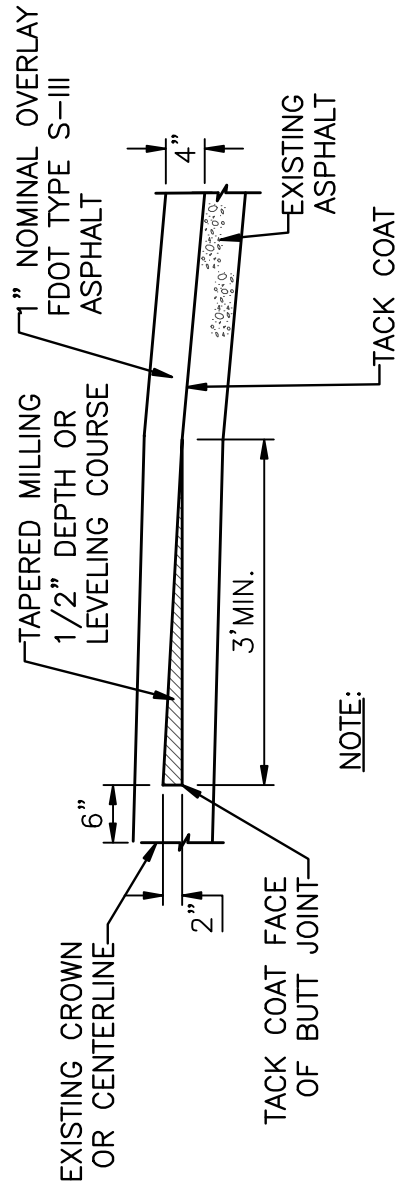


CITY OF FORT LAUDERDALE

OFFICE OF THE CITY ENGINEER



NOTE:

1. REPLACE ALL LANE MARKINGS AND REFLECTIVE MARKERS.

DATE: FEB'06

SCALE:

N.T.S.

REVISED:

MARCH '09

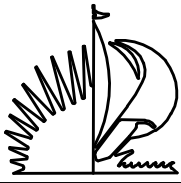
DRAWN BY:

R.C.

ASPHALT TAPER DETAIL

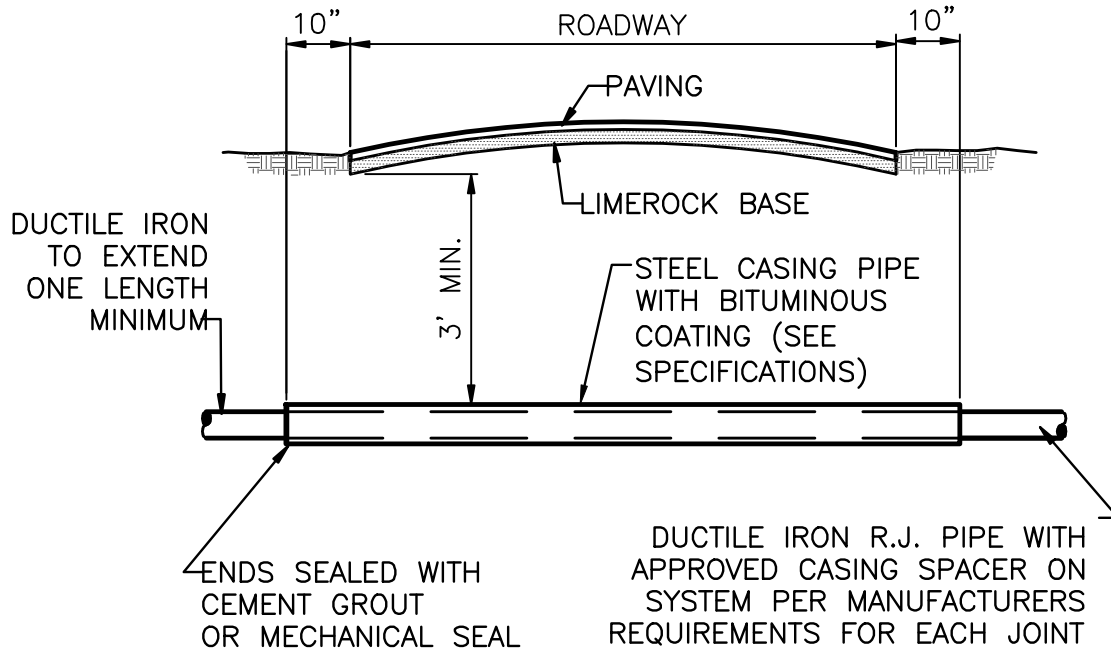
C

101



CITY OF FORT LAUDERDALE

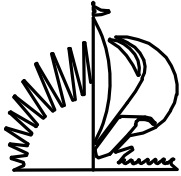
OFFICE OF THE CITY ENGINEER



CARRIER PIPE SIZE	STEEL CASING INSIDE DIAMETER (MIN)	MINIMUM WALL THICKNESS
4"	12"	.188
6"	16"	.250
8"	18"	.250
10"	20"	.250
12"	24"	.250
14"	24"	.250
16"	30"	.250
18"	30"	.250
20"	36"	.250
24"	36"	.312
30"	48"	.375
36"	54"	.450
42"	60"	.500
48"	72"	.500

NOTE:
 SUBMITTAL OF A TO-SCALE PROFILE DRAWING FOR EACH UTILITY MAIN JACK AND BORE IS REQUIRED. ALL RELEVANT DATA MUST BE SHOWN (LENGTH AND SIZE OF CASING, PIPE CONFLICTS, ELEVATIONS ETC.).

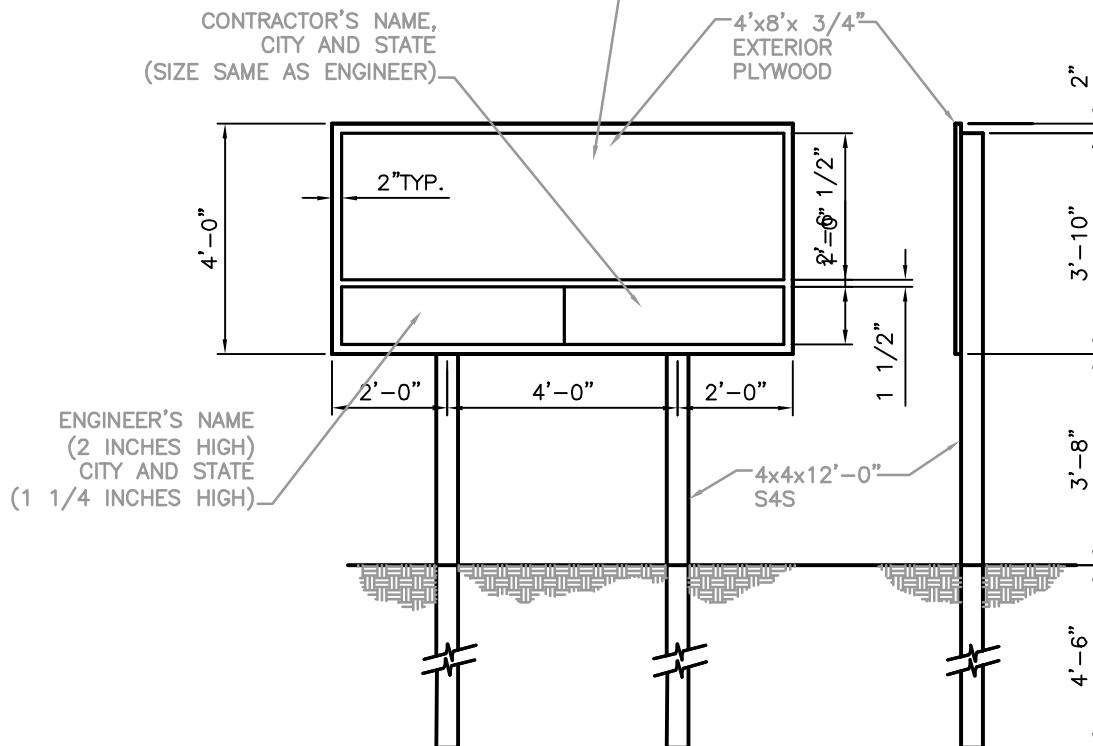
DATE: FEB'06	SCALE: N.T.S.	CASING INSTALLATION	C 107
REVISED: MARCH '09	DRAWN BY: R.C.		



CITY OF FORT LAUDERDALE

OFFICE OF THE CITY ENGINEER

SEE SPECIFICATIONS FOR CONSTRUCTION,
FACILITIES AND TEMPORARY CONTROLS FOR
PROJECT IDENTIFICATION AND RELATED TEXT
FOR THIS AREA (MIN. LETTER
HEIGHT = 2 INCHES, MAIN TITLE = 3 INCHES)



NOTE:
LETTERS SHALL BE HELVETICA
MEDIUM BLUE (PANTONE 301)
ON WHITE BACKGROUND. BORDER
SHALL BE BLUE (PANTONE 301)

PROJECT SIGN

108

DATE: FEB'06

SCALE:

N.T.S.

REVISED:

MARCH '09

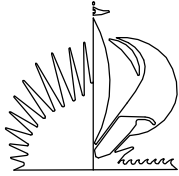
DRAWN BY:

R.C.

PROJECT SIGN

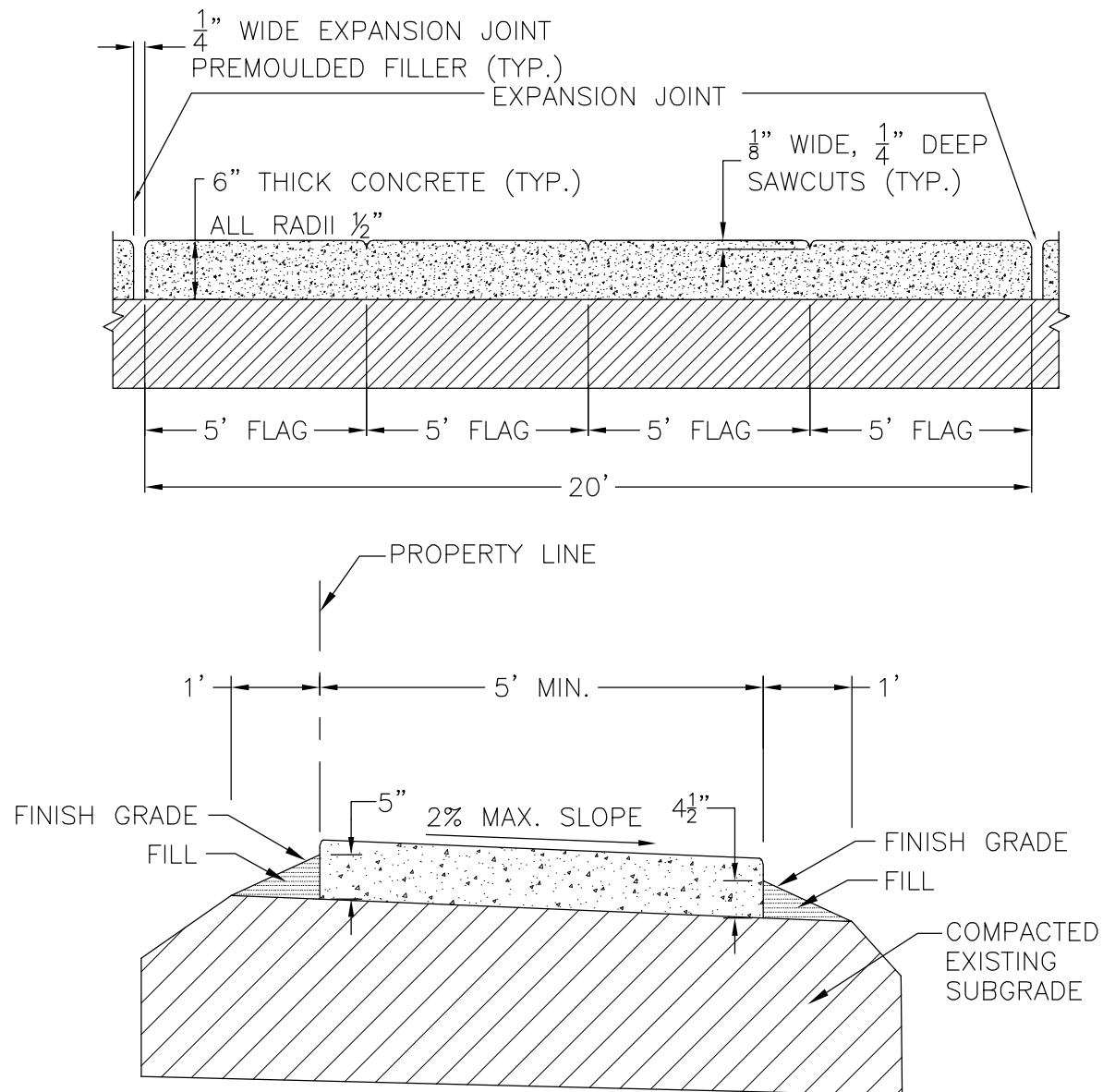
C

108



CITY OF FORT LAUDERDALE

OFFICE OF THE CITY ENGINEER



NOTES:

1. A MINIMUM OF 6" THICK SIDEWALK IS REQUIRED ON ALL SIDEWALK APPLICATIONS.
2. CONCRETE STRENGTH SHALL BE 3000 P.S.I.
3. THE USE OF REINFORCEMENT WILL NOT BE PERMITTED.
4. SIDEWALK SLOPES SHALL MEET THE REQUIREMENTS OF THE AMERICANS WITH DISABILITIES ACT (ADA).

DATE: JAN.'82

SCALE:

N.T.S.

REVISED:

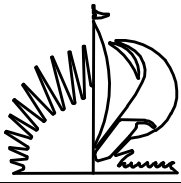
OCT. 2015

DRAWN BY:

SIDEWALK CONSTRUCTION

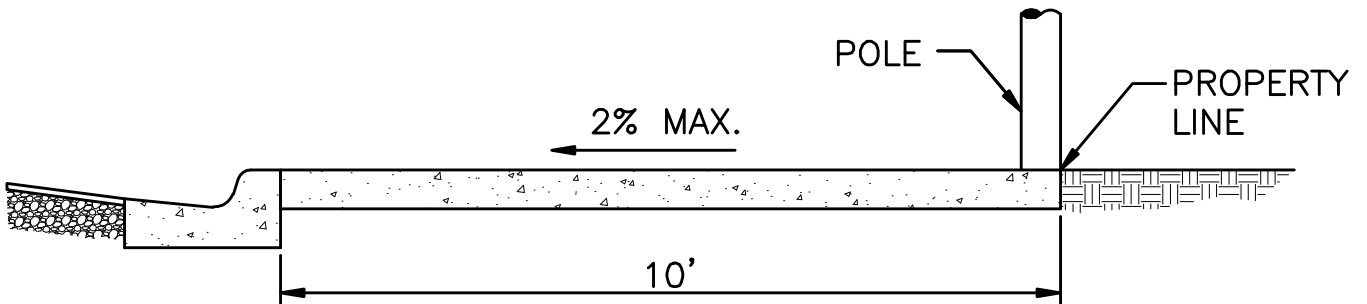
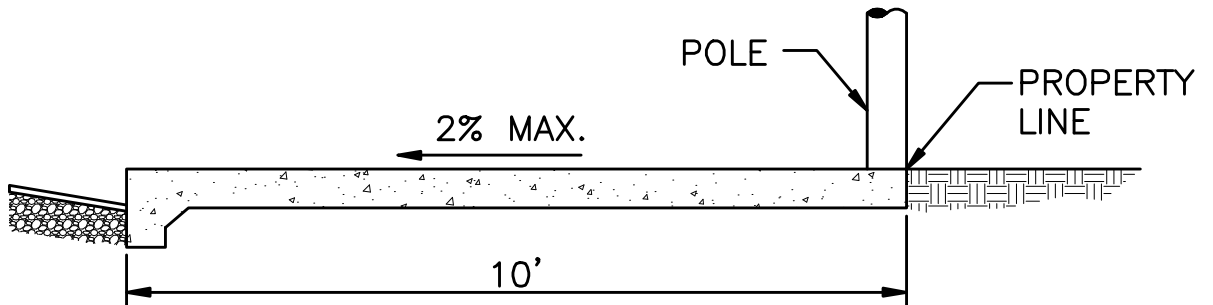
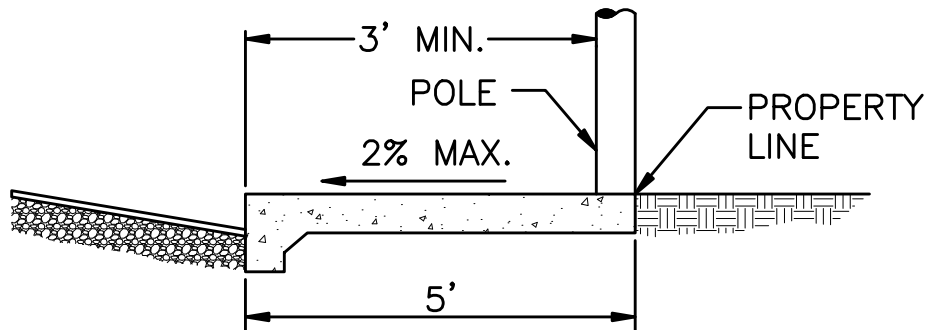
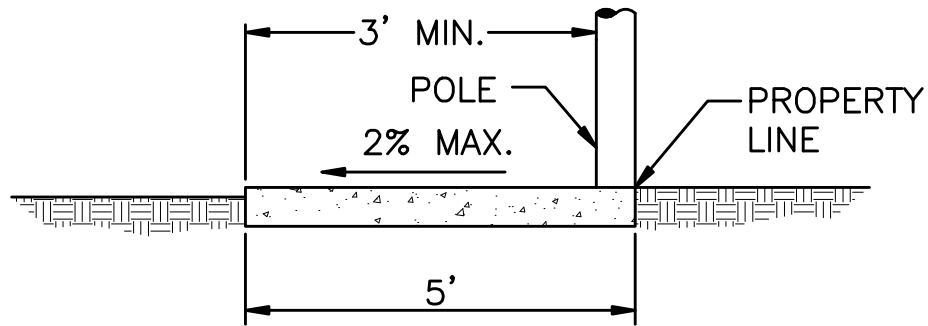
C

2.1



CITY OF FORT LAUDERDALE

OFFICE OF THE CITY ENGINEER



DATE: JAN.'82

SCALE:

N.T.S.

REVISED:

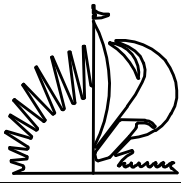
MARCH '09

DRAWN BY:

POLE IN SIDEWALK

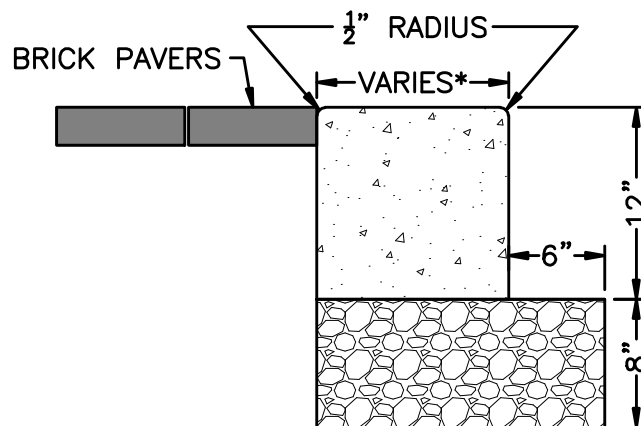
C

2.2



CITY OF FORT LAUDERDALE

OFFICE OF THE CITY ENGINEER



HEADER CURB

- * 18" X 12" FOR ROADWAY
- 12" X 12" FOR WALKWAY & PARKING APPLICATIONS

DATE: JAN. '82

SCALE:

N.T.S.

REVISED:

MARCH '09

DRAWN BY:

HEADER CURB

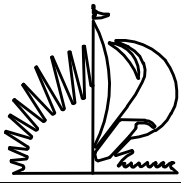
C

3.3



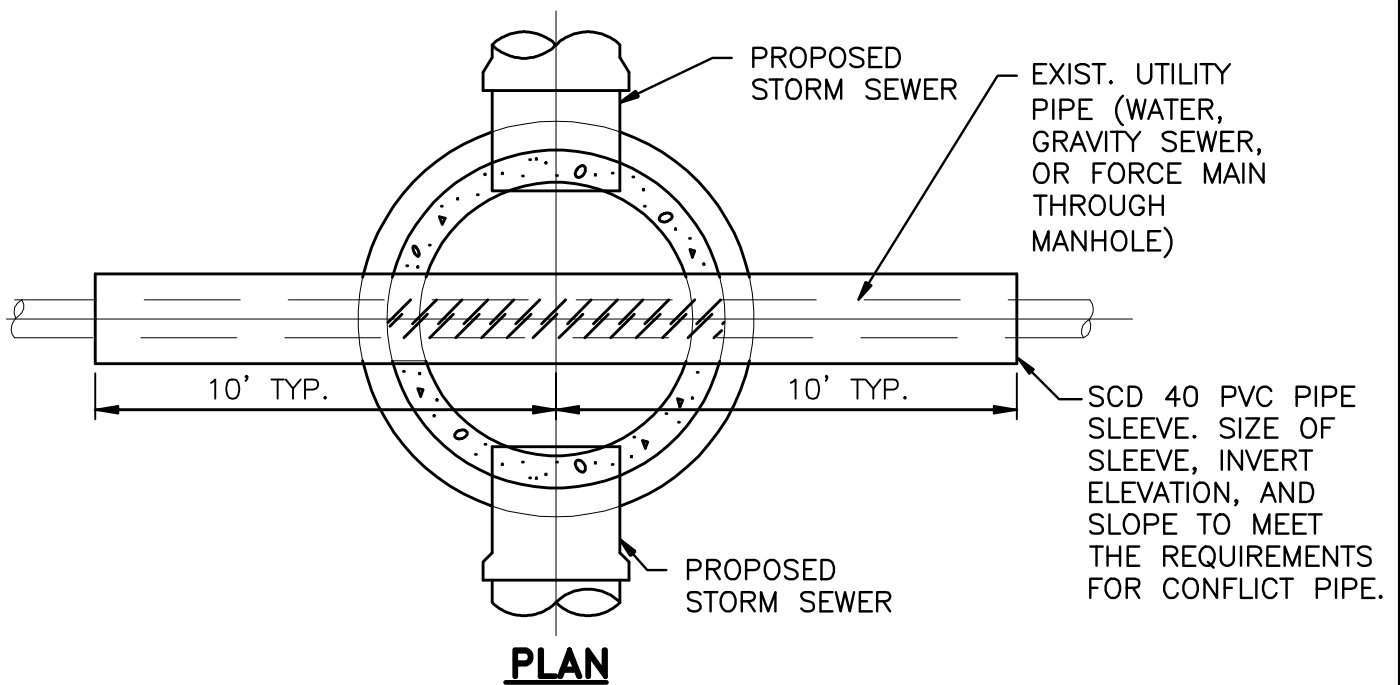
1. CONTRACTOR SHALL DETERMINE PIPE SIZES, PIPE INVERT ELEVATIONS AND ANGLES OF PIPE ENTRY AND EXIT.
2. ALL CONFLICT MANHOLES SHALL CONFORM TO THE REQUIREMENTS SHOWN ON THE CITY OF FORT LAUDERDALE ENGINEERING PLAN AND SPECS.

DATE: FEB.'06	SCALE: N.T.S.	<p align="center">CONFLICT MANHOLE FOR NEW STORM SEWERS</p>	<p align="center">D</p> <p align="center">3.2</p> <p align="center">1 OF 2</p>
REVISED: MARCH '09	DRAWN BY: A.C.		



CITY OF FORT LAUDERDALE

OFFICE OF THE CITY ENGINEER



DATE: FEB.'06

SCALE:

N.T.S.

REVISED:

MARCH '09

DRAWN BY:

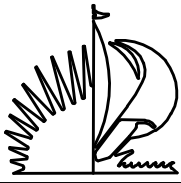
A.C.

CONFLICT MANHOLE FOR NEW STORM SEWERS

D

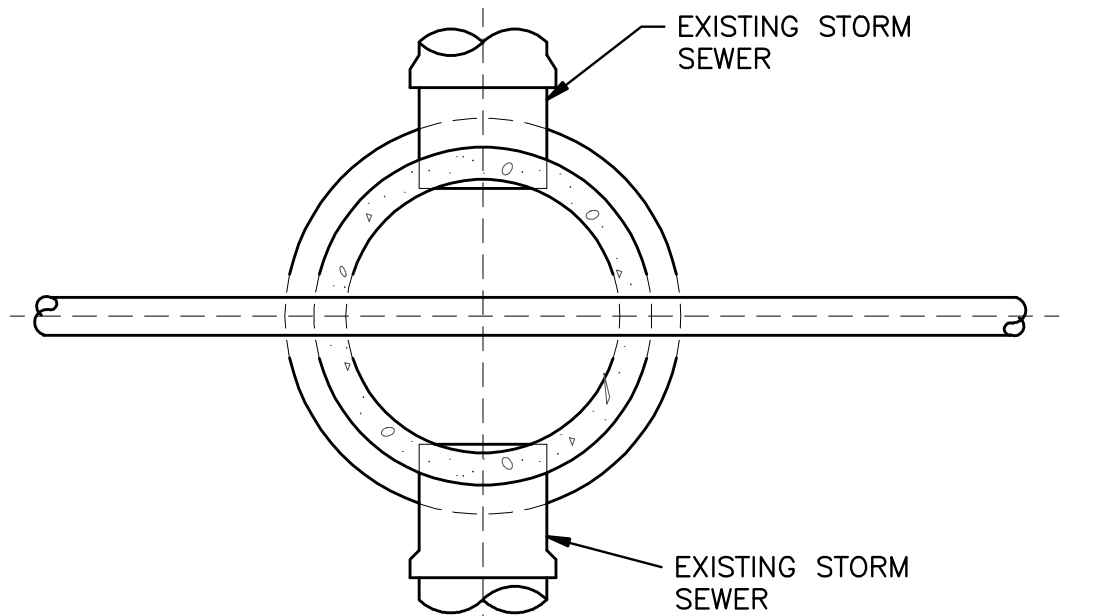
3.2

2 OF 2

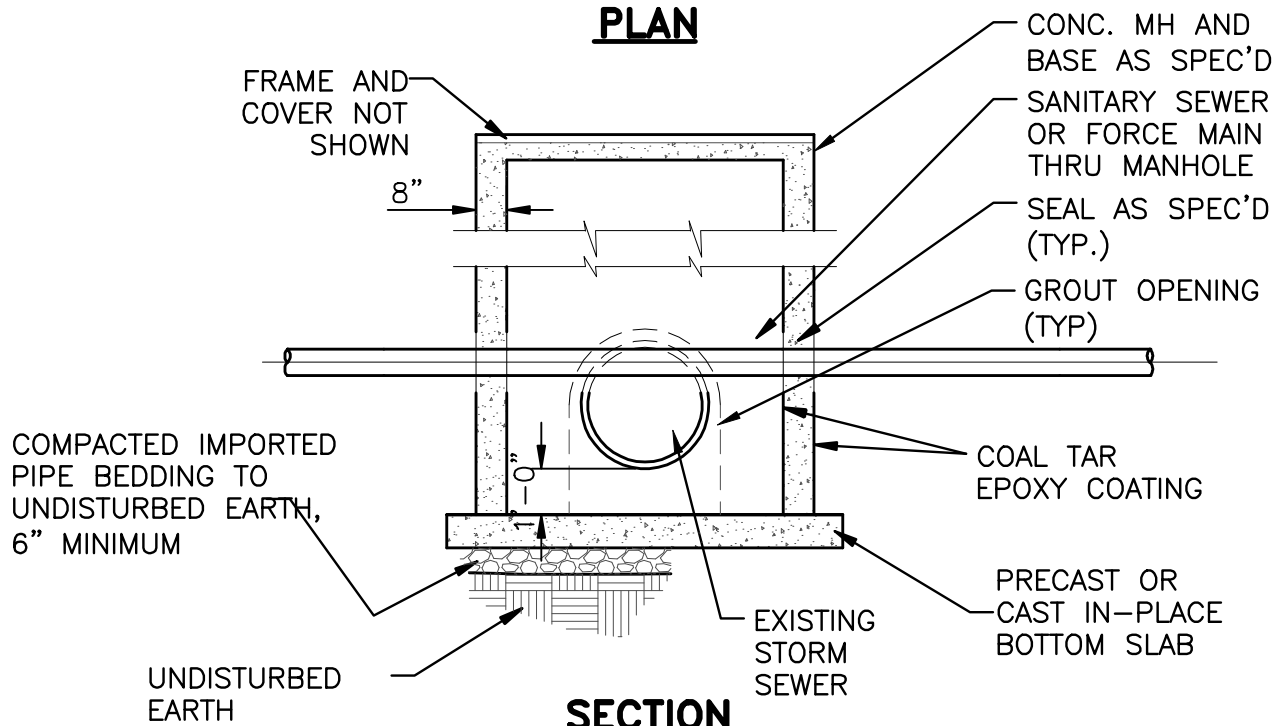


CITY OF FORT LAUDERDALE

OFFICE OF THE CITY ENGINEER



PLAN



SECTION

NOTE: CONTRACTOR SHALL DETERMINE PIPE SIZES, PIPE INVERT ELEVATIONS AND ANGLES OF PIPE ENTRY AND EXIT.

DATE: FEB'06

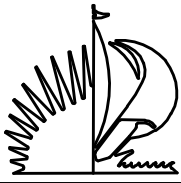
SCALE:
N.T.S.

REVISED:
MARCH '09

DRAWN BY:
R.C.

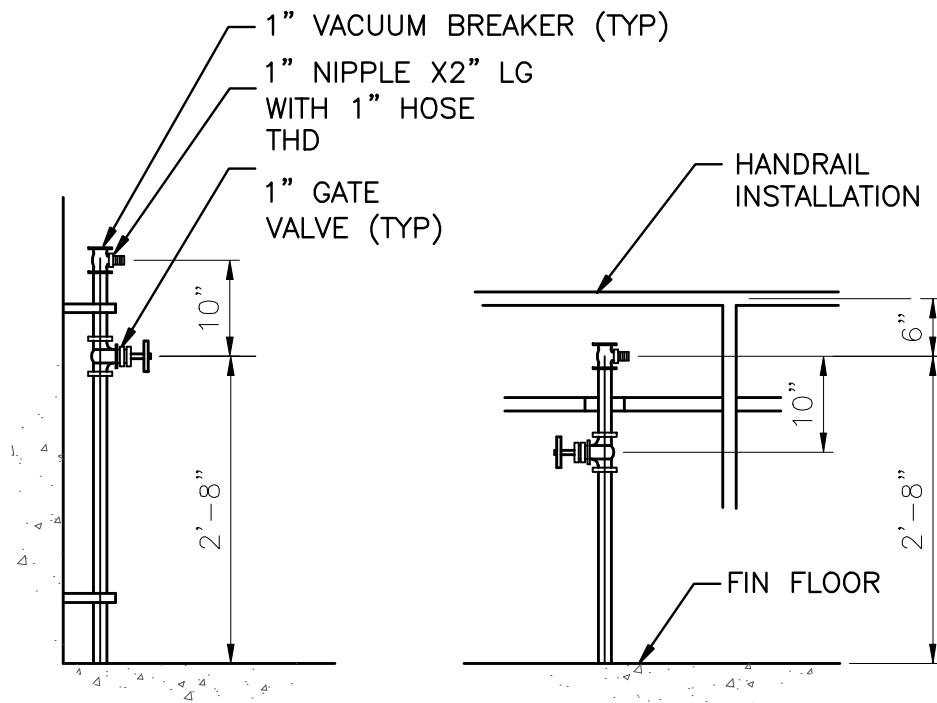
**CONFLICT MANHOLE FOR SANITARY SEWER
THROUGH EXISTING STORM SEWER
(IN ACCORDANCE W/FDOT #301)**

**D
3.3**



CITY OF FORT LAUDERDALE

OFFICE OF THE CITY ENGINEER



DATE: FEB'06

SCALE:

N.T.S.

REVISED:

MARCH '09

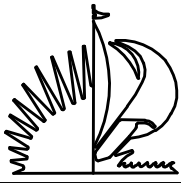
DRAWN BY:

R.C.

ELEVATION HOSE BIB

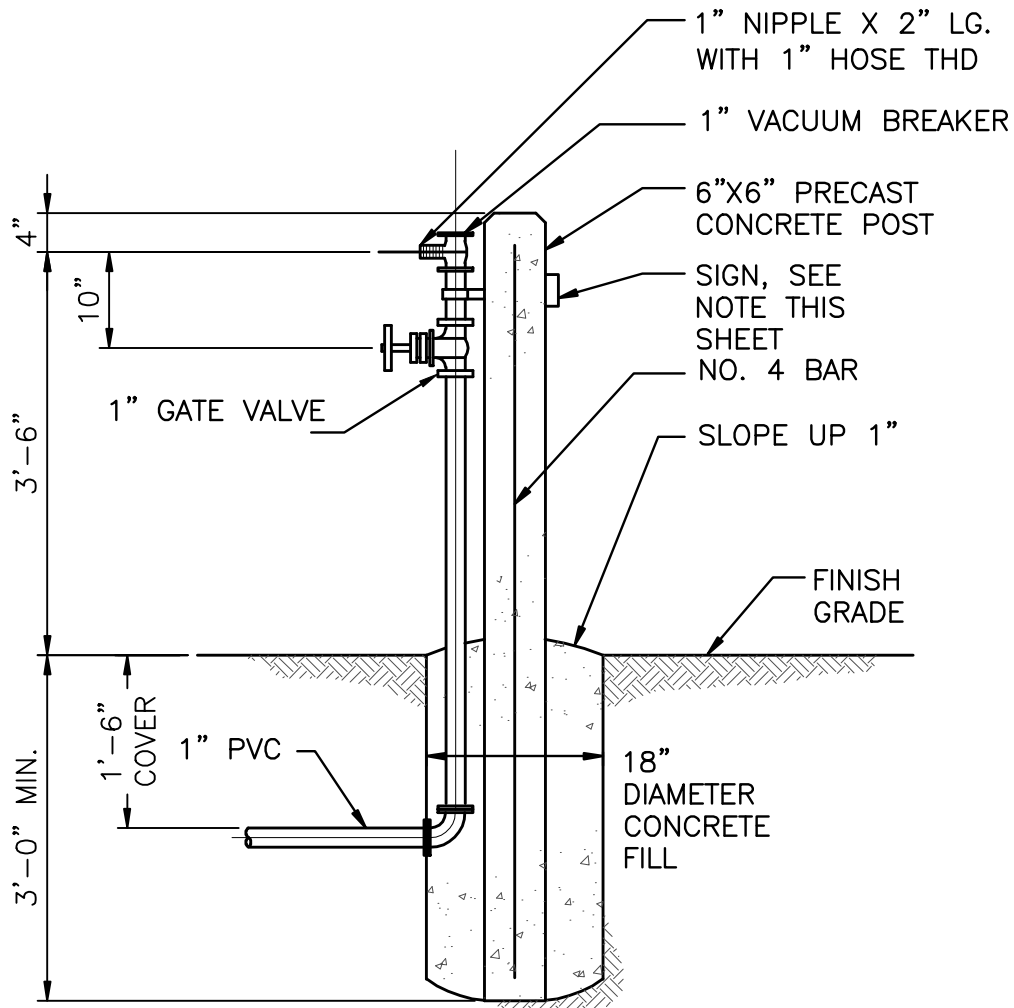
M

931



CITY OF FORT LAUDERDALE

OFFICE OF THE CITY ENGINEER



DATE: FEB'08

SCALE:

N.T.S.

REVISED:

MARCH '09

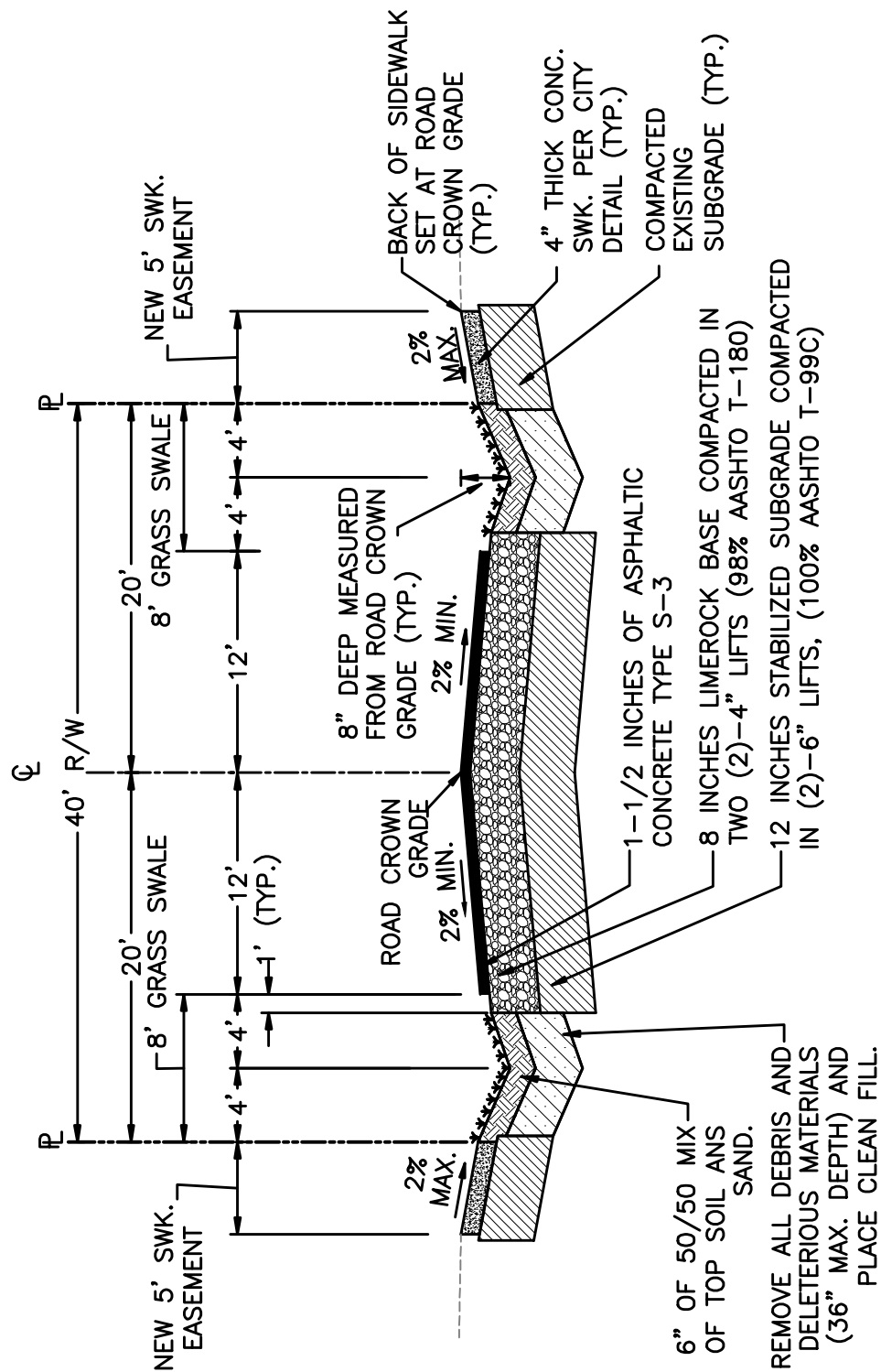
DRAWN BY:

R.C.

HOSE BIB

M

961



DATE: JAN. '82

REVISED:

MARCH '09

SCALE:

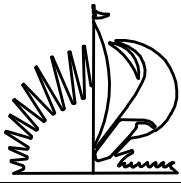
N.T.S.

DRAWN BY:

TYPICAL ROAD

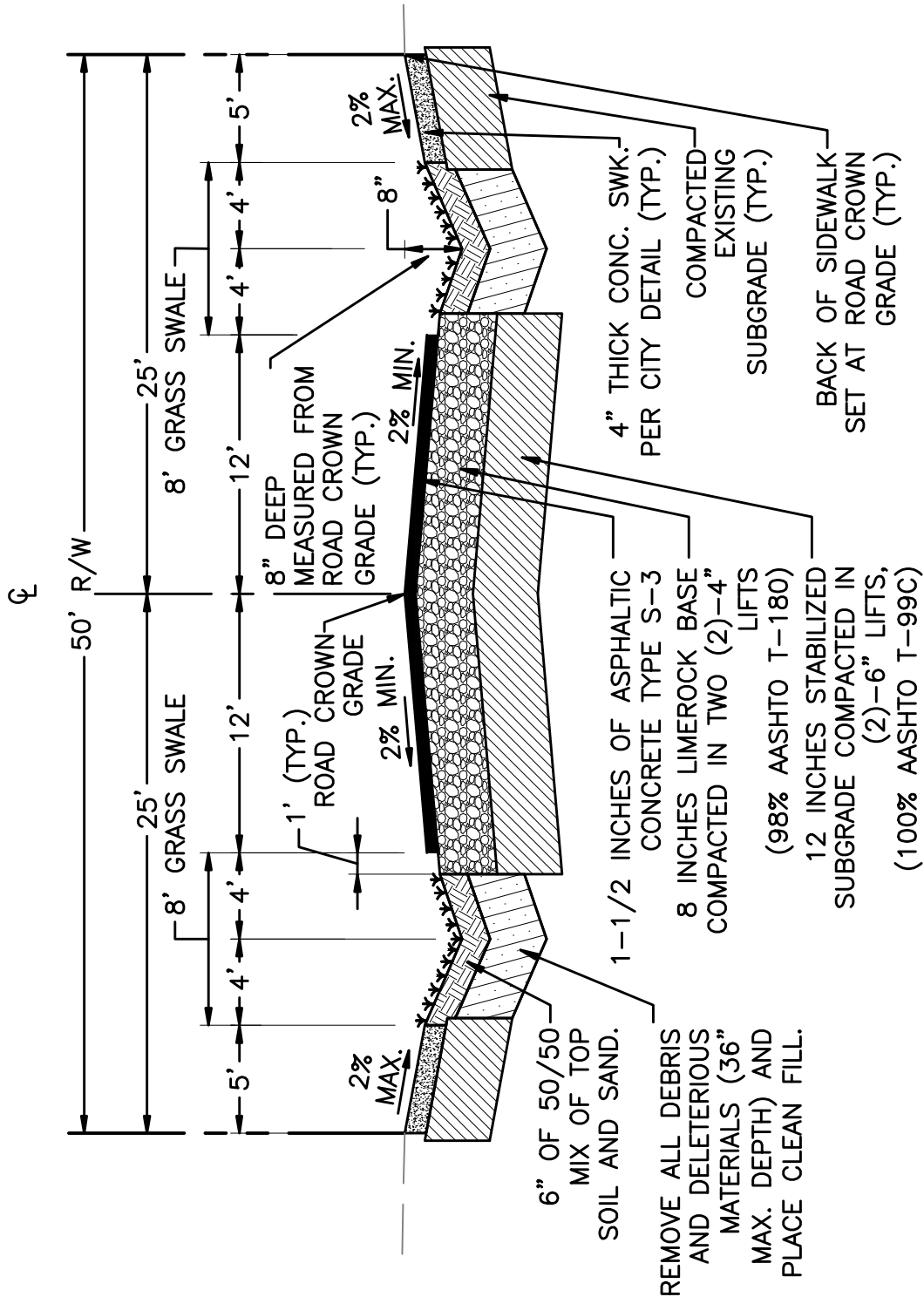
40' RIGHT-OF-WAY

P



CITY OF FORT LAUDERDALE

OFFICE OF THE CITY ENGINEER



DATE: JAN.'82

SCALE:

N.T.S.

REVISED:

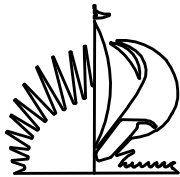
MARCH '09

DRAWN BY:

TYPICAL ROAD

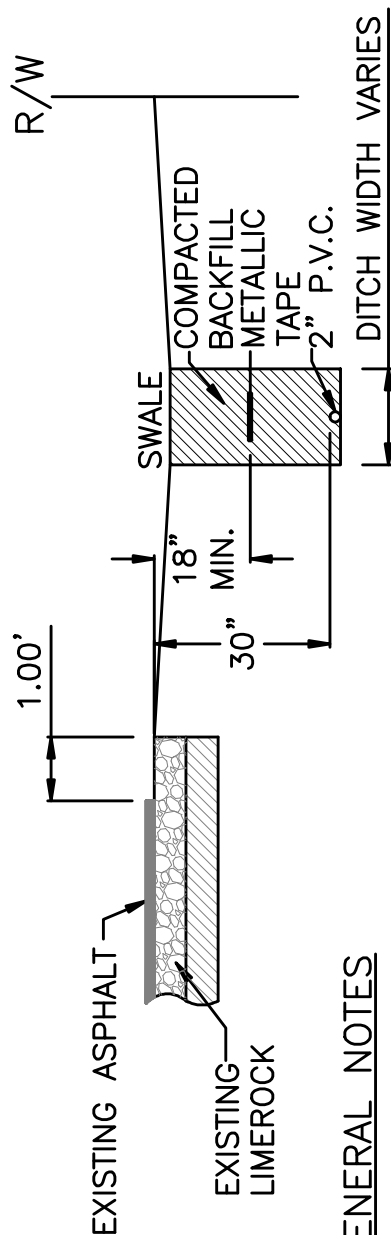
50' RIGHT-OF-WAY

P
2.1



CITY OF FORT LAUDERDALE

OFFICE OF THE CITY ENGINEER



GENERAL NOTES

1. BACKFILL SHALL BE COMPACTED TO 98% OF MAXIMUM DRY DENSITY PER AASHTO T-99-C AND SHALL BE PLACED IN LIFTS NOT TO EXCEED 12" MAXIMUM, LOOSE MEASUREMENT.
2. FIBER OPTIC CABLE SHALL BE INSTALLED IN MINIMUM 2" SCHEDULE 40 P.V.C. CONDUIT.
3. LOCATION OF CONDUIT WITH RESPECT TO CENTERLINE OF STREETS, RIGHT-OF-WAY LINES OR OTHER BASE LINES WILL BE SUBJECT TO APPROVAL OF PUBLIC WORKS DEPARTMENT.
4. 0.005" X 3" WIDE (MINIMUM) METALLIC TAPE COLOR CODED U.L.C.C. ORANGE TO RUN CONTINUOUSLY WITH TRENCH. TAPE IDENTIFYING FIBER OPTIC CABLE WILL HAVE THE WORDS "CAUTION FIBER OPTIC" FOLLOWED BY OWNERS NAME AND TELEPHONE NUMBER.
5. U.L.C.C.=UTILITY LOCATION CO-ORDINATION COUNCIL
6. THE PROVISIONS IN THIS DETAIL SUPERSEDES ALL OTHER RELATED PROVISIONS MENTIONED IN CITY OF FORT LAUDERDALE CONSTRUCTION STANDARDS AND SPECIFICATIONS.

DATE: APRIL '04

SCALE:

N.T.S.

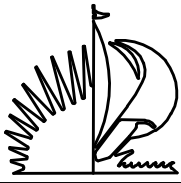
REVISED:

MARCH '09

DRAWN BY:

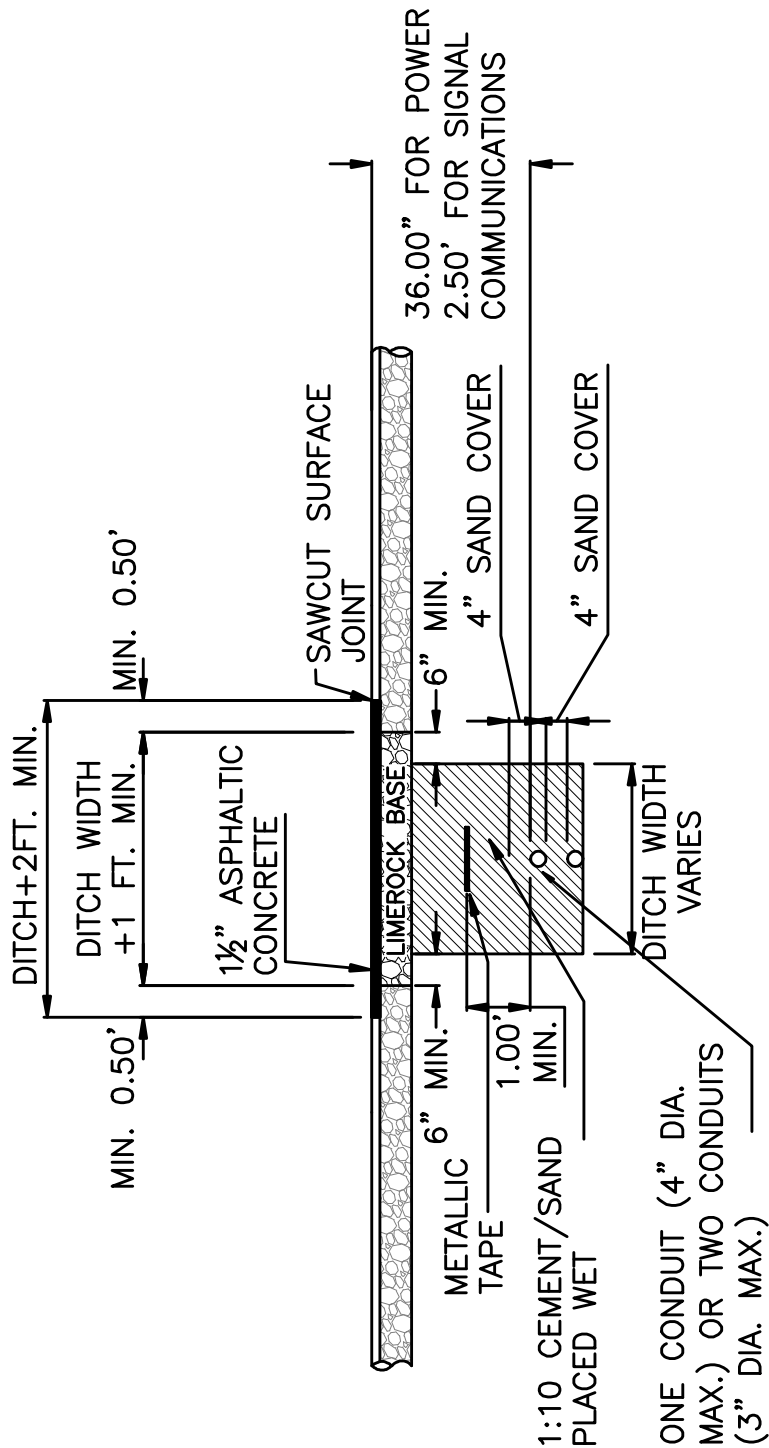
RESTORATION OF PAVEMENT - FIBER
OPTIC CABLE INSTALLATION PARALLEL

P**4.10**



CITY OF FORT LAUDERDALE

OFFICE OF THE CITY ENGINEER



DATE: APRIL '04

SCALE:

N.T.S.

REVISED:

MARCH '09

DRAWN BY:

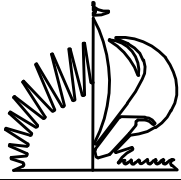
RESTORATION OF PAVEMENT

UTILITIES INSTALLATION CROSSING

P

4.11

1 OF 2



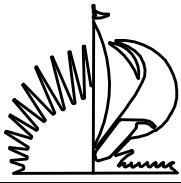
CITY OF FORT LAUDERDALE

OFFICE OF THE CITY ENGINEER

GENERAL NOTES

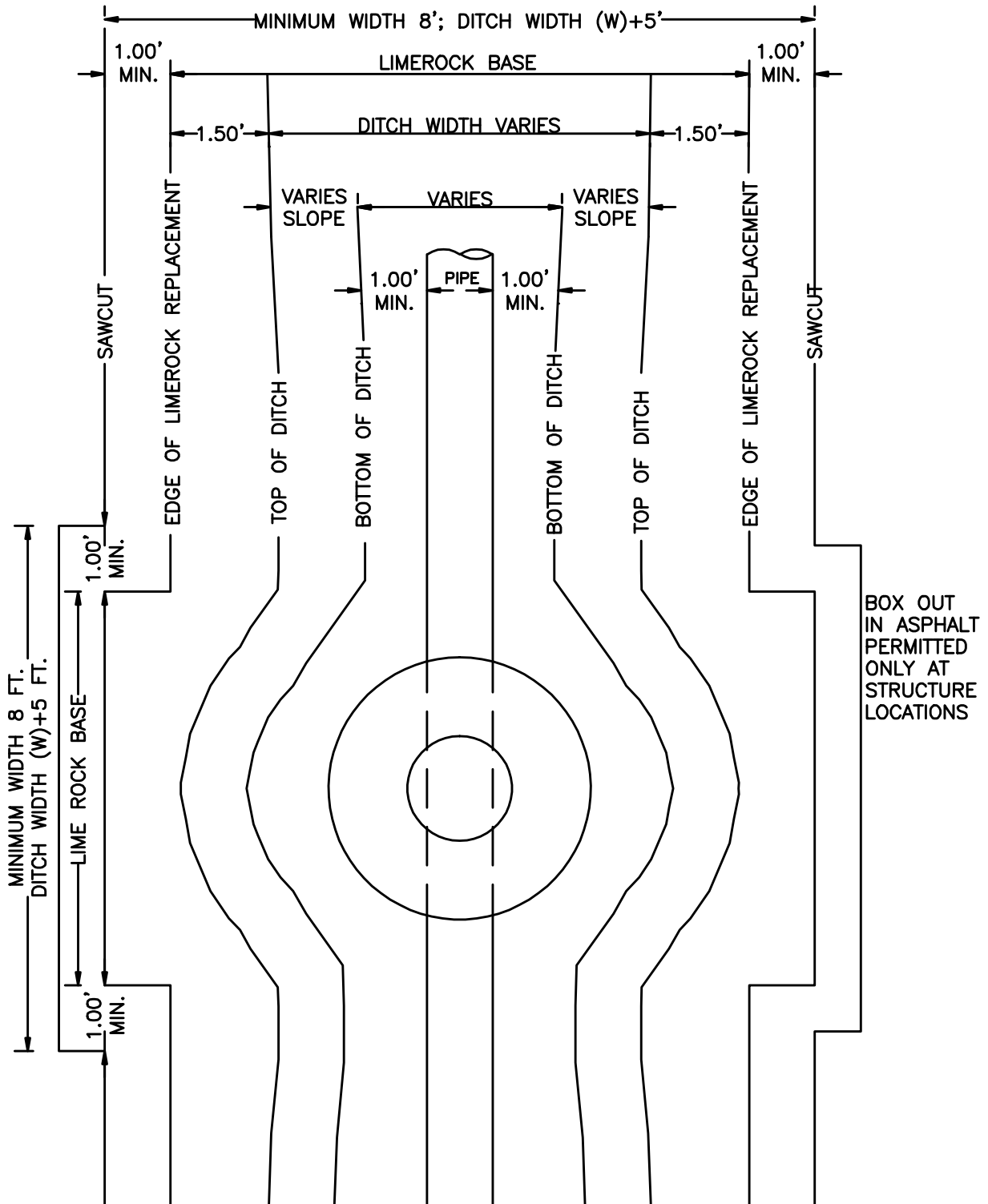
1. BASE MATERIAL SHALL BE PLACED IN LAYERS NOT THICKER THAN 6" COMPACTED THICKNESS AND EACH LAYER THOROUGHLY ROLLED OR TAMPED TO 98% OF MAXIMUM DENSITY, PER AASHTO T-180.
2. ASPHALT PAVEMENT JOINTS (ASPHALTIC CONCRETE) SHALL BE MECHANICALLY SAWED.
3. NEW SURFACE MATERIAL WILL BE D.O.T. TYPE III ASPHALTIC CONCRETE.
4. BASE MATERIAL SHALL HAVE A MINIMUM LBR OF 100 & MINIMUM CARBONATE CONTENT OF 70% FOR MAJOR STREETS AND 60% FOR RESIDENTIAL STREETS.
5. IF THE DITCH IS FILLED TEMPORARILY, IT SHALL BE COVERED WITH A 2" ASPHALTIC CONCRETE PATCH ON MAJOR STREET AND 1-1/2" ASPHALTIC CONCRETE PATCH ON RESIDENTIAL STREET AND PARKING LOT TO KEEP THE FILL MATERIAL FROM RAVELING UNTIL PLACED WITH A PERMANENT PATCH.
6. GAS MAINS 4" OR SMALLER IN SIZE SHALL BE CONSTRUCTED AS SHOWN IN THIS DETAIL WITH THE PROVISION OF 3" MINIMUM WIDTH CONTINUOUS METALLIC TAPE OR #12 WIRE WRAPPED AROUND THE CONDUITS.
7. THE PROVISIONS IN THIS DETAIL SUPERSEDES ALL OTHER RELATED PROVISIONS MENTIONED IN CITY OF FORT LAUDERDALE CONSTRUCTION STANDARDS AND SPECIFICATIONS.
8. THIS DETAIL APPLIES FOR ROAD CROSSINGS ONLY. FOR PARALLEL INSTALLATIONS WITHIN THE ROADWAY, EITHER HALF A LANE OR A FULL RESTORATION SHALL BE CONSTRUCTED IN CONFORMANCE WITH APPLICABLE DETAILS.

DATE: APRIL '04	SCALE: N.T.S.	RESTORATION OF PAVEMENT UTILITIES INSTALLATION CROSSING	P 4.11 <small>2 OF 2</small>
REVISED: MARCH '09	DRAWN BY:		



CITY OF FORT LAUDERDALE

OFFICE OF THE CITY ENGINEER



DATE: APRIL '04

SCALE:

N.T.S.

REVISED:

MARCH '09

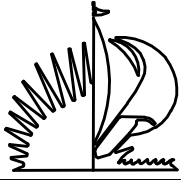
DRAWN BY:

RESTORATION OF PAVEMENT

UTILITIES INSTALLATION PARALLEL

P

4.12



CITY OF FORT LAUDERDALE

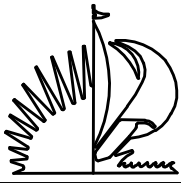
OFFICE OF THE CITY ENGINEER

THE PROCEDURE FOR BACKFILL AND PAVEMENT RESTORATION SHALL BE AS FOLLOWS:
"DENSITY TESTS OF COMPACTED FILL, BACKFILL SHALL BE TAKEN AT EACH 12" PRIOR TO
PLACEMENT OF THE SUCCEEDING LIFT OF MATERIAL ACCORDING TO THE FOLLOWING
SCHEDULE".

1. FOR ANY ROAD CROSSING IN WHICH THE ROAD IS CUT AND RESTORED ONE LANE AT A TIME, ONE DENSITY TEST SHALL BE TAKEN IN EACH LANE.
2. FOR ANY ROAD CROSSING IN WHICH THE ROAD IS CUT AND RESTORED THREE LANES AT A TIME, DENSITIES SHALL BE TESTED IN TWO LOCATIONS STAGGERED WITH EACH SUCCESSIVE LIFT.
3. FOR ANY ROAD CROSSING IN WHICH THE ROAD IS CUT AND RESTORED TWO LANES AT A TIME, DENSITIES SHALL BE TESTED IN ONE LANE PER LIFT, ALTERNATING LANES WITH EACH LIFT.
4. CUTS ACROSS ROADS SHALL NOT BE LEFT OPENED OVER NIGHT UNLESS ABSOLUTELY NECESSARY. TRENCHES SHALL BE BACKFILLED AND A TEMPORARY ASPHALT APPLIED TO MAKE A SMOOTH LEVEL PATCH. THE TRENCHES SHALL THEN BE EXCAVATED THE NEXT DAY AND PERMANENT BACKFILL AND PAVEMENT INSTALLED IN ACCORDANCE WITH THESE STANDARDS. THE ONLY EXCEPTIONS WILL BE IN CASES WHERE THE FACILITY INSTALLED MUST BE TESTED BEFORE THE ROADS ARE RESTORED. IN THESE CASES, THE PERMANENT RESTORATION MUST BE PERFORMED ON THE DAY OF TESTING OR THE NEXT DAY.
5. IN CASES WHERE THE INSTALLATION PARALLELS THE ROADWAY AND DAMAGES THE PAVEMENT, THE DENSITY TESTS SHALL BE MADE EVERY 100 L.F. WITH TEST LOCATIONS STAGGERED 25' EACH LIFT.
6. SHOULDER AREAS AND SWALE AREAS BEYOND SHOULDERS SHALL BE COMPACTED TO A MINIMUM OF 98% OF MAXIMUM DRY DENSITY, ALL AS DETERMINED BY AASHTO T-99-C STANDARD PROCTOR TEST.
7. RESTORATION OF STRIPING, SIGNING, AND SIGNALIZATION DEVICES SHALL BE ACCOMPLISHED IMMEDIATELY AFTER PAVEMENT RESTORATION IS COMPLETED.

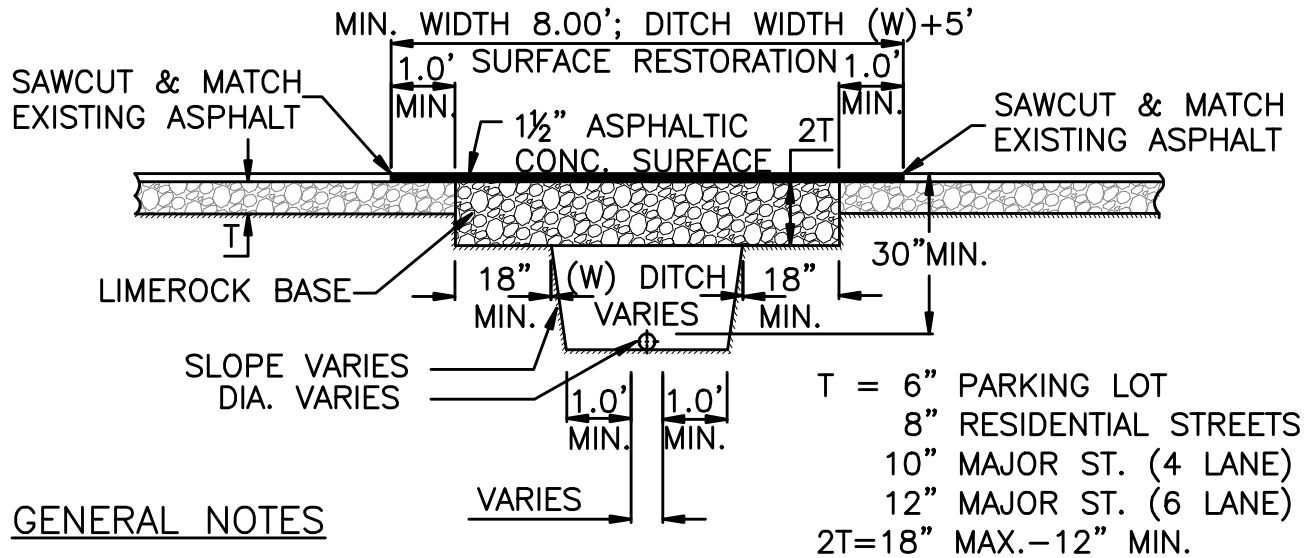
A COPY OF ALL PROCTOR AND FIELD DENSITY TESTS SHALL BE FURNISHED TO THE ENGINEERING DIVISION.

DATE: APRIL '04	SCALE: N.T.S.	PROCEDURE FOR RESTORATION OF FLEXIBLE PAVEMENT	P 4.13
REVISED: MARCH '09	DRAWN BY:		



CITY OF FORT LAUDERDALE

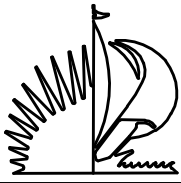
OFFICE OF THE CITY ENGINEER



GENERAL NOTES

1. REPLACED BASE MATERIAL OVER DITCH SHALL BE TWICE THE THICKNESS OF THE ORIGINAL BASE. MINIMUM 12", MAXIMUM 18".
2. BASE MATERIAL SHALL BE PLACED IN LAYERS NOT THICKER THAN 6" COMPACTED THICKNESS AND EACH LAYER THOROUGHLY ROLLED OR TAMPED TO 98% OF MAXIMUM DENSITY, PER AASHTO T-180.
3. ASPHALT PAVEMENT JOINTS (ASPHALTIC CONCRETE) SHALL BE MECHANICALLY SAWED.
4. NEW SURFACE MATERIAL WILL BE D.O.T. TYPE III ASPHALTIC CONCRETE.
5. BASE MATERIAL SHALL HAVE A MINIMUM LBR OF 100 & MINIMUM CARBONATE CONTENT OF 70% FOR MAJOR STREETS AND 60% FOR RESIDENTIAL STREETS.
6. IF THE DITCH IS FILLED TEMPORARILY, IT SHALL BE COVERED WITH A 2" ASPHALTIC CONCRETE PATCH ON MAJOR STREET AND 1-1/2" ASPHALTIC CONCRETE PATCH ON RESIDENTIAL STREET AND PARKING LOT TO KEEP THE FILL MATERIAL FROM RAVELING UNTIL PLACED WITH A PERMANENT PATCH.
7. SUBGRADE SHALL BE COMPACTED TO 100% OF DRY DENSITY PER AASHTO T-99 AND SHALL BE PLACED IN LIFTS NOT TO EXCEED 12" MAXIMUM, LOOSE MEASUREMENT.
8. PAVEMENT RESTORATION DUE TO PLACEMENT OF 4" GAS MAINS OR LARGER SHALL BE AS SHOWN ON THIS DETAIL WITH A 3" MINIMUM WIDTH AND PLACEMENT OF CONTINUOUS METALLIC TAPE OR #12 WIRE WRAPPED AROUND THE PIPE(S).
9. THE PROVISIONS IN THIS DETAIL SUPERSEDES ALL OTHER RELATED PROVISIONS MENTIONED IN CITY OF FORT LAUDERDALE CONSTRUCTION STANDARDS AND SPECIFICATIONS.

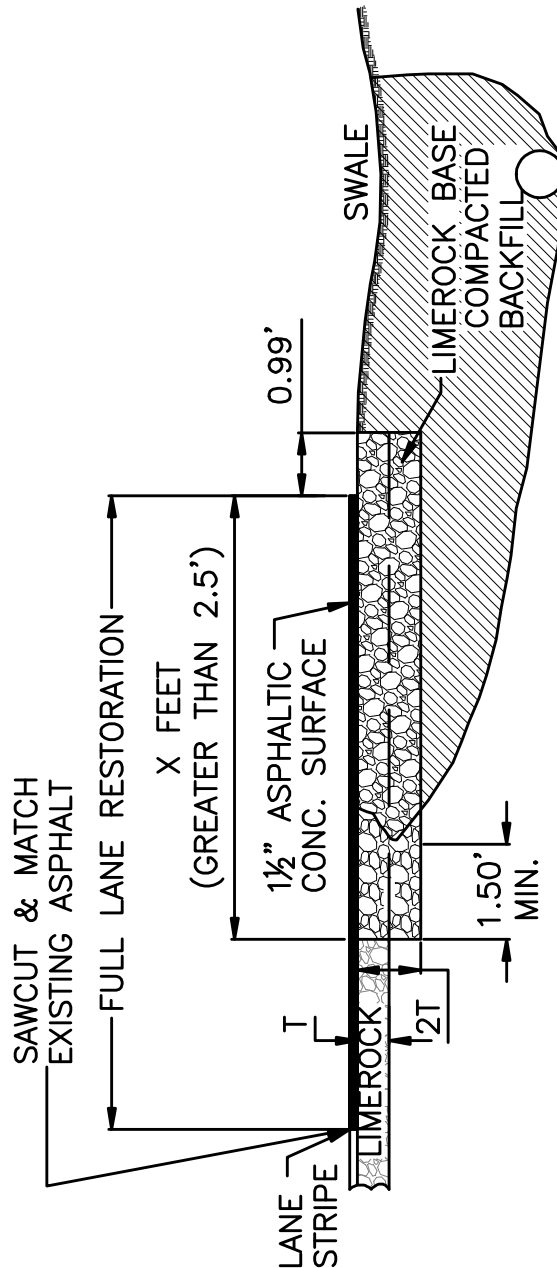
DATE: APRIL '04	SCALE: N.T.S.	RESTORATION OF PAVEMENT UTILITY CROSSING	P 4.1
REVISED: MARCH '09	DRAWN BY:		



CITY OF FORT LAUDERDALE

OFFICE OF THE CITY ENGINEER

T= 6" PARKING LOT
 8" RESIDENTIAL STREETS
 10" MAJOR ST. (4 LANE)
 12" MAJOR ST. (6 LANE)
 2T=18" MAX.-12" MIN.



DATE: APRIL '04

SCALE:

N.T.S.

REVISED:

MARCH '09

DRAWN BY:

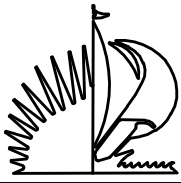
FULL LANE RESTORATION OF PAVEMENT

PARALLEL UTILITY INSTALLATION

P

4.3

1 OF 2



CITY OF FORT LAUDERDALE

OFFICE OF THE CITY ENGINEER

GENERAL NOTES

1. REPLACED BASE MATERIAL OVER DITCH SHALL BE TWICE THE THICKNESS OF THE ORIGINAL BASE. MINIMUM 12", MAXIMUM 18".
2. BASE MATERIAL SHALL BE PLACED IN LAYERS NOT THICKER THAN 6" COMPACTED THICKNESS AND EACH LAYER THOROUGHLY ROLLED OR TAMPED TO 98% OF MAXIMUM DENSITY, PER AASHTO T-180.
3. ASPHALT PAVEMENT JOINTS (ASPHALTIC CONCRETE) SHALL BE MECHANICALLY SAWED.
4. NEW SURFACE MATERIAL WILL BE D.O.T. TYPE III ASPHALTIC CONCRETE.
5. BASE MATERIAL SHALL HAVE A MINIMUM LBR OF 100 & MINIMUM CARBONATE CONTENT OF 70% FOR MAJOR STREETS AND 60% FOR RESIDENTIAL STREETS.
6. IF THE DITCH IS FILLED TEMPORARILY, IT SHALL BE COVERED WITH A 2" ASPHALTIC CONCRETE PATCH ON MAJOR STREET AND 1-1/2" ASPHALTIC CONCRETE PATCH ON RESIDENTIAL STREET AND PARKING LOT TO KEEP THE FILL MATERIAL FROM RAVELING UNTIL PLACED WITH A PERMANENT PATCH.
7. SUBGRADE SHALL BE COMPACTED TO 100% OF DRY DENSITY PER AASHTO T-99 AND SHALL BE PLACED IN LIFTS NOT TO EXCEED 12" MAXIMUM, LOOSE MEASUREMENT.
8. PAVEMENT RESTORATION DUE TO PLACEMENT OF 4" GAS MAINS OR LARGER SHALL BE AS SHOWN ON THIS DETAIL WITH A 3" MINIMUM WIDTH AND PLACEMENT OF CONTINUOUS METALLIC TAPE OR #12 WIRE WRAPPED AROUND THE PIPE(S).
9. THE DIMENSION 'X' FEET IS ANY WIDTH GREATER THAN 2.5'.
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DATE: APRIL '04

SCALE:

N.T.S.

REVISED:

MARCH '09

DRAWN BY:

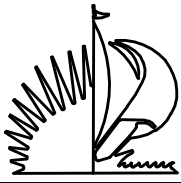
FULL LANE RESTORATION OF PAVEMENT

PARALLEL UTILITY INSTALLATION

P

4.3

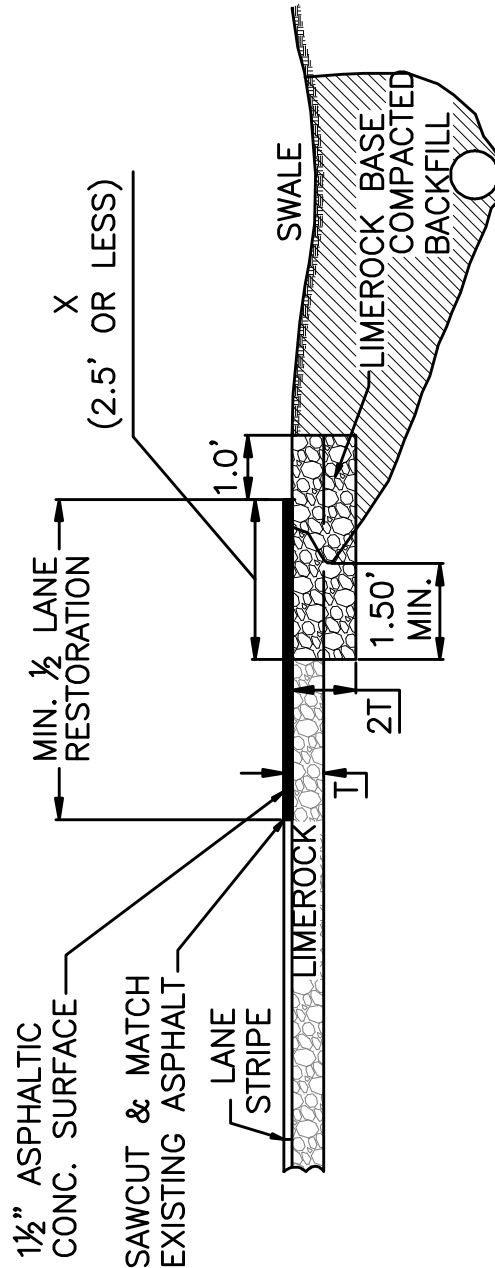
2 OF 2



CITY OF FORT LAUDERDALE

OFFICE OF THE CITY ENGINEER

$T = 6"$ PARKING LOT
 $8"$ RESIDENTIAL STREETS
 $10"$ MAJOR ST. (4 LANE)
 $12"$ MAJOR ST. (6 LANE)
 $2T = 18"$ MAX. - $12"$ MIN.



DATE: JAN. '82

SCALE:

REVISED:

MARCH '09

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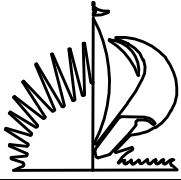
RESTORATION OF PAVEMENT

PARALLEL UTILITY INSTALLATION

P

4.4

1 OF 2



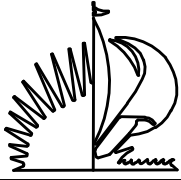
CITY OF FORT LAUDERDALE

OFFICE OF THE CITY ENGINEER

GENERAL NOTES

1. REPLACED BASE MATERIAL OVER DITCH SHALL BE TWICE THE THICKNESS OF THE ORIGINAL BASE. MINIMUM 12", MAXIMUM 18".
2. BASE MATERIAL SHALL BE PLACED IN LAYERS NOT THICKER THAN 6" COMPACTED THICKNESS AND EACH LAYER THOROUGHLY ROLLED OR TAMPED TO 98% OF MAXIMUM DENSITY, PER AASHTO T-180.
3. ASPHALT PAVEMENT JOINTS (ASPHALTIC CONCRETE) SHALL BE MECHANICALLY SAWED.
4. NEW SURFACE MATERIAL WILL BE D.O.T. TYPE III ASPHALTIC CONCRETE.
5. BASE MATERIAL SHALL HAVE A MINIMUM LBR OF 100 & MINIMUM CARBONATE CONTENT OF 70% FOR MAJOR STREETS AND 60% FOR RESIDENTIAL STREETS.
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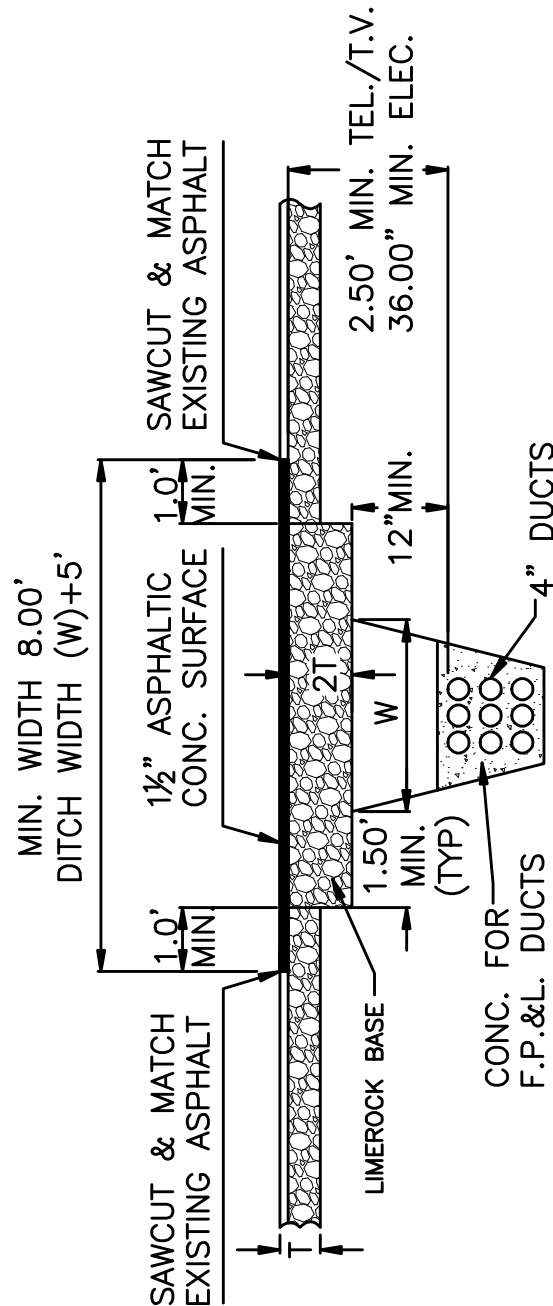
DATE: JAN.'82	SCALE:	RESTORATION OF PAVEMENT PARALLEL UTILITY INSTALLATION	P 4.4 2 OF 2
REVISED: MARCH '09	DRAWN BY:		



CITY OF FORT LAUDERDALE

OFFICE OF THE CITY ENGINEER

T= 6" PARKING LOT
 8" RESIDENTIAL STREETS
 10" MAJOR ST. (4 LANE)
 12" MAJOR ST. (6 LANE)
 2T=18" MAX.-12" MIN.



DATE: APRIL '04

SCALE:

N.T.S.

REVISED:

MARCH '09

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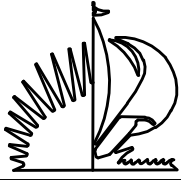
RESTORATION OF PAVEMENT

UTILITIES CROSSING

P

4.5

1 OF 2



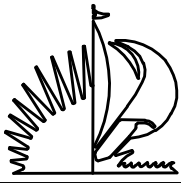
CITY OF FORT LAUDERDALE

OFFICE OF THE CITY ENGINEER

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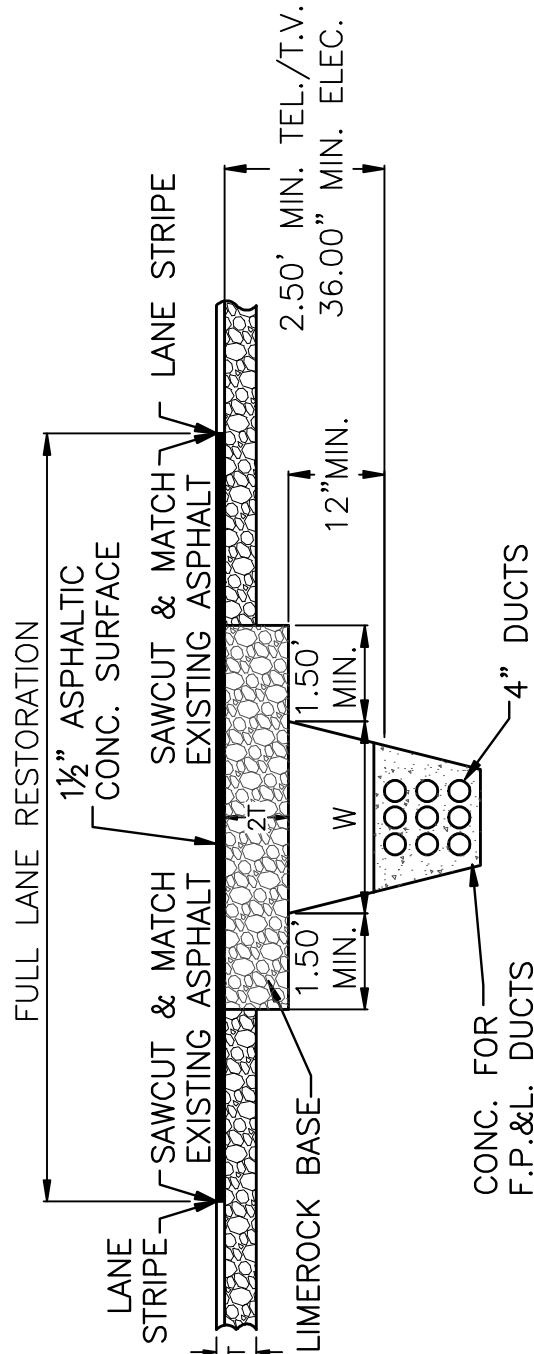
DATE: APRIL '04	SCALE: N.T.S.	RESTORATION OF PAVEMENT UTILITIES CROSSING	P 4.5 <small>2 OF 2</small>
REVISED: MARCH '09	DRAWN BY:		



CITY OF FORT LAUDERDALE

OFFICE OF THE CITY ENGINEER

T= 6" PARKING LOT
 8" RESIDENTIAL STREETS
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DATE: APRIL '04

SCALE:

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REVISED:

MARCH '09

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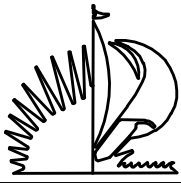
RESTORATION OF PAVEMENT

PARALLEL UTILITIES INSTALLATION

P

4.6

1 OF 2



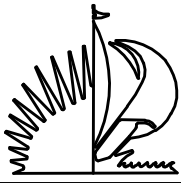
CITY OF FORT LAUDERDALE

OFFICE OF THE CITY ENGINEER

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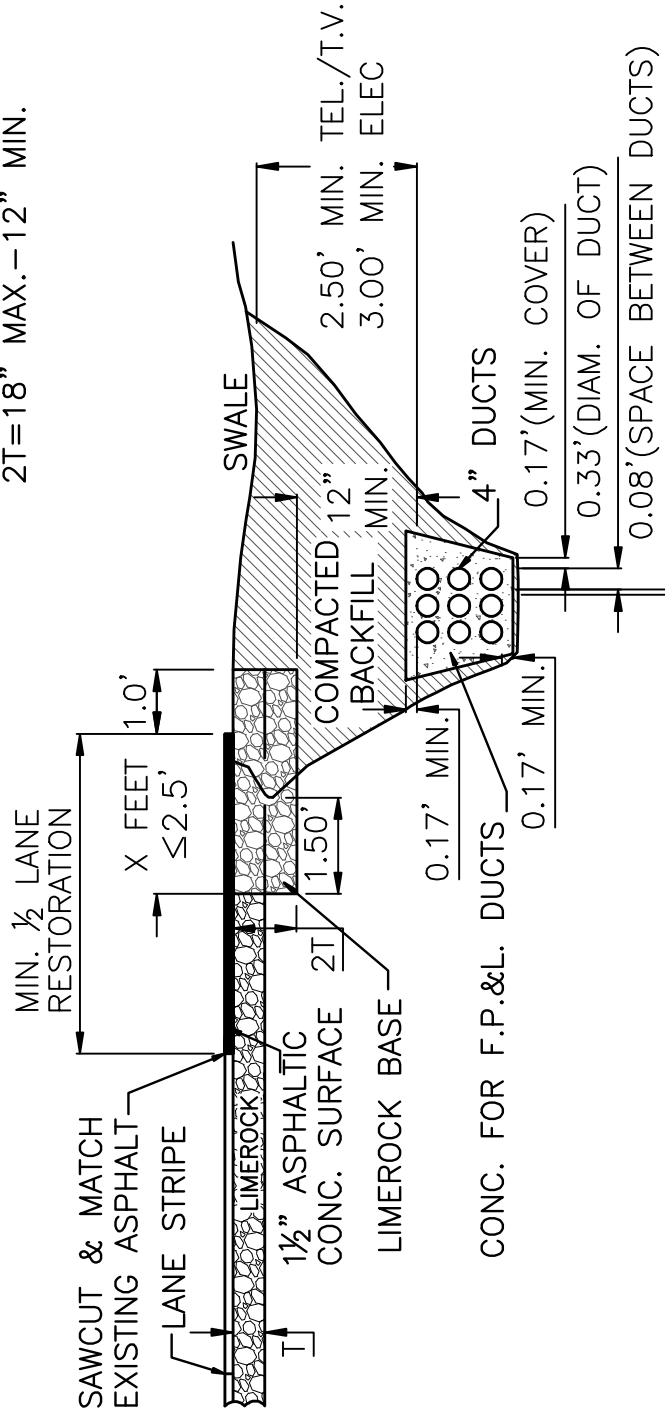
DATE: APRIL '04	SCALE: N.T.S.	RESTORATION OF PAVEMENT PARALLEL UTILITIES INSTALLATION	P 4.6 <small>2 OF 2</small>
REVISED: MARCH '09	DRAWN BY:		



CITY OF FORT LAUDERDALE

OFFICE OF THE CITY ENGINEER

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 8" RESIDENTIAL STREETS
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DATE: APRIL '04

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N.T.S.

REVISED:

MARCH '09

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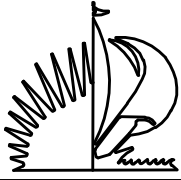
RESTORATION OF PAVEMENT

PARALLEL UTILITIES INSTALLATION

P

4.7

1 OF 2



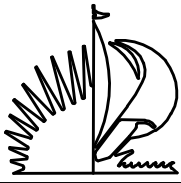
CITY OF FORT LAUDERDALE

OFFICE OF THE CITY ENGINEER

GENERAL NOTES

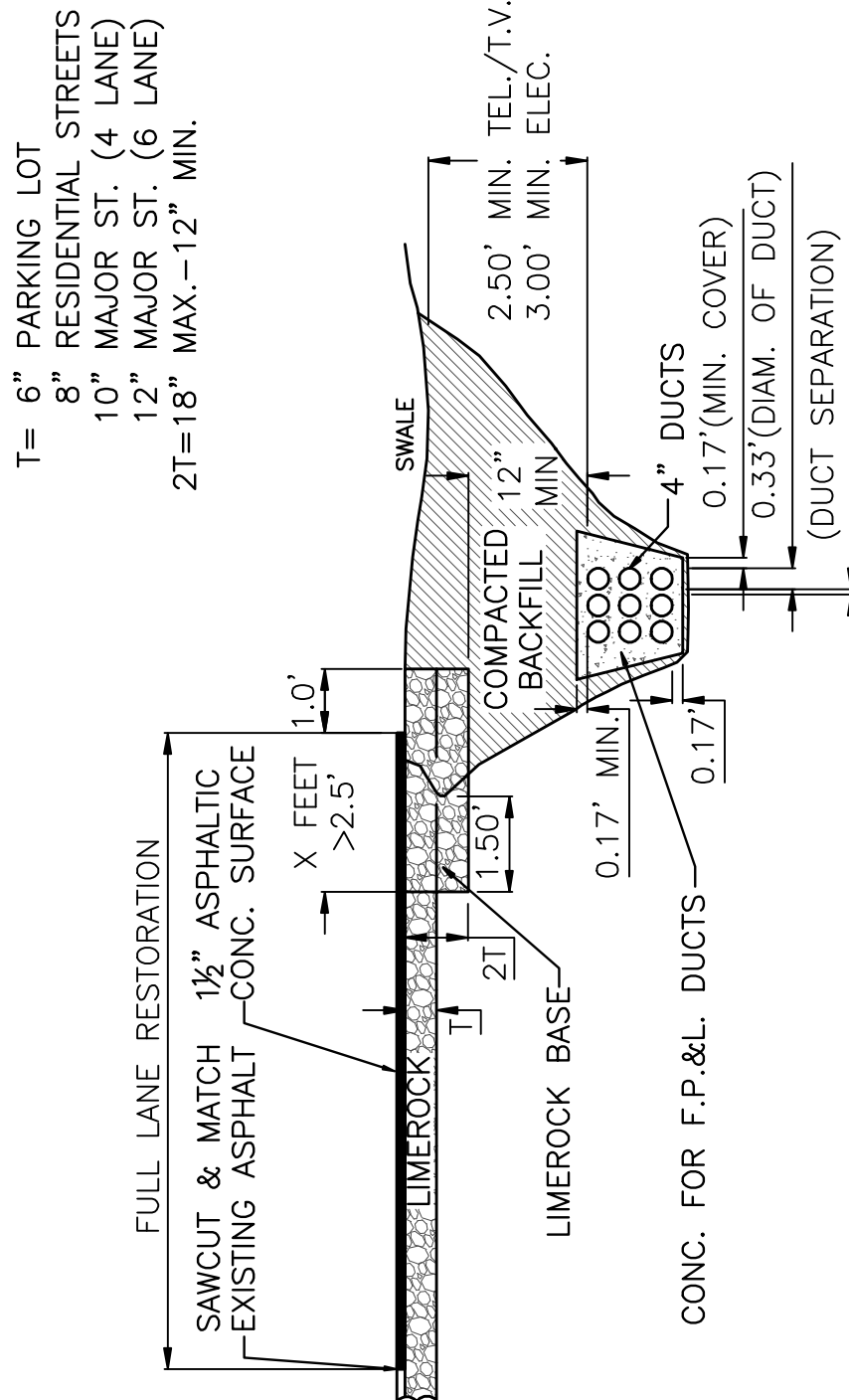
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DATE: APRIL '04	SCALE: N.T.S.	RESTORATION OF PAVEMENT PARALLEL UTILITIES INSTALLATION	P 4.7 <small>2 OF 2</small>
REVISED: MARCH '09	DRAWN BY:		



CITY OF FORT LAUDERDALE

OFFICE OF THE CITY ENGINEER



DATE: APRIL '08

SCALE:
N.T.S.

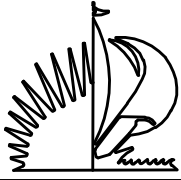
REVISED:
MARCH '09

DRAWN BY:

FULL LANE RESTORATION OF PAVEMENT

PARALLEL UTILITIES INSTALLATION

P
4.8
1 OF 2



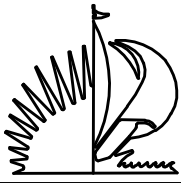
CITY OF FORT LAUDERDALE

OFFICE OF THE CITY ENGINEER

GENERAL NOTES

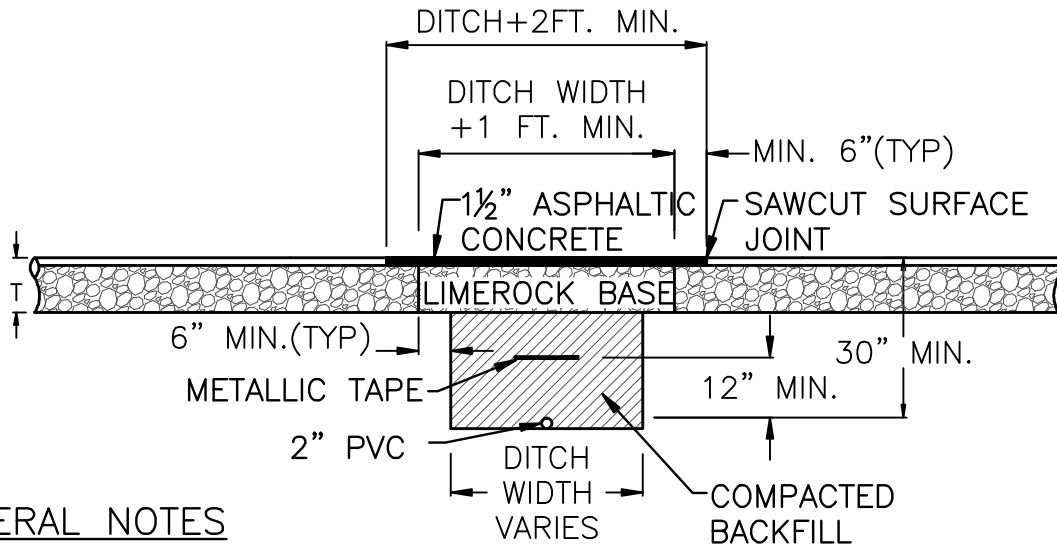
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DATE: APRIL '08	SCALE: N.T.S.	FULL LANE RESTORATION OF PAVEMENT PARALLEL UTILITIES INSTALLATION	P 4.8 <small>2 OF 2</small>
REVISED: MARCH '09	DRAWN BY:		



CITY OF FORT LAUDERDALE

OFFICE OF THE CITY ENGINEER



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6. SUBGRADE SHALL BE COMPACTED TO 100% OF DRY DENSITY PER AASHTO T-99 AND SHALL BE PLACED IN LIFTS NOT TO EXCEED 12" MAXIMUM, LOOSE MEASUREMENT.
7. FIBER OPTIC CABLE SHALL BE INSTALLED IN MINIMUM 2" SCHEDULE 40 P.V.C. CONDUIT.
8. LOCATION OF CONDUIT WITH RESPECT TO CENTERLINE OF STREETS, RIGHT-OF-WAY LINES OR OTHER BASE LINES WILL BE SUBJECT TO APPROVAL OF PUBLIC WORKS DEPARTMENT.
9. 0.005" X 3" WIDE MINIMUM METALLIC TAPE COLOR CODED U.L.C.C. ORANGE TO RUN CONTINUOUSLY WITH TRENCH. TAPE IDENTIFYING FIBER OPTIC CABLE WILL HAVE THE WORDS "CAUTION FIBER OPTIC" FOLLOWED BY OWNERS NAME AND TELEPHONE NUMBER.
10. U.L.C.C.=UTILITY LOCATION COORDINATION COUNCIL

DATE: APRIL '04

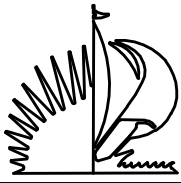
SCALE:
N.T.S.

REVISED:
MARCH '09

DRAWN BY:

RESTORATION OF PAVEMENT - FIBER
OPTIC CABLE INSTALLATION CROSSING

P
4.9



CITY OF FORT LAUDERDALE

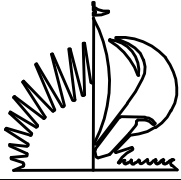
OFFICE OF THE CITY ENGINEER

NOTES:

1. STORM SEWER, GRAVITY WASTEWATER AND RECLAIMED WATER MAIN CROSSING UNDER POTABLE WATER MAINS SHALL BE LAID TO PROVIDE A MINIMUM VERTICAL DISTANCE OF EIGHTEEN (18) INCHES BETWEEN THE INVERT OF THE UPPER PIPE AND THE CROWN OF THE LOWER PIPE. WHERE THIS MINIMUM SEPARATION CANNOT BE MAINTAINED, THE CROSSING SHALL BE ARRANGED SO THAT THE STORM/WASTEWATER/RECLAIMED WATER PIPE JOINTS AND POTABLE WATER MAIN JOINTS ARE EQUIDISTANT FROM THE POINT OF CROSSING WITH NO LESS THAN TEN (10) FEET BETWEEN ANY TWO JOINTS, BOTH PIPES SHALL BE D.I.P., AND THE MINIMUM VERTICAL SEPARATION SHALL BE 6 INCHES. WHERE THERE IS NO ALTERNATIVE TO STORM/WASTEWATER/RECLAIMED WATER PIPES CROSSING OVER A POTABLE WATER MAIN, THE CRITERIA FOR MINIMUM 18" VERTICAL SEPARATION BETWEEN LINES AND JOINT ARRANGEMENT, AS STATED ABOVE, SHALL BE REQUIRED, AND BOTH PIPES SHALL BE D.I.P. IRRESPECTIVE OF SEPARATION. D.I.P. IS NOT REQUIRED FOR STORM SEWERS.
2. MAINTAIN MIN. TEN (10) FEET HORIZONTAL DISTANCE BETWEEN POTABLE WATER MAIN AND STORM SEWER, WASTEWATER MAIN, OR FORCE MAIN. MAINTAIN MIN. THREE (3) FEET HORIZONTAL DISTANCE (WALL TO WALL) BETWEEN RECLAIMED WATER MAIN AND POTABLE WATER MAIN, STORM SEWER, WASTEWATER GRAVITY MAIN OR FORCE MAIN. VERTICAL DISTANCE OF EIGHTEEN (18) INCHES BETWEEN THE OUTSIDE OF THE FORCE MAIN AND OUTSIDE OF THE POTABLE WATER MAIN OR RECLAIMED WATER MAIN WITH THE POTABLE WATER MAIN OR RECLAIMED WATER MAIN CROSSING OVER THE FORCE MAIN.
3. FORCE MAIN CROSSING POTABLE WATER MAIN OR RECLAIMED WATER MAIN SHALL BE LAID TO PROVIDE A MINIMUM VERTICAL DISTANCE OF EIGHTEEN (18) INCHES BETWEEN THE OUTSIDE OF THE FORCE MAIN AND OUTSIDE OF THE POTABLE WATER MAIN OR RECLAIMED WATER MAIN WITH POTABLE WATER MAIN OR RECLAIMED WATER MAIN CROSSING OVER THE FORCE MAIN.
4. FITTINGS SHALL BE RESTRAINED.
5. THE DEFLECTION TYPE CROSSING IS PREFERRED.
6. DO NOT EXCEED 75% OF MANUFACTURER'S RECOMMENDED MAXIMUM JOINT DEFLECTION FOR DUCTILE IRON PIPE. NO DEFLECTION AT THE JOINT IS ALLOWED FOR P.V.C. PIPE. BENDING OF P.V.C. PIPE SHALL NOT EXCEED THE FOLLOWING PARAMETERS:

PVC PIPE SIZE (INCH)	MIN. ALLOWED RADIUS (FT.)	MAX. DEFLECTION (INCH) PER 20' LENGTH
6"	300	8"
8"	400	6"
10"	600	4"
12"	600	4"

DATE: FEB'06	SCALE: N.T.S.	PRESSURE PIPE CONFLICT NOTES	P 401
REVISED: MARCH '09	DRAWN BY: R.C.		



CITY OF FORT LAUDERDALE

OFFICE OF THE CITY ENGINEER

I. FORCE MAIN AND WATER MAIN OUTSIDE OF WELLFIELD PROTECTION ZONE

MAXIMUM QUANTITY OF WATER (GALLONS PER HOUR) THAT MAY BE SUPPLIED TO MAINTAIN PRESSURE WITHIN 5 P.S.I. OF THE SPECIFIED TEST PRESSURE.

(MECHANICAL OR PUSH-ON JOINT, 18 FT. NOMINAL LENGTHS, PER 1000 FT. OF PIPE)

AVG. TEST PRESSURE	PIPE DIAMETER (INCHES)													
	PSI	2	3	4	6	8	10	12	14	16	18	20	24	30
150	0.10	0.14	0.18	0.27	0.37	0.46	0.55	0.64	0.73	0.83	0.92	1.10	1.38	

NOTES:

1. TO OBTAIN THE MAXIMUM QUANTITY OF WATER FOR PIPE WITH 20 FT. NOMINAL LENGTHS, MULTIPLY THE QUANTITY CALCULATED FROM THE TABLE BY 0.9.
2. THE MAXIMUM QUANTITY OF ADDED WATER FOR A PIPELINE IS CALCULATED BY MULTIPLYING THE QUANTITY PER HOUR AS OBTAINED FROM THE ABOVE TABLE, BY THE DURATION OF THE TEST IN HOURS, AND BY THE TOTAL LENGTH OF THE LINE BEING TESTED DIVIDED BY 1,000. IF THE LINE UNDER TEST CONTAINS SECTIONS OF VARIOUS DIAMETERS, THE MAXIMUM QUANTITY ADDED WILL BE THE SUM OF THE COMPUTED QUANTITIES FOR EACH SIZE.
3. MAXIMUM TEST LENGTH = 2,500 FEET PER SECTION.
4. THIS STANDARD SHALL REFLECT ANY REVISION OF A.W.W.A. C-600-05. HOWEVER, THE MAXIMUM QUANTITY OF WATER ADDED SHALL NOT EXCEED 50% OF RECOMMENDED LIMIT PER APPLICABLE AWWA C-600-05 STANDARD.

DATE: FEB'06

SCALE:

N.T.S.

REVISED:

MARCH '09

DRAWN BY:

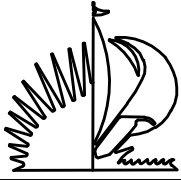
R.C.

PRESSURE TEST CRITERIA

P

403

1 OF 2



CITY OF FORT LAUDERDALE

OFFICE OF THE CITY ENGINEER

CONTINUES:

5. STANDARD TEST PRESSURE = 150 P.S.I.

6. FORMULA BASIS: $L = \frac{(S) \times (D) \times (P)^{\frac{1}{2}}}{133,200}$

L = MAXIMUM QUANTITY OF WATER TO BE ADDED (GALLONS PER HOUR)

S = LENGTH OF PIPE TESTED (FEET)

D = DIAMETER OF PIPE (INCHES)

P = TEST PRESSURE (P.S.I.)

7. PRESSURE TEST DURATION TO BE MIN. 2 HOURS.

8. DISINFECTION OF MAINS SHALL COMPLY WITH A.N.S.I./A.W.W.A. C-651-05 STANDARD.

9. DUCTILE IRON WATER MAIN PIPE SHALL CONFORM TO THE REQUIREMENTS OF A.N.S.I./A.W.W.A. C-151-'02.

II. FORCE MAIN AND WATER MAIN WITHIN WELLFIELD PROTECTION ZONE.

NOTES:

1. PRESSURE TEST PROCEDURE TO FOLLOW THE CURRENT AWWA C-600-05 STANDARD (150psi, (2) HOUR DURATION). THERE SHALL BE NO PRESSURE DROP IN THE PIPE DURING THE TEST ("ZERO" FILL-UP TOLERANCE).

DATE: FEB'06

SCALE:

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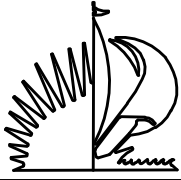
R.C.

PRESSURE TEST CRITERIA

P

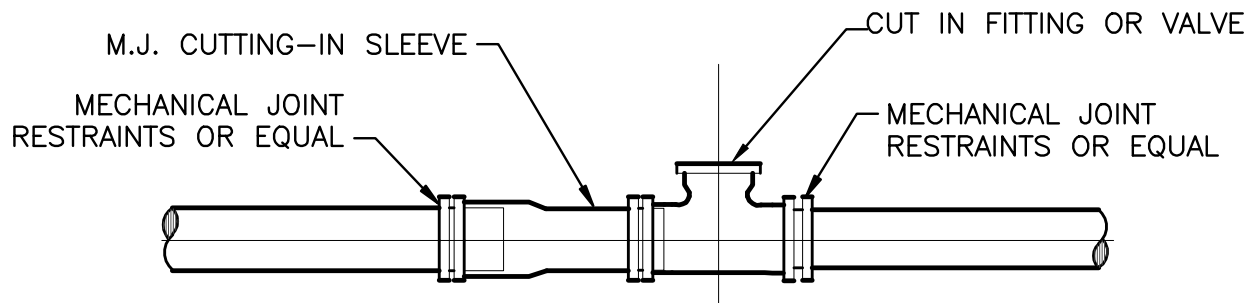
403

2 OF 2



CITY OF FORT LAUDERDALE

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DUCTILE IRON—MECHANICAL JOINT (FORCE MAIN)

1. MECHANICAL JOINTS RESTRAINTS ARE REQUIRED THROUGHOUT ASSEMBLY.

DATE: FEB'06

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MARCH '09

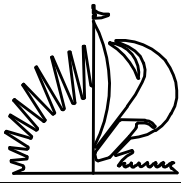
DRAWN BY:

R.C.

PRESSURE PIPE STANDARD CUT-IN DETAIL

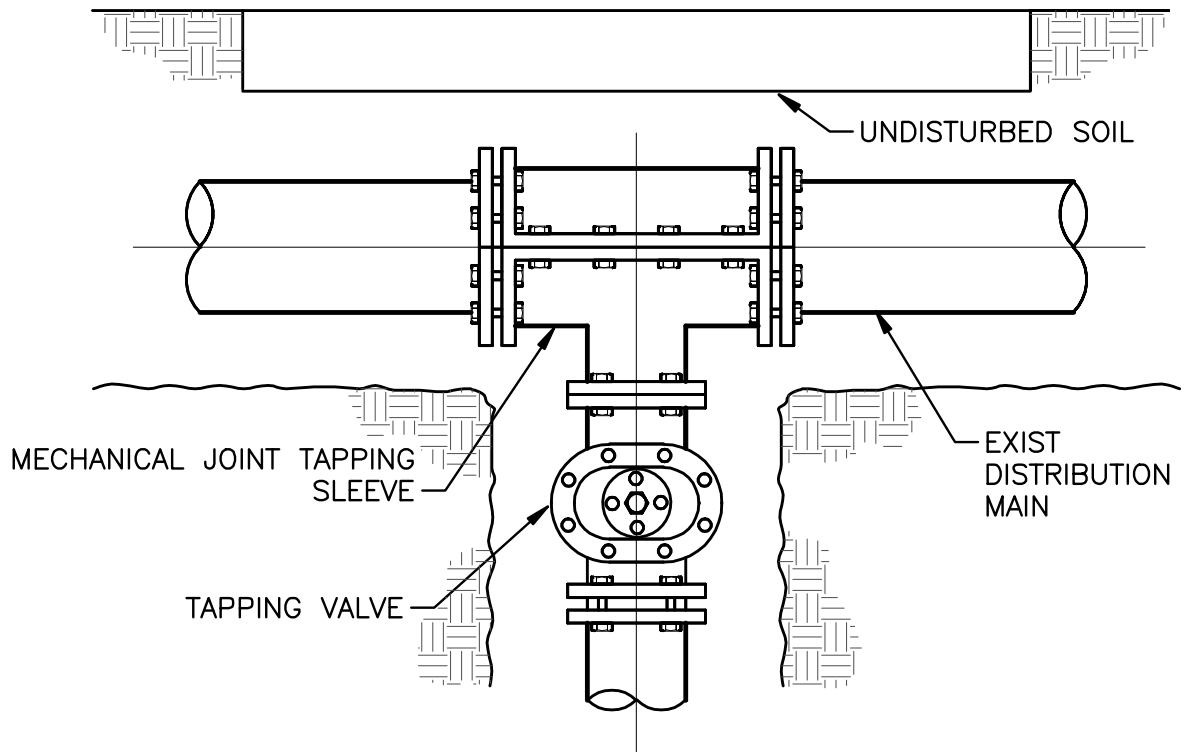
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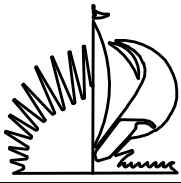
R.C.

PLAN VIEW
TAPPING TEE ASSEMBLY DETAIL

P

405





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NOTES:

1. PRECAST CONCRETE TYPE # 4000 P.S.I.
2. ALL OPENINGS SHALL BE SEALED WITH A WATERPROOF NON-SHRINKING GROUT.
3. LIFT HOLES ARE PERMITTED.
4. ALL PIPE HOLES SHALL BE PRECAST OR CORE-DRILLED.
5. MANHOLE FABRICATION SHALL BE IN ACCORDANCE WITH A.S.T.M. C-478 LATEST STANDARD.
6. PAINT INSIDE & OUTSIDE WITH 2 COATS OF AN APPROVED PROTECTIVE COATING. (MIN. 10 MIL D.F.T. PER COAT.)
7. CONCRETE COLLAR REQUIRED WHEN MANHOLE IS OUTSIDE PAVEMENT, SEE DETAIL.
8. AIR RELEASE VALVE SHALL BE TYPE AND SIZE APPROPRIATE FOR SERVICE INTENDED (2"MIN.).
9. CONSTRUCTION JOINT AT BASE IS PERMITTED.
10. DUCTILE IRON PIPE IS REQUIRED THROUGH THE MANHOLE.
11. THREADED AREAS OF CORPORATION STOP SHALL BE SPIRAL WRAPPED WITH TWO LAYERS OF TEFLON TAPE.
12. IF MANHOLE IS LARGER THAN 4' DIAMETER USE REDUCING GRADE RING OR CONE SECTION.
13. USE CONFLICT TYPE MANHOLE WITH PRECAST OR CAST IN-PLACE BOTTOM SLAB.

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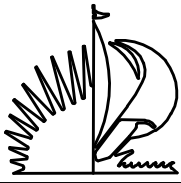
R.C.

**AIR RELEASE VALVE AND
MANHOLE IN PAVED AREAS**

P

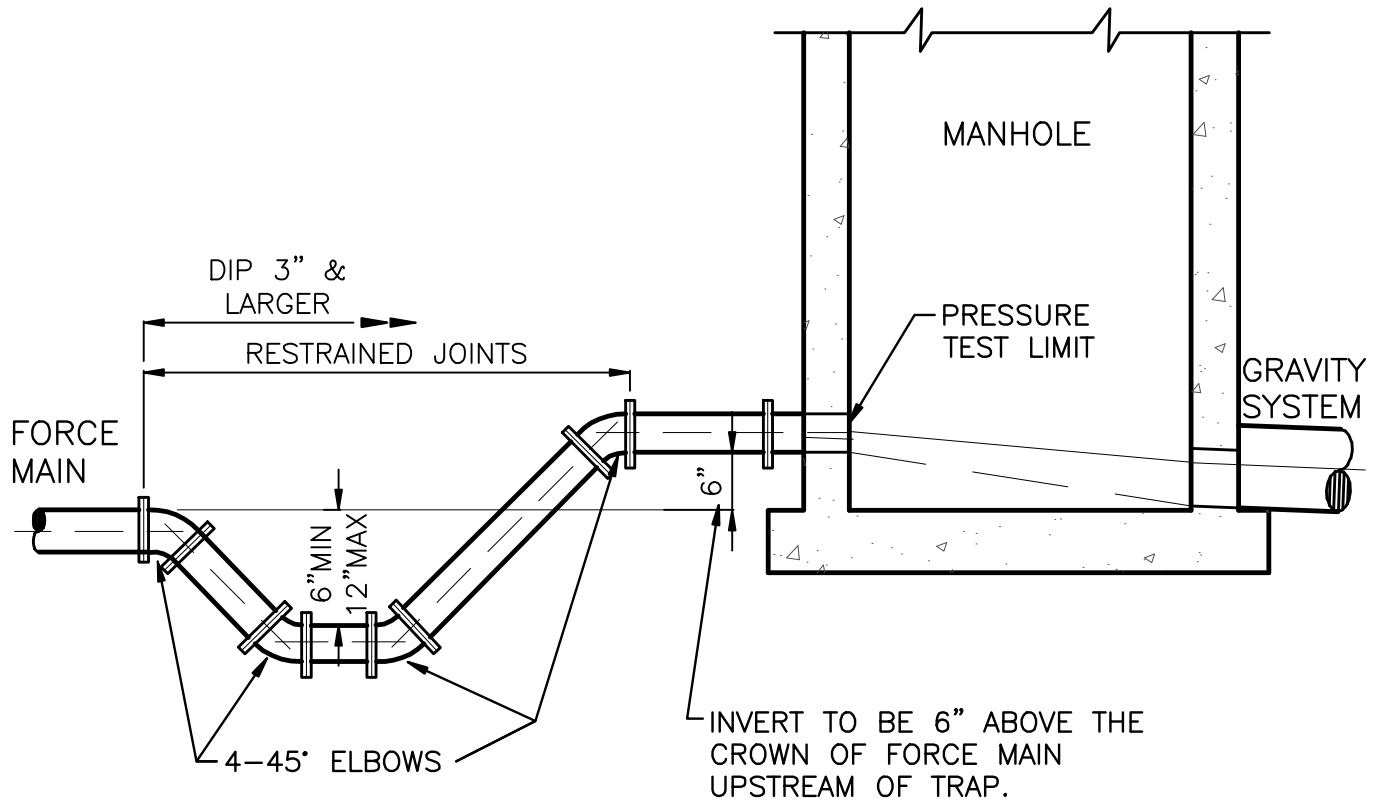
407

1 OF 2



CITY OF FORT LAUDERDALE

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NOTES:

1. FORCE MAIN TO ENTER MANHOLE AS CLOSE AS POSSIBLE TO 180° TO GRAVITY OUTLET.
2. THE INVERT LEVEL OF FORCE MAIN AT POINT OF ENTRY SHALL BE 6" ABOVE INVERT OF MANHOLE.
3. CORE ENTRY ONLY INTO EXISTING MANHOLES.
4. TRAP TO BE LOCATED PRIOR TO DROP INTO MANHOLE.
5. USE TWO 45° ELBOWS PAST TRAP IF ELEVATION DROP IS REQUIRED TO ENTER MANHOLE.
6. FLOW CHANNEL REQUIRED.
7. MANHOLE TO BE COATED AS SPECIFIED.

DATE: FEB'06

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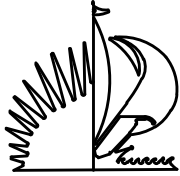
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R.C.

FORCE MAIN ENTERING MANHOLE

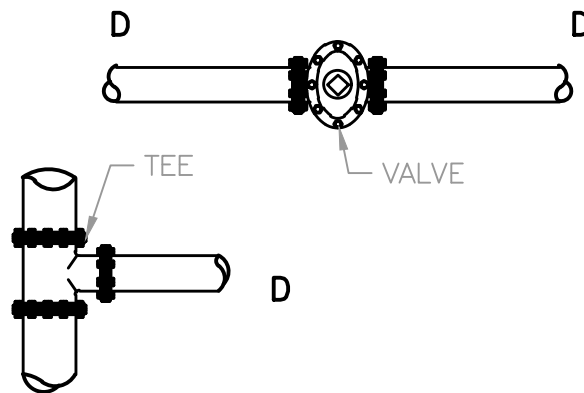
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408



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DEAD ENDS

SIZE	DISTANCE IN FEET		
	A & B	C	D
4"	18	18	54
6"	18	18	72
8"	18	36	90
10"	18	36	108
12"	18	36	126
14"	18	54	144
16"	18	54	162
18"	18	54	180
20"	18	72	198
24"	18	72	216

NOTE:

1. FOR PIPE SIZE OVER 24" SEE SPECIFICATIONS
2. ALL JOINTS WITHIN THE CALCULATED LENGTH PLUS THE NEXT JOINT BEYOND THE CALCULATED LENGTH MUST BE RESTRAINED.
3. IF THE DISTANCE BETWEEN FITTINGS IS LESS THAN OR EQUAL TO THE CALCULATED RESTRAINT LENGTH, RESTRAIN ALL JOINTS BETWEEN THOSE FITTINGS.

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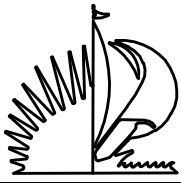
R.C.

MINIMUM RESTRAINED JOINT
LENGTH FOR PRESSURE
MAINS

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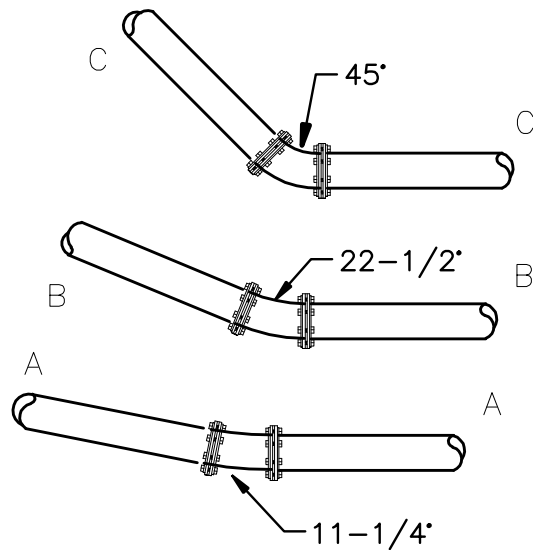
409

3 OF 3



CITY OF FORT LAUDERDALE

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DEFLECTIONS

DATE: FEB'06

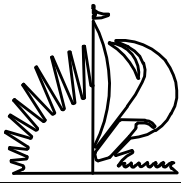
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MARCH '09

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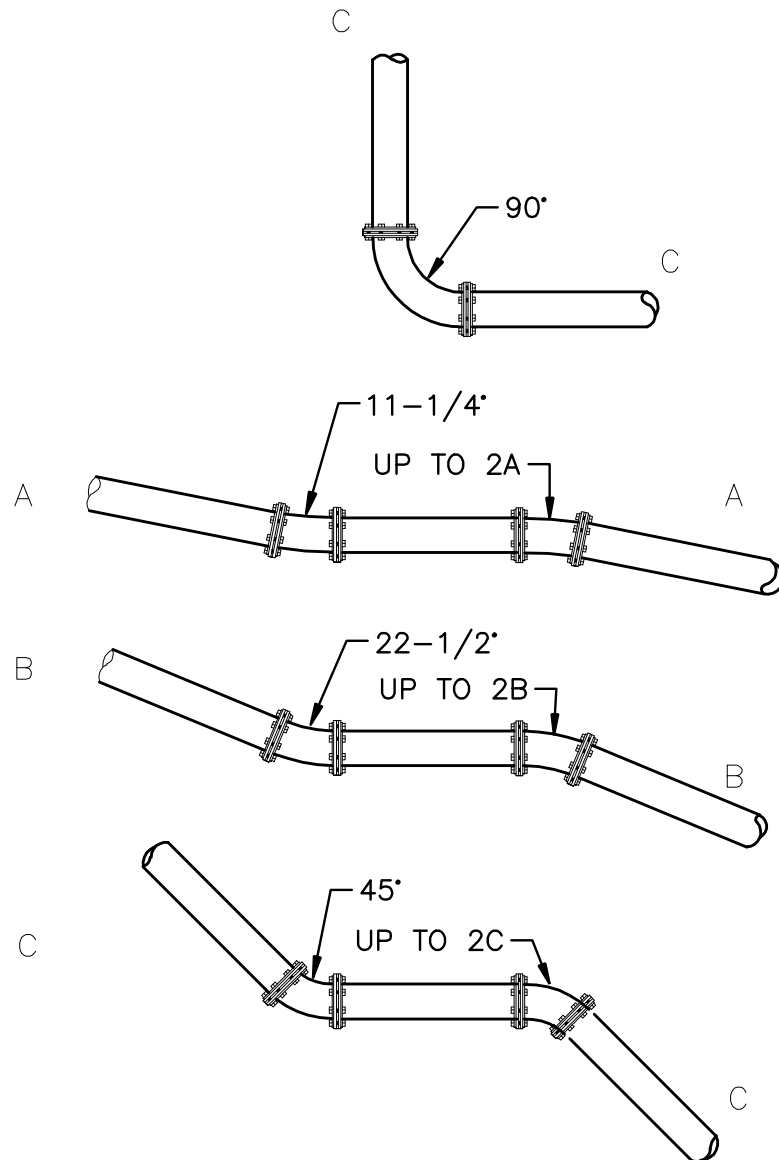
**MINIMUM RESTRAINED JOINT
LENGTH FOR PRESSURE
MAINS**

P
409
2 OF 3



CITY OF FORT LAUDERDALE

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OFFSETS

DATE: FEB'06

SCALE:

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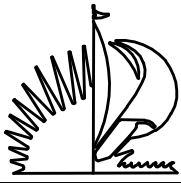
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**MINIMUM RESTRAINED JOINT
LENGTH FOR PRESSURE
MAINS**

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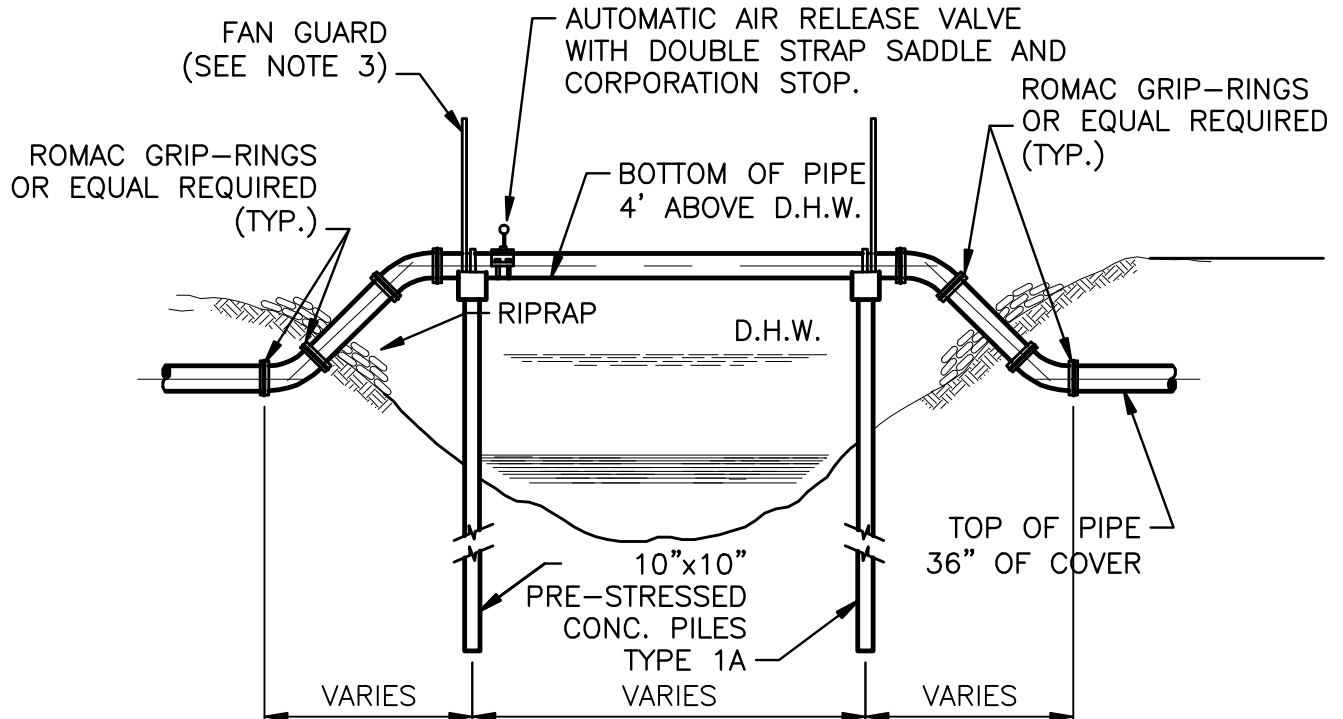
409

1 OF 3



CITY OF FORT LAUDERDALE

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NOTES:

1. ALL EXPOSED PIPE SHALL BE DUCTILE IRON OR PREFABRICATED STEEL WITH FLANGED FITTINGS. RETAINER GLANDS AND UNIFLANGE TYPE FITTINGS ARE NOT TO BE SUBSTITUTED FOR FLANGED FITTINGS.
2. SPAN LENGTHS AS REQUIRED BY PERMITTING AGENCY.
3. FAN GUARDS ARE REQUIRED. SEE DETAIL.
4. ALL EXPOSED PIPING SHALL BE PAINTED AS SPECIFIED IN THE APPROVED MATERIAL LIST.
5. ALL HARDWARE SHALL BE PAINTED WITH COAL TAR EPOXY.
6. PIPE SHALL BE CRADLED ON NEOPRENE, 1/2" THICK MINIMUM.
7. TIE-DOWN STRAPS MUST PROPERLY FIT AND SECURE PIPE IN CRADLE.
8. PIPE CRADLE IN CAP SHALL CONTACT 1/2 CIRCUMFERENCE OF PIPE. (SEE FAN GUARD DETAIL).
9. PILE LIFT CABLE SHALL BE REMOVED BELOW SURFACE; HOLE SHALL BE FILLED WITH EPOXY CEMENT.
10. THREADED AREAS OF CORPORATION STOP SHALL BE SPIRAL WRAPPED WITH TWO WRAPS OF TEFLON TAPE.
11. STAINLESS STEEL (316) REQUIRED FOR ALL STRAPS, SADDLES, FLANGE BOLTS, AND OTHER HARDWARE FOR INSTALLATIONS OVER BRACKISH OR MARINE WATERS (ANTI-GALL COMPOUND TO BE USED WHEN ASSEMBLING STAINLESS STEEL NUTS AND BOLTS).

DATE: FEB'08

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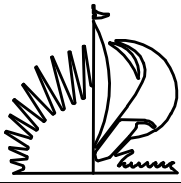
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**TYPICAL UTILITIES CANAL
CROSSING**

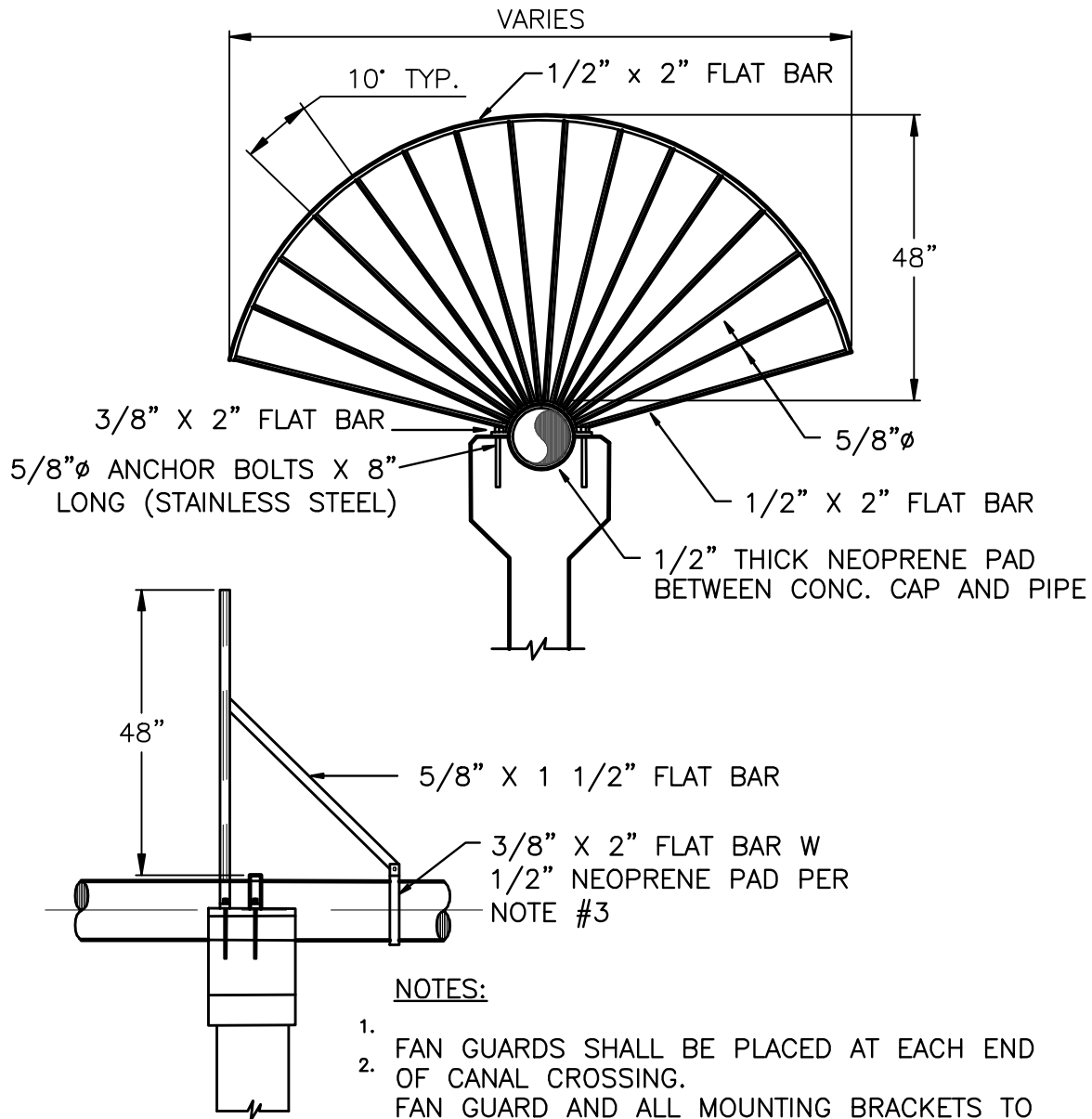
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410



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NOTES:

1. FAN GUARDS SHALL BE PLACED AT EACH END OF CANAL CROSSING.
2. FAN GUARD AND ALL MOUNTING BRACKETS TO BE HOT DIP GALVANIZED AND MOUNTING HARDWARE TO BE STAINLESS STEEL.
3. 1/2" THICK NEOPRENE PAD TO INSULATE PIPE FROM CONTACT WITH ALL MOUNTING HARDWARE, FAN GUARD HARDWARE, AND CONCRETE SURFACES.

DATE: FEB'08

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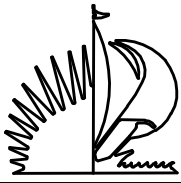
DRAWN BY:

R.C.

TYPICAL FAN GUARD

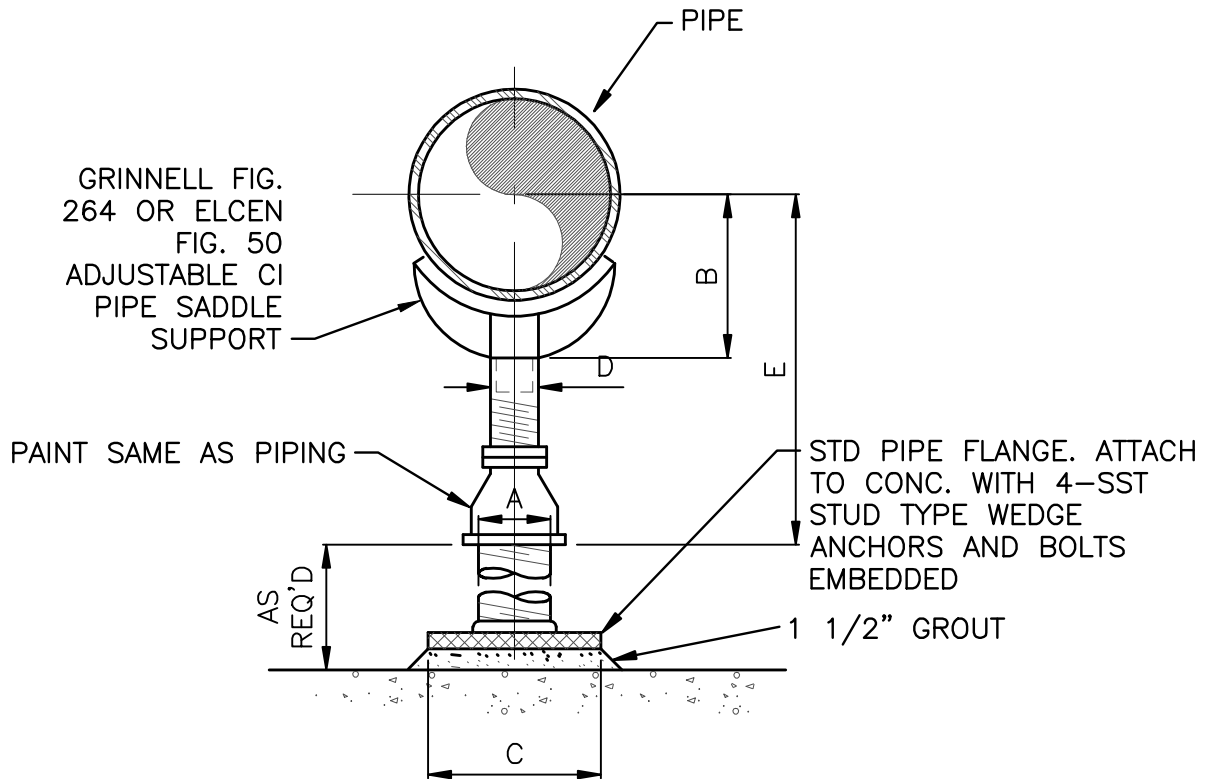
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411



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NOTES:

1. PROVIDE HALF ROUND RIGID INSULATION AND INSULATION PROTECTION SHIELD, SIMILAR TO GRINNELL FIGURE 167 OR ELCEN FIGURE 219, WHERE PIPING IS INSULATED.
2. PROVIDE NEOPRENE WAFFLE ISOLATION PAD, SIMILAR TO MASON TYPE 'W' OR KORFUND KORPAD 40, UNDER SUPPORT FOOT WHEN PIPING IS ISOLATED OR SUPPORT IS ADJACENT TO MECHANICAL EQUIPMENT.
3. FOR BASE, HEIGHT AND FLANGE DIMENSIONS, SEE TABLE.

DIMENSION TABLE						
PIPE SIZE	A	B	C	D	E	
					MIN.	MAX.
4"	3"	4-1/4"	9"	2-1/2"	9-1/4"	14"
6"	3"	5-1/2"	9"	2-1/2"	10-1/2"	15-1/4"
8"	3"	6-7/8"	9"	2-1/2"	11-3/4"	16-1/2"
10"	3"	8-1/2"	9"	2-1/2"	13-1/2"	18-1/4"
12"	3"	9-15/16"	9"	2-1/2"	15"	19-3/4"

DATE: FEB'06

SCALE:

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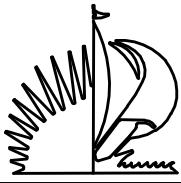
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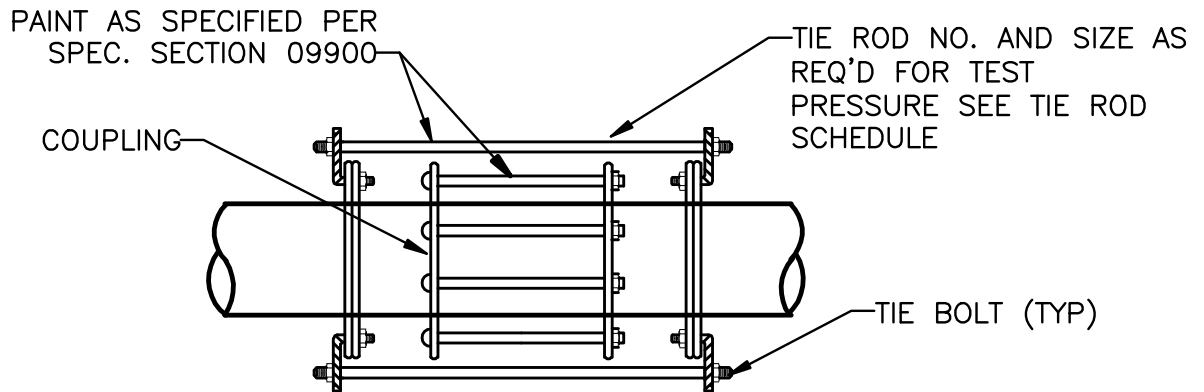
PIPE SUPPORT

**PS
500**

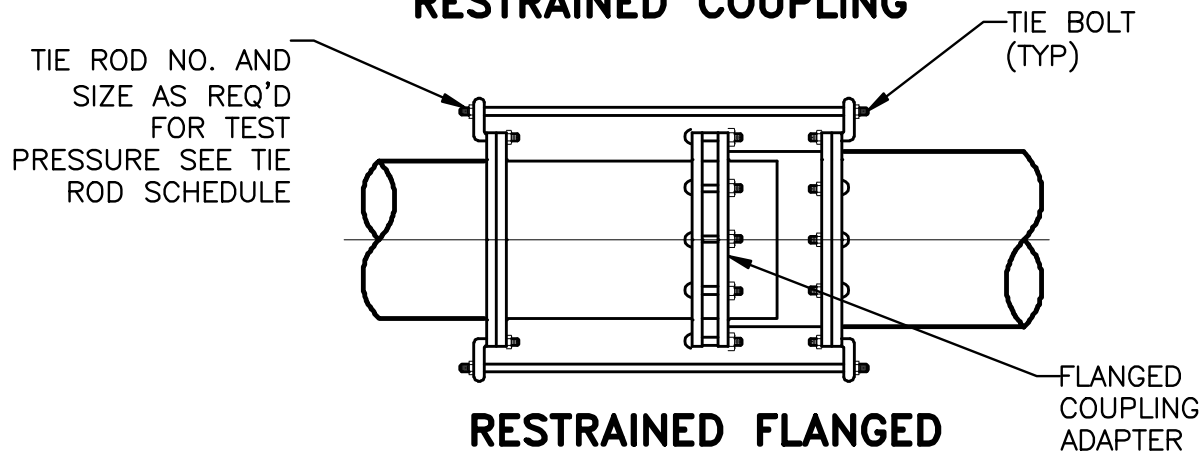


CITY OF FORT LAUDERDALE

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RESTRAINED COUPLING



RESTRAINED FLANGED COUPLING ADAPTER

TIE ROD SCHEDULE													
TEST PRESSURE		25 PSI		50 PSI		100 PSI		150 PSI		225 PSI		375 PSI	
PIPE DIAMETER (IN.)	MINIMUM PIPE WALL THICKNESS (IN.) *	TIE RODS		TIE RODS		TIE RODS		TIE RODS		TIE RODS		TIE RODS	
		DIA (IN.)	NO. REQD	DIA (IN.)	NO. REQD	DIA (IN.)	NO. REQD	DIA (IN.)	NO. REQD	DIA (IN.)	NO. REQD	DIA (IN.)	NO. REQD
6	3/16	—	—	—	—	5/8	2	5/8	2	5/8	2	5/8	2
8	3/16	—	—	—	—	5/8	2	5/8	2	5/8	2	3/4	2
10	3/16	—	—	—	—	5/8	2	5/8	2	3/4	2	7/8	2
12	3/16	5/8	2	5/8	2	5/8	2	5/8	2	3/4	2	7/8	4

DATE: FEB'06

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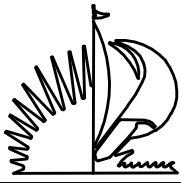
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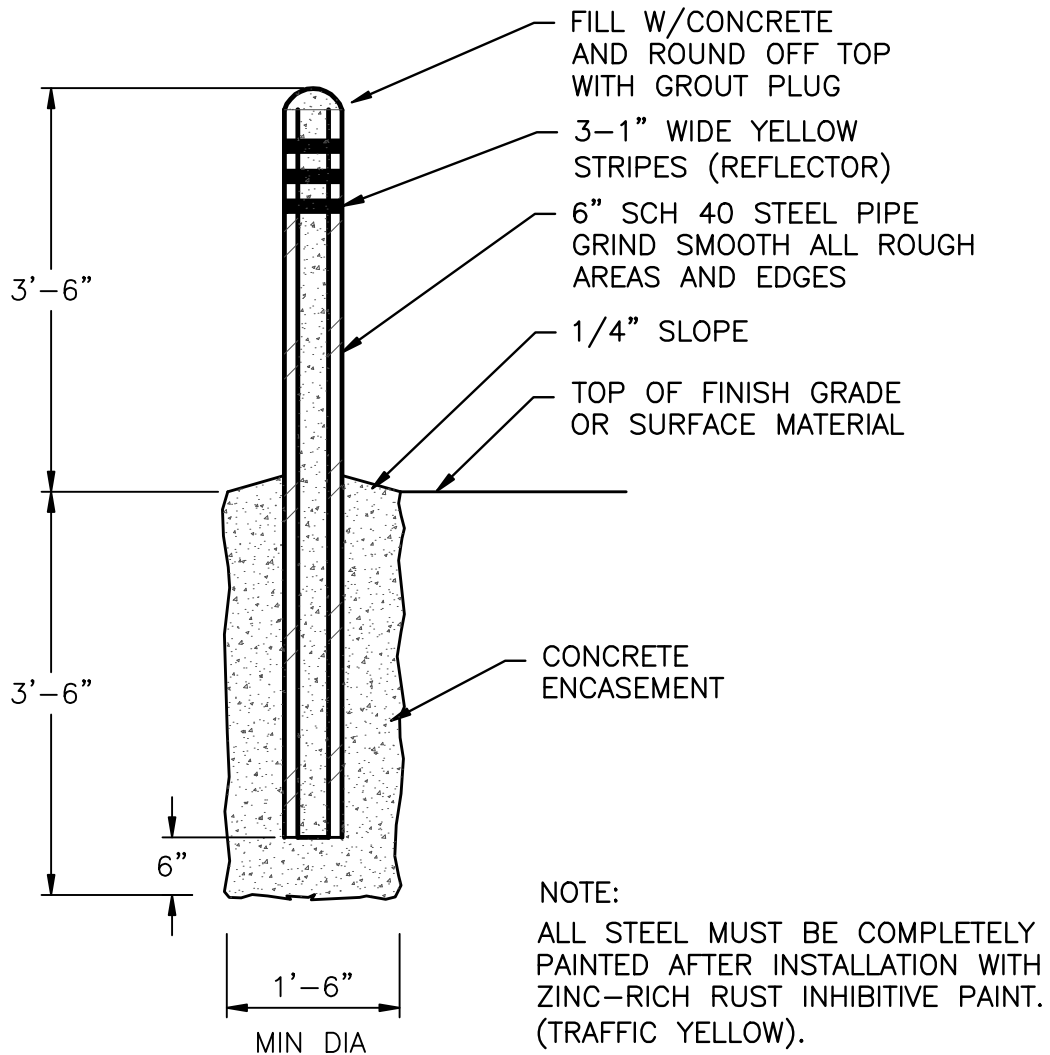
RESTRAINED COUPLING DETAILS

PS
501



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DATE: FEB'06

SCALE:

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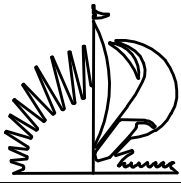
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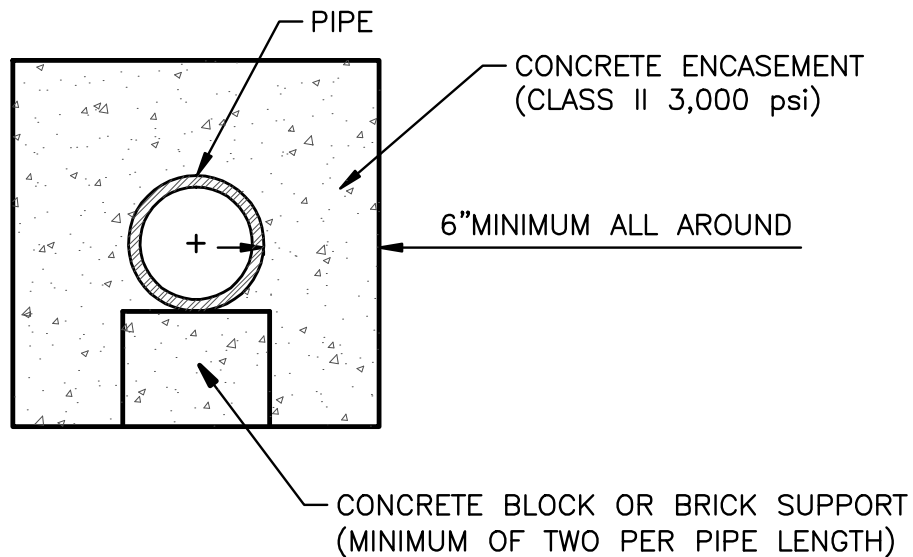
GUARD POST

**PS
502**



CITY OF FORT LAUDERDALE

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NOTES:

1. WHERE MINIMUM COVER, 36", IS NOT AVAILABLE ENCASEMENT WILL BE REQUIRED.
2. ALL CONCRETE ENCASEMENTS MUST BE FORMED AND INSPECTED BY THE CITY'S INSPECTOR PRIOR TO PLACING CONCRETE AND BACKFILLING.
3. WRAP PIPE IN VISQUEEN PRIOR TO POURING ENCASEMENT.
4. AT CROSSINGS, ENCASEMENT SHALL EXTEND TEN FEET (10') ON EITHER SIDE OF CROSSING.
5. BEGINNING AND ENDING OF ENCASEMENTS SHALL NOT BE MORE THAN 6" FROM A PIPE JOINT.

DATE: FEB'06

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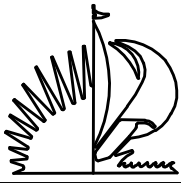
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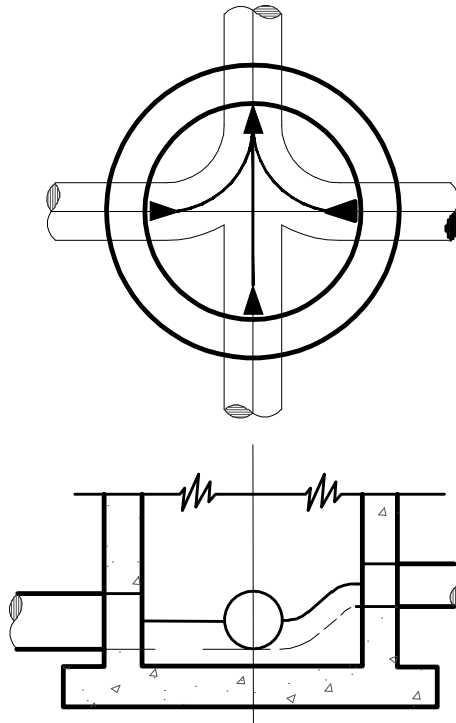
PIPE CONCRETE ENCASEMENT

**PS
503**



CITY OF FORT LAUDERDALE

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NOTES:

1. ALL INVERT CHANNELS ARE TO BE CONSTRUCTED FOR SMOOTH FLOW WITHOUT OBSTRUCTION.
2. PROPERLY SHAPED SPILLWAYS SHALL BE CONSTRUCTED BETWEEN PIPES WITH DIFFERENT INVERT ELEVATIONS TO PROVIDE FOR SMOOTH FLOWS.
3. SERVICE LATERALS SHALL NOT ENTER MANHOLES UNLESS SPECIFIED ON PLANS AND THEN MUST BE TREATED AS MAINS. (ELEVATIONS SHOWN, PRECAST HOLE, FLOW CHANNEL)
4. BRICK RUBBLE PERMITTED AS FLOW CHANNEL BUILDUP.
5. SIDEWALLS OF FLOW CHANNEL SHALL BE AT LEAST HALF OF PIPE HEIGHT AT ALL POINTS.
6. NO INSIDE DROP LARGER THAN 6" SHALL BE ALLOWED WITH 3 OR 4 INVERTS AND MANHOLES WITH A CHANGE OF DIRECTION OF FLOW OF MORE THAN 45 DEGREES.

DATE: FEB'06

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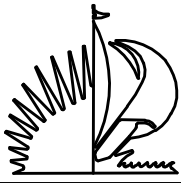
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INVERT FLOW CHANNELS

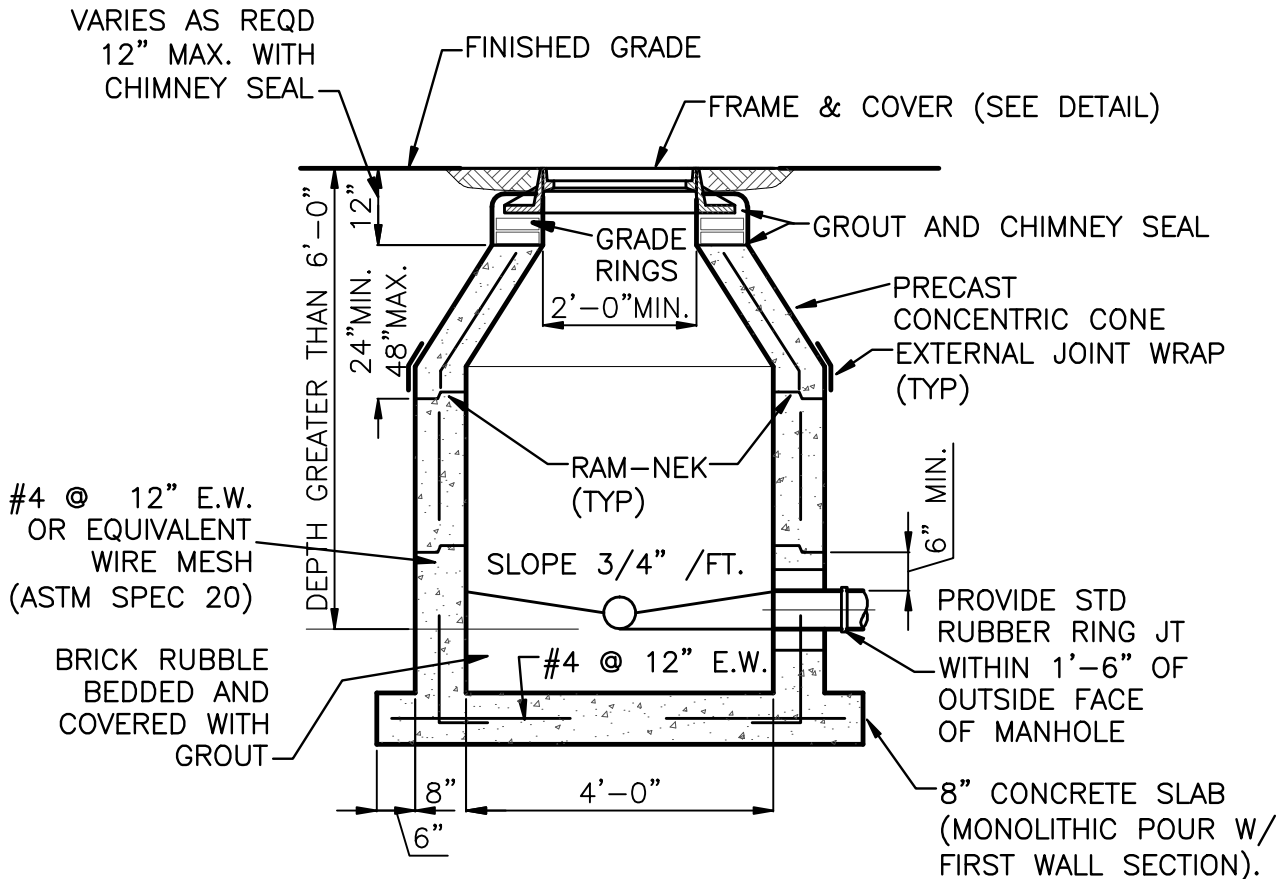
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202



CITY OF FORT LAUDERDALE

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NOTES:

1. PRECAST CONCRETE TYPE II 4000 P.S.I.
2. "RAM-NEK" OR EQUAL AT ALL RISER JOINTS (1/2" THICK WITH THE WIDTH AT LEAST 1/2 THE WALL THICKNESS).
3. ALL OPENINGS SHALL BE SEALED WITH A WATERPROOF NON-SHRINKING GROUT.
4. FLOW CHANNELS SHALL BE CONSTRUCTED TO DIRECT INFLUENT INTO FLOW STREAM. (SEE DETAIL)
5. LIFT HOLES ARE PERMITTED.

DATE: FEB'06

SCALE:

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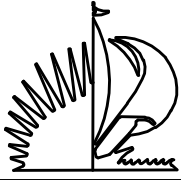
R.C.

STANDARD MANHOLE

S

203

1 OF 2



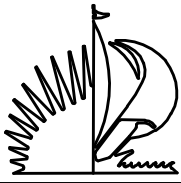
CITY OF FORT LAUDERDALE

OFFICE OF THE CITY ENGINEER

NOTES (CONT'D)

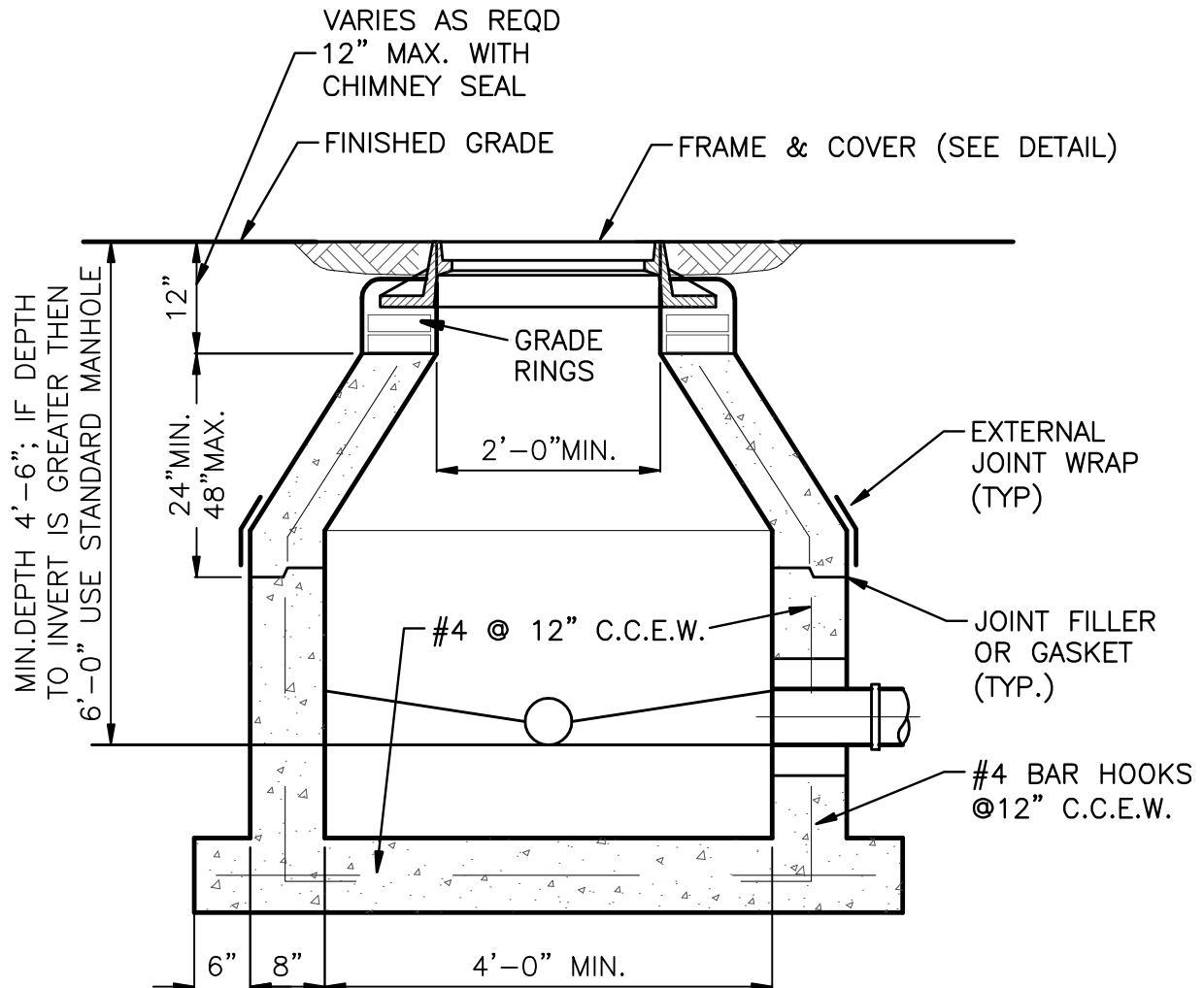
6. ALL PIPE HOLES SHALL BE PRECAST OR CORE DRILLED.
 - A. FOR PVC PIPE ENTERING MANHOLE WITH PRECAST HOLES USE THE APPROVED NON-ASBESTOS PVC-MANHOLE ADAPTER OR PRECAST FLEXIBLE MANHOLE SLEEVE FOR THE APPROPRIATE PIPE DIAMETER AND DIMENSION RATIO. THE ADAPTER SHALL NOT EXTEND MORE THAN 1" INTO THE MANHOLE. DOUBLE BANDING IS REQUIRED FOR FLEXIBLE MANHOLE SLEEVE.
 - B. CONNECTION TO A MANHOLE WITH A CORE DRILLED HOLE SHALL BE MADE USING A 5' MIN. DUCTILE IRON PIPE SECTION (EPOXY LINED) OR THE APPROVED PVC-MANHOLE ADAPTER.
7. INSIDE DROPS SHALL NOT BE DESIGNED TO EXCEED 1.80 FEET AND
8. NOT CONSTRUCTED TO EXCEED 2.0 FEET. MAX. 6" INSIDE DROP IS PERMITTED FOR MANHOLES WITH 3 OR MORE INVERTS AND MANHOLES WITH A CHANGE IN FLOW DIRECTION OF MORE THAN 45 DEGREES.
9. MANHOLE FABRICATION SHALL BE IN ACCORDANCE WITH ASTM C-478, LATEST STANDARD.
10. MINIMUM 5 FEET IS REQUIRED BETWEEN OUTSIDE OF MANHOLE AND SERVICE WYE.
11. MANHOLES TO BE PAINTED INSIDE AND OUTSIDE WITH 2 COATS OF AN APPROVED PROTECTIVE COATING. (ONE COAT RED, ONE COAT BLACK) MIN. 8-10 MILS D.F.T. PER COAT.
12. MANHOLE SHALL BE SET PLUMB TO LINE AND GRADE.

DATE: FEB'06	SCALE: N.T.S.	STANDARD MANHOLE	S 203 2 OF 2
REVISED: MARCH '09	DRAWN BY: R.C.		



CITY OF FORT LAUDERDALE

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NOTE:

ALL STANDARD MANHOLE NOTES AND DETAILS ARE APPLICABLE

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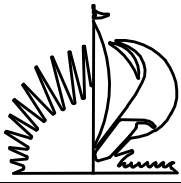
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SHALLOW MANHOLE

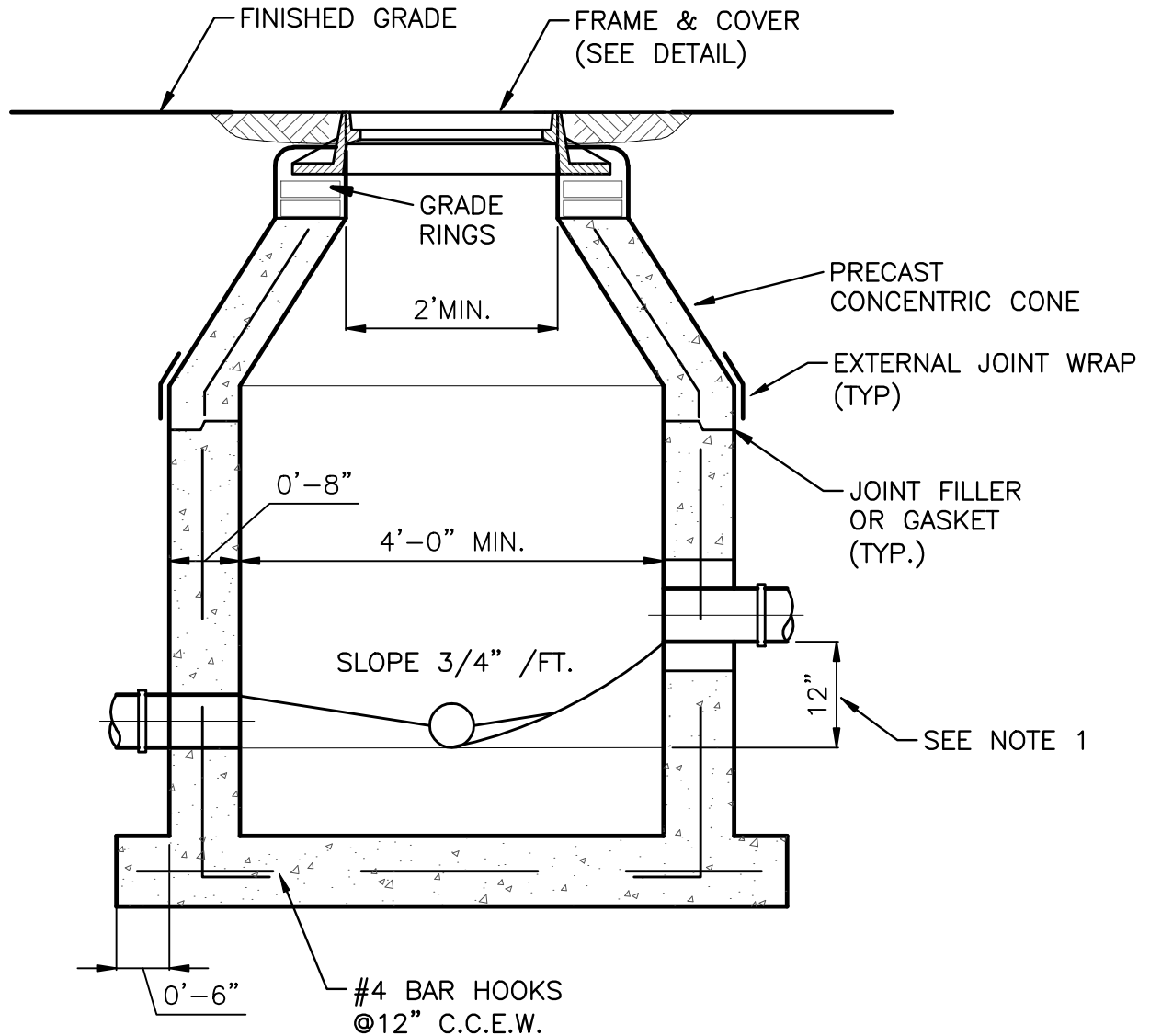
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204



CITY OF FORT LAUDERDALE

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NOTES:

1. INSIDE DROP TO BE USED WHEN DROP IS GREATER THAN 6 INCHES AND LESS THAN 24 INCHES AND/OR FOR LATERAL CONNECTIONS.
2. A FLOW CHANNEL SHALL BE CONSTRUCTED INSIDE MANHOLE TO DIRECT INFLUENT INTO FLOW STREAM.
3. CONSTRUCTION OF DROP SHALL PROVIDE AN OVERSIZED SLAB TO EXTEND UNDER THE DROP CONNECTION.
4. MINIMUM PIPE SIZE FOR DROP IS 8".
5. SEE "STANDARD MANHOLE" DETAIL FOR ADDITIONAL REQUIREMENTS.

DATE: FEB'06

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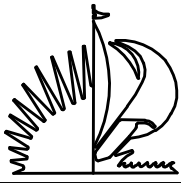
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DROP CONNECTION
PRECAST MANHOLE TYPE A

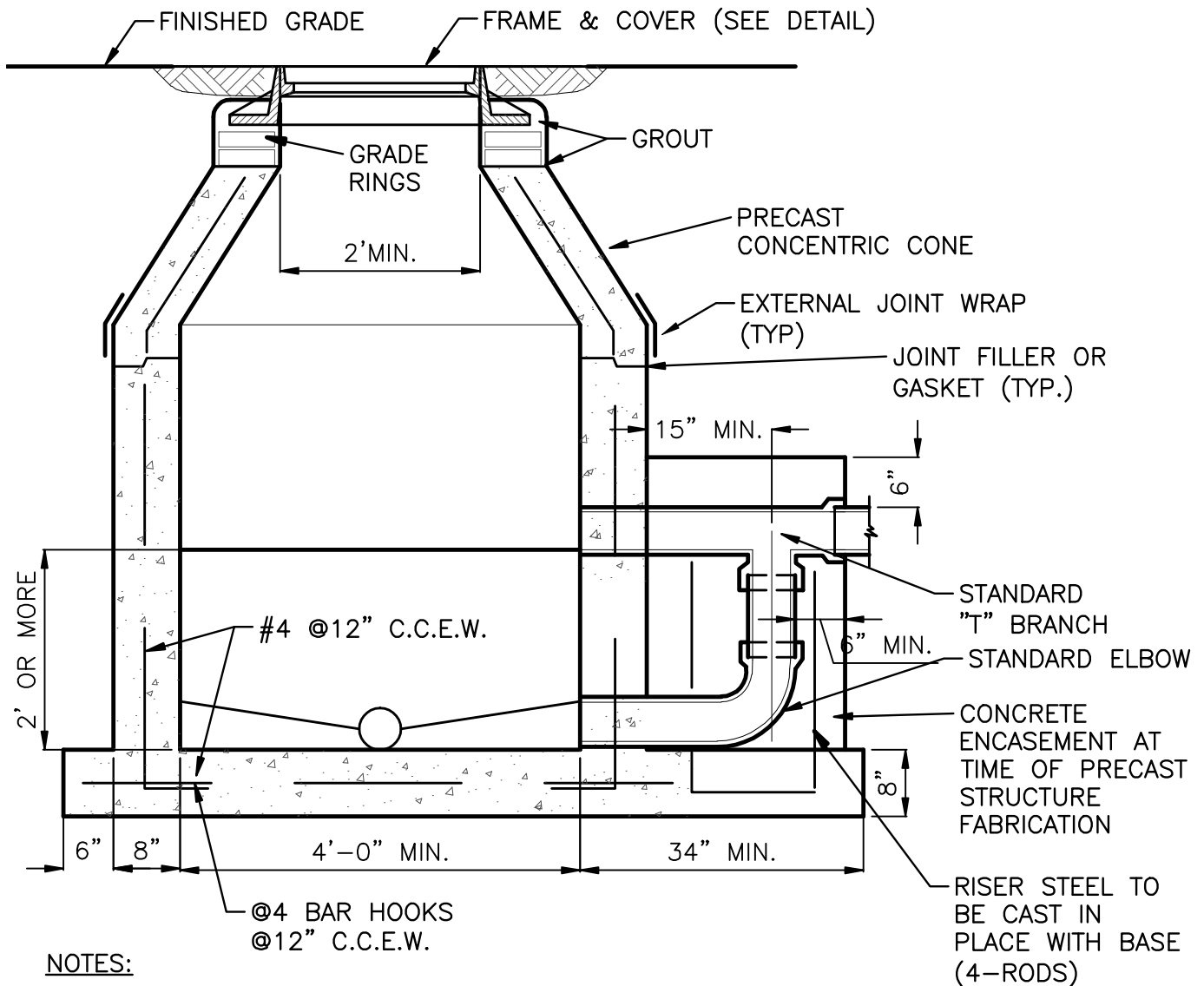
S

205



CITY OF FORT LAUDERDALE

OFFICE OF THE CITY ENGINEER



NOTES:

1. ALL DETAILS AND SPECIFICATIONS FOR STANDARD MANHOLES ARE APPLICABLE EXCEPT FOR REFERENCES TO DROP ASSEMBLY.
2. DROP CONNECTIONS SHALL BE REQUIRED WHENEVER AN INFLUENT INVERT IS LOCATED 2.0 FEET OR MORE ABOVE THE MAIN INVERT CHANNEL. DROP CONNECTIONS SHOULD NOT BE DESIGNED FOR LESS THAN A 2.0 FOOT DROP.
3. SOLVENT TYPE JOINT PVC FITTINGS TO BE UTILIZED IN THE DROP ASSEMBLY ONLY.
4. THE PRECAST BASE SHALL EXTEND FULLY UNDER THE DROP ASSEMBLY AND BE CONSTRUCTED MONOLITHICALLY WITH THE BASE SECTION.
5. BRICK AND CONCRETE RUBBLE ARE PERMITTED AS FILLER IN DROP ENCASEMENT.

DATE: FEB'06

SCALE:

N.T.S.

REVISED:

MARCH '09

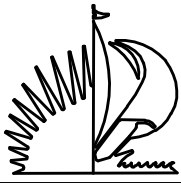
DRAWN BY:

R.C.

**OUTSIDE DROP CONNECTION
PRECAST MANHOLE TYPE B**

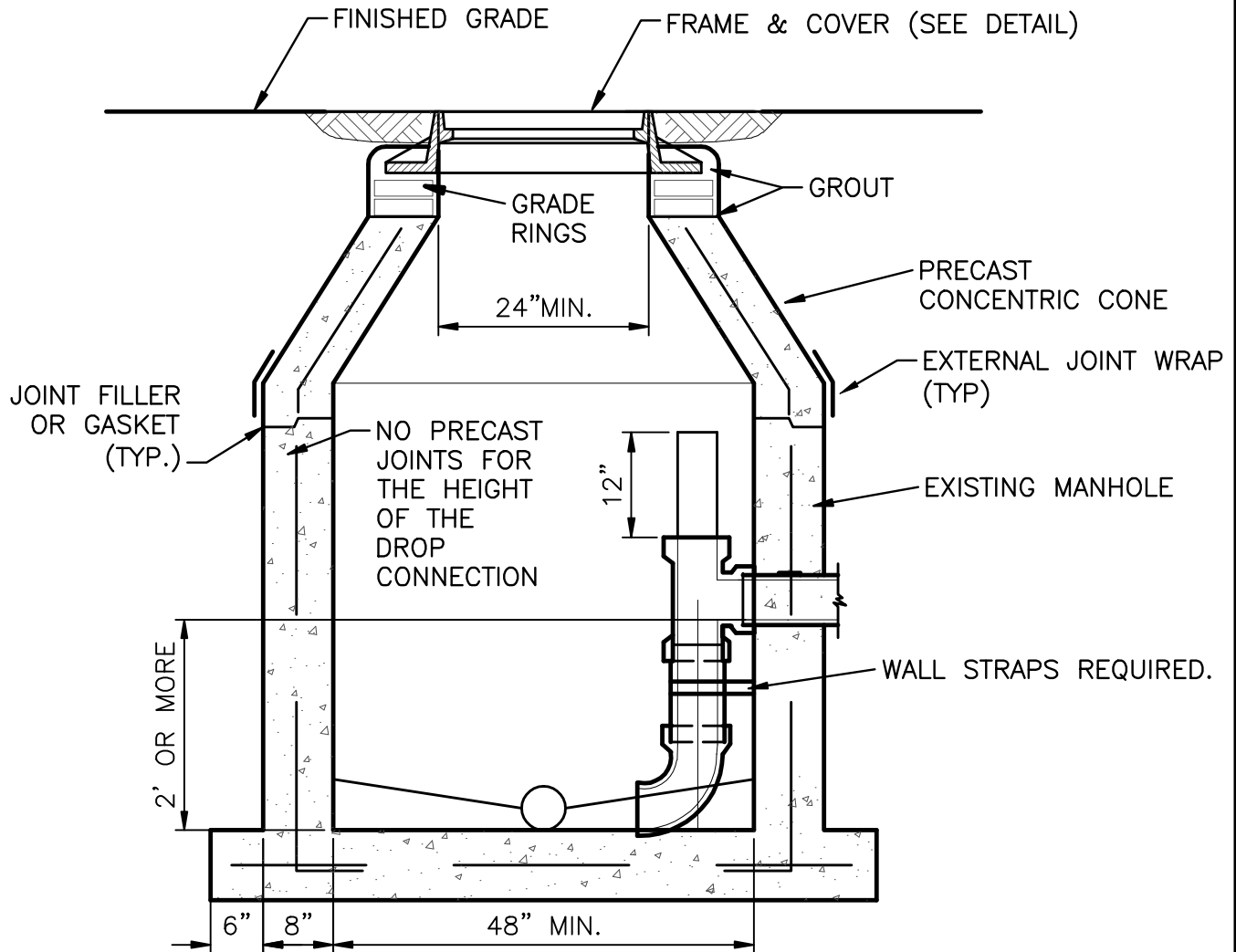
S

206



CITY OF FORT LAUDERDALE

OFFICE OF THE CITY ENGINEER



NOTES:

1. ALL DETAILS AND SPECIFICATIONS FOR STANDARD MANHOLES ARE APPLICABLE EXCEPT FOR REFERENCES TO DROP ASSEMBLY.
2. INSIDE DROP CONNECTION TO BE USED ONLY FOR A SINGLE DROP CONNECTION TO AN EXISTING MANHOLE.
3. DROP CONNECTIONS SHALL BE REQUIRED WHENEVER AN INFLUENT INVERT IS LOCATED 2.0 FEET OR MORE ABOVE THE MAIN INVERT CHANNEL. DROP CONNECTIONS SHOULD NOT BE DESIGNED FOR LESS THAN A 2.4 FOOT DROP.
4. SOLVENT TYPE JOINT PVC FITTINGS TO BE UTILIZED IN THE DROP ASSEMBLY ONLY.

DATE: FEB'06

SCALE:

N.T.S.

REVISED:

MARCH '09

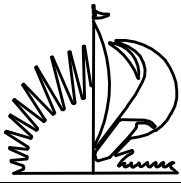
DRAWN BY:

R.C.

**INSIDE DROP CONNECTION
EXISTING MANHOLE C**

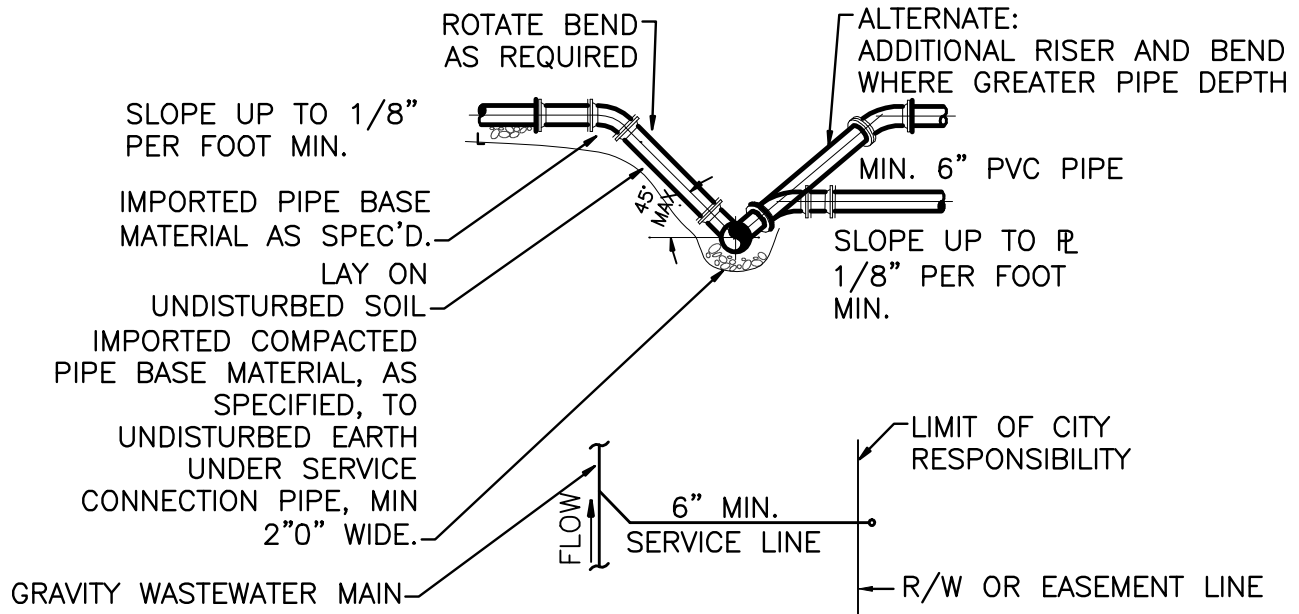
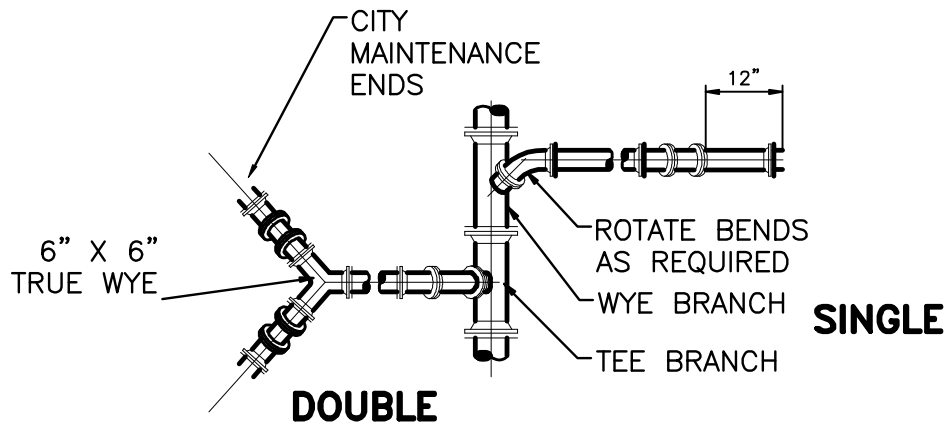
S

207



CITY OF FORT LAUDERDALE

OFFICE OF THE CITY ENGINEER



NOTES:

1. WASTEWATER MAIN WYE BRANCH TO MATCH MAIN PIPE MATERIAL.
2. NO 90° BENDS SHALL BE USED FOR WASTEWATER SERVICE AND CLEANOUT INSTALLATIONS.
3. SERVICE LATERALS SHALL TERMINATE AT 12" INSIDE THE PROPERTY LINE AT A DEPTH OF 3 FEET EXCEPT WHERE A DEEPER INVERT IS REQUIRED BY EXISTING BUILDING CONDITIONS.

DATE: FEB'06

SCALE:

N.T.S.

REVISED:

MARCH '09

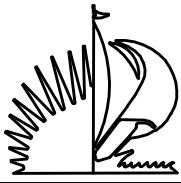
DRAWN BY:

R.C.

**TYPICAL WASTEWATER SERVICE
CONNECTION**

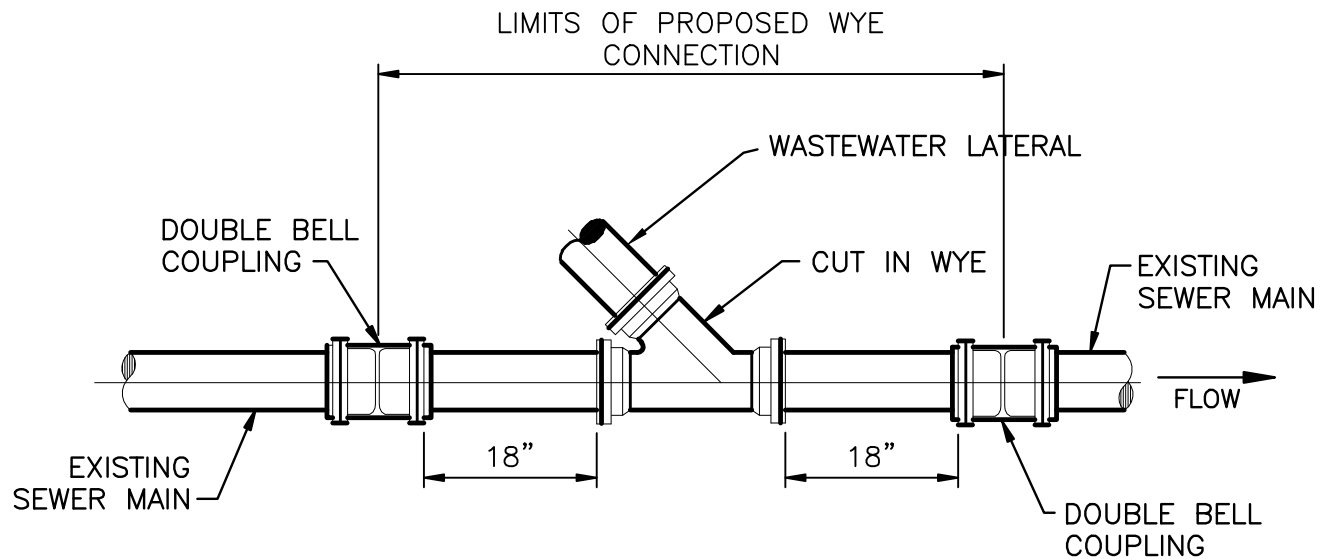
S

208



CITY OF FORT LAUDERDALE

OFFICE OF THE CITY ENGINEER



DATE: FEB'06

SCALE:

N.T.S.

REVISED:

MARCH '09

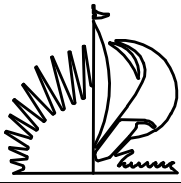
DRAWN BY:

R.C.

**NEW LATERAL ON EXISTING
GRAVITY WASTEWATER MAIN**

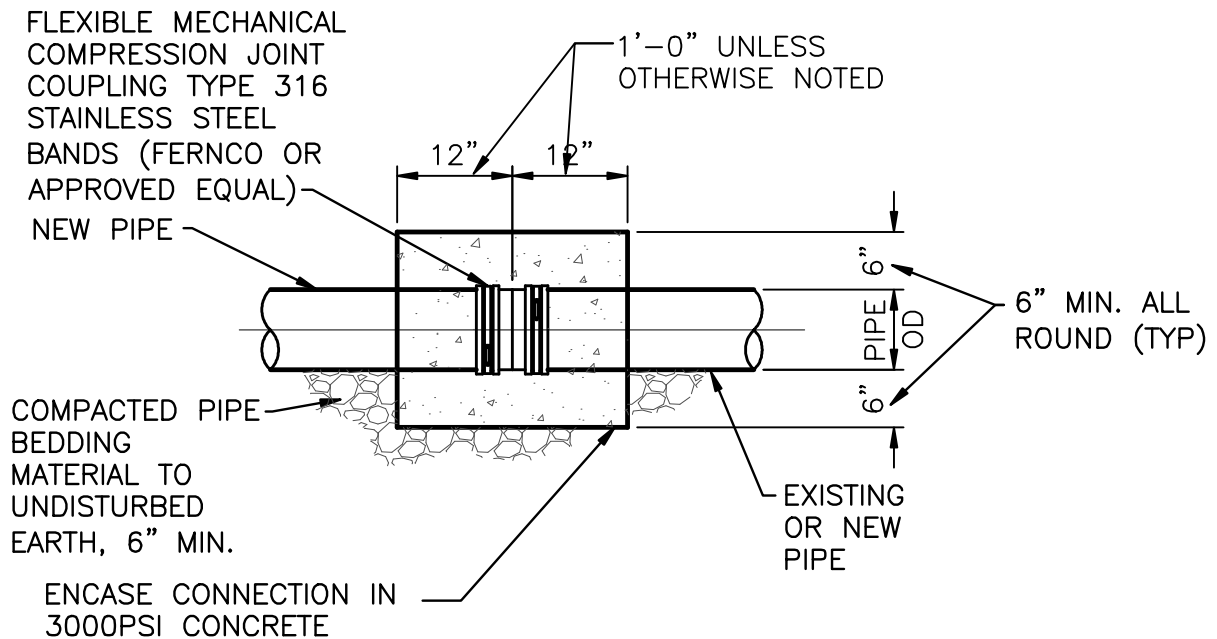
S

210



CITY OF FORT LAUDERDALE

OFFICE OF THE CITY ENGINEER



DATE: FEB'06

SCALE:

N.T.S.

REVISED:

MARCH '09

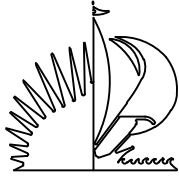
DRAWN BY:

R.C.

**JOINT OF DESSIMILAR GRAVITY
SEWER PIPES**

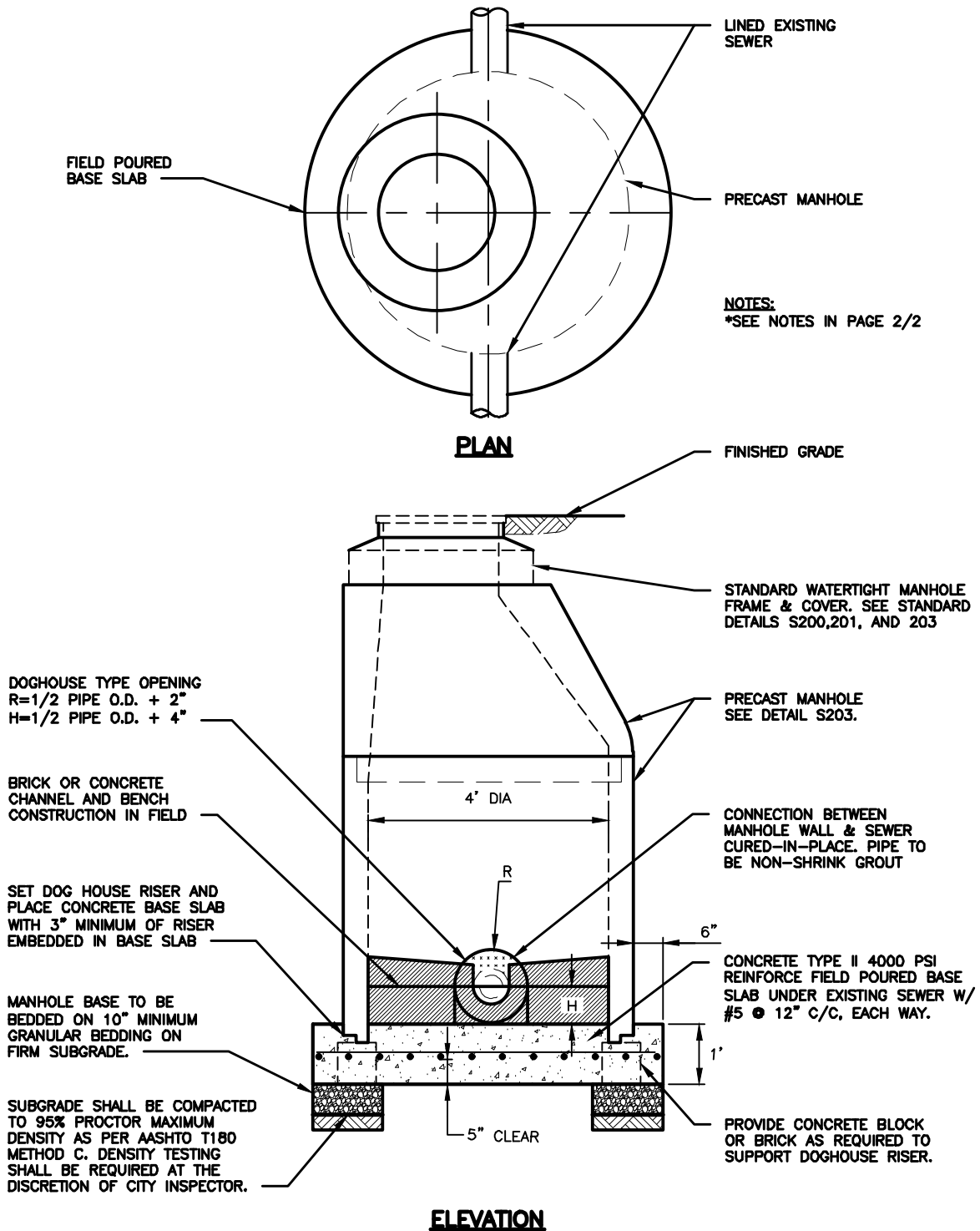
S

211



CITY OF FORT LAUDERDALE

OFFICE OF THE CITY ENGINEER



DATE: July 2018

SCALE:

N.T.S.

REVISED:

July 2018

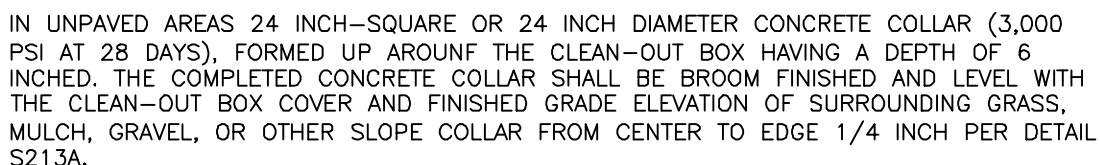
DRAWN BY:

B.H.

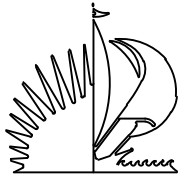
PRECAST CONCRETE MANHOLE BUILT
OVER EXISTING CURED IN PLACE
LINED SEWER PIPE

S

212
1 of 2

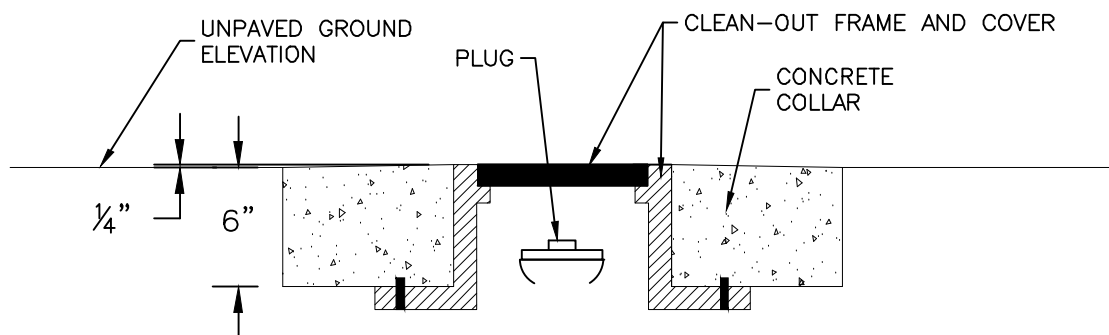


DATE: Sep-18	SCALE:	SEWER SERVICE CONNECTION AT PROPERTY LINE OR EASEMENT LINE (PROFILE)	S 213
REVISED: 10/06/20	NTS DRAWN BY: B.H.		



CITY OF FORT LAUDERDALE

OFFICE OF THE CITY ENGINEER



DATE: Oct-20

SCALE:

NTS

REVISED:

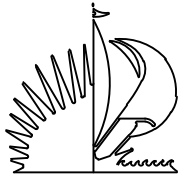
10/06/20

DRAWN BY:

B.H.

SEWER SERVICE
CONCRETE COLLAR
FOR CLEANOUTS

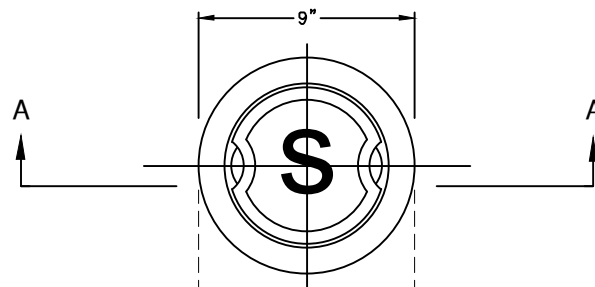
S
213A



CITY OF FORT LAUDERDALE

OFFICE OF THE CITY ENGINEER

NOTES: IN VEHICULAR TRAFFIC AREAS
NOT PAVED SEE NOTE "A" BELOW.



PLAN

EXPANSION PLUG NOTES:

1. EXPANSION PLUG SHALL NOT INTERFERE WITH LID.
2. PLUG FLANGE SHALL BE LARGER THAN PIPE I.D.
3. THREADED COMPONENTS SHALL BE FLATTENED OR STAKED TO PREVENT DISASSEMBLY.

FINISHED GRADE OR
PAVING (SEE NOTE ABOVE)

COVER (DIMENSIONS PER IRON
CASTING MANUFACTURER)

6" MAX SET PVC
CLEANOUT PLUG NOT TO
INTERFERE WITH COVER

PVC CLEANOUT PLUG

PVC CLEANOUT ADAPTER

SAND CUSHION
TRAFFIC AREAS ONLY

10.5"

4" PIPE

FOR PAVED AREAS, PROVIDE 6"
THICK CONCRETE PAD 20"
DIAMETER ($f'_c=3000$ PSI @ 28
DAYS).

PVC CLEANOUT RISER, FOR
ADDITIONAL INFORMATION,
SEE DETAIL NOTES S213.

COMPACT 8" MIN. OF LBR 70
GRAVEL TO 98% AASHTO T-180

NOTE "A":
PROVIDE 12" MIN. GRAVEL
BEDDING FOR UN-PAVED AREAS.
COMPACT 12" LBR 70 GRAVEL
TO 98% AASHTO T-180

PLACE CONCRETE COLLAR ABOVE
GRAVEL PER DETAIL S213A.

NOTE:

SEE S213 FOR ADDITIONAL CLEANOUTS DETAILS.

DATE: Sep-18

SCALE:

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

REVISED:

Sep-18

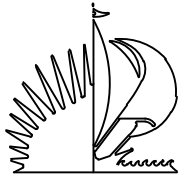
DRAWN BY:

B.H.

CLEAN-OUT COVER ASSEMBLY FOR 4-INCH CLEAN-OUTS

S

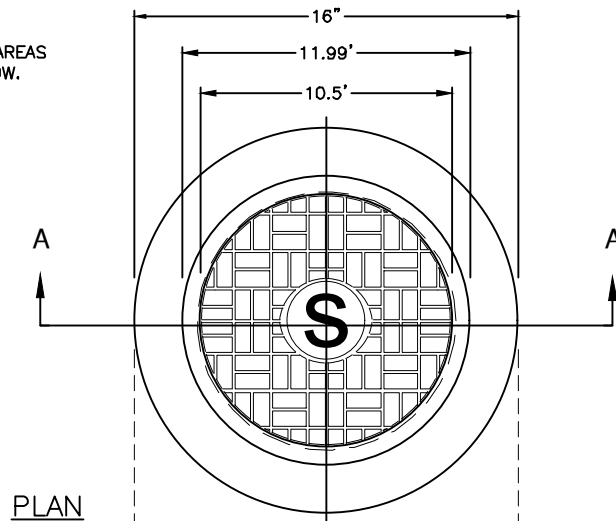
214



CITY OF FORT LAUDERDALE

OFFICE OF THE CITY ENGINEER

NOTES: IN VEHICULAR TRAFFIC AREAS
NOT PAVED SEE NOTE "A" BELOW.



FINISHED GRADE OR
PAVING (SEE NOTE
ABOVE)

4' MAX
SET PVC CLEANOUT
PLUG NOT TO
INTERFERE WITH
COVER

PVC CLEANOUT
PLUG

PVC CLEANOUT
ADAPTER

PROVIDE RUBBER
GASKET

SAND CUSHION
TRAFFIC AREAS
ONLY

FOR PAVED AREAS, PROVIDE
6" THICK CONCRETE PAD 20"
DIAMETER ($f'c=3000$ PSI @ 28
DAYS).

PVC CLEANOUT RISER. FOR
ADDITIONAL INFORMATION SEE
DETAIL S213

COMPACT 8" MIN LBR 70
GRAVEL TO 98% AASHTO T-180

NOTE "A":
PROVIDE 12" MIN. GRAVEL
BEDDING FOR UN-PAVED AREAS.
COMPACT 12" LBR 70 GRAVEL
TO 98% AASHTO T-180

PLACE CONCRETE COLLAR ABOVE
GRAVEL PER DETAIL S213A.

NOTE:

SEE S213 FOR ADDITIONAL CLEANOUTS DETAILS.

SECTION A-A

DATE: Sep-18

SCALE:

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

REVISED:

Sep-18

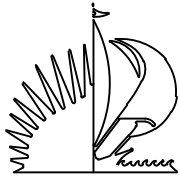
DRAWN BY:

B.H.

**CLEAN-OUT COVER
ASSEMBLY FOR 6-INCH CLEAN-OUTS**

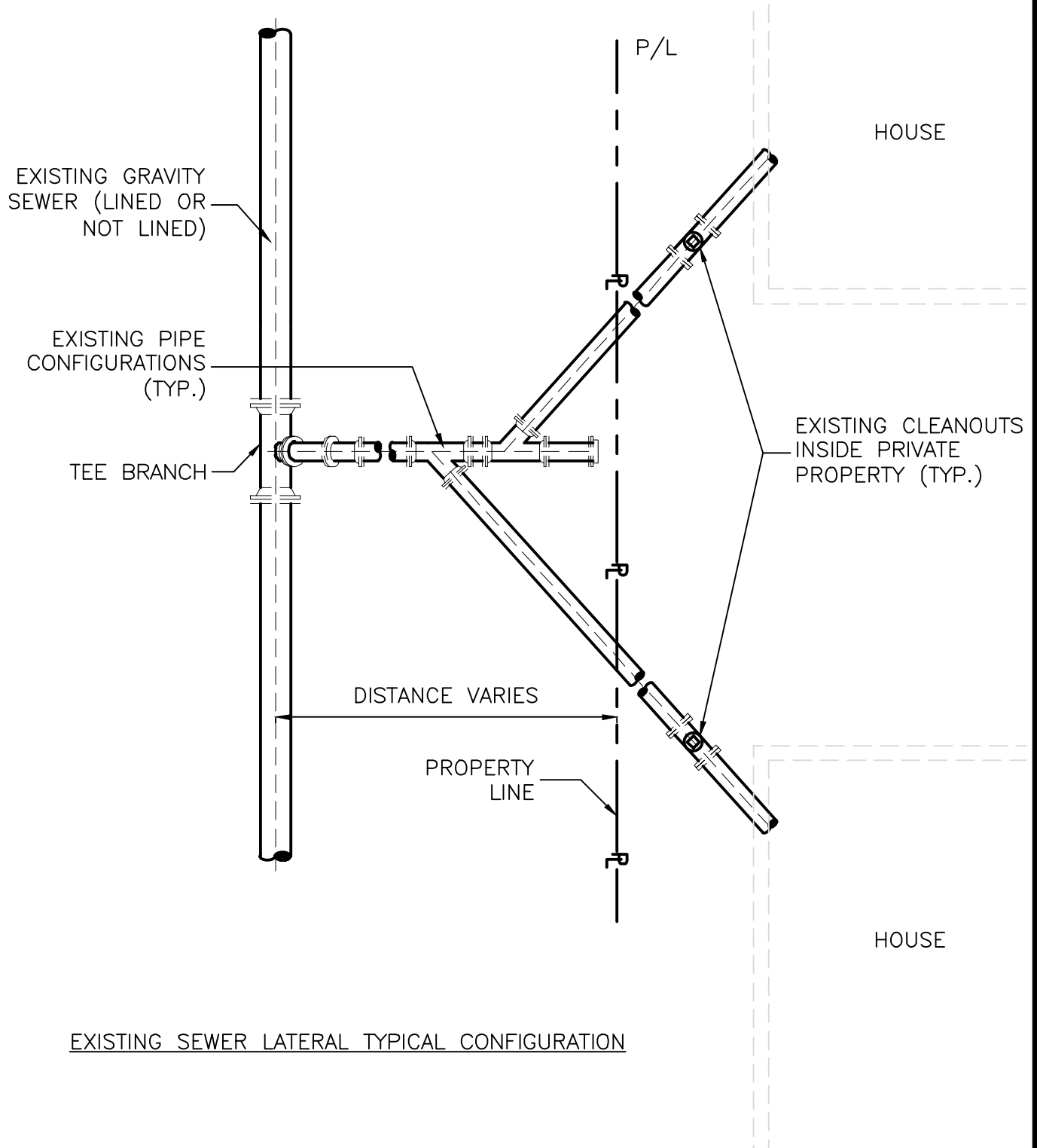
S

215



CITY OF FORT LAUDERDALE

OFFICE OF THE CITY ENGINEER



DATE: Dec-18

SCALE:

1/4"=1'-0"

REVISED:

Sep-18

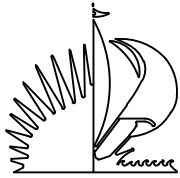
DRAWN BY:

B.H.

EXISTING WASTEWATER DOUBLE
SERVICE CONNECTION TYPICAL

S

216

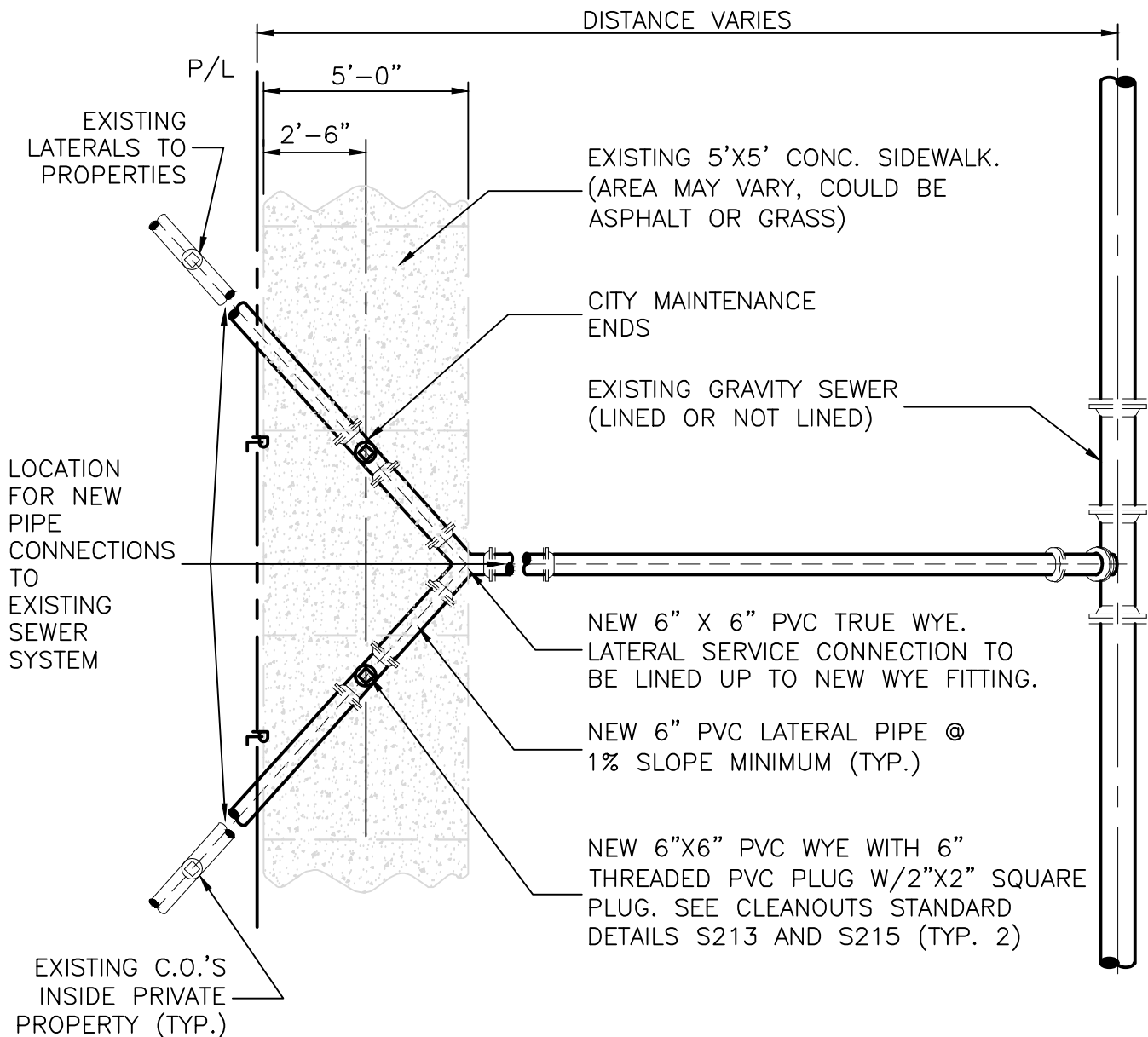


CITY OF FORT LAUDERDALE

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NOTES:

1. REPAIRS TO BE DONE BASED ON PRE-EXISTING TYPE OF FIELD CONDITIONS.
2. REFERENCE STD. DETAILS FOR C.O. INSTALLATIONS. (S213, S214, & S215)



NEW SEWER LATERAL TYPICAL CONFIGURATION

DATE: Dec-18

SCALE:

1/4"=1'-0"

REVISED:

Sep-18

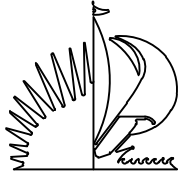
DRAWN BY:

B.H.

WASTEWATER DOUBLE
SERVICE CONNECTION

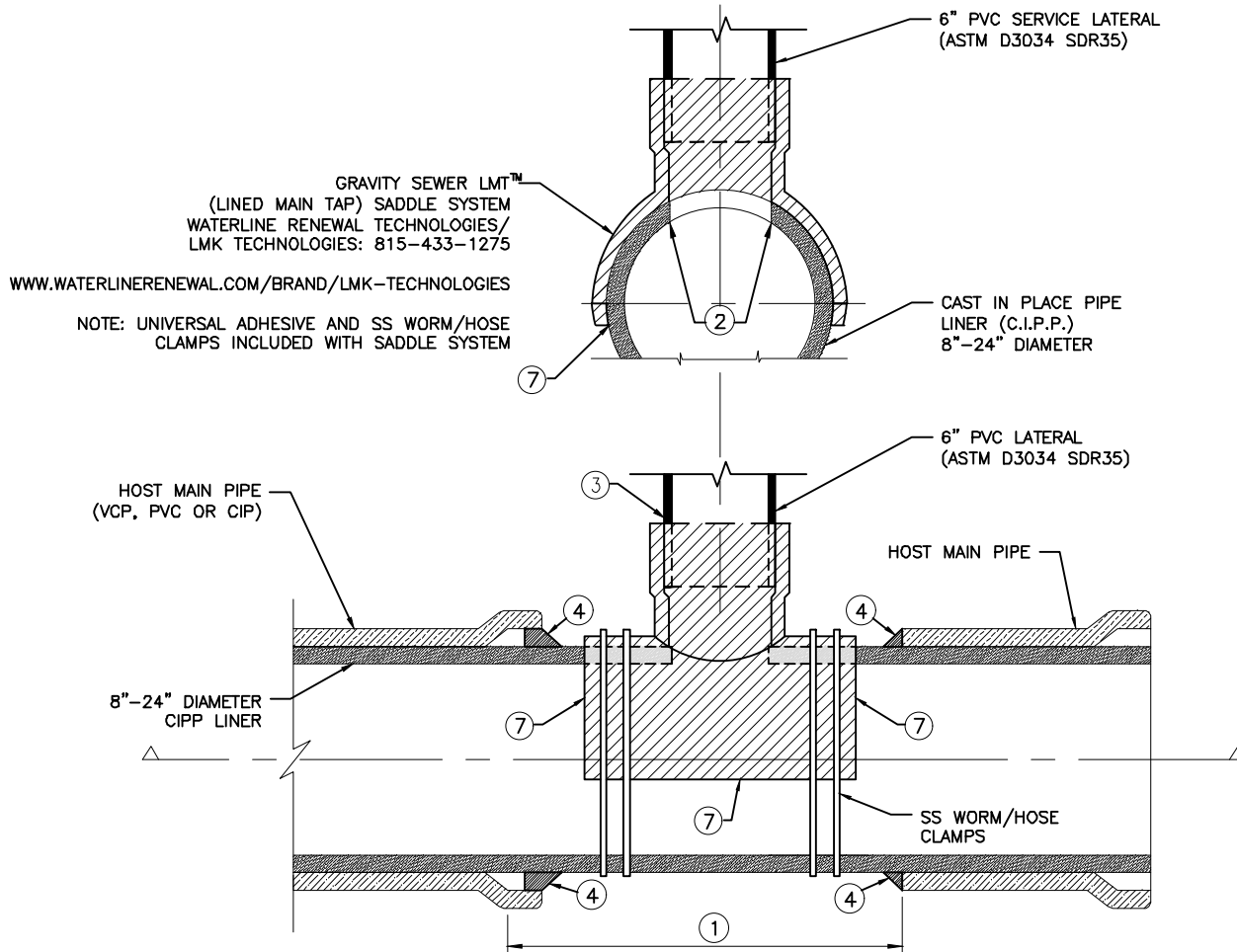
S

217



CITY OF FORT LAUDERDALE

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LEGEND

- ① CUT & REMOVE SECTION OF HOST PIPE WHERE SERVICE CONNECTION IS TO BE MADE WITHOUT DAMAGING CIPP LINER.
- ② CUT HOLE FOR LATERAL WITH DIAMETER EQUAL TO INSIDE DIAMETER OF THE PVC LATERAL IN MAIN SEWER LINER WITH POWER TOOL.
- ③ CONNECT 6" PVC SEWER LATERAL BY LMT™(LINED MAIN TAP) SADDLE SYSTEM.
- ④ SEAL THE PIPE CUTS WITH HYDRAULIC CEMENT.
- ⑤ IF NEW LATERAL SERVICE CONNECTION IS BEING CONSTRUCTED SEE TYPICAL WASTEWATER SERVICE CONNECTION DETAIL 208.
- ⑥ IF A NEW CLEAN-OUT COVER ASSEMBLY MUST BE INSTALLED SEE STANDARD DETAILS 213, 213A, 214, 215 AND 216 FOR REFERENCE
- ⑦ UNIVERSAL ADHESIVE TO BE ON THE INSIDE OF SADDLE TO FORM WATER TIGHT SEAL BETWEEN LINER AND HOST PIPE. SEE MANUFACTURE'S SPECIFICATIONS FOR MORE APPLICATION INSTRUCTIONS.

DATE: June/2021

SCALE:

N.T.S

REVISED:

June/2021

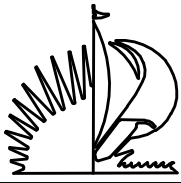
DRAWN BY:

A.C.

SADDLE TEE FASTENED TO
LINED GRAVITY MAIN

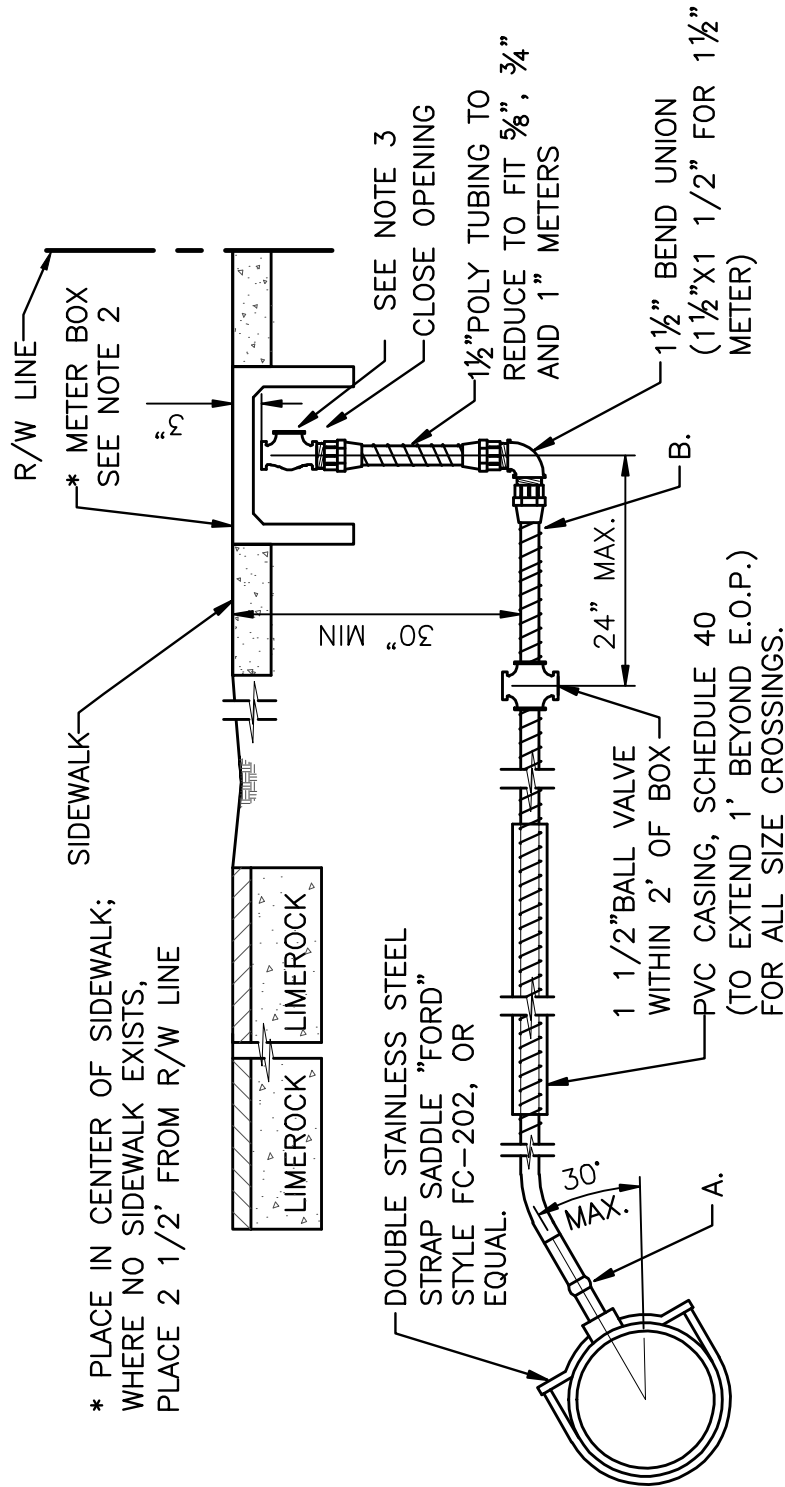
S

218



CITY OF FORT LAUDERDALE

OFFICE OF THE CITY ENGINEER



DATE: FEB.'09

SCALE:

N.T.S.

REVISED:

MARCH '09

DRAWN BY:

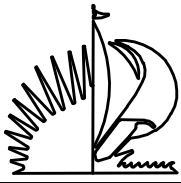
R.C.

TYPICAL WATER SERVICE INSTALLATION

W

300

1 OF 2



CITY OF FORT LAUDERDALE

OFFICE OF THE CITY ENGINEER

- A. CORPORATION STOP, BRASS AWWA I.P. THREAD AT INLET AND CONDUCTIVE COMPRESSION CONNECTION, FOR CTS O.D. TUBING "MUELLER" B-25028, INCLUDING THE STAINLESS STEEL LINER, "MUELLER" 506141 (FOR 2-INCH), 506139 (FOR 1 -INCH), 504385 (FOR 1-INCH), OR APPROVED EQUAL.
- B. POLYETHYLENE WATER SERVICE PIPE (3408 ASTM 2737 SDR9) WITH #12 GAUGE COATED COPPER WIRE SINGLE-STRAND WRAPPED AROUND POLYETHYLENE SERVICE.

NOTE:

1. GROUND KEY ANGLE METER STOP, CONDUCTIVE COMPRESSION FOR CTS O.D. TUBING, X METER FLANGE 180° TURN CHECK-LOCK WING "MUELLER" H-14277, FOR 2-INCH INCLUDING THE STAINLESS STEEL LINER, "MUELLER" 506141 (FOR 2-INCH) OR APPROVED EQUAL, AND MUELLER 110 COMPRESSION CONNECTION.
2. METER BOXES FOR 5/8, 3/4, 1, 1½ AND 2 INCH METERS SHALL BE THE OKIE DOKIE #890-40-260282 MEDIUM BOX AND 890-40-260257 MEDIUM LID OR EQUAL.
3. TIE-IN TO EXISTING 5/8, 3/4, OR 1 INCH METER AND CONNECT ANGLE VALVE TO EXISTING METER WHERE APPLICABLE.
4. ALL POLY SERVICE LINES SHOULD BE WRAPPED WITH #12 WIRE STRIPPED AND GROUNDED TO EACH FITTING. A CONDUCTIVITY TEST SHOULD BE PERFORMED.
5. ALL PVC WATER MAINS SHOULD BE WRAPPED WITH #6 WIRE STRIPPED AND GROUNDED TO EACH FITTING. A CONDUCTIVITY TEST SHOULD BE PERFORMED.

DATE: FEB.'09

SCALE:

N.T.S.

REVISED:

MARCH '09

DRAWN BY:

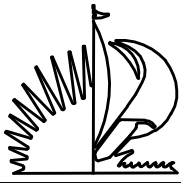
R.C.

TYPICAL WATER SERVICE INSTALLATION

W

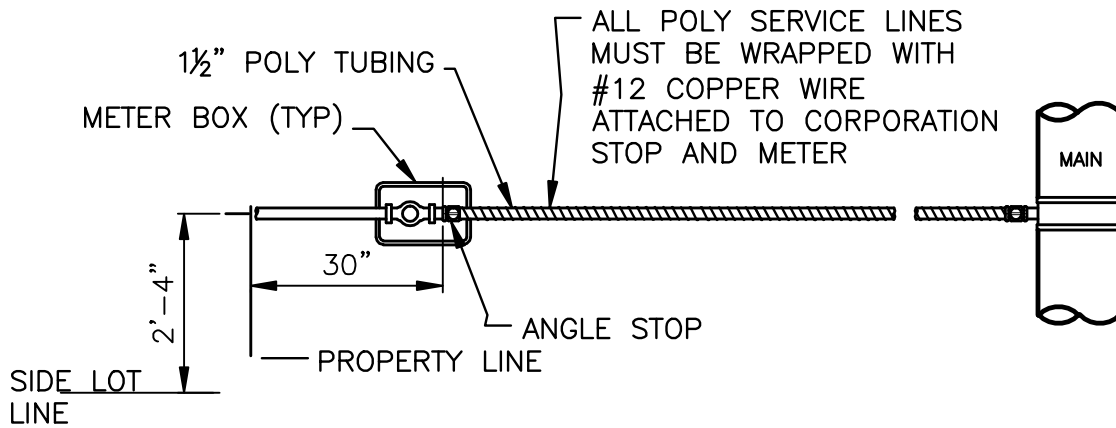
300

2 OF 2

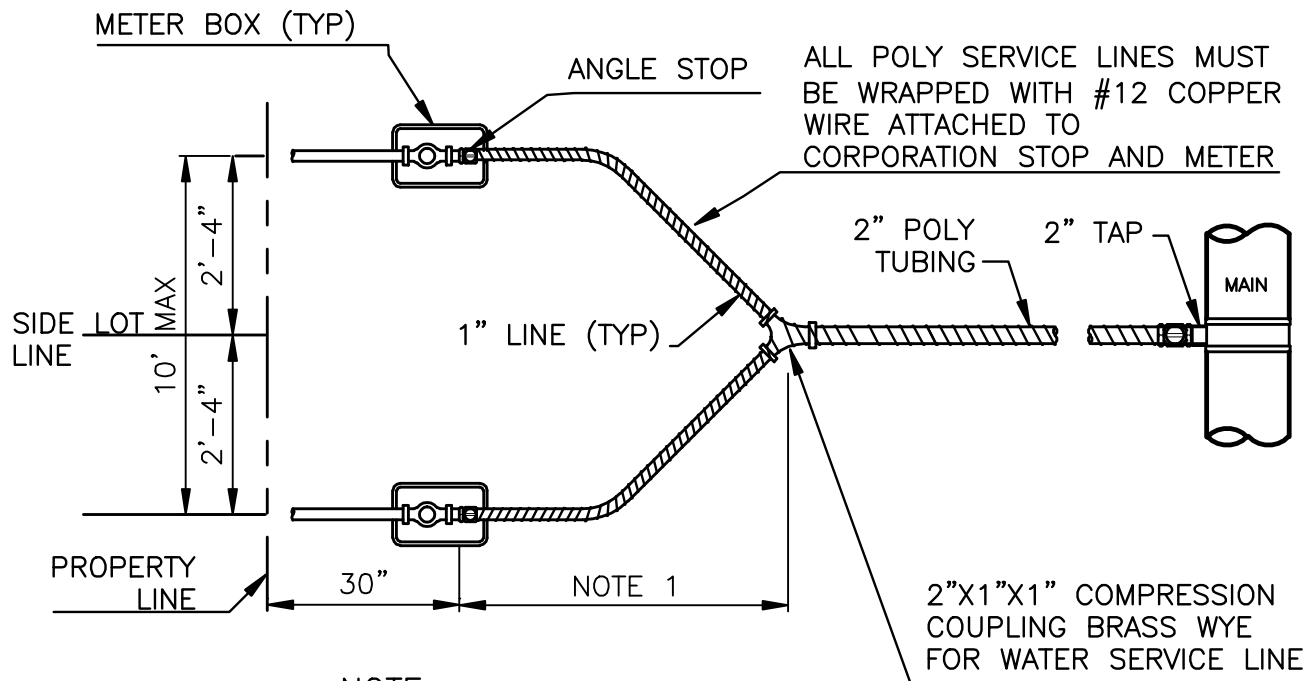


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SINGLE NEW SERVICE PLAN



NOTE:

1. KEEP 1 1/2" WYE AS CLOSE AS POSSIBLE TO METER BOX.

DOUBLE NEW SERVICE PLAN

DATE: FEB'06

SCALE:

N.T.S.

REVISED:

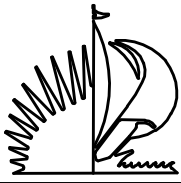
MARCH '09

DRAWN BY:

R.C.

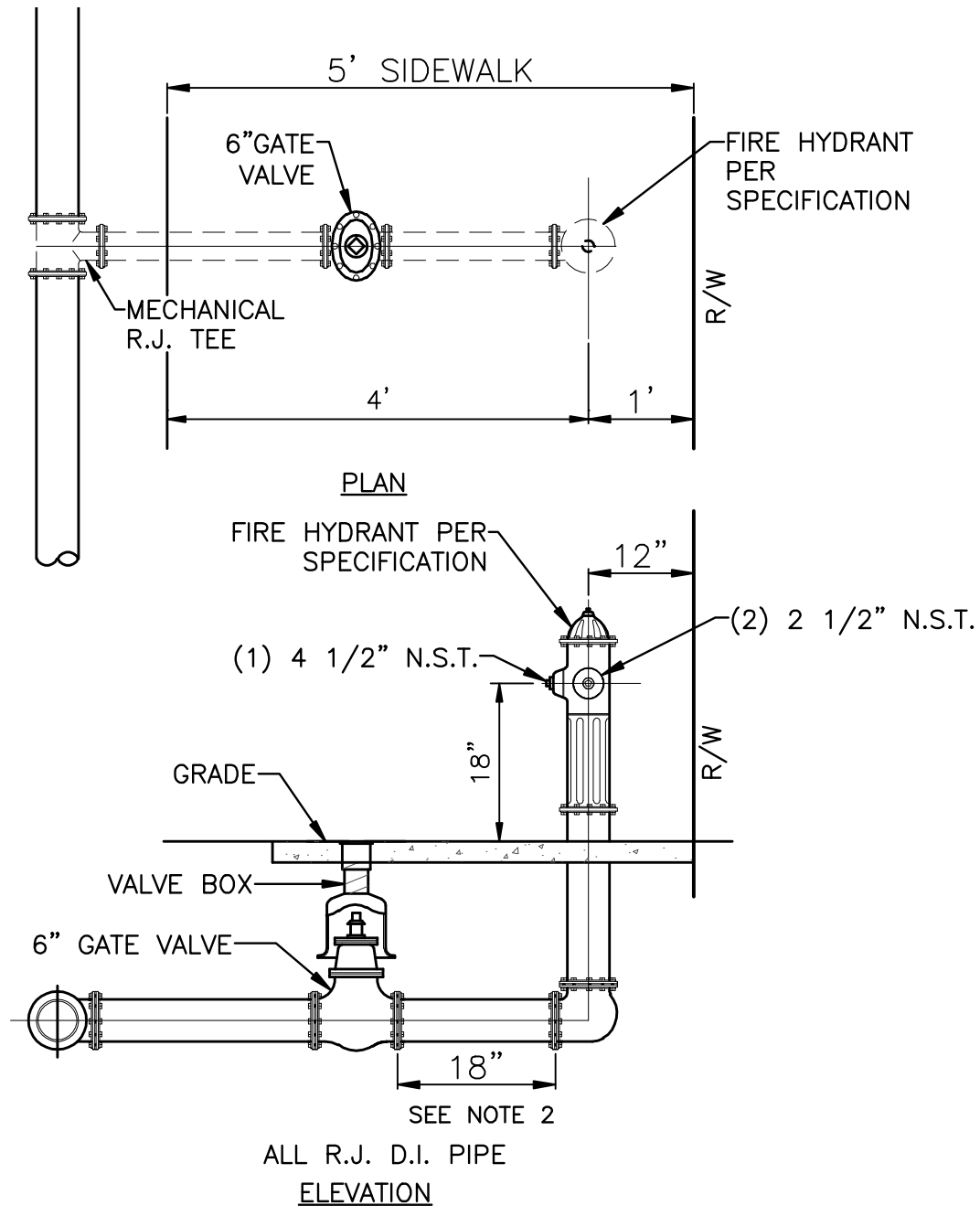
TYPICAL WATER SERVICE

W
301



CITY OF FORT LAUDERDALE

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NOTES:

1. ACTUAL LOCATION OF FIRE HYDRANT TO BE DECIDED IN THE FIELD WITH ENGINEER'S APPROVAL.
2. KEEP VALVE AS CLOSE AS POSSIBLE TO THE HYDRANT.

DATE: FEB'06

SCALE:

N.T.S.

REVISED:

MARCH '09

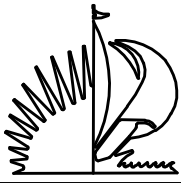
DRAWN BY:

R.C.

**TYPICAL NEW FIRE HYDRANT
ASSEMBLY INSTALLATION**

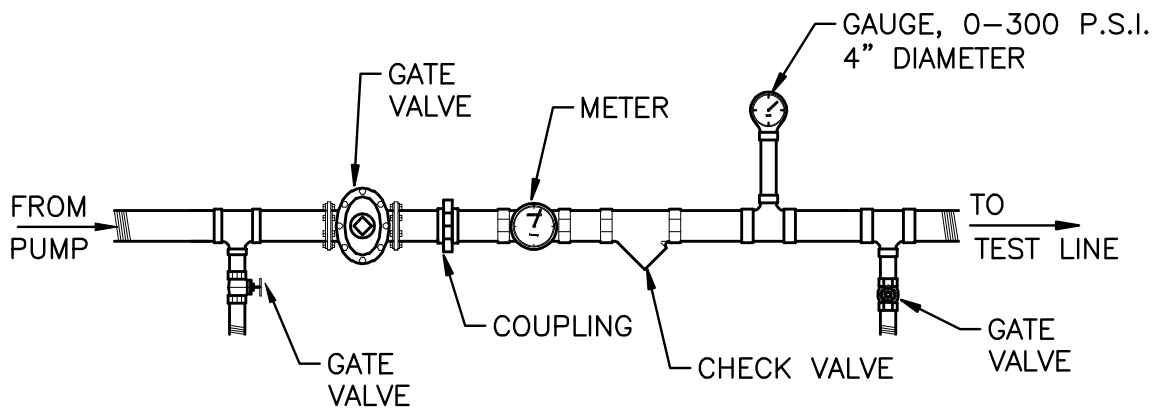
W

302



CITY OF FORT LAUDERDALE

OFFICE OF THE CITY ENGINEER



NOTE:
PRESSURE TEST TO INCLUDE
SERVICES TO ANGLE STOP.

DATE: FEB'06

SCALE:

N.T.S.

REVISED:

MARCH '09

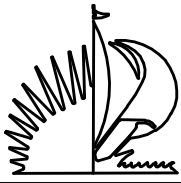
DRAWN BY:

R.C.

PRESSURE TEST DETAIL

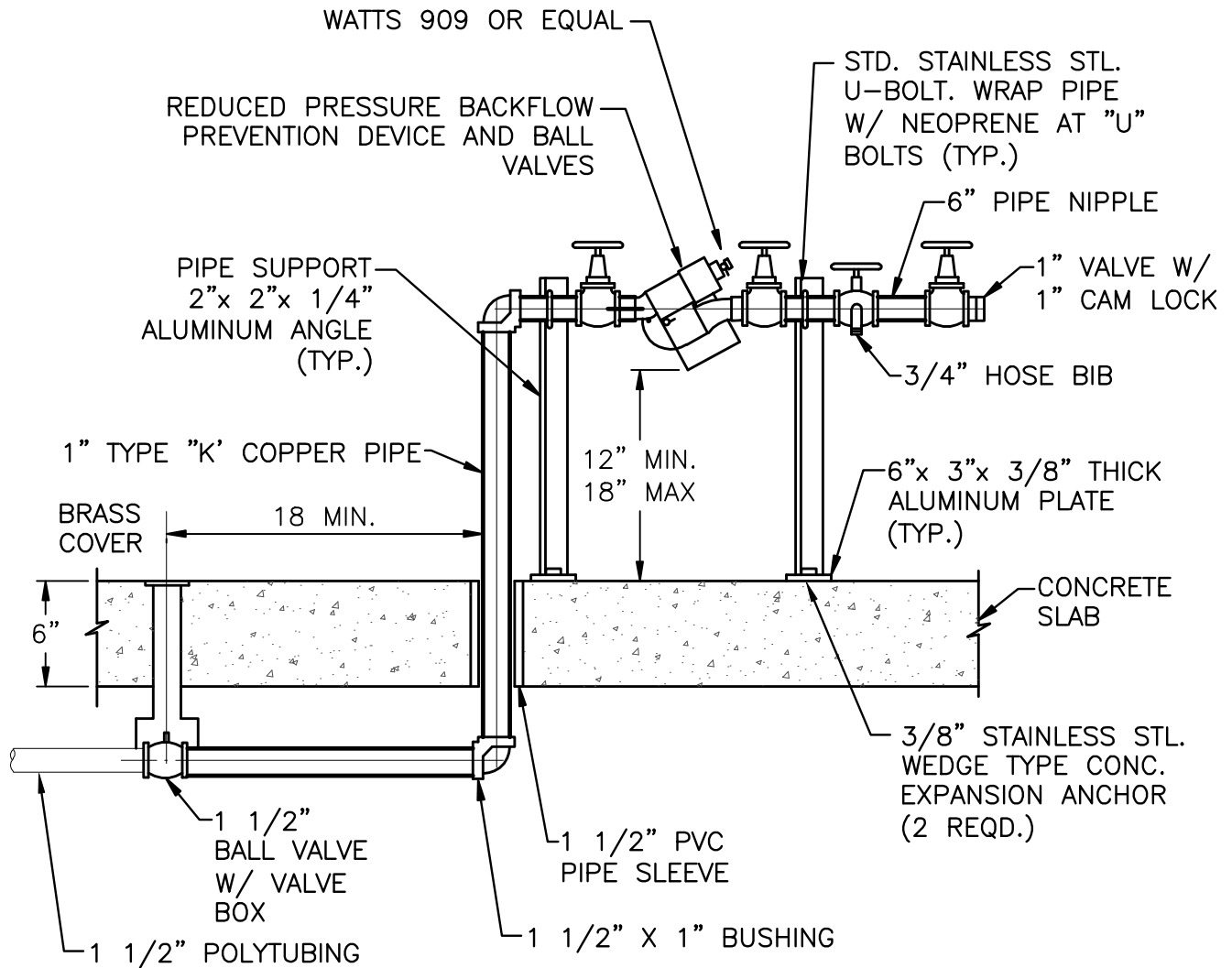
W

306



CITY OF FORT LAUDERDALE

OFFICE OF THE CITY ENGINEER



DATE: FEB'06

SCALE:

N.T.S.

REVISED:

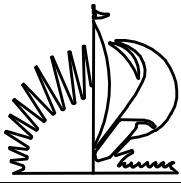
MARCH '09

DRAWN BY:

R.C.

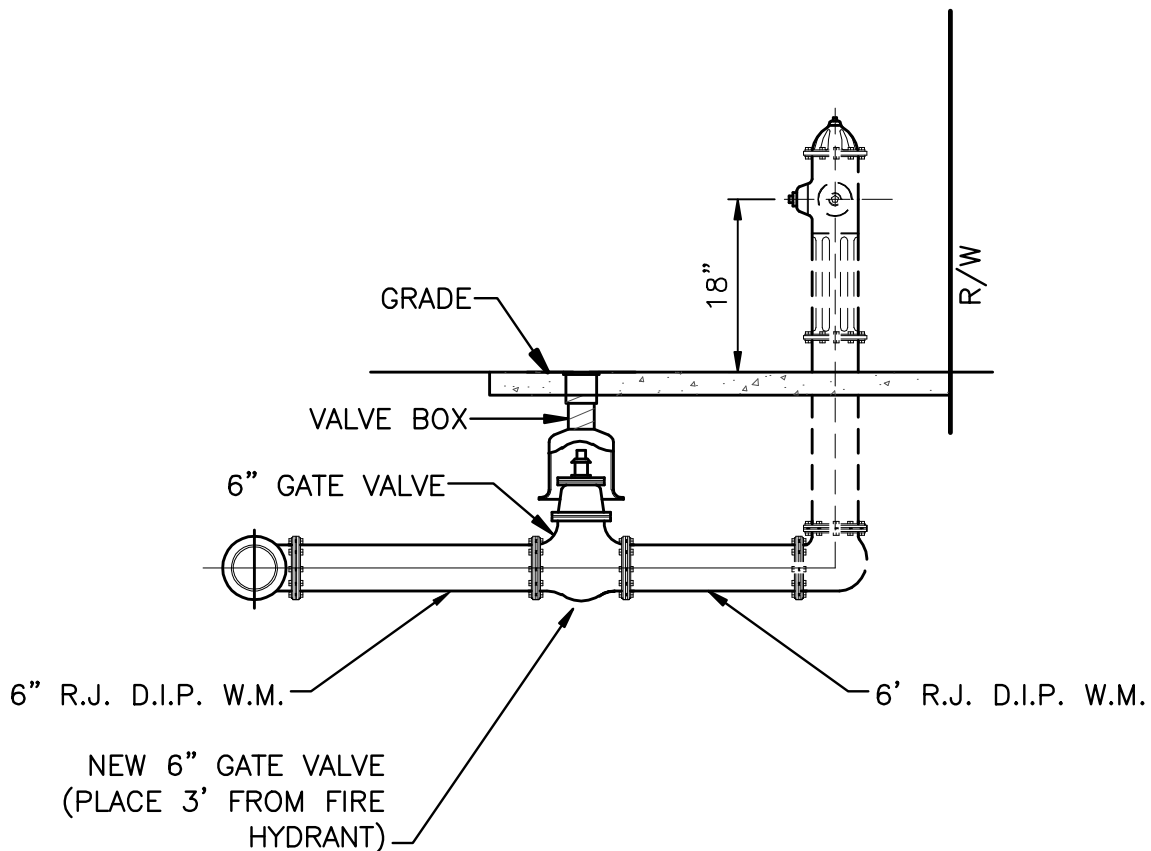
**REDUCED PRESSURE BACKFLOW
PREVENTER WITH HOSE CONNECTION
FOR LIFT STATION**

**W
307**



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NOTES:

1. RECONNECT EXISTING FIRE HYDRANT TO NEW WATER MAIN.
2. KEEP VALVE AS CLOSE AS POSSIBLE TO THE HYDRANT.
3. WHEN FIRE HYDRANT "TEE" IS ON P.V.C. PIPE RUN, CONSTRUCT 1 LENGTH OF D.I.P. (R.J.) PIPE ON EACH SIDE OF FIRE HYDRANT "TEE".

DATE: FEB'06

SCALE:

N.T.S.

REVISED:

MARCH '09

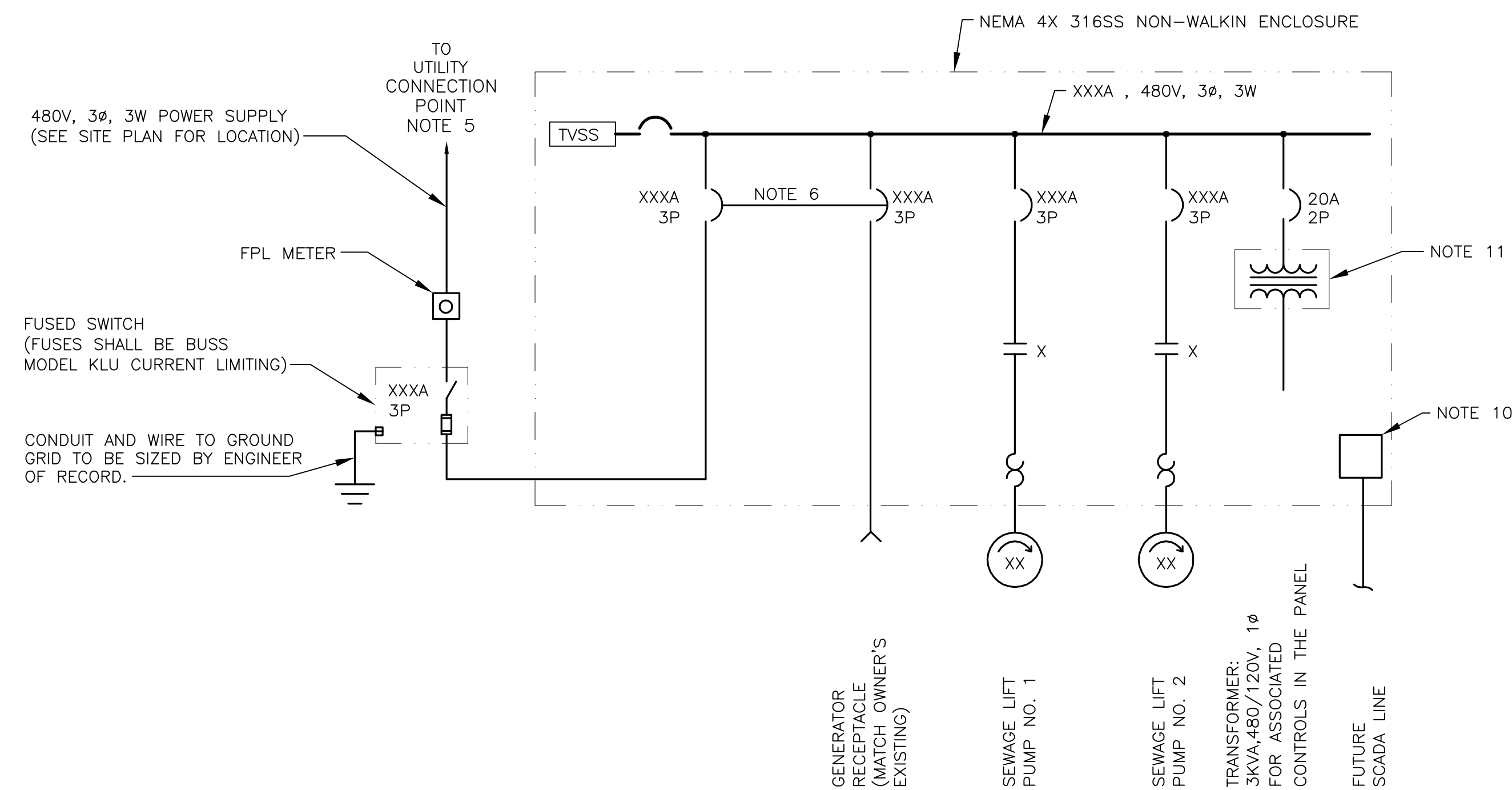
DRAWN BY:

R.C.

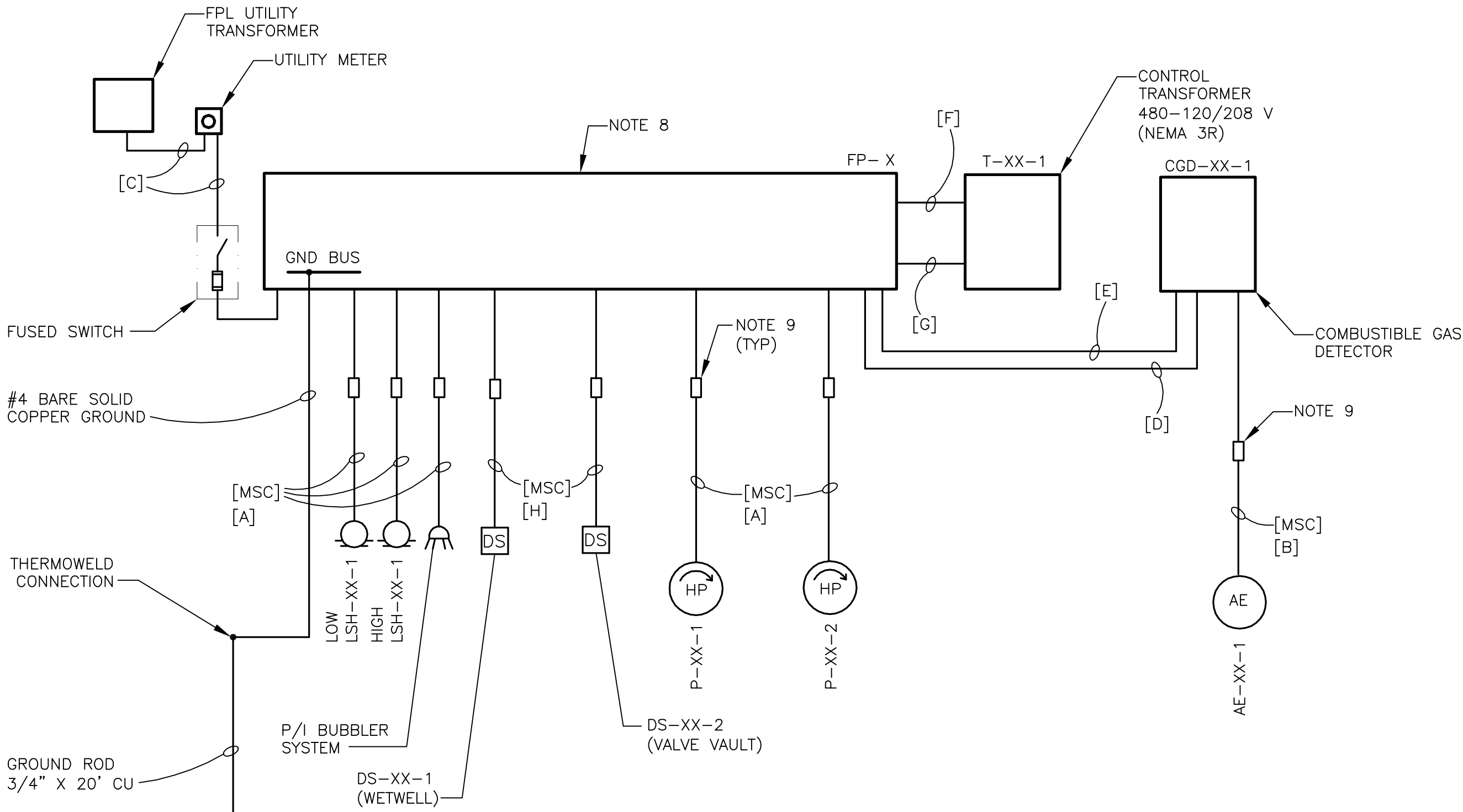
**RELOCATE OR CONNECT
EXISTING HYDRANT**

W

308



DUPLEX PUMP STATION XX ONE LINE DIAGRAM
MOTORS ALTERNATE LEAD/LAG LOGIC



TYPICAL RISER DIAGRAM
XX = PS NUMBER

CONNECTED LOAD SUMMARY

DESCRIPTION	PS-1		
	A	KVA	HP
PUMP NO.1	XX	XX	XX
PUMP NO.2	XX	XX	XX
MISCELLANEOUS	6.25	3	
TOTAL	XX	XX	
SERVICE RATING	ADD 25% OF LARGEST MOTOR AT XX A EQUALS XX		

GENERAL ELECTRICAL NOTES:

1. THE AREA INSIDE THE WET WELL IS A HAZARDOUS, CLASS 1, DIV. 2 LOCATION
2. THE AREA WITHIN 3 FEET FROM THIS HATCH AND 1.5 FEET ABOVE THE WET WELL SLAB IS A HAZARDOUS, CLASS 1, DIV. 2 LOCATION.
3. THE AREA WITHIN A 3 FEET RADIUS FROM THE VENT OPENING IS A HAZARDOUS, CLASS 1, DIV. 2 LOCATION. THE AREA WITHIN A 5 FEET RADIUS FROM THE VENT OPENING IS A HAZARDOUS, CLASS 1, DIV. 2 LOCATION.
4. THE AREA INSIDE THE VALVE VAULT IS A HAZARDOUS, CLASS 1, DIV. 2 LOCATION.
5. CONTRACTOR SHALL PROVIDE NEW UNDERGROUND SERVICE FROM UTILITY CONNECTION POINT TO METER BASE LOCATED AT FIELD PANEL. CONTRACTOR SHALL COORDINATE WITH THE POWER UTILITY IN ORDER TO PROVIDE 480V, 3Ø SERVICE TO LIFT STATION. CONTRACTOR SHALL COORDINATE WITH THE OWNER. CONTRACTOR TO INCLUDE ALL REQUIRED MATERIAL AND LABOR INCLUDING METER BASE AND ANY UTILITY FEE, WHICH MAY BE REQUIRED BY THE LOCAL UTILITY FOR THE INSTALLATION OF THE NEW SERVICE. THE CONTRACTOR SHALL INCLUDE A MINIMUM OF 100 FEET OF UNDERGROUND SERVICE FROM THE METER BASE TO THE FPL SERVICE CONNECTION POINT IN THE BASE BID FOR EACH STATION.
6. PROVIDE INTERLOCK SO THAT ONLY ONE CIRCUIT BREAKER (MAIN OR EMERGENCY) CAN BE CLOSED AT A TIME.
7. FIELD PANEL AND CONCRETE SLAB SHALL BE ABLE TO WITHSTAND 140 MPH WIND LOADING: PROVIDE MOUNTING TO SLAB PER MANUFACTURER'S RECOMMENDATIONS.
8. ALL CONDUITS SHALL ENTER THE CONTROL PANEL FROM THE BOTTOM.
9. PROVIDE WIRING METHODS AND MATERIALS SUITABLE FOR A CLASS 1, DIVISION 2 AREA WITHIN ALL HAZARDOUS AREAS. UTILIZE "EYSR" SPLIT CASE FITTING AS MANUFACTURED BY CROUSE-HINDS AND FILL WITH "CHICO" CEMENT. IF PVC COATED CONDUITS ARE USED, PEEL OFF THE SECTION WHERE THE SPLIT SEAL GOES, AND AFTER ITS INSTALLED, COAT THE OUTSIDE WITH MANUFACTURERS RECOMMENDED KIT.
10. ALLOW 16x16x4" SPACE IN PANEL FOR FUTURE SCADA LINE. STUB 2" CONDUIT OUT 5' INTO GRASSY AREA. CAP AND IDENTIFY LOCATION ON RECORD DRAWINGS.
11. TRANSFORMER MUST BE 3R RATED AND MOUNTED BY ITSELF (IN THE RACK) OUTSIDE OF ANY ENCLOSURE.
12. FIELD PANEL LOCATIONS ARE TO BE FIELD VERIFIED AND ARE SHOWN FOR CLARITY ONLY.
13. FINAL COMPONENT SIZE AND SELECTION FOR EACH STATION TO BE COORDINATED WITH PUMP SUPPLIER AND SUBJECT TO ACTUAL PUMPS AND MOTORS SELECTED.

CONDUIT SCHEDULE:

- [A] = 2" PVC COATED STEEL CONDUIT W/ MANUFACTURER SUPPLIED CABLE (MSC)
- [B] = 1" PVC COATED STEEL CONDUIT W/ MANUFACTURER SUPPLIED CABLE (MSC)
- [C] = CONDUIT AND WIRE FROM UTILITY TO METER TO PUMP CONTROL PANEL TO BE SIZED BY ENGINEER OF RECORD
- [D] = 1" PVC COATED STEEL CONDUIT W/ 2#14
- [E] = 1" PVC COATED STEEL CONDUIT W/ 1#12, 2#12G
- [F] = 1" PVC COATED STEEL CONDUIT W/ 2#12, 1#12G
- [G] = 1" PVC COATED STEEL CONDUIT W/ 2#10, 1#10G
- [H] = 3/4" PVC COATED STEEL CONDUIT W/ 2#14

NOT FOR CONSTRUCTION OR BID

ENGINEER
PETER PARTINGTON
REG. No. 45089
DATE:

TEL: (864) 828-5240
FAX: (864) 828-5074

DRAWN BY: DATE: MM/DD/YY

DESIGNED BY: SCALE:

CHECKED BY:

FIELD BOOK:

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

NO.	DATE	BY	CHECK'D	DESCRIPTION

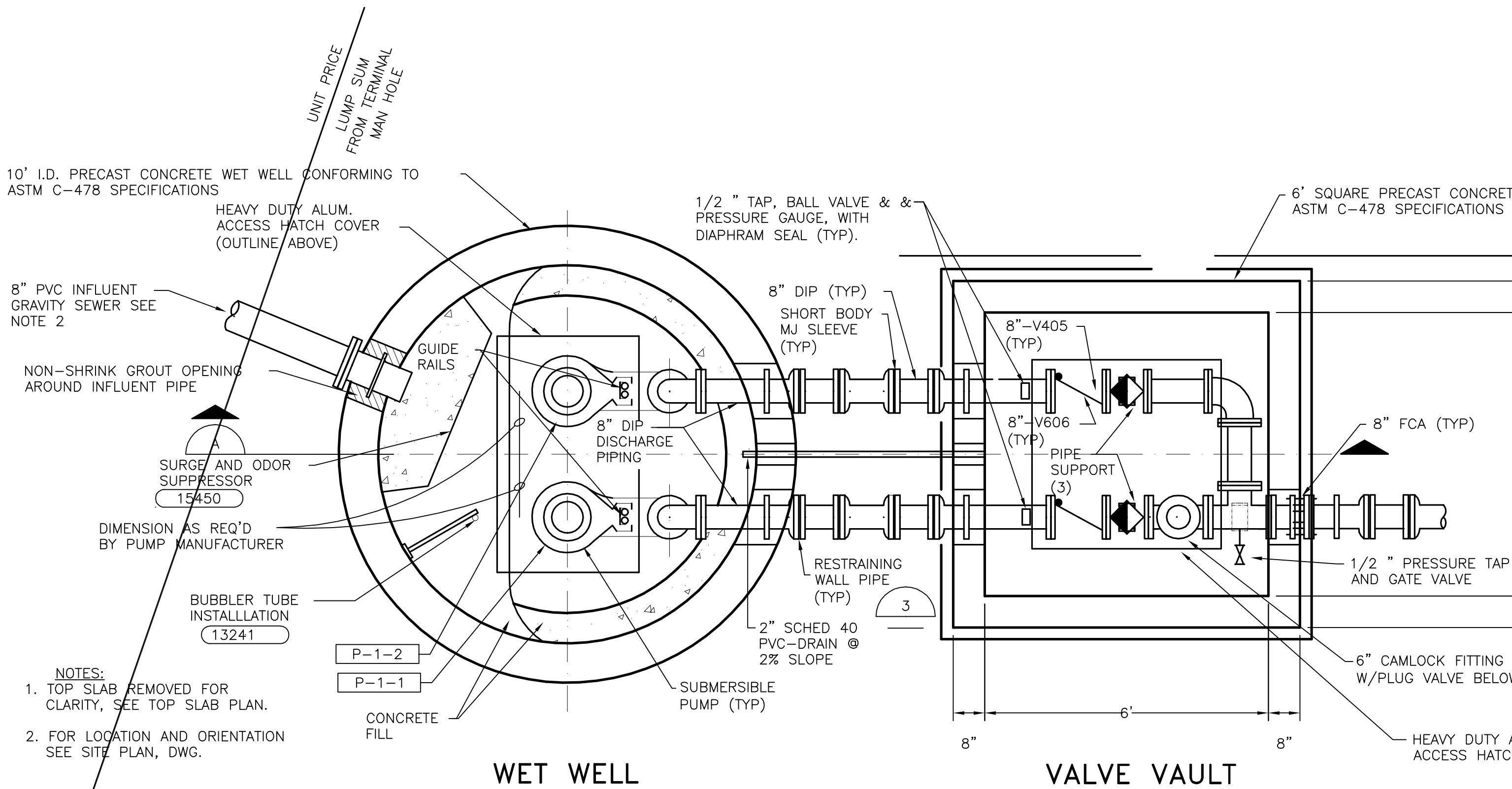
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PROJECT NAME
DESCRIPTION
SHEET
PLACE PROJECT ADDRESS

SHEET NO. OF
X-1 XX

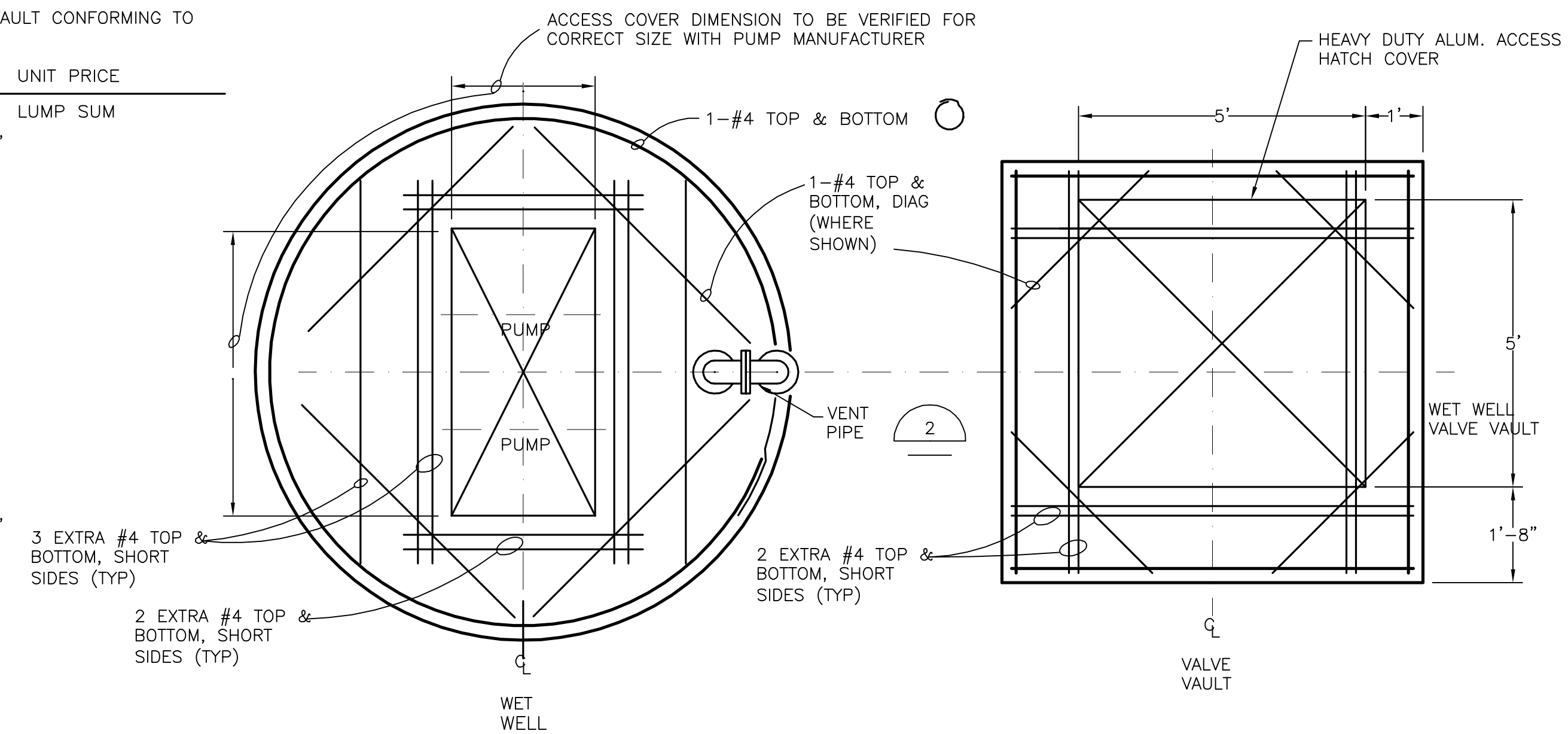
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4-XXX-XX



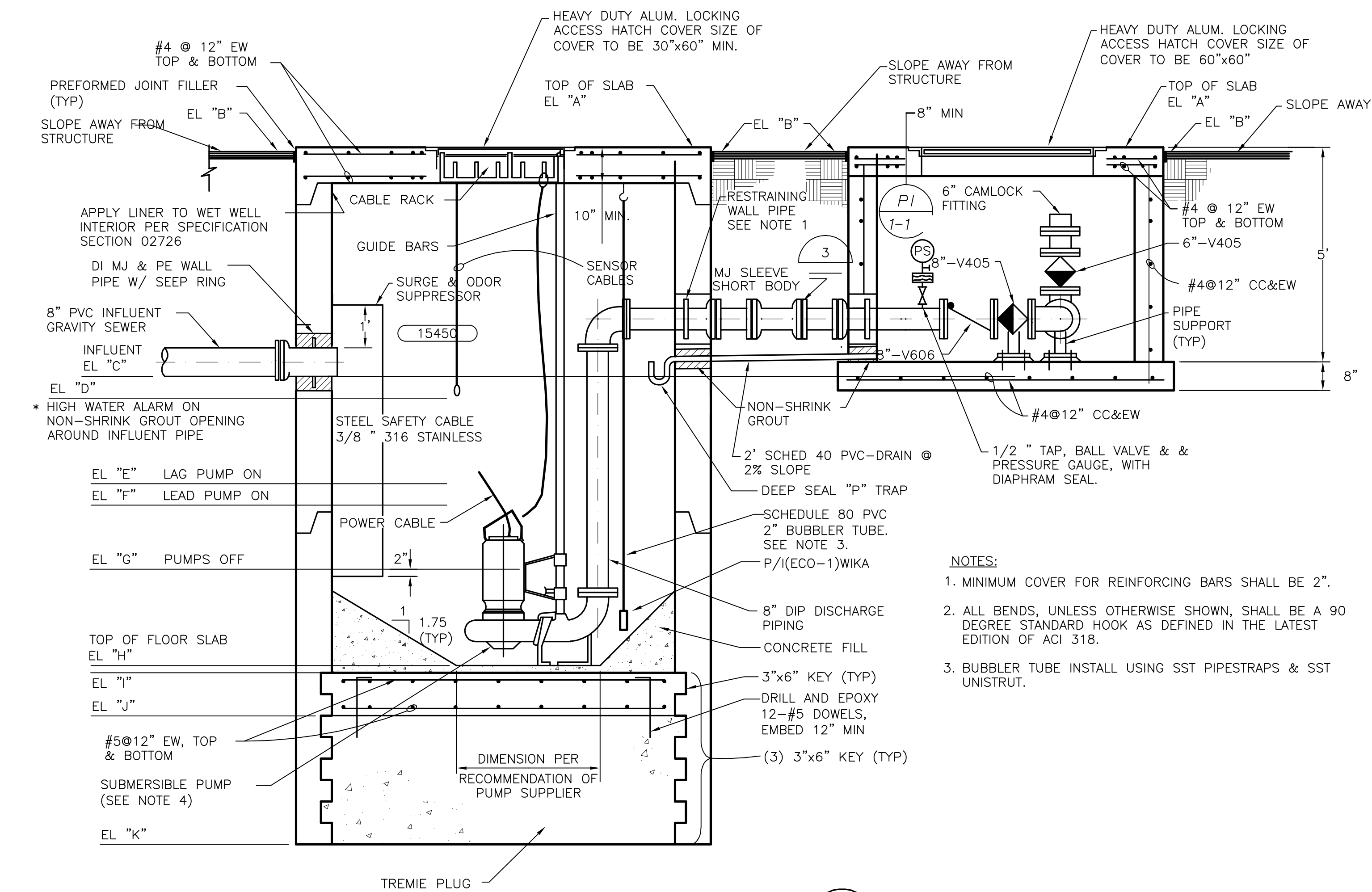
PLAN



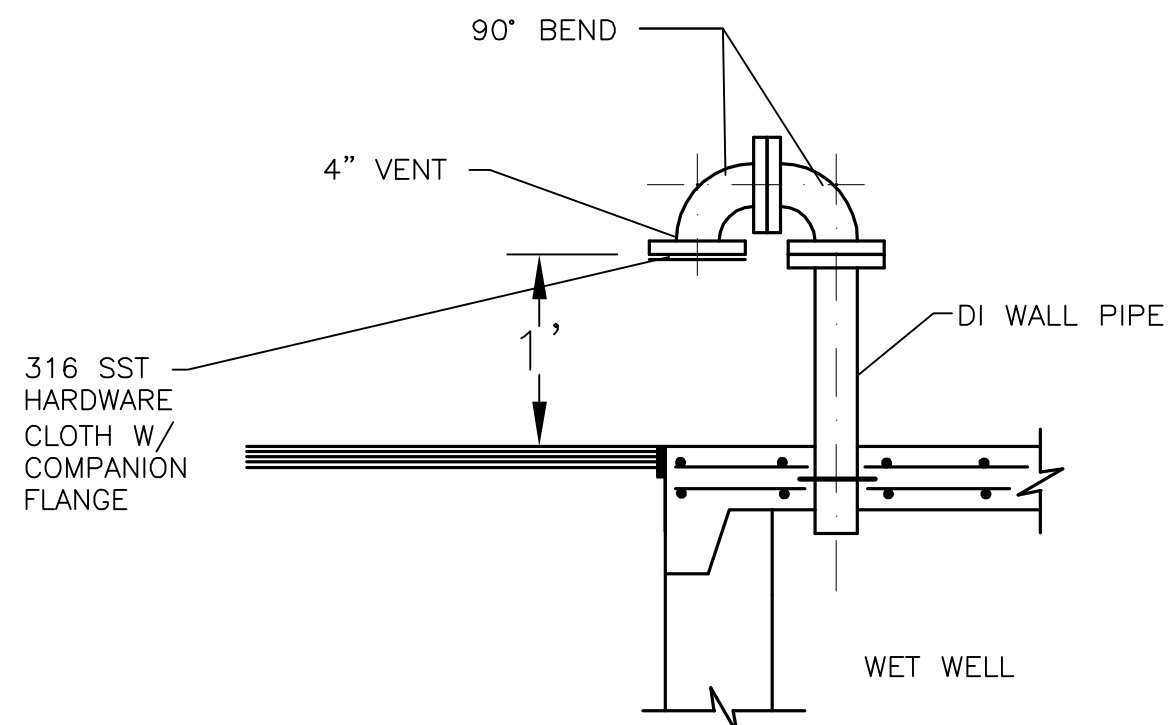
TOP SLAB PLAN

NOTES:

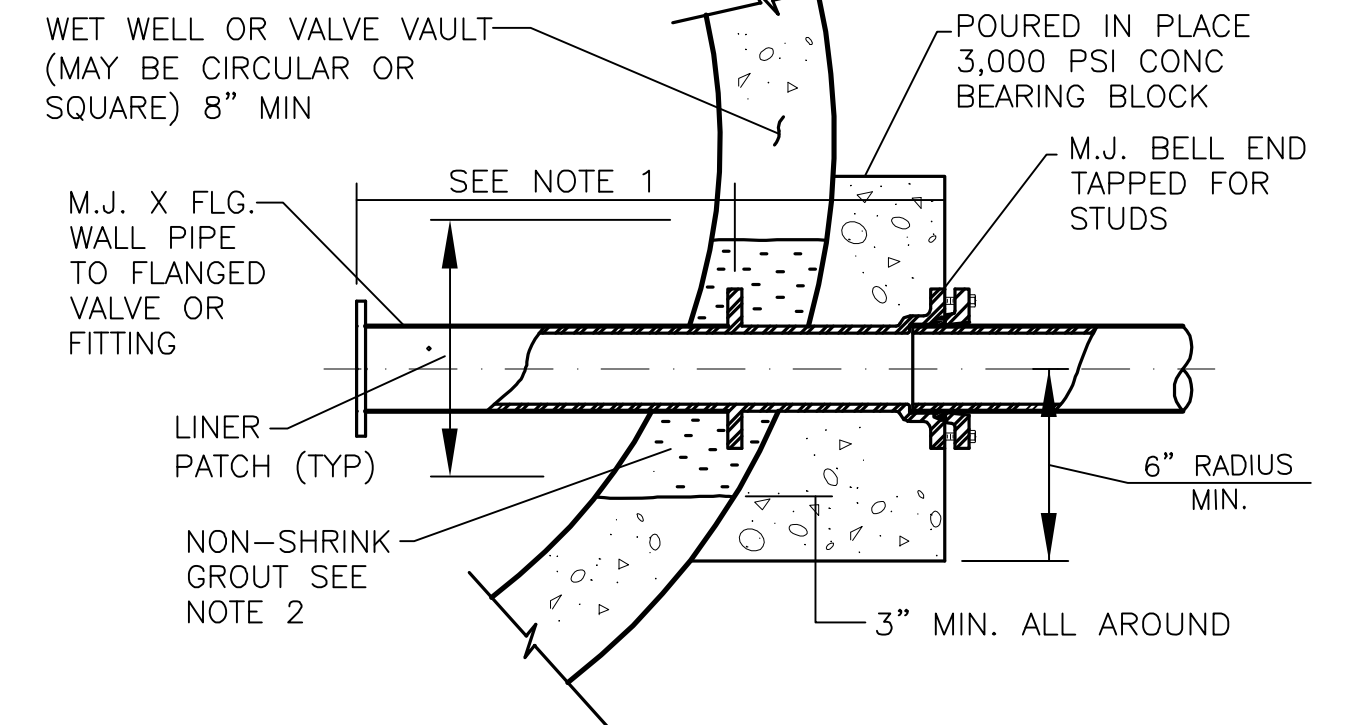
- VARIES- CONTRACTOR TO ORDER WALL PIPE WITH DIMENSIONS NECESSARY TO CENTER COLLAR IN WALL & PLACE FLANGE AT DESIRED LOCATION.
- APPLY APPROVED WATERPROOF BONDING AGENT TO EXISTING CONCRETE SURFACE BEFORE PLACING NON-SHRINK GROUT, DRY PACK FROM EARTH SIDE, APPLY APPROVED WATERPROOF COATING AS SPECIFIED TO ELIMINATE SEEPAGE INTO VAULT OR WET WELL FROM PIPE/CONDUIT PENETRATIONS.



SECTION A



VENT PIPE DETAIL



RESTRAINING WALL PIPE DETAIL

SCHEDULE OF ELEVATIONS (FEET MSL)

LETTER	LEVEL DESCRIPTION	PS-1 (A-101)	PS-2 (A-102)	PS-3 (A-103)
A	TOP OF PUMP STATION & VAULT SLABS	9.90	8.70	7.80
B	FINISH GRADE ADJACENT SLAB	9.40	8.20	7.30
C	INFLUENT GRAVITY SEWER INVERT	(-)3.15	(-)3.12	(-)3.98
D	HIGH WATER ALARM	(-)4.10	(-)4.10	(-)5.00
E	LAG PUMP ON	(-)6.10	(-)6.10	(-)7.00
F	LEAD PUMP ON	(-)8.10	(-)8.10	(-)9.00
G	PUMPS OFF	(-)10.10	(-)11.10	(-)12.00
H	TOP OF FLOOR SLAB	(-)12.10	(-)13.10	(-)14.00
I	TOP OF KEY	(-)12.40	(-)13.40	(-)14.30
J	BOTTOM OF KEY	(-)13.40	(-)14.40	(-)15.30
K	BOTTOM OF TREMIE PLUG	(-)17.40	(-)18.40	(-)19.30
	INSIDE DIAMETER PUMP STATION	6'	6'	6'
	FORCE MAIN PIPING (D.I.P.)	4"	6"	6"
	PUMP OPERATION REQUIREMENTS	178 gpm @ 123' 25HP(MAX)	253 gpm @ 79' 20HP(MAX)	243 gpm @ 86' 20HP(MAX)

NOT FOR CONSTRUCTION OR BID

PROJECT # P0000

PROJECT NAME

DESCRIPTION

SHEET

PLACE PROJECT ADDRESS

SHEET NO.

X-1

OF

XX

TOTAL:

0

CAD FILE:

XXXXX-XXX-XXX0000

DRAWING FILE NO.

4-XXX-XX

ENGINEER: PS&S PARTINGTON

DATE: 06/08

DESIGNED BY: SCALE:

CHECKED BY:

FIELD BOOK:

DATE: MM/DD/YY

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ENGINEER: PS&S PARTINGTON

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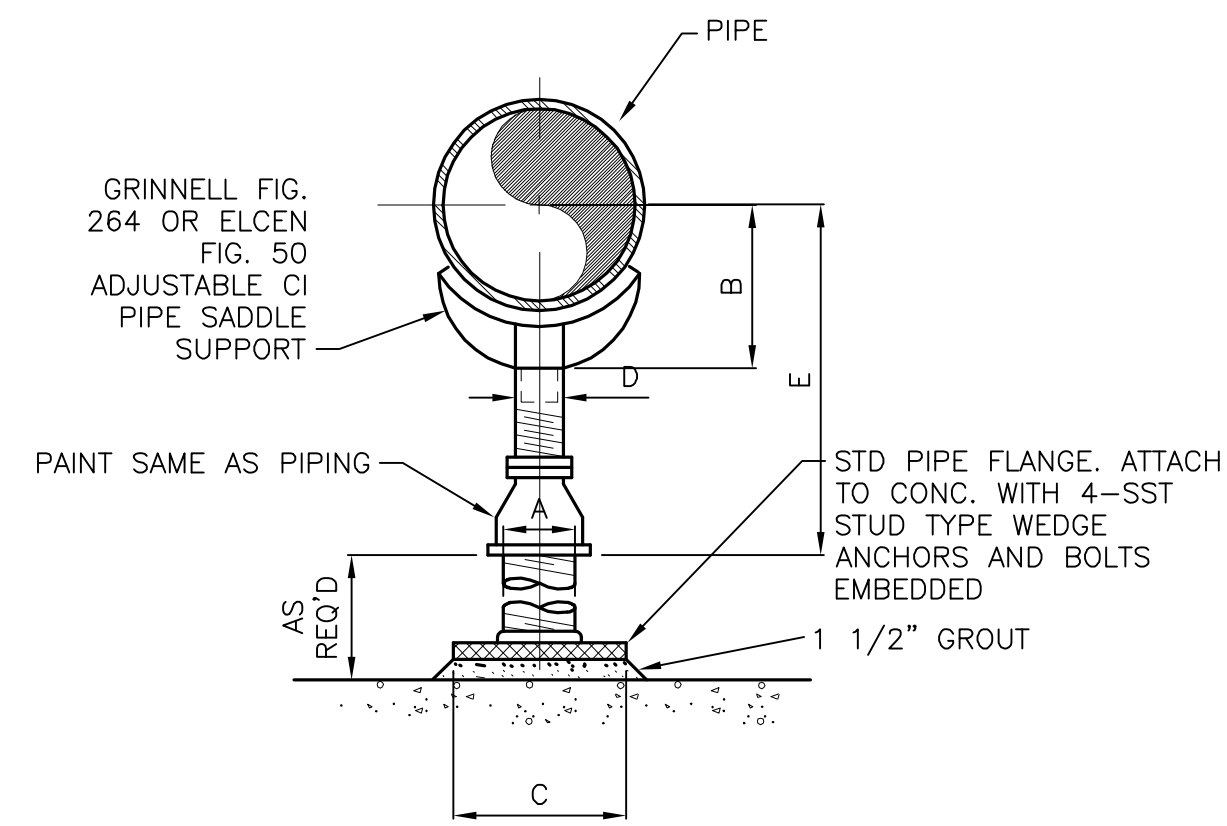
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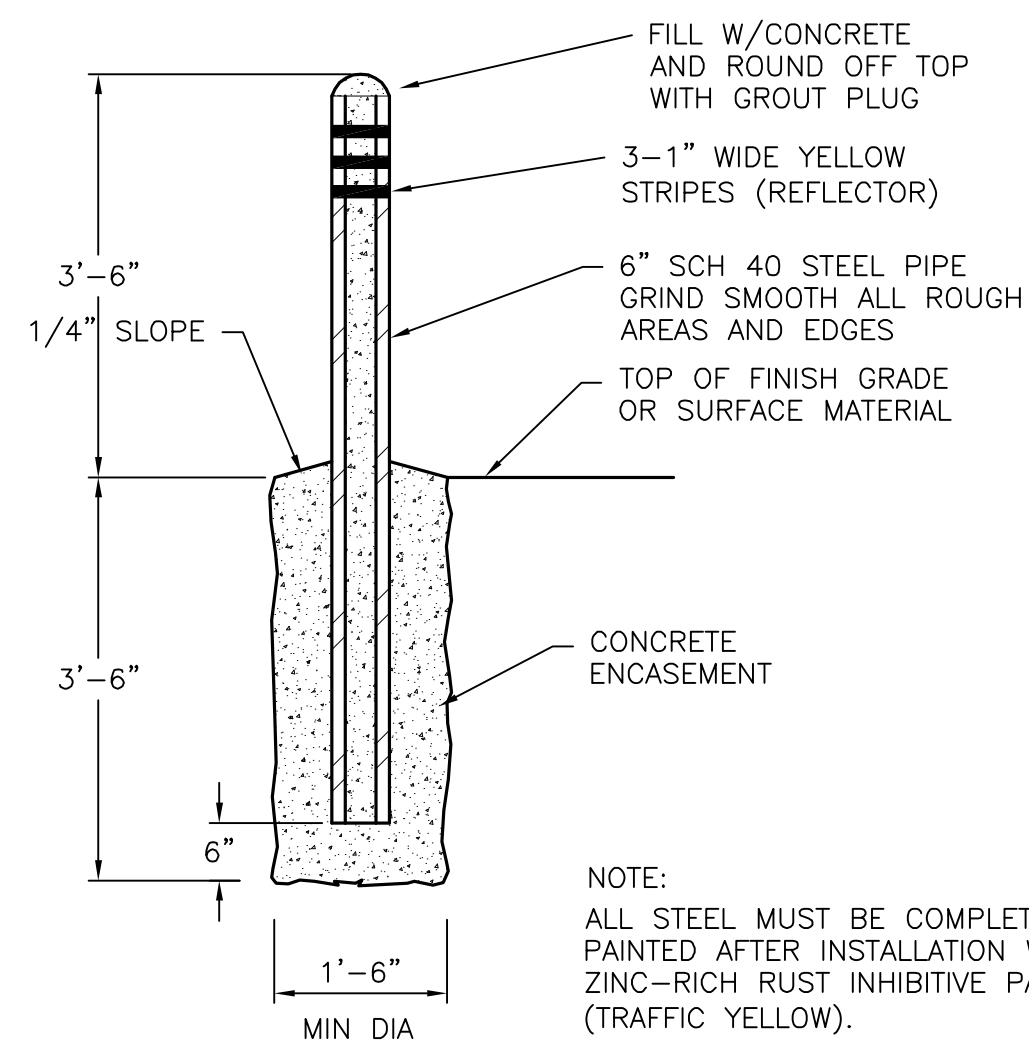


- NOTES:
1. PROVIDE HALF ROUND RIGID INSULATION AND INSULATION PROTECTION SHIELD, SIMILAR TO GRINNELL FIGURE 167 OR ELCEN FIGURE 219, WHERE PIPING IS INSULATED.
 2. PROVIDE NEOPRENE WAFFLE ISOLATION PAD, SIMILAR TO MASON TYPE 'W' OR KORFUND KORPAD 40, UNDER SUPPORT FOOT WHEN PIPING IS ISOLATED OR SUPPORT IS ADJACENT TO MECHANICAL EQUIPMENT.
 3. FOR BASE, HEIGHT AND FLANGE DIMENSIONS, SEE TABLE.

DIMENSION TABLE						
PIPE SIZE	A	B	C	D	E	
					MIN.	MAX.
4"	3"	4-1/4"	9"	2-1/2"	9-1/4"	14"
6"	3"	5-1/2"	9"	2-1/2"	10-1/2"	15-1/4"
8"	3"	6-7/8"	9"	2-1/2"	11-3/4"	16-1/2"
10"	3"	8-1/2"	9"	2-1/2"	13-1/2"	18-1/4"
12"	3"	9-15/16"	9"	2-1/2"	15"	19-3/4"

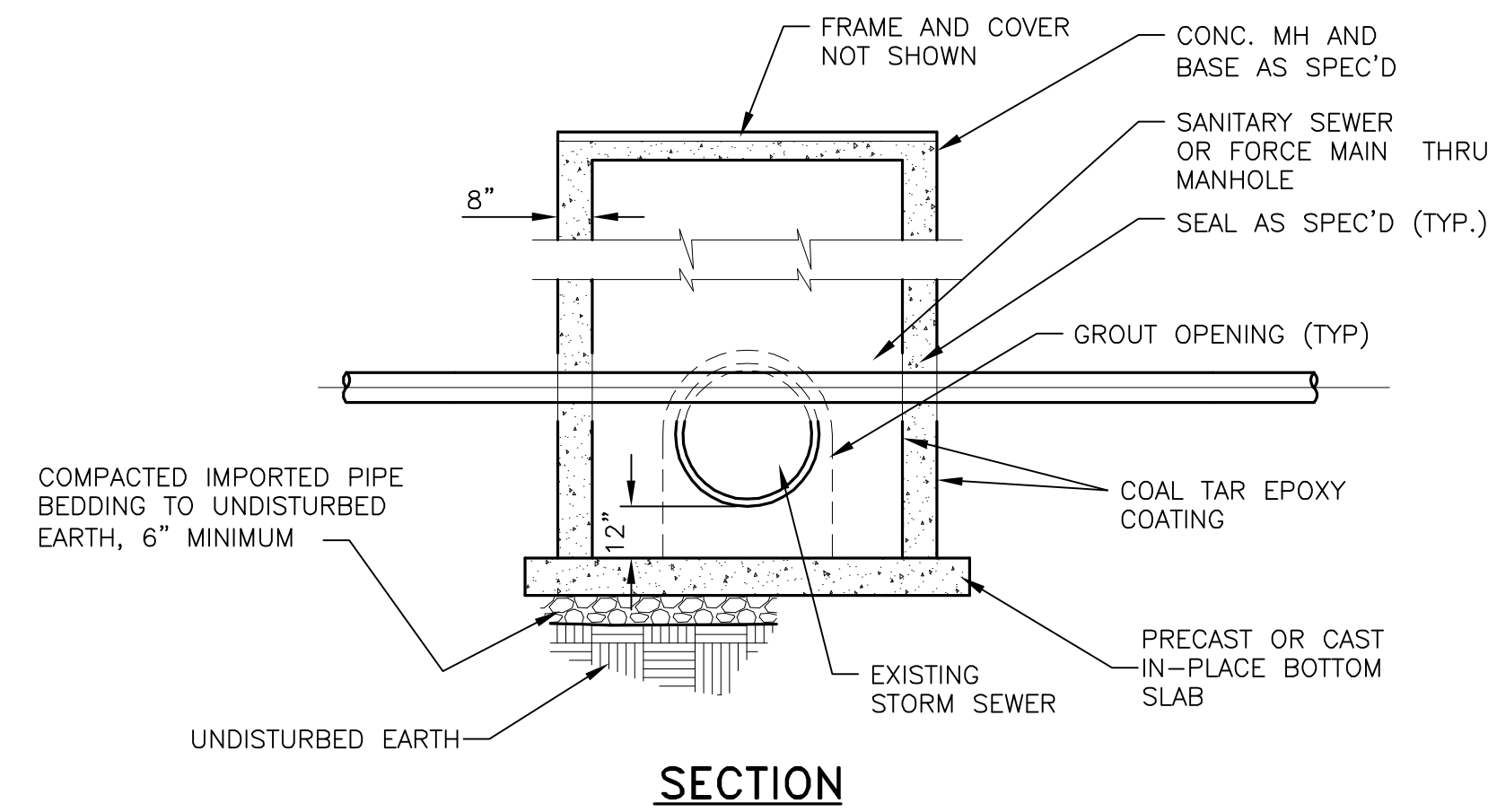
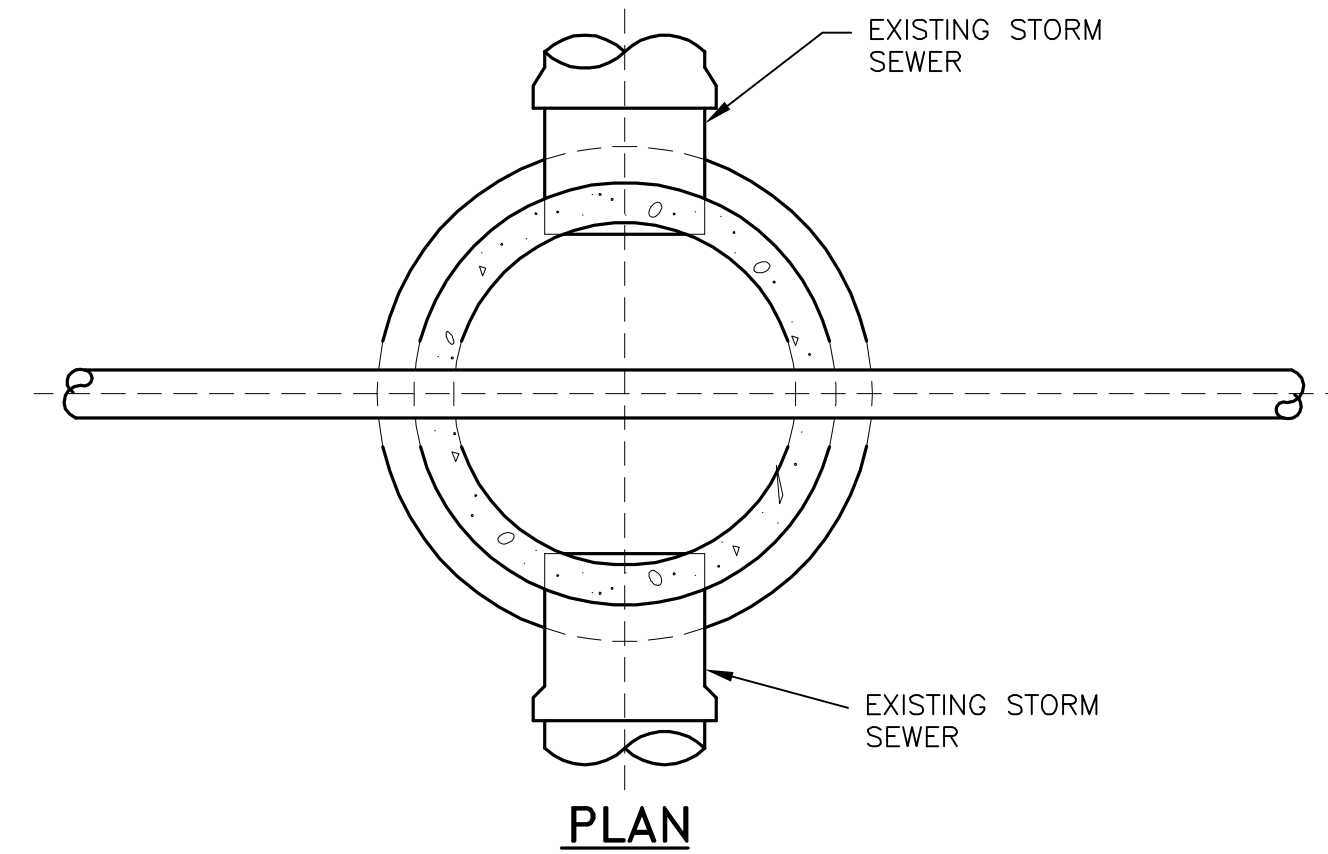
PIPE SUPPORT

500



GUARD POST

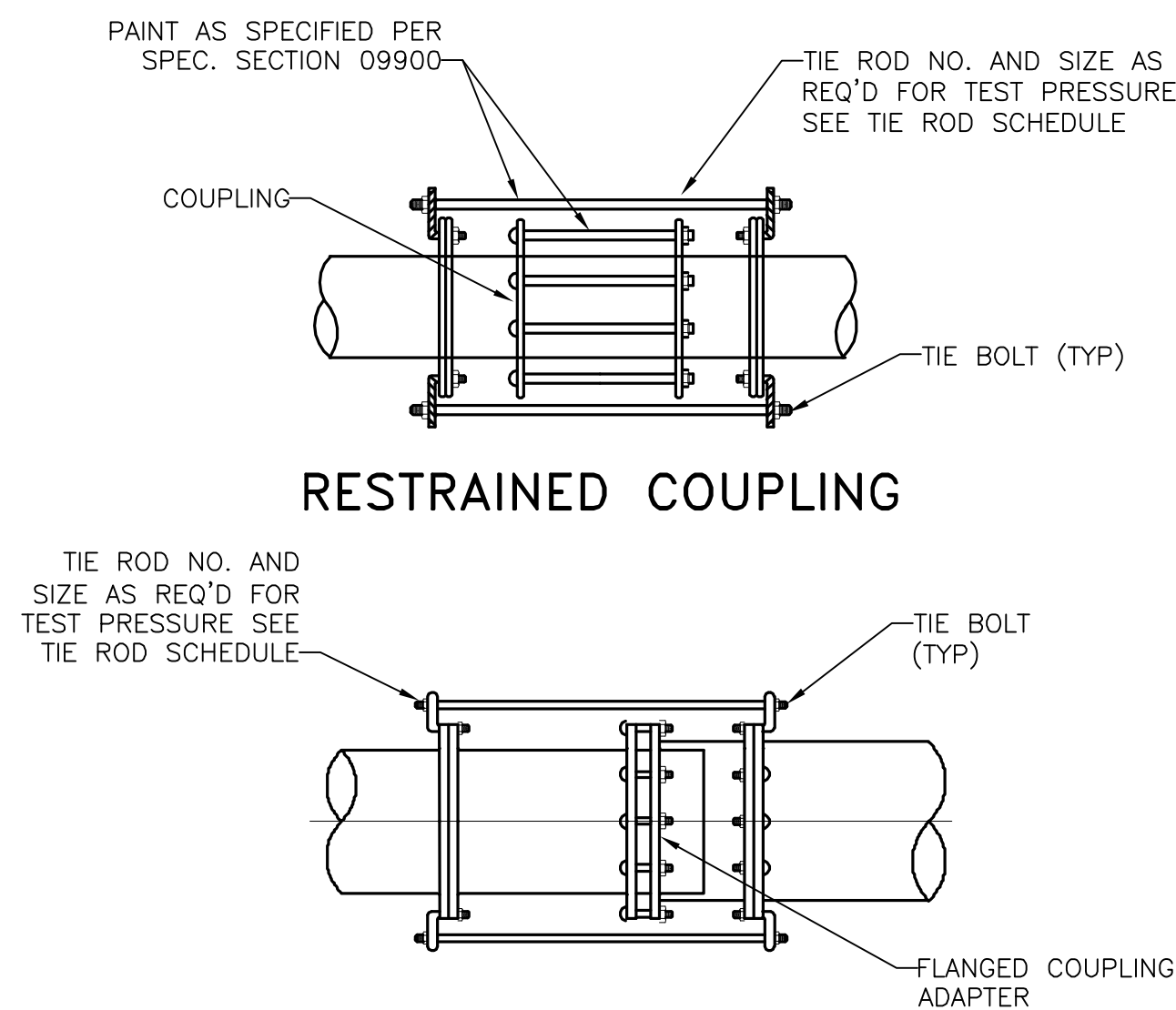
502



NOTE: CONTRACTOR SHALL DETERMINE PIPE SIZES, PIPE INVERT ELEVATIONS AND ANGLES OF PIPE ENTRY AND EXIT.

CONFLICT MANHOLE FOR EXISTING STORM SEWERS
(IN ACCORDANCE W/ FDOT #307)

604

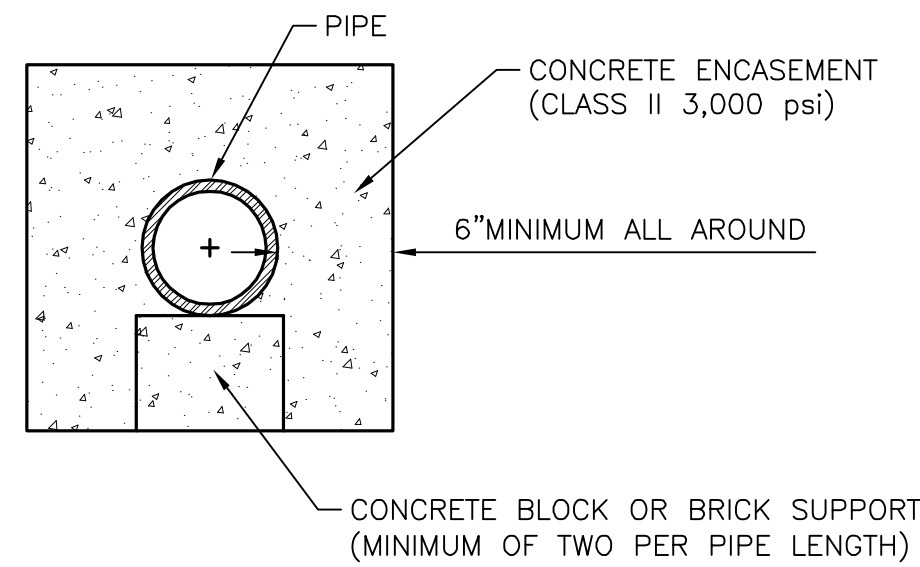


RESTRAINED FLANGED COUPLING ADAPTER

TIE ROD SCHEDULE							
TEST PRESSURE		25 PSI	50 PSI	100 PSI	150 PSI	225 PSI	375 PSI
PIPE DIAMETER (IN.)	MINIMUM PIPE WALL THICKNESS (IN.) *	TIE RODS DIA. (IN.) NO. REQD	TIE RODS DIA. (IN.) NO. REQD	TIE RODS DIA. (IN.) NO. REQD	TIE RODS DIA. (IN.) NO. REQD	TIE RODS DIA. (IN.) NO. REQD	TIE RODS DIA. (IN.) NO. REQD
6	3/16	—	—	5/8 2	5/8 2	5/8 2	5/8 2
8	3/16	—	—	5/8 2	5/8 2	5/8 2	3/4 2
10	3/16	—	—	5/8 2	5/8 2	3/4 2	7/8 2
12	3/16	5/8 2	5/8 2	5/8 2	5/8 2	3/4 2	7/8 4

RESTRAINED COUPLING DETAILS

501

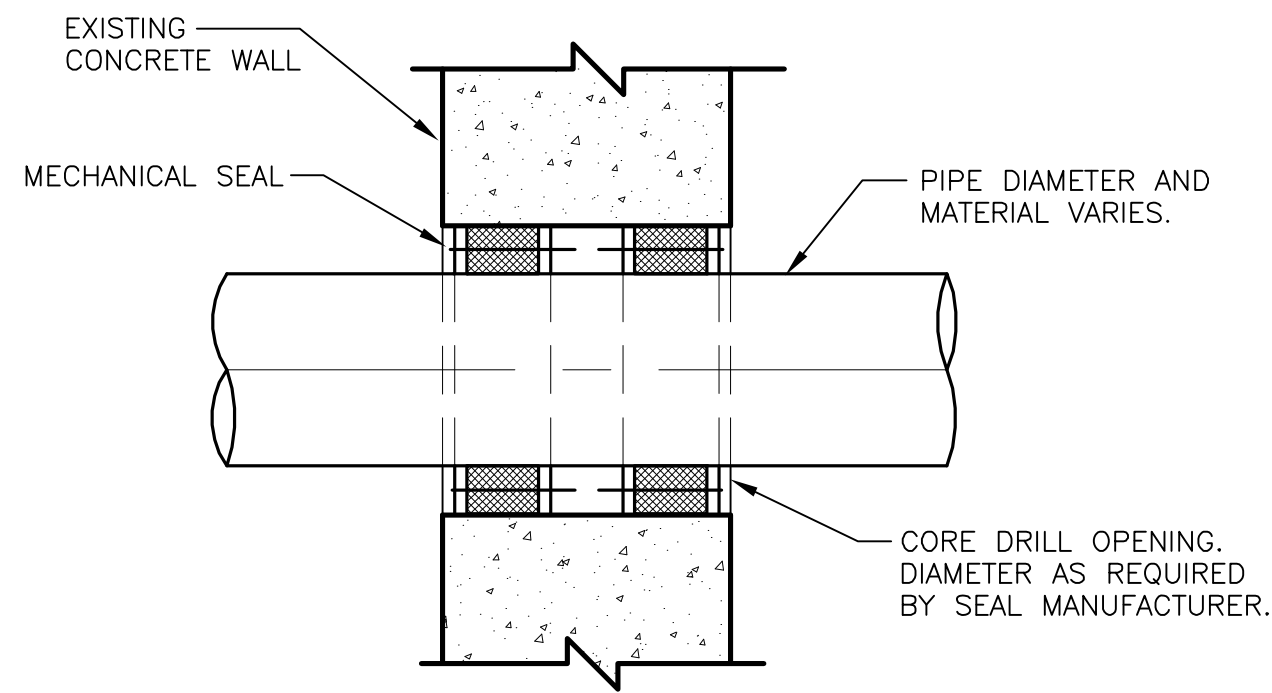


- NOTES:
1. WHERE MINIMUM COVER, 36", IS NOT AVAILABLE ENCASEMENT WILL BE REQUIRED.
 2. ALL CONCRETE ENCASEMENTS MUST BE FORMED AND INSPECTED BY THE CITY'S INSPECTOR PRIOR TO PLACING CONCRETE AND BACKFILLING.
 3. WRAP PIPE IN VISQUEEN PRIOR TO POURING ENCASEMENT.
 4. AT CROSSINGS, ENCASEMENT SHALL EXTEND TEN FEET (10') ON EITHER SIDE OF CROSSING.
 5. BEGINNING AND ENDING OF ENCASEMENTS SHALL NOT BE MORE THAN 6" FROM A PIPE JOINT.

PIPE CONCRETE ENCASEMENT

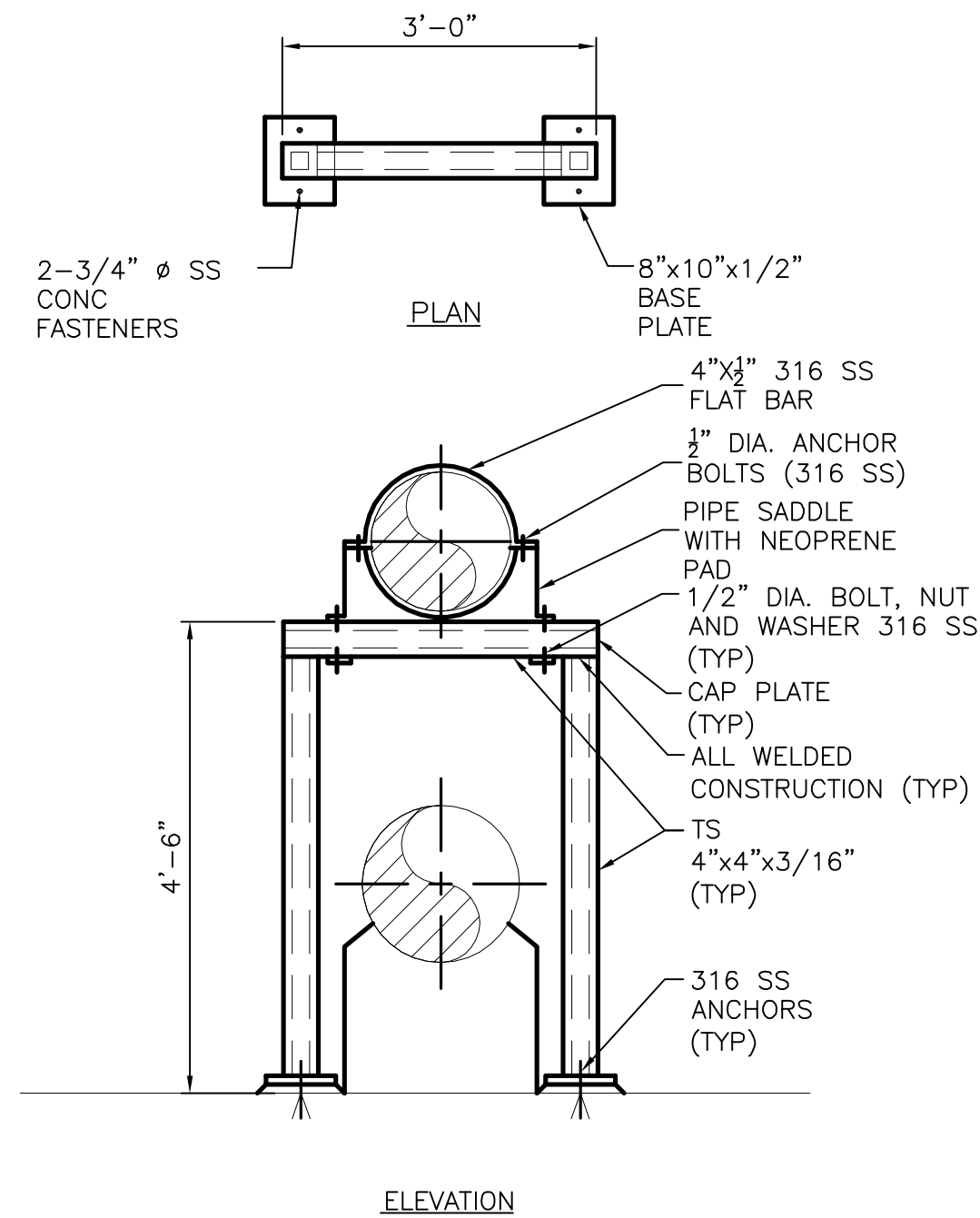
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REVISIONS		DESCRIPTION	
NO.	DATE	BY	CHK'D

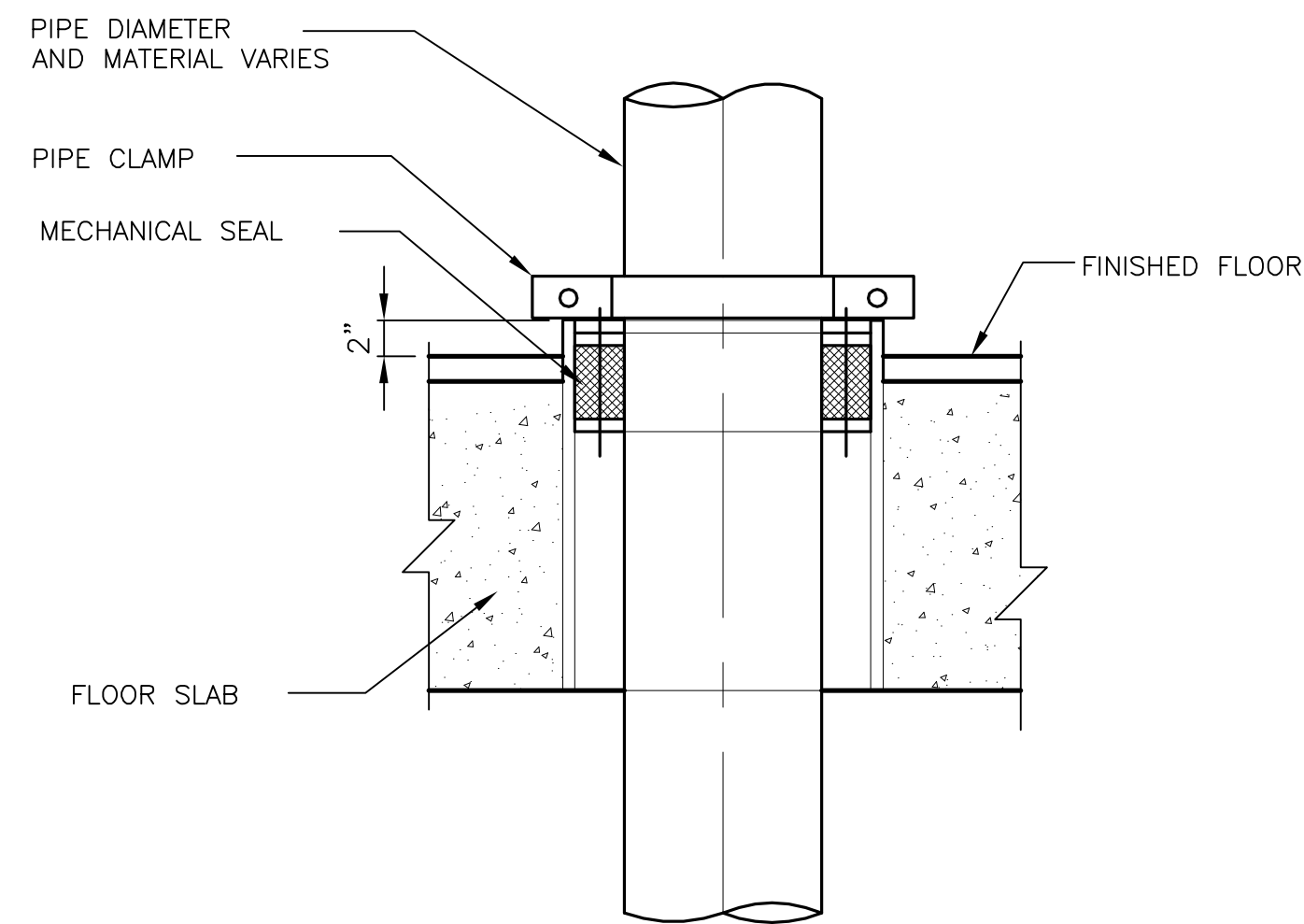


CORE DRILLED OPENING AND
MECHANICAL SEAL PENETRATION
THROUGH EXISTING CONCRETE

957



958



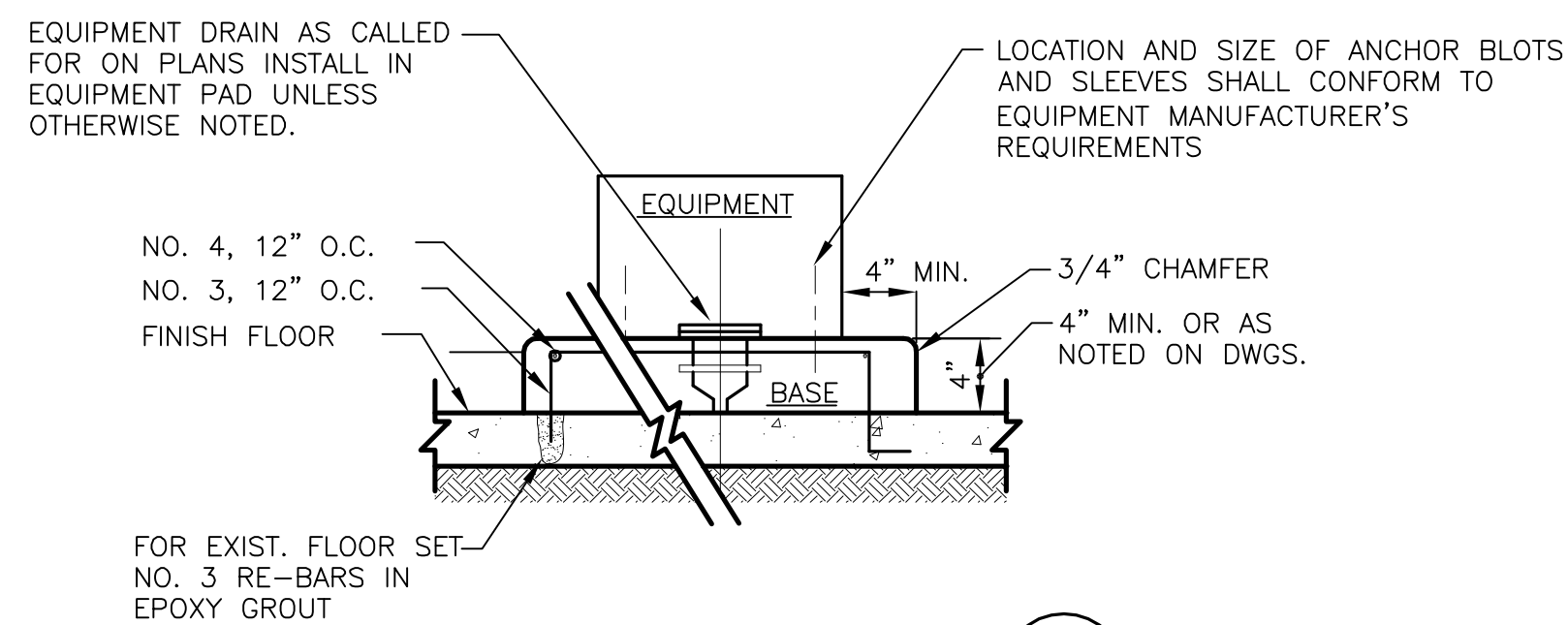
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THROUGH EXISTING CONCRETE

959



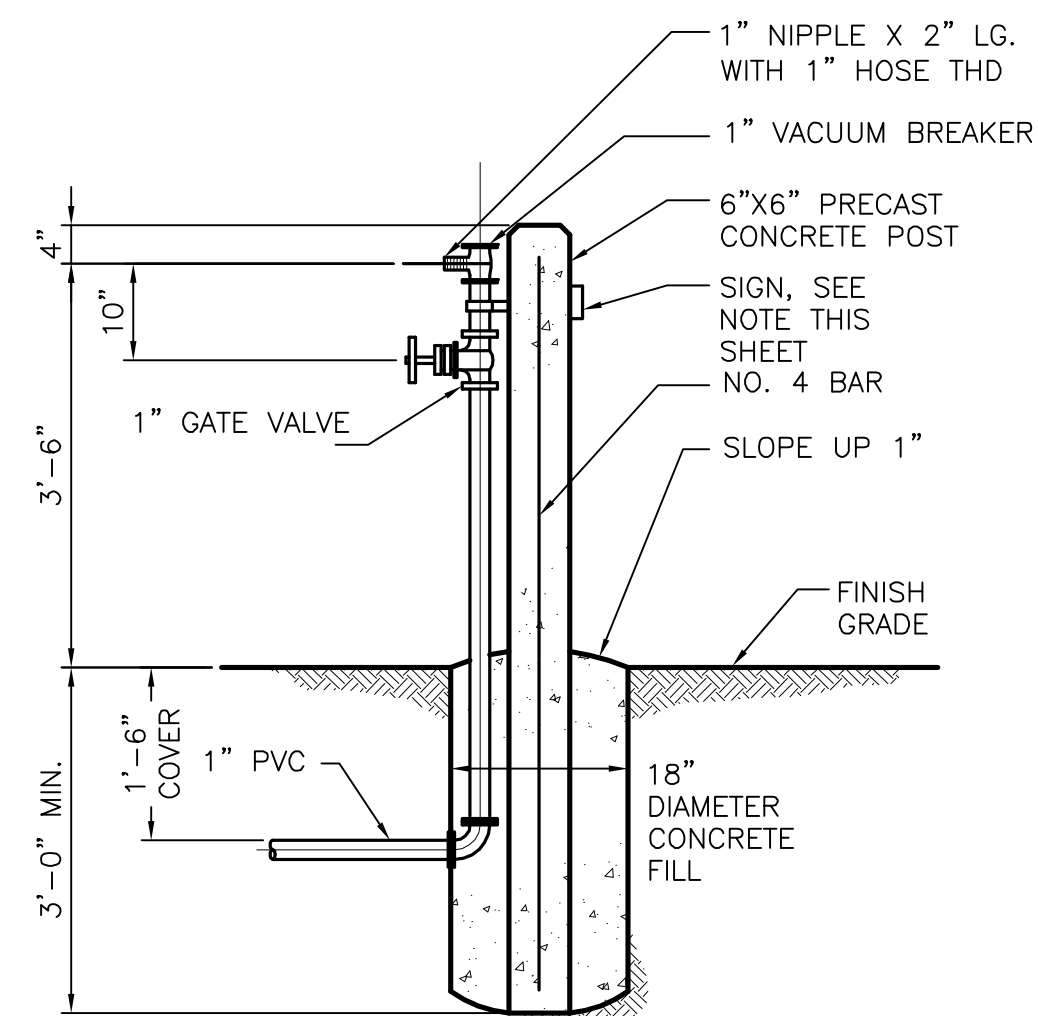
FLOOR BOX

930



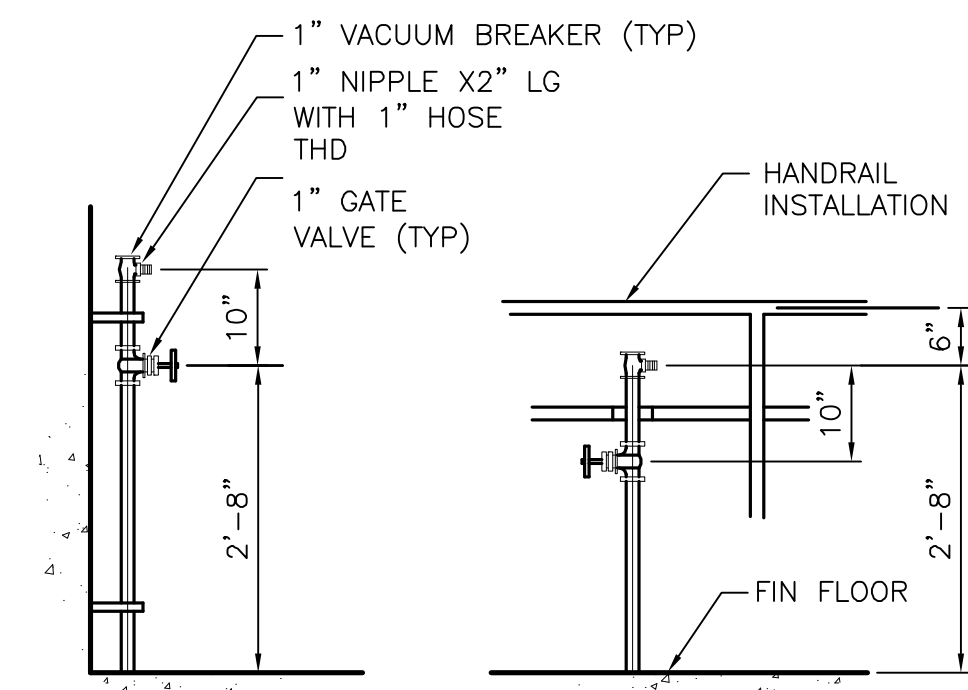
EQUIPMENT PAD

921



HOSE BIBB

961

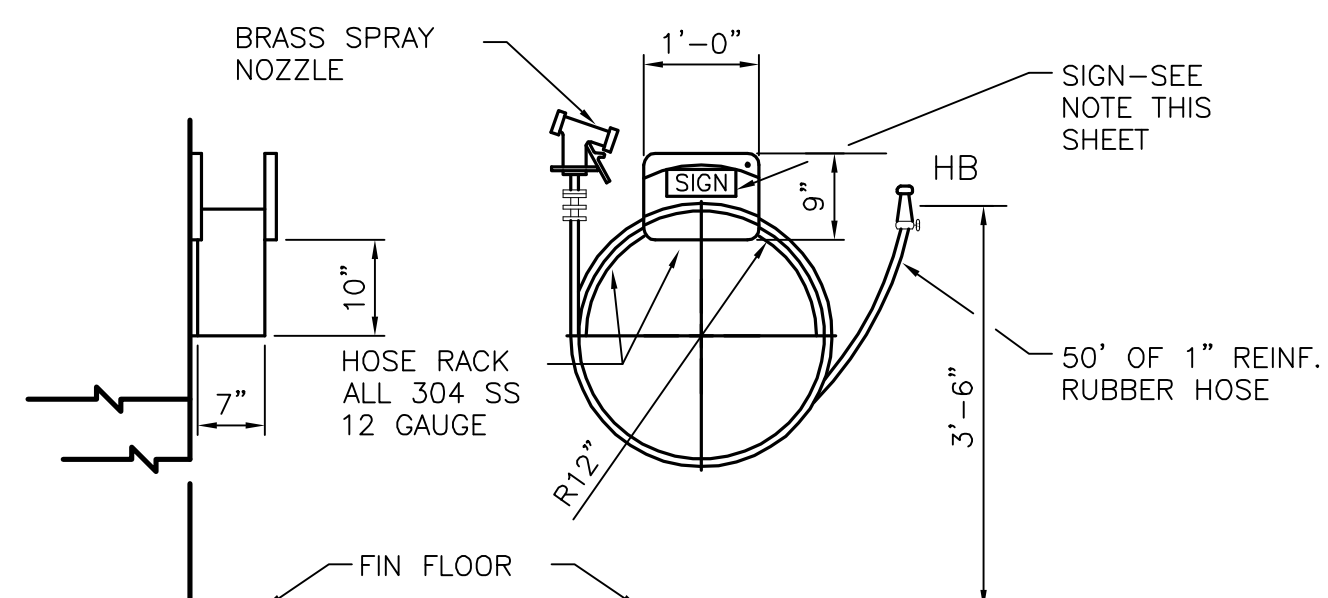


ELEVATION HOSE BIBB

931

NOTE:
ANCHOR WASH HOSE STATION TO WALL OR HANDRAIL WITH STAINLESS STEEL HARDWARE AS REQUIRED

POTABLE/NON-POTABLE WATER SIGN
THE CONTRACTOR SHALL PROVIDE A SIGN ABOVE ALL HOSE BIBBS WHICH SHALL STATE EITHER "POTABLE" OR "NON-POTABLE, DO NOT DRINK." THE SIGN SHALL BE MADE OF LAMINATED PLASTIC WITH A BLACK FACE AND WHITE LETTERS APPROX. 3/4" HIGH. ATTACH THE SIGN TO STRUCTURE, WASH HOSE STATION OR HANDRAIL WITH 304 STAINLESS STEEL HARDWARE AS REQUIRED.

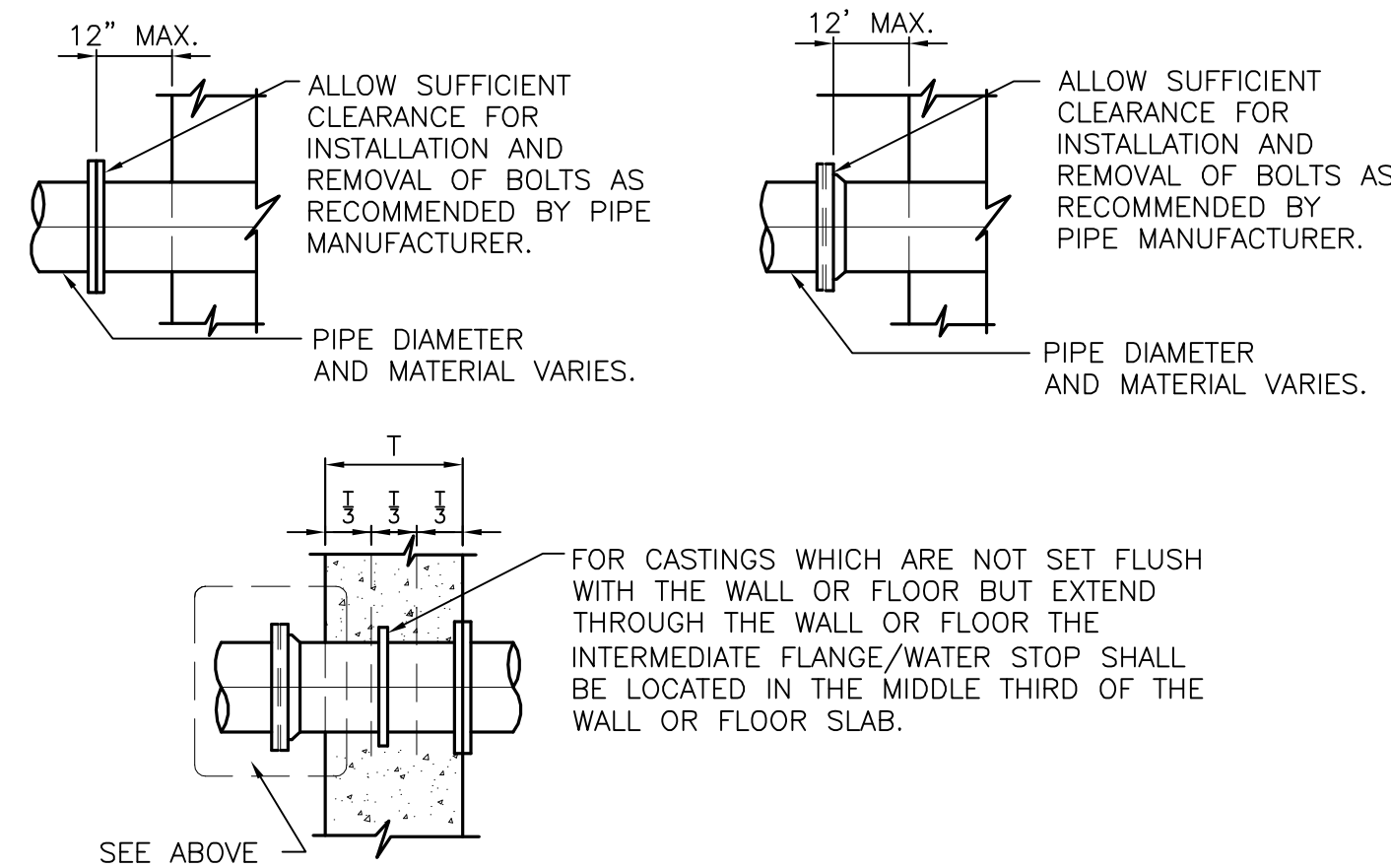


WASH HOSE STATION

935

NOT FOR CONSTRUCTION OR BID

ENGINEER CITY OF FORT LAUDERDALE DESIGN NO. 40009 DATE:		DRAWN BY: DATE: FEB. 2006 ENG. SCALE: N.T.S. DESIGNED BY: WW2011 CHECKED BY: WW2011 FIELD BOOK:		TEL: (864) 828-5240 FAX: (864) 828-5074	
CITY OF FORT LAUDERDALE PUBLIC WORKS DEPARTMENT ENGINEERING & ARCHITECTURE 100 North Andrews Avenue, Fort Lauderdale, Florida 33301					
REVISIONS		DESCRIPTION			
NO.	DATE	BY	CHKD		
PROJECT # P0000		PROJECT NAME			
DESCRIPTION		SHEET			
PLACE PROJECT ADDRESS					
SHEET NO. X-1		OF XX			
TOTAL: 0					
CAD FILE: XXXXX-XXX-XXX0000					
DRAWING FILE NO. 4-XXX-XX					

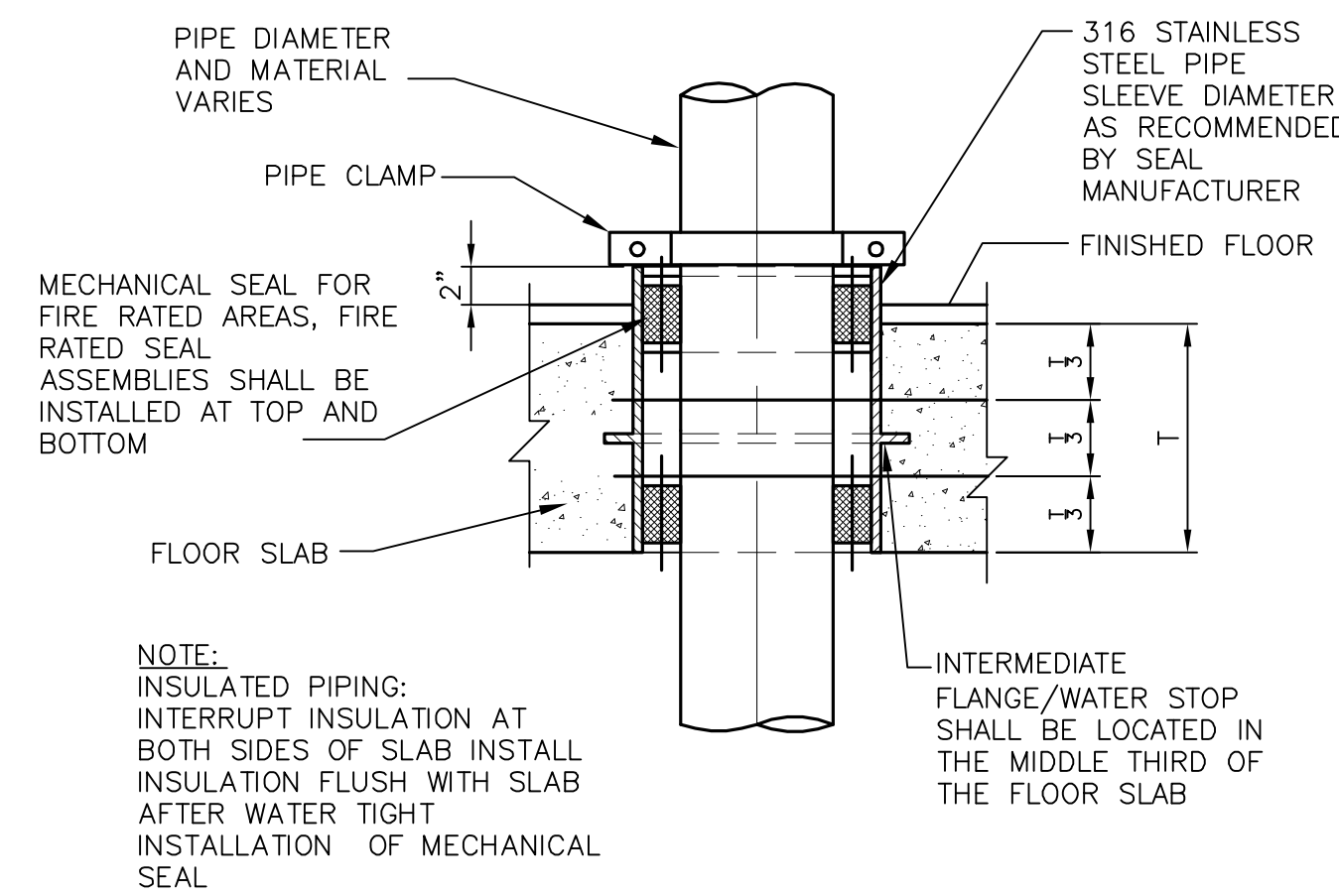


CATSING WITH NON FLUSH- JOINTS

923

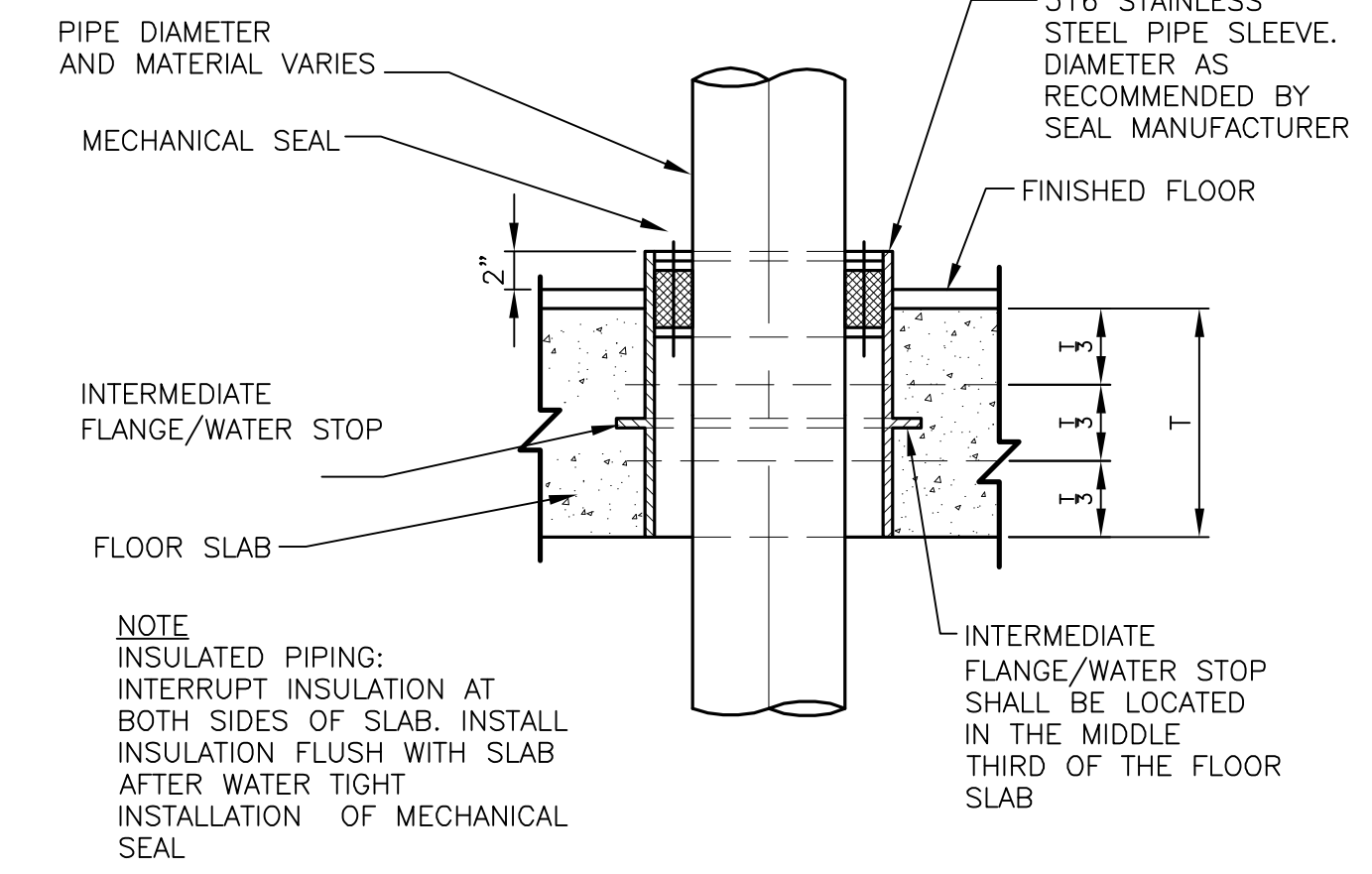
CORE DRILLED OPENING AND MECHANICAL SEAL PENETRATION THROUGH EXISTING CONCRETE

924



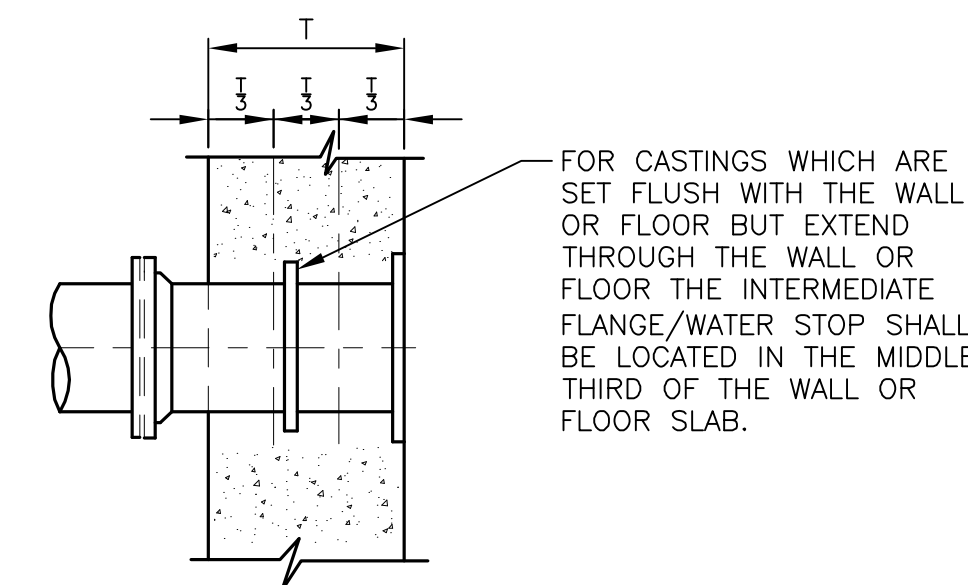
FLOOR SLEEVE WITH DUAL MECHANICAL SEAL

925



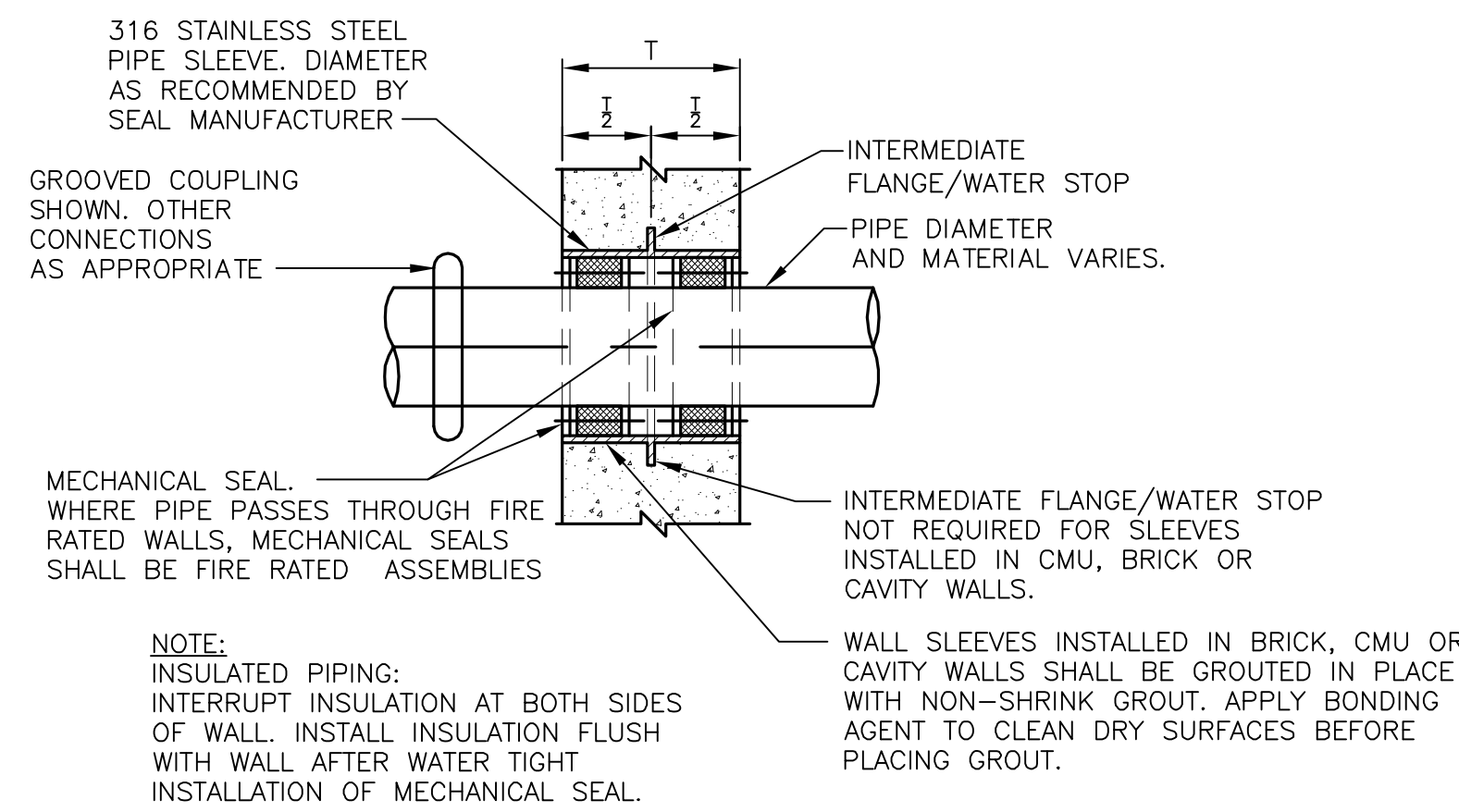
SLEEVE WITH MECHANICAL SEAL

926



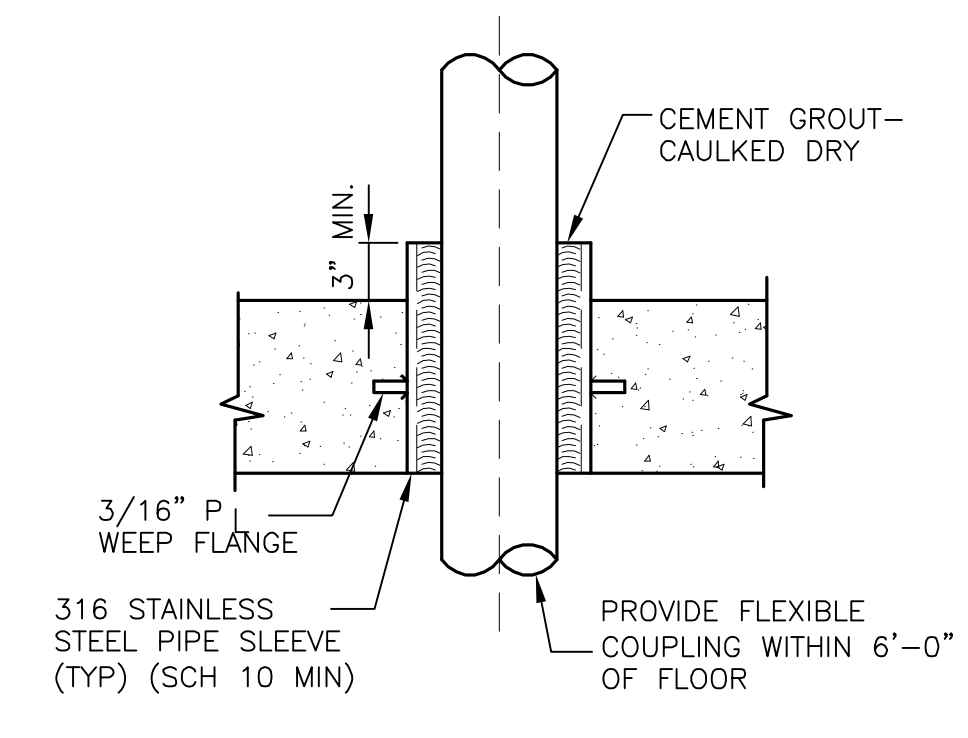
CASTING WITH FLUSH JOINTS

927



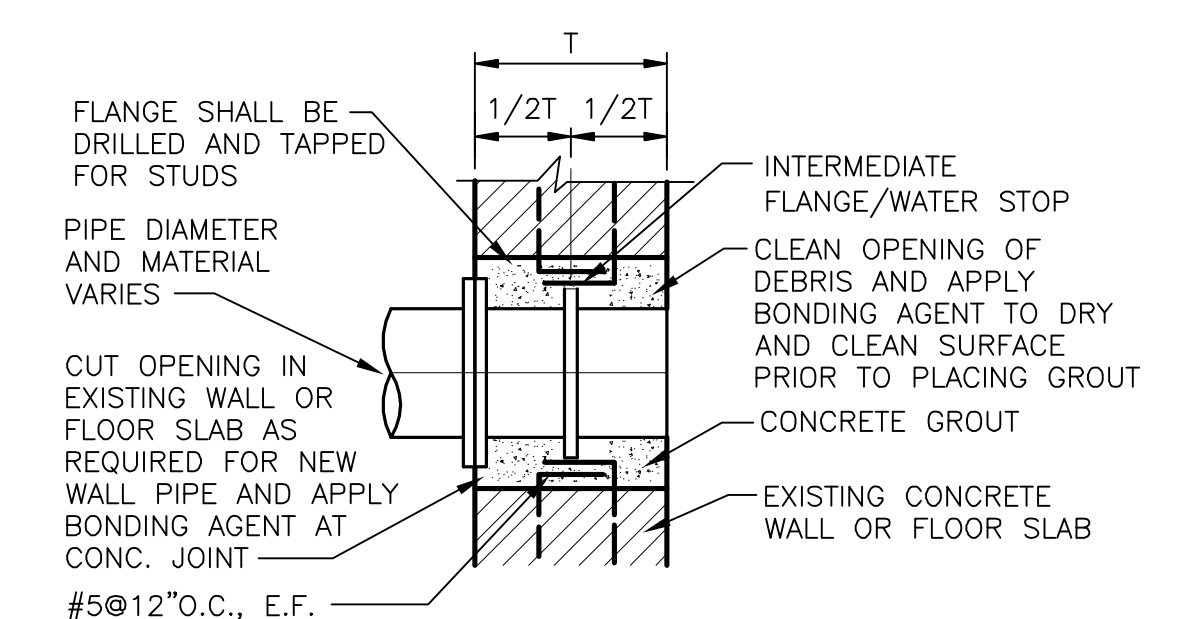
WALL SLEEVE WITH MECHANICAL SEAL FOR CONCRETE, BRICK, CMU OR CAVITY WALLS

928



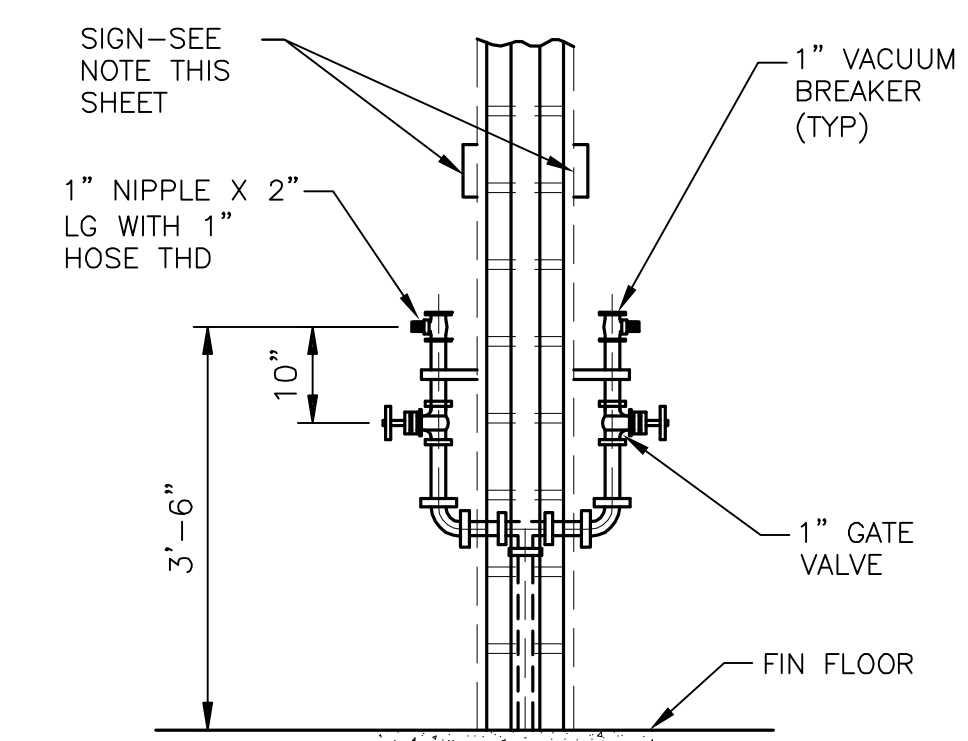
PIPE SLEEVE (WET FLOOR)

929



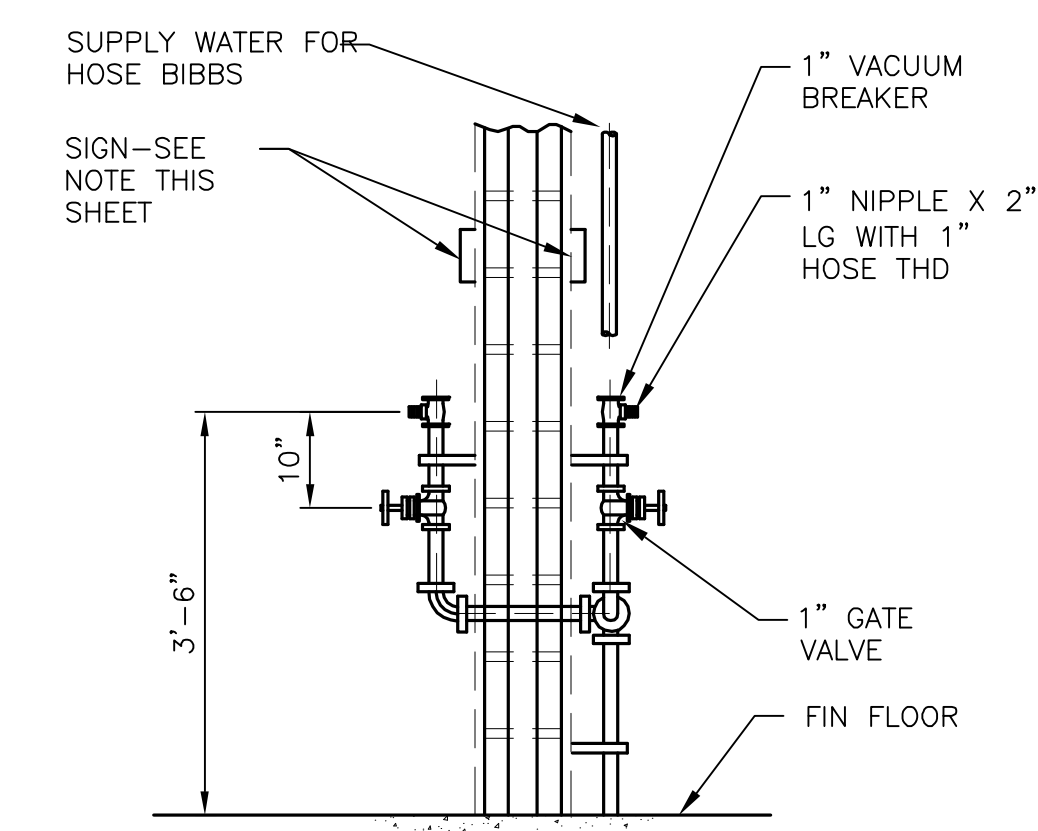
WALL PIPE TO BE INSTALLED IN EXISTING WALLS OR FLOOR SLABS

932



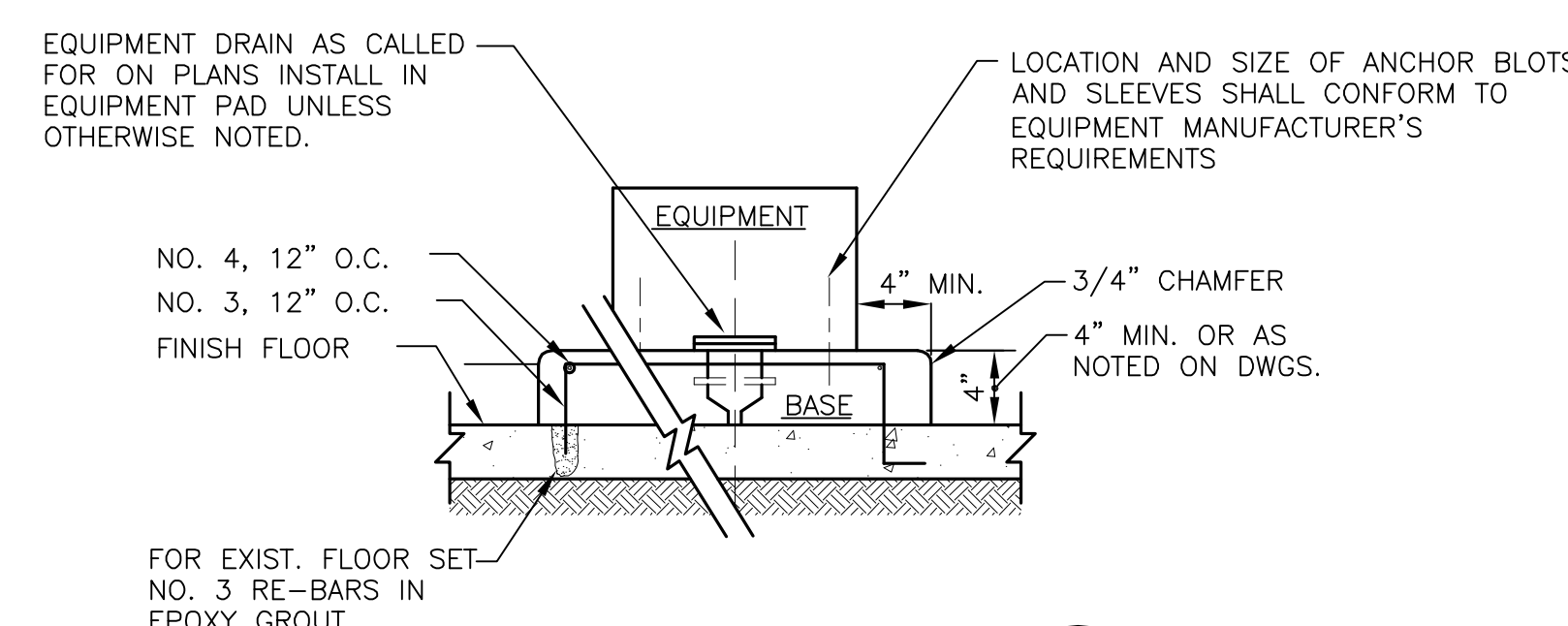
ELEVATION HOSE BIBB

933



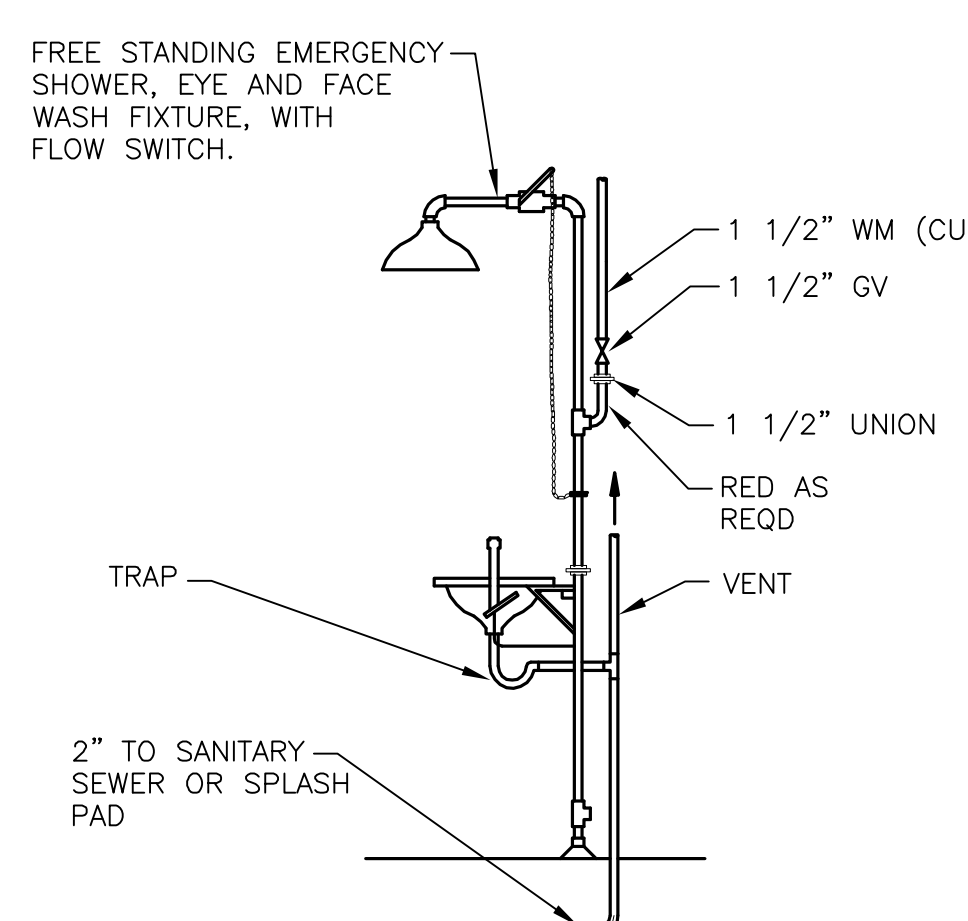
ELEVATION HOSE BIBB

934



EQUIPMENT PAD

821



EMERGENCY SHOWER/EYE & FACE WASH

936

NOT FOR CONSTRUCTION OR BID

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

ENGINEER: **PARTRINGTON**
PROJECT NO: **46009**
DATE: **FEB. 2006**

DRAWN BY: **WW2011**
ENG. BY: **WW2011**
CHECKED BY: **WW2011**
FIELD BOOK: **33301**

REVISIONS		DESCRIPTION
NO.	DATE	BY

PROJECT # **P0000**
PROJECT NAME **DESCRIPTION**
SHEET **XX**

PLACE PROJECT ADDRESS

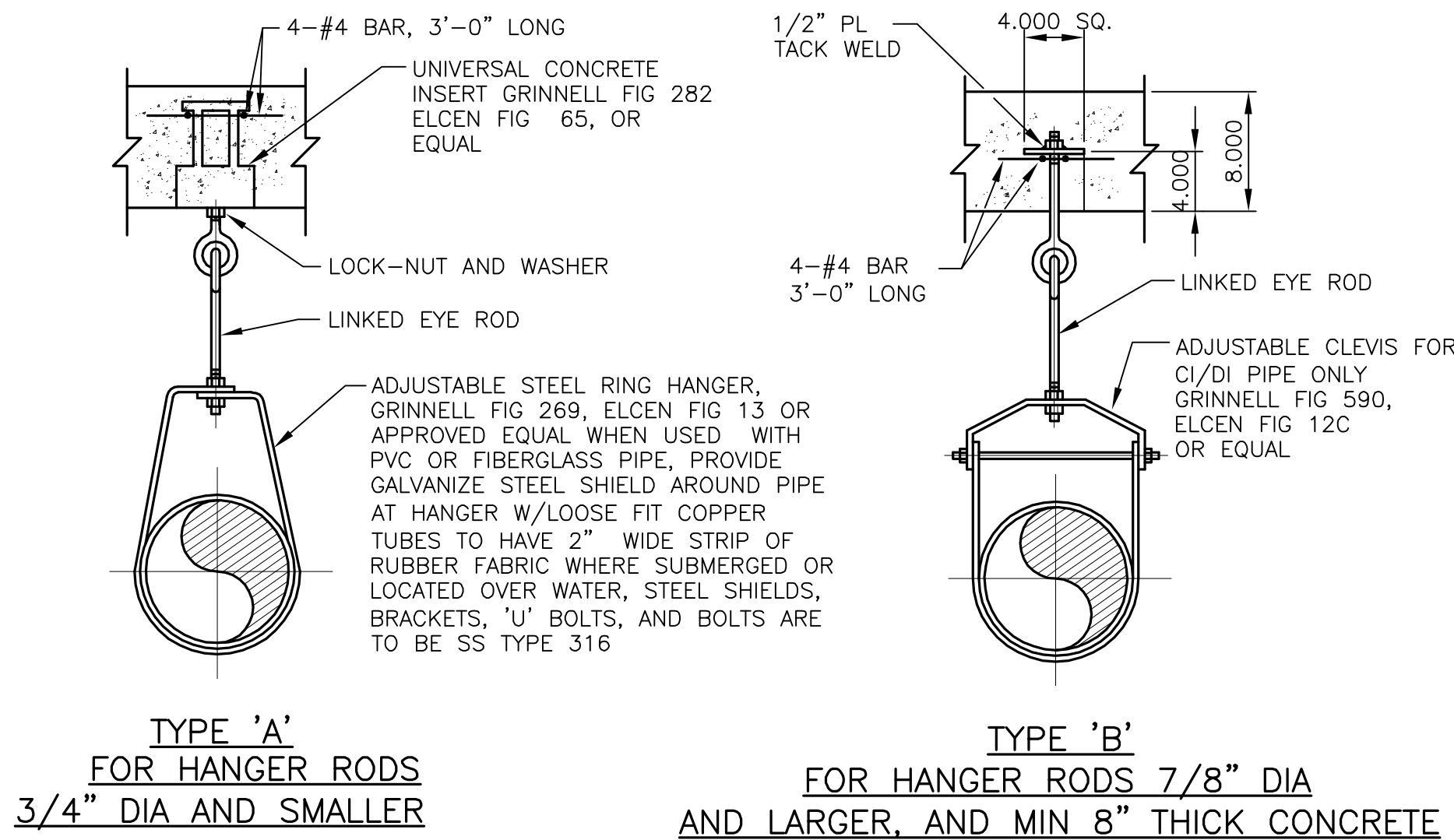
SHEET NO. **X-1** OF **XX**

TOTAL: **0**

CAD FILE: **XXXXX-XXX-XXX0000**

DRAWING FILE NO. **4-XXX-XX**

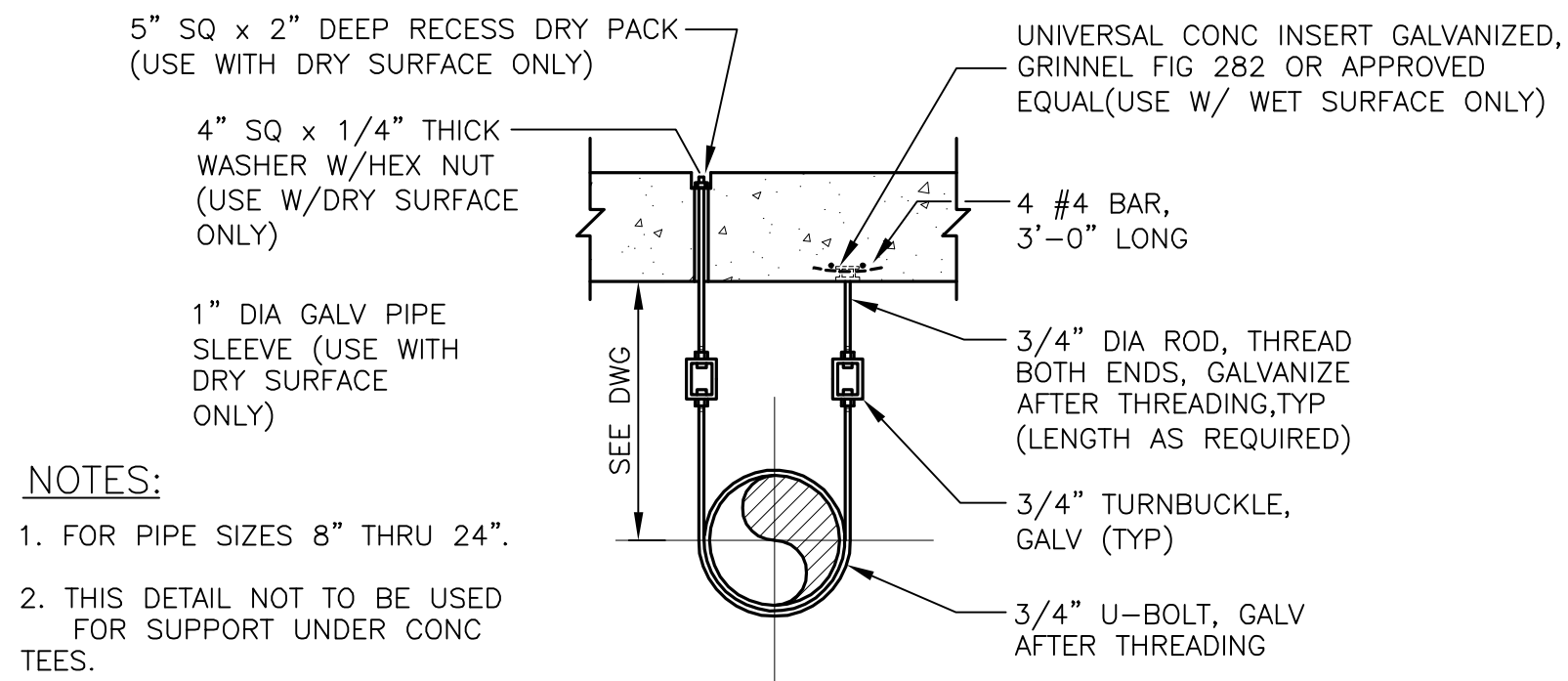
936



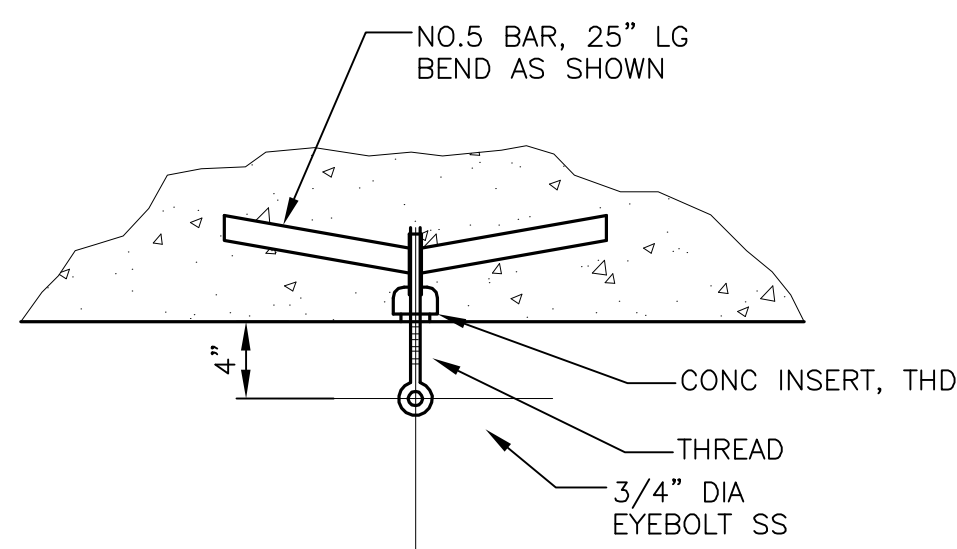
PIPE HANGER RODS & SUPPORT SPACING					
PIPE DIA (INCHES)	ROD DIA (INCHES)	MAX SUPPORT SPACING (FEET)		WEIGHT LIMIT (LBS)	
		STL PIPE	CI/DI PIPE	TYPE 'A'	TYPE 'B'
1 & SMALLER	3/8	5	PER HANGER LENGTH AND FIT - MAX SPACING 5 FEET - LOCATE HANGER CLOSE TO EACH CONNECTION	610	----
1 ? TO 2	3/8	5		610	----
2 ? TO 3 ?	1/2	10		1130	----
4 TO 5	5/8	10		1430	----
6	3/4	10		1430	3800
8,10,12	7/8	10	MIN 1 HANGER PER HANGER LENGTH AND FIT - MAX SPACING 5 FEET - LOCATE HANGER CLOSE TO EACH CONNECTION	----	3800
14,16	1	10		----	3800

NOTE:
GALVANIZE ALL PARTS
AFTER FABRICATION

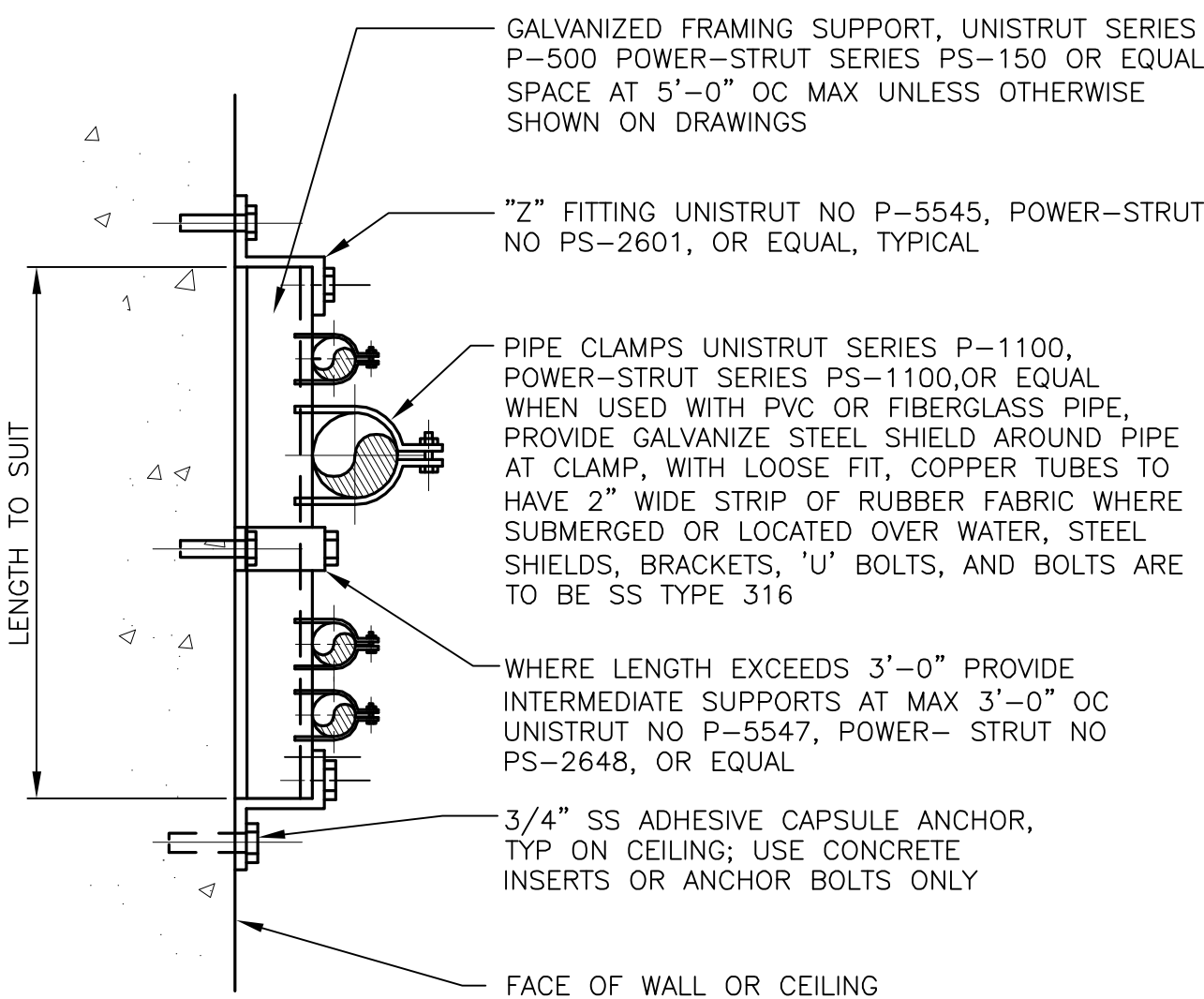
PIPE HANGER 948



DUAL ROD PIPE HANGER 951

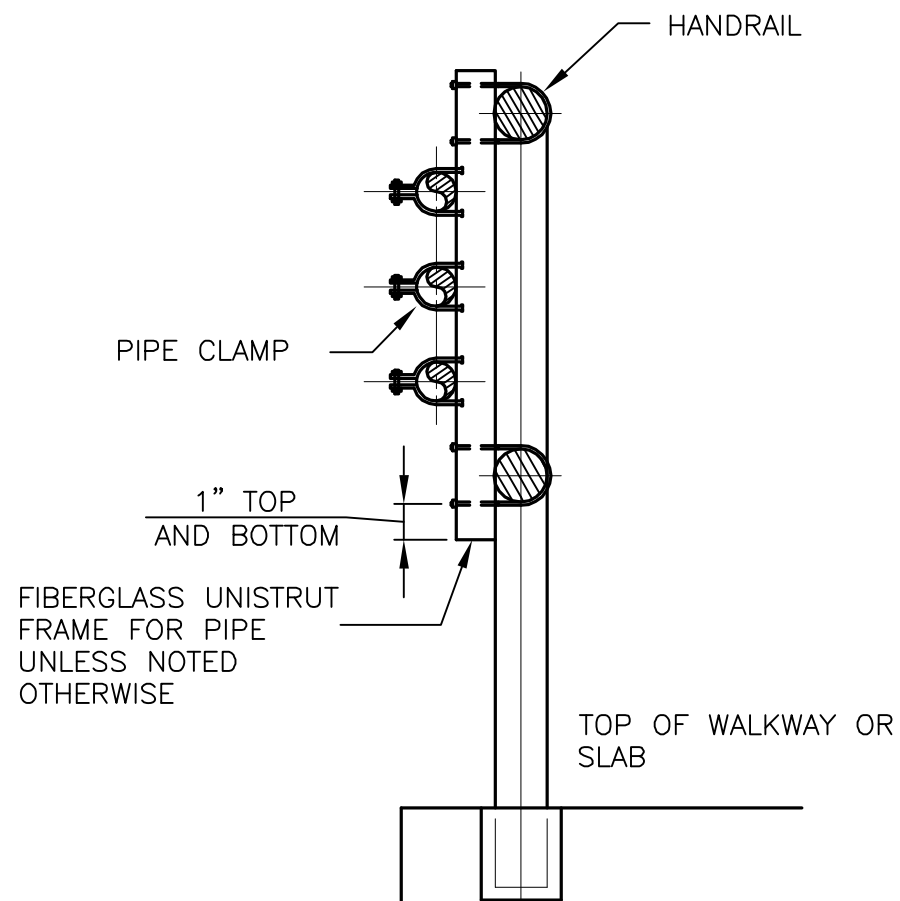


955

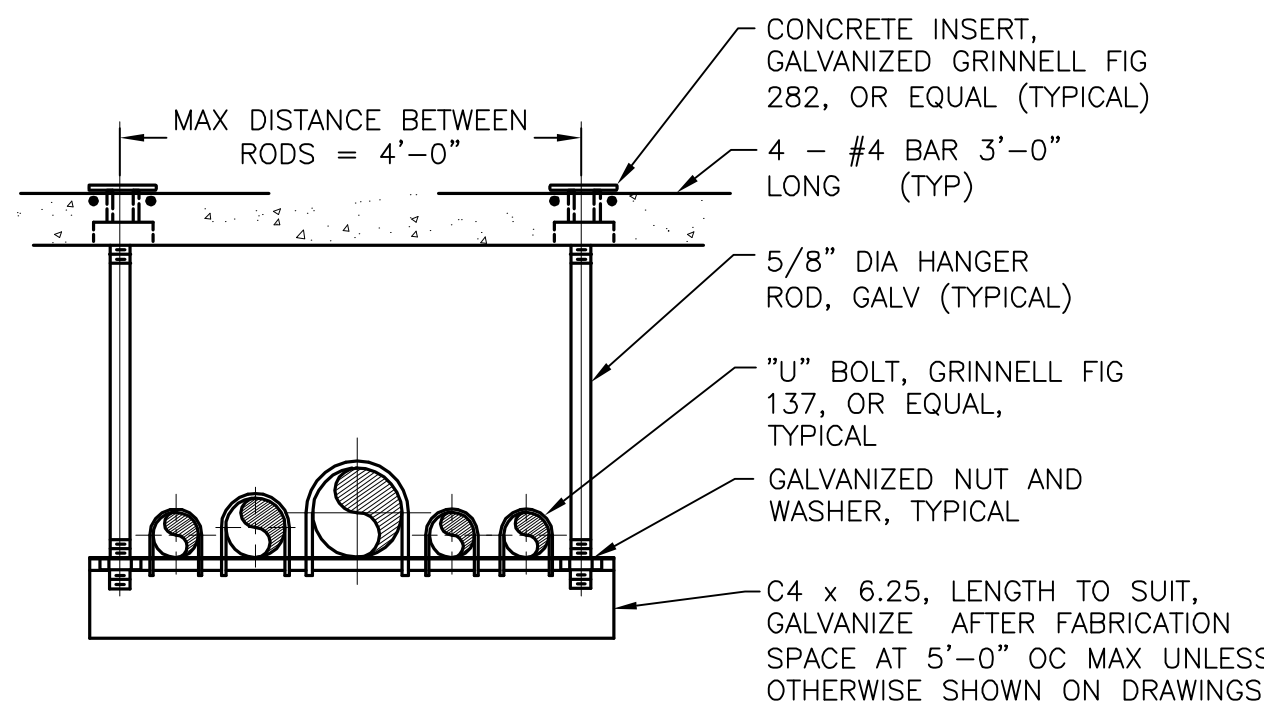


NOTE:
WHERE SUBMERGED OR LOCATED ON OR ABOVE TOP OF WALL
OF HYDRAULIC STRUCTURE, FRAMING SUPPORT, Z FITTINGS,
INTERMEDIATE SUPPORTS, BOLTS, WASHERS AND SHIELD SHALL
BE TYPE 316 STAINLESS STEEL

FLUSH MOUNTED PIPE SUPPORT 949

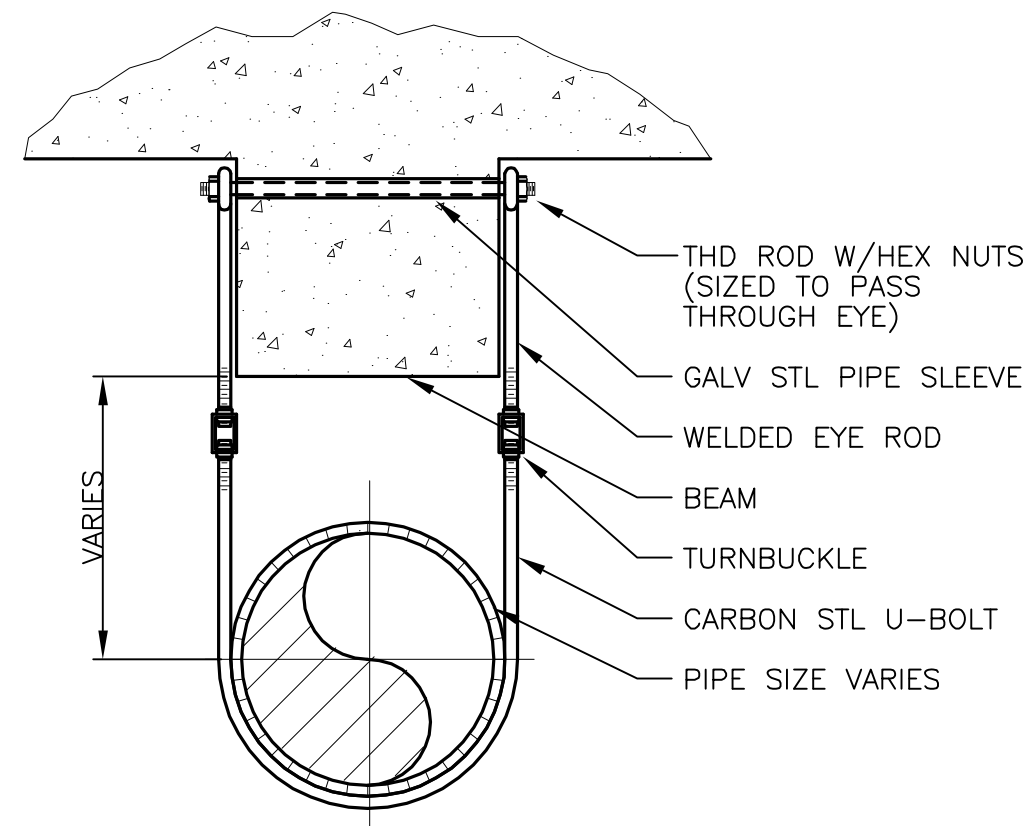


HANDRAIL SUPPORTED PIPE 952

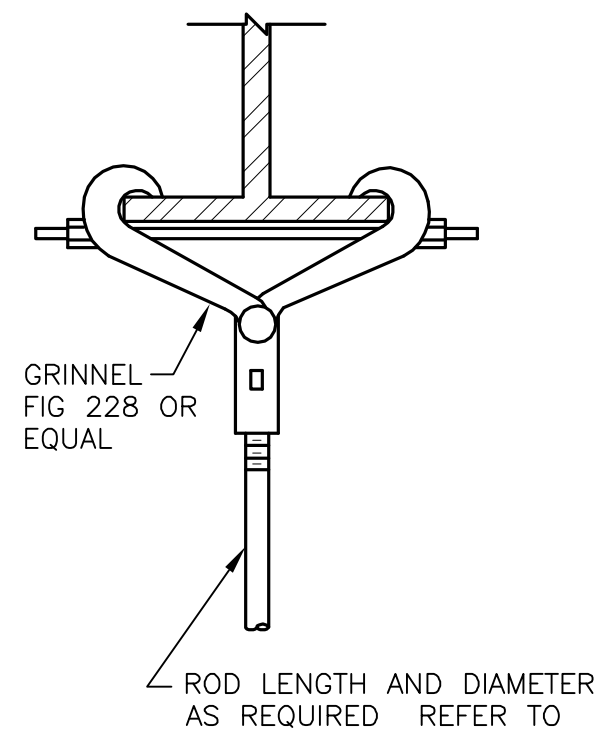


NOTE:
WHEN USED WITH PVC OR FIBERGLASS PIPE PROVIDE
GALVANIZE STEEL SHIELD AROUND PIPE AT "U" BOLT,
WITH LOOSE FIT, WRAP COPPER TUBES WITH 2" WIDE
STRIP OF RUBBER FABRIC WHERE SUBMERGED OR
LOCATED OVER WATER, STEEL SHIELDS, BRACKETS, 'U'
BOLTS, AND BOLTS ARE TO BE SS TYPE 316

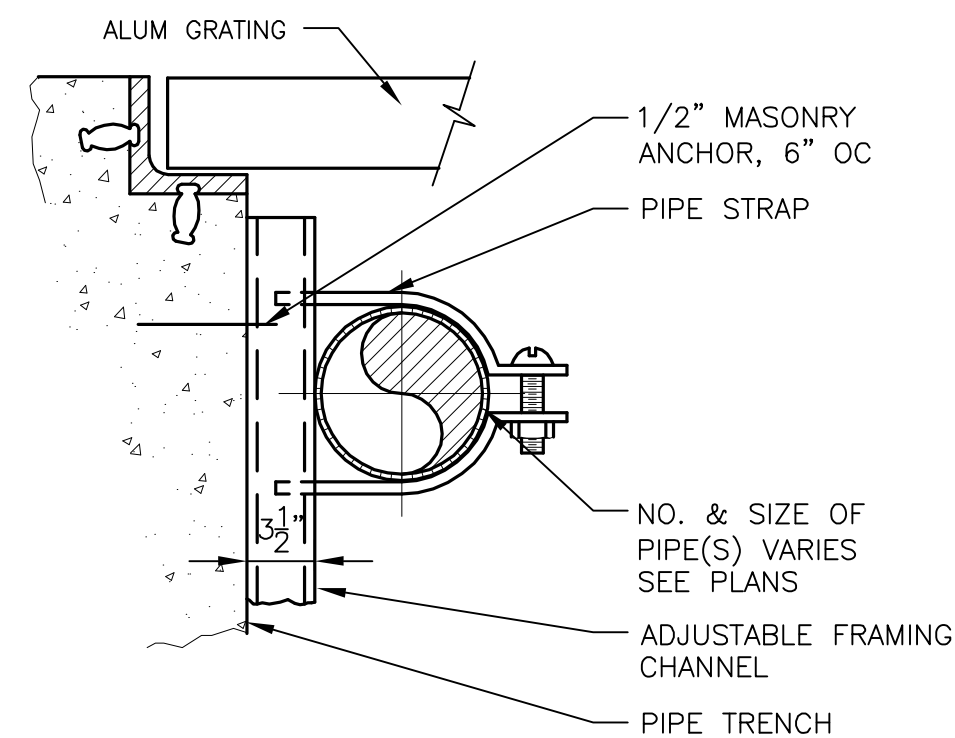
TRAPEZE PIPE HANGER 950



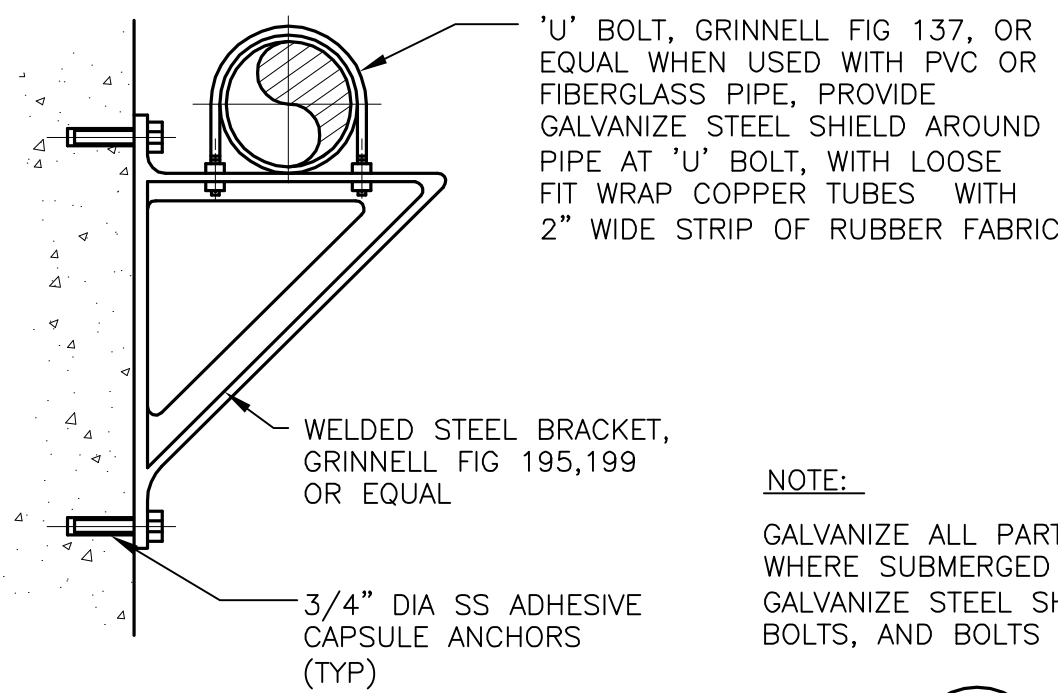
953



BEAM CLAMP 822



954



NOTE:
GALVANIZE ALL PARTS AFTER FABRICATION
WHERE SUBMERGED OR LOCATED OVER WATER,
GALVANIZE STEEL SHIELDS, BRACKETS, 'U'
BOLTS, AND BOLTS ARE TO BE SS TYPE 316

PIPE BRACKET 956

NOT FOR CONSTRUCTION OR BID

ENGINEER
PETER PARTINGTON
REGISTERED PROFESSIONAL ENGINEER
No. 40099
DATE:

DATE: 2006 FEB.

DESIGNED BY: SCALE: N.T.S.

CHECKED BY: WW2011

FIELD BOOK: WW2011

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

REVISEMENTS

NO.	DATE	BY	CHD	DESCRIPTION

PROJECT # P0000
PROJECT NAME
DESCRIPTION
SHEET
PLACE PROJECT ADDRESS

SHEET NO. X-1 OF XX

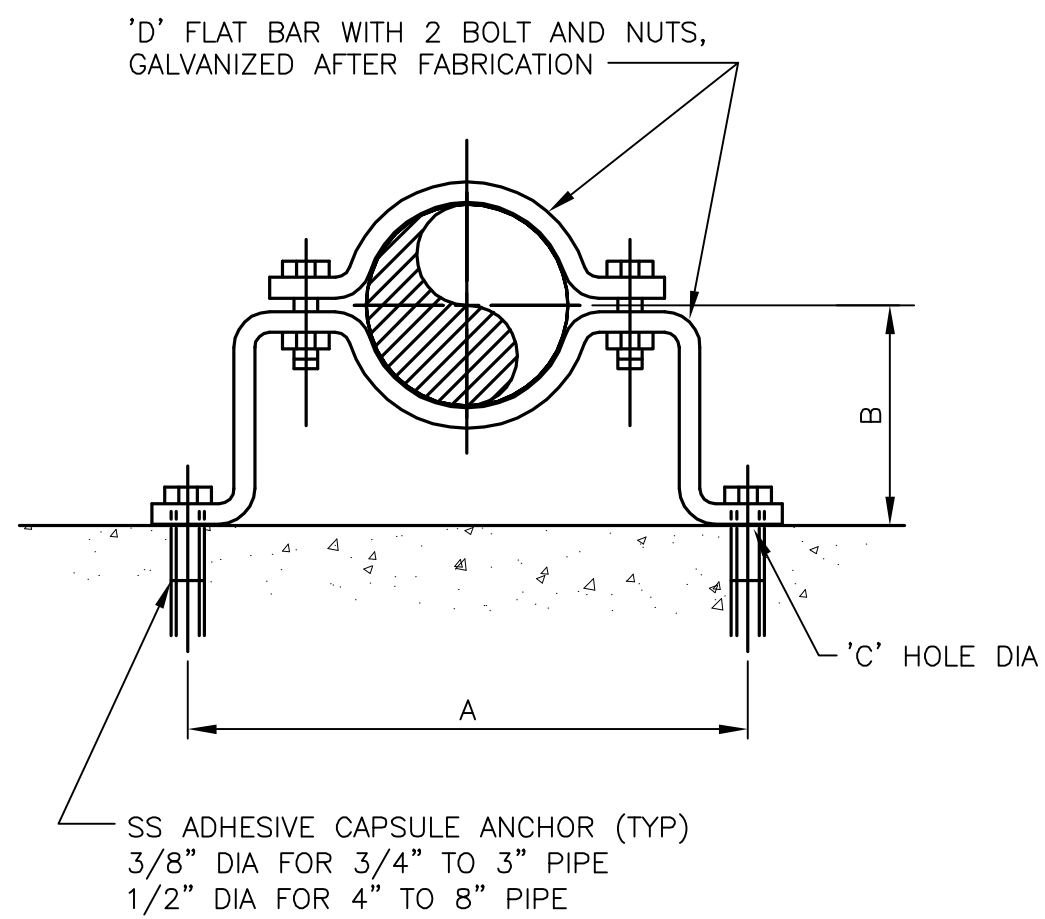
TOTAL: 0

CAD FILE: XXXXX-XXX-XXX0000

DRAWING FILE NO. 4-XXX-XX

DIMENSIONS IN INCHES					
PIPE DIA.	'A'	'B' SEE NOTE 3 BELOW	'C' HOLE DIA.	'D' FLAT BAR SIZE	LOAD RATING LBS.*
3/4	5-15/16	2-1/2	7/16	3/16 X 1-1/4	300
1	6-1/4	2-5/8	7/16	3/16 X 1-1/4	300
1-1/4	6-11/16	2-3/4	7/16	3/16 X 1-1/4	300
1-1/2	6-15/16	3	7/16	3/16 X 1-1/4	300
2	8-5/16	3-3/16	7/16	1/4 X 1-1/4	500
2-1/2	8-7/8	3-7/16	7/16	1/4 X 1-1/4	500
3	9-1/8	3-3/4	7/16	1/4 X 1-1/4	500
3-1/2	10-1/16	4	7/16	1/4 X 1-1/4	500
4	10-9/16	4-1/4	9/16	1/4 X 1-1/2	600
5	11-3/4	4-3/4	9/16	1/4 X 1-1/2	600
6	14-3/8	5-5/16	9/16	3/8 X 1-1/2	850
8	16-5/8	6-5/16	9/16	3/8 X 1-1/2	850

* SAFETY FACTOR OF 5

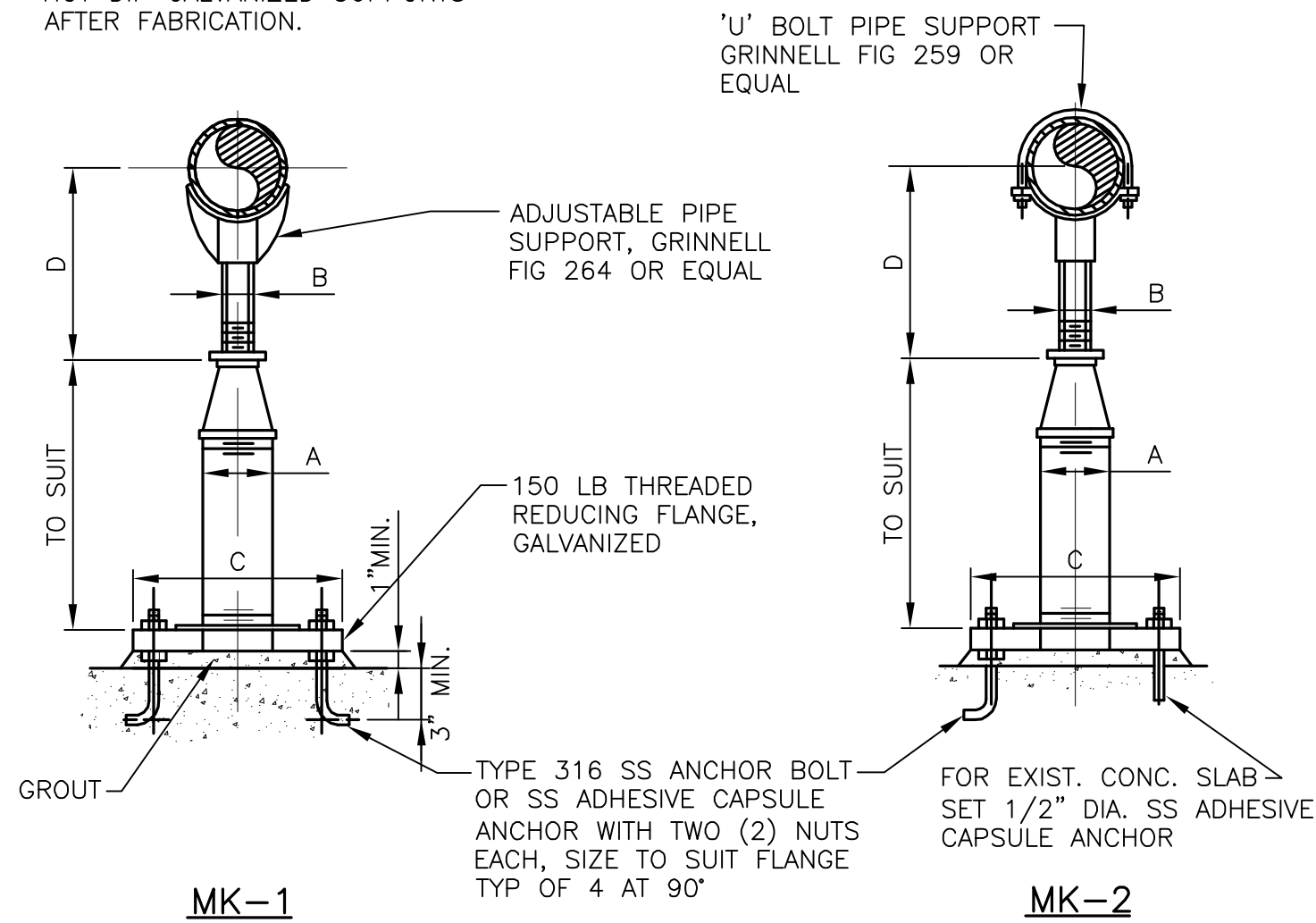


NOTES:

- WHERE SUBMERGED OR LOCATED ON OR ABOVE TOP OF WALL OF HYDRAULIC STRUCTURE, PIPE CLAMP, WASHER AND SHIELD SHALL BE TYPE 316 STAINLESS STEEL
- WHEN USED WITH PVC OR FIBERGLASS PIPE PROVIDE GALVANIZE STEEL SHIELD AROUND PIPE AT CLAMP, WITH LOOSE FIT. WRAP COPPER TUBES WITH 2" STRIP OF RUBBER FABRIC
- FOR FLANGED PIPING INCREASE 'B' DIMENSION AS REQUIRED
- ALL ANCHOR BOLTS SHALL BE TYPE 316 SS.

PIPE CLAMP FOR INDIVIDUAL PIPES 937

NOTE:
HOT DIP GALVANIZED SUPPORTS AFTER FABRICATION.



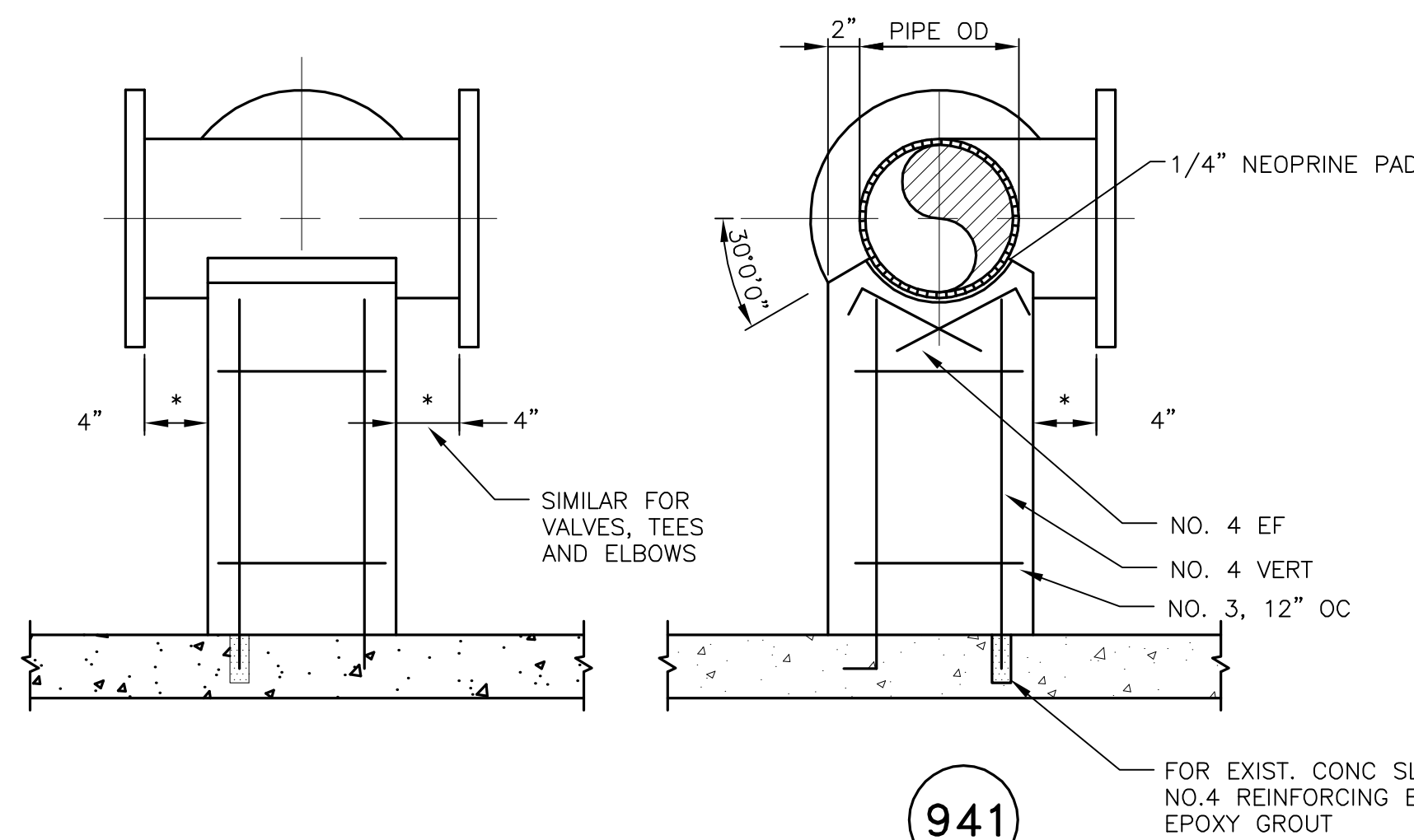
ADJUSTABLE PIPE SUPPORT 938

ADJUSTABLE PIPE SUPPORT APPROX DIMENSIONS IN INCHES					
PIPE SIZE	A	B	C	D MIN	D MAX
2 1/2	2 1/2	1 1/2	9	8	11 1/2
3	2 1/2	1 1/2	9	8 1/4	11 3/4
3 1/2	2 1/2	1 1/2	9	8 1/2	12
4	3	2 1/2	9	10 1/4	14
6	3	2 1/2	9	11 5/8	15 1/4
8	3	2 1/2	9	13 5/8	16 1/2
10	3	2 1/2	9	14 5/8	18 1/4
12	3	2 1/2	9	15 5/8	19 3/4
14	4	3	11	18 5/8	20 3/4
16	4	3	11	19 7/8	22 1/4
18	6	3 1/2	13 1/2	21 1/4	24
20	6	3 1/2	13 1/2	23 1/4	25 1/2
24	6	4	13 1/2	26 1/2	28 1/4
30	6	4	13 1/2	29 5/8	31 1/2
32	6	4	13 1/2	30 5/8	32 3/4
36	6	4	13 1/2	32 5/8	34 3/4

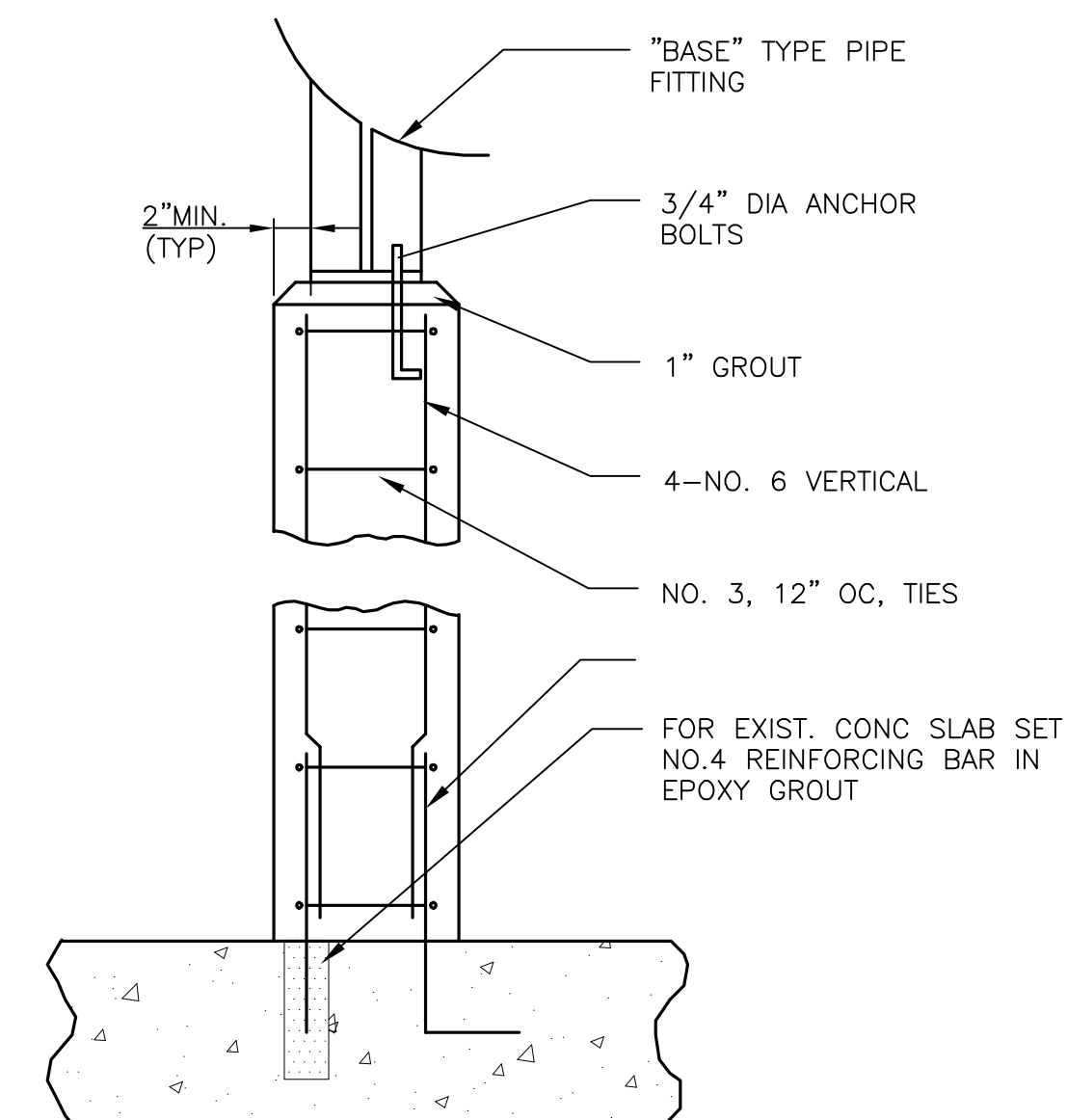
NOTE:

- UNDER VALVES, METERS OR OTHER SPECIAL APPURTENANCES A FABRICATED SUPPORT PIECE MAY BE UTILIZED AS ACCEPTABLE TO ENGINEER

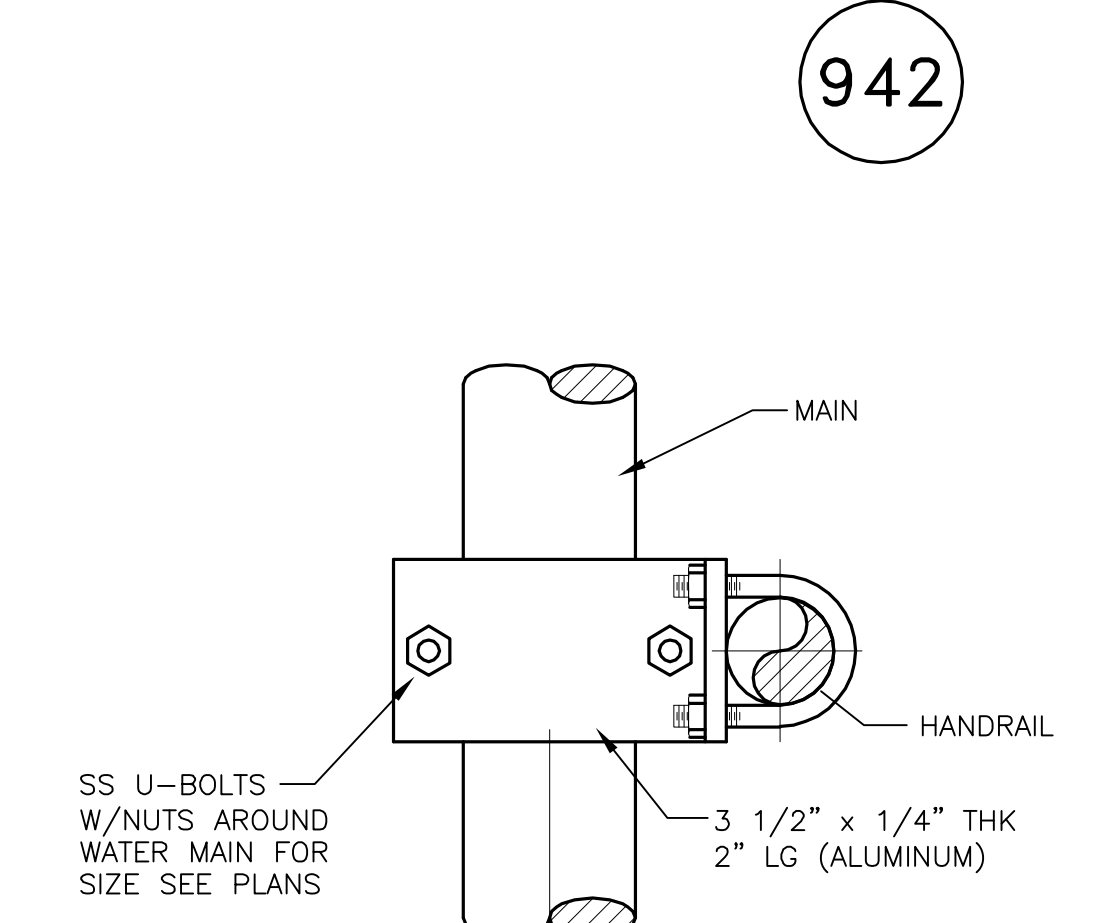
* INCREASE 4" CLEARANCE AS REQUIRED IF BOLT HAS TO BE INSERTED FROM THE SUPPORT SIDE OF THE CONNECTION.



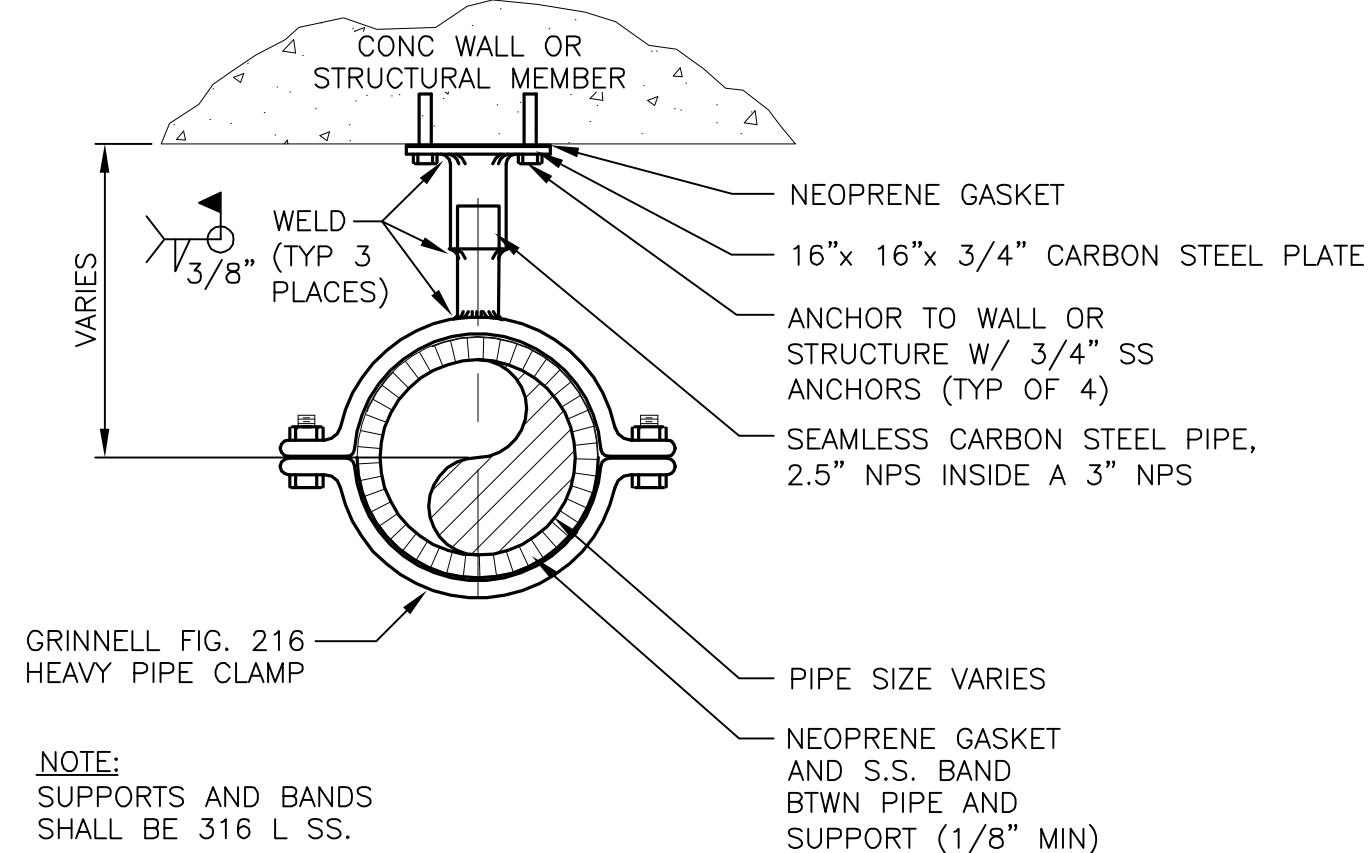
8" PIPE OR SMALLER 940



941

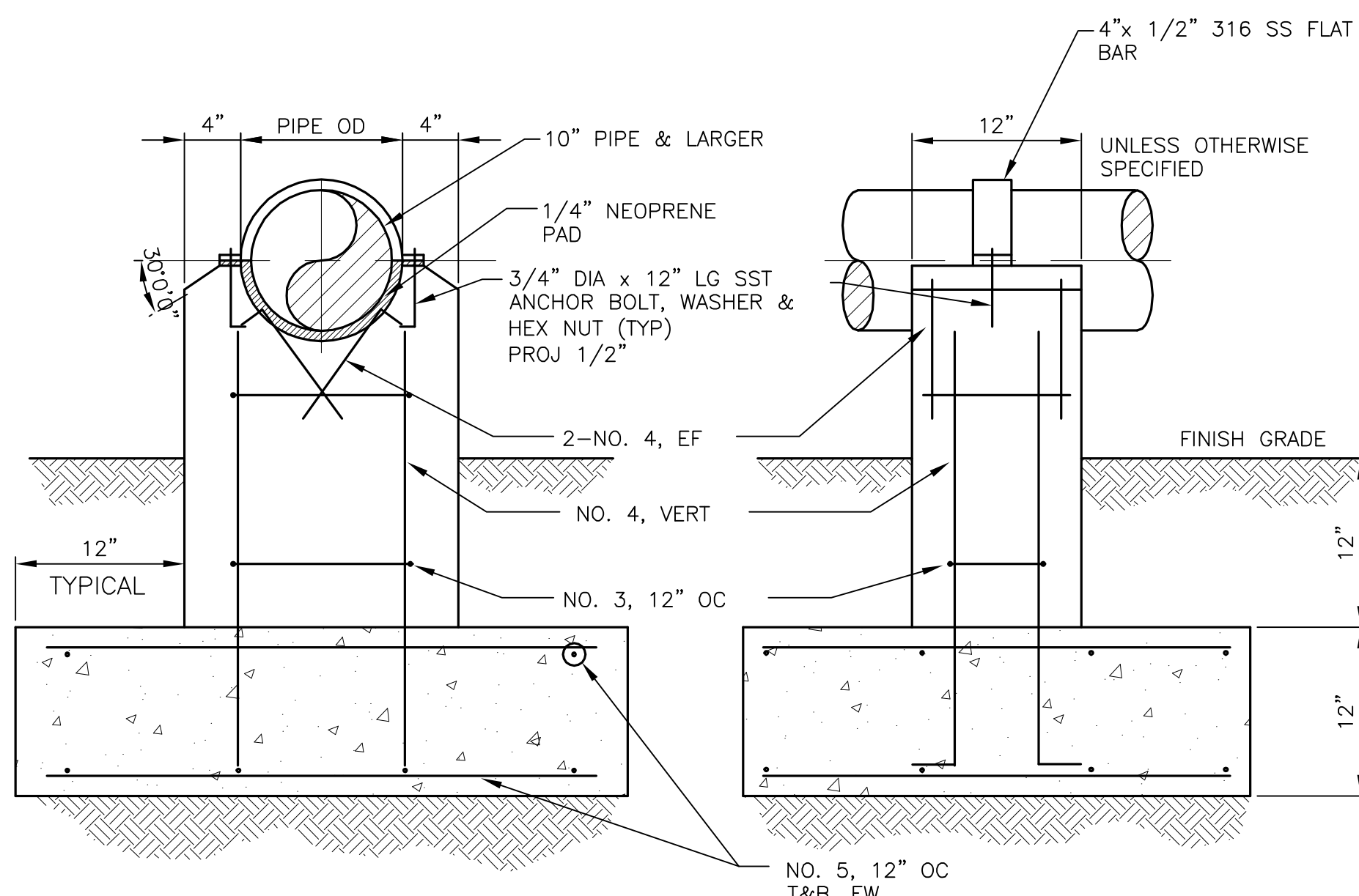


942

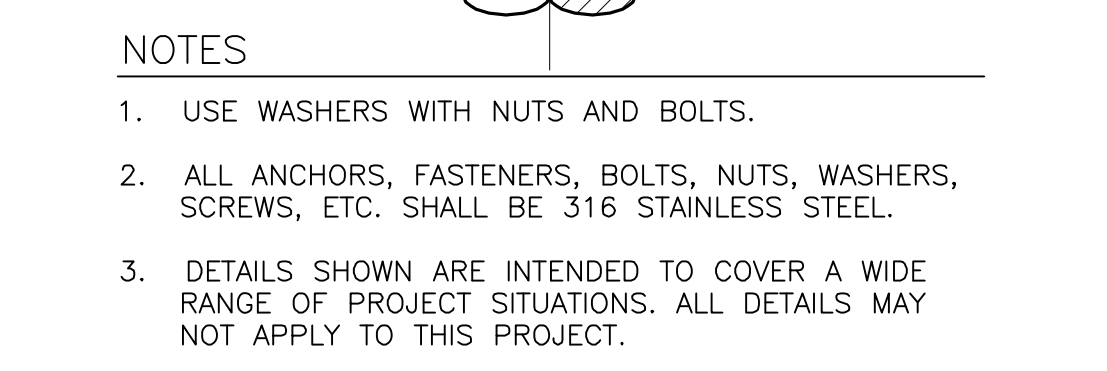


NOTE:
SUPPORTS AND BANDS SHALL BE 316 L SS.

945



10" PIPE AND LARGER 946



947

NOTES

- USE WASHERS WITH NUTS AND BOLTS.
- ALL ANCHORS, FASTENERS, BOLTS, NUTS, WASHERS, SCREWS, ETC. SHALL BE 316 STAINLESS STEEL.
- DETAILS SHOWN ARE INTENDED TO COVER A WIDE RANGE OF PROJECT SITUATIONS. ALL DETAILS MAY NOT APPLY TO THIS PROJECT.

PROJECT: PETER PARTINGTON
REG. No. 48088
DATE:

DRAWN BY: DATE: 2006
ENG. FEB.
DESIGNED BY: SCALE: N.T.S.
CHECKED BY: WW2011
FIELD BOOK: WW2011

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

NO.	DATE	BY	CH'D	DESCRIPTION

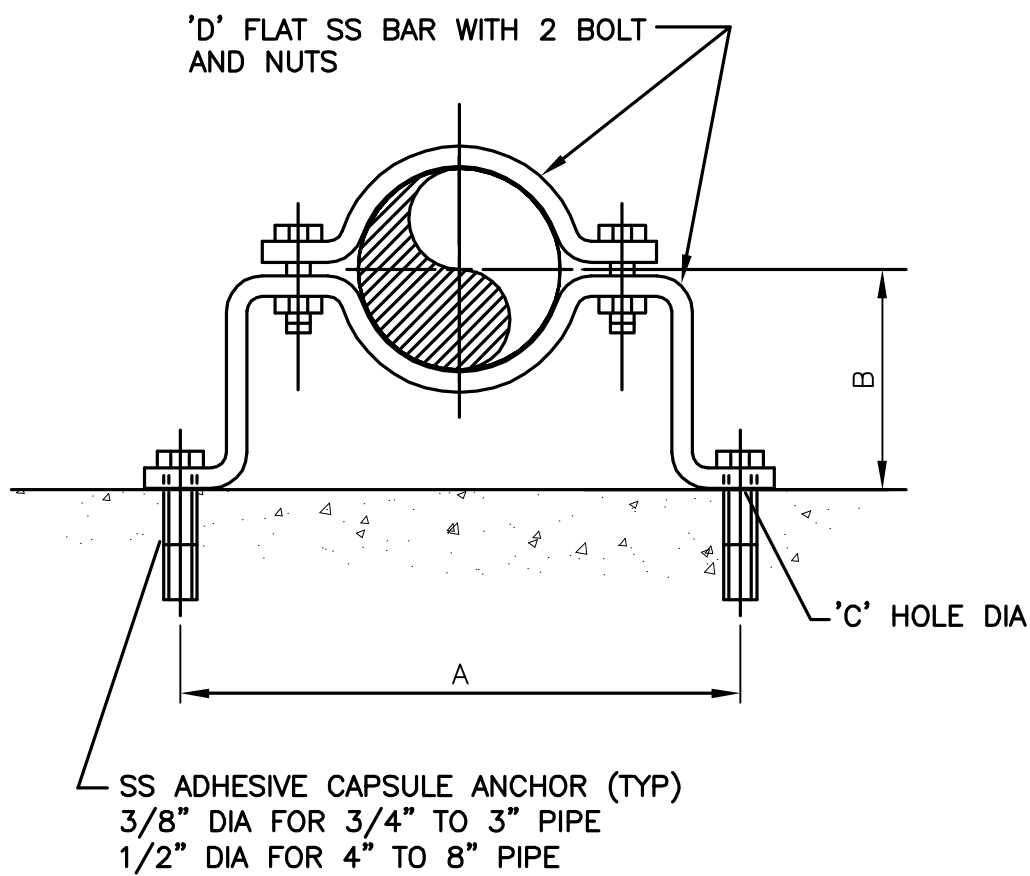
PROJECT # P0000
PROJECT NAME
DESCRIPTION
SHEET
PLACE PROJECT ADDRESS

SHEET NO.	OF
X-1	XX
TOTAL:	0
CAD FILE:	XXXXX-XXX-XXX0000
DRAWING FILE NO.	4-XXX-XX

NOT FOR CONSTRUCTION OR BID

DIMENSIONS IN INCHES					
PIPE DIA.	'A'	'B' SEE NOTE 3 BELOW	'C' HOLE DIA.	'D' FLAT BAR SIZE	LOAD RATING LBS.*
3/4	5-15/16	2-1/2	7/16	3/16 X 1-1/4	300
1	6-1/4	2-5/8	7/16	3/16 X 1-1/4	300
1-1/4	6-11/16	2-3/4	7/16	3/16 X 1-1/4	300
1-1/2	6-15/16	3	7/16	3/16 X 1-1/4	300
2	8-5/16	3-3/16	7/16	1/4 X 1-1/4	500
2-1/2	8-7/8	3-7/16	7/16	1/4 X 1-1/4	500
3	9-1/8	3-3/4	7/16	1/4 X 1-1/4	500
3-1/2	10-1/16	4	7/16	1/4 X 1-1/4	500
4	10-9/16	4-1/4	9/16	1/4 X 1-1/2	600
5	11-3/4	4-3/4	9/16	1/4 X 1-1/2	600
6	14-3/8	5-5/16	9/16	3/8 X 1-1/2	850
8	16-5/8	6-5/16	9/16	3/8 X 1-1/2	850

* SAFETY FACTOR OF 5

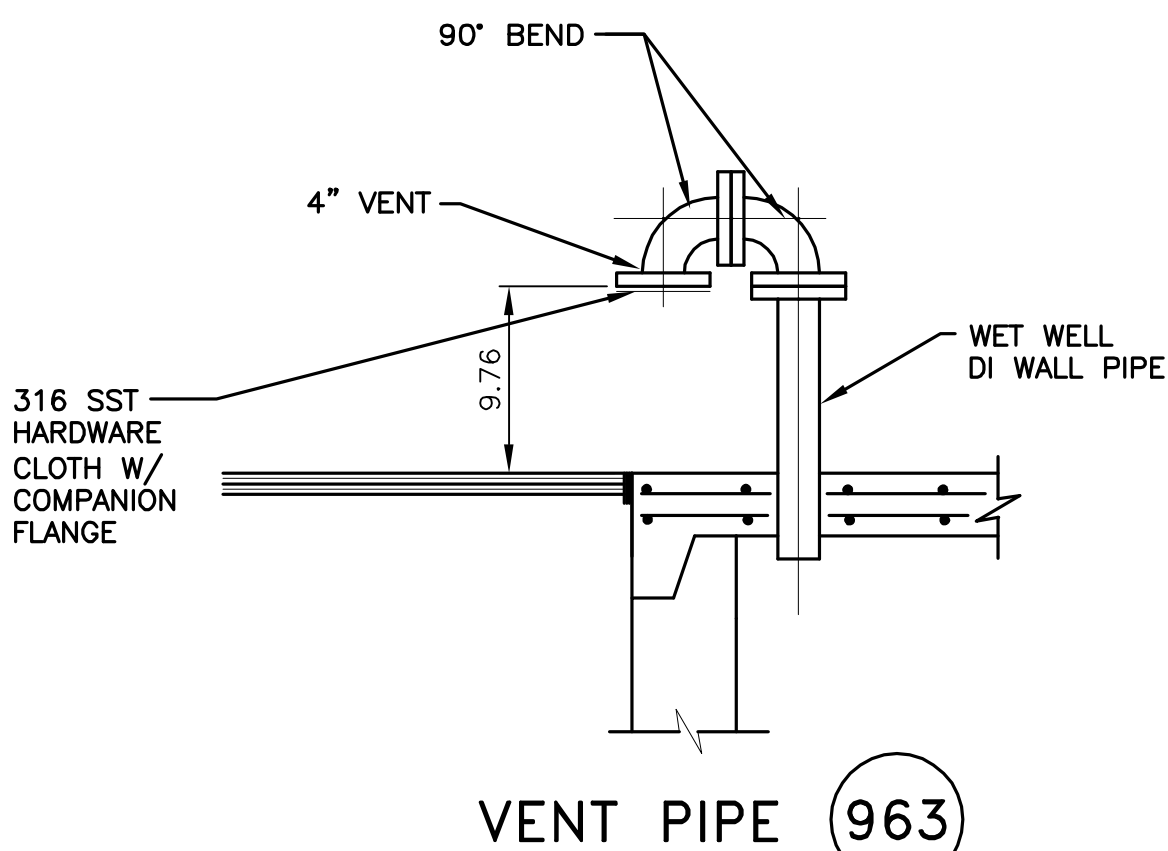


NOTES:

- PIPE CLAMP, WASHER AND SHIELD SHALL BE TYPE 316 STAINLESS STEEL
- WHEN USED WITH PVC OR FIBERGLASS PIPE PROVIDE STAINLESS STEEL SHIELD AROUND PIPE AT CLAMP, WITH LOOSE FIT. WRAP COPPER TUBES WITH 2\"/>

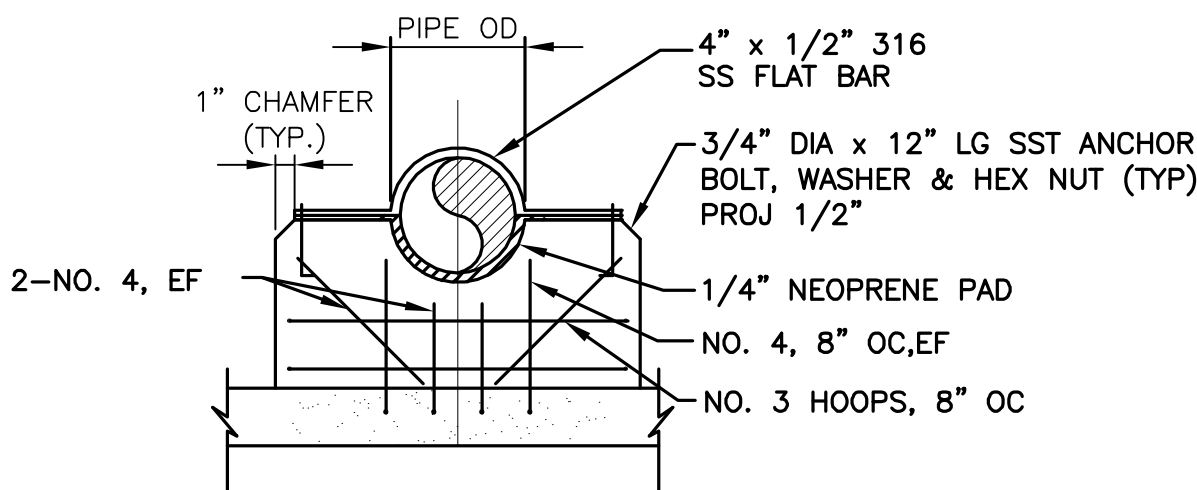
PIPE CLAMP FOR INDIVIDUAL PIPES

962



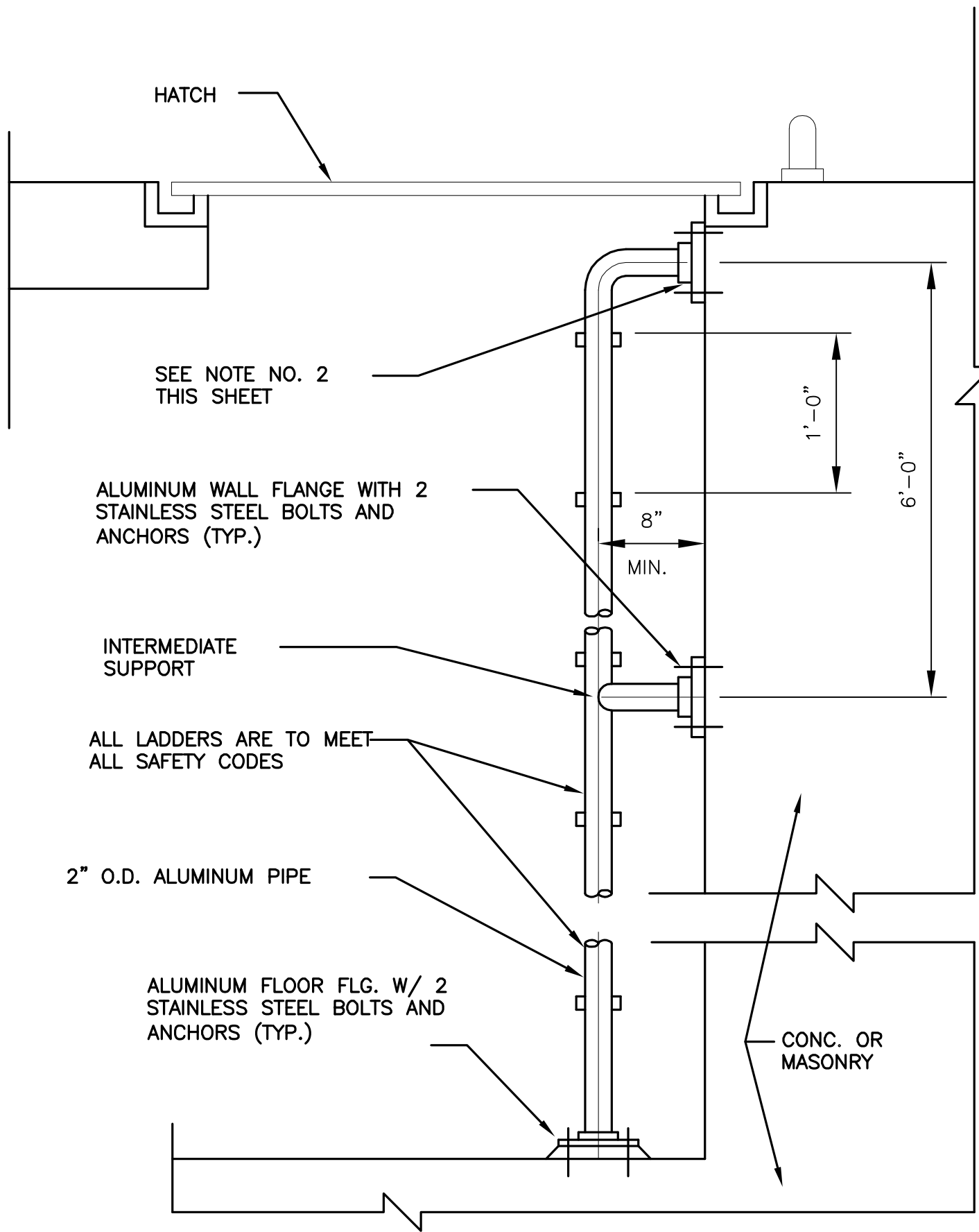
VENT PIPE

963



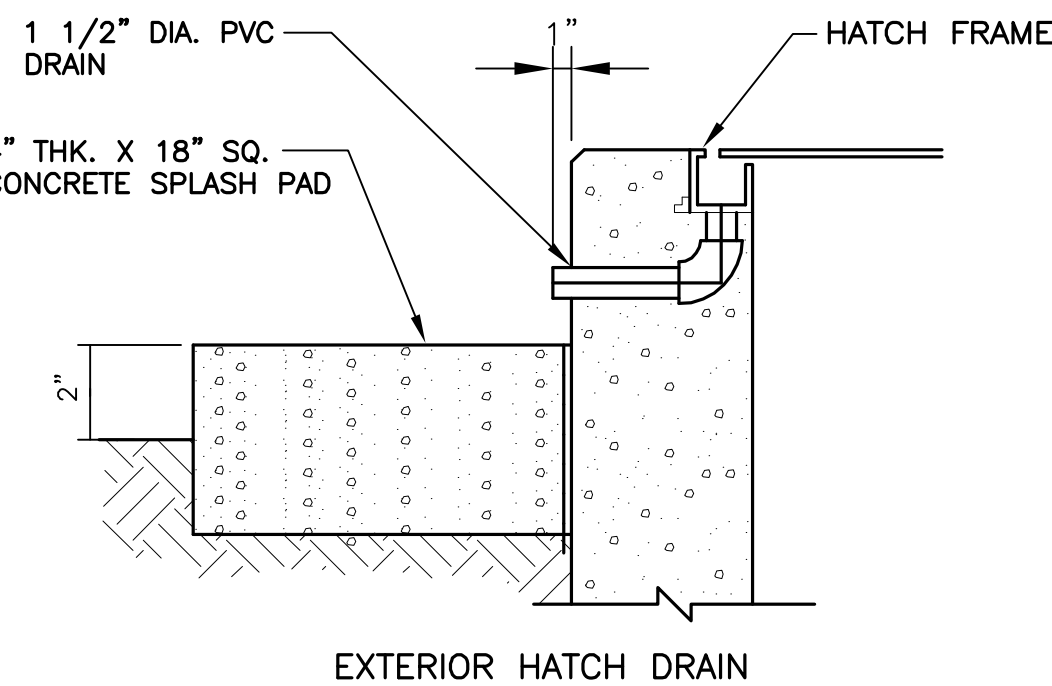
REACTION TYPE PIPE SUPPORT

944

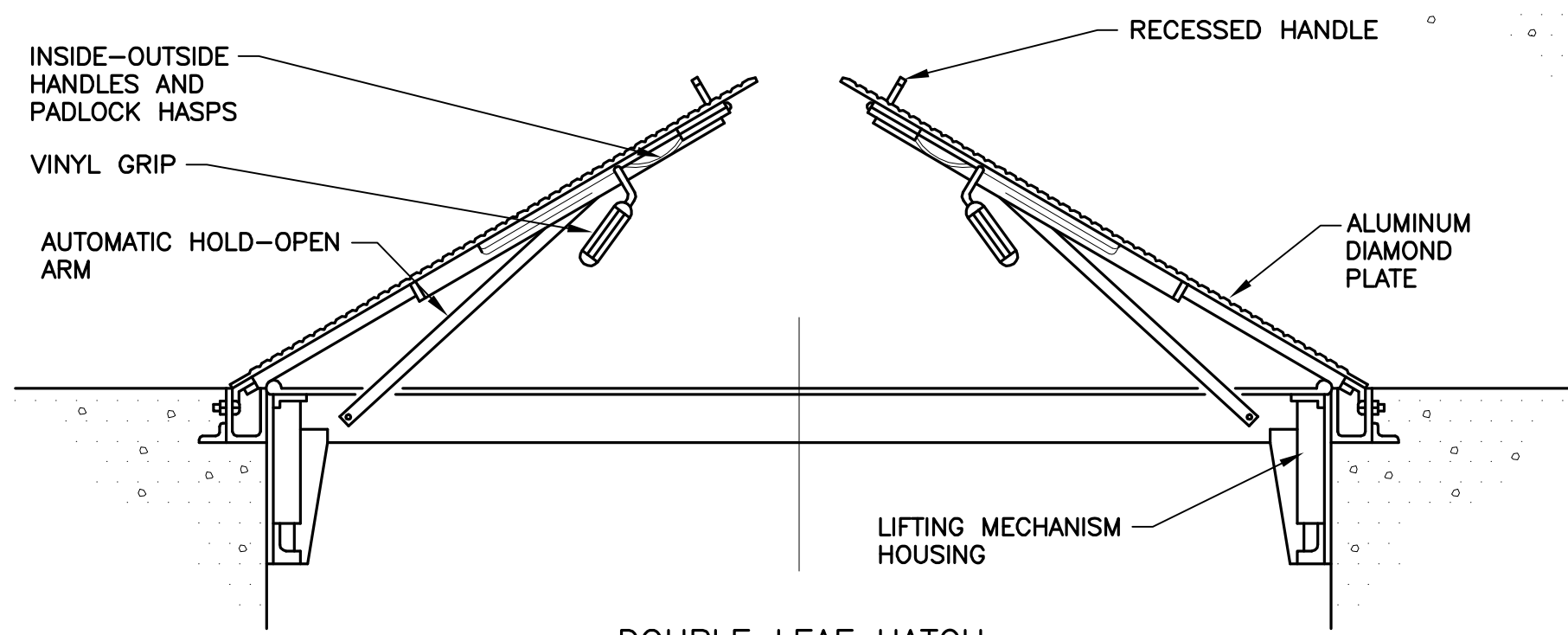


TYPICAL ALUMINUM LADDER (IN PIT)

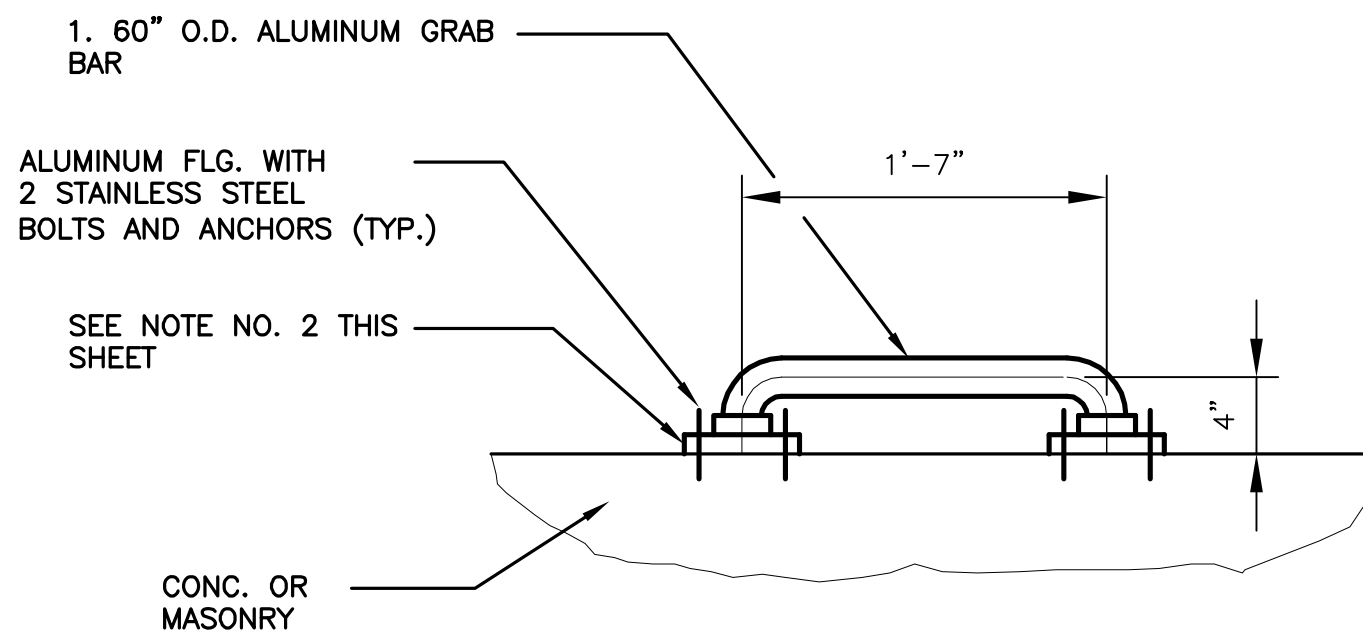
126



EXTERIOR HATCH DRAIN

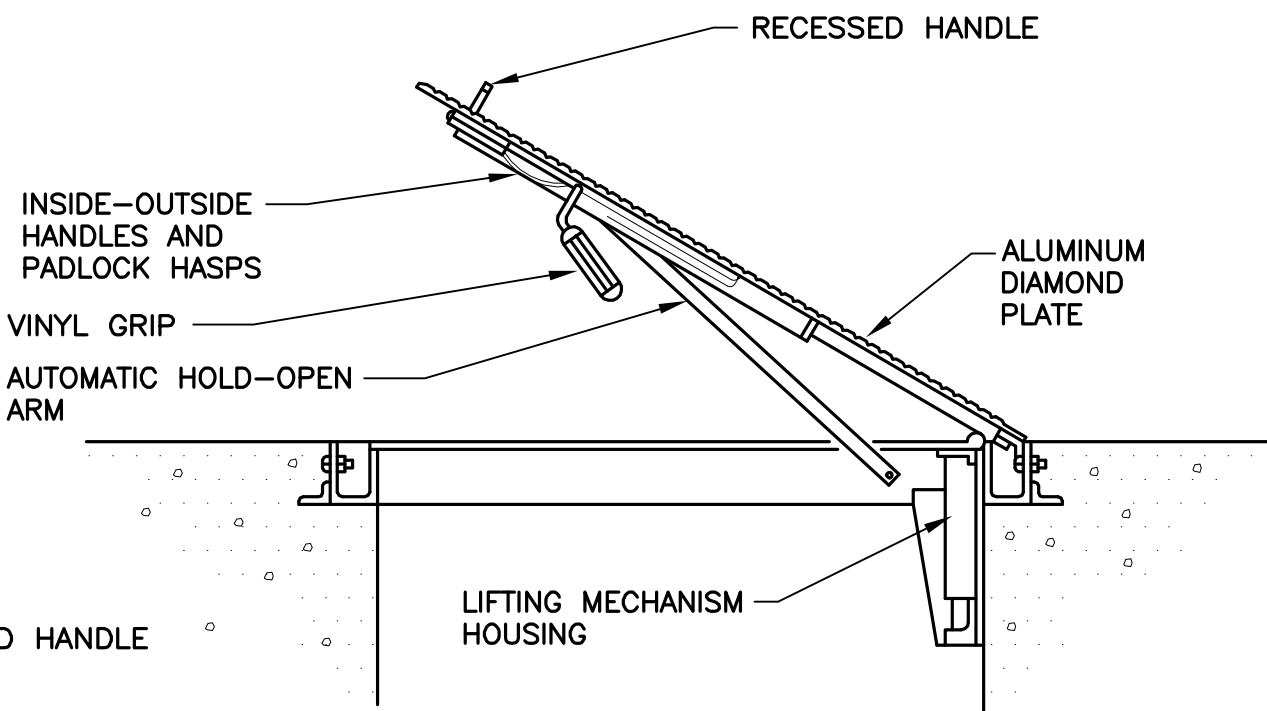


DOUBLE LEAF HATCH



TYPICAL GRAB BAR

125



SINGLE LEAF HATCH

HATCH NOTES

- ALUMINUM HATCHES TO BE SUPPLIED WITH STAINLESS STEEL HARDWARE.
- ALL HATCHES TO BE SUPPLIED WITH SAFETY CHAINS. CORNER POST WITH FLOOR INSERTS MUST ALSO BE PROVIDED FOR SINGLE LEAF HATCHES.

HATCH SCHEDULE					
NO.	LOCATION	SIZE	LEAF	DRAIN	REMARKS
1*	VALVE VAULT	4'-0" X 8'-0"	DOUBLE	YES	PROVIDE 6" CURB TO PREVENT INFILTRATION OF RAINWATER
2*	VALVE VAULT	3'-6" X 8'-0"	DOUBLE	YES	PROVIDE 6" CURB TO PREVENT INFILTRATION OF RAINWATER
3*	WET WELL	4'-6" X 11'-0"	SINGLE	YES	PROVIDE 6" CURB TO PREVENT INFILTRATION OF RAINWATER

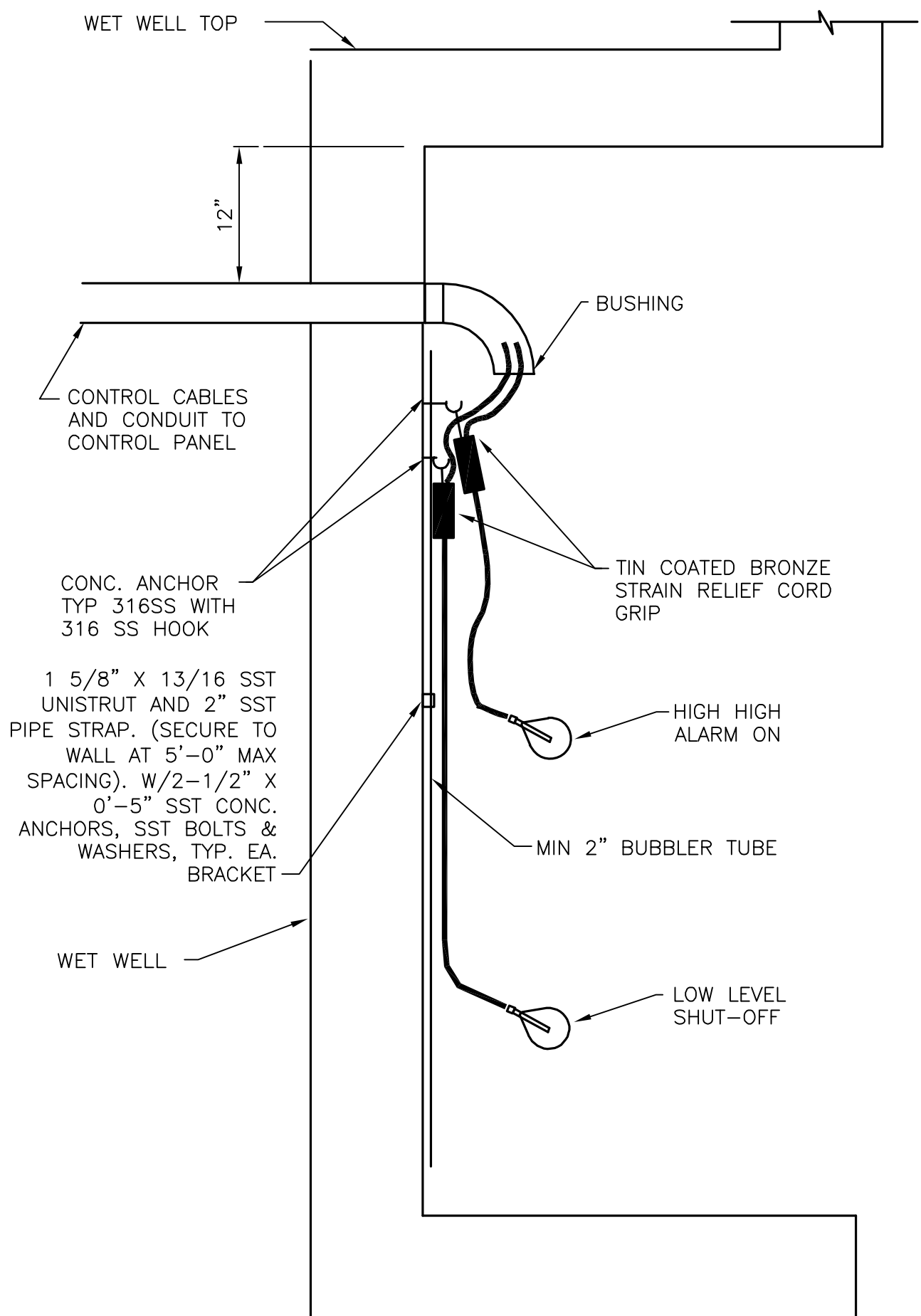
* SEE NOTE 1 ON SHEET M-1

TYPICAL HATCH DETAILS AND SCHEDULE

964

REVISIONS		DESCRIPTION	
NO.	DATE	BY	CHKD

NOT FOR CONSTRUCTION OR BID

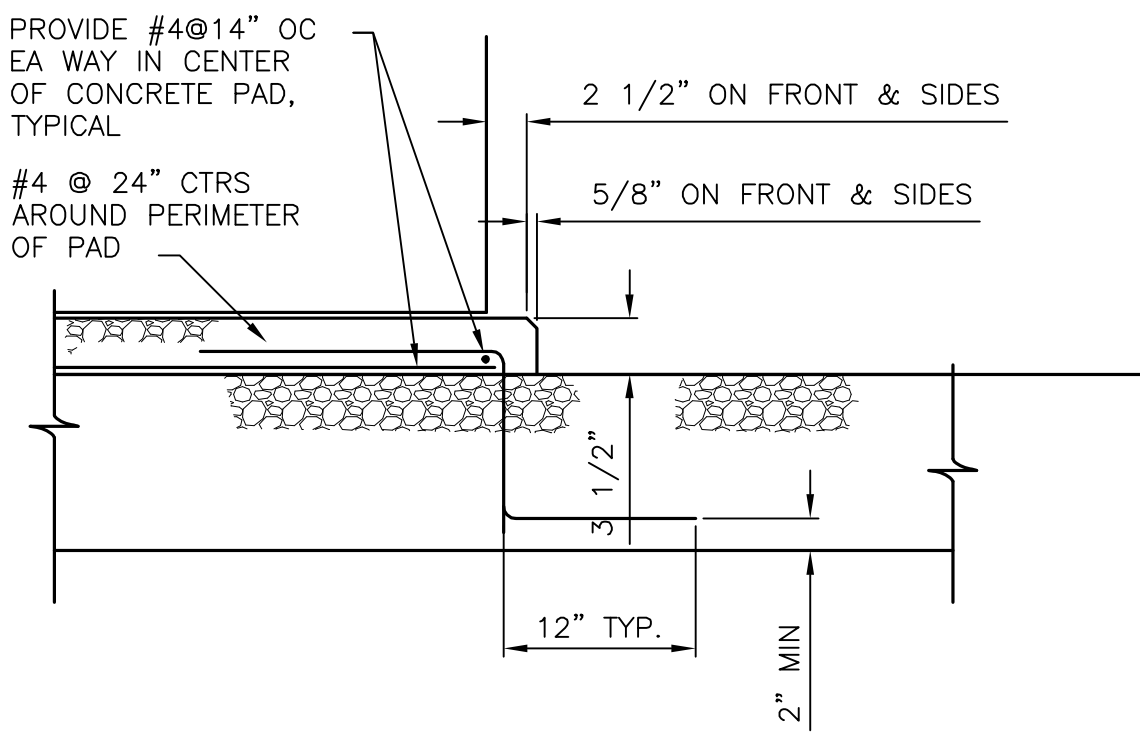


LEVEL CONTROL NOTES:

1. UTILIZE P/I (ECO-1) (WIKA) AS THE PRIMARY LEVEL CONTROL.
2. REFER TO MECH. DWGS. FOR LEVEL SETPOINT ELEVATIONS.
3. INSTALL BUBBLER TUBE (MIN 2" PVC). USE SST HARDWARE.
4. PRESSURE TRANSDUCER IS TO BE LOCATED ON OPPOSITE SIDE OF WETWELL FROM INFLUENT LINE AND IS NOT TO INTERFERE WITH PUMP OPERATION.

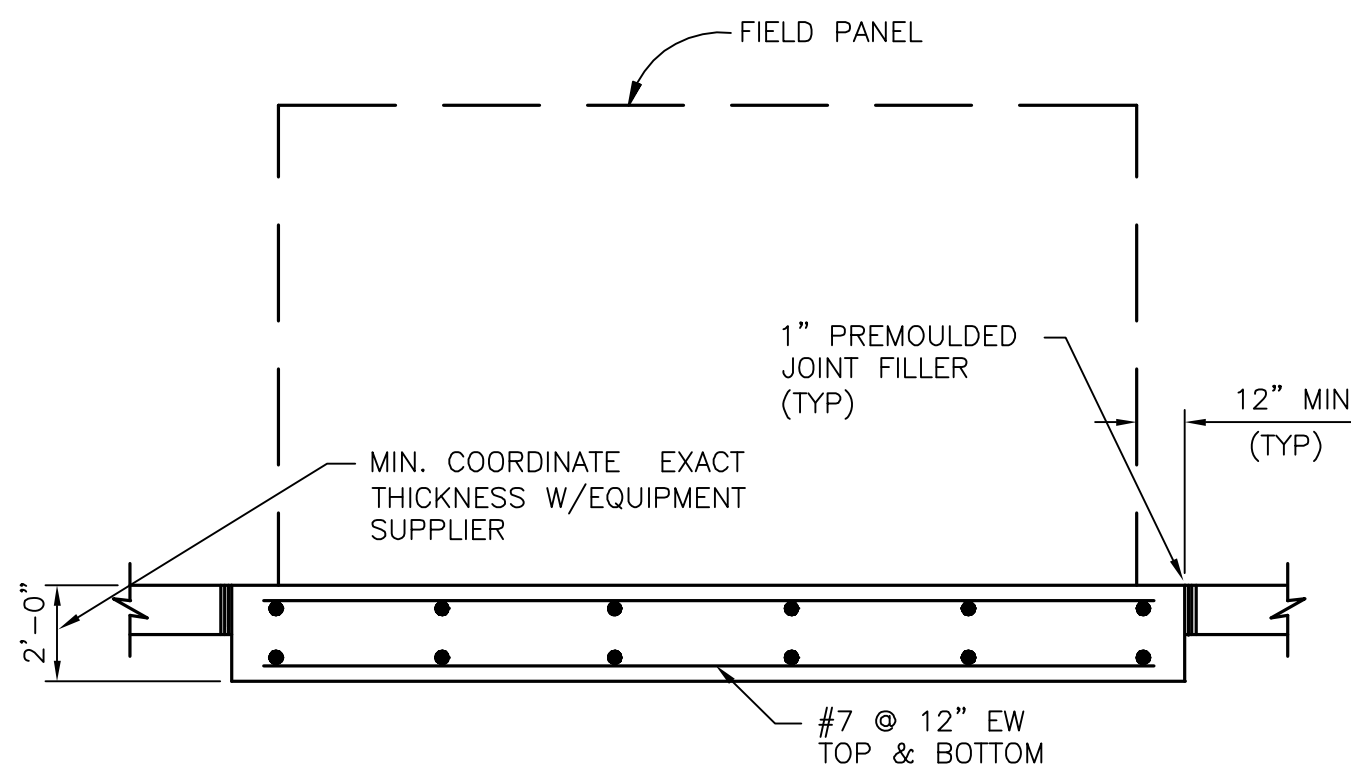
LEVEL SWITCH & BUBBLER SUPPORT
NTS

E-1



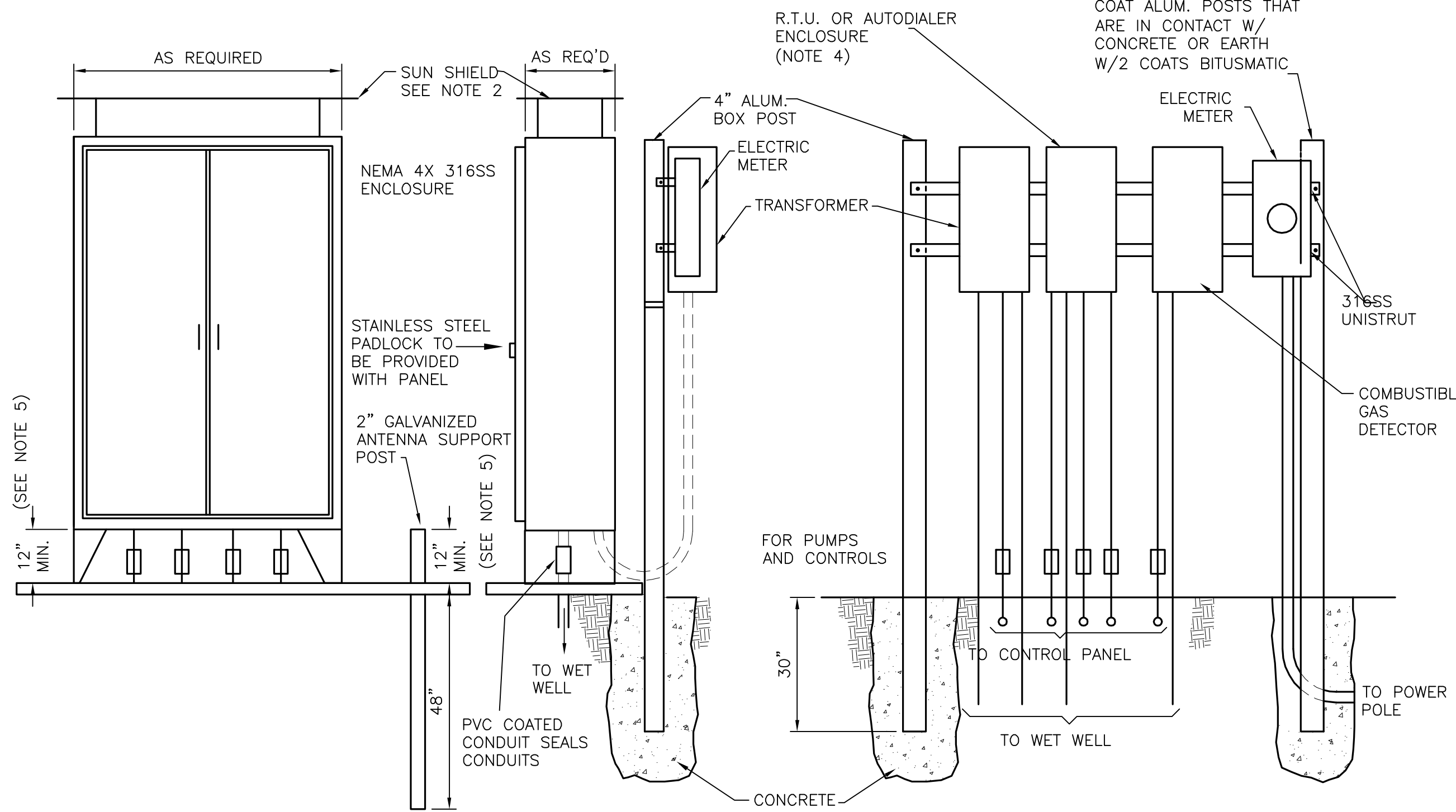
CONCRETE PAD SECTION
NTS

E-2



EQUIPMENT PAD
NTS

E-3



NOTES:

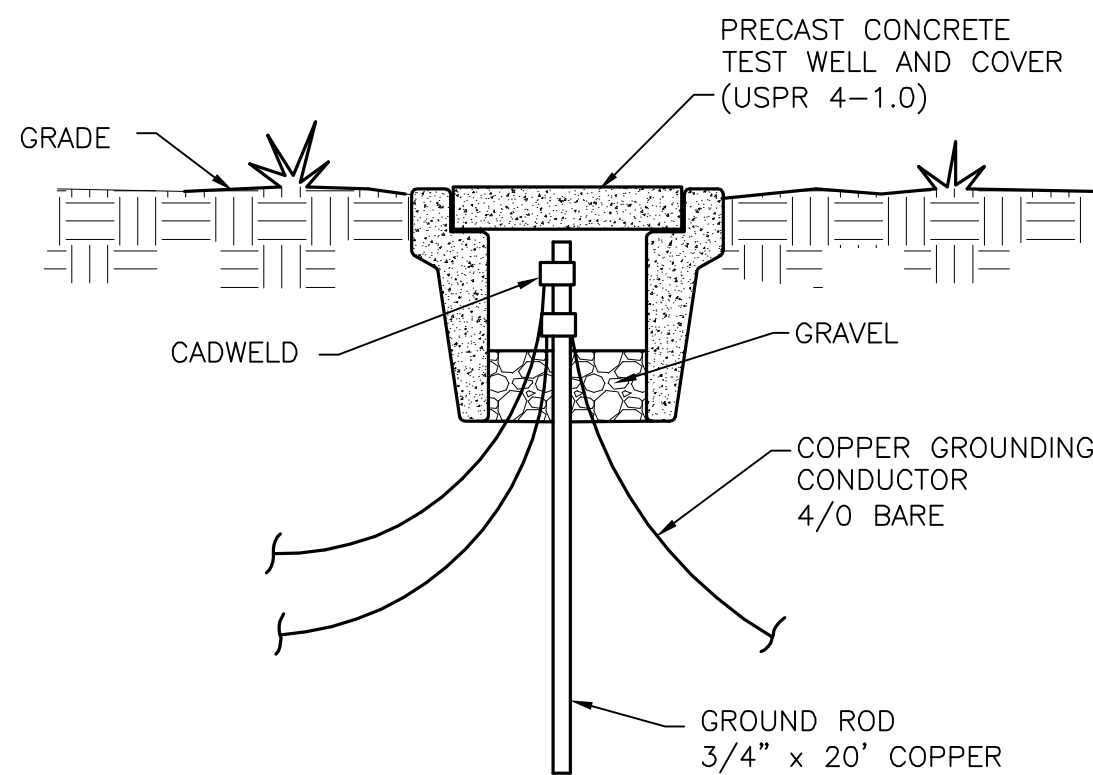
1. SIZES SHOWN ARE MINIMUM, ADJUST SIZES AS DEEMED NECESSARY WITHOUT ANY ADDITIONAL COST.
2. PROVIDE 12/14 GA. 316 SST SUN SHIELD MOUNTED ON 2" HIGH INSULATING STANDOFFS. STANDOFFS SHALL BE INSTALLED AS TO MAINTAIN THE NEMA RATING OF THE ENCLOSURE. DIMENSION AS REQUIRED BY PANEL MANUFACTURER.
3. ALL EXPOSED METAL PARTS ARE TO BE BONDED TO THE GROUND RING.
4. PROVIDE A 24"x20"x8" NEMA4X 316 STAINLESS STEEL ENCLOSURE FOR FUTURE SCADA EQUIPMENT. PROVIDE (1) 2" & (1) 1" EMPTY CONDUIT BETWEEN THE CONTROL PANEL AND R.T.U. ENCLOSURE.
5. BOTTOM OF CONTROL PANEL TO BE ABOVE 100 YEAR FLOOD ELEVATION AS SPECIFIED BY ENGINEER.

DUPLIX PUMP PANEL LAYOUT
NTS

SIDE VIEW

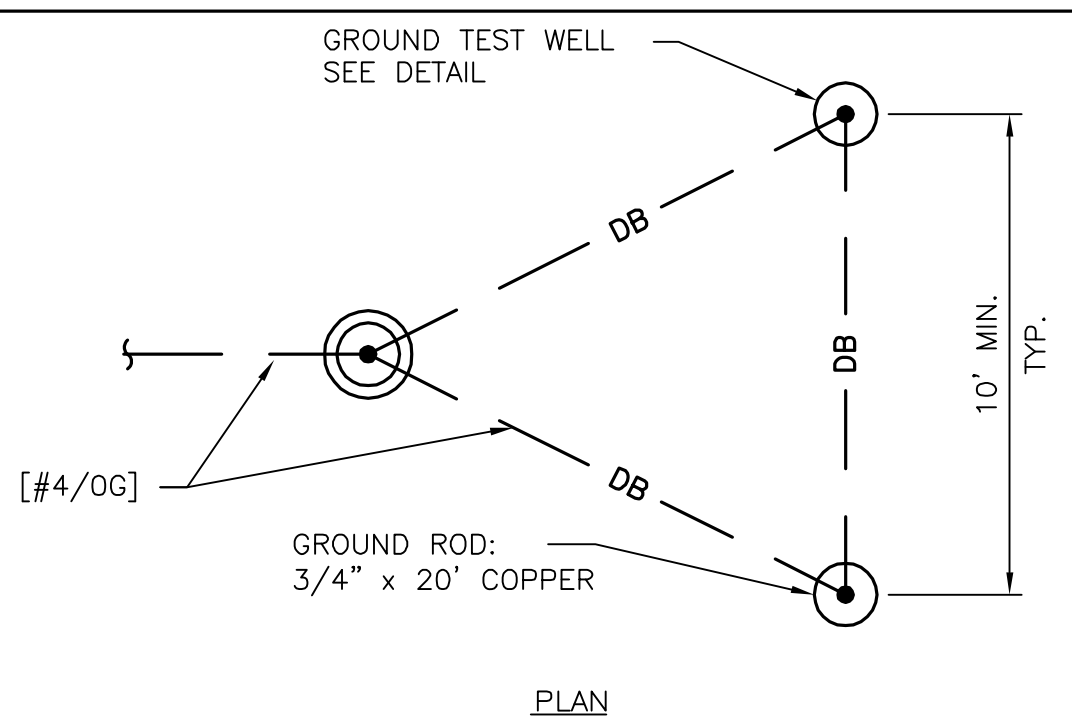
REAR VIEW

E-4



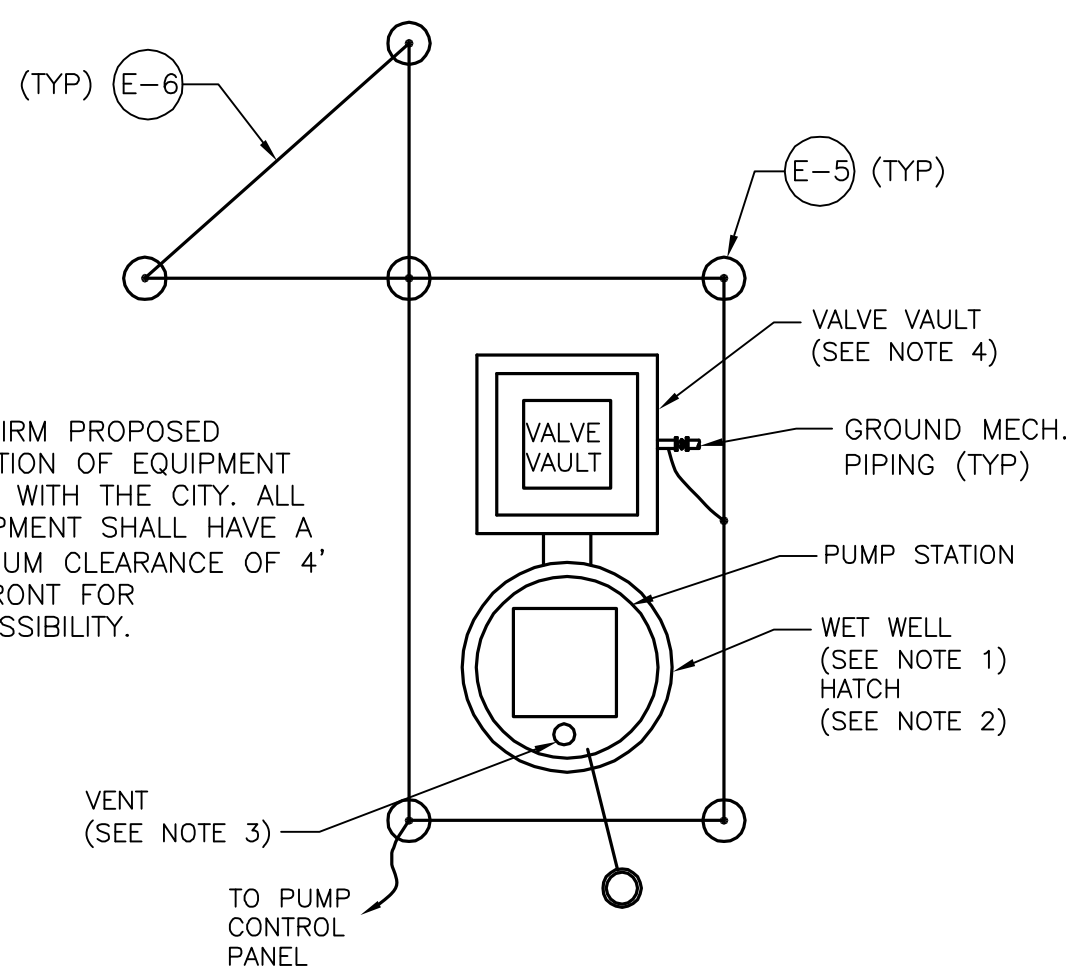
GROUND TEST WELL
NTS

E-5



GROUND TRIANGLE
NTS

E-6

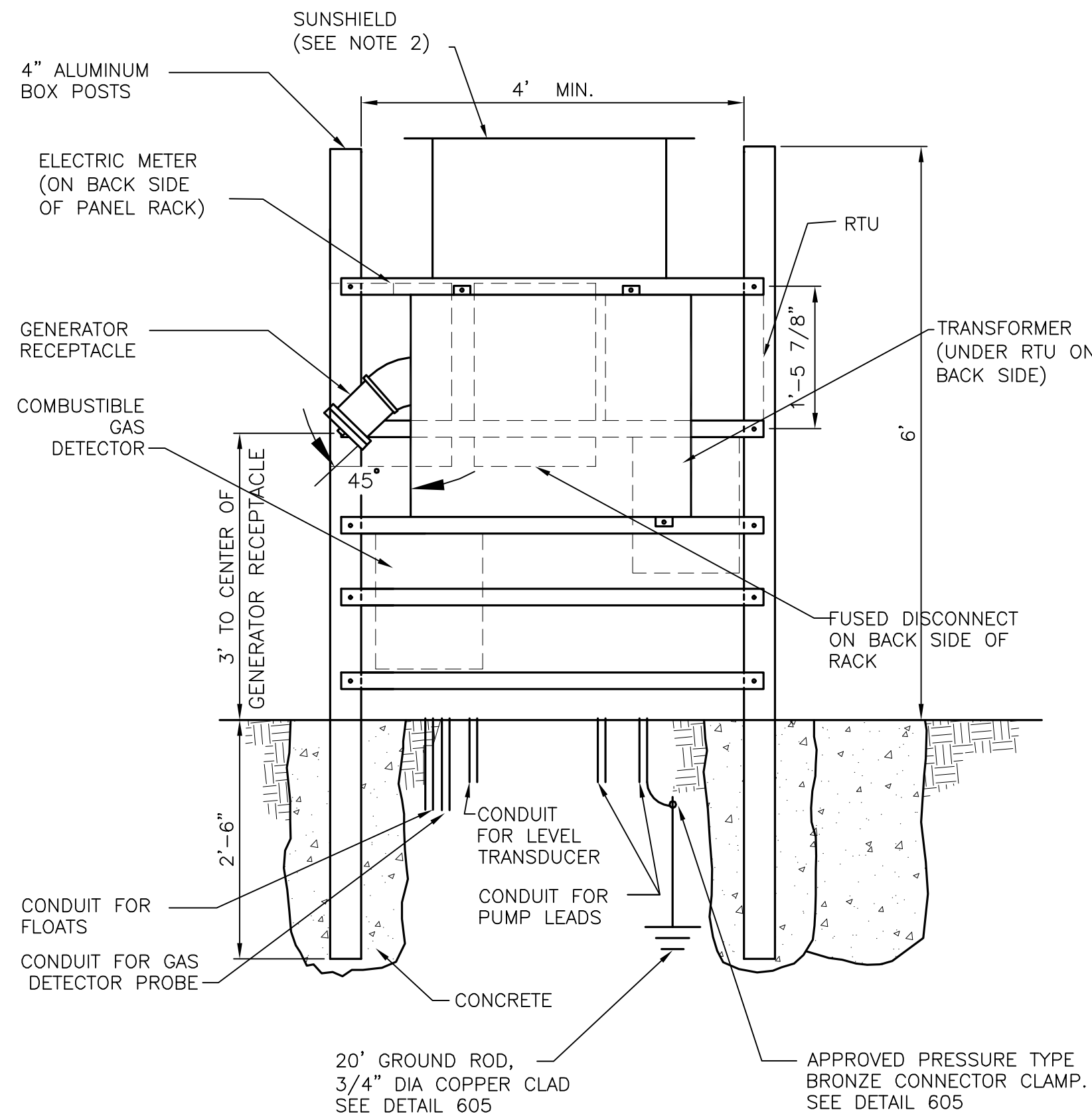
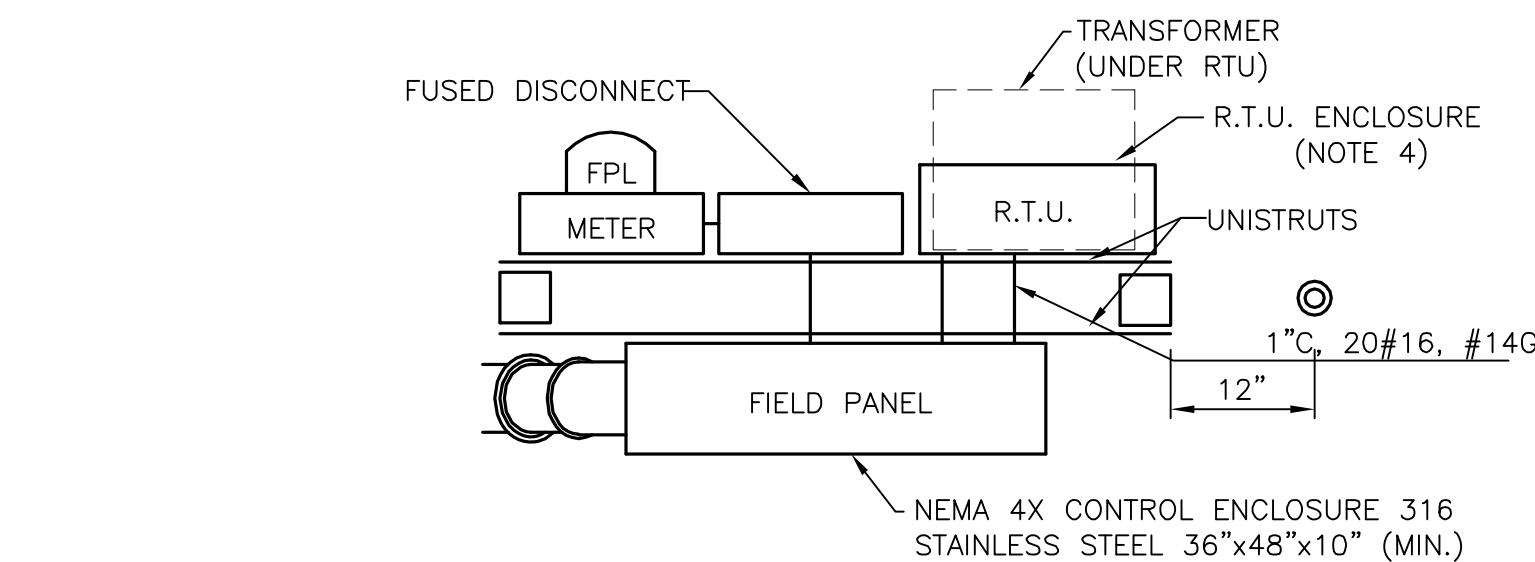


CONFIRM BYPASS METHOD WITH CITY.

TYPICAL SITE PLAN
NTS

NOTES:

1. THE AREA INSIDE THE WET WELL IS A HAZARDOUS, CLASS 1, DIV. 2 LOCATION
2. THE AREA WITHIN 3 FEET FROM THE ACCESS HATCH AND 1.5 FEET ABOVE THE WET WELL SLAB IS A HAZARDOUS, CLASS 1, DIV. 2 LOCATION.
3. THE AREA WITHIN A 3 FEET RADIUS FROM THE VENT OPENING IS A HAZARDOUS, CLASS 1, DIV. 2 LOCATION.
4. THE AREA INSIDE THE VALVE VAULT IS A HAZARDOUS, CLASS 1, DIV. 2 LOCATION.



NOTES:

1. SIZES SHOWN ARE MINIMUM, ADJUST SIZES AS DEEMED NECESSARY WITHOUT ANY ADDITIONAL COST.
2. PROVIDE 12/14 GA. 316 SST SUN SHIELD MOUNTED ON 2" HIGH INSULATING STANDOFFS. STANDOFFS SHALL BE INSTALLED AS TO MAINTAIN THE NEMA RATING OF THE ENCLOSURE. DIMENSION AS REQUIRED BY PANEL MANUFACTURER.
3. ALL EXPOSED METAL PARTS ARE TO BE BONDED TO THE GROUND RING.
4. PROVIDE A 24"x20"x8" NEMA4X 316 STAINLESS STEEL ENCLOSURE FOR FUTURE SCADA EQUIPMENT. PROVIDE (1) 2" & (1) 1" EMPTY CONDUIT BETWEEN THE CONTROL PANEL AND R.T.U. ENCLOSURE

FIELD PANEL MOUNTING DETAIL
NTS

E-8

ENGINEER: JAMES HARTINGTON
FIRM: JH
DATE: 4/20/08
TEL: (864) 828-5240
FAX: (864) 828-5074

DRAWN BY: DATE: FEB. 2006
ENG. DESIGNED BY: SCALE: N.T.S.
CHECKED BY: WW2011
FIELD BOOK: WW2011

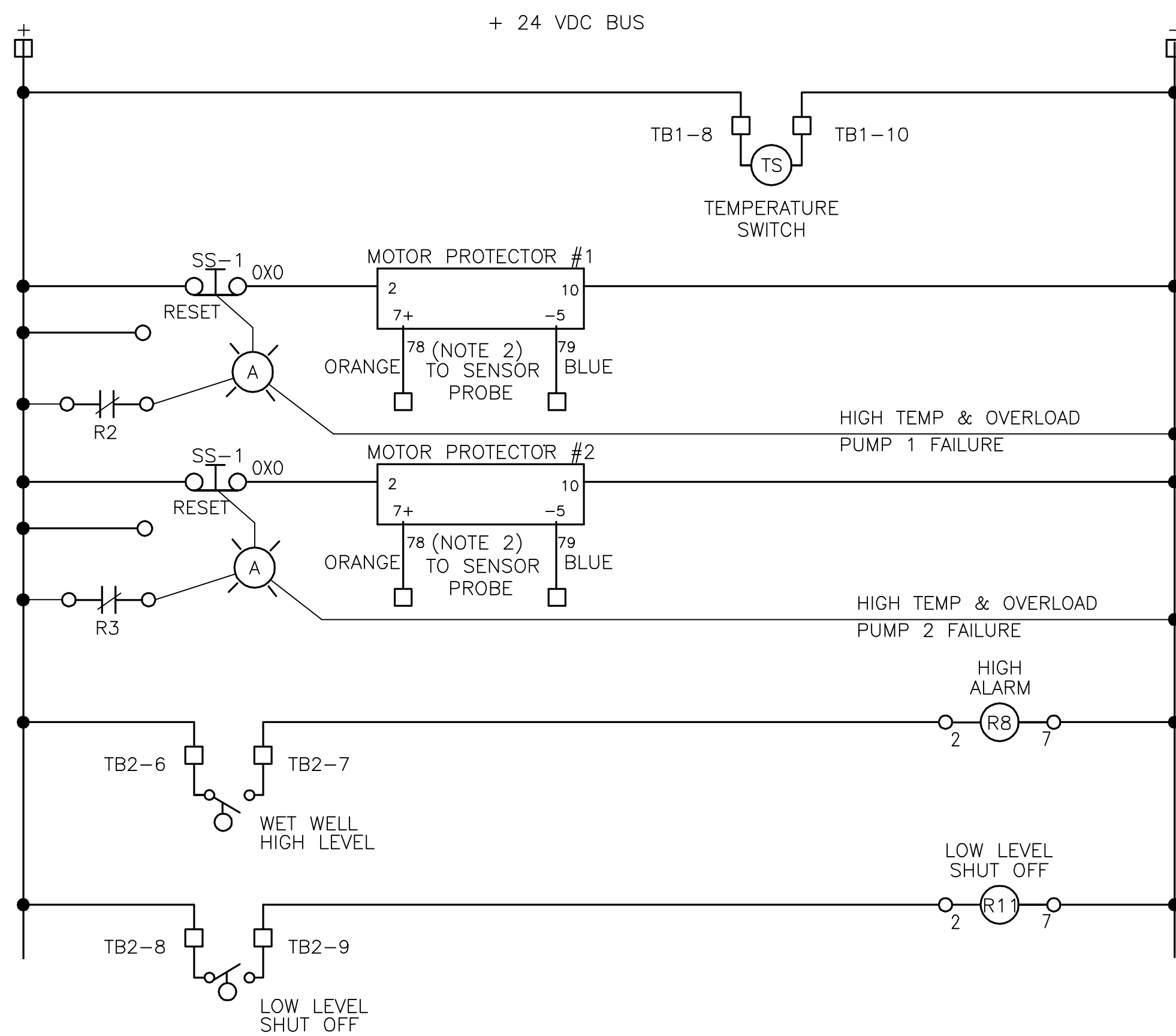
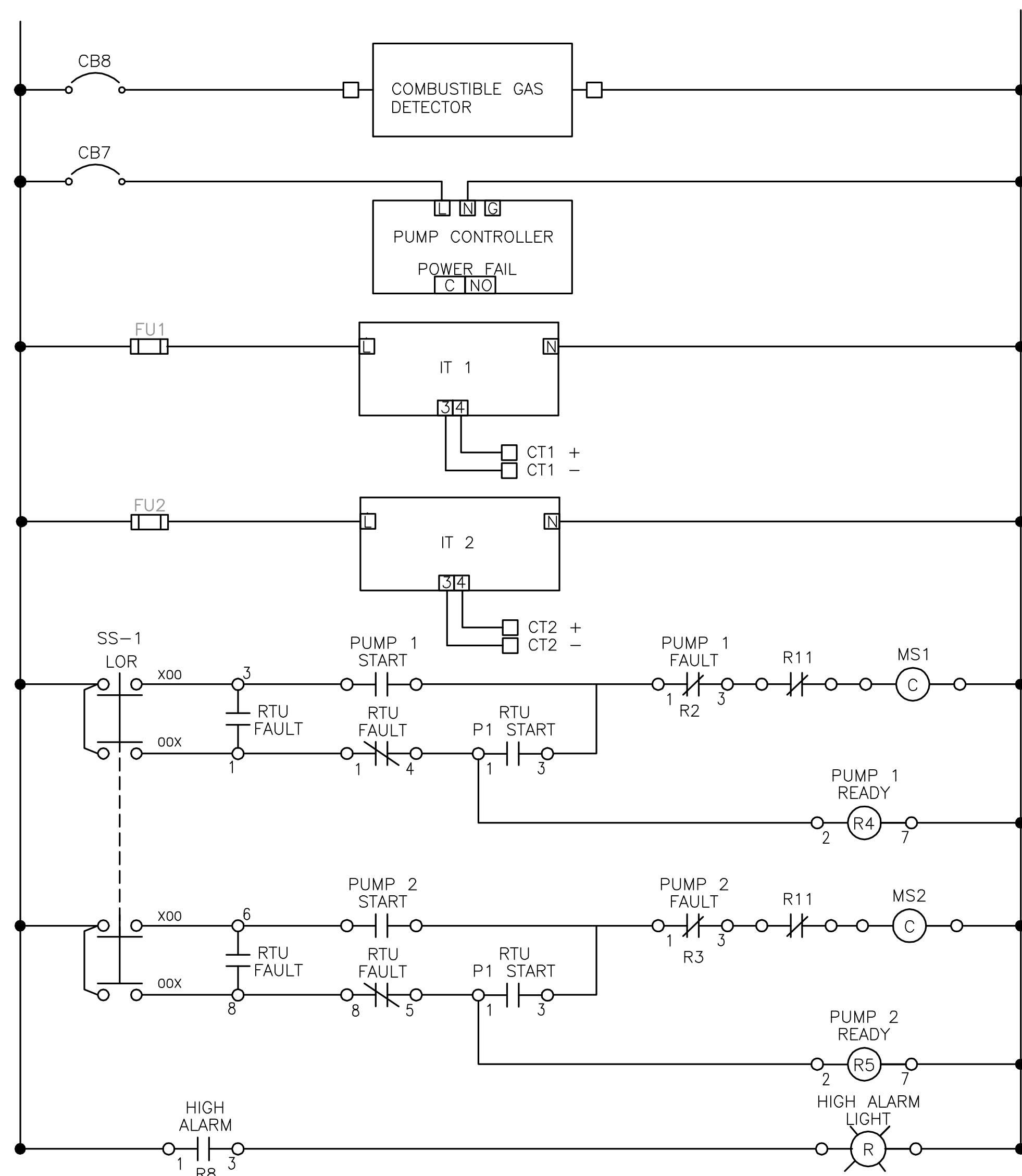
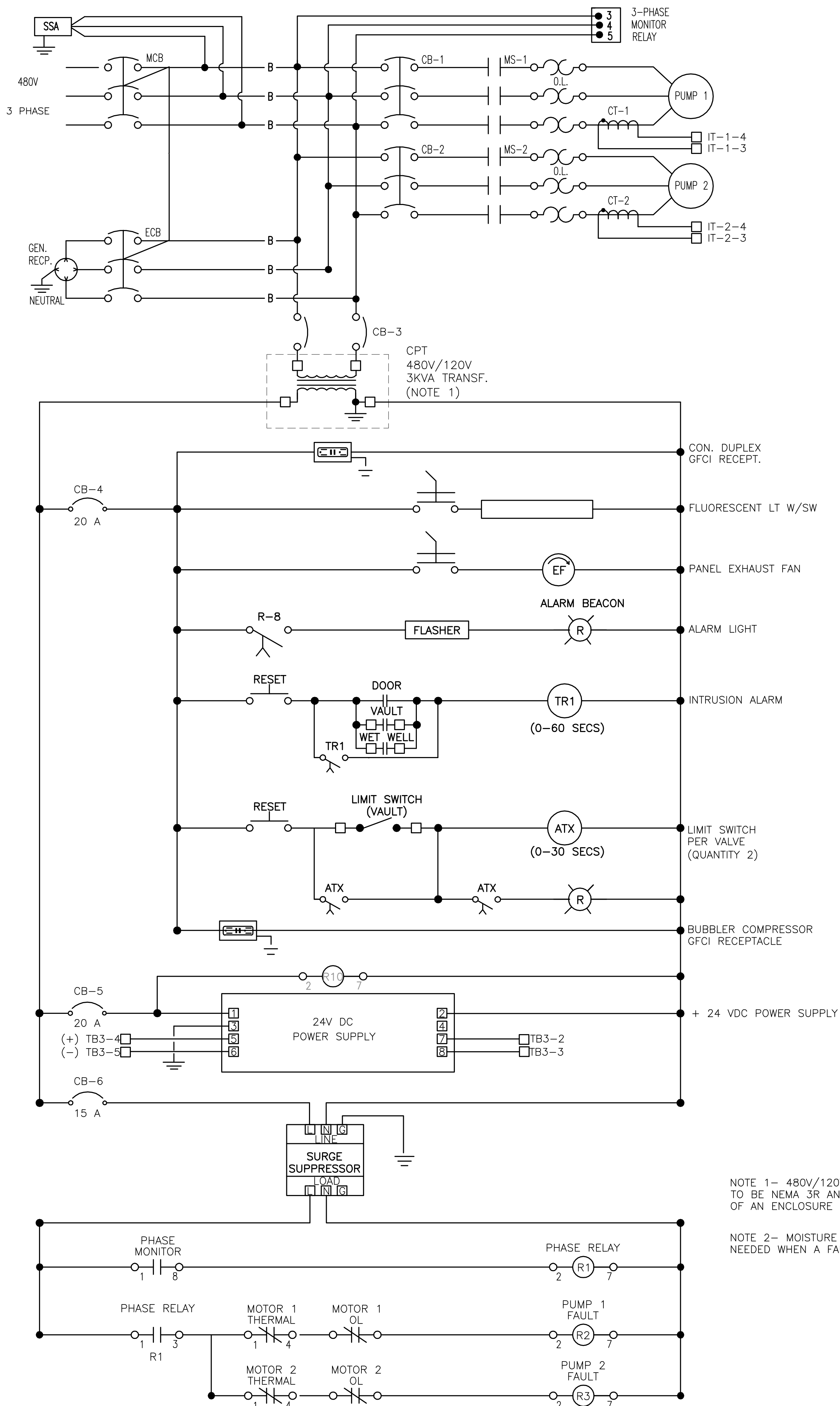
CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

REVISIONS		DESCRIPTION	
NO.	DATE	BY	CHKD

PROJECT # P0000
PROJECT NAME
DESCRIPTION
SHEET
PLACE PROJECT ADDRESS

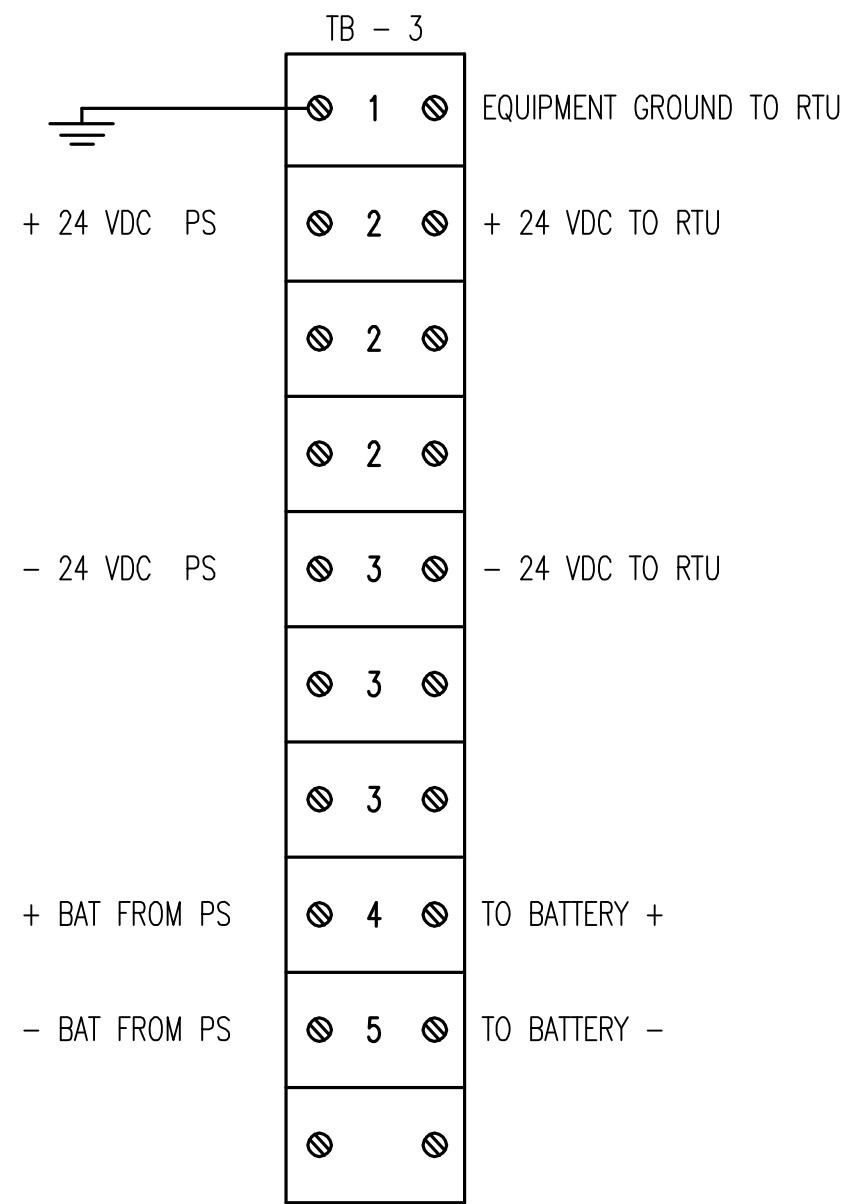
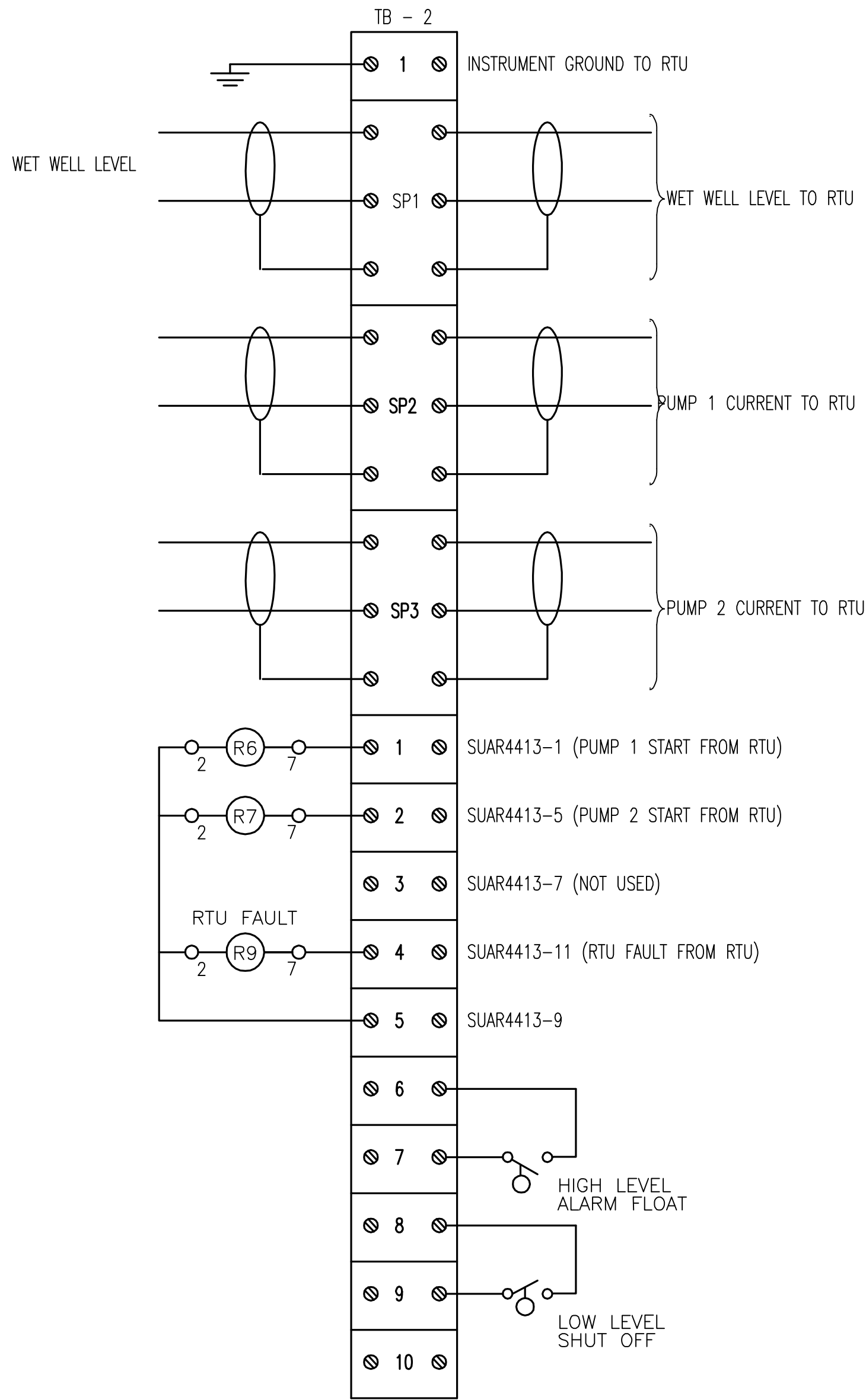
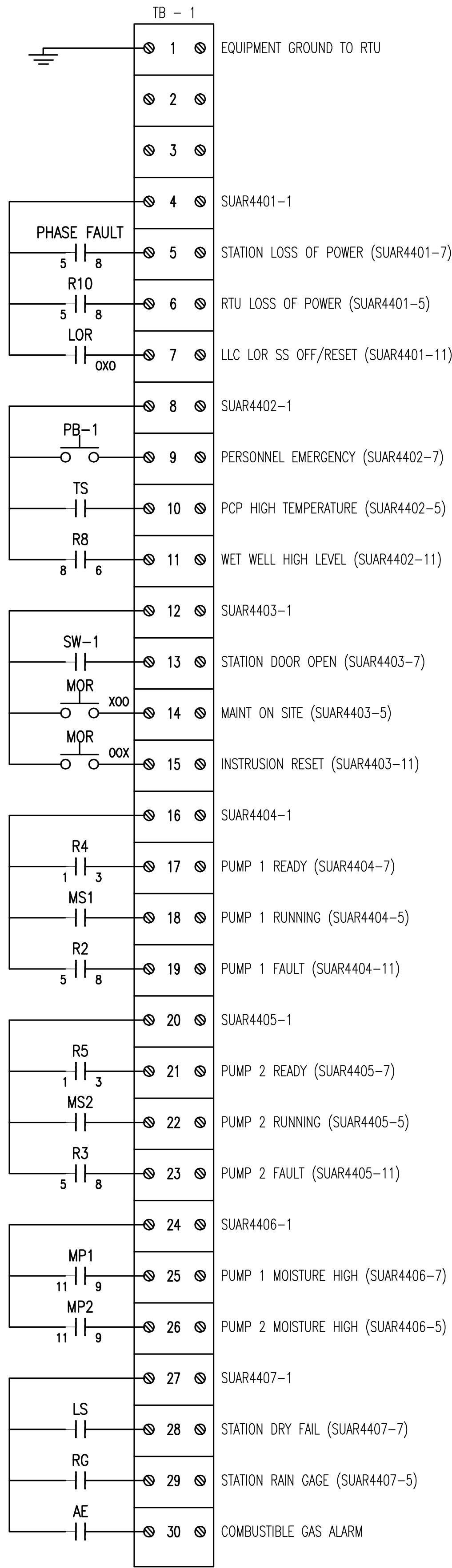
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X-1		XX	
TOTAL:		0	
CAD FILE:		XXXXX-XXX-XXX0000	
DRAWING FILE NO.		4-XXX-XX	

NOT FOR CONSTRUCTION OR BID



NOT FOR CONSTRUCTION OR BID

PROJECT # P0000		SHEET NO. X-1		OF XX	
PROJECT NAME DESCRIPTION		SHEET PROJECT ADDRESS		TOTAL: 0	
DRAWING FILE NO. 4-XXX-XX		CAD FILE: XXXXX-XXX-XXX0000		DRAWING FILE NO. 4-XXX-XX	
DRAWN BY: DATE: FEB. 2006		DESIGNED BY: SCALE: N.T.S.		CHECKED BY: WW2011	
ENGINEER: PETER PARTINGTON		REL. No: 45089		DATE:	
CITY OF FORT LAUDERDALE		PUBLIC WORKS DEPARTMENT		ENGINEERING & ARCHITECTURE	
100 North Andrews Avenue, Fort Lauderdale, Florida 33301		TEL: (954) 828-5240		FAX: (954) 828-5074	



DUPLEX PUMP STATION – TERMINAL BLOCKS

NOT FOR CONSTRUCTION OR BID

ENGINEER
PETER PARTINGTON
REG. No. 45089
DATE:

DRAWN BY:
ENG.
DESIGNED BY:
SCALE:
N.T.S.
CHECKED BY:
FIELD BOOK:

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

PROJECT # P0000
PROJECT NAME
DESCRIPTION
SHEET
PLACE PROJECT ADDRESS

SHEET NO.
X-1
TOTAL: 0
CAD FILE:
XXXXX-XXX-XXXX0000
DRAWING FILE NO.
4-XXX-XX

OF
XX

REVISIONS

NO.	DATE	BY	CHK'D	DESCRIPTION

ENGINEER
PETER PARTINGTON
REG. No. 45089
DATE:

DRAWN BY:
ENG.
DESIGNED BY:
SCALE:
N.T.S.
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FIELD BOOK:

CITY OF FORT LAUDERDALE
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100 North Andrews Avenue, Fort Lauderdale, Florida 33301

PROJECT # P0000
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XXXXX-XXX-XXXX0000
DRAWING FILE NO.
4-XXX-XX

OF
XX

PS03

ELECTRICAL LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION																	
	CONTROL DEVICE – FURNISHED AND INSTALLED UNDER OTHER SECTIONS; RACEWAYS, CONDUCTORS, AND CONDUCTOR END TERMINATORS FURNISHED AND INSTALLED UNDER THIS SECTION AS SHOWN. CONDUCTOR FINAL CONNECTIONS PROVIDED UNDER OTHER SECTIONS.		CONVENIENCE RECEPTACLE – DUPLEX UNLESS SPECIFIED OTHERWISE WP–WEATHERPROOF C– CLOCK HANGER TL– TWIST LOCK CRE–CORROSION RESISTANT		CONTACT – NORMALLY OPEN WITH NEMA SIZE INDICATED AS APPLICABLE		TIME DELAY CONTACTS																	
	CONNECTION POINT TO EQUIPMENT SPECIFIED. FURNISHED AND INSTALLED UNDER OTHER SECTIONS. RACEWAY, CONDUCTOR AND CONNECTION IN THIS SECTION.		CONVENIENCE RECEPTACLE, PEDESTAL, DUPLEX SINGLE FACE UNLESS INDICATED OTHERWISE		CONTACT – NORMALLY CLOSED WITH NEMA SIZE INDICATED AS APPLICABLE		NORMALLY OPEN, TIMED OPEN																	
	INDICATES RACEWAYS AND CIRCUIT NUMBERS. FIRST NUMBER IS RACEWAY AND NUMBER AFTER DASH IS CIRCUIT NUMBER. 5–E(3) INDICATES THAT THERE ARE 3 EMPTY RACEWAY NO.5. SEE SCHEDULE.		RECEPTACLE – 240V., 1 , AMPERAGE INDICATED		OVERLOAD RELAY HEATER		NORMALLY OPEN, TIMED CLOSED																	
	MAJOR ELECTRICAL COMPONENT OR DEVICE – NAME OR IDENTIFYING SYMBOL AS SHOWN.		RECEPTACLE, SPECIAL PURPOSE – AMPERAGE AS INDICATED		MAGNETIC STARTER WITH NEMA SIZE INDICATED		NORMALLY CLOSED, TIMED OPEN																	
	BRANCH CIRCUIT PANEL BOARD		DUPLEX CONVENIENCE RECEPTACLE – FLUSH IN FLOOR		CIRCUIT BREAKER, MAGNETIC TRIP ONLY, FRAME SIZE SHOWN, 3 POLE UNLESS INDICATED OTHERWISE.		NORMALLY CLOSED, TIMED CLOSED																	
	UNIT HEATER NO.1 SEE SCHEDULE		MULTI OUTLET ASSEMBLY		CIRCUIT BREAKER, THERMAL MAGNETIC TRIP SHOWN, 3 POLE UNLESS INDICATED OTHERWISE.		LIQUID LEVEL																	
	TELEPHONE TERMINAL CABINET		WALL CLOCK WITH CLOCK HANGER CONVENIENCE RECEPTACLE		CIRCUIT BREAKER WITH CURRENT LIMITING FUSES, TRIP AND FUSE RATING INDICATED, 3 POLE UNLESS INDICATED OTHERWISE.		OPENS ON RISING LEVEL, CLOSSES ON FALLING LEVEL																	
	TERMINAL JUNCTION BOX		TELEPHONE RECEPTACLE (OUTLET BOX ONLY) FLUSH IN FLOOR		FUSED SWITCH, SWITCH AND FUSE CURRENT RATING INDICATED, 3 POLE UNLESS INDICATED OTHERWISE.		CLOSSES ON RISING LEVEL, OPENS ON FALLING LEVEL																	
	WOUND–ROTOR MOTOR, HORSEPOWER INDICATED		TELEPHONE RECEPTACLE (OUTLET BOX ONLY)		SWITCH – CURRENT RATING INDICATED, 3 POLE UNLESS INDICATED OTHERWISE.		PRESSURE OR VACCUUM																	
	MOTOR, SQUIRREL CAGE INDUCTION – HORSEPOWER INDICATED		GENERAL CONTROL OR WIRING DEVICE. NEMA 1 ENCLOSURE UNLESS INDICATED OTHERWISE. LETTER SYMBOLS OR ABBREVIATIONS INDICATE TYPE OF DEVICE.		DRAWOUT AIR CIRCUIT BREAKER, LOW VOLTAGE		OPENS ON RISING PRESSURE, CLOSSES ON FALLING PRESSURE																	
	LUMINAIRE – SEE SCHEDULE		PUSH–BUTTON STATION, NEMA 1 ENCLOSURE UNLESS INDICATED OTHERWISE. (WP = NEMA 4 ENCLOSURE) SEE CONTROL DIAGRAMS FOR TYPE PUSH BUTTON REQUIRED.		DRAWOUT AIR CIRCUIT BREAKER, MEDIUM VOLTAGE		CLOSSES ON RISING PRESSURE, OPENS ON FALLING PRESSURE																	
	LUMINAIRE – SEE SCHEDULE		NONFUSED DISCONNECT SWITCH, SIZE INDICATED, 3 POLE UNLESS INDICATED OTHERWISE, NEMA 1 ENCLOSURE, WP = WEATHERPROOF (NEMA 3R)		DRAWOUT FUSED SWITCH, MEDIUM VOLTAGE		FLOW																	
	LUMINAIRE AND POLE – SEE SCHEDULE		FUSED DISCONNECT SWITCH, SIZE INDICATED (60/40, 60 = SWITCH RATING: 40 = FUSE RATING) 3 POLE UNLESS INDICATED OTHERWISE, NEMA 1 ENCLOSURE, WP = WEATHERPROOF (NEMA 3R)		LIGHTNING ARRESTER		OPENS ON HIGH FLOW, CLOSSES ON LOW FLOW																	
	WALL MOUNTED LUMINAIRE – SEE SCHEDULE		CONTACTOR, MAGNETIC, NEMA SIZE INDICATED, NEMA 1 ENCLOSURE, UNLESS INDICATED OTHERWISE.		FUSE		CLOSSES ON HIGH FLOW, OPENS ON LOW FLOW																	
	FLOOD LIGHTS – AIM IN THE DIRECTION SHOWN		LIGHTING CONTACTOR, CURRENT RATING INDICATED, NEMA 1 ENCLOSURE UNLESS INDICATED OTHERWISE. SEE CONTROL DIAGRAM FOR NUMBER OF POLES.		CAPACITOR – KVAR INDICATED		TEMPERATURE																	
	EXIT LIGHTS – SEE SCHEDULE		STARTER MAGNETIC NEMA SIZE INDICATED, NEMA 1 ENCLOSURE UNLESS INDICATED OTHERWISE. SEE CONTROL DIAGRAM.		METER WITH SWITCH – SCALE RANGE SHOWN		OPENS ON RISING TEMPERATURE, CLOSSES ON FALLING TEMPERATURE																	
	SMALL LETTER SUBSCRIPT AT SWITCH AND LUMINAIRE INDICATES SWITCHING. SUBSCRIPT NUMBER AT LUMINAIRE INDICATES CIRCUIT IN PANELBOARD.		COMBINATION (FUSE OR CIRCUIT BREAKER ASINDICATED) MAGNETIC STARTER, NEMA SIZE INDICATED, NEMA 1 ENCLOSURE UNLESS INDICATED OTHERWISE. SEE CONTROL DIAGRAM.		GROUND		CLOSSES ON RISING TEMPERATURE, OPENS ON FALLING TEMPERATURE																	
	HOME RUN – DESTINATION SHOWN		METERING FACILITIES		PICK–UP SETTING		LIMIT SWITCH																	
	EXPOSED CONDUIT AND CONDUCTORS*		MULTI–PARTY DESK TOP COMMUNICATIONS SYSTEM STATION WITH REMOTE AMPLIFIER		TIME CURRENT CHARACTERISTIC		HELD OPEN, NORMALLY CLOSED																	
	CONCEALED CONDUIT AND CONDUCTORS*		MULTI–PARTY WALL MOUNTED COMMUNICATIONS SYSTEM STATION WITH INTEGRAL AMPLIFIER		PUSH–BUTTON SWITCH, MOMENTARY CONTACT, NORMALLY OPEN		HELD CLOSED, NORMALLY OPEN																	
	NOTE: * ALL UNMARKED CONDUIT RUNS CONSIST OF TWO NO.12 CONDUCTORS IN CONDUIT. RUNS MARKED WITH CROSSHATCHES INDICATE NUMBER OF NO.12 CONDUCTORS. CROSSHATCH WITH SUBSCRIPT "G" INDICATES GREEN GROUND WIRE. SIZE CONDUIT ACCORDING TO SPECIFICATIONS AND APPLICABLE CODE.		CONE TYPE PAGING SPEAKER, CEILING MOUNTED		PUSH–BUTTON SWITCH, MOMENTARY CONTACT, NORMALLY CLOSED		ONE LINE DIAGRAM CONTINUATION SYMBOL A=INTERFACE IDENTIFIER E–2=DWG NUMBER WHERE OTHER END OF CONTINUATION CAN BE FOUND																	
	CROSSHATCHES WITH BAR INDICATE #10 CONDUCTOR. SIZE CONDUIT ACCORDING TO SPECIFICATIONS AND APPLICABLE CODE.		INTERIOR PAGING TRUMPET SOUND REPRODUCER, 120" x 60" WITH REMOTE AMPLIFIER, SURFACE MOUNTED.		PUSH BUTTON SWITCH, MAINTAINED CONTACTS WITH MECHANICAL INTERLOCK		PROTECTIVE RELAY XX = 47 PHASE FAILURE/PHASE REVERSE 50 INSTANTANEOUS 51 TIME OVERCURRENT 51GS GROUND FAULT/GROUND SENSOR 51N RESIDUAL CONNECTED GROUND RELAY 86 LOCKOUT RELAY 87 DIFFERENTIAL RELAY																	
	CONDUIT DOWN		OUTDOOR PAGING TRUMPET SOUND REPRODUCER, 120" x 60" WITH REMOTE AMPLIFIER, SURFACE MOUNTED.		3 POSITION SELECTOR SWITCH MAINTAINED CONTACT		NOTE: THIS IS A STANDARD LEGEND SHEET. SOME SYMBOLS OR ABBREVIATIONS MAY APPEAR ON THIS SHEET AND NOT ON THE PLANS.																	
	CONDUIT UP		TERMINAL CABINET FOR COMMUNICATIONS SYSTEM		TIME DELAY RELAY CONTACT (TIME ACTION INDICATED)																			
	CONDUIT, STUBBED AND CAPPED AS SHOWN		FIRE ALARM STATION, MANUAL		REMOTE DEVICE																			
	CABLE TRAY – SEE SPECIFICATIONS		FIRE ALARM STATION, AUTOMATIC, HEAT DETECTOR		SELECTOR SWITCH – MAINTAINED CONTACT – CHART IDENTIFIES OPERATION:																			
	BUS DUCT – SEE SPECIFICATIONS		FIRE ALARM BELL	<table><tr><th colspan="4">POSITION</th></tr><tr><th>CKT.</th><th>HAND</th><th>OFF</th><th>AUTO</th></tr><tr><td>1</td><td>X</td><td>O</td><td>O</td></tr><tr><td>2</td><td>O</td><td>O</td><td>X</td></tr></table> X – CLOSED CONTACT O – OPEN CONTACT	POSITION				CKT.	HAND	OFF	AUTO	1	X	O	O	2	O	O	X				
POSITION																								
CKT.	HAND	OFF	AUTO																					
1	X	O	O																					
2	O	O	X																					
	TRENCHING FOR UTILITY COMPANY PRIMARY POWER CUTS		FIRE ALARM HORN		CURRENT TRANSFORMER, NUMBER INDICATED																			
	TRENCHING FOR TELEPHONE COMPANY CIRCUITS		AIR DUCT IONIZATION DETECTOR		INDICATING LIGHT, PUSH–TO–TEST, LETTER INDICATES COLOR																			
	CONCRETE ENCASED CONDUIT		EXHAUST FAN		INDICATING LIGHT – LETTER INDICATES COLOR A – AMBER G – GREEN B – BLUE R – RED C – CLEAR W – WHITE																			
	DIRECT BURIED CONDUIT		COMBUSTIBLE GAS DETECTOR																					
	WALL SWITCH: 2– DOUBLE POLE P– PILOT LIGHT 3– THREE WAY K– KEY OPERATED 4– FOUR WAY D– DIMMER WP–WEATHERPROOF CRE–CORROSION RESISTANT																							
	MANUAL MOTOR STARTER SWITCH																							

NOT FOR CONSTRUCTION OR BID

ENGINEER
PETER PARTINGTON
REG. No. 46089
DATE:

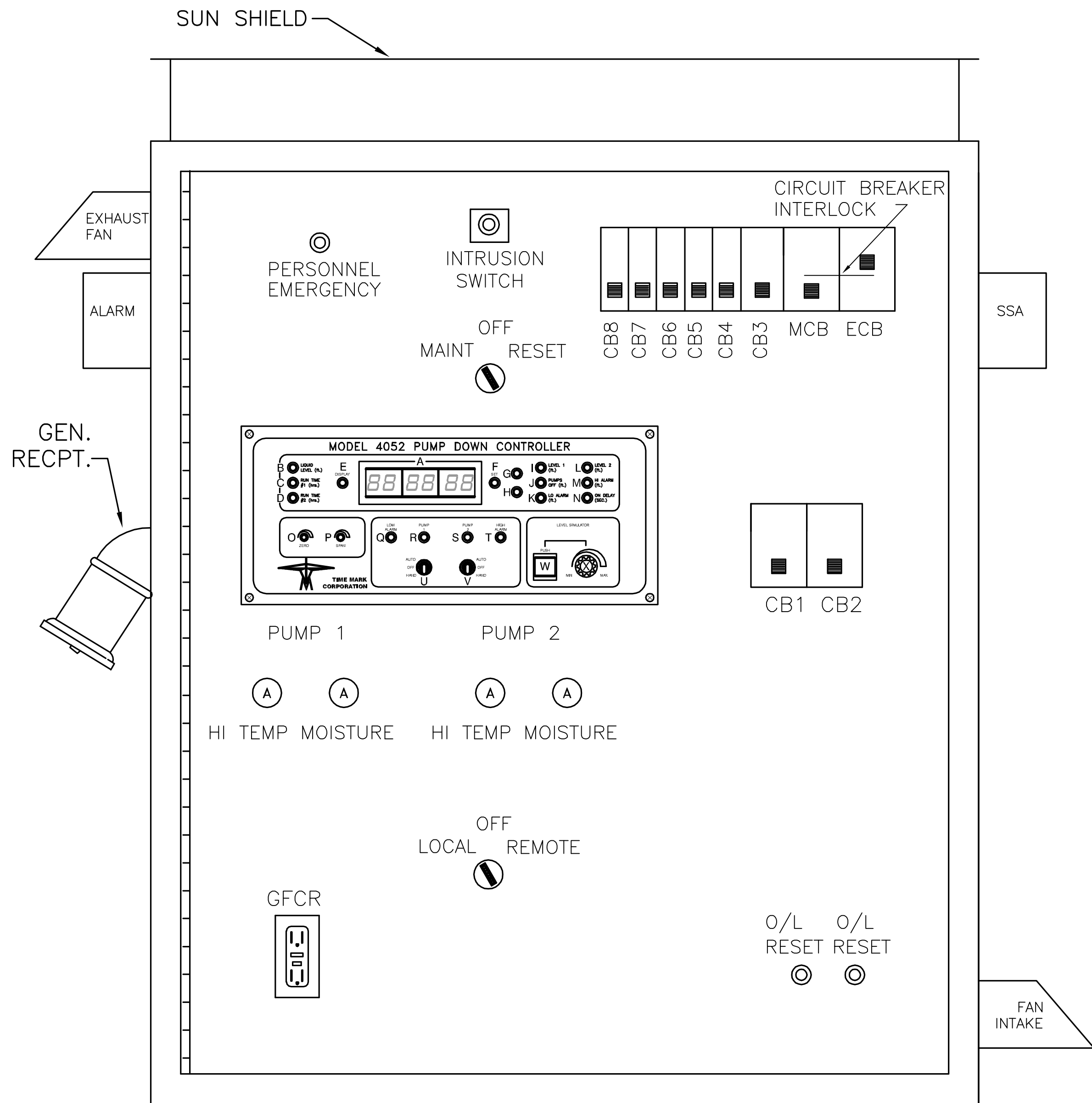
DESIGNED BY: SCALE: N.T.S.
CHECKED BY: WW2011
FIELD BOOK: 33301

DATE: 2006 FEB.
ENG. WW2011
DESIGNED BY: WW2011
CHECKED BY: WW2011

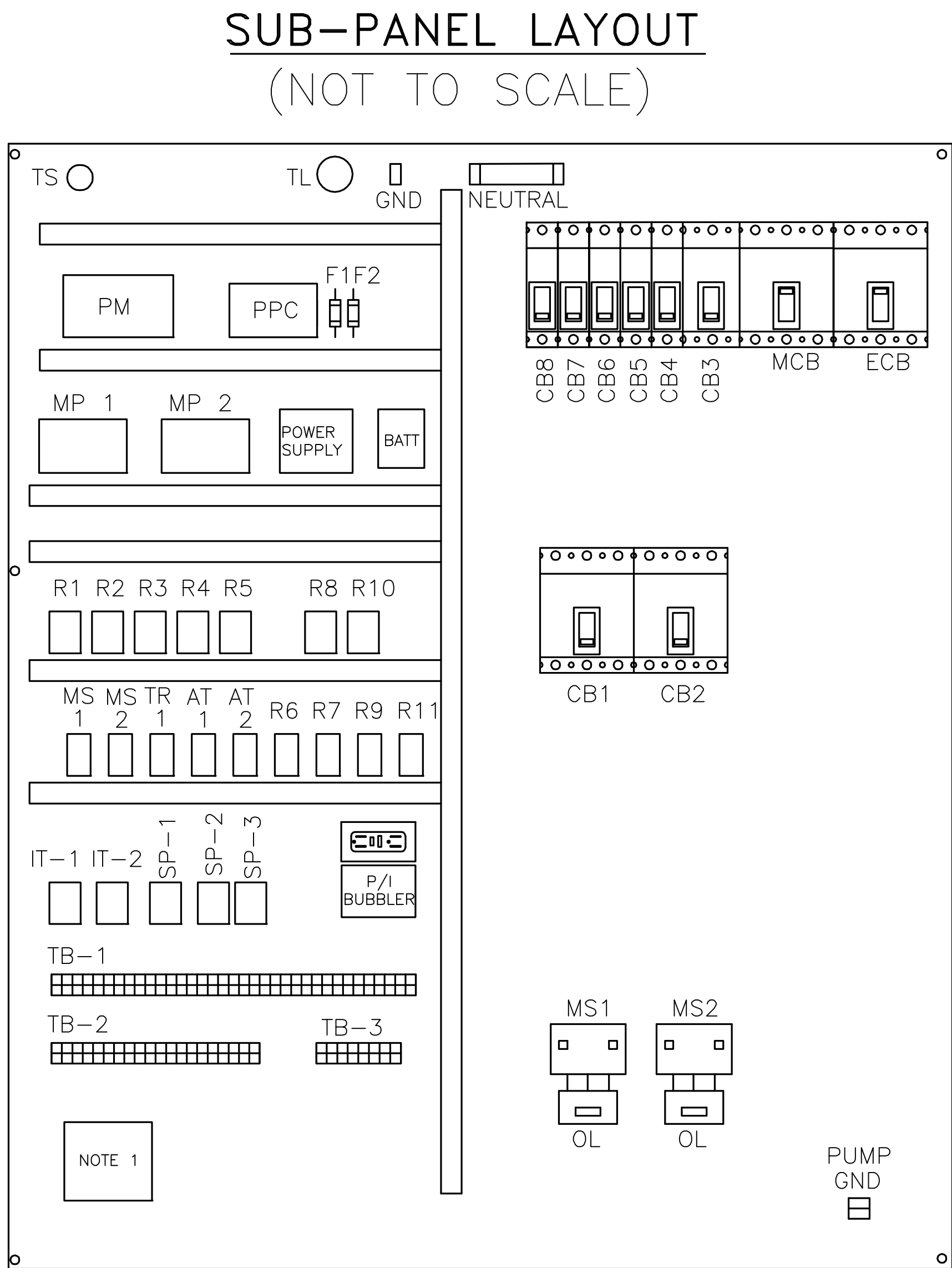
PROJECT # P0000
PROJECT NAME
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SHEET NO. OF
X-1 XX

TOTAL: 0
CAD FILE: XXXXX–XXX–XXX0000
DRAWING FILE NO. 4–XXX–XX



DEAD FRONT LAYOUT
(NOT TO SCALE)



NOTE 1 :
PROVIDE MINIMUM 16" X 16" SPACE
ON BACKPLATE FOR AUTODIALER TO
BE INSTALLED BY OWNER OR FOR
FUTURE SCADA.

ITEM	DESCRIPTION	MANUFACTURER	PART NO.
24 PS	24 V DC POWER SUPPLY	MEAN WELL	AD-155A
3-PHASE MONITOR	3-PHASE MONITOR	TIME MARK	258
CB-1	CIRCUIT BREAKER 1	GE	
CB-2	CIRCUIT BREAKER 2	GE	
CB-3	CIRCUIT BREAKER 3	GE	
CB-4	CIRCUIT BREAKER 4	GE	
CB-5	CIRCUIT BREAKER 5	GE	
CB-6	CIRCUIT BREAKER 6	GE	
CB-7	CIRCUIT BREAKER 7	GE	
CB-8	CIRCUIT BREAKER 8	GE	
COM	BUBBLER COMPRESSOR		
CPT	CONTROL POWER TRANSFORMER		
OR	CONVENIENCE RECEPTACLE		
CT-1	CURRENT TRANSFORMER 1	SQUARE D	
CT-2	CURRENT TRANSFORMER 2	SQUARE D	
ECB	EMERGENCY CIRCUIT BREAKER	GE	SRPF250A200
EF	EXHAUST FAN	DAYTON	5C155
FLOAT	WET WELL LEVEL HIGH ALARM FLOAT	PEABODY BARNES	73612XF
FU 1	CURRENT TRANSDUCER FUSE	GLASSTRON	
FU2	CURRENT TRANSDUCER FUSE	GLASSTRON	
GEN RECPT.	GENERATOR RECEPTACLE	CROUSE HINDS	AR2041
GFCI	GROUND FAULT CONVENIENCE RECEPTACLE		
GND BUSS BAR			
HAL	WET WELL HIGH ALARM LIGHT		
IT 1	PUMP 1 CURRENT TRANSDUCER	STI	CLE
IT 2	PUMP 2 CURRENT TRANSDUCER	STI	CLE
LLC	LIQUID LEVEL CONTROLLER	TIME MARK	4052
MC 1	MOTOR STARTER 1 RELAY		
MC 2	MOTOR STARTER 2 RELAY		
MCB	MAIN CIRCUIT BREAKER	GE	SRPF250A200
MP 1	MOTOR PROTECTOR 1		
MP 2	MOTOR PROTECTOR 2		
MS-1	MOTOR STARTER 1		
MS-2	MOTOR STARTER 2		
OL 1	OVERLOAD BLOCK 1		
OL 2	OVERLOAD BLOCK 2		
PPC	POWER PROTECTOR AND CONDITIONER	SOLA	
R 1	PHASE FAULT RELAY	IDEC	RR2P-ULC
R 10	RTU POWER SUPPLY LOSS OF POWER	IDEC	RR2P-ULC
R 2	PUMP 1 FAULT RELAY	IDEC	RR2P-ULC
R 3	PUMP 2 FAULT RELAY	IDEC	RR2P-ULC
R 4	PUMP 1 READY RELAY	IDEC	RR2P-ULC
R 5	PUMP 2 READY RELAY	IDEC	RR2P-ULC
R 6	PUMP 1 START FROM RTU RELAY	IDEC	RR2P-ULC
R 7	PUMP 2 START FROM RTU RELAY	IDEC	RR2P-ULC
R 8	WET WELL LEVEL HIGH ALARM RELAY	IDEC	RR2P-ULC
R 9	RTU FAULT RELAY	IDEC	RR2P-ULC
R11	LOW LEVEL SHUT-OFF RELAY	IDEC	RR2P-ULC
RTU PS BATTERY			
SP-1	WET WELL LEVEL TO RTU SURGE PROTECTOR	EDCO	DRS-036
SP-2	PUMP 1 CURRENT TO RTU SURGE PROTECTOR	EDCO	DRS-036
SP-3	PUMP 2 CURRENT TO RTU SURGE PROTECTOR	EDCO	DRS-036
SS-1	LOCAL OFF REMOTE SELECTOR SWITCH		
SSA	SECONDARY SURGE ARRESTOR	METER-TREATER	RCHW-4803L2-A
TB-1	RTU IO TERMINAL BLOCK	WEIDMUELLER	WDU 2.5
TB-2	24 V DC POWER BUS	WEIDMUELLER	WDU 2.5
TB-3	TERMINAL BLOCK3	WEIDMUELLER	WDU 2.5
TL	TROUBLE LIGHT FLUORESCENT W/SWITCH	NUTONE	18W
SS-2	MAINTENANCE ON SITE SELECTOR SWITCH		
PB-1	PERSONNEL EMERGENCY PUSH BUTTON		

DUPLEX PUMP PANEL LAYOUT
DUPLEX PUMP STATION

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CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING & ARCHITECTURE
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

DRAWN BY:	DATE:	DESIGNED BY:	SCALE:	CHECKED BY:	FIELD BOOK:
PETER PARTINGTON	FEB., 2006	WW2011	N.T.S.	WW2011	
REG. No. 48099					
DATE:					

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