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**CITY OF PUNTA GORDA**

UTILITY DEPARTMENT  
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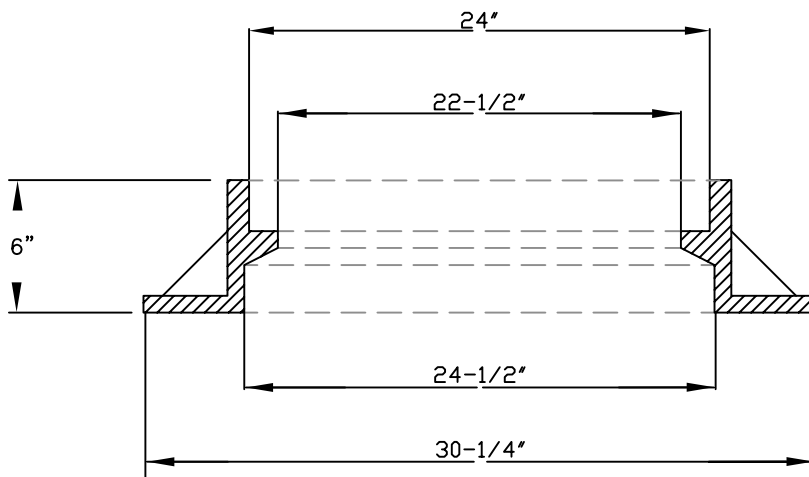
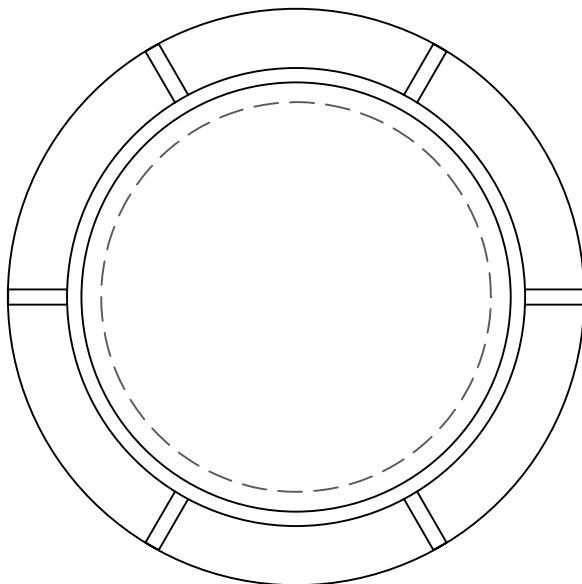
SANITARY SEWER

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SS-0

REV BY	DATE
TIM S	4/23/08

# MANHOLE FRAME RING



NOTES;

1. US FOUNDRY 170 E MANHOLE FRAME.
2. MATERIAL= ASTM-A48 CLASS 35A GRAY IRON.
3. FRAME WT.= 150 lbs. APROX.

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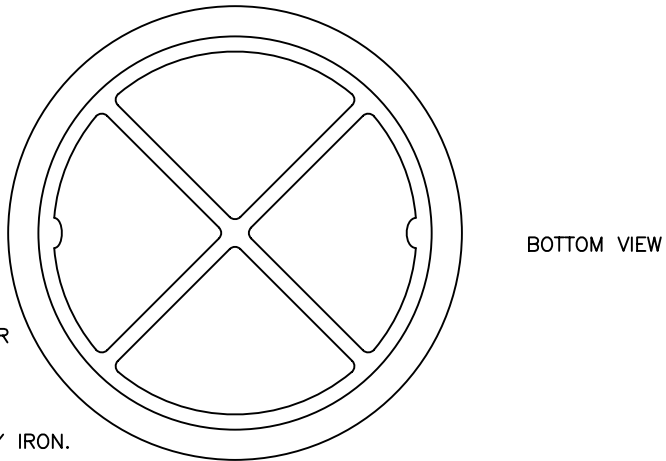
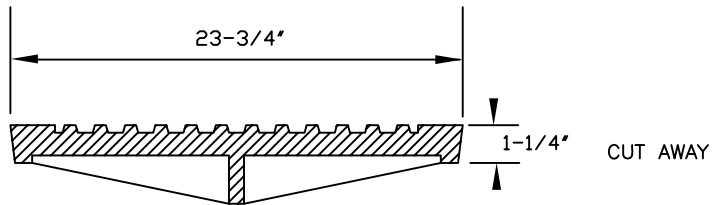
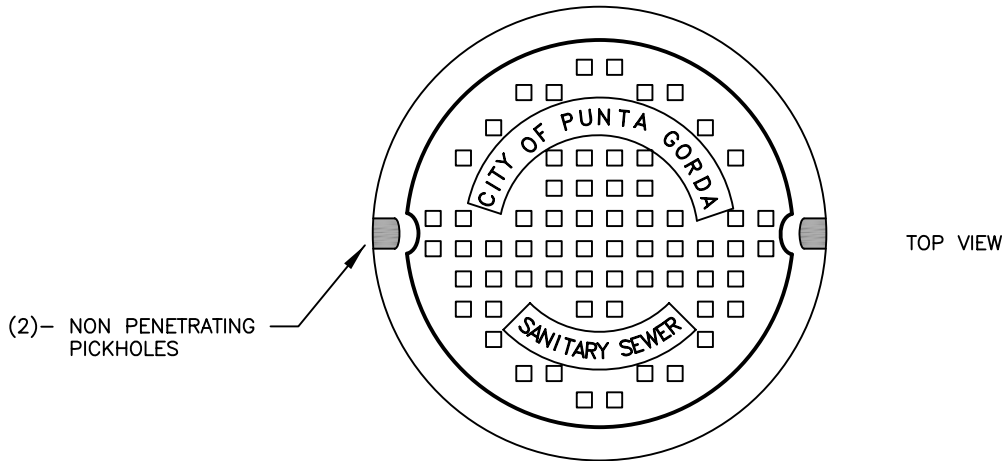
SANITARY SEWER

MANHOLE FRAME RING

SS-1

REV BY	DATE
TIM S	07/09/08

# MANHOLE COVER



**NOTES**

1. US FOUNDRY- 170 E MANHOLE COVER
2. COVER WT. 130 LBS (APROX.)
3. RING WT. 150 LBS (APROX.)
4. MATERIAL; ASTM-A48 CLASS 35B GRAY IRON.

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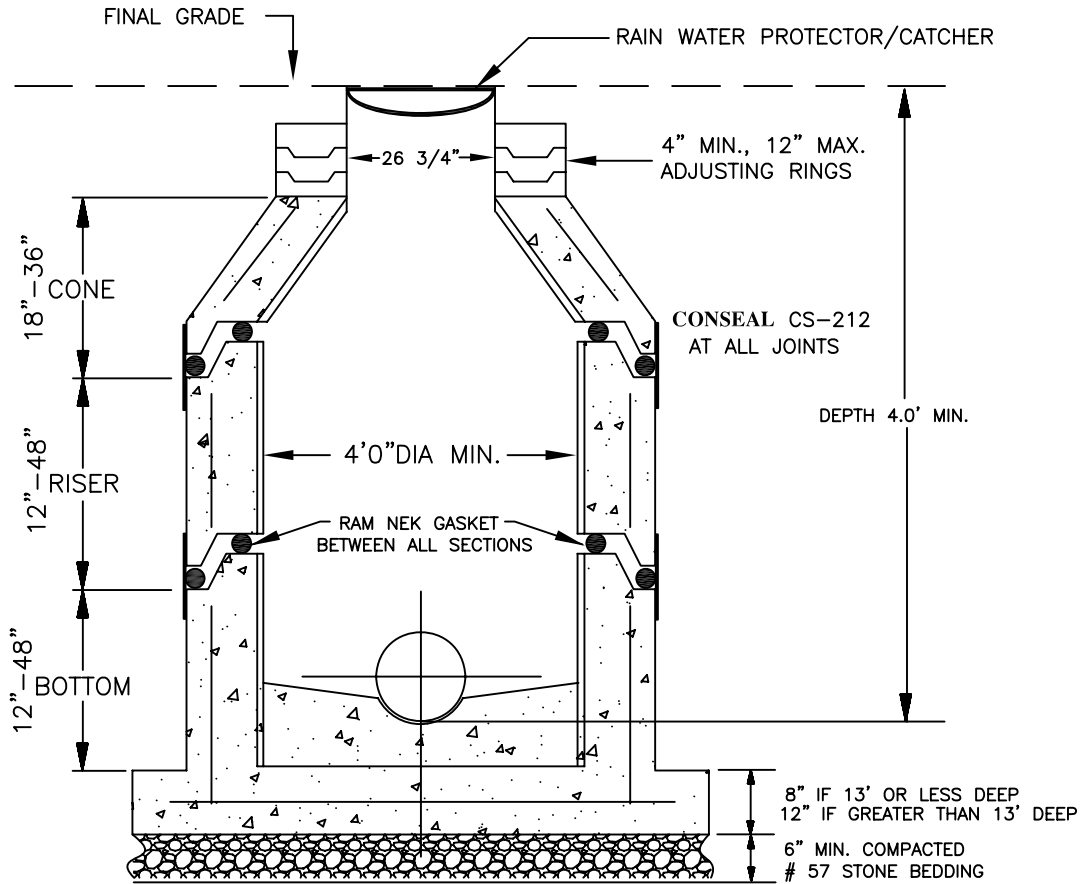
SANITARY SEWER

MANHOLE COVER

SS-2

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TIM S	07/09/08

# TYPICAL MANHOLE



SECTION

NOTES:

1. MANHOLE SHALL CONFORM TO A.S.T.M. C-478, CONCRETE SHALL BE CLASS "A" TYPE II, 4000 PSI.
2. INTERIOR/EXTERIOR OF MANHOLE SHALL BE COATED WITH 2 COATS OF BITMASTIC (COAL TAR EPOXY)
3. INTERIOR OF MASTER-MANHOLE SHALL BE COATED WITH "I.E.T." OR "SEWPER COAT".
4. ALL EXTERIOR JOINTS SHALL BE WRAPPED WITH CONSEAL CS-212 FLEXIBLE JOINT SEALANT.
5. FLEXIBLE GASKET CONNECTIONS FOR CONNECTING PIPES SHALL MEET THE A.S.T.M. C-923 REQUIREMENTS.
6. FOR MANHOLE FRAME RING & COVER INFO, SEE DETAIL SS-1.
7. ADJUSTING RINGS SHALL BE MADE OF SOLID CONCRETE, NOT BRICKS.
8. INVERT BENCH SHALL BE SOLID CONCRETE NO RED BRICK FILLERS.
9. FOR INVERT FLOW DESIGN AND CONSTRUCTION, SEE DETAIL SS-4

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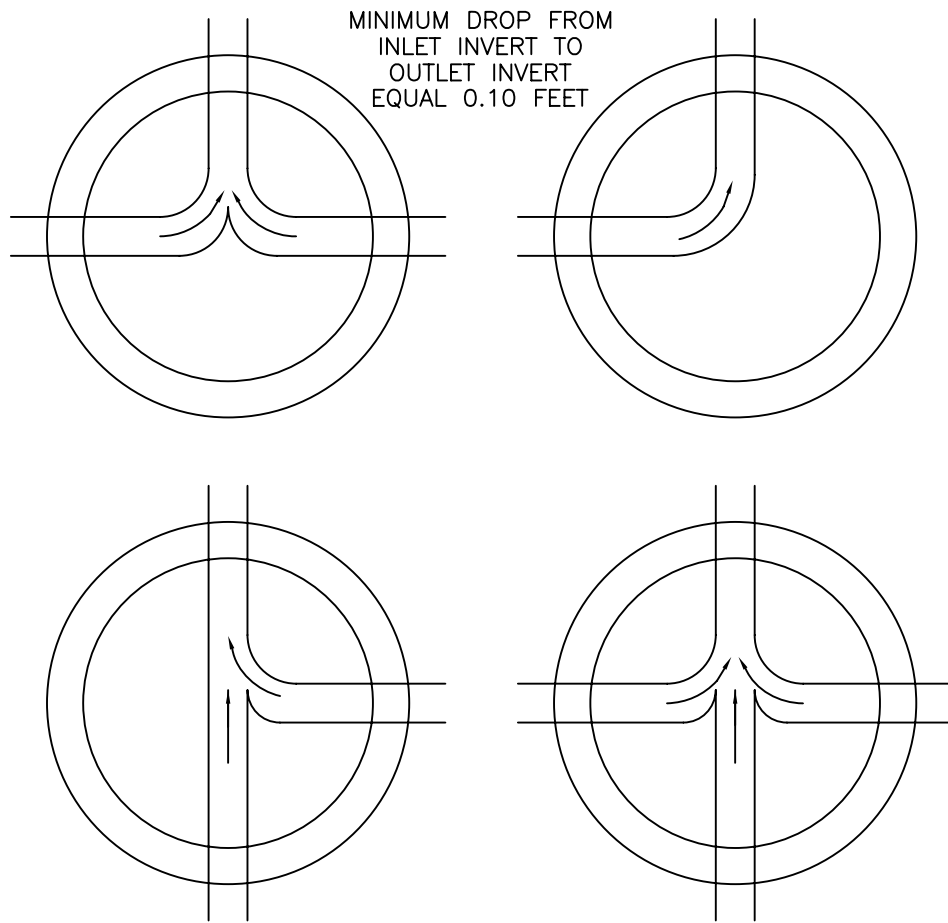
SANITARY SEWER

PRECAST MANHOLE  
 CONCENTRIC

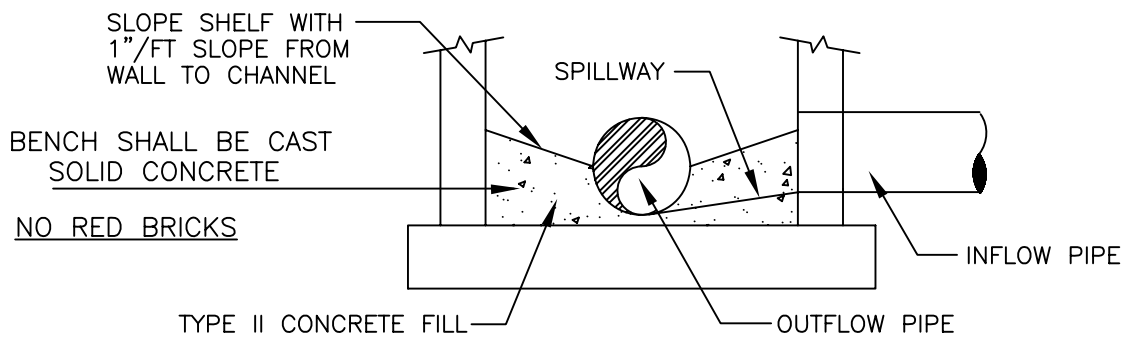
SS-3

REV BY	DATE
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# CHANNELIZATION OF MANHOLE INVERT



PLAN OF INVERT AND FLOW CHANNELS  
DEPTH OF CHANNELIZATION SHALL BE  
EQUAL TO 0.8 OF PIPE DIA. (MIN.)



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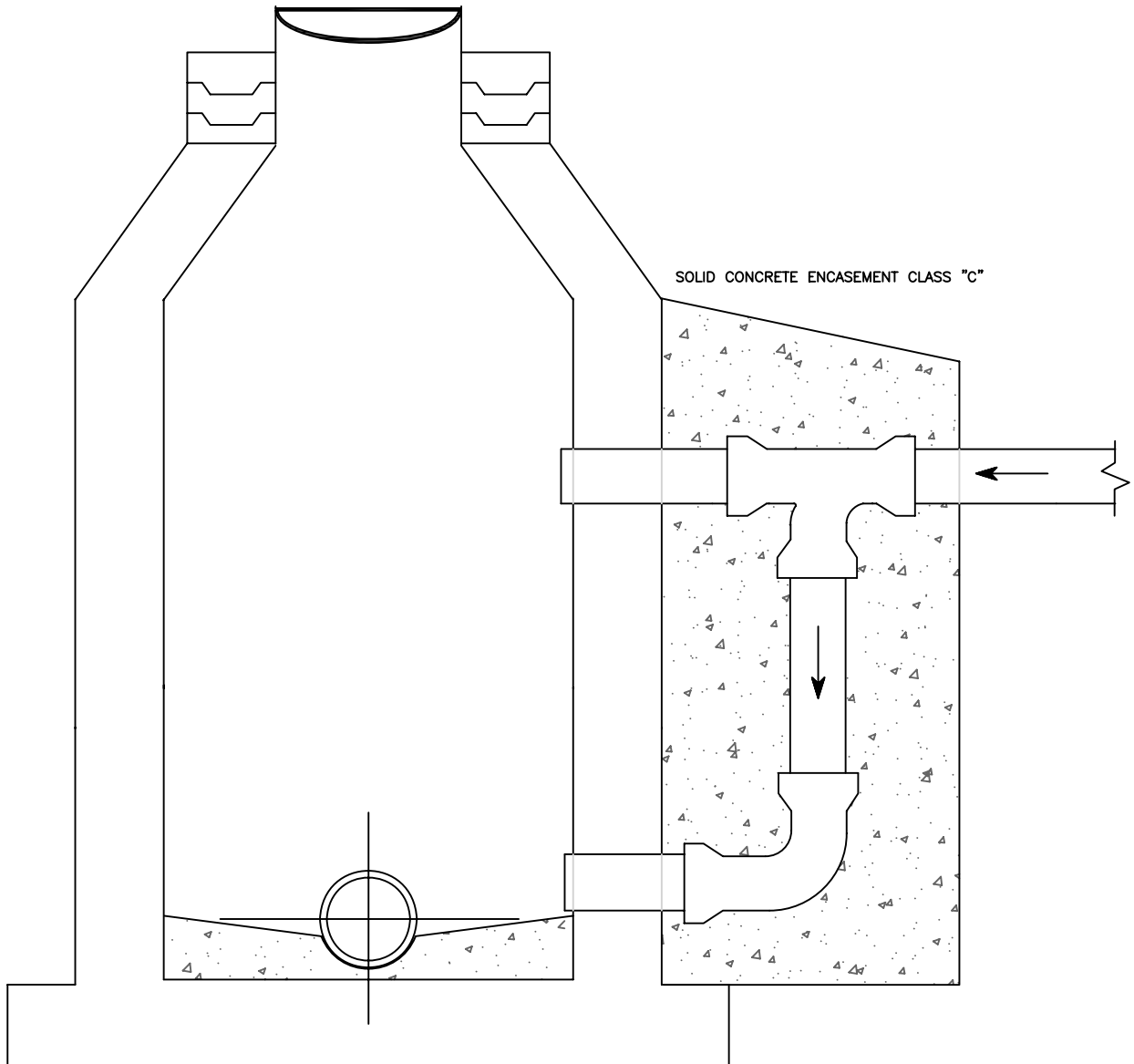
SANITARY SEWER

MANHOLE FLOW  
CHANNELS

SS-4

REV BY	DATE
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# TYPICAL OUTSIDE DROP MANHOLE



SEE PUNTA GORDA DETAIL SS-3 FOR TYPICAL MANHOLE CONSTRUCTION STANDARDS

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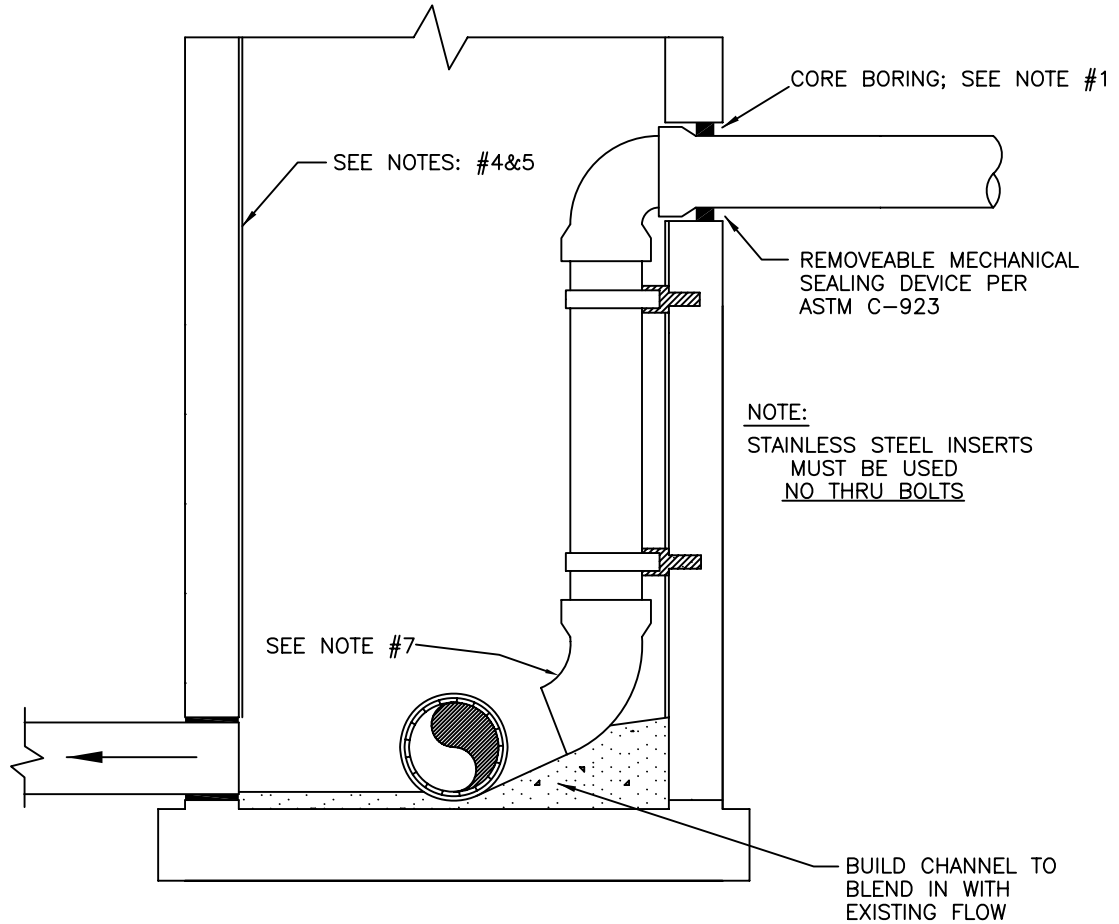
SANITARY SEWER

MANHOLE DROP 2.5'  
OR GREATER

SS-5

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# TYPICAL INSIDE DROP MANHOLE



**NOTES:**

1. ALL PIPING ENTERING EXISTING STRUCTURES SHALL BE ACCOMPLISHED BY MECHANICAL ROTARY CORE BORING . AFTER INSTALLATION OF PIPING. ALL PIPE OPENINGS SHALL HAVE RESILIENT SEALS AS PER ASTM C-923.
2. ALL FITTINGS SHALL BE AWWA C-907, DROP PIPE SHALL BE AWWA C-900 (CLASS 150, DR 18) WITH PIPE BELL RESTRAINTS.
3. ALL HARDWARE SHALL BE 316 STAINLESS STEEL.
4. MANHOLES THAT HAVE A FORCE MAIN ENTERING SHALL HAVE INTERIOR COATED WITH I.E.T. OR SEWPER COAT.
5. MANHOLES WITH NEW GRAVITY INSIDE DROP SHALL BE RECOATED WITH BITMASTIC.
6. ADAPTORS CONNECTING DIFFERENT PIPING MUST BE MANUFACTURED FOR THIS PURPOSE; SUBMIT DETAILS TO ENGINEER FOR APPROVAL.
7. FOR WET WELL INSTALLATIONS, 45° BEND SHALL BE OMITTED. INVERT OF FORCE MAIN SHALL EXTEND TO "PUMP OFF" LEVEL.

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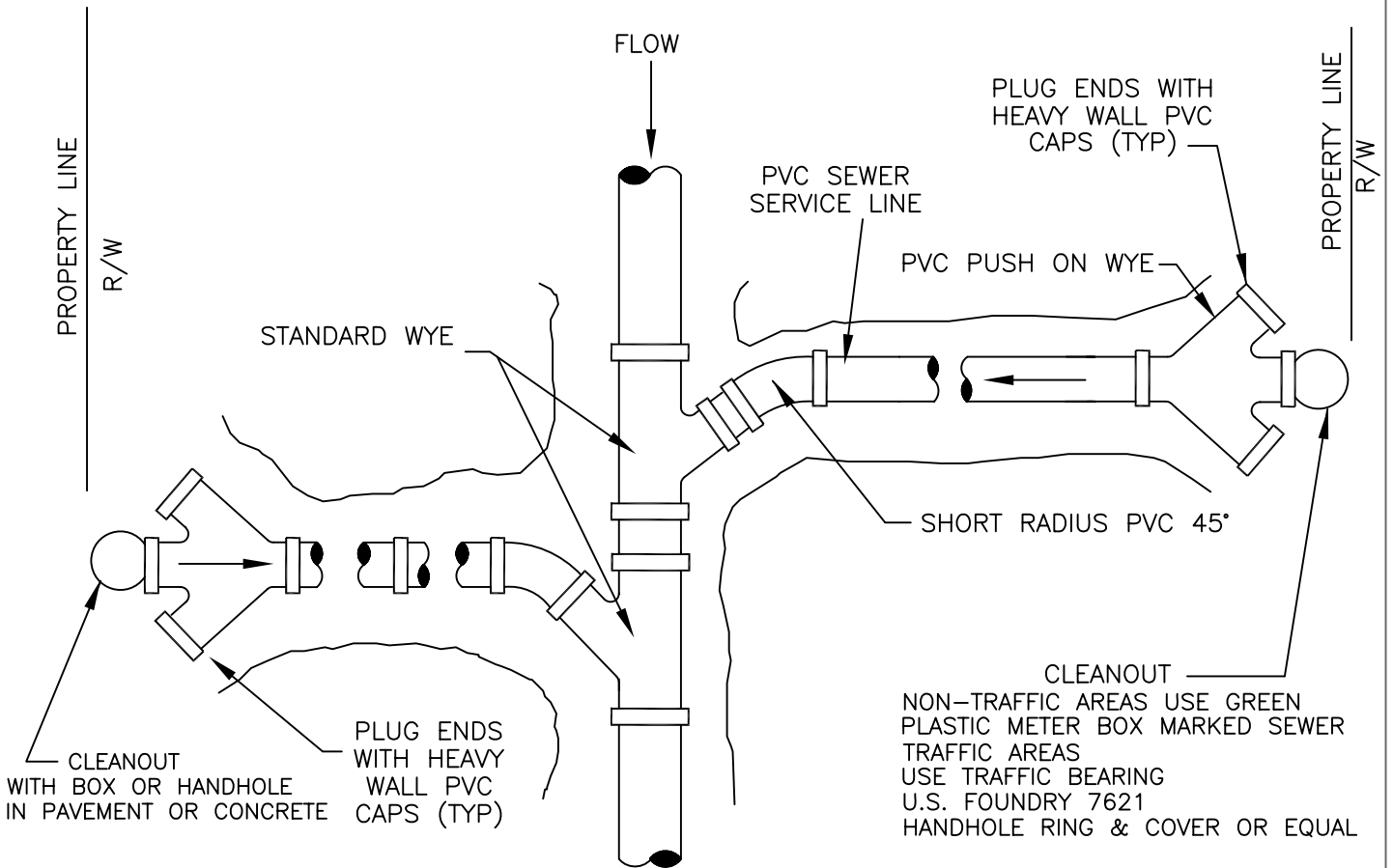
SANITARY SEWER

FORCE MAIN INSIDE  
 DROP CONNECTION

SS-6

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# STANDARD SEWER SERVICE LATERAL (TYP.PLAN)



**NOTE:** 1. ALL FITTINGS SHALL BE PVC  
PUSH ON GASKETED TYPE

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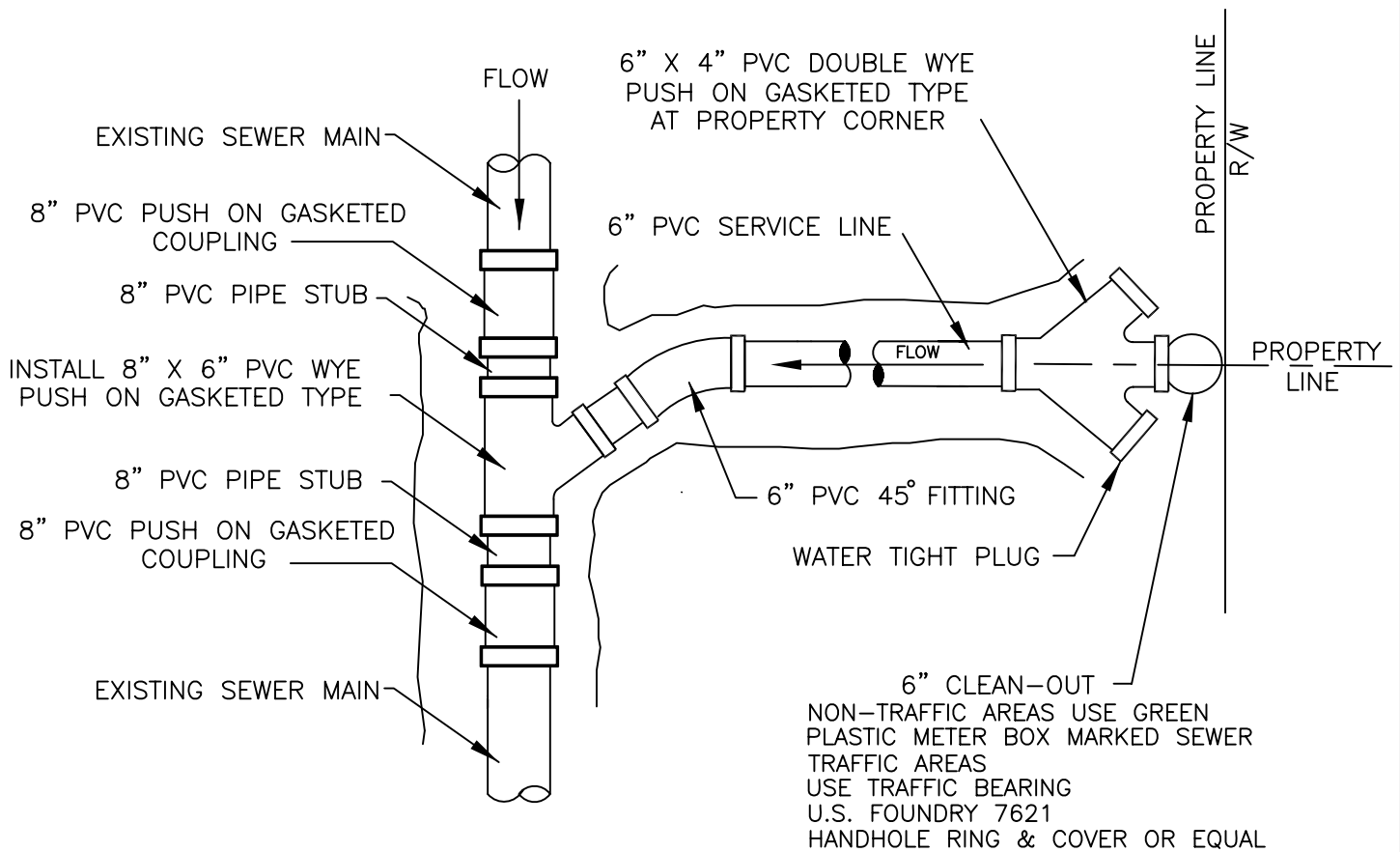
SANITARY SEWER

STANDARD SEWER  
SERVICE LATERALS

SS-7

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TIM S	04/23/08





**NOTES:**

1. PVC PIPE AND FITTINGS SHALL BE PUSH JOINT WITH RUBBER GASKET PER ASTM D 3034.
2. WHEN SERVICE LINE IS INSTALLED BY DIRECTIONAL DRILL METHOD MINIMUM PIPE SLOPE SHALL BE 2% AND PIPE MATERIAL MAY BE PVC D 1785 SCHEDULE 40 OR HDPE SDR 25.

**NEW SERVICE LATERAL  
INSTALLED IN EXISTING MAIN**

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SANITARY SEWER

NEW SERVICE LATERAL  
TO EXISTING MAIN

SS-8

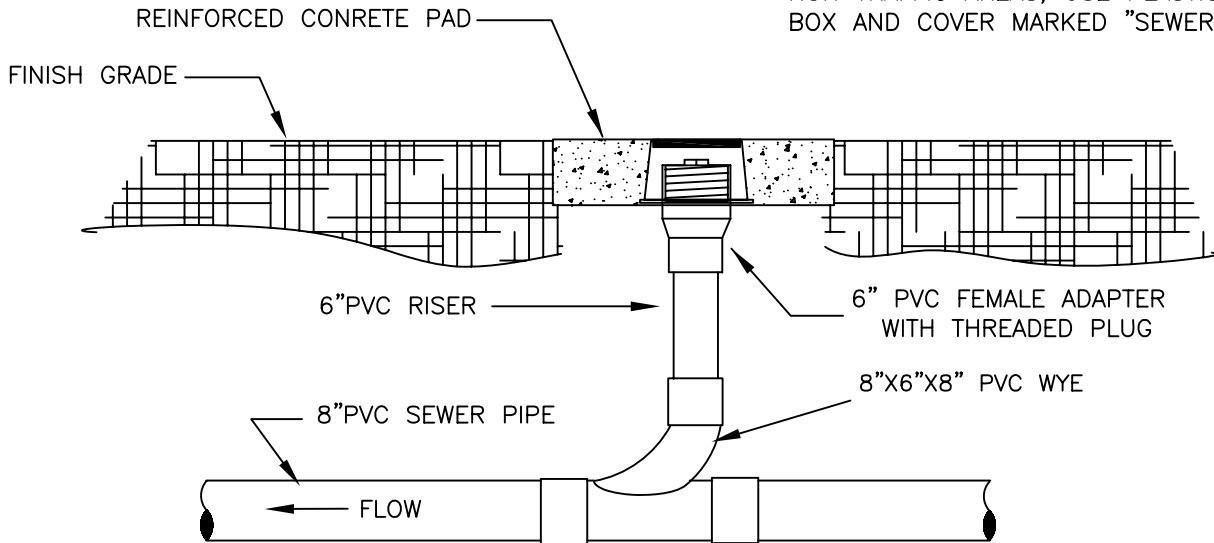
REV BY	DATE

# SEWER CLEAN-OUT COVERS

COMMERCIAL;  
ALL AREAS, USE CAST IRON HAND HOLE AND COVER (U.S. FOUNDRY 7621 OR EQUAL) WITH REINFORCED 30" X 30" CONCRETE PAD.

RESIDENTIAL;  
TRAFFIC AREAS, USE CAST IRON HAND HOLE AND COVER (7621 OR EQUAL) W/PAD.

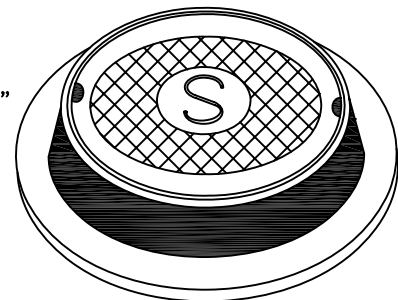
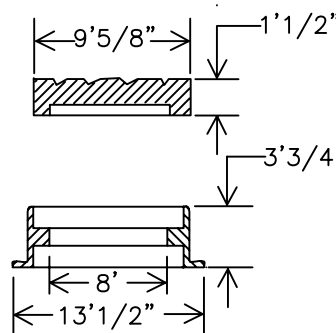
NON TRAFFIC AREAS, USE PLASTIC METER BOX AND COVER MARKED "SEWER".



## USF 7621 REVERSIBLE HANDHOLE RING AND COVER

COVERS ARE MARKED WITH "S"

COVER TYPE	LOAD RATING	COVER WEIGHT	TOTAL WEIGHT
FE	HEAVY DUTY	20	45



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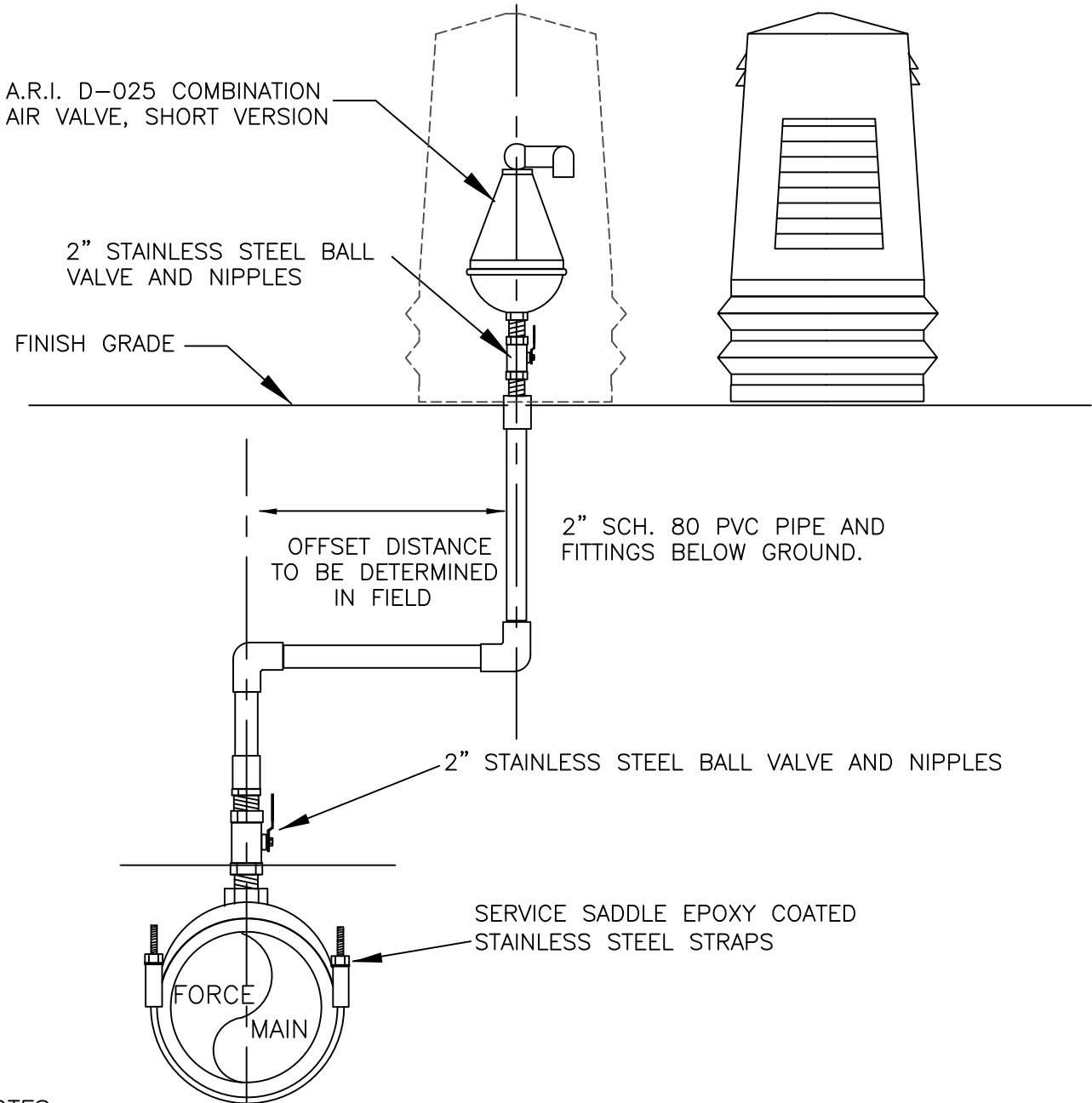
SANITARY SEWER

SEWER CLEAN-OUT  
DETAIL

SS-9

REV BY	DATE
TIM S	04/23/08

GREEN WEATHER COVER  
 MANUFACTURED BY WEATHER PLUS CORP  
 MODEL RARVH30G  
 OR APPROVED EQUAL



**NOTES:**

1. AIR RELEASE VALVES ARE REQUIRED ON 4" AND LARGER FORCE MAINS.
2. WHERE POSSIBLE ARV IS TO BE MOUNTED ABOVE GROUND.
3. ARV TO BE SIZED ACCORDING TO MANUFACTURER'S RECOMMENDATION FOR FORCE MAIN SIZE.

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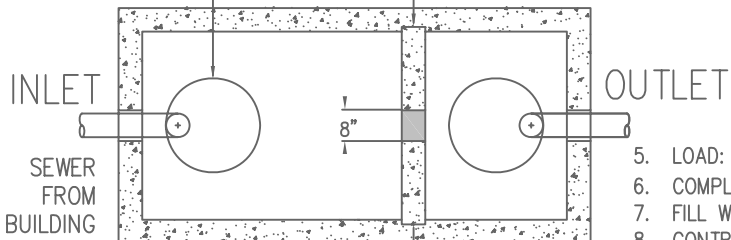
FORCE MAIN  
 AIR RELEASE VALVE

SS-10

REV BY	DATE
TIM S	03/07/11

24" CLEAR ACCESS  
OPENING (TYP)

PRECAST  
BAFFLE 3"  
THICK



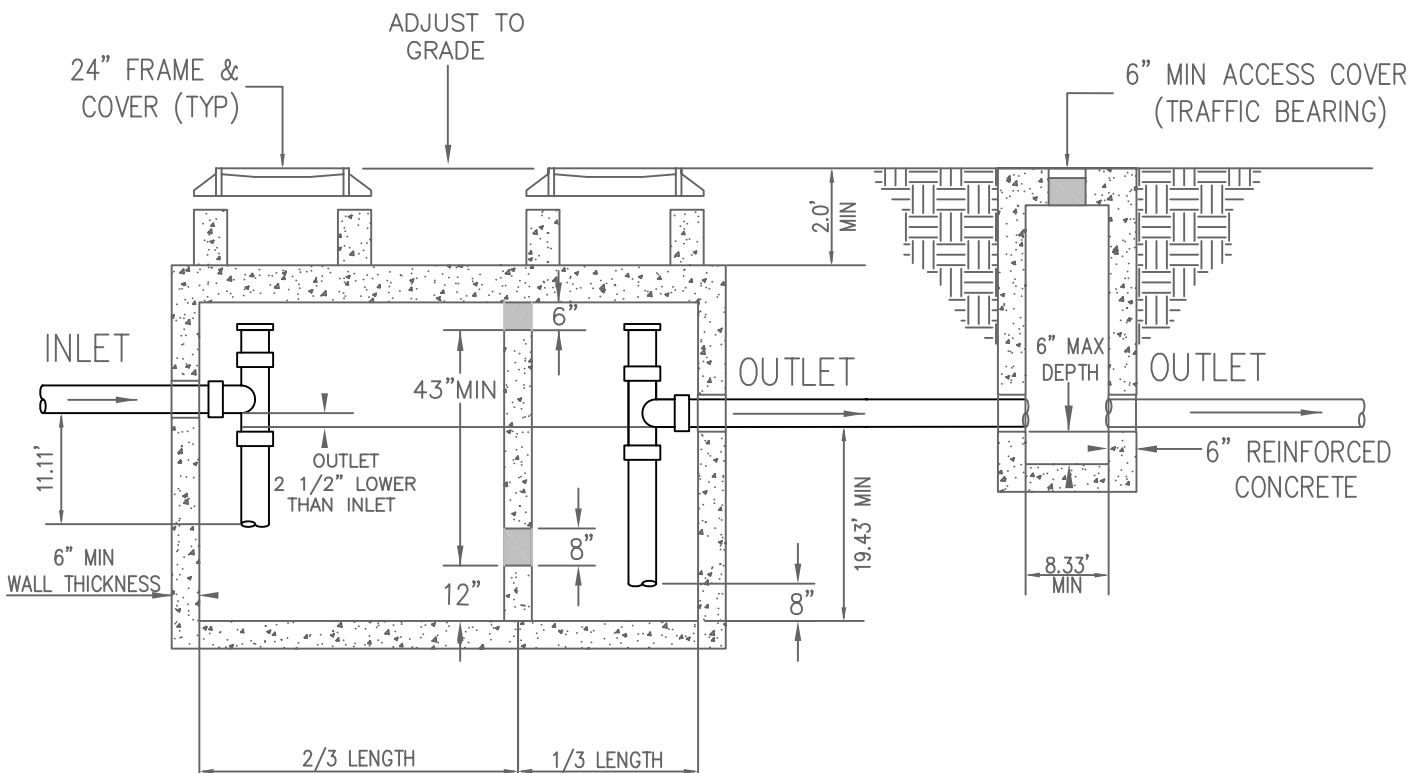
SLOT BOTH SIDES

PLAN VIEW

NOT TO SCALE

NOTES:

1. CONCRETE: 4,500 P.S.I. 28 DAY COMPRESSIVE STRENGTH
2. REBAR: ASTM A-615 GRADE 60
3. MESH: ASTM A-185 GRADE 65
4. DESIGN: = CHARLOTTE COUNTY CODE (AS AMENDED) SEC. 3-8-150  
= FLORIDA BUILDING CODE - PLUMBING, CHAPTER 10  
= PLUMBING AND DRAINAGE INSTITUTE G-101  
= ASTM C-857 MINIMUM STRUCTURAL DESIGN LOADING FOR UNDERGROUND PRECAST CONCRETE UTILITY STRUCTURES  
= 6-INCH MINIMUM WALL THICKNESS  
= PREVENT FLOTATION WHEN EMPTY
5. LOAD: H-20 TRUCK WHEEL w/ 30% IMPACT PER A.A.S.H.T.O.
6. COMPLETE STRUCTURE AND PIPING TO BE WATERTIGHT.
7. FILL W/ CLEAN WATER PRIOR TO START UP OF SYSTEM.
8. CONTRACTOR TO SUPPLY AND INSTALL ALL PIPING, SANITARY TEES, AND CLEANOUTS FOR CLEANING TOWARDS INTERCEPTORS AND FOR CLEANING AWAY FROM INTERCEPTOR ON BOTH THE INLET AND OUTLET. (ALT: DUAL SWEEP CLEAN OUTS)
9. GRAY WATER ONLY - BLACK WATER SHALL BE CARRIED BY SEPARATE SEWER TO A POINT DOWNSTREAM OF THE GREASE INTERCEPTOR.
10. MULTIPLE TANKS MAY BE REQUIRED PER THE SIZING FORMULA. (MULTIPLE TANKS SHALL BE IN SERIES)



SECTION VIEW

NOT TO SCALE

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SANITARY SEWER

GREASE TRAP DESIGN

SS-11

REV BY	DATE
T.S.	01/29/08

## GREASE INTERCEPTOR SIZING FORMULA ( PER FLORIDA BUILDING CODE )

(S) X (GS) X (HR/12) X (LF) = EFFECTIVE CAPACITY OF GREASE INTERCEPTOR IN GALLONS

\*NOTE; IF DISCHARGED INTO PUBLIC UTILITY, MULTIPLY FINAL GALLONS BY 0.75.\*

1. "S" = NUMBER OF SEATS IN DINING AREA.
2. "GS" = GALLONS OF WASTE WATER PER SEAT. (USE 25 GALS. FOR RESTAURANTS WITH CHINA DISHES AND/OR AUTOMATIC DISHWASHER. USE 10 GALS. FOR RESTAURANTS WITH PAPER OR BASKETS AND NO DISHWASHER.)
3. "HR" = NUMBER IN HOURS RESTAURANT IS OPEN.
4. "LF" = LOADING FACTOR. (USE 2.00 FOR INTERSTATE HIGHWAY: 1.50 OTHER FREEWAYS: 1.25 RECREATIONAL AREA: 1.00 MAIN HIGHWAY: 0.75 OTHER HIGHWAY.)

### OTHER ESTABLISHMENTS WITH COMMERCIAL KITCHENS

(M) X (GM) X (LF) = EFFECTIVE CAPACITY OF GREASE INTERCEPTOR IN GALLONS

\*NOTE; IF DISCHARGED INTO PUBLIC UTILITY, MULTIPLY FINAL GALLONS BY 0.75.\*

1. "M" = MEALS PREPARED PER DAY.
2. "GM" = 5 GALLONS OF WASTE WATER PER MEAL
3. "LF" = LOADING FACTOR. (USE 1.00 WITH DISHWASHING MACHINE: 0.75 WITHOUT DISHWASHING MACHINE.)

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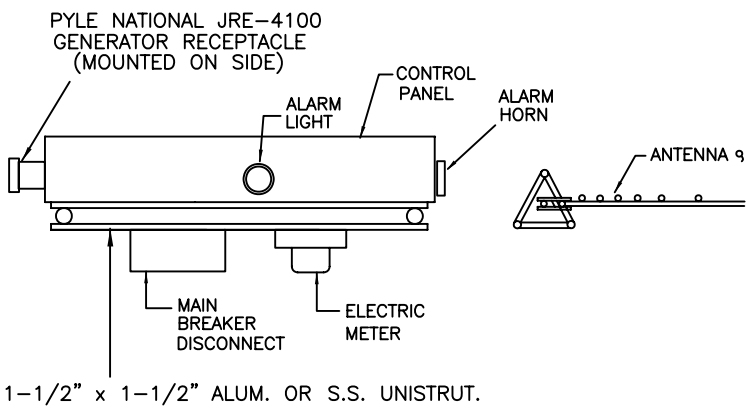
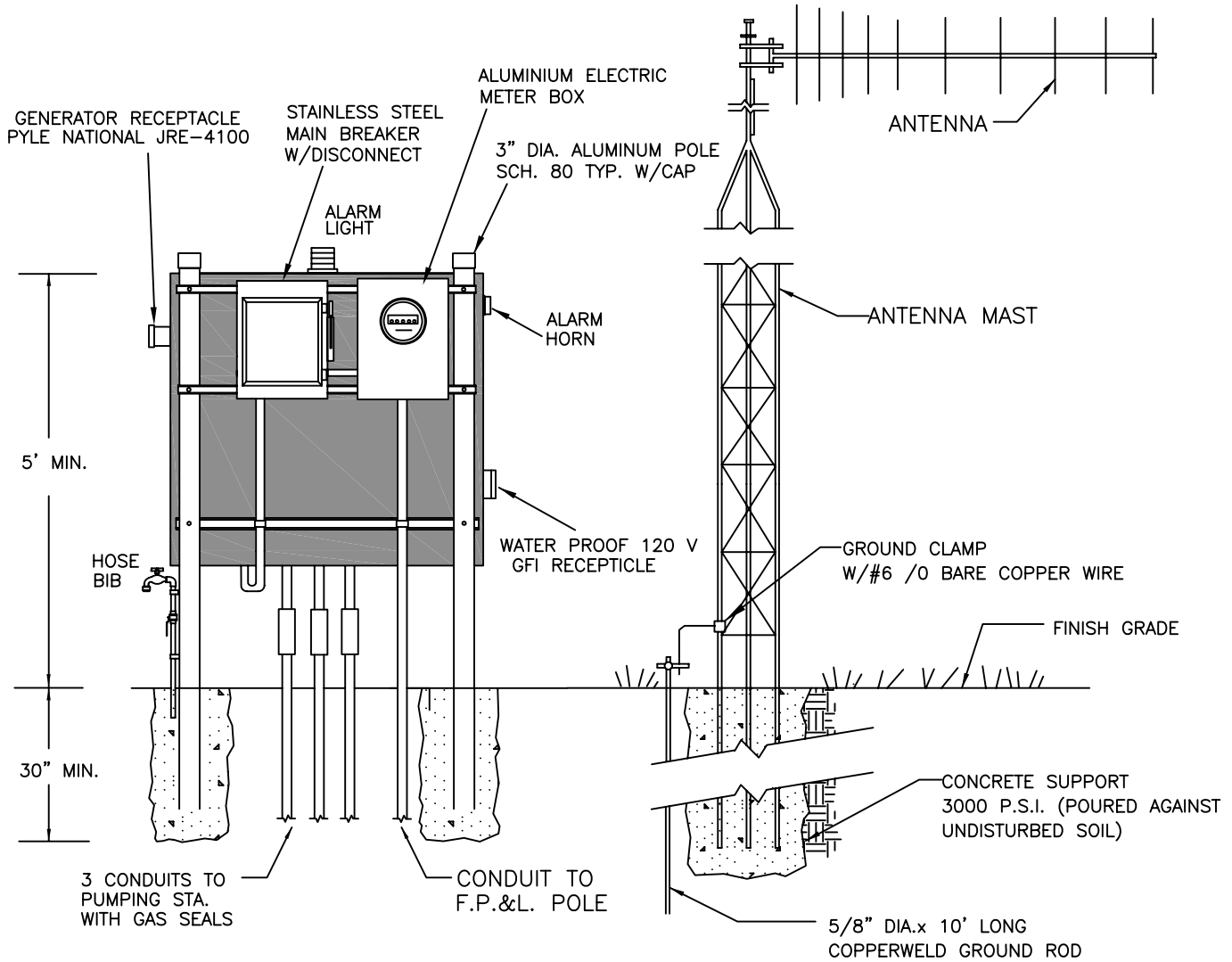
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SANITARY SEWER

GREASE INTERCEPTOR  
SIZING FORMULA

SS-12

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- NOTES:
1. ALL EQUIPMENT FURNISHED FOR THE PUMP STATION SHALL CONFORM TO CITY OF PUNTA GORDA UTILITY DEPARTMENT STANDARDS.
  2. POWER TO BE SUPPLIED AS DIRECTED, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH PROVIDING TEMPORARY AND PERMANENT ELECTRICAL SERVICE
  3. ALL CONDUIT ENTERING THE CONTROL PANEL SHALL BE SEALED WITH INDUSTRIAL FOAM.
  4. ALL P.V.C. CONDUIT SHALL BE SCHEDULE 80
  5. CONTROL PANEL ENCLOSURE TO BE NEMA 4X STAINLESS STEEL WITH RAIN SHIELD.
  6. ALL MOUNTING HARDWARE AND BRACKETS SHALL BE STAINLESS STEEL OR ALUMINIUM.
  7. METER CAN SHALL BE ALUMINIUM, MAIN BREAKER SHALL BE STAINLESS STEEL W/ EXTERNAL DISCONNECT.

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SANITARY SEWER  
 LIFT STATION PANEL  
 LOCATION DETAILS

SS-13	
REV BY	DATE
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