCREENED
4" GALV. PIPE

WATER TIGHT MANHOLE
FRAME AND COVER

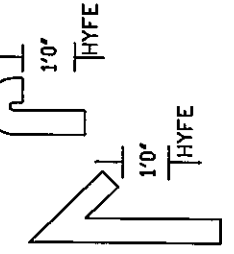
CAST IN PLACE PIPE
FLANGE 12" ABOVE MH TOP
PROPOSED
GRADE

12" PRE-CAST TOP SLAB

SLOPE FINISHED GRADE
AWAY FROM MANHOLE
ALL SIDES.

MANHOLE TO
HAVE CAST IN
RISER OPPOSITE
STEPS TO
ACCOMMODATE
4" GALVANIZED
PIPE.

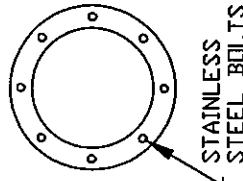
FLANGE



VENT DETAIL

* OTHER ACCEPTABLE
COVERS

GASKET



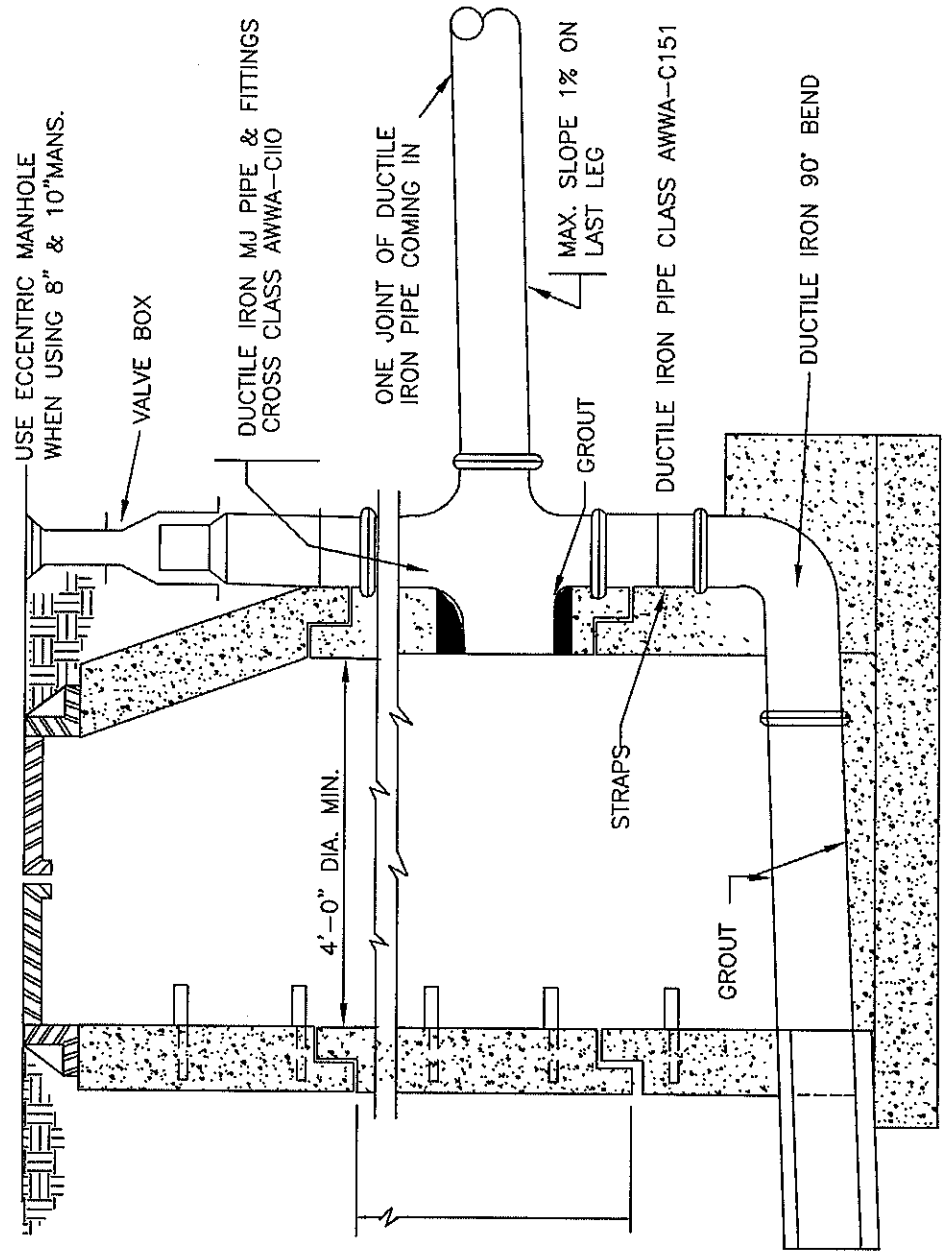
STAINLESS
STEEL BOLTS

NOTES:

1. VENT MUST BE FACTORY WELDED
FABRICATED AND GALVANIZED
OR COATED TWICE WITH GREEN
EPOXY PAINT
2. MANHOLE NUMBER NEEDS TO
COINCIDE WITH VENT NUMBER

SGWASA	
UTILITY DEPARTMENT	
STANDARD SEAL TIGHT MANHOLE WITH VENTED STACK	
DWG. NO.	REVISIONS
DATE	REVISIONS
DATE	REVISIONS
DATE	REVISIONS

S-24

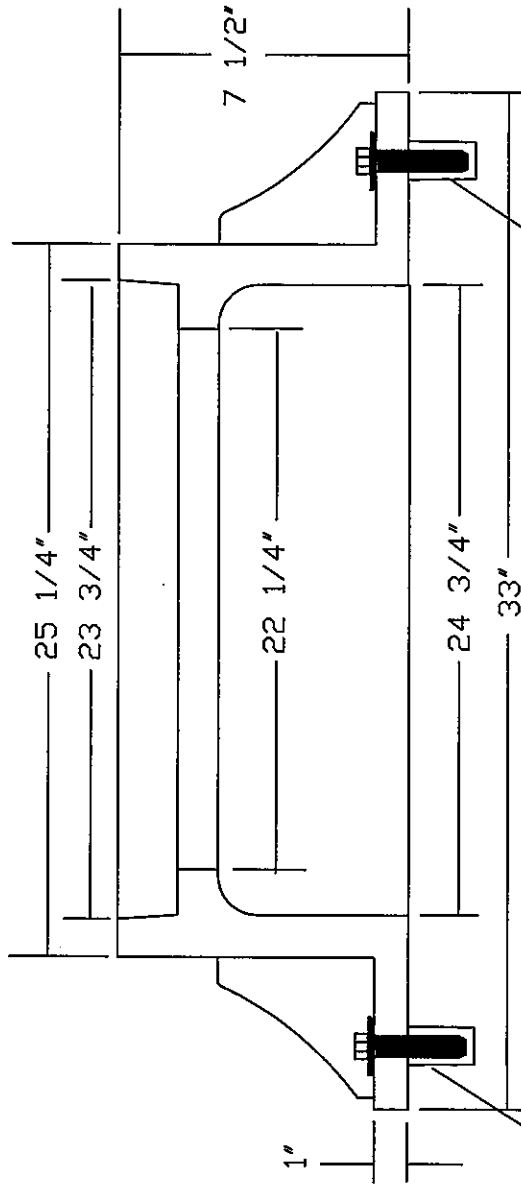
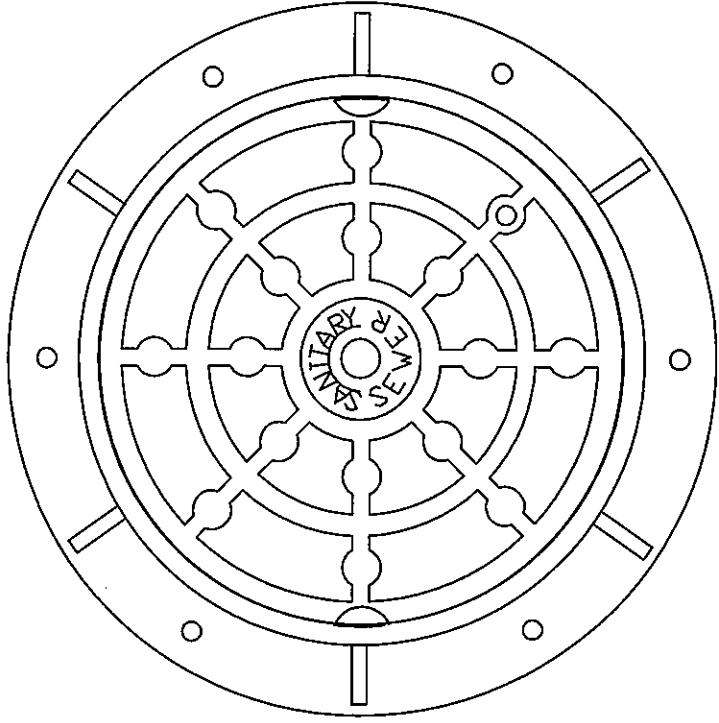
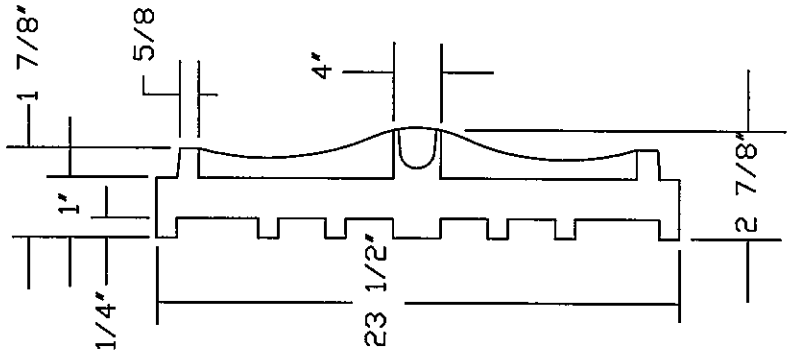


NOTES:

1. PIPE SIZE FOR DROP TO EQUAL INFLOW SEWER PIPE SIZE
2. DRILL ALL HOLES FOR PIPE AND BOLTS.
3. DROP-MANHOLE MANDATORY WHEN DIFFERENTIAL BETWEEN INVERTS IS GREATER THAN 2'-6".
4. SEE SCWASA STANDARD FOR PRECAST MANHOLES, DETAIL S-20, FOR MANHOLE DETAILS.

MANHOLE FRAME AND COVER

COVER 120 LBS. MINIMUM



FRAME 182 LBS.

LAGSHIELDS ONLY MAY BE USED
IN ROADWAY APPLICATIONS.

OR

5/8"X3" LAGSHIELD IN HOLE
DRILLED INTO CONE OR
RING WITH ANCHOR SUNK TO
DESIGN DEPTH, AND 5/8"X3"
HOT DIPPED GALVANIZED
LAG BOLT AND WASHER.

SGWASA

UTILITY DEPARTMENT

STANDARD MANHOLE COVER

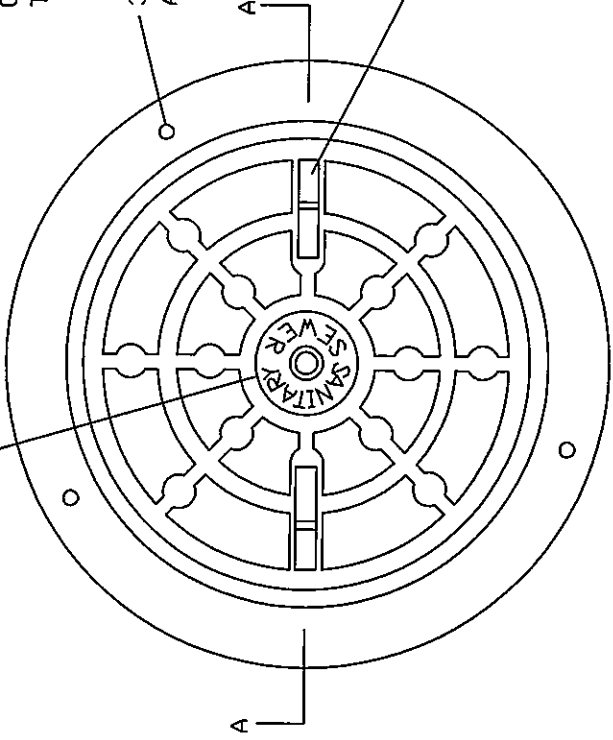
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-25				

1" LETTERING
RECESSED FLUSH

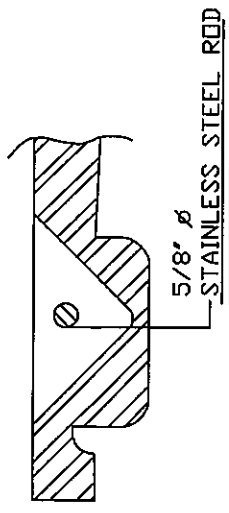
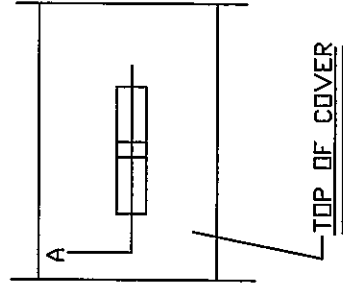
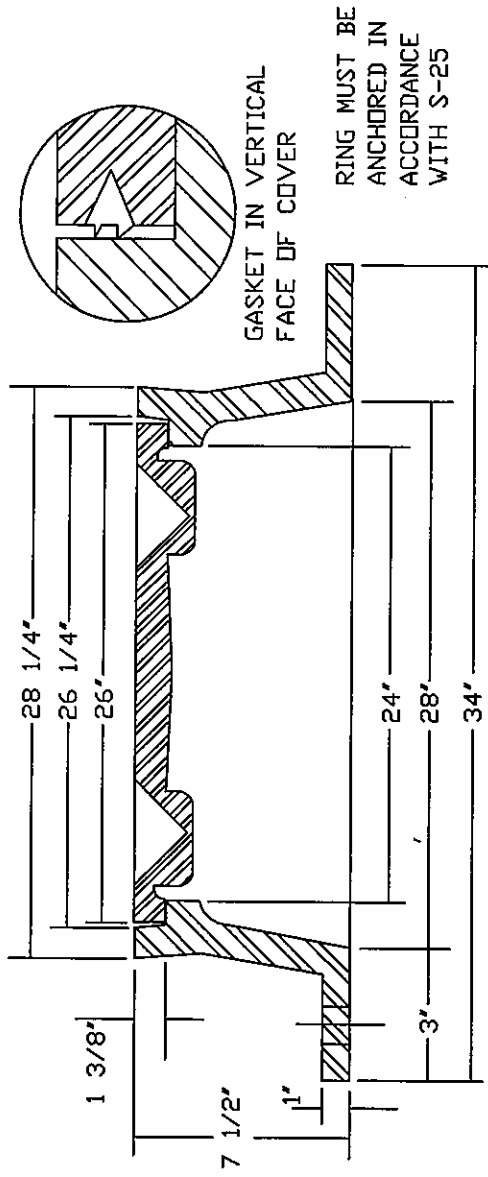
MINIMUM A/G WEIGHT
FRAME 262
COVER 170
TOTAL 432

3 -1" DIA. HOLES
AT 120°

TYPICAL LIFTING DEVICE



PLAN



TYPICAL LIFTING DEVICE SECTION A

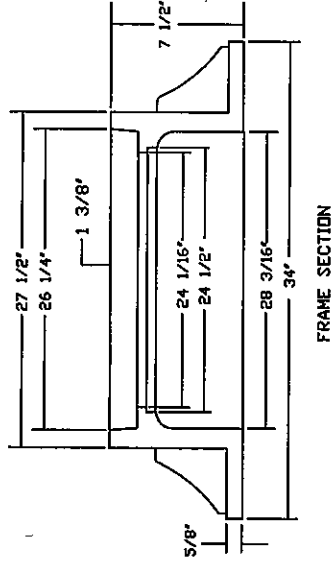
TOP OF COVER

SGWASA

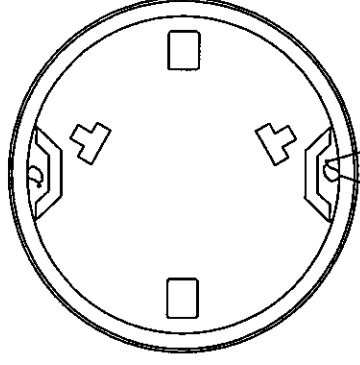
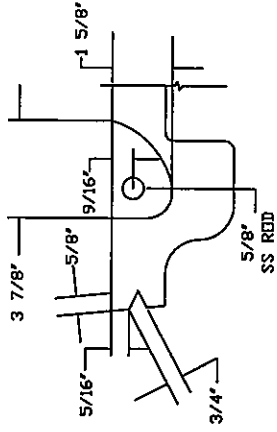
UTILITY DEPARTMENT

MANHOLE FRAME AND
WATERTIGHT COVER

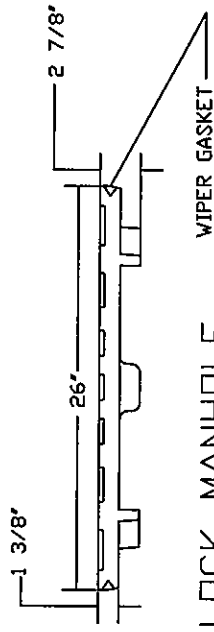
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-26				



FRAME SECTION



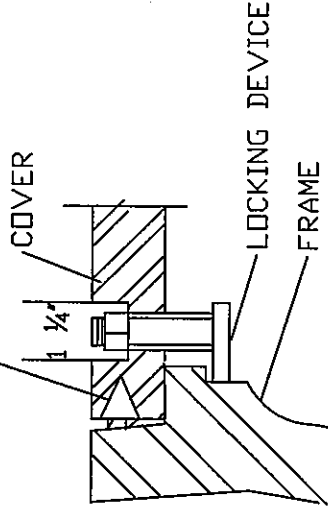
(2) CAM LOCKS
(2) SS ROLL PINS
1/2" DIA x 1 3/4"



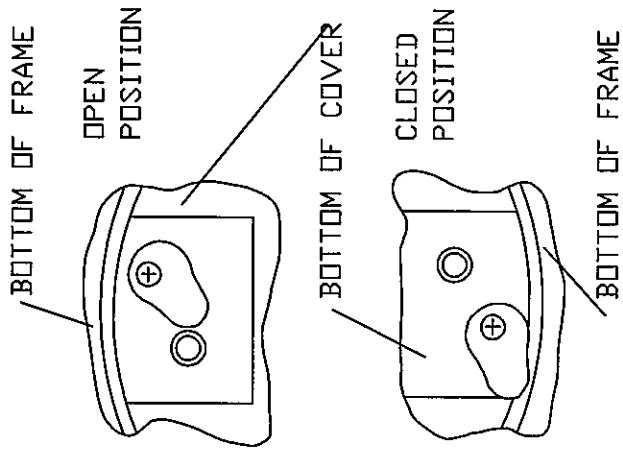
TYPICAL CAM LOCK MANHOLE

WIPER GASKET

FINNED GASKET IN VERTICAL
FACE OF COVER TO MAKE
WATERTIGHT.



STANDARD - PENTAGON HEAD S.S.
OPTIONAL - S.S. HEX HEAD BOLT



TYPICAL LOCKING DEVICE

NOTE: DEWEY BROS. OR
APPROVED EQUAL

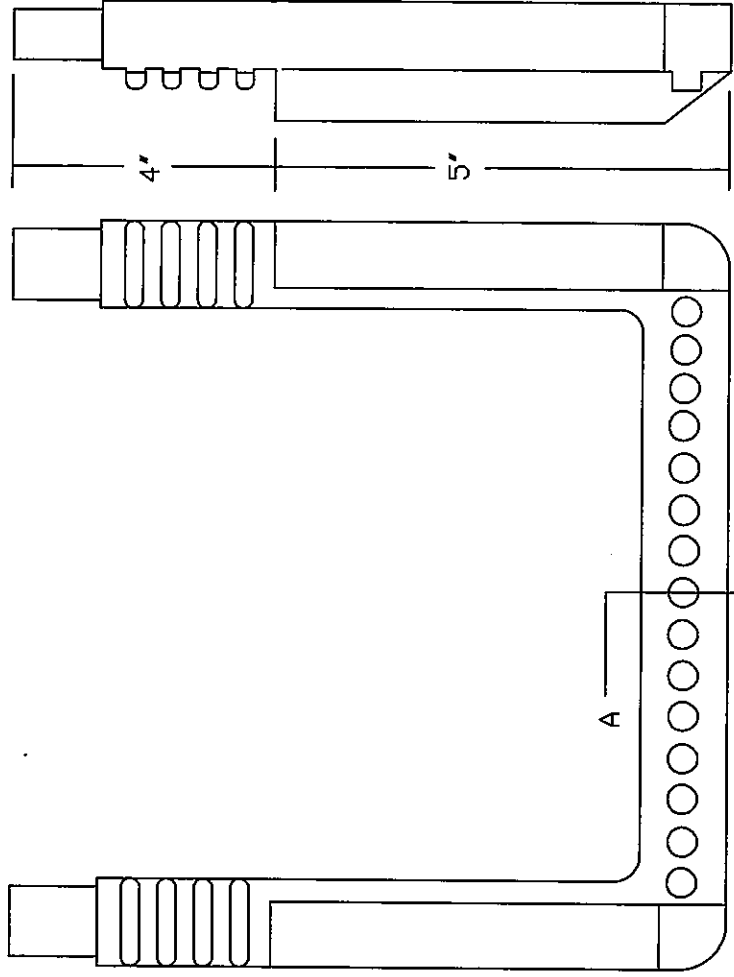
RING MUST BE ANCHORED
IN ACCORDANCE WITH S-25

SGWASA

UTILITY DEPARTMENT

WATER-TIGHT MANHOLE FRAME
WITH CAM LOCK COVER

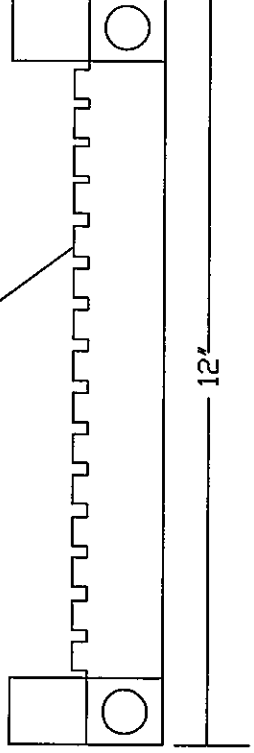
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-27				



SIDE
ELEVATION

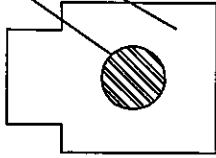
PLAN

SLIP RESISTANT CLEATS



ELEVATION

#3 OR #4 REBAR



CORROSION RESISTANT MATERIAL
RUBBER, PLASTIC

SECTION A - A

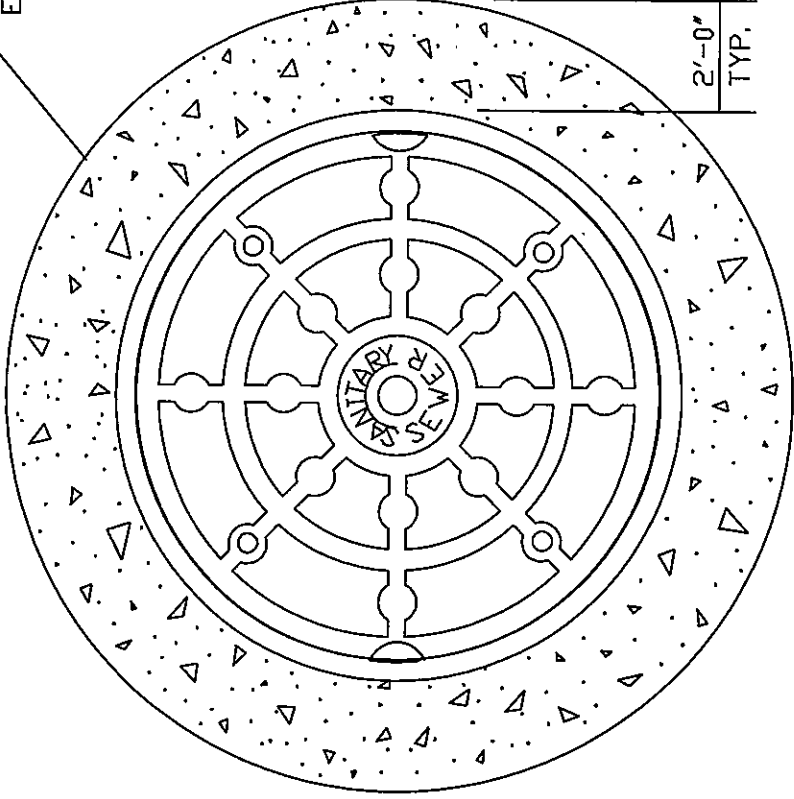
SGWASA

UTILITY DEPARTMENT

STANDARD SLIP RESISTANT
MANHOLE STEP DETAIL

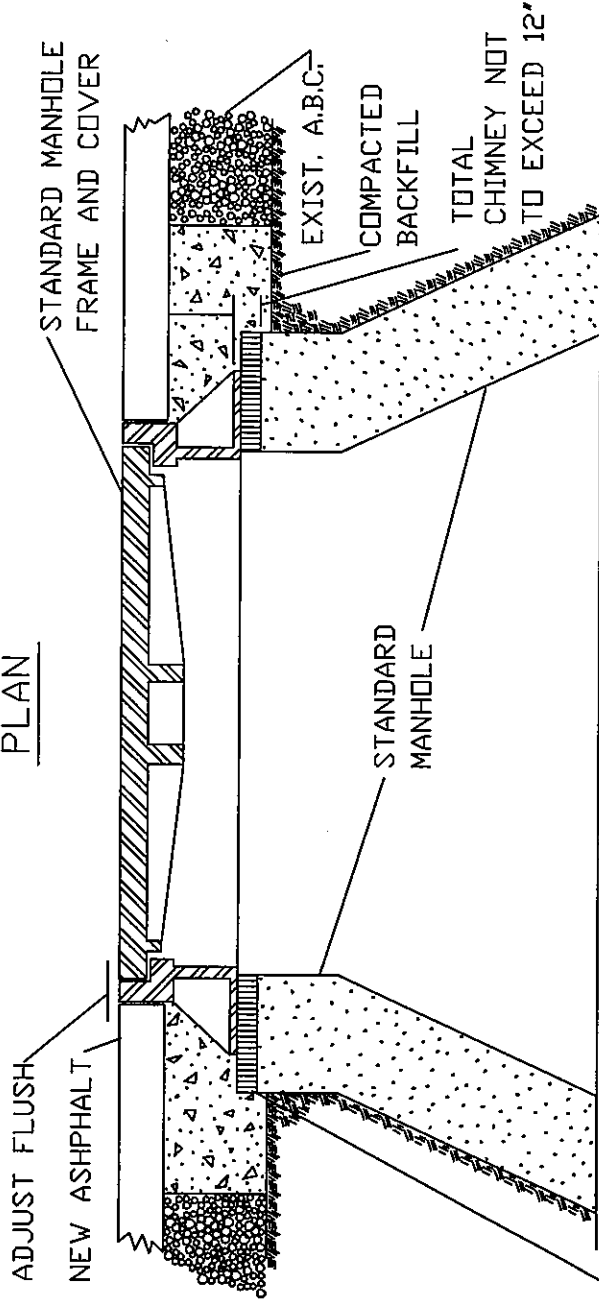
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-28				

3000 P.S.I. CONCRETE
ENCASEMENT



2'-0"
TYP.

PLAN



SECTION

— PRECAST CONCRETE SPACER
(DONUT RINGS) OR CONC.
BRICK IN TRAFFIC AREAS
ONLY. DONUT RINGS NOT
ALLOWED IN EASEMENTS.

SGWASA

UTILITY DEPARTMENT

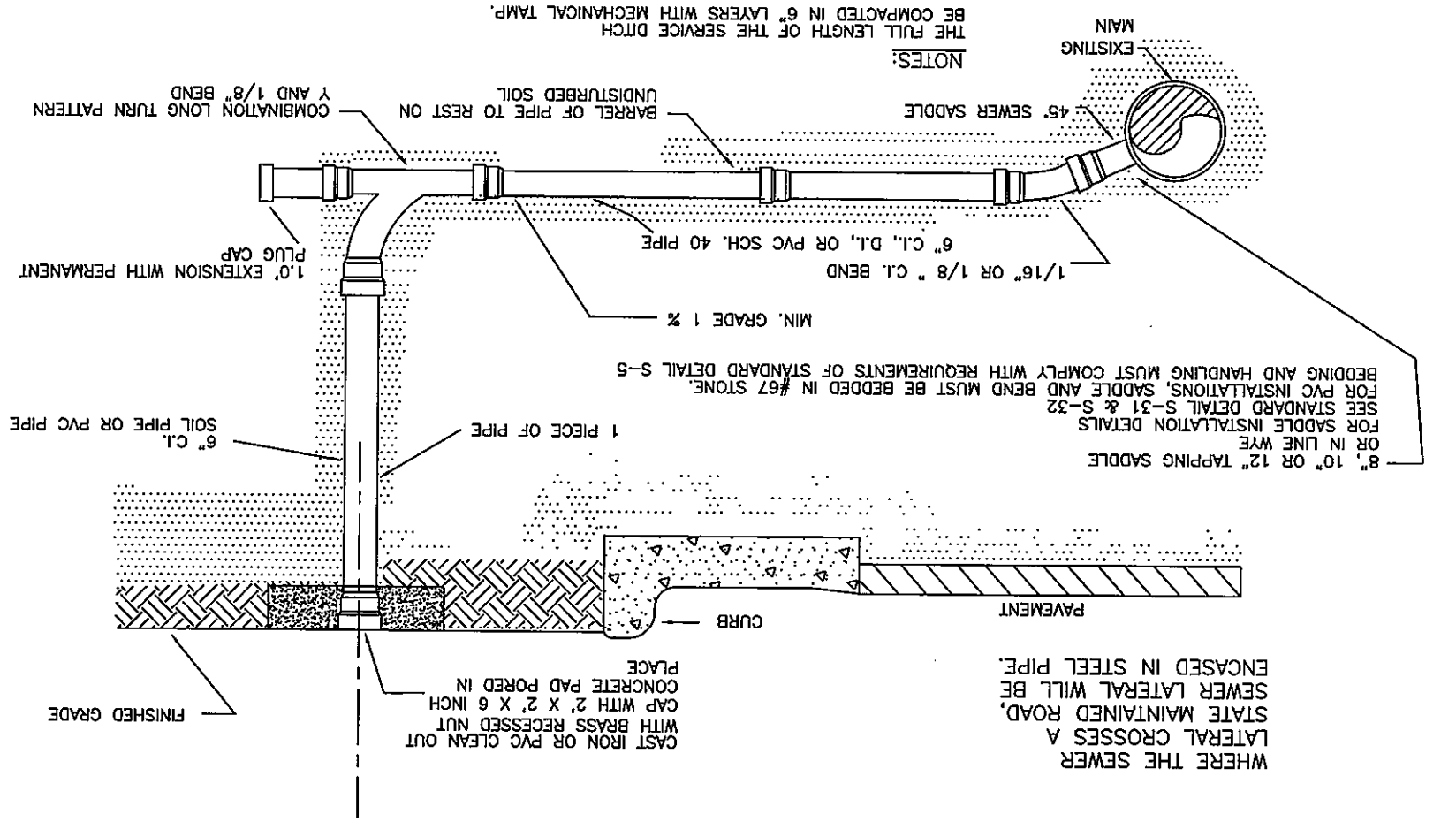
STANDARD MANHOLE FRAME
AND COVER RAISING DETAILS

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-29				

SGWASA
UTILITY DEPARTMENT
TYPICAL SANITARY SEWER LATERAL CONNECTION

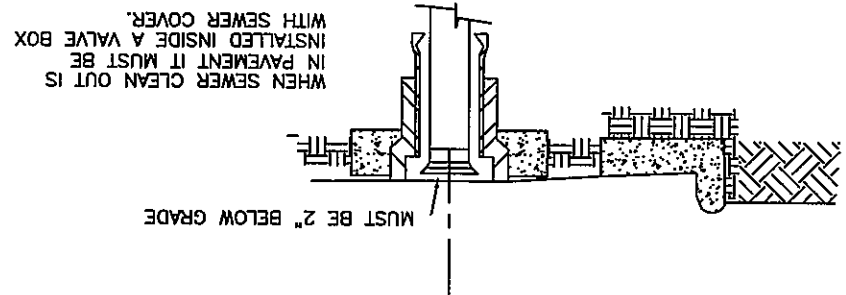
DRW. NO.
S-30

SGWASA TYPICAL SANITARY SEWER LATERAL CONNECTION

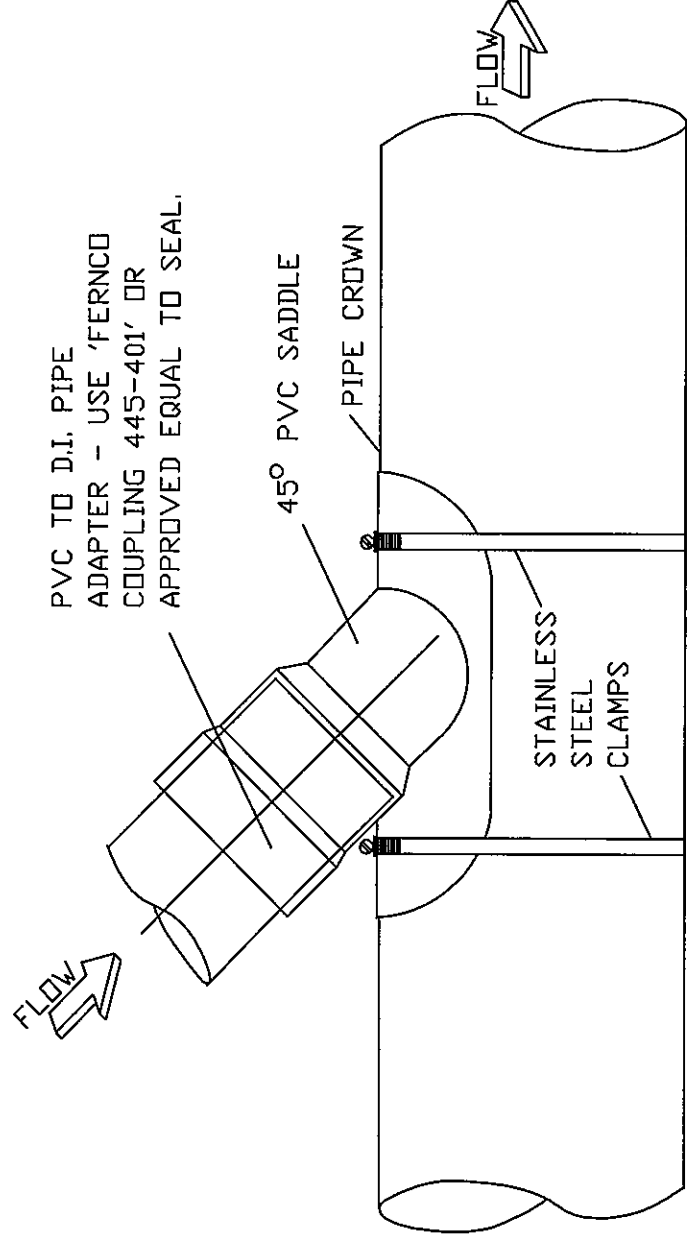


WHERE THE SEWER
LATERAL CROSSES A
STATE MAINTAINED ROAD,
SEWER LATERAL WILL BE
ENCASED IN STEEL PIPE.

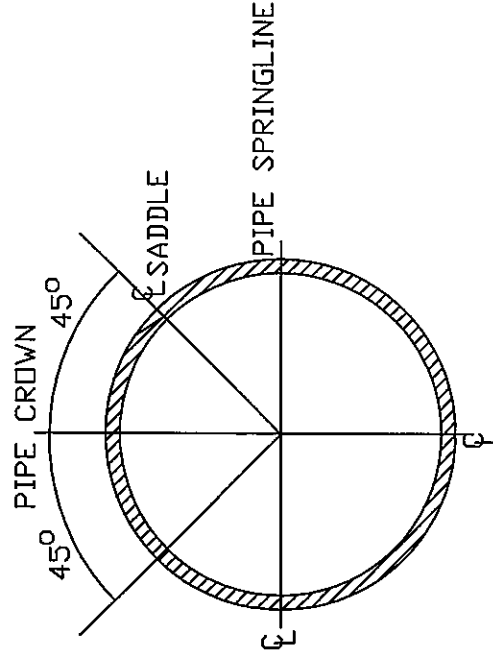
PAVEMENT OPTION



PROPERTY LINE OR EDGE OF EASEMENT



BACKFILL UNDER PVC SADDLE, ADAPTOR, AND CAST IRON BEND WITH #67 STONE AS SHOWN ON S-4.

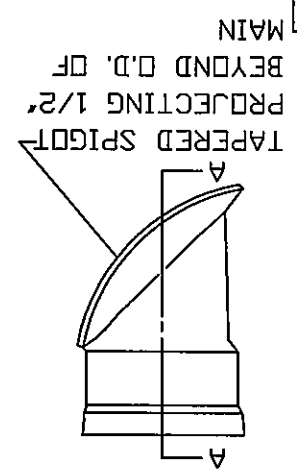
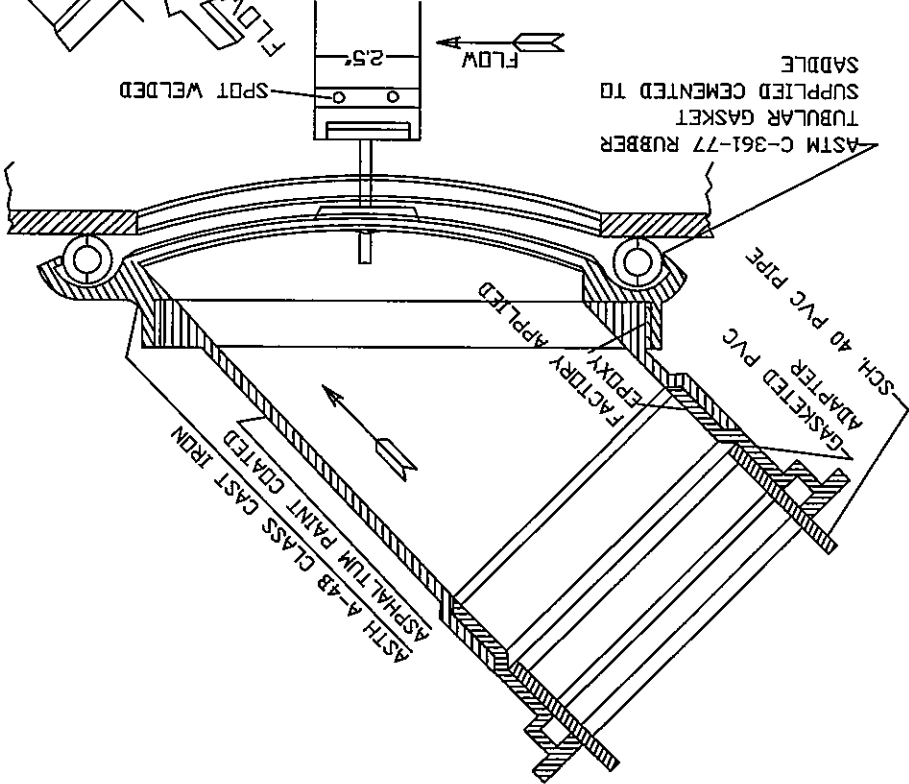
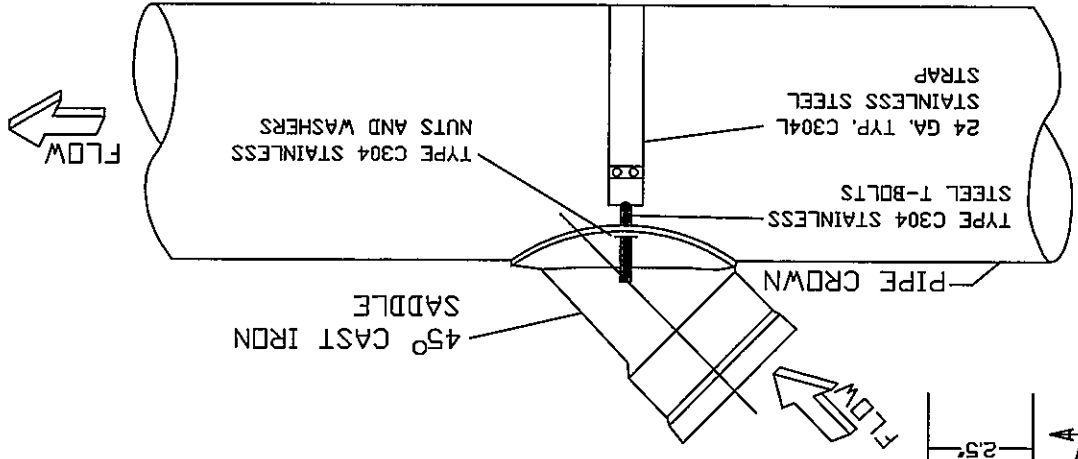
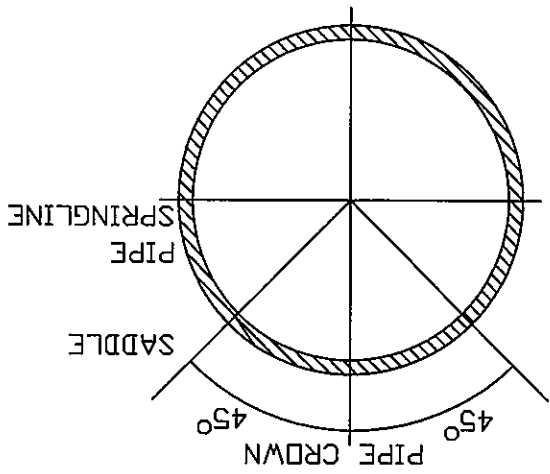


SADDLE INSTALLATION LIMITS

SGWASA
UTILITY DEPARTMENT

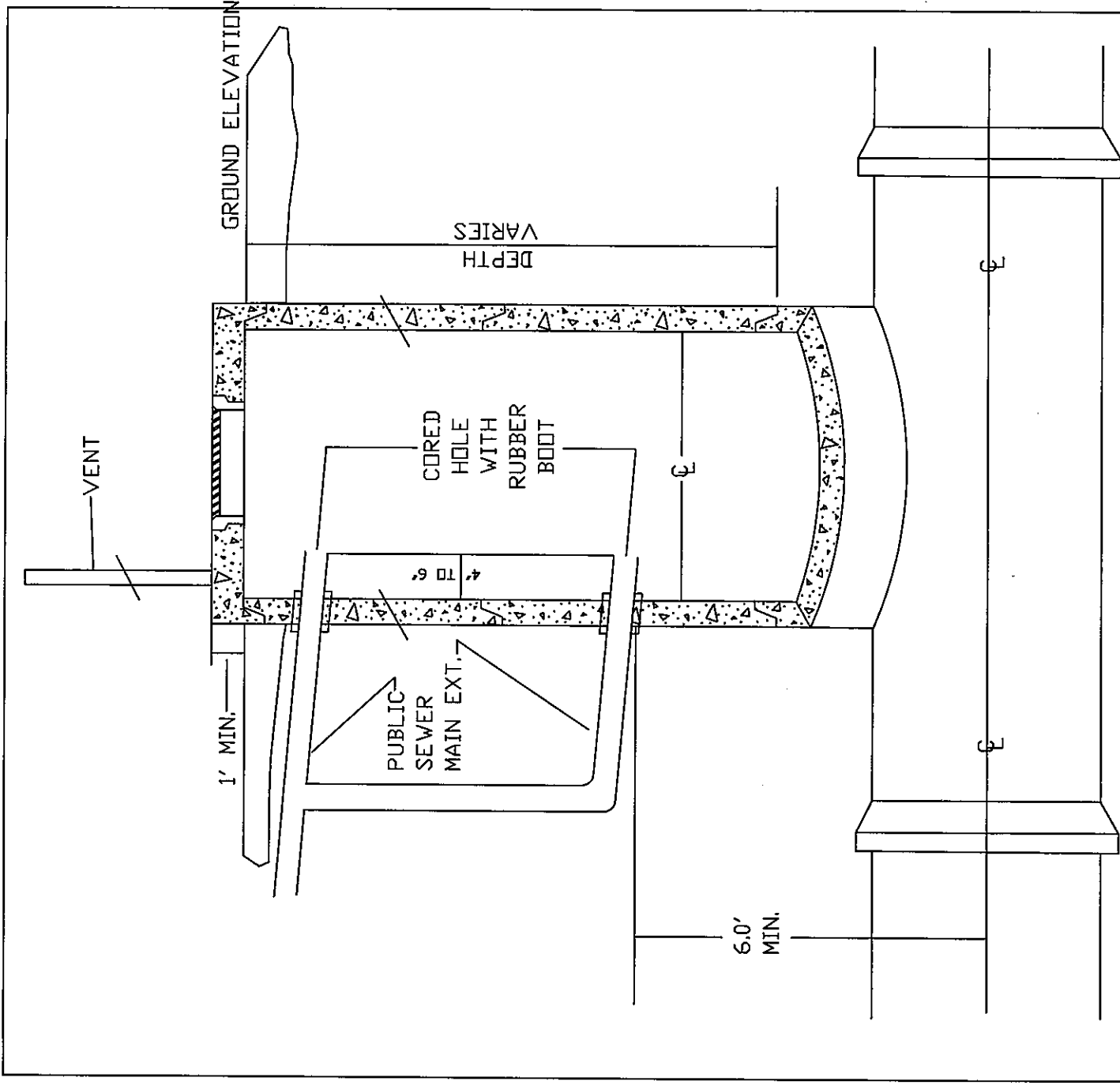
LATERAL SADDLE INSTALLATION
DETAIL FOR PVC PIPE

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-31				



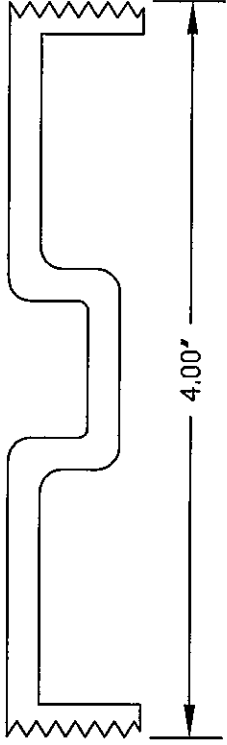
NOTE: SADDLE TO BE
GENECCO E40 OR EQUAL

SGWASA	
UTILITY DEPARTMENT	
LATERAL SADDLE INSTALLATION DETAIL FOR VCP AND DUCTILE IRON PIPE	
DWG. NO.	S-32
REVISIONS	
DATE	
REVISIONS	
DATE	

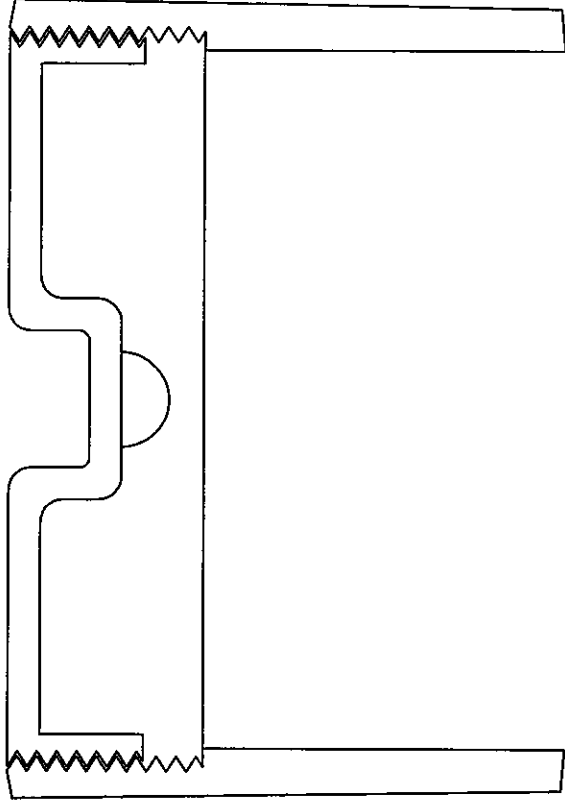


1. HOLE SHALL BE CORED IN RISER SECTION FOR PUBLIC SERVICE MAIN EXTENSION.
2. RUBBER BOOT IN BOTH CORES
3. CORES SHALL BE IN CENTER OF RISER SECTION
4. CONNECTION TO TEE MANHOLE MUST BE MADE UNDER DIRECT SUPERVISION OF SGWASA.

SGWASA			
UTILITY DEPARTMENT			
MAIN EXTENSION TO TIE INTO TEE MANHOLE			
DWG. NO.	REVISIONS	DATE	REVISIONS
S-33			
		DATE	DATE



STANDARD 4" BRONZE CLEANOUT PLUG



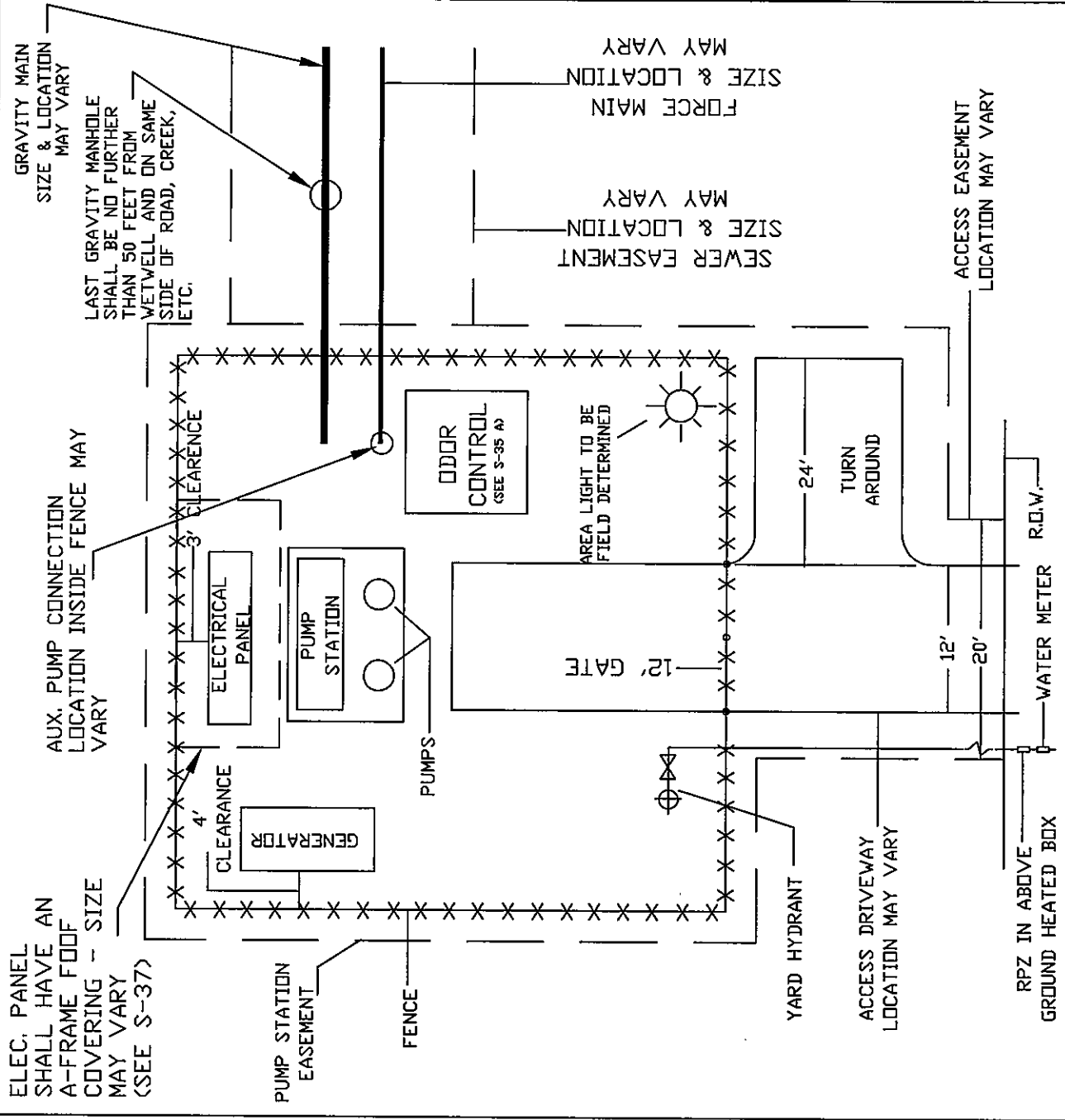
CLEANOUT FERRULE WITH PLUG

STYLES ACCEPTED:

- INVERTED NUT
- RAISED NUT

SGWASA
 UTILITY DEPARTMENT
 4" CLEANOUT PLUG

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-34				



NOTES:

1. PUMP STATION MUST MEET ALL ZONING SET-BACK REQUIREMENTS
2. PUMP STATION MUST MEET ALL LANDSCAPING REQUIREMENTS
3. WATER SERVICE FOR YARD HYDRANT MUST HAVE RPZ BACKFLOW PROTECTION. SIZE OF SERVICE MAY VARY
4. PUMP STATION EASEMENT TO BE 50'x 50' MINIMUM
5. EQUIPMENT LOCATIONS MAY VARY

* FOR ELECTRICAL PANEL REFER TO DETAILS S-36

SGWASA	
UTILITY DEPARTMENT	
MINIMUM REQUIREMENTS FOR PUMP STATIONS	
DWG. NO.	REVISIONS
S-35	
DATE	REVISIONS
	DATE

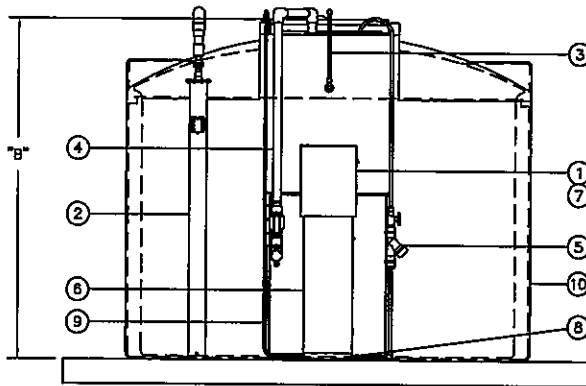
CHEMICAL STORAGE TANK OPTIONS

TANK GALLONAGE	"A"-TANK DIAMETER	"B"-TANK HEIGHT	"C"-PAD DIMENSIONS
1,550	6'-0"	10'-3"	10'-0"
3,050	8'-0"	11'-6"	12'-0"
4,050	8'-0"	14'-8"	12'-0"

NOTE: DIMENSIONS ARE NOMINAL. THEY ARE ±5%.

NOTES

- OWNER/CONTRACTOR TO FURNISH CONCRETE PAD WITH ALL IN-SLAB PIPING AND CONDUIT
- ALL PIPING AND APPURTENANCES PVC, SCH 80
- ALL ELECTRICAL CONDUIT AND WIRING BY OWNER
- UTILIZE SWEEPS ONLY (NO ELBOWS) FOR CONDUIT DIRECTIONAL CHANGES
- OWNER/CONTRACTOR TO FURNISH AND INSTALL ALL NECESSARY SLAB OPENINGS, SLEEVES AND SEALANT
- OWNER/CONTRACTOR TO FURNISH AND INSTALL ALL NECESSARY HANGERS, SUPPORTS, AND BLOCKING FOR PIPING
- ALL HARDWARE REQUIRED FOR INSTALLATION SHALL BE STAINLESS STEEL, FURNISHED AND INSTALLED BY OWNER
- SEE SUPPLEMENTAL STANDARD DETAILS FOR CHEMICAL FEED UNIT, CALIBRATION PEDESTAL, PIPING SUPPORT, STORAGE TANK, LEVEL GAGE AND VARIOUS OTHER COMPONENTS



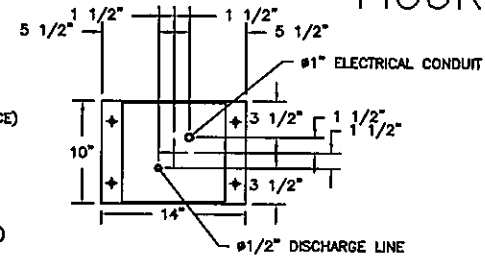
ELEVATION VIEW

PAD & EQUIPMENT LAYOUT IS ONLY SUGGESTED
 PAD DOES NOT INCLUDE ANY CONTAINMENT CURBING
 CAUTION-CALIBRATION STAND DOOR EXTENDS PAST PAD DIMENSIONS

NOMENCLATURE

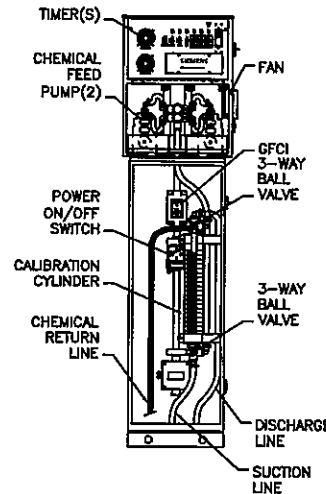
- CONTROL BOX ASSEMBLY W/PUMP(S)
- MECHANICAL LEVEL INDICATOR ASSEMBLY
- #1/2" OVERFILL LEVEL ASSEMBLY
- #2" FILL PIPING ASSEMBLY
- SUCTION PIPING ASSEMBLY (1/2" OR 3/4" DEPENDING ON PUMP CHOICE)
- MULTI OPTION CALIBRATION STAND ASSEMBLY
- PUMP(S)
- 14" X 10" SS PIPE STAND RISER
- 36" X 24" X 48" SS PIPE/UTILITY TANK STAND
- DOUBLE WALLED TANK: (SEE DIMENSION POSSIBILITIES IN BOX AT LEFT)

FIGURE S-35A



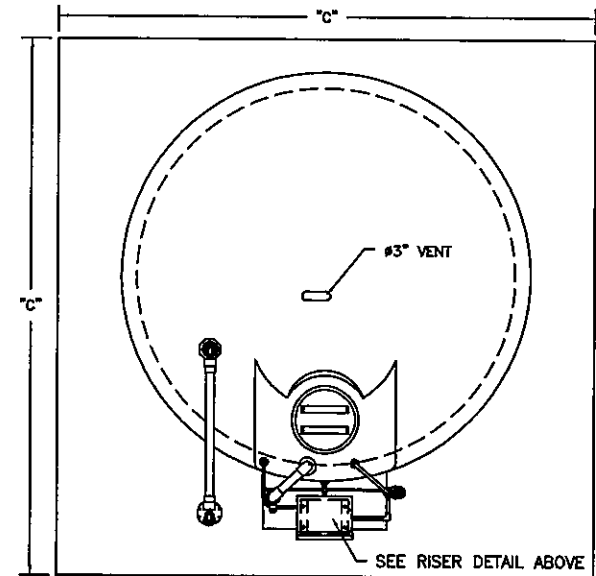
RISER/SLAB PENETRATION DETAIL

NTS



DETAIL VIEW

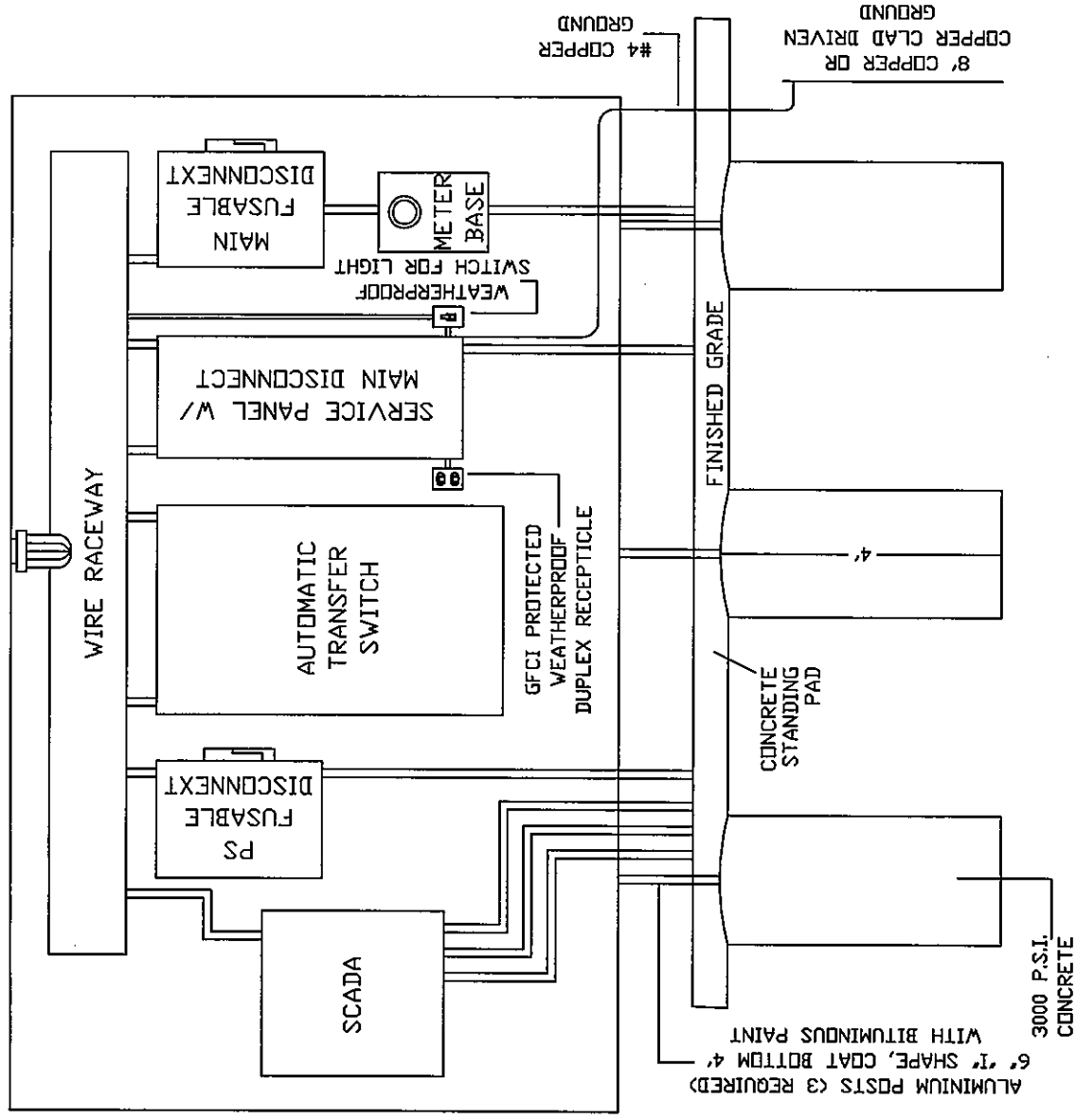
NTS



PLAN VIEW

<small>THIS DOCUMENT AND ALL INFORMATION CONTAINED HEREIN ARE THE PROPERTY OF SIEMENS WATER TECHNOLOGIES. IT IS TO BE USED IN ACCORDANCE WITH THE LICENSE AGREEMENT. SIEMENS WATER TECHNOLOGIES AND ITS AFFILIATES ARE NOT RESPONSIBLE FOR ANY DAMAGE OR LOSS OF PROFITS OR BUSINESS OPERATIONS THAT MAY BE INCURRED BY ANY USER OF THIS DOCUMENT. SIEMENS WATER TECHNOLOGIES AND ITS AFFILIATES ARE NOT RESPONSIBLE FOR ANY DAMAGE OR LOSS OF PROFITS OR BUSINESS OPERATIONS THAT MAY BE INCURRED BY ANY USER OF THIS DOCUMENT. SIEMENS WATER TECHNOLOGIES AND ITS AFFILIATES ARE NOT RESPONSIBLE FOR ANY DAMAGE OR LOSS OF PROFITS OR BUSINESS OPERATIONS THAT MAY BE INCURRED BY ANY USER OF THIS DOCUMENT.</small>		DESIGNER BYERSB DATE 08/21/2007	TITLE NOMINAL GALLONAGE W/MECHANICAL LEVEL INDICATOR CHEMICAL FEED SYSTEM					
		CHECKER DATE	CLIENT SOUTH GRANVILLE WATER AND SEWER AUTHORITY					
		FRY DATE						
		ENGINEER DATE	SIEMENS WATER TECHNOLOGIES SARASOTA, FL 1-941-355-2971					
		NUMBER DATE						
		FILE UPDATE						
REV 35	DESCRIPTION	BY	DATE	PROJECT SALES	CODE	DRAWING NOMINAL 1B	SHEET 1 OF 2	REV

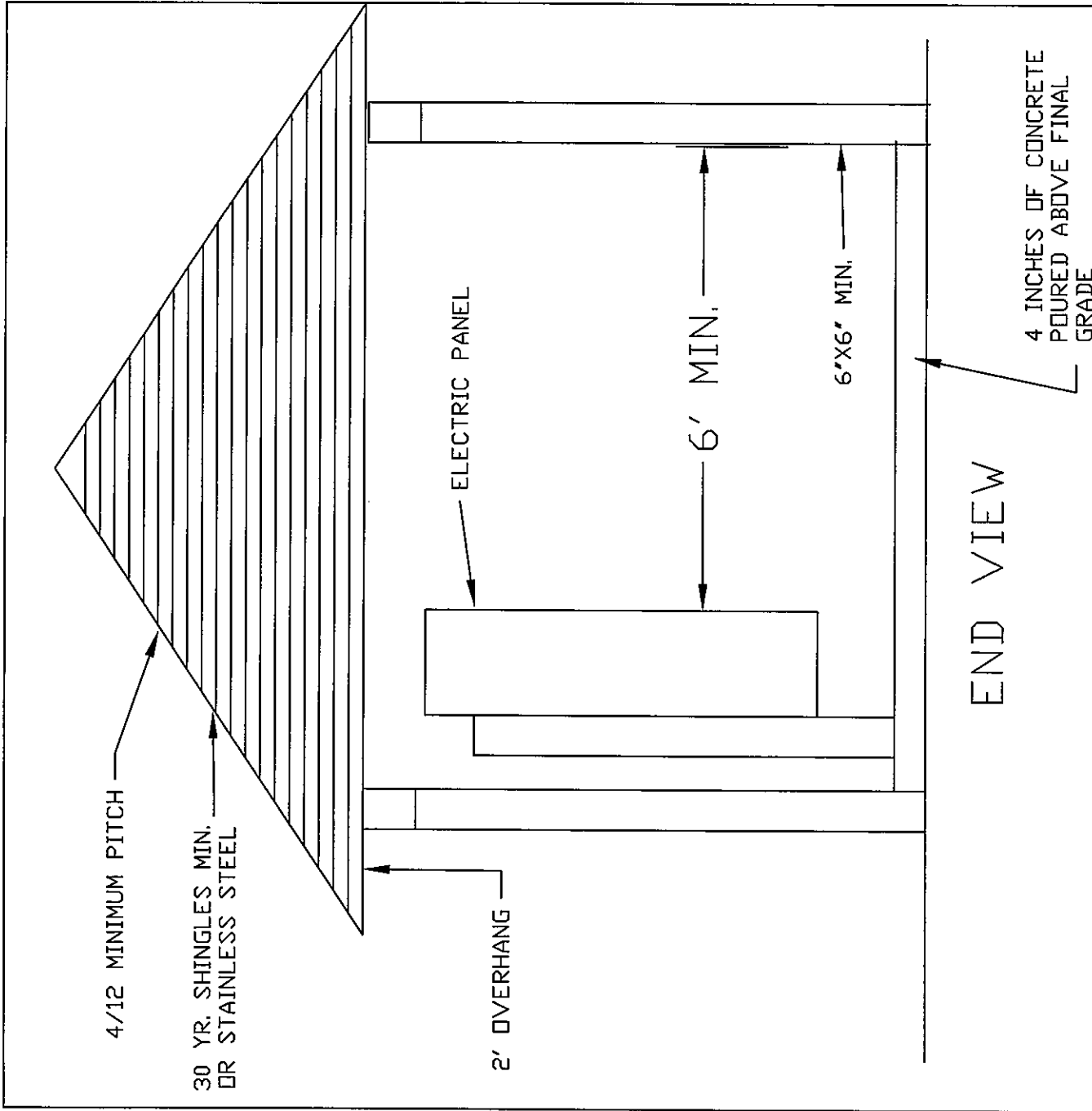
S-35 A



NOTES

1. BACKING PLATE TO BE 1/4" ALUMINUM. MOUNT TO 'I' BEAM POSTS WITH STAINLESS STEEL NUT, BOLTS, AND WASHERS.
2. ALL ELECTRICAL WORK SHALL CONFORM TO LATEST NATIONAL, STATE AND LOCAL CODES AND REQUIREMENTS.
3. SHOW CONDUIT SIZE AND NUMBER WITH WIRE SIZE AND NUMBER ON PUMP STATION PLANS.
4. PANEL LAYOUT IS SCHEMATIC ONLY. ADJUST AS NEEDED TO ACCOMMODATE EQUIPMENT.
5. ALL ENCLOSURES SHALL BE NEMA 4 RATED AND LOCKABLE.
6. ENCLOSURES SHALL BE MOUNTED TO ALUMINUM BACKING PLATE WITH NYLON SPACERS & STAINLESS STEEL NUTS, BOLTS & WASHERS. * FOR WEATHER HOOD REFER TO DETAIL S-37
7. ALL CONDUITS SHALL BE SEALED TO PREVENT MOISTURE, SEWER GASES, ETC. FROM ENTERING EQUIPMENT ENCLOSURES.
8. NO EQUIPMENT SHALL BE MOUNTED LESS THAN 36" ABOVE FINISHED GRADE.

SGWASA			
UTILITY DEPARTMENT			
PUMP STATION			
ELECTRICAL PANEL			
DWG. NO.	REVISIONS	DATE	REVISIONS
S-36			
		DATE	DATE

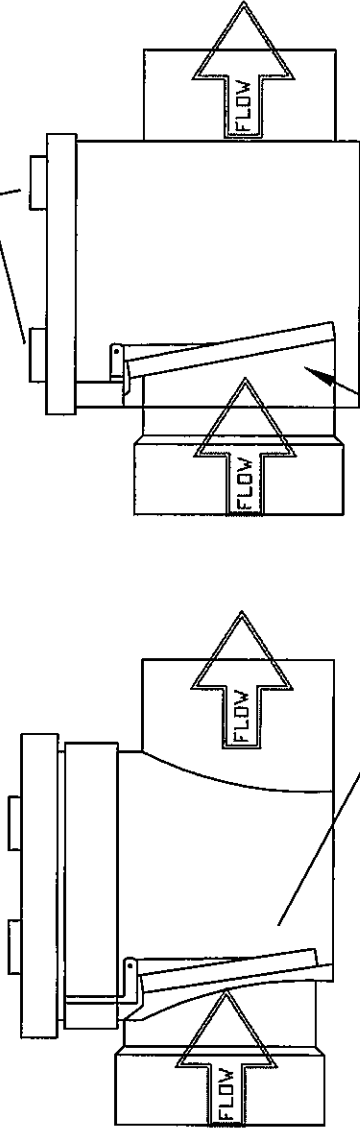


NOTES:

1. ALL MATERIAL SHALL BE WOOD TREATED FOR GROUND CONTACT
OR STAINLESS STEEL
2. MATERIALS SHALL BE IN ACCORDANCE TO BUILDING CODE

SGWASA			
UTILITY DEPARTMENT			
WEATHER HOOD FOR ELECTRICAL EQUIPMENT PANEL			
DWG. NO.	REVISIONS	DATE	REVISIONS
S-37			DATE

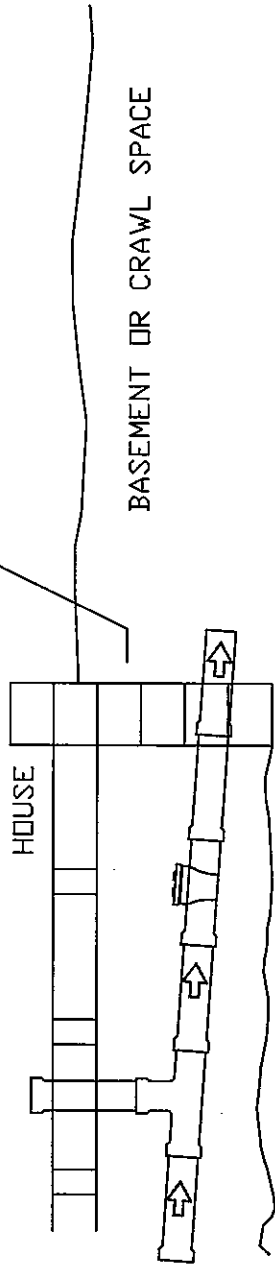
TYPICAL SANITARY SEWER SERVICE BACKWATER VALVE STYLES:



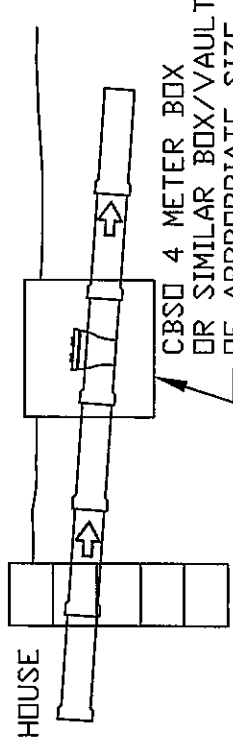
SCREWCAPS

FLAPPER VALVE

TYPICAL BACKWATER VALVE INSTALLATIONS:



BASEMENT OR CRAWL SPACE



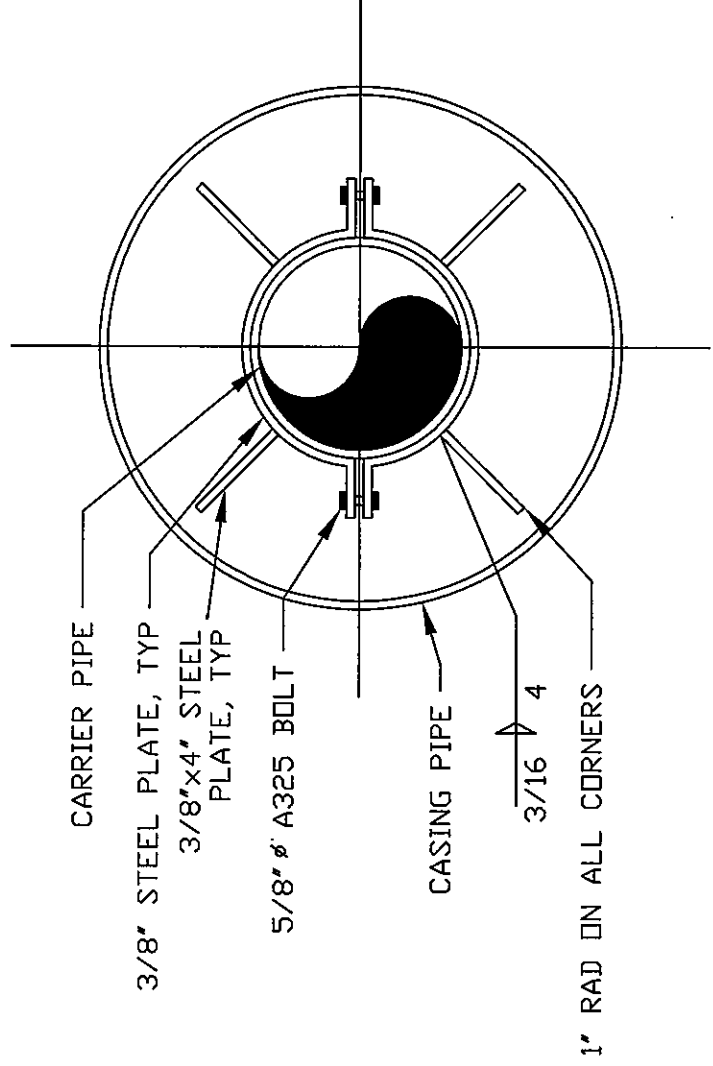
YARD/Vault INSTALLATION FOR BUILDINGS BUILT ON SLAB AND OTHER LOCATIONS WHERE VALVE CANNOT BE INSTALLED IN BASEMENT OR CRAWL SPACE.

CBSO 4 METER BOX OR SIMILAR BOX/Vault OF APPROPRIATE SIZE TO ALLOW REGULAR MAINTENANCE

NOTES:

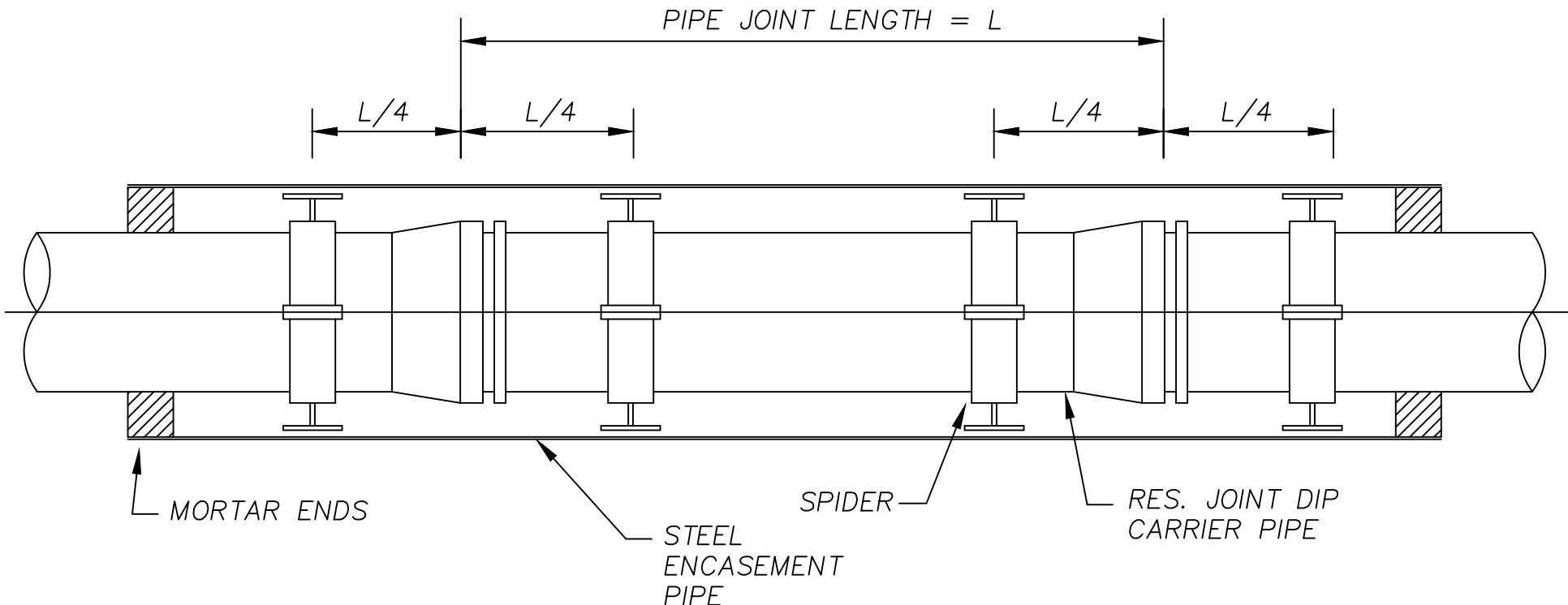
1. INSTALLATIONS OF GREATER THAN 4' IN DEPTH MAY REQUIRE MANHOLE.
2. VALVES MUST BE INSTALLED IN A LOCATION AT WHICH THEY CAN BE CLEANED AND SERVICED REGULARLY.

SGWASA			
UTILITY DEPARTMENT			
TYPICAL SANITARY SEWER SERVICE BACKWATER VALVE INSTALLATION			
DWG. NO.	REVISIONS	DATE	REVISIONS
S-38			
		DATE	DATE



SGWASA	
UTILITY DEPARTMENT	
PIPE ALIGNMENT GUIDE	

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-39				

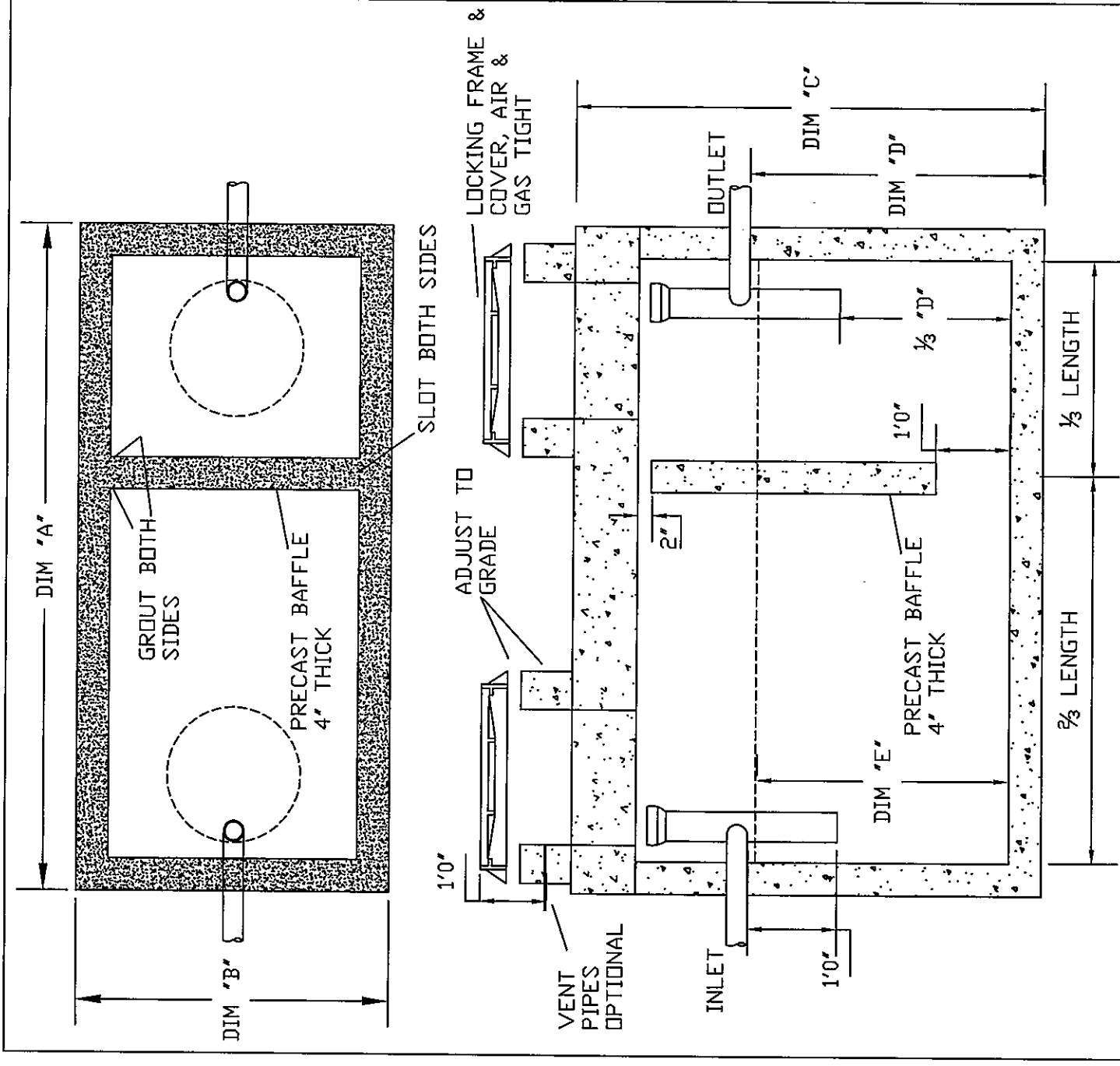


NOTES:

1. SEE SGWASA PIPE ALIGNMENT GUIDE DETAIL S-39 FOR SPIDER DIMENSIONS.
2. ENCASEMENT PIPE SHALL BE HIGH STRENGTH STEEL, SPIRAL WELDED OR SMOOTH-WALL SEAMLESS PER ASTM A 139 AND ASTM A 283, GRADE "B" STEEL WITH A MIN. YIELD STRENGTH OF 35,000-PSI, MIN. WALL THICKNESS OF 0.375-IN.
3. EXTERIOR OF ENCASEMENT PIPE SHALL BE COATED WITH TWO COATS OF A COMPATIBLE BLACK EPOXY WITH A TOTAL DRY FILM THICKNESS OF 10 MILS PER COAT. EPOXY COATING SHALL BE TNEMEC HI-BUILD TNEME-TAR SERIES 46H-413, OR APPROVED EQUAL. PIPE SHALL BE COATED INSIDE AND OUTSIDE IN ACCORDANCE WITH AWWA C203 AND ANY ADDITIONAL REQUIREMENTS OF THE NCDOT.
4. METAL "SPIDER" PIPE ALIGNMENT GUIDE DEVICES SHALL BE INSTALLED IN ALL CASINGS WITH A MINIMUM OF TWO SPIDERS PER CARRIER PIPE JOINT LOCATED $\frac{1}{4}$ OF THE PIPE JOINT LENGTH IN FROM BOTH THE BELL AND SPIGOT ENDS.

SGWASA		
UTILITY DEPARTMENT		
BORE & JACK DETAIL		
DWG. NO.	REVISION	DATE
S-39A		

BORE & JACK DETAIL



DETAIL 40A CONTAINS THE SIZING CHART FOR THE OIL/GREASE TRAP

SGWASA			
UTILITY DEPARTMENT			
OIL AND GREASE TRAP SIZING			
DWG. NO.	REVISIONS	DATE	REVISIONS
S-40			
			DATE

SIZING CHART

CAP (GAL.)	DIM "A"	DIM "B"	DIM "C"	DIM "D"	DIM "E"
600	7'0"	4'8"	7'0"	3'6"	3'2"
750	7'0"	4'8"	7'0"	4'3"	3'11"
1000	9'0"	5'0"	7'2"	4'2"	3'10"
1250	9'0"	5'0"	7'2"	5'2"	4'10"
1500	11'2"	5'8"	7'2"	4'4"	4'0"
1750	11'2"	5'8"	7'2"	4'11"	4'7"
2000	12'8"	6'8"	8'0"	4'7"	3'10"
2500	12'8"	6'8"	8'0"	5'6"	4'9"
2750	12'8"	6'8"	8'0"	6'0"	5'3"
3000	15'7"	9'7"	8'6.5"	5'0"	3'9"
4000	15'7"	9'7"	8'6.5"	6'3"	5'0"
5000	19'11"	9'11"	8'11"	6'2"	4'9"
6000	19'11"	9'11"	10'5"	7'2"	5'9"

NOTES:

1. CONCRETE: 28 DAY $f'_c=4500$ psi
2. REBAR: ASTM A-615 GRADE 60
3. MESH: ASTM A-185 GRADE 65
4. DESIGN: ACI318-83 BUILDING CODE
 ASTM C-857 MINIMUM STRUCTURAL DESIGN
 LOADING FOR UNDERGROUND PRECAST
 CONCRETE UTILITY STRUCTURES
5. LOADS: H-20 TRUCK WHEEL WITH 30% IMPACT PER AASHTO
6. FILL WITH CLEAN WATER PRIOR TO START UP OF SYSTEM
7. CONTRACTOR TO SUPPLY AND INSTALL ALL PIPING AND
 SANITARY TEES, 4 CLEAN OUTS FOR CLEANING TOWARD
 TRAP, AND FOR CLEANING AWAY FROM TRAP ON BOTH THE
 INLET AND OUTLET/ALT. DUAL SWEEP CLEAN OUTS.
8. GRAY WATER ONLY, BLACK WATER SHALL BE CARRIED
 BY SEPARATE SEWER.

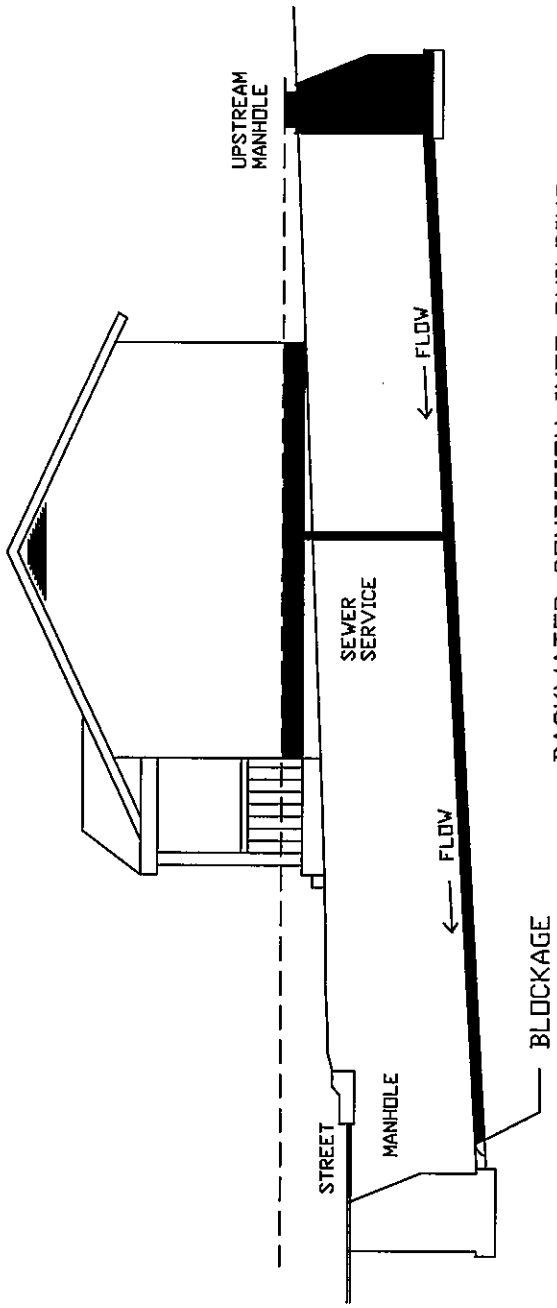
SGWASA

UTILITY DEPARTMENT

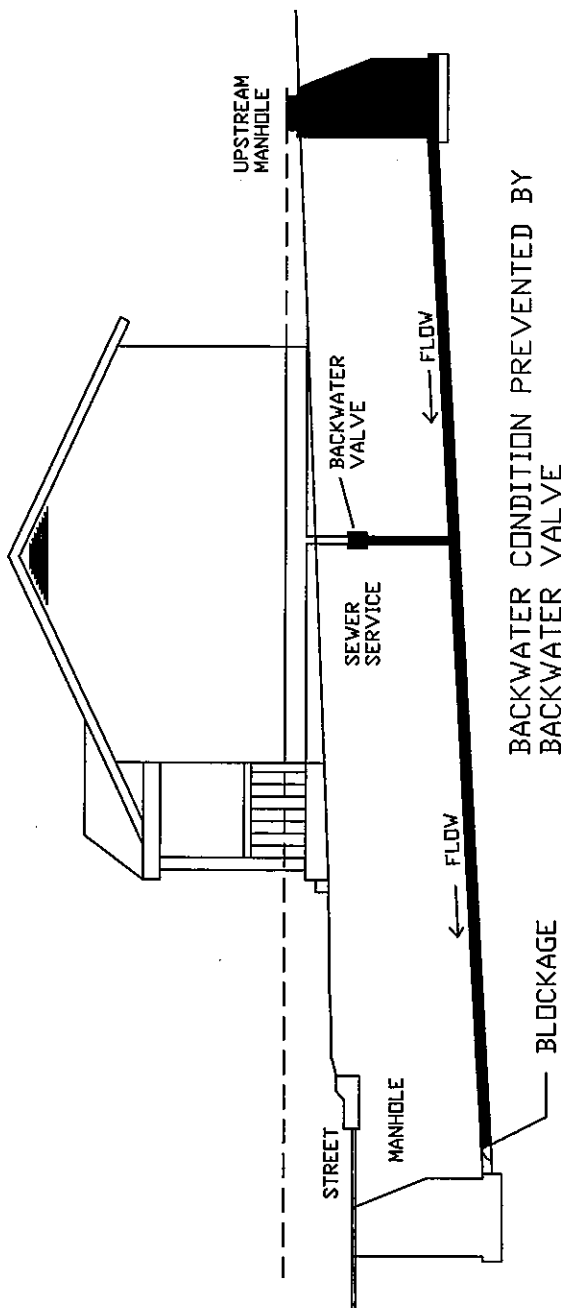
OIL AND GREASE TRAP SIZING

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-40A				

BUILDING WITH NEXT UPSTREAM MANHOLE HIGHER THAN THE LOWEST DRAIN AND BLOCKAGE IN SEWER MAIN

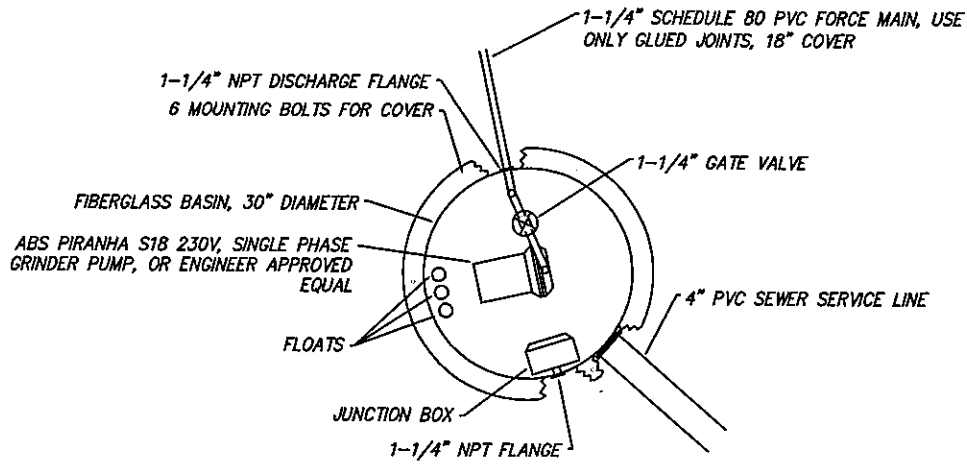


BACKWATER CONDITION INTO BUILDING WITHOUT BACKWATER VALVE

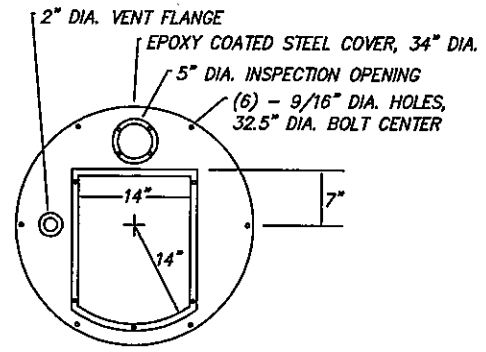


BACKWATER CONDITION PREVENTED BY BACKWATER VALVE

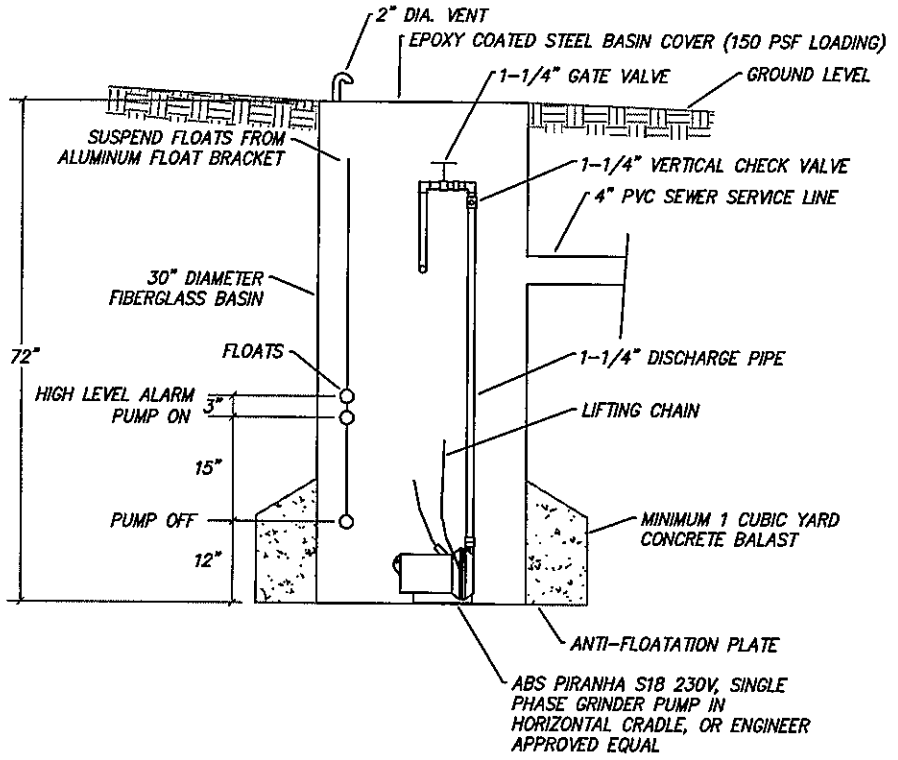
SGWASA	
UTILITY DEPARTMENT	
TYPICAL SEWER SERVICE REQUIRING BACKWATER VALVE	
DWG. NO.	REVISIONS
S-41	
DATE	REVISIONS
DATE	REVISIONS



PLAN - COVER REMOVED

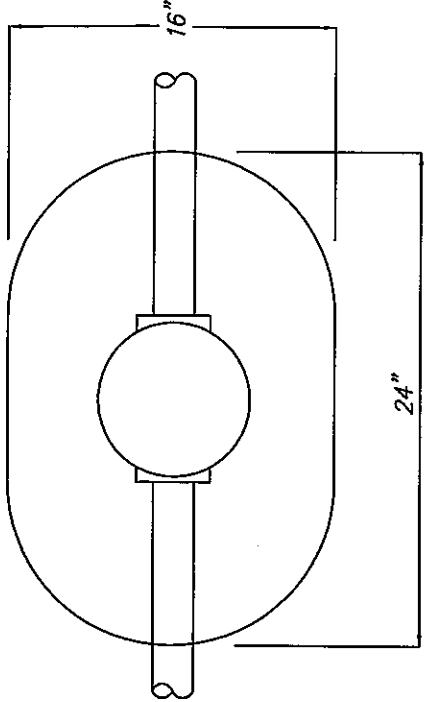


COVER DETAIL

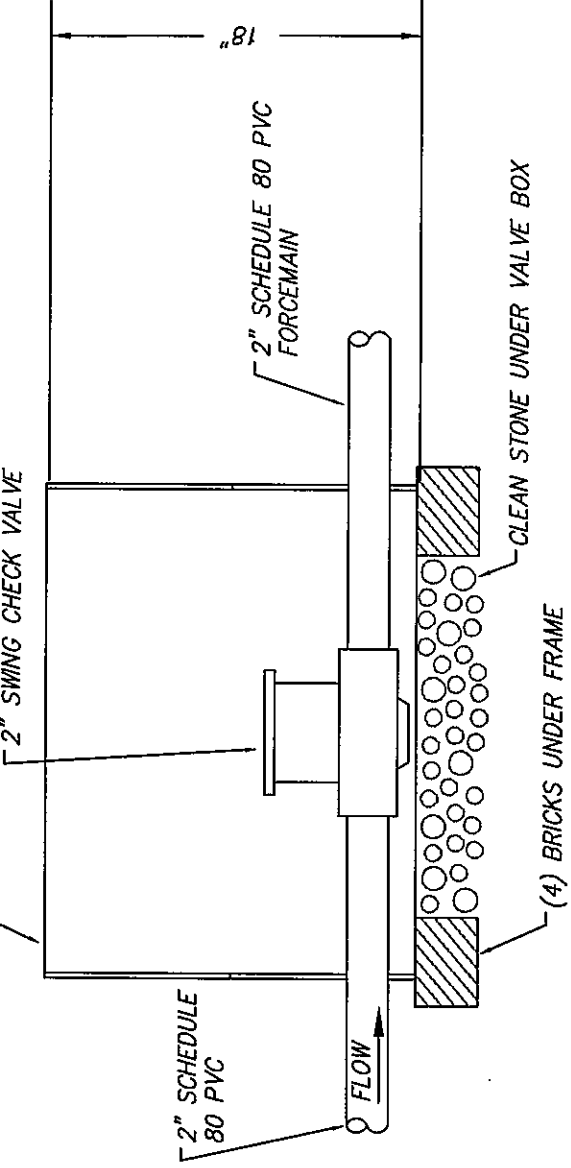


SECTION

SGWASA				
UTILITIES DEPARTMENT				
TYPICAL RES. PUMP STATION PUMP STATION DETAIL				
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-42A				

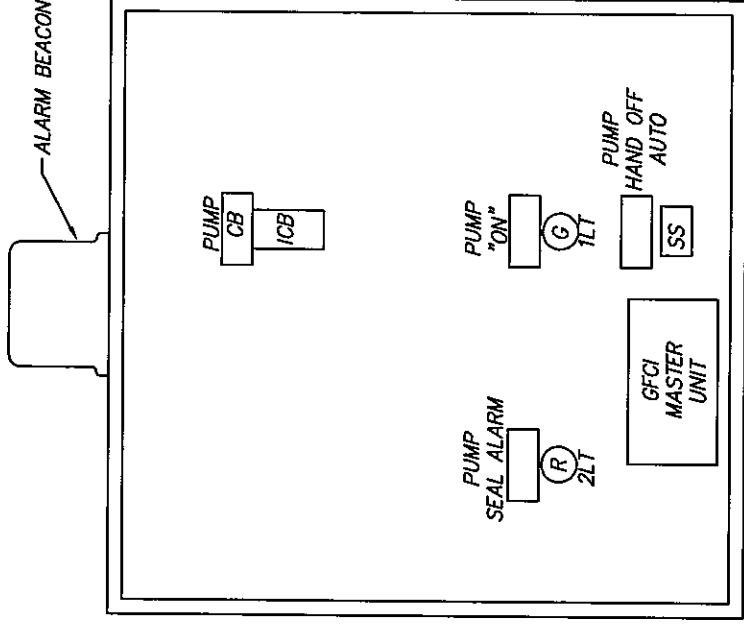


24"x16"x18" DEEP FRAME AND COVER,
SIMILAR TO VULCAN V-8415, SIMILAR SIZE
FIBERGLASS BOX AND COVER MAY BE USED



2" SWING CHECK VALVE DETAIL

SGWASA			
UTILITIES DEPARTMENT			
TYPICAL RES. PUMP STATION SWING CHECK VALVE DETAIL			
DWG. NO.	REVISIONS	DATE	REVISIONS
S-42B			
			DATE



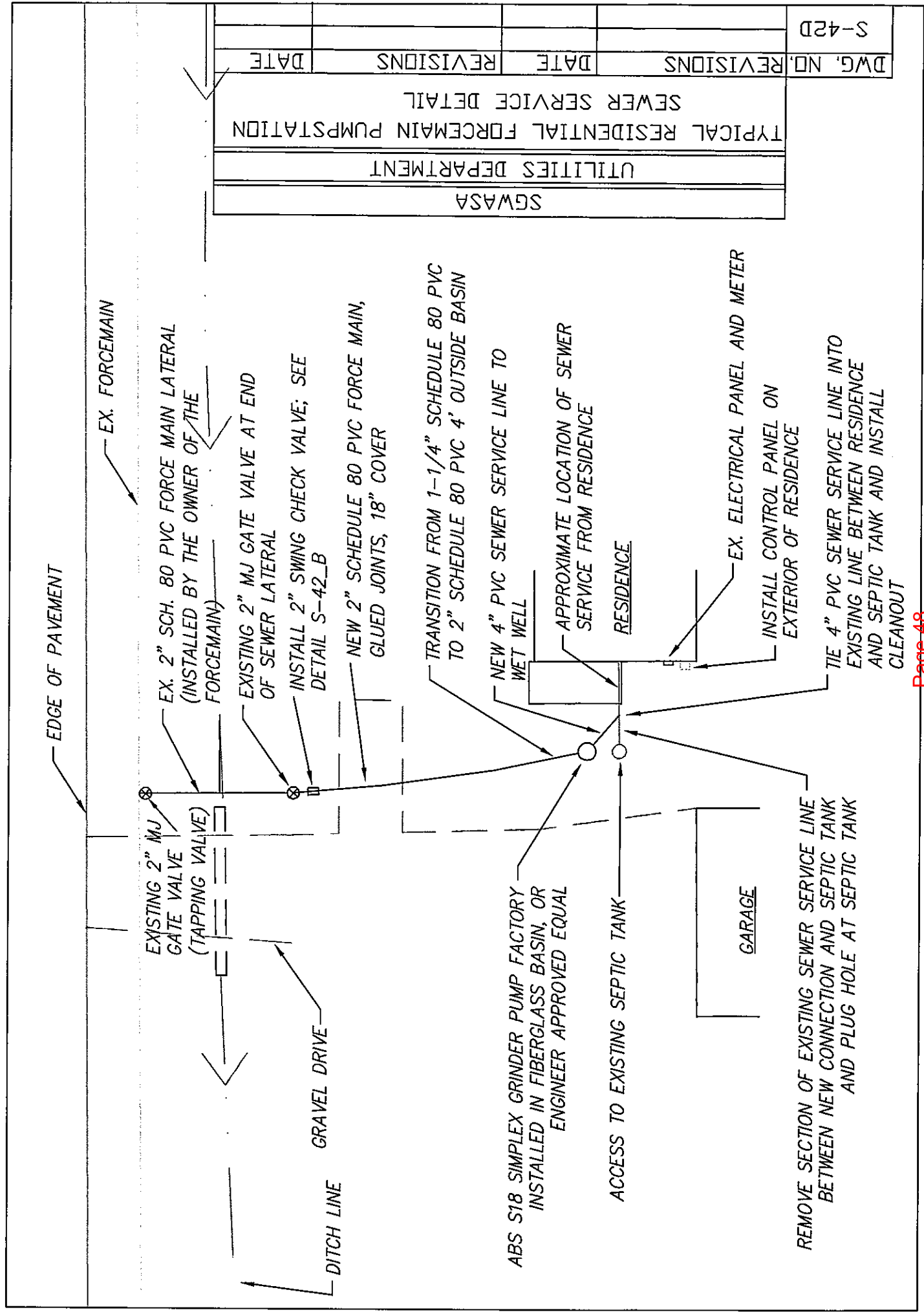
DEADFRONT LAYOUT

NOTES:

- * NEMA 4X FIBERGLASS ENCLOSURE (18" HIGH X 16" WIDE) WITH ALUMINUM INNER DEADFRONT.
- * EXTERIOR LOCKABLE HASP.
- * UL 508 LISTED INDUSTRIAL CONTROL PANEL.
- * THERMAL MAGNETIC CIRCUIT BREAKER FOR PUMP.
- * IEC RATED CONTACTOR, AMBIENT COMPENSATED THERMAL OVERLOAD RELAY FOR PUMP.
- * KLIXON (INTERNAL MOTOR THERMAL PROTECTION) WIRED TO AUTOMATICALLY SHUTDOWN PUMP UPON AN OVERTEMP CONDITION.
- * START CAPACITORS, RUN CAPACITORS, AND START RELAYS AS REQUIRED FOR SINGLE PHASE APPLICATION.
- * HAND-OFF-AUTO SELECTOR SWITCH.
- * GREEN PUMP ON INDICATOR LIGHT.
- * RED SEAL FAILURE INDICATOR LIGHT.
- * SOLID STATE SEALMINDER WATER SENSING RELAYS.
- * FLASHING HIGH LEVEL ALARM BEACON AND ALARM HORN WITH SILENCE SWITCH.
- * FUSE FOR PROTECTION OF 120VAC CONTROL CIRCUIT.
- * 600 VOLT RATED TERMINALS FOR FIELD WIRING OF PANEL.

CONTROL PANEL DETAIL

SGWASA			
UTILITIES DEPARTMENT			
TYPICAL RES. PUMP STATION CONTROL PANEL DETAIL			
DWG. NO.	REVISIONS	DATE	REVISIONS
S-42C			
			DATE



SGWASA		UTILITIES DEPARTMENT		TYPICAL RESIDENTIAL FORCEMAIN PUMPSTATION		SEWER SERVICE DETAIL	
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE	REVISIONS	DATE	REVISIONS
S-42D							