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CITY OF MARGATE, FLORIDA
DEPARTMENT OF ENVIRONMENTAL
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DETAIL INDEX

CITY OF MARGATE, FLORIDA
DEPARTMENT OF ENVIRONMENTAL
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GENERAL NOTES

G-1

GENERAL NOTES FOR WATER AND SEWER

1. ALL APPLICABLE PERMITS MUST BE OBTAINED AND ALL APPLICABLE FEES AND CHARGES MUST BE PAID PRIOR TO COMMENCEMENT OF CONSTRUCTION.
2. A PRE-CONSTRUCTION MEETING SHALL BE HELD WITH THE CITY'S DEPARTMENT OF ENVIRONMENTAL AND ENGINEERING SERVICES (DEES) ATTENDED BY THE CONTRACTOR, DEVELOPER'S ENGINEER, AND OTHER INTERESTED PARTIES PRIOR TO ISSUANCE OF ANY CONSTRUCTION PERMITS
3. THE CONTRACTOR SHALL MAINTAIN AT ALL TIMES ON THE SITE A CURRENT SET OF APPROVED CONSTRUCTION PLANS. THE PLANS SHALL BE MADE AVAILABLE TO THE CITY ENGINEER OR HIS DESIGNEE UPON REQUEST.
4. THE CONTRACTOR SHALL FIELD VERIFY THE LOCATIONS OF ALL EXISTING UTILITIES SHOWN ON THE APPROVED PLANS. APPROVAL OF DEVELOPMENT PLANS BY THE CITY IN NO WAY IMPLIES VERIFICATION OF THE ACCURACY OF THOSE PLANS OR FEATURED DEPICTED THEREON. THE DEVELOPER'S ENGINEER SHALL BRING TO THE ATTENTION OF THE CITY ENGINEER ANY DISCREPANCY IN, OR VARIATION FROM THE APPROVED PLANS.
   THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF EXISTING AND NEWLY INSTALLED UTILITIES AND IMPROVEMENTS FROM DAMAGE, DISRUPTION OF SERVICE, OR DESTRUCTION AT ALL TIMES THROUGHOUT THE DURATION OF CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR TAKING SUCH MEASURES AS NECESSARY TO PROTECT THE HEALTH, SAFETY, AND WELFARE OF THOSE PERSONS HAVING ACCESS TO THE WORK SITE. THE CONTRACTOR SHALL TAKE THE NECESSARY PRECAUTIONS TO SAFEGUARD ALL EXISTING STRUCTURES AND UTILITIES. THE LOCATION OF EXISTING UTILITIES SHOWN ON THESE PLANS ARE APPROXIMATE ONLY AND ARE BASED ON SURVEY AND AS-BUILT INFORMATION. ADDITIONAL UTILITIES MAY EXIST WHICH ARE NOT SHOWN ON THE PLANS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND VERIFYING ALL UTILITIES PRIOR TO BEGINNING CONSTRUCTION. ANY AND ALL CONFLICTS WITH EXISTING UTILITIES SHALL BE REPORTED TO THE ENGINEER. THIS WORK BY THE CONTRACTOR SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT AND NO ADDITIONAL COMPENSATION SHALL BE ALLOWED.
5. THE CONTRACTOR SHALL INFORM THE CITY'S DEES AT LEAST 48 HOURS IN ADVANCE OF COMMENCING CONSTRUCTION AND/OR CONNECTING TO CITY FACILITY.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING LOCATIONS OF ALL UTILITIES, AND MODIFICATIONS OF SUNSHINE ONE. CALL 1-800-432-4770 48 HOURS IN ADVANCE OF CONSTRUCTION.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SCHEDULING OF, AND PAYMENT FOR, SUCH TESTS AS MAY BE DEEMED NECESSARY BY THE DEVELOPER'S ENGINEER OR THE CITY ENGINEER, AND AS CALLED FOR IN THE PLANS AND SPECIFICATIONS.
8. CONSTRUCTION SHALL BE CARRIED OUT IN STRICT COMPLIANCE WITH THOSE STANDARDS ACCEPTED BY THE CITY OF MARGATE. IN THOSE INSTANCES WHERE THE CITY'S SPECIFICATIONS DIFFER FROM THE LOCAL MUNICIPALITY'S SPECIFICATIONS, THE CITY OF MARGATE STANDARDS WILL CONTROL.
9. THE DEVELOPER'S ENGINEER SHALL MAKE SUFFICIENT INSPECTIONS OF THE WORK TO ENABLE HIM TO CERTIFY THE INSTALLATION AS BEING IN CONFORMANCE WITH THE APPLICABLE STANDARDS AND SPECIFICATIONS.
10. THE CITY'S DEES WILL CARRY OUT INSPECTIONS OF THE WORK, WILL INFORM THE CONTRACTOR WHEN TO BACK FILL THE WORK, AND WILL WITNESS ALL PRESSURE, BACTERIOLOGICAL AND INFILTRATION/ EXFILTRATION TESTS.
11. NO DEVIATION FROM APPROVED PLANS SHALL BE PERMITTED WITHOUT WRITTEN CONSENT OF THE CITY ENGINEER.
12. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THESE PLANS WITH ANY PAVING AND DRAINAGE PLANS IN THIS AREA.
13. THE FOLLOWING DOCUMENTS ARE TO BE ON FILE AT THE OFFICE OF THE CITY ENGINEER PRIOR TO THE CONNECTION OF THE FIRST WATER METER:
    A. FINAL ENGINEERING PLANS APPROVED BY THE CITY'S DEES
    B. LETTERS OF ACCEPTANCE FROM:
       - BROWARD COUNTY DER - WASTEWATER LICENSING SECTION / FLORIDA DEPT. OF ENVIRONMENTAL PROTECTION (FDEP)
    C. COPIES OF BACTERIOLOGICAL REPORTS STAMPED BY THE HEALTH DEPARTMENT
    D. CERTIFICATION OF ENGINEER OF RECORD
    E. LETTER FROM DEVELOPER STATING THAT NO LIENS HAVE BEEN FIELD RELATING TO INSTALLATION OF UTILITIES
    F. BILL OF SALE ABSOLUTE FOR SYSTEM
    G. GRANT OF EASEMENT OR LETTER STATING THAT EASEMENTS ARE ON THE PLAT
    H. LETTER FROM DEVELOPER COMMITTING TO RECORDATION OF APPROPRIATE DOCUMENTS WITHIN 90 DAYS
    I. ADDRESS PLAN OF PROJECT
    J. TWO PAPER COPIES, ONE PDF FILE, AND ONE GEOREFRENCED AUTOCAD FILE (RELEASE 12 OR HIGHER)
    K. FINAL INSPECTION VERIFICATION BY CITY OF MARGATE ENGINEERING INSPECTOR
    L. TEMPORARY METER REMOVAL LETTER DIVISION "MINIMUM STANDARDS"
14. ALL INSTALLATIONS WITHIN BROWARD COUNTY RIGHT-OF-WAY SHALL BE IN CONFORMITY WITH BROWARD COUNTY ENGINEERING

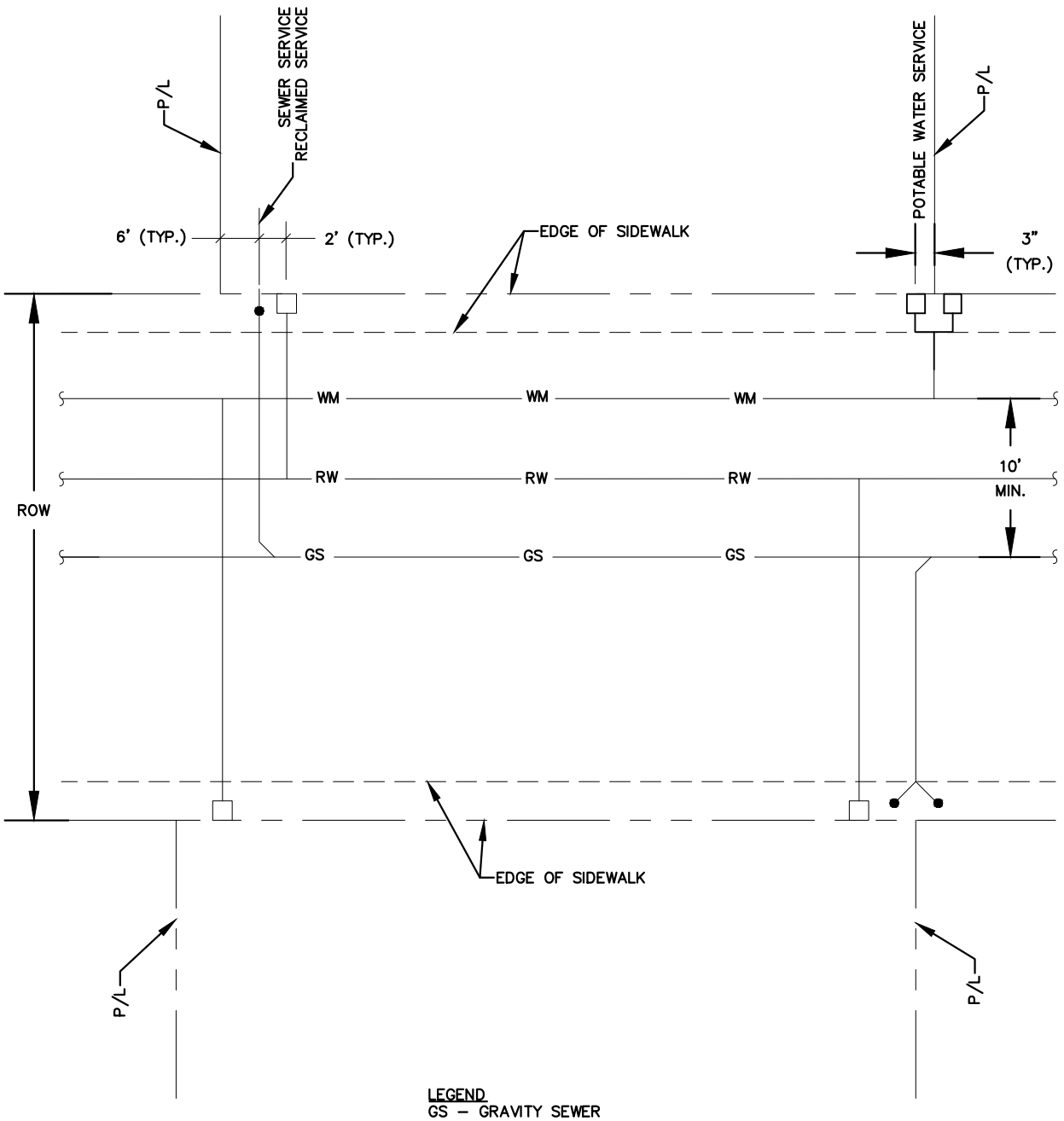
THRUST RESTRAINT

1. ALL BENDS, TEES, CROSSES, REDUCERS, AND DEAD ENDS SHALL BE RESTRAINED THROUGH AN APPROVED MEANS OF MECHANICAL JOINT RESTRAIN USING MEGALUGS AND ALL THREAD RODS. ANY LINE TERMINATED AS A CONSTRUCTION PHASE THAT IS A KNOWN FUTURE EXTENSION, SHALL HAVE A PLUGGED VALVE AT THE END AND RESTRAINED WITH MEGALUGS AND ALL THREAD RODS.
2. ALL BENDS, TEES, CROSSES, REDUCERS, AND DEAD ENDS FOR 4" DIAMETER PIPE AND LARGER SHALL HAVE MECHANICAL JOINTS WITH MEGALUGS AND ALL THREAD RODS OR APPROVED EQUAL FOR RESTRAINT IN LIEU OF THRUST BLOCKS.

Know what's **below.**
Call before you dig.

1. PRIOR TO BEGINNING ANY WORK, CONTRACTOR SHALL CONTACT ALL UTILITY COMPANIES THAT HAVE FACILITIES WITHIN THE PROJECT AREA.

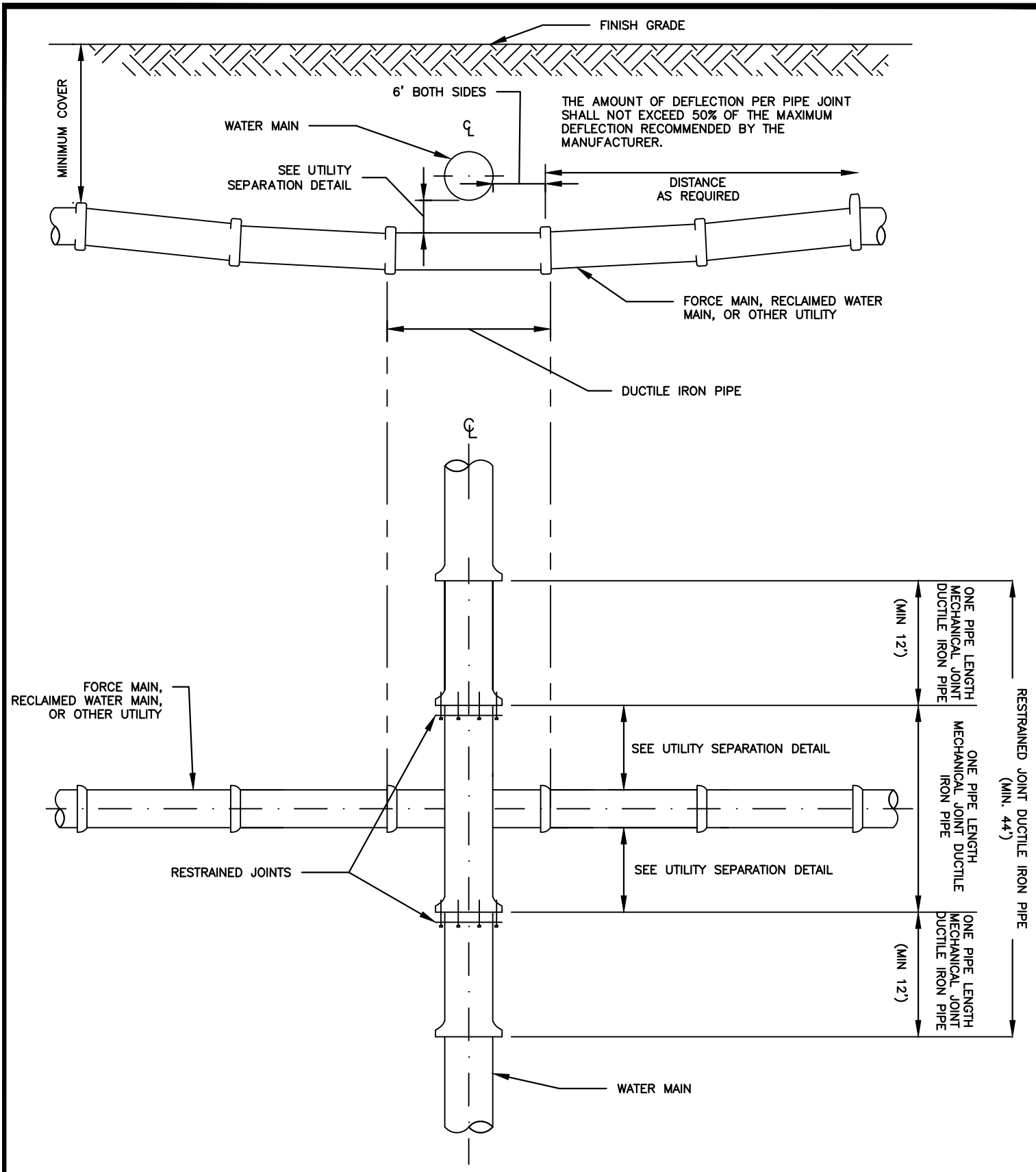
2. THE ABOVE NOTICE SHALL APPEAR ON THE COVER SHEET OF ALL CONSTRUCTION PLANS SUBMITTED TO THE CITY.



LEGEND
GS – GRAVITY SEWER
RW – RECLAIMED WATER
WM – POTABLE WATER MAIN

NOTE: LOCATION OF SERVICES CAN BE MODIFIED WITH CITY APPROVAL.

DATE: 08/24	DRAWN: KHA		
CITY OF MARGATE, FLORIDA DEPARTMENT OF ENVIRONMENTAL AND ENGINEERING SERVICES		**UTILITY LOCATIONS**	**G-3**



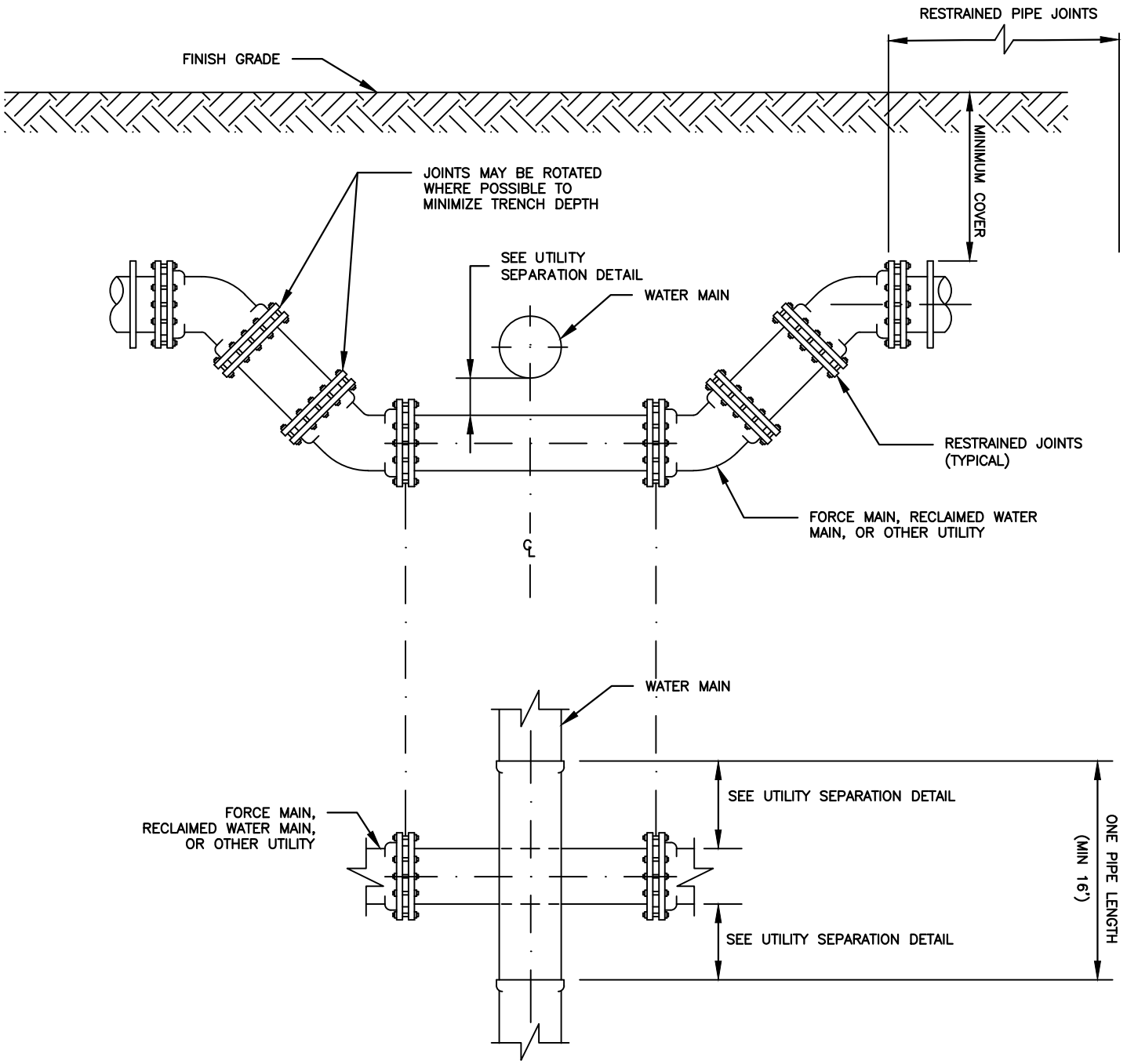
NOTE:
1. MINIMUM COVER IS 30" FOR D.I.P. AND 36" FOR P.V.C.

DATE: 08/24 | DRAWN: KHA

CITY OF MARGATE, FLORIDA
DEPARTMENT OF ENVIRONMENTAL AND ENGINEERING SERVICES

STANDARD UTILITY CROSSING

G-4



NOTE:

1. MINIMUM COVER IS 30" FOR D.I.P. AND 36" FOR P.V.C.
2. WHEREVER POSSIBLE DEFLECTION OF THE PIPE WILL BE USED TO AVOID EXISTING OBSTRUCTIONS. THIS CROSSING SHALL BE USED ONLY WHEN ORDERED BY THE INSPECTOR AND APPROVED BY THE ENGINEER.

DATE: 08/24	DRAWN: KHA		
CITY OF MARGATE, FLORIDA DEPARTMENT OF ENVIRONMENTAL AND ENGINEERING SERVICES		**SPECIAL UTILITY CROSSING**	**G-5**

CITY OF MARGATE, FLORIDA
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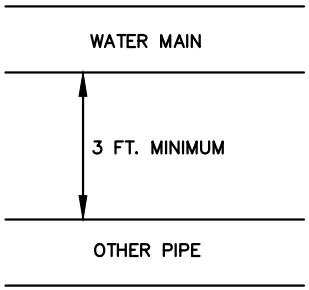
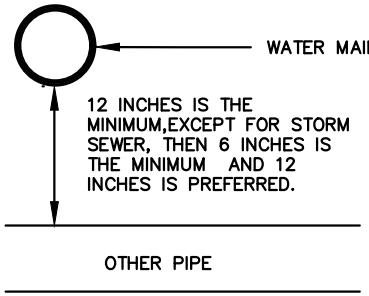
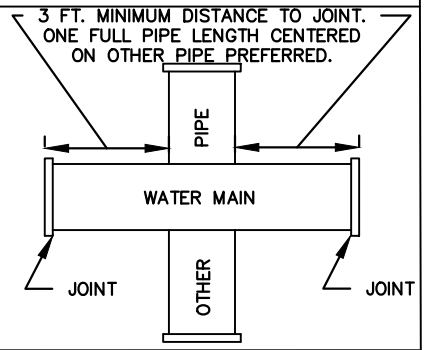
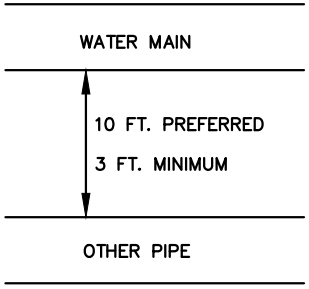
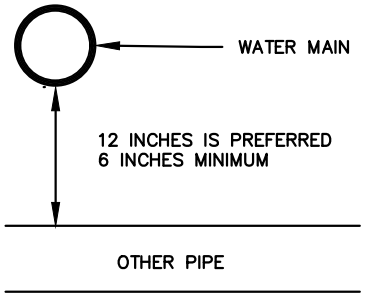
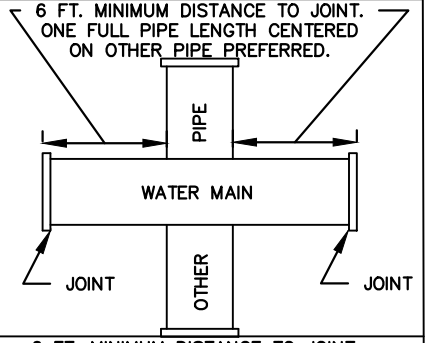
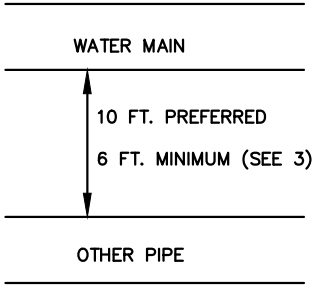
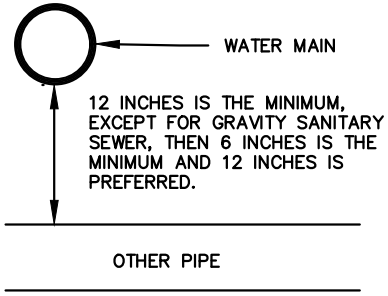
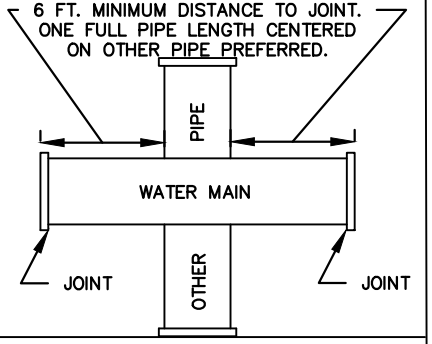
UTILITY SEPARATION

G-6

OTHER PIPE	HORIZONTAL SEPARATION	VERTICAL SEPARATION (SEE 1) (PROFILE VIEW)	VERTICAL SEPARATION (PLAN VIEW)
STORM SEWER, STORMWATER FORCEMAIN, RECLAIMED WATER (SEE 2)			
VACUUM SANITARY SEWER			
GRAVITY SANITARY SEWER (SEE 3), WASTEWATER FORCEMAIN, RECLAIMED WATER (SEE 4)			
ON-SITE SEWAGE TREATMENT AND DISPOSAL SYSTEM	10 FT. MINIMUM		

NOTES:

1. WATER MAIN SHOULD CROSS ABOVE THE OTHER PIPE. WHEN WATER MAIN MUST BE BELOW OTHER PIPE, THE MINIMUM SEPARATION IS 12 IN.
2. RECLAIMED WATER REGULATED UNDER PART III OF CHAPTER 62-610, F.A.C.
3. 3 FEET FOR GRAVITY SANITARY SEWER WHERE THE BOTTOM OF THE WATER MAIN IS LAID AT LEAST 6 INCHES ABOVE THE TOP OF THE GRAVITY SANITARY SEWER.
4. ADDITIONAL REQUIREMENTS MAY APPLY, REFER TO F.A.C. RULE 62-555.314.

CITY OF MARGATE, FLORIDA
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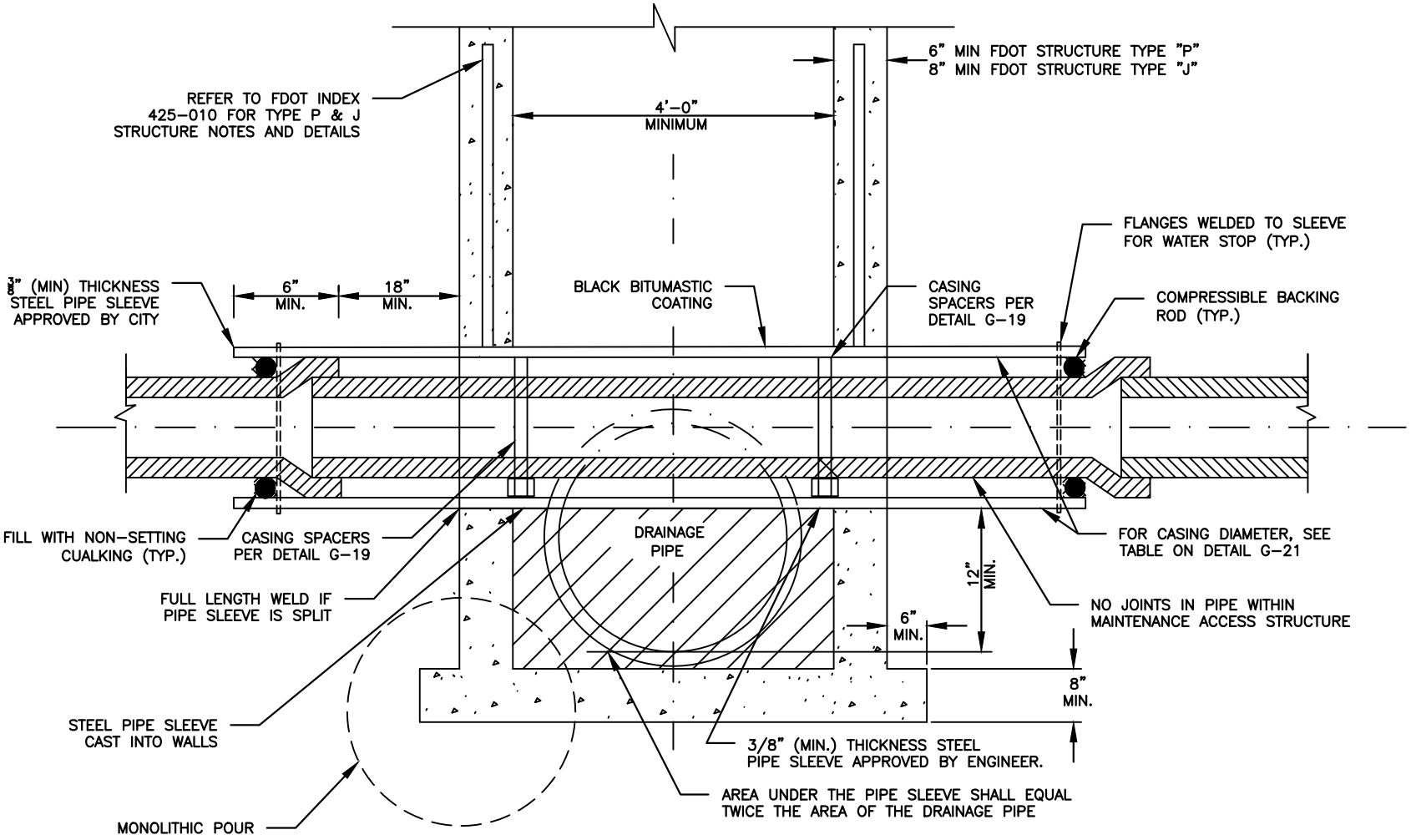
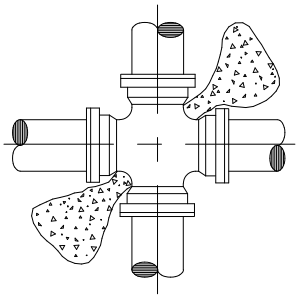
CONFLICT MAINTENANCE ACCESS STRUCTURE

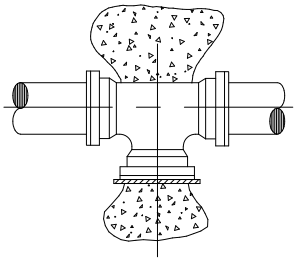
G-7



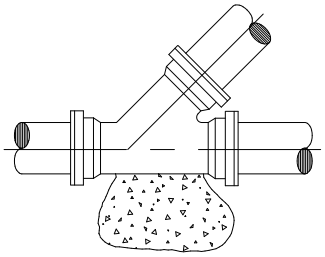
NOTE:
1. ALL CONFLICT MAINTENANCE ACCESS STRUCTURES SHALL CONFORM TO THE DETAILS SHOWN ON THIS DRAWING AND TO THE REQUIREMENTS OF ASTM C-478.
2. POTABLE WATER PIPE SHALL NOT PASS THROUGH OR CONTACT STORM DRAINAGE MAINTENANCE ACCESS STRUCTURE WITHOUT WRITTEN PERMISSION BY THE CITY.
3. POTABLE WATER PIPE SHALL NOT PASS THROUGH OR CONTACT SANITARY SEWER MAINTENANCE ACCESS STRUCTURE.
4. MINIMUM TWO (2) FOOT CLEARANCE REQUIRED BETWEEN OUTSIDE OF SLEEVE AND PARALLEL WALL.
5. CONFLICT STRUCTURE TO COMPLY WITH REQUIREMENTS OF CHAPTER 62-555.314 (FAC).
6. PIPE AND SLEEVE TO BE OF DISSIMILAR MATERIAL.



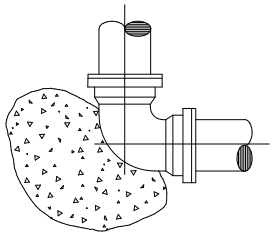
CROSS



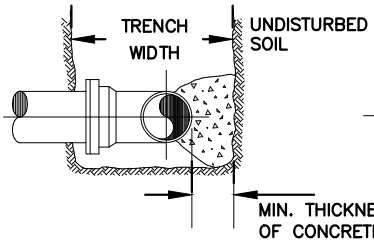
TEE WITH PLUG



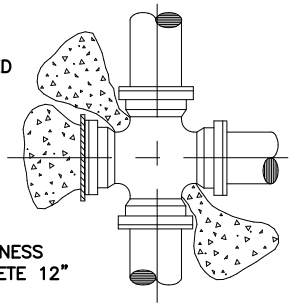
WYE or TEE



ELBOW



TYPICAL SECTION



CROSS WITH PLUG

PIPE	THRUST BLOCK AREA REQ'D	REMARKS	NOTE: FOR OTHER FITTINGS USE THE FOLLOWING FACTORS. TEE 100% 45° BEND 71% 22 1/2° BEND 20% DEAD END 100%
4"	2.0 SQ. FT.	VALUES ARE FOR 90° BEND, BASED ON 2000 P.S.F. SAFE BEARING LOAD AND PIPE PRESSURE OF 150 P.S.I. FOR OTHER SOILS & PRESSURES THE AREA REQUIRED IS IN DIRECT PROPORTION	
6"	4.0 SQ. FT.		
8"	6.6 SQ. FT.		
10"	10.0 SQ. FT.		
12"	14.0 SQ. FT.		
14"	18.6 SQ. FT.		

NOTES:
1. CONCRETE THRUST BLOCKS OR THRUST COLLARS MAY BE UTILIZED ONLY IF NECESSARY FOR CONNECTIONS TO AN EXISTING PIPING SYSTEM, OTHERWISE MECHANICAL RESTRAINTS SHALL BE USED. KEEP "T" BOLTS CLEAR OF CONCRETE, WRAPPED IN VISQUEEN FOR FUTURE ACCESS, WITH A MINIMUM OF 1' THICKNESS BETWEEN THE FITTING AND SOIL.
2. BEFORE POURING CONCRETE, PLUGS SHALL BE WRAPPED WITH VISQUEEN AND A BOARD PLACED IN FRONT.
3. CONCRETE SHALL BE 2500 P.S.I. MINIMUM.
4. THE ENGINEER OF RECORD SHALL SUBMIT A THRUST BLOCK SIZE CALCULATION FOR TEE CONNECTIONS INTO UNRESTRAINED EXISTING MAINS LARGER THAN 14".
5. THE ENGINEER OF RECORD SHALL SUBMIT A PIPE RESTRAINT DESIGN FOR INLINE EXTENSIONS OF A EXISTING UNRESTRAINED MAIN IF MECHANICAL JOINT RESTRAINT CAN NOT BE INSTALLED ON THE EXISTING MAIN.

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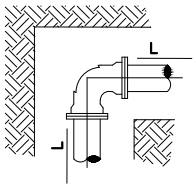
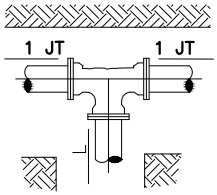
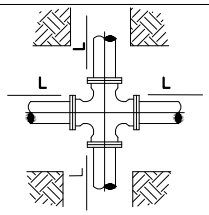
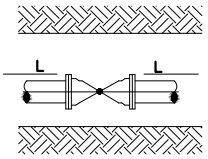
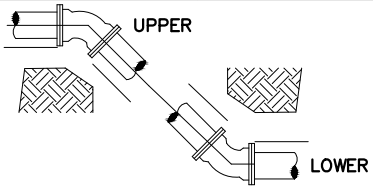
THRUST BLOCK DETAILS

G-8

HORIZONTAL	 11 ¼"–90° BEND	 TEE OR TAPPING SLEEVE	 CROSS	 VALVE OR DEAD END
 45° VERT OFFSET	– CROSSES SHALL BE RESTRAINED IN ALL DIRECTIONS. – FITTINGS AND VALVES NEED TO BE RESTRAINED PER STANDARD DETAILS, EVEN WHEN THE FITTINGS OR VALVES ARE CUT IN AFTER THE INITIAL PIPE INSTALLATION. ASBESTOS CEMENT PIPE WILL BE REPLACED WITH DUCTILE IRON PIPE AT LEAST THROUGH THE RESTRAINING LENGTH.			

DUCTILE IRON PIPE

HORIZONTAL, L (FEET)							45° VERTICAL OFFSET (FEET)	
DIAMETER	11 1/4°	22 1/2°	45°	90°	TEE OR CROSS	VALVES AND DEAD END	UPPER	LOWER
4"	1	2	4	10	7	20	9	4
6"	2	3	6	14	15	28	12	7
8"	2	4	8	17	23	37	16	8
10"	2	5	9	21	30	44	19	8
12"	3	5	10	24	38	52	22	9

PVC PIPE

HORIZONTAL, L (FEET)							45° VERTICAL OFFSET (FEET)	
DIAMETER	11 1/4°	22 1/2°	45°	90°	TEE OR CROSS	VALVES AND DEAD END	UPPER	LOWER
4"	2	3	5	12	11	32	14	5
6"	2	4	7	16	23	45	19	6
8"	3	5	9	21	37	59	25	8
10"	3	5	11	25	48	71	30	9
12"	3	6	12	29	61	83	35	11

THE NOTED REQUIREMENTS WERE CALCULATED IN ACCORDANCE WITH THRUST RESTRAINT CALCULATOR V7.2 BY EBAA IRON WITH THE FOLLOWING ASSUMPTIONS:
SOIL CONDITIONS: SW OR GW; NOMINAL SIZE EQUALS BRANCH SIZE; LENGTH ALONG RUN EQUALS 4 FEET
LAYING CONDITION: 4, SAND BEDDING, BACKFILL COMPACTED > 80%; VERTICAL LOW SIDE DEPTH EQUALS 3.5 FEET
MINIMUM COVER: 3.0 FT SAFETY FACTOR: 1.5 BARE PIPE (NO POLY WRAP)
IF FIELD CONDITIONS DIFFER FROM THE ABOVE, CONTRACTOR SHALL NOTIFY THE CITY.
FOR PIPE LARGER THAN INCLUDED IN THE ABOVE TABLES, ENGINEER OF RECORD SHALL SUBMIT CALCULATIONS FOR EACH JOINT REQUIRING RESTRAINT.

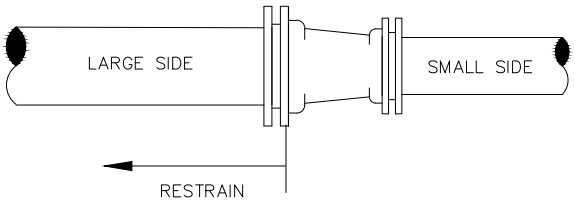
SINGLE FITTING RESTRAINED JOINT
150 PSI TEST PRESSURE

DATE: 08/24 | DRAWN: KHA

CITY OF MARGATE, FLORIDA
DEPARTMENT OF ENVIRONMENTAL AND ENGINEERING SERVICES

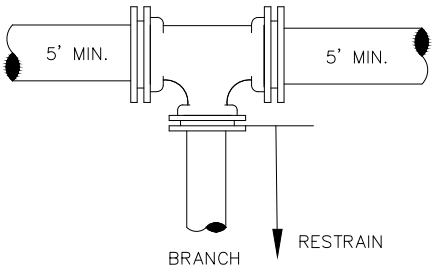
RESTRAINED JOINT REQUIREMENTS SINGLE FITTINGS

G-9



STRAIGHT REDUCER

SMALL SIDE	DUCTILE IRON PIPE				
	DIAMETER	6"	8"	10"	12"
	4"	15'	27'	36'	45'
	6"		16'	27'	38'
	8"			15'	28'
	10"				16'
	PVC PIPE				
		6"	8"	10"	12"
	4"	24'	43'	58'	72'
	6"		25'	44'	61'
	8"			24'	44'
	10"				25'



TEE REDUCER

BRANCH SIZE	DUCTILE IRON PIPE				
	DIAMETER	6"	8"	10"	12"
	4"	1'	1'	1'	1'
	6"		6'	1'	1'
	8"			15'	10'
	10"				23'
	PVC PIPE				
		6"	8"	10"	12"
	4"	1'	1'	1'	1'
	6"		16'	8'	1'
	8"			31'	25'
	10"				44'

THE NOTED REQUIREMENTS WERE CALCULATED IN ACCORDANCE WITH THRUST RESTRAINT CALCULATOR V7.2 BY EBAA IRON WITH THE FOLLOWING ASSUMPTIONS:
SOIL CONDITIONS: SW OR GW; LENGTH ALONG RUN EQUALS 4 FEET
LAYING CONDITION: 4, SAND BEDDING, BACKFILL COMPACTED > 80%
MINIMUM COVER: 3.0 FT;SAFETY FACTOR: 1.5;BARE PIPE (NO POLY WRAP)
IF FIELD CONDITIONS DIFFER FROM THE ABOVE, CONTRACTOR SHALL NOTIFY THE CITY.
FOR PIPE LARGER THAN INCLUDED IN THE ABOVE TABLES, ENGINEER OF RECORD SHALL SUBMIT CALCULATIONS FOR EACH JOINT REQUIRING RESTRAINT.

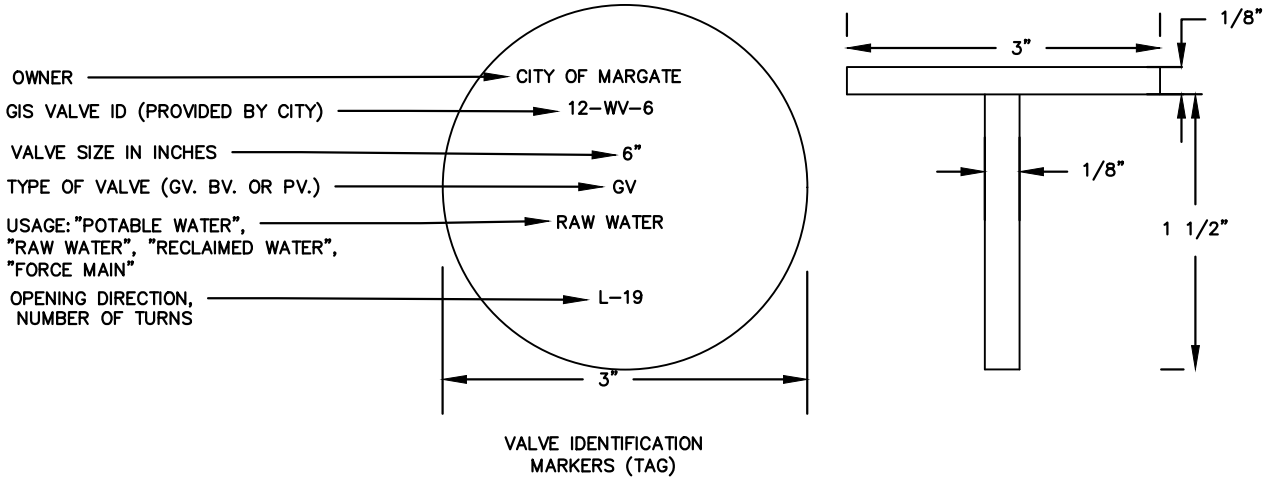
RESTRAINED REDUCING FITTING
150 PSI TEST PRESSURE

DATE: 08/24 | DRAWN: KHA

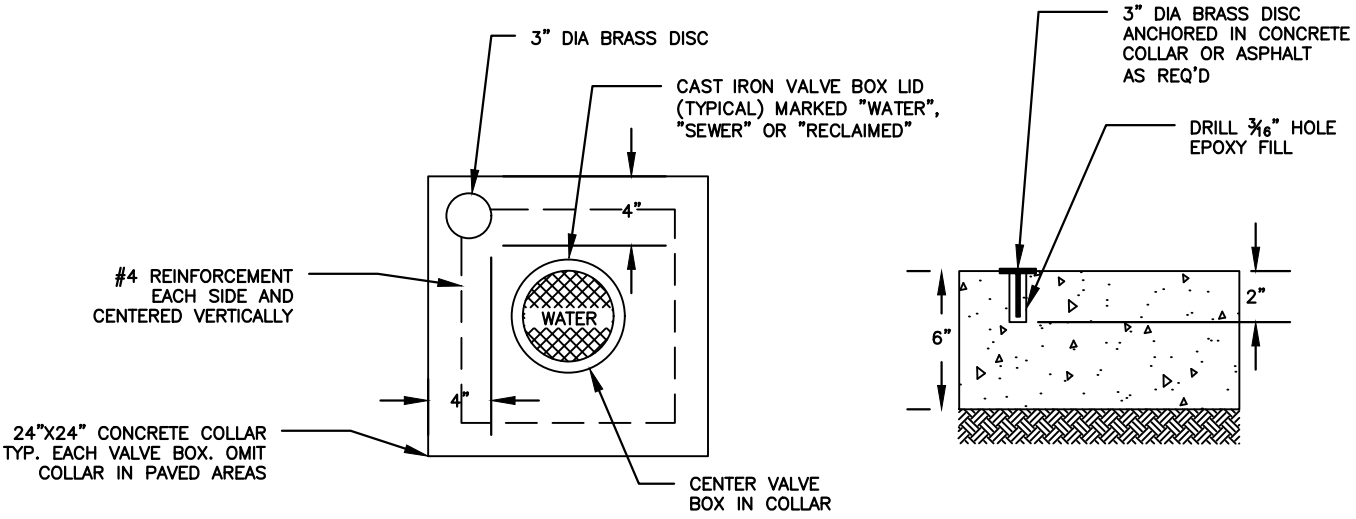
CITY OF MARGATE, FLORIDA
DEPARTMENT OF ENVIRONMENTAL AND ENGINEERING SERVICES

RESTRAINED JOINT REQUIREMENTS REDUCING FITTINGS

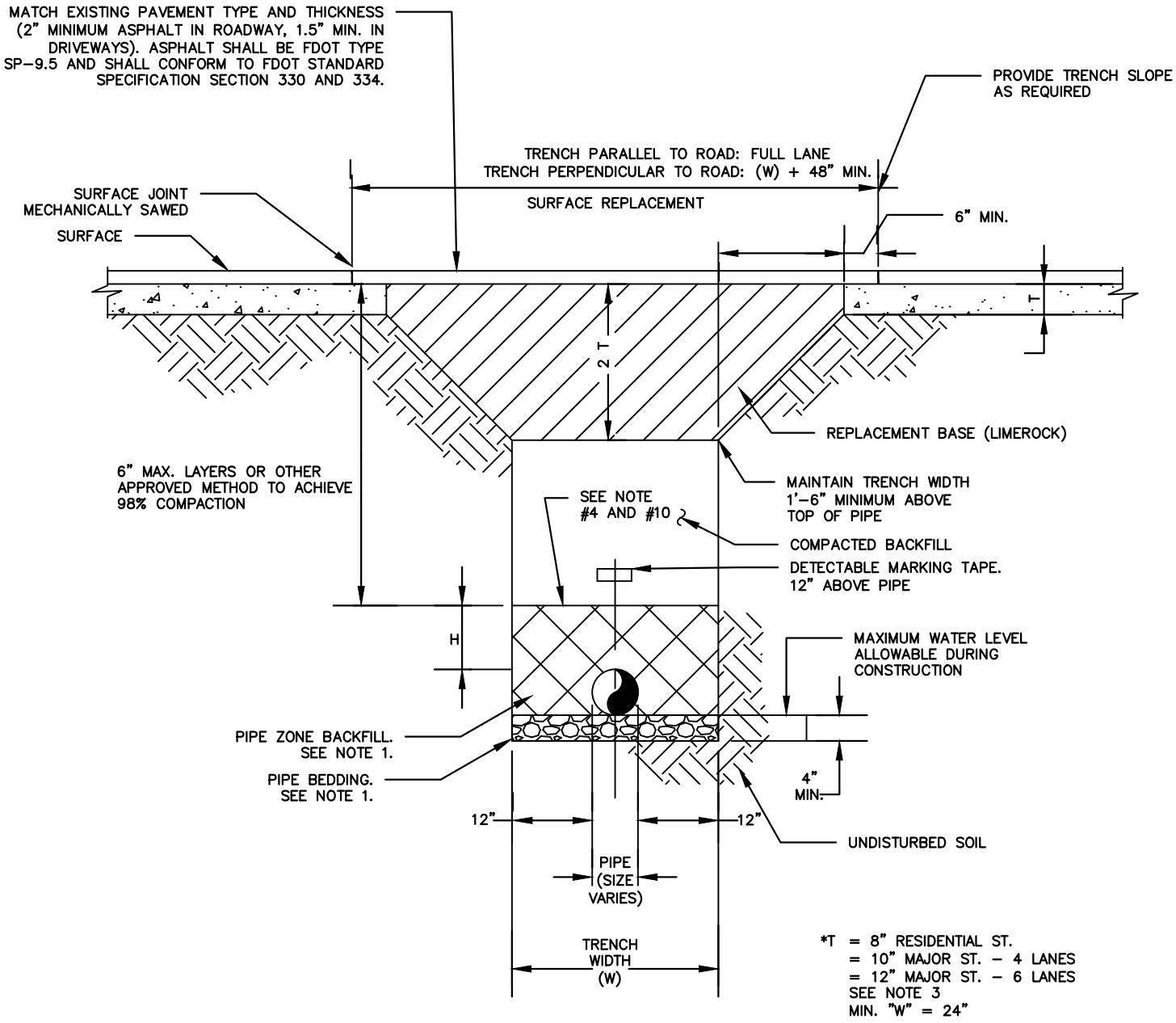
G-10



VALVE IDENTIFICATION MARKERS (TAG)



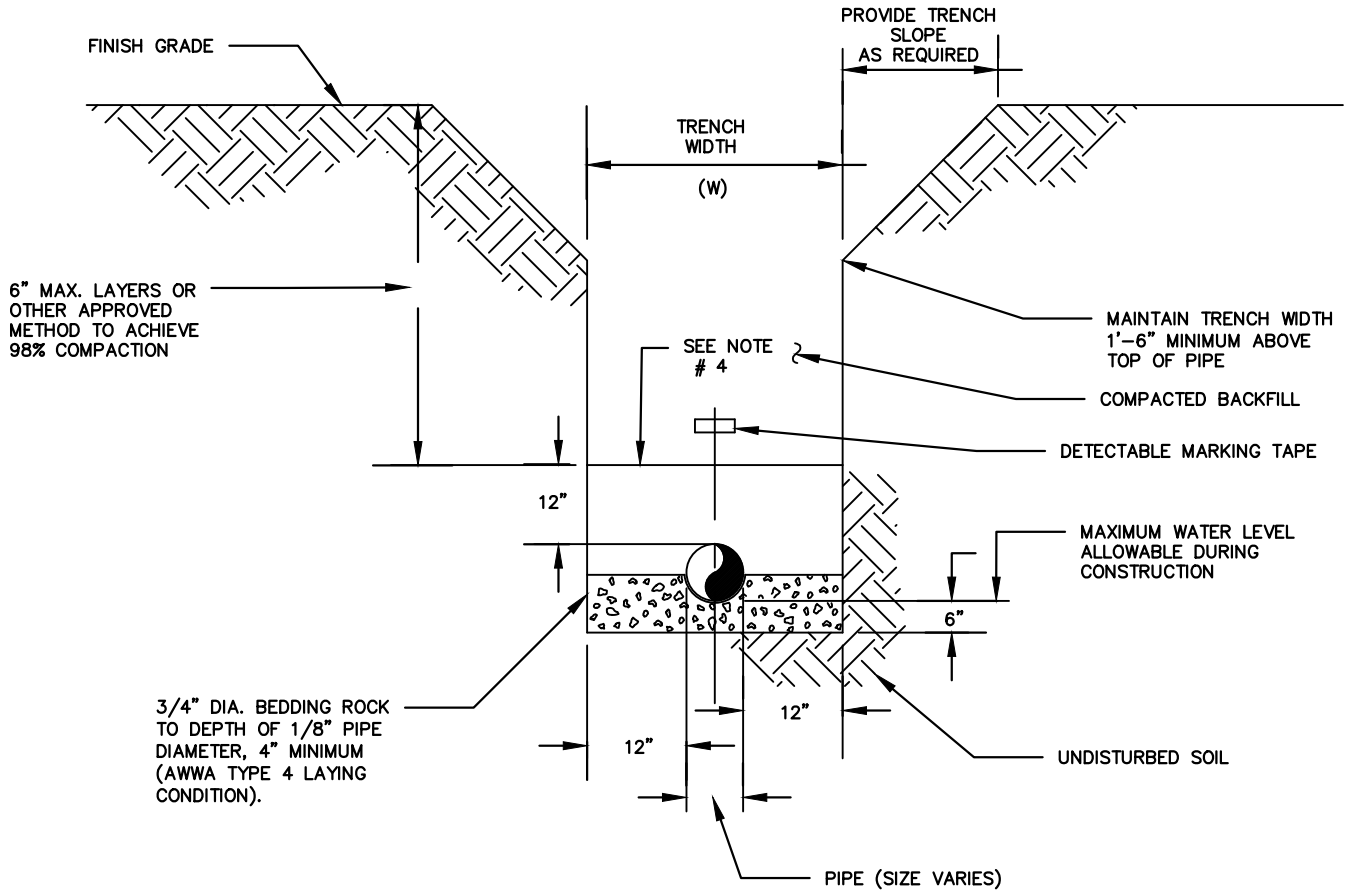
DATE: 08/24	DRAWN: KHA		
CITY OF MARGATE, FLORIDA DEPARTMENT OF ENVIRONMENTAL AND ENGINEERING SERVICES		**VALVE COLLAR AND IDENTIFICATION MARKER**	**G-11**



NOTES:

1. UNLESS OTHERWISE SPECIFIED, BEDDING MATERIAL AND PIPE ZONE BACKFILL TO FOLLOW AWWA TYPE 4 LAYING CONDITION.
2. PIPE ZONE BACKFILL HEIGHT (H) OVER TOP OF PIPE SHALL BE AT LEAST 12 IN. FOR PIPE LARGER THAN 24 IN. AND 6 IN. FOR PIPE 24 IN. OR LESS.
3. REPLACED BASE MATERIAL OVER TRENCH SHALL BE TWICE THE THICKNESS OF THE ORIGINAL BASE, BUT NO LESS THAN "T" SCHEDULE.
4. BASE MATERIAL SHALL HAVE A MINIMUM LBR OF 100. BACKFILL MATERIAL SHALL HAVE A MINIMUM LBR OF 40.
5. ASPHALT CONCRETE PAVEMENT JOINTS SHALL BE MECHANICALLY SAWED.
6. COMPACTION PERCENTAGE SHOWN REFER TO AASHTO T-180, UNLESS NOTED.
7. PERMIT REQUIRED FROM ENGINEERING TO CUT PAVEMENT.
8. IF TRENCH IS FILLED TEMPORARILY, IT SHALL BE COVERED WITH A 2" ASPHALTIC CONCRETE PATCH UNTIL REPLACED WITH A PERMANENT PATCH.
9. REMOVED UNSUITABLE SIZED STONES FOUND IN TRENCH TO A DEPTH OF AT LEAST SIX INCHES BELOW THE BOTTOM OF PIPE.
10. MECHANICAL COMPACTION IS NOT ALLOWED BELOW THIS LEVEL.

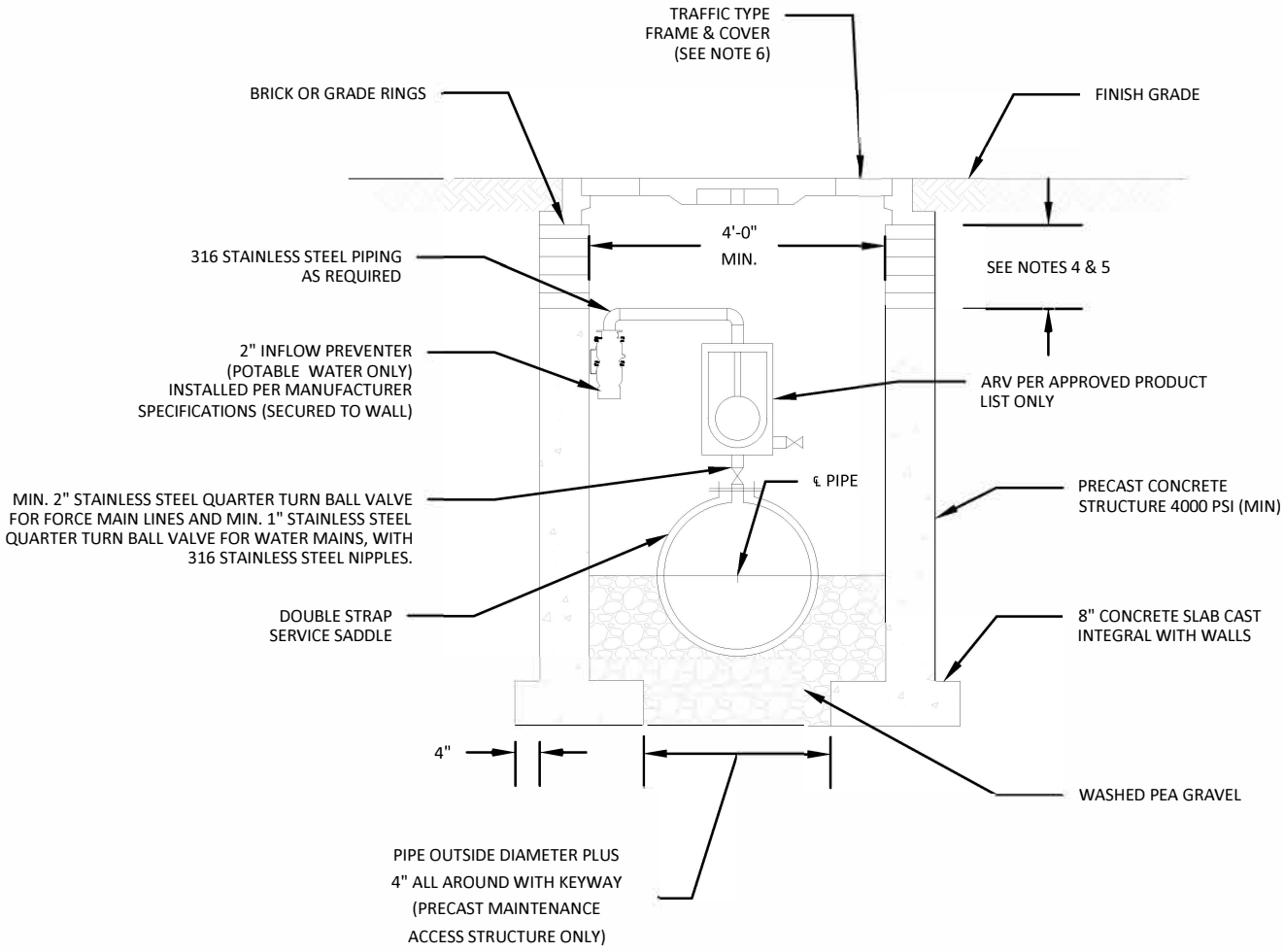
DATE: 08/24	DRAWN: KHA		
CITY OF MARGATE, FLORIDA DEPARTMENT OF ENVIRONMENTAL AND ENGINEERING SERVICES	**TRENCH DETAIL (PAVED AREAS)**	**G-12**	



NOTES:

1. WHERE SOIL CONDITIONS CAN NOT BE MAINTAINED AS SHOWN ABOVE, PROVIDE APPROVED METHOD OF CONSTRUCTION.
2. SHEETING WILL BE REQUIRED AS DETERMINED IN THE FIELD.
3. COMPACTION PERCENTAGES SHOWN REFER TO AASHTO T-180.
4. MECHANICAL COMPACTION NOT ALLOWED BELOW THIS LEVEL.
5. REMOVE UNSUITABLY SIZED STONES FOUND IN TRENCH TO A DEPTH OF AT LEAST SIX INCHES BELOW THE BOTTOM OF PIPE.

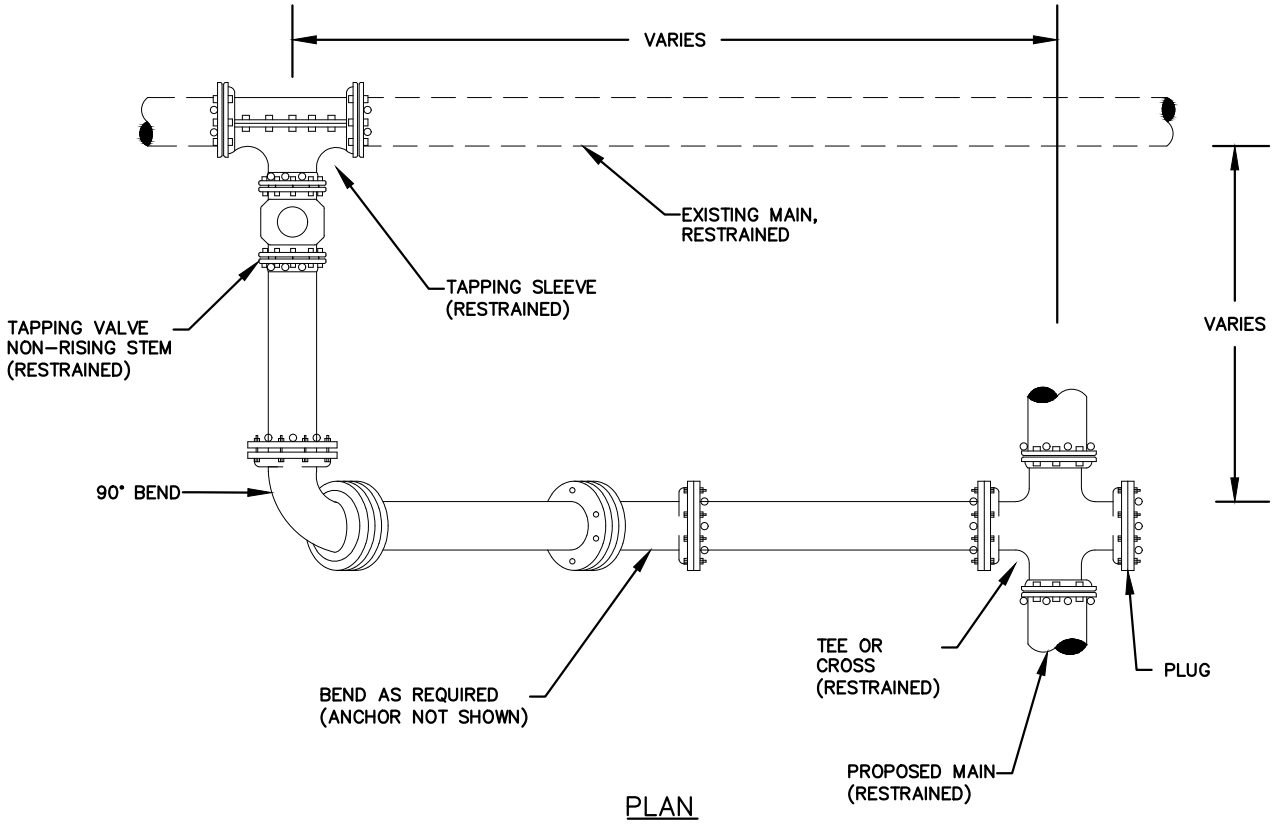
DATE: 08/24	DRAWN: KHA		
CITY OF MARGATE, FLORIDA DEPARTMENT OF ENVIRONMENTAL AND ENGINEERING SERVICES		**TRENCH DETAIL (UNPAVED AREAS)**	**G-13**



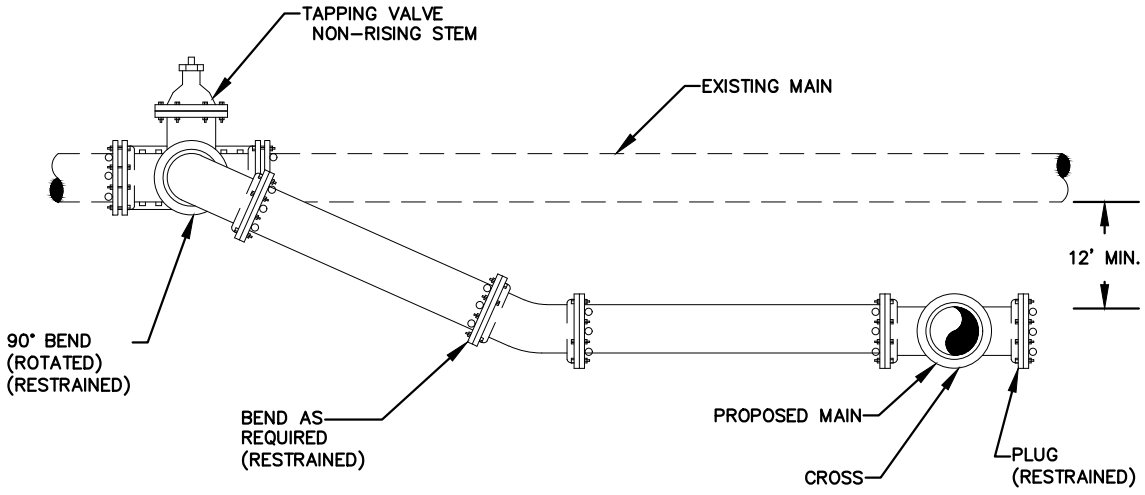
NOTES:

1. LIFT HOLES ARE TO BE SEALED WITH MORTAR INSIDE AND OUTSIDE AFTER INSTALLATION.
2. MAINTENANCE ACCESS STRUCTURE WALLS TO BE COATED INSIDE AND OUTSIDE WITH 16 MIL. THICKNESS COAL TAR EPOXY.
3. ALL OPENINGS SHALL BE SEALED WITH A WATERPROOF, EXPANDING GROUT. ACTUAL LOCATION AND MAINTENANCE ACCESS STRUCTURE FRAME ELEVATION SHALL BE DETERMINED BY ENGINEER BASED ON AS-BUILT SURVEY DATA.
4. THE CHIMNEY AREA SHALL BE MINIMUM OF 4" AND A MAXIMUM OF 12" IN HEIGHT. A MINIMUM OF 3 COURSES OF BRICK SHALL BE INSTALLED.
5. GRADE RINGS ARE AN ACCEPTABLE ALTERNATIVE TO BRICK. A MINIMUM OF 3 GRADE RINGS SHALL BE INSTALLED. SET IN TWO STRIPS OF SEALANT/ADHESIVE COMPOUND ON EACH SEALING FACE.
6. SET MAINTENANCE ACCESS STRUCTURE FRAME ON A BED OF PORTLAND CEMENT AND SILICA SAND. BRING MORTAR UP OVER FRAME.

DATE: 07/25	DRAWN: KHA		
CITY OF MARGATE, FLORIDA DEPARTMENT OF ENVIRONMENTAL AND ENGINEERING SERVICES		**AIR RELEASE VALVE WITH MAINTENANCE ACCESS STRUCTUTRE**	**G-14**



PLAN

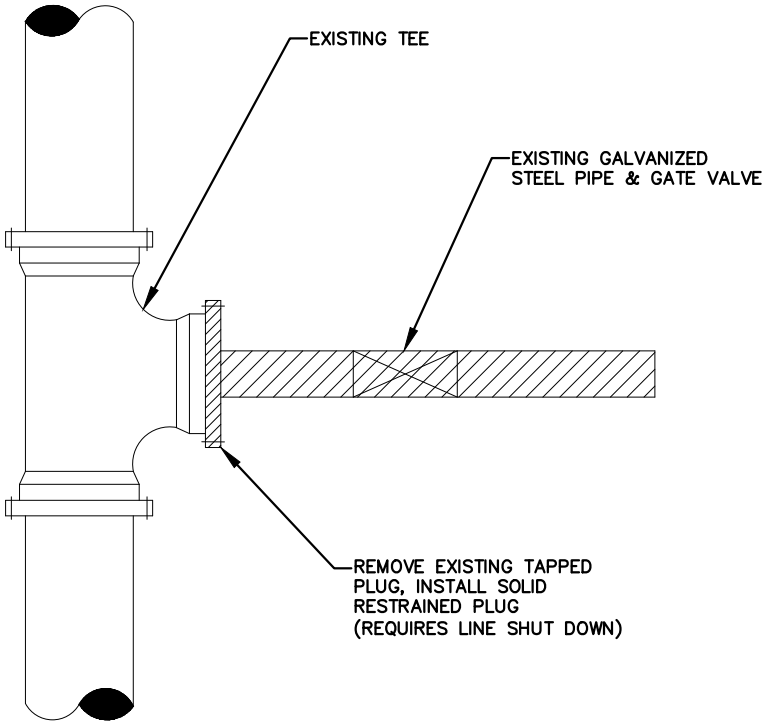


SECTION

NOTES:

1. ALL JOINTS TO BE RESTRAINED BY APPROVED METHODS.
2. IF CONNECTION IS PRIOR TO FDEP CLEARANCE THEN A SECOND VALVE WITH VENT IS REQUIRED.
3. ALTERNATE OPTIONS MAY BE USED AS NECESSARY.

DATE: 08/24	DRAWN: KHA		
CITY OF MARGATE, FLORIDA DEPARTMENT OF ENVIRONMENTAL AND ENGINEERING SERVICES	**TYPICAL CONNECTION TO EXISTING MAIN**	**G-15**	



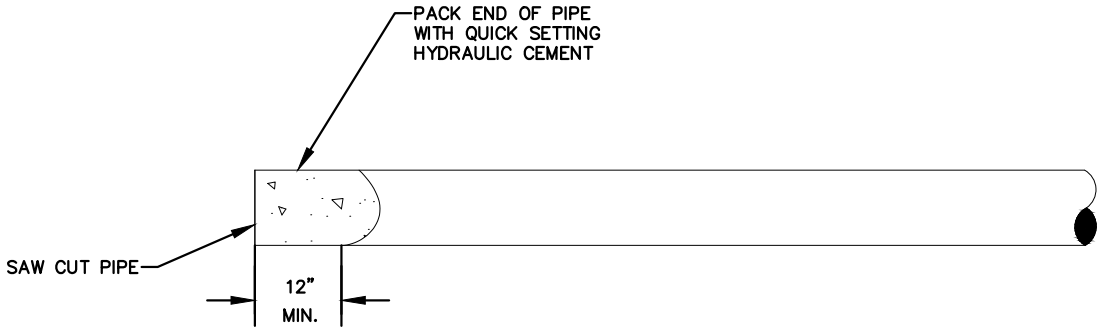
LIVE LINE SEALING
2" AND 3" GALVANIZED STEEL PIPE

DATE: 08/24 | DRAWN: KHA

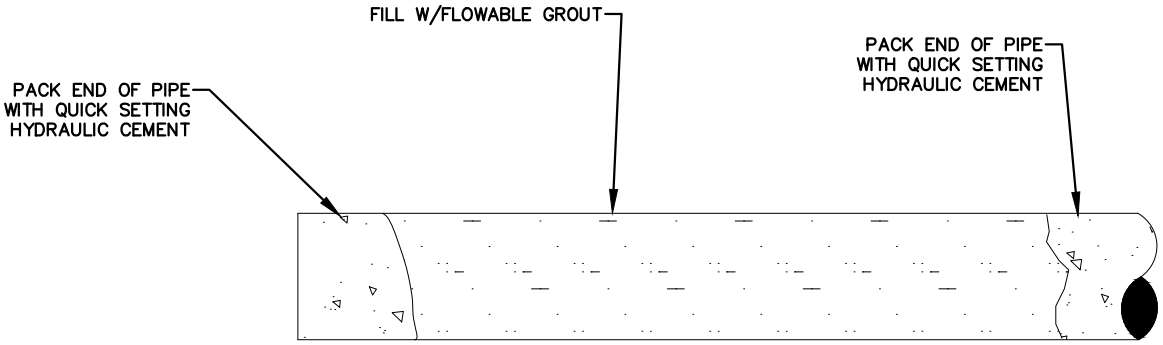
CITY OF MARGATE, FLORIDA
DEPARTMENT OF ENVIRONMENTAL
AND ENGINEERING SERVICES

PIPE TO BE ABANDONED (LIVE LINE LESS THAN 4" DIAMETER)

G-16



2" AND 3" PIPE

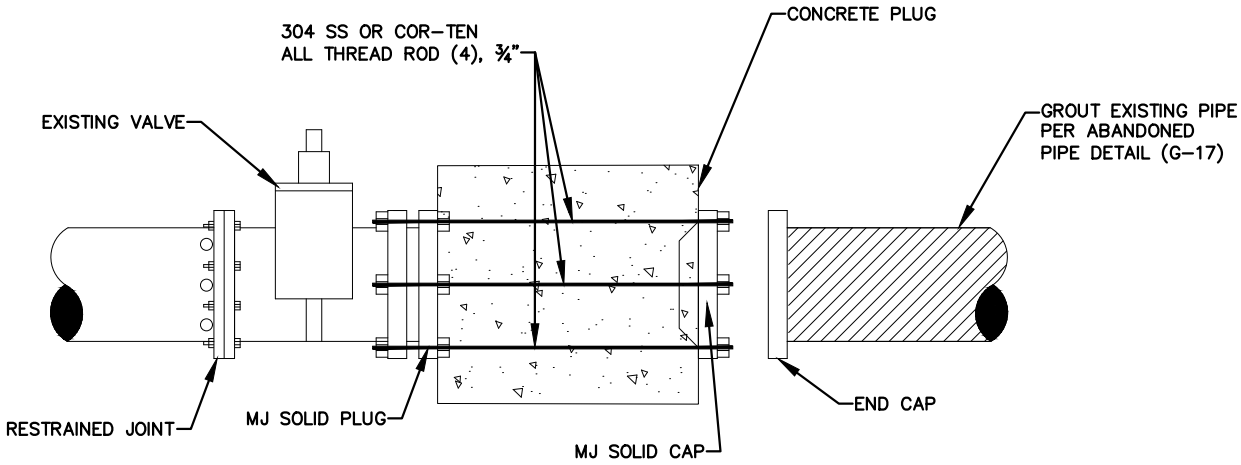


4" AND LARGER PIPE

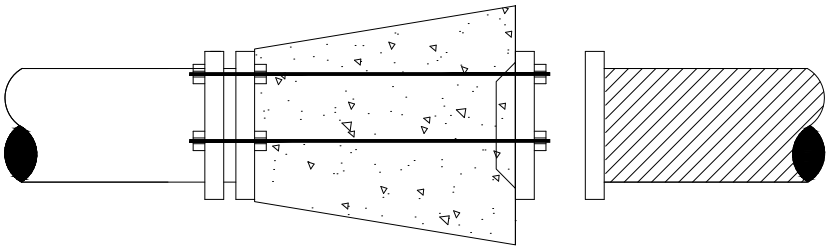
NOTES:

1. GROUT IN PLACE WITH QUICK SETTING HYDRAULIC CEMENT.
2. PUMP FLOWABLE GROUT FROM ONE END, OR INTERMEDIATE POINTS ALONG THE PIPELINE, UNTIL PIPE IS FILLED AS WITNESSED BY THE DISCHARGE.
3. 600 FEET MAX LENGTH FOR EACH ABANDONMENT.

DATE: 08/24	DRAWN: KHA		
CITY OF MARGATE, FLORIDA DEPARTMENT OF ENVIRONMENTAL AND ENGINEERING SERVICES		**PIPE TO BE ABANDONED**	G-17



PROFILE



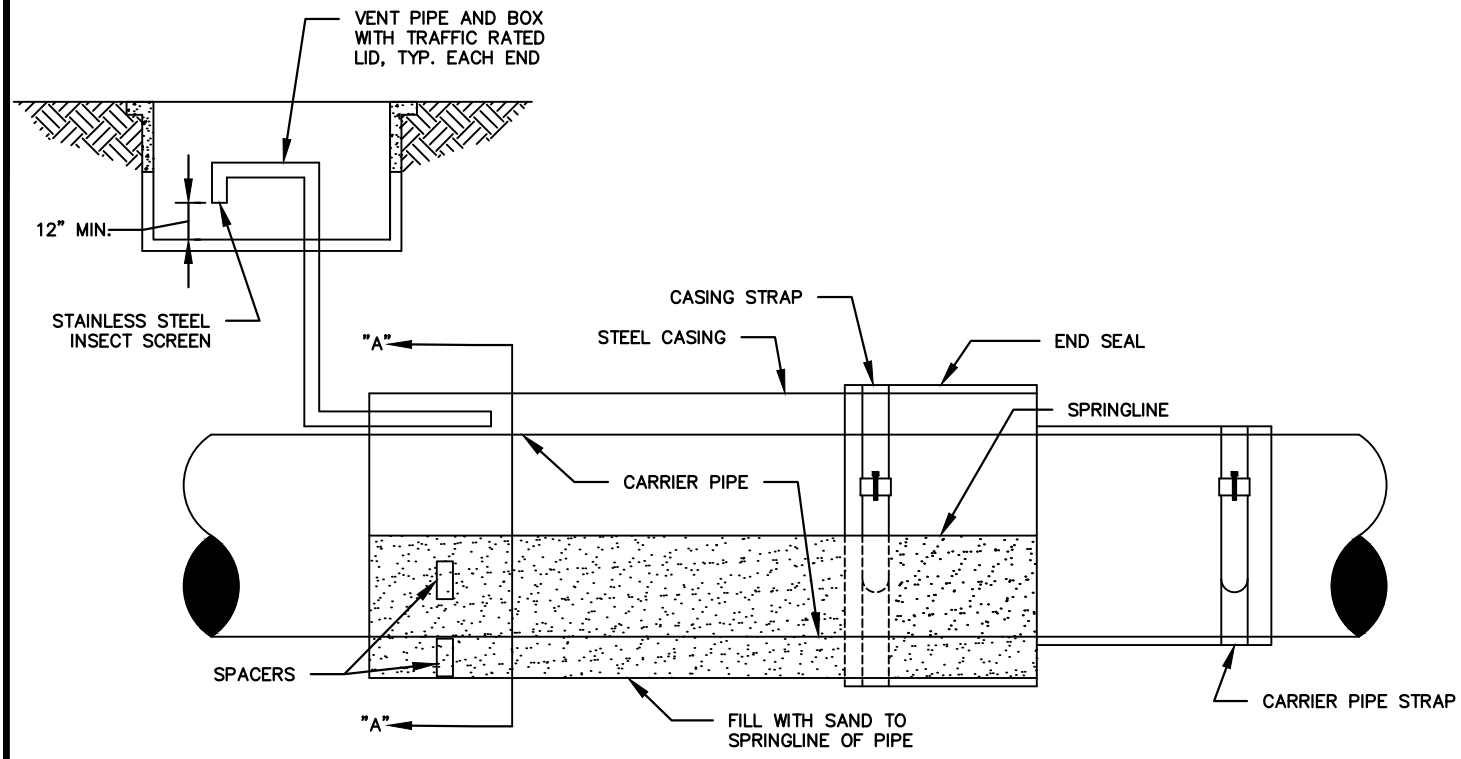
PLAN

AT EXISTING VALVE OR FITTING

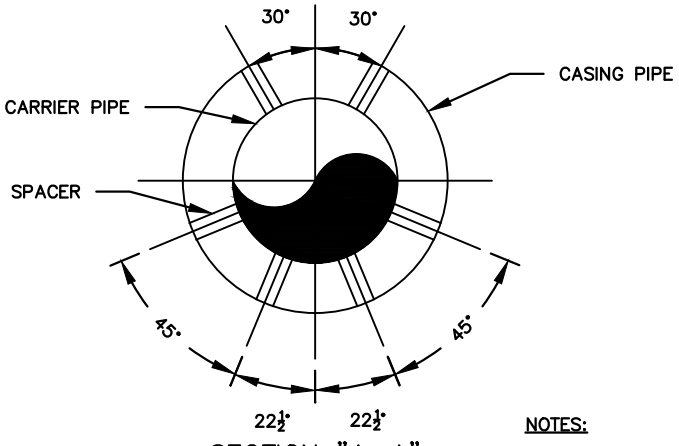
SEQUENCE OF CONSTRUCTION:

1. RESTRAIN VALVE OR FITTING. CONTRACTOR TO PROVIDE TEMPORARY RESTRAINT AS REQUIRED. (REQUIRES LINE SHUT DOWN)
2. REMOVE EXISTING PIPE FOR NEW CONCRETE PLUG.
3. INSTALL PLUG INTO BELL OF VALVE OR FITTING AND CAP ON END OF EXISTING PIPE TO BE ABANDONED.
4. INSTALL ALL THREAD RODS (3/4" DIA., MIN) AND POUR CONCRETE PLUG.

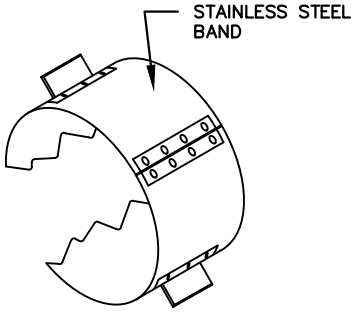
DATE: 08/24	DRAWN: KHA		
CITY OF MARGATE, FLORIDA DEPARTMENT OF ENVIRONMENTAL AND ENGINEERING SERVICES		**PIPE TO BE ABANDONED (LIVE LINE 4" AND LARGER)**	**G-18**



CASING SEAL



SECTION "A–A"



CASING SPACERS

NOTES:

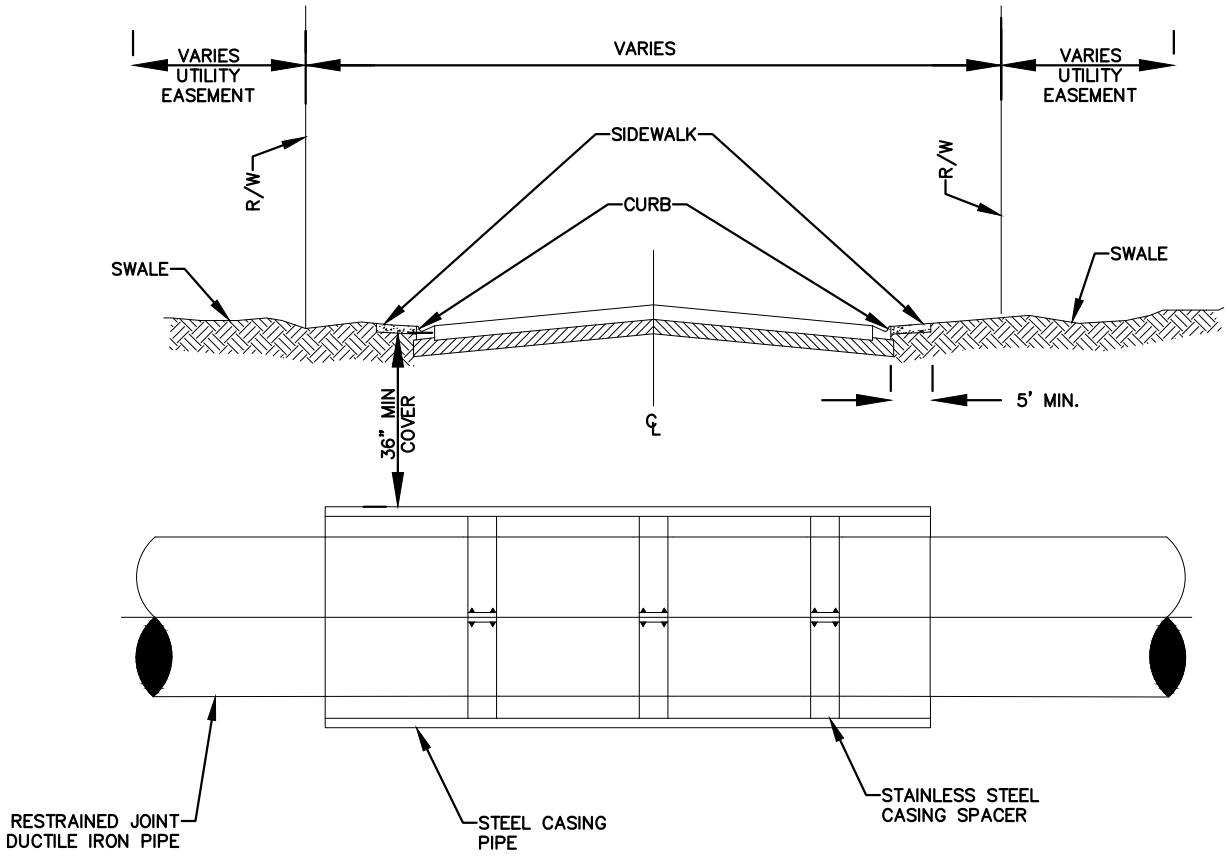
1. THE DISTANCE BETWEEN SPACERS AND THEIR POSITION ON THE CARRIER PIPE IS TO BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
2. THE CARRIER PIPE SHALL BE CENTERED IN THE CASING PIPE.
3. THE SKIDS ON THE SPACER SHALL RESTRAIN CARRIER PIPE MOVEMENT.

DATE: 08/24 | DRAWN: KHA

CITY OF MARGATE, FLORIDA
DEPARTMENT OF ENVIRONMENTAL AND ENGINEERING SERVICES

CASING PIPE JACK AND BORE

G-19



NOTES:

1. THE END OF THE CASING PIPE SHALL EXTEND BEYOND THE EDGE OF PAVEMENT A MINIMUM OF 5'.
2. WHEN CONSTRUCTION IS WITHIN FDOT OR RAILROAD JURISDICTION, ADDITIONAL REQUIREMENTS OF THE UTILITY ACCOMMODATION MANUAL SHALL BE MET.

DATE: 08/24	DRAWN: KHA		
CITY OF MARGATE, FLORIDA DEPARTMENT OF ENVIRONMENTAL AND ENGINEERING SERVICES		**JACK AND BORE PROFILE**	**G-20**

SPECIFICATION FOR CARRIER AND CASING PIPES		
	CARRIER PIPE	CASING PIPE
CONTENTS TO BE HANDLED	WATER/WASTEWATER	NONE
OUTSIDE DIAMETER	DETERMINED BY PROJECT	SEE TABLE
PIPE MATERIAL	DUCTILE IRON	STEEL
SPECIFICATION AND GRADE	ANSI/AWWA C151/A21.51	ASTM A139, GRADE "B"
PRESSURE CLASS/WALL THICKNESS	350 FOR ≤ 14" DIAMETER DETERMINED BY PROJECT ENGINEER FOR > 14" DIAMETER	0.500"
ACTUAL WORKING PRESSURE	150 PSI	NONE
TYPE OF JOINT	RESTRAINED	WELDED
COATING	BLACK BITUMINOUS	BLACK BITUMINOUS
METHOD OF INSTALLATION	CASING SPACERS	JACK AND BORE
PROTECTION AT ENDS OF CASING	N/A	CASING END SEAL

1. CASING PIPE TO BE INSTALLED UNDER ROAD BY JACKING AND BORING.
2. ALL WORK DONE WITHIN FDOT, BROWARD COUNTY OR RAILROAD RIGHT OF WAY IS SUBJECT TO INSPECTION AND DIRECTION OF THEIR ENGINEER.
3. ALL WORK SHALL BE DONE IN ACCORDANCE WITH CURRENT AWWA STANDARDS FOR PIPE LINES CONVEYING NONFLAMMABLE SUBSTANCES AND FDOT REQUIREMENTS. AS PER UTILITY ACCOMMODATION GUIDE, LATEST VERSION.
4. FIELD AND SHOP WELDS OF THE CASING PIPES SHALL CONFORM WITH AWS STANDARD SPECIFICATIONS. FIELD WELDS SHALL BE COMPLETE PENETRATIONS, SINGLE–BEVEL GROOVE TYPE JOINTS.
5. STEEL CASING SHALL CONFORM TO THE REQUIREMENTS OF ASTM DESIGNATION A139. THE CASING PIPES SHALL HAVE THE MINIMUM NOMINAL DIAMETER AND MINIMUM WALL THICKNESS AS SHOWN.
6. CONTRACTOR SHALL VERIFY LOCATION AND DEPTH OF ALL EXISTING UTILITIES PRIOR TO STARTING JACKING AND BORING.
7. MINIMUM VERTICAL CLEARANCE BETWEEN PROPOSED CASING PIPE AND OTHER EXISTING UTILITIES SHALL BE 12" MINIMUM.
8. STAINLESS STEEL CASING SPACERS WITH POLYMER RUNNERS SUBJECT TO APPROVAL OF CITY.

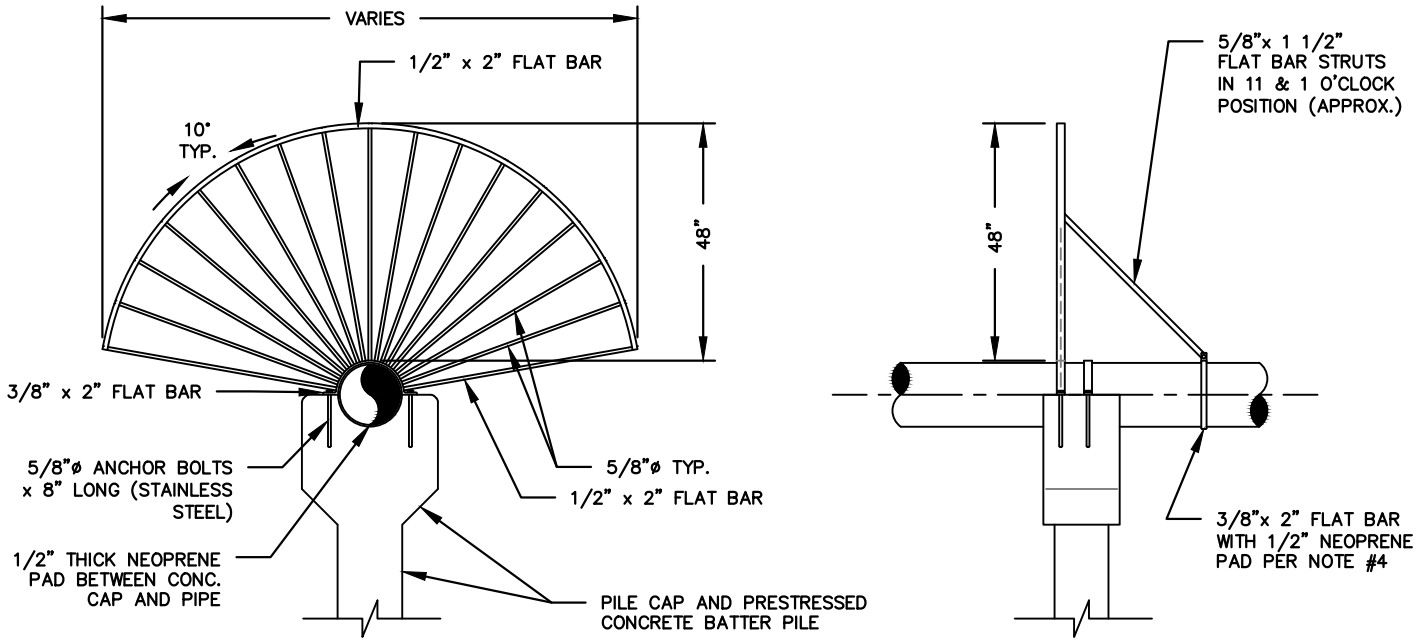
CARRIER PIPE SIZE	NOMINAL DIAMETER OF STEEL CASING PIPE
6"	14"
8"	16"
10"	20"
12"	24"
14"	24"
16"	30"
18"	34"
20"	36"
24"	42"
30"	42"
36"	48"
42"	54"
48"	72"

DATE: 08/24 | DRAWN: KHA

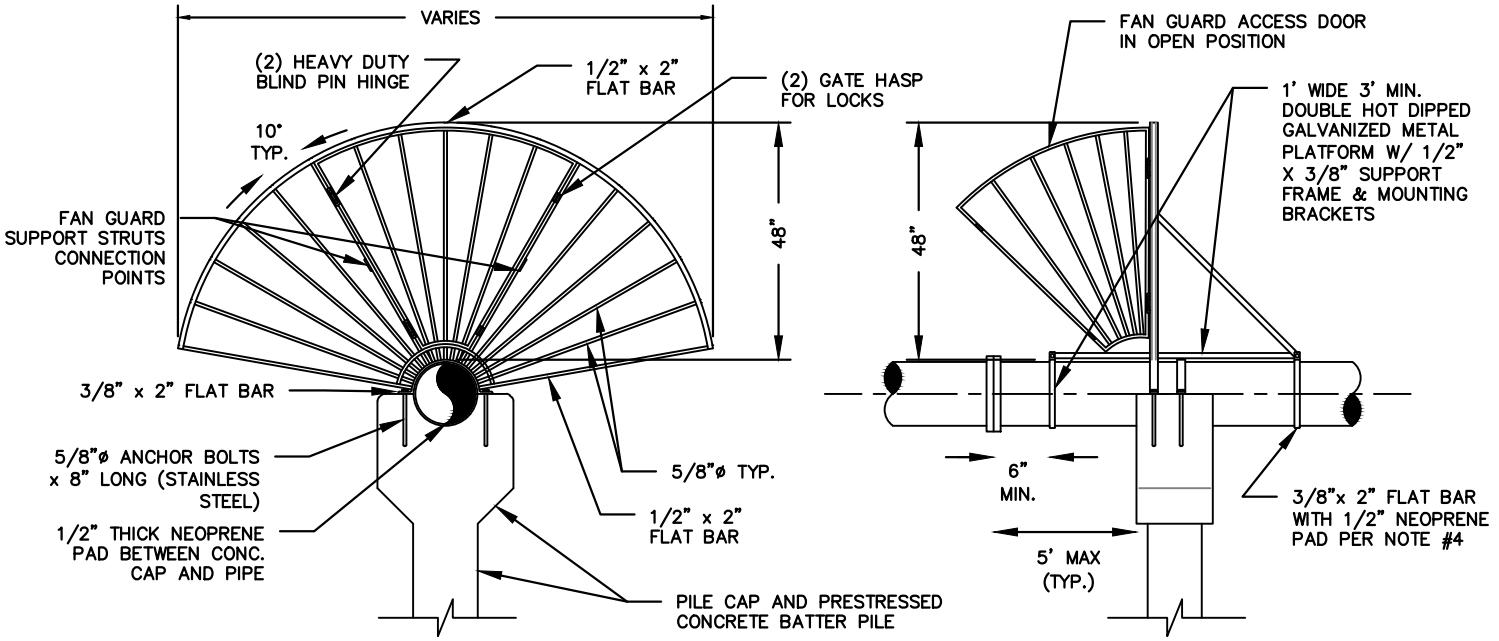
CITY OF MARGATE, FLORIDA
DEPARTMENT OF ENVIRONMENTAL AND ENGINEERING SERVICES

JACK AND BORE GENERAL SPECIFICATIONS

G-21



TYPICAL FAN GUARD

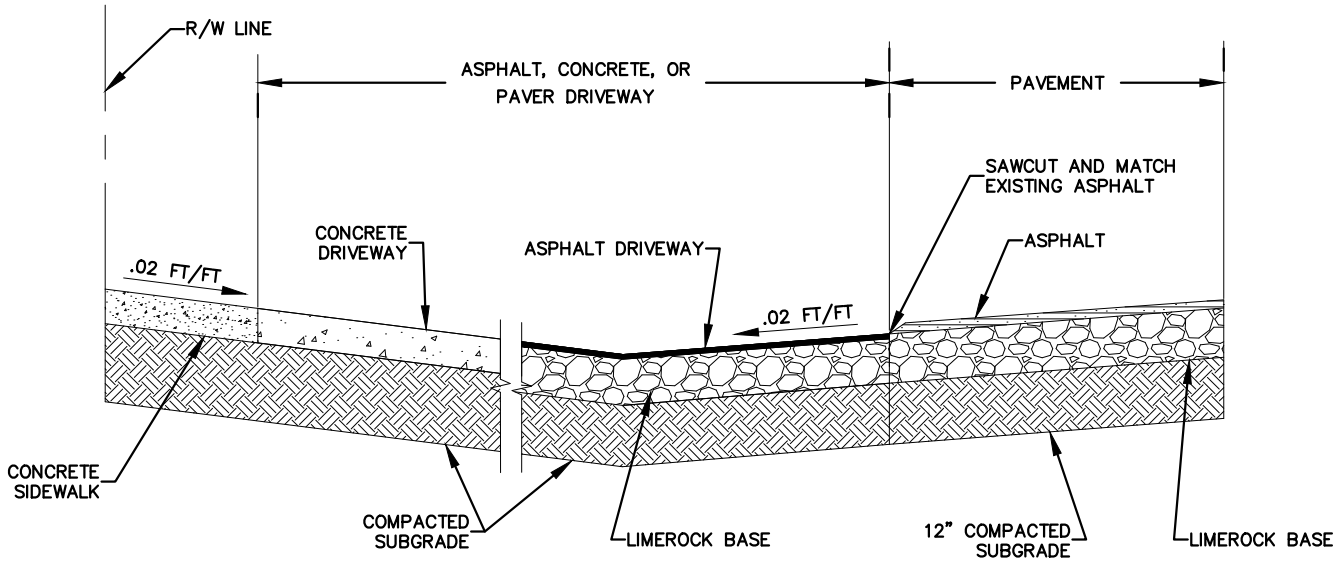


FAN GUARD WITH ARV ACCESS (SWINGS OUTWARD)

NOTES:

1. FAN GUARD SHALL BE PLACED AT EACH END OF CANAL CROSSING.
2. ANCHOR BOLTS AND MISCELLANEOUS HARDWARE, NUTS, BOLTS, SHALL BE STAINLESS STEEL.
3. FAN GUARD AND ALL MOUNTING BRACKETS TO BE HOT DIP GALVANIZED AND MOUNTING HARDWARE TO BE STAINLESS STEEL.
4. 1/2" THICK NEOPRENE PAD TO INSULATE PIPE FROM CONTACT WITH ALL MOUNTING HARDWARE, FAN GUARD HARDWARE, AND CONCRETE SURFACES.

DATE: 08/24	DRAWN: KHA		
CITY OF MARGATE, FLORIDA DEPARTMENT OF ENVIRONMENTAL AND ENGINEERING SERVICES		**TYPICAL FAN GUARD**	**G-22**



RESTORATION SPECIFICATION SUMMARY TABLE

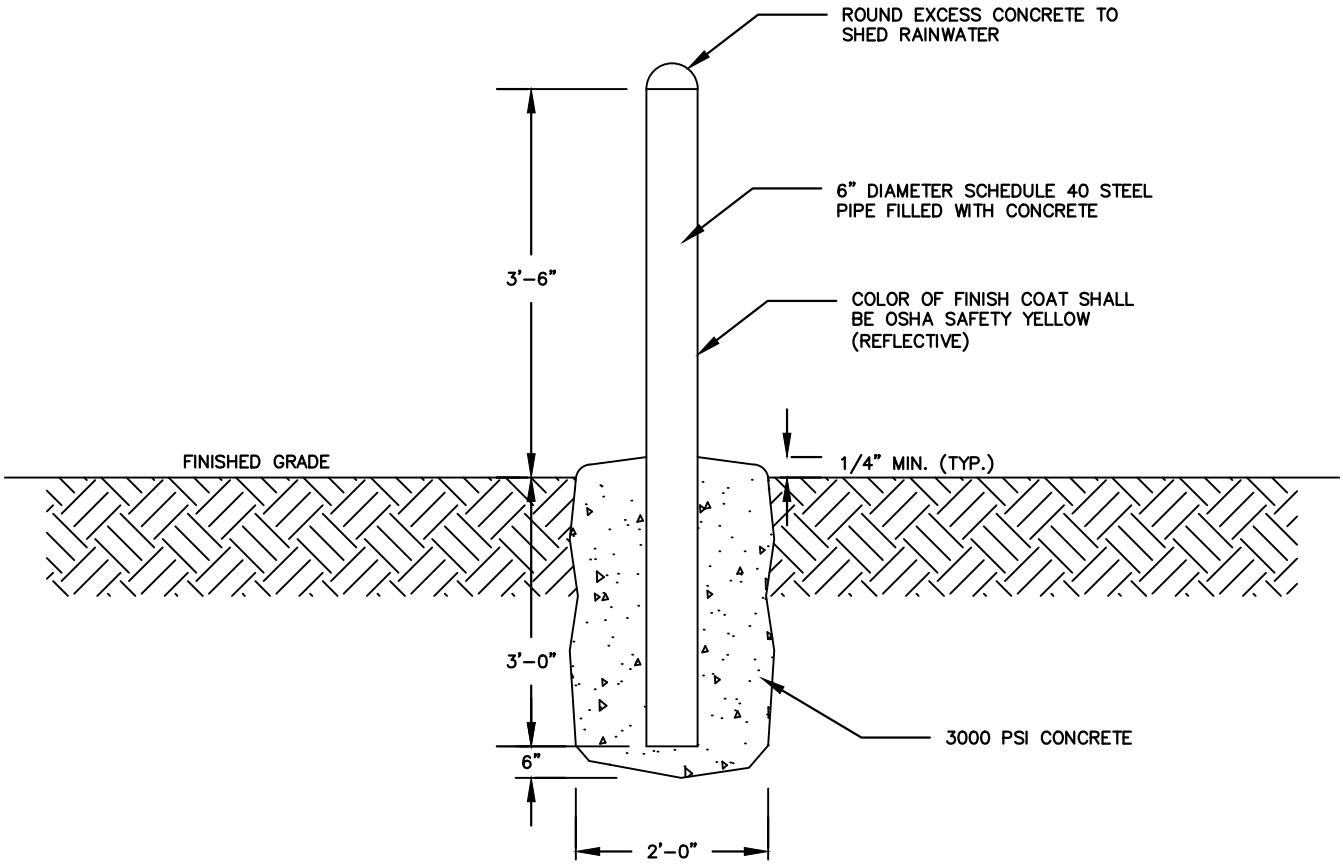
TYPE	MATERIAL	SPECIFICATION
TYPE I	SOD OR SEED	COMPACTED SUBGRADE (100% PER AASHTO T-99C) BAHIA OR ST. AUGUSTINE SOD TO MATCH EXISTING
TYPE II-A	ASPHALT DRIVEWAY	1-1/2" ASPHALT, 6" LIMEROCK (98% PER AASHTO T-180), COMPACTED SUBGRADE (100% PER AASHTO T-99C)
TYPE III	CONCRETE DRIVEWAY	6" CONCRETE (NO WIRE MESH) COMPACTED SUBGRADE (100% PER AASHTO T-99C)
TYPE IV	PAVERS	PROVIDE CONCRETE RESTRAIN AROUND PAVERS TO HOLD THEM IN PLACE. TO BE INSTALLED 1.5" BELOW THE PAVER BRICK INSTALLATION TO ALLOW SOD ABUTTING TO THE NEW DRIVEWAY. ENSURE SAND IS SWEPT IN BETWEEN PAVERS TO LOCK IN PLACE. PROVIDE MINIMUM OF 1" OF BEDDING SAND FOR PAVER BRICKS. 6" LIMEROCK COMPACTED (98% PER AASHTO T-180; MIN. LBR=100) COMPACTED SUBGRADE (100% PER AASHTO T99C; MIN. LBR=40)

DATE: 08/24 | DRAWN: KHA

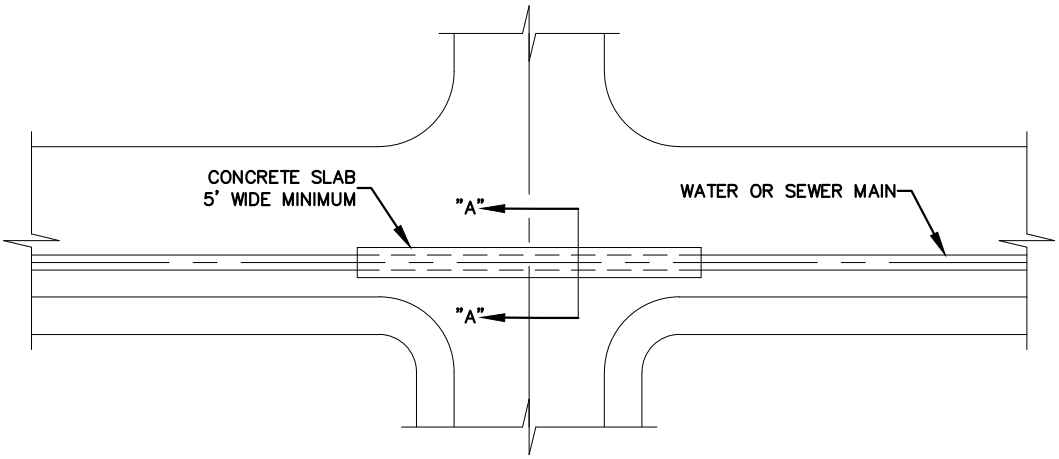
CITY OF MARGATE, FLORIDA
DEPARTMENT OF ENVIRONMENTAL
AND ENGINEERING SERVICES

TYPICAL SECTION THROUGH SWALE

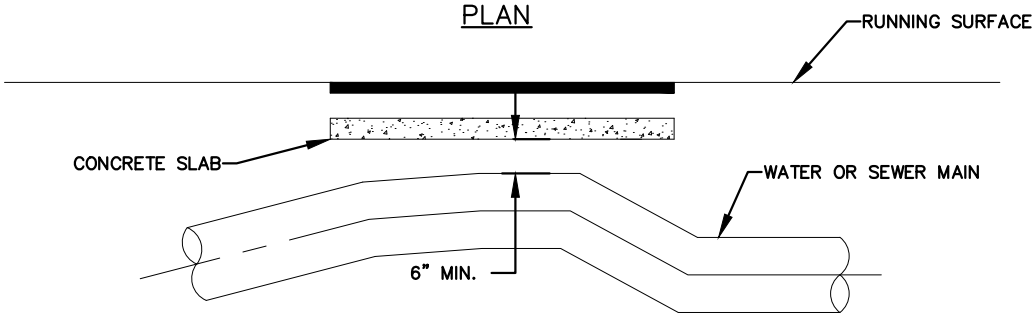
G-23



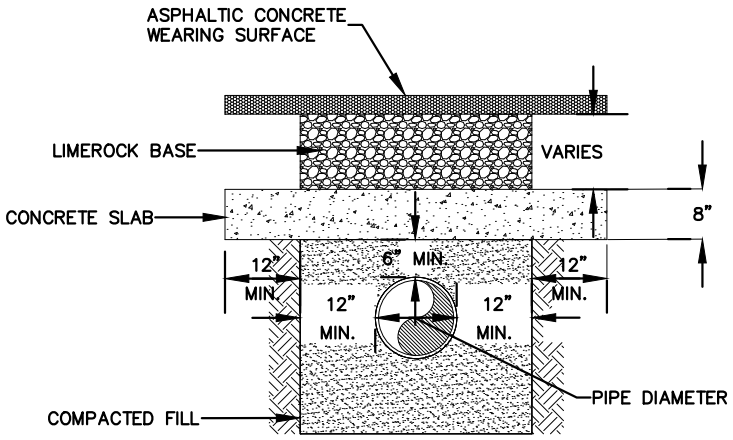
DATE: 08/24	DRAWN: KHA		
CITY OF MARGATE, FLORIDA DEPARTMENT OF ENVIRONMENTAL AND ENGINEERING SERVICES		**BOLLARD**	**G-24**



PLAN



PROFILE

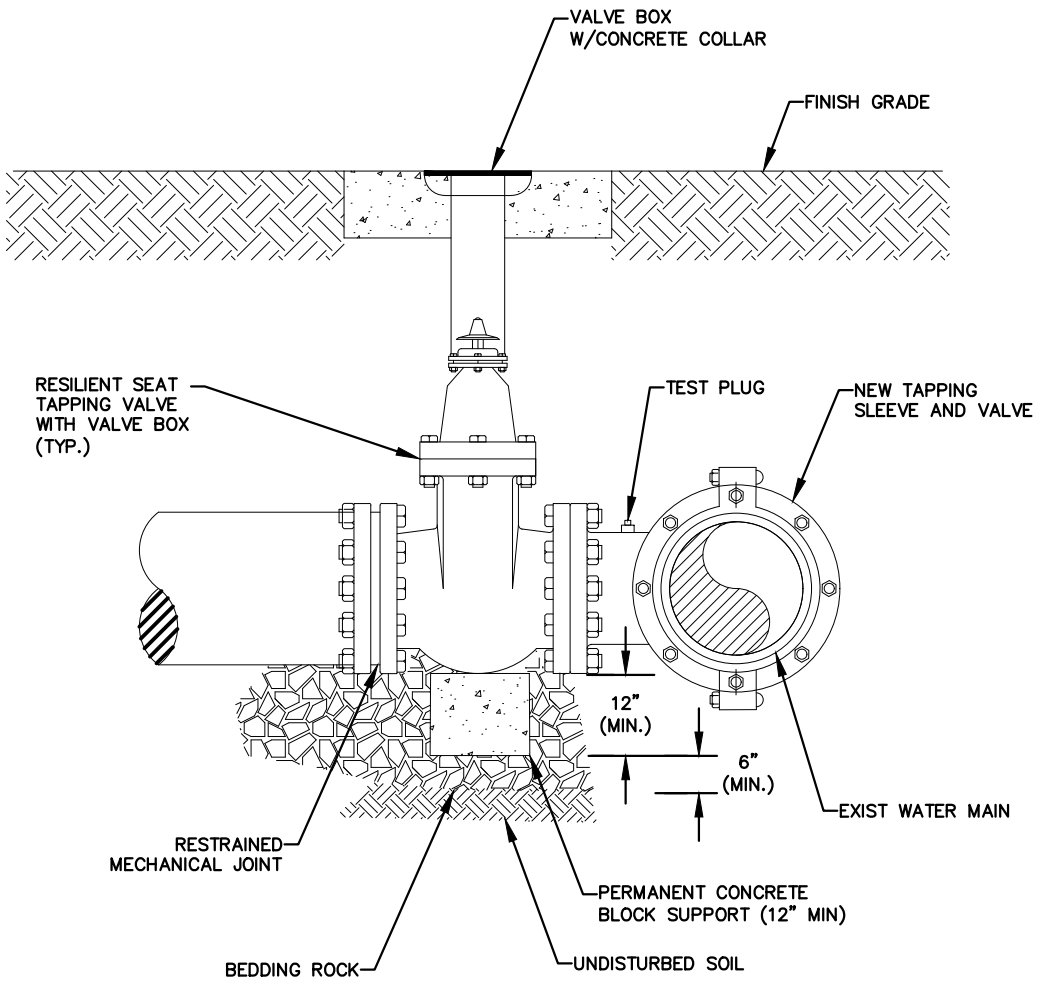


SECTION A–A

NOTES:

1. CONCRETE SLAB TO BE DESIGNED BY ENGINEER OF RECORD.
2. EXTEND CONCRETE SLAB UNTIL COVER EXCEEDS 30 INCHES FOR DIP OR 36 INCHES FOR PVC.
3. CONCRETE TO BE 3,000 PSI MINIMUM.
4. THIS DETAIL TO BE USED ONLY UPON WRITTEN APPROVAL FROM THE CITY.

DATE: 08/24	DRAWN: KHA		
CITY OF MARGATE, FLORIDA DEPARTMENT OF ENVIRONMENTAL AND ENGINEERING SERVICES		**CONCRETE SLAB OVER SHALLOW PIPELINES**	**G-25**



NOTES:

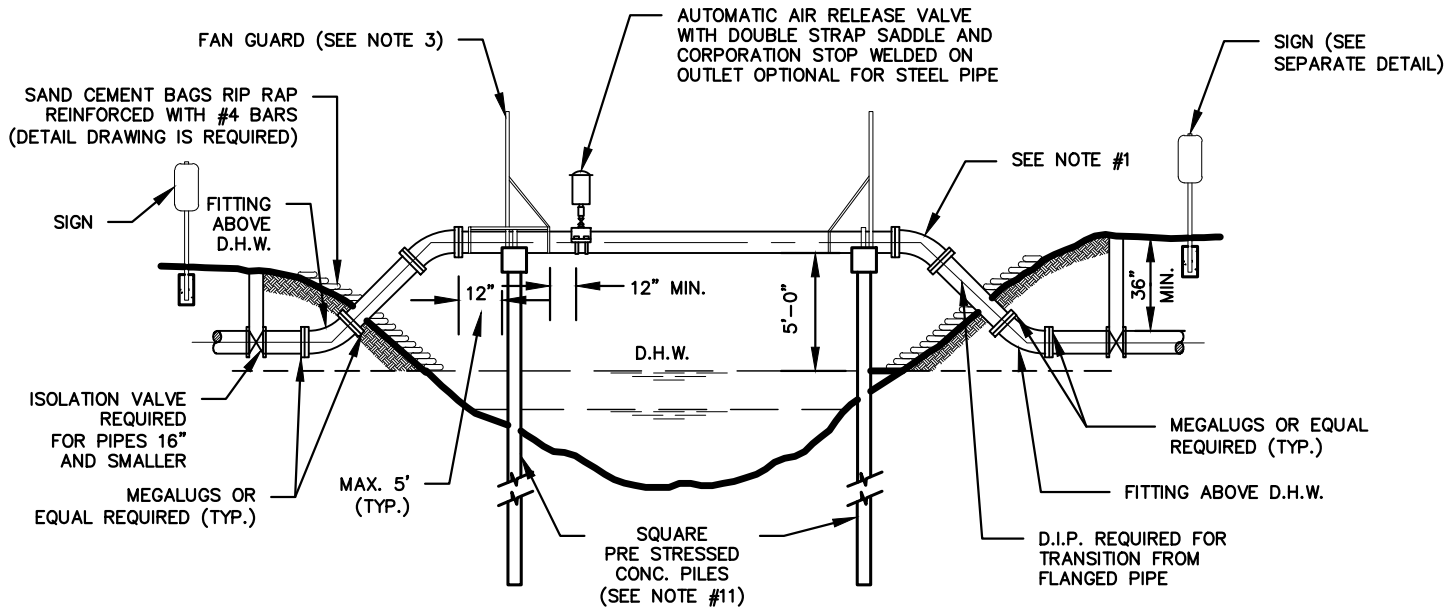
1. REFER TO THE CITY MINIMUM DESIGN AND CONSTRUCTION STANDARDS FOR MINIMUM REQUIREMENTS AND PRE-APPROVED MANUFACTURERS.
2. MAIN SHALL BE CLEANED BEFORE ATTACHING SLEEVE
3. SLEEVE AND VALVE SHALL BE PRESSURE TESTED BEFORE MAKING TAP. PRESSURE TEST AND TAP SHALL BE MADE IN PRESENCE OF AN AUTHORIZED CITY REPRESENTATIVE.
4. TAP SHALL BE MADE NO CLOSER THAN 18" FROM THE NEAREST JOINT.
5. CONCRETE BLOCK SHALL COMPLETELY SUPPORT TAPPING VALVE.
6. RESTRAINT JOINT REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE CITY MINIMUM DESIGN AND CONSTRUCTION STANDARDS.

DATE: 08/24 | DRAWN: KHA

CITY OF MARGATE, FLORIDA
DEPARTMENT OF ENVIRONMENTAL
AND ENGINEERING SERVICES

TAPPING SLEEVE AND VALVE INSTALLATION

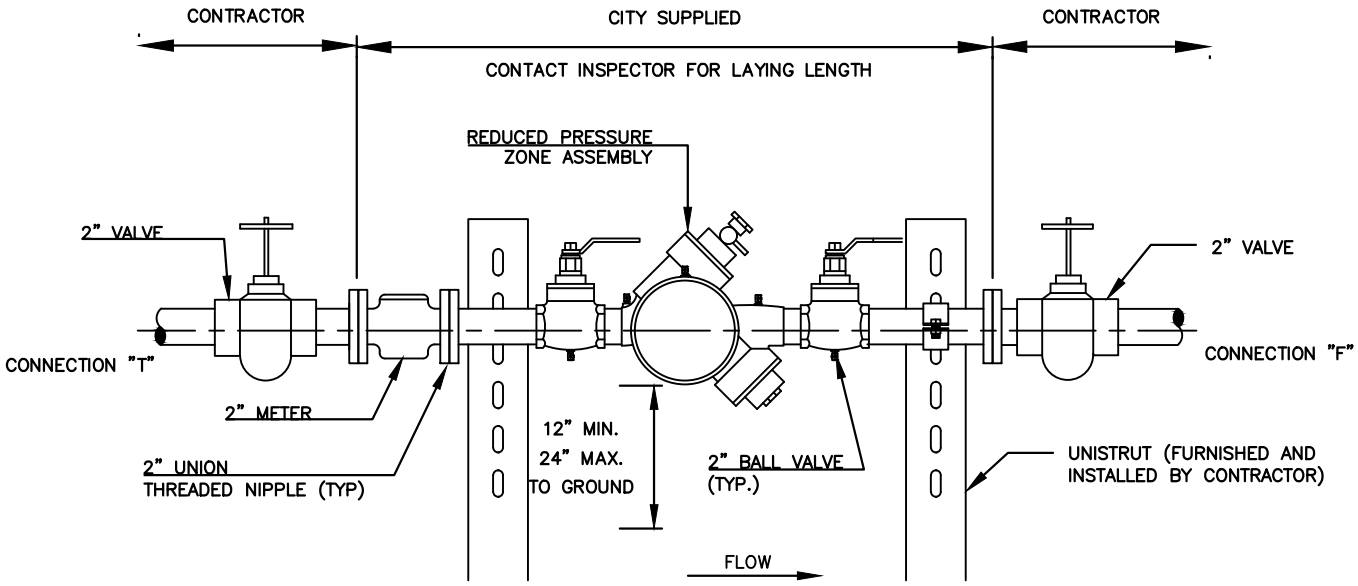
G-26



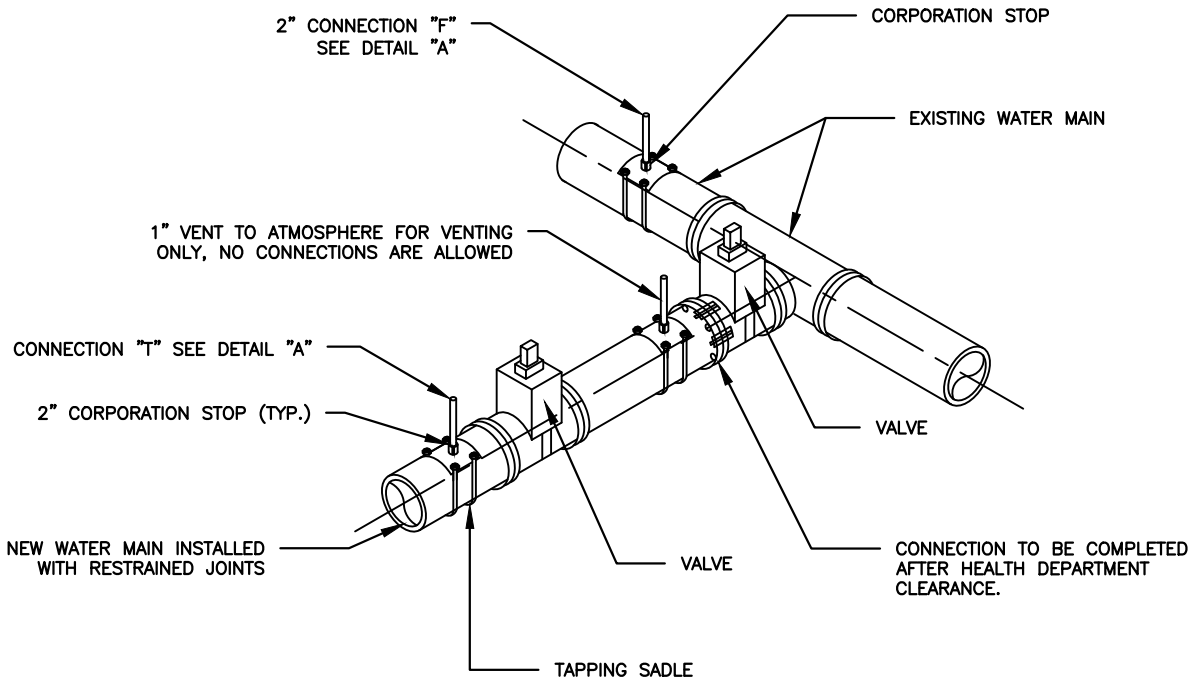
NOTES:

1. ALL EXPOSED PIPE SHALL BE DUCTILE IRON OR PREFABRICATED STEEL WITH FLANGED FITTINGS AND PROFILE GASKETS. RETAINER GLANDS AND UNIFLANGE TYPE FITTINGS. PREFABRICATED STEEL PIPE MAY INCORPORATE WELDED ON LONG RADIUS UPPER BENDS. PREFABRICATED FLANGED PIPE SHALL BE FACTORY TESTED.
2. SPAN LENGTHS AS REQUIRED BY PERMITTING AGENCY.
3. FAN GUARDS ARE REQUIRED, SEE FAN GUARD/PILE CAP DESIGN DETAILS, FOR ADDITIONAL REQUIREMENTS. ACCESS PLATFORM AND GATE REQUIRED ON ARV SIDE ONLY.
4. a. ALL EXPOSED PIPING SHALL BE PAINTED AS SPECIFIED IN THE APPROVED MATERIAL LIST.
   b. ALL HARDWARE SHALL BE PAINTED WITH COAL–TAR EPOXY.
5. PIPE SHALL BE CRADLED ON 1/2" THICK NEOPRENE (DUROMETER GRADE 50) CURRENT FDOT STANDARDS APPLY. NEOPRENE IS REQUIRED AT ALL STRAPS INSTALLED OVER STEEL PIPE. NEOPRENE SHALL EXTEND 1" BEYOND THE EDGES OF CRADLE AND STRAPS.
6. TIE–DOWN STRAPS MUST PROPERLY FIT AND SECURE PIPE IN CRADLE.
7. PIPE CRADLE IN CAP SHALL CONTACT 1/3 CIRCUMFERENCE OF PIPE. (SEE FAN GUARD DETAIL)
8. SHOW EXISTING CANAL CROSS SECTION, ULTIMATE CANAL SECTION, AND RELEVANT ELEVATIONS AND DISTANCES ON A TO–SCALE DETAIL DRAWING.
9. PILE LIFT CABLE SHALL BE REMOVED BELOW SURFACE; HOLE SHALL BE FILLED WITH EPOXY CEMENT.
10. THREADED AREAS OF BRASS FITTINGS SHALL BE SPIRAL WRAPPED WITH TWO WRAPS OF TEFLON TAPE.
11. THE PILES AND CAP DESIGN SHALL BE SHOWN ON TO–SCALE SIGNED AND SEALED DRAWINGS. MIN. 12"X12" TYPE 1A FLORIDA DOT INDEX PILES ARE REQUIRED (FDOT STANDARDS APPLY). SIGNED AND SEALED SHOP DRAWINGS ARE REQUIRED.
12. PREFABRICATED STEEL PIPE SHALL HAVE WELDED ON BEARING PADS EXTENDING MIN. 1" BEYOND PIPE CRADLE. THE PADS SHALL BE INSTALLED BY STEEL PIPE MANUFACTURER PRIOR TO PAINTING.
13. FORCE MAIN CROSSING OVER BODIES OF WATER MAY BE SUBJECT TO A D.E.P. "NOTICED GENERAL ENVIRONMENTAL RESOURCE PERMIT" (NGP).

DATE: 08/24	DRAWN: KHA		
CITY OF MARGATE, FLORIDA DEPARTMENT OF ENVIRONMENTAL AND ENGINEERING SERVICES	**TYPICAL AERIAL CANAL CROSSING SINGLE PIPE (SINGLE PILES)**	**G-27**	



JUMPER ASSEMBLY
DETAIL "A"



NOTES:

1. A CITY SUPPLIED FIRE HYDRANT BACKFLOW METER WITH RPZ MAY BE USED IN LIEU OF THE JUMPER ASSEMBLY.
2. SEE DETAIL W-2 FOR ADDITIONAL REQUIREMENTS.

DATE: 08/24	DRAWN: KHA		
CITY OF MARGATE, FLORIDA DEPARTMENT OF ENVIRONMENTAL AND ENGINEERING SERVICES		**FILLING AND FLUSHING**	**W-1**

NOTES:

1. A FILLING AND FLUSHING JUMPER ASSEMBLY CONNECTION IS REQUIRED AT ALL CONNECTIONS BETWEEN EXISTING ACTIVE CITY WATER MAINS AND NEW WATER MAINS. THE PROCEDURES ARE APPLICABLE WHEN CONNECTING TO AN EXISTING CITY WATER MAIN, WHETHER BY TAPPING TEE AND VALVE OR BY CONTINUATION OF A PLUGGED STUB OUT WITH AN EXISTING GATE VALVE.

2. THE CONTRACTOR SHALL CONTACT CITY REGARDING SCHEDULING OF REQUIRED INSPECTIONS RELATING TO THE CONNECTION. CITY INSPECTIONS ARE SPECIFICALLY REQUIRED FOR TIE–INS OR WET TAPS TO EXISTING WATER MAINS, JUMPER ASSEMBLY CONNECTION INSTALLATION, FLUSHING, PRESSURE TESTING, DISINFECTION, SAMPLING, PLUGGING OF SAMPLING POINTS AND PERMANENT CONNECTION OF THE NEW WATER MAIN. THE CONTRACTOR SHALL FOLLOW ALL PROCEDURES STRICTLY IN ACCORDANCE WITH CITY STANDARDS.

3. THE JUMPER ASSEMBLY (2" DIAMETER FLANGE TO FLANGE) WILL BE SUPPLIED BY CITY AND INSTALLED AND TESTED BY THE CONTRACTOR, IN COORDINATION WITH THE ENGINEER OF RECORD (EOR) AND CITY. OTHER MATERIALS AND INSTALLATION REQUIRED FOR THE CONNECTION ARE THE RESPONSIBILITY OF THE CONTRACTOR. THE UNDERGROUND FITTINGS SHALL BE RESTRAINED MECHANICAL JOINT TYPE. ALL MATERIALS SHALL BE PER THE CITY APPROVED PRODUCT SPECIFICATION SHEETS. THE JUMPER SHALL BE MAINTAINED BY THE CONTRACTOR UNTIL IT IS REMOVED. JUMPER ASSEMBLIES 3" AND LARGER SHALL BE SUPPLIED AND INSTALLED BY THE CONTRACTOR IN COORDINATION WITH CITY.

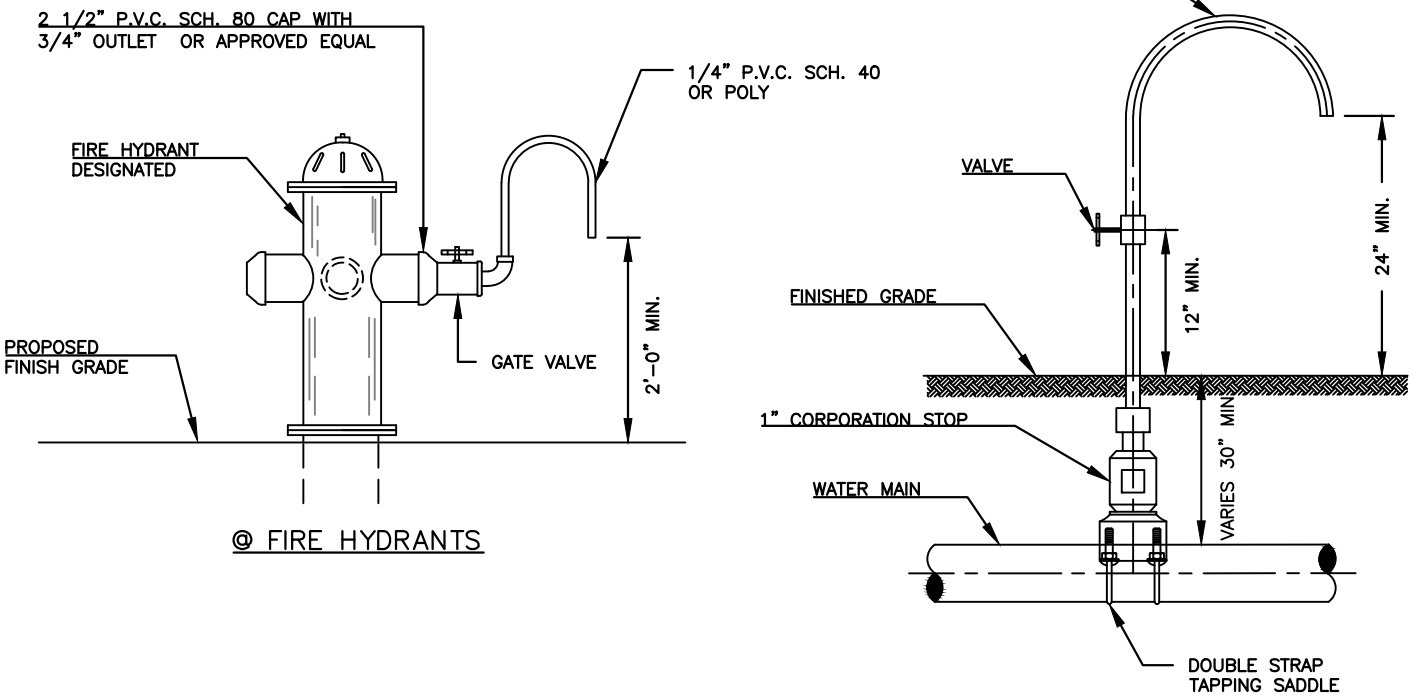
4. ALL NEW WATER MAINS SHALL BE FLUSHED, PRESSURE TESTED AND DISINFECTED. NEW MAINS SHALL NOT BE PLACED INTO SERVICE UNTIL THE BACTERIOLOGICAL TEST RESULTS ARE SATISFACTORY AND A WRITTEN APPROVAL HAS BEEN OBTAINED FROM CITY, AS WELL AS CERTIFICATION FROM THE FLORIDA DEPARTMENT OF HEALTH.

5. THE WATER MAINS SHALL BE PRESSURE TESTED AFTER FLUSHING AND PRIOR TO DISINFECTION. ALL VALVES SHALL REMAIN CLOSED DURING THE PRESSURE TEST AND WILL NOT BE OPENED UNTIL THE RESULTS OF PRESSURE TESTING AND BACTERIOLOGICAL TESTING ARE SATISFACTORY AND THE SYSTEM HAS BEEN ACCEPTED FOR OPERATION BY CITY, AND HAS RECEIVED CERTIFICATION FROM THE FLORIDA DEPARTMENT OF HEALTH.

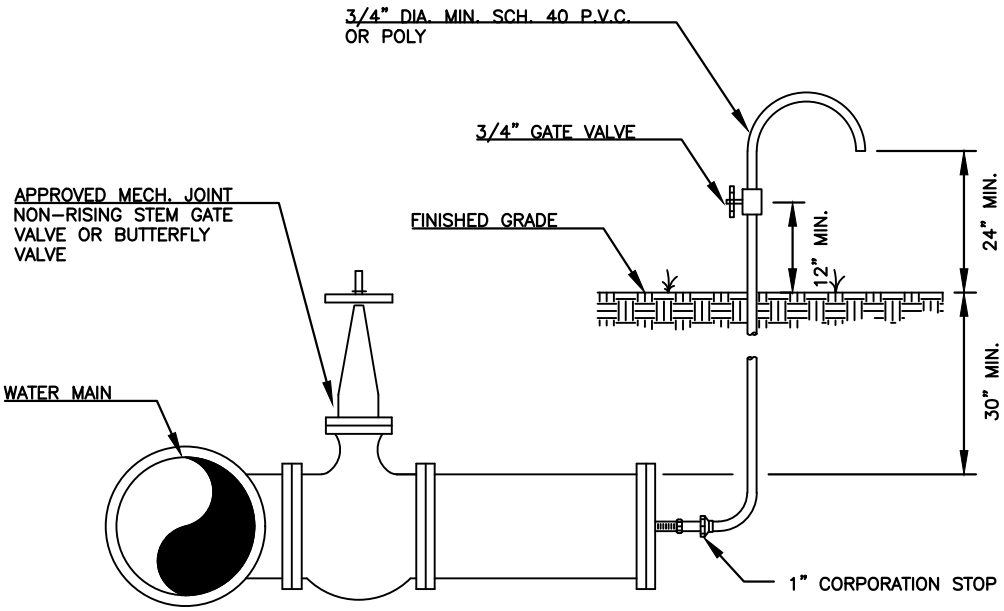
6. DISINFECTION SHALL BE CONDUCTED IN ACCORDANCE WITH AWWA C651. A MINIMUM PRESSURE OF 25 PSI SHALL BE MAINTAINED IN THE NEW MAIN AFTER DISINFECTION AT ALL TIMES.

7. PERMANENT CONNECTION TO EXISTING MAINS BY OPENING OF MAIN VALVES SHALL NOT BE MADE PRIOR TO BACTERIOLOGICAL CLEARANCE AND UNTIL APPROVED BY CITY AND CERTIFIED BY THE FLORIDA DEPARTMENT OF HEALTH.

8. UPON BACTERIOLOGICAL CLEARANCE, THE SAMPLING POINTS SHALL BE REMOVED AND PLUGGED BY THE CONTRACTOR. THE CONTRACTOR SHALL MAKE THE PERMANENT CONNECTION IN THE PRESENCE OF A CITY INSPECTOR. THE PIPE AND FITTINGS FOR CONNECTION SHALL BE DISINFECTED BY SPRAYING AND SWABBING WITH CHLORINE. THE JUMPER ASSEMBLY (FLANGE TO FLANGE) WILL BE REMOVED BY THE CONTRACTOR IN COORDINATION WITH CITY. THE CONTRACTOR SHALL REMOVE THE REMAINDER OF THE JUMPER CONNECTION PIPING AND PLUG THE CORPORATION STOP VALVES.



@ FIRE HYDRANTS

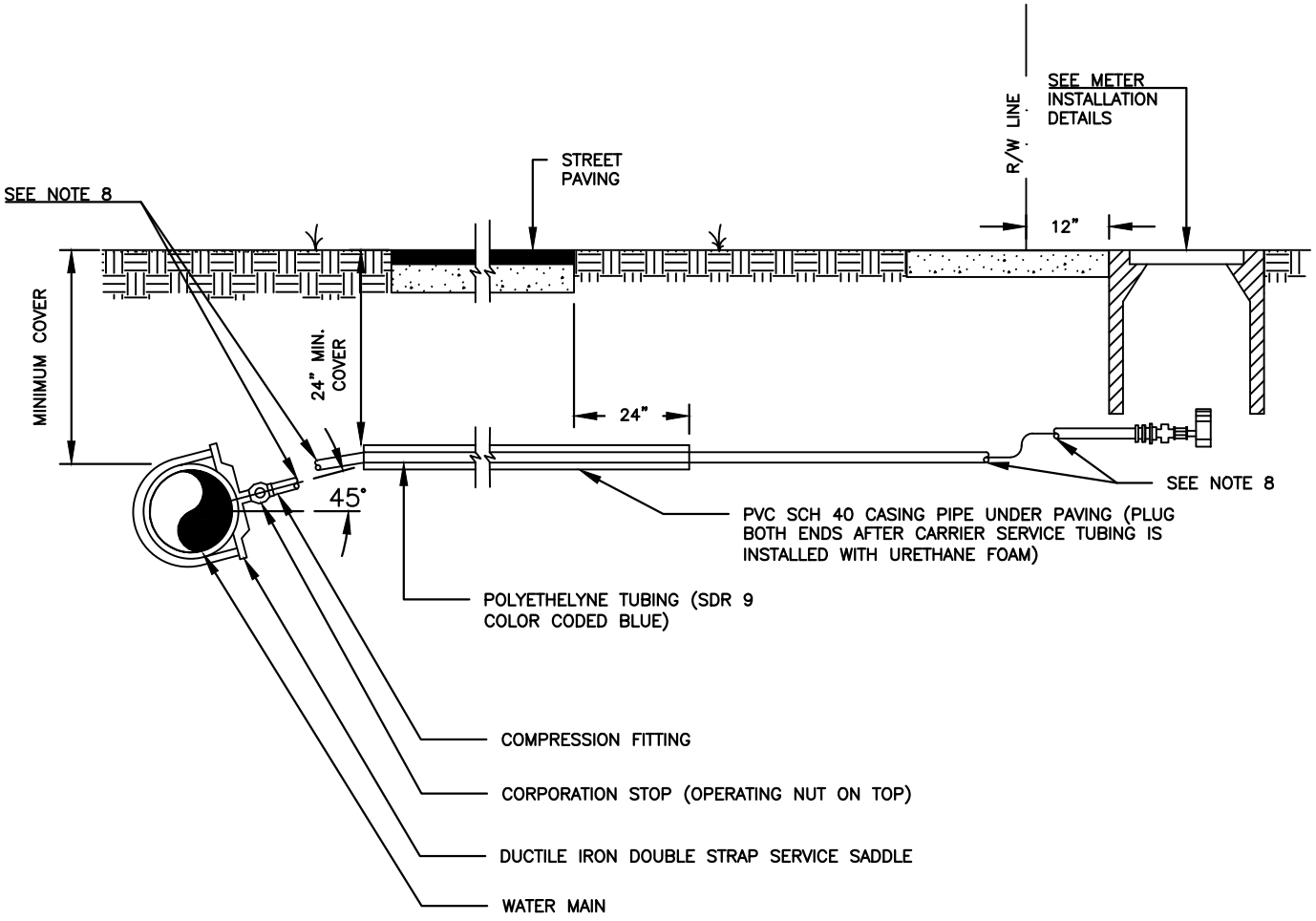


@ TERMINAL POINTS

NOTES:

1. SAMPLE POINTS SHALL BE LOCATED AND LATER REMOVED AS REQUIRED BY BROWARD COUNTY HEALTH DEPARTMENT.
2. CORPORATION STOP SHALL BE CLOSED AND PLUGGED/CAPPED WITH BRASS FITTING AFTER HEALTH DEPARTMENT CLEARANCE.
3. SAMPLING POINTS MAY BE PLACED AT THE ENDS OF WATER SERVICES BEFORE THE METERS AND ON BLOW OFFS FOR TERMINAL WATER MAINS, WHERE SERVICES AND BLOW OFFS ARE REQUIRED BY PLANS.

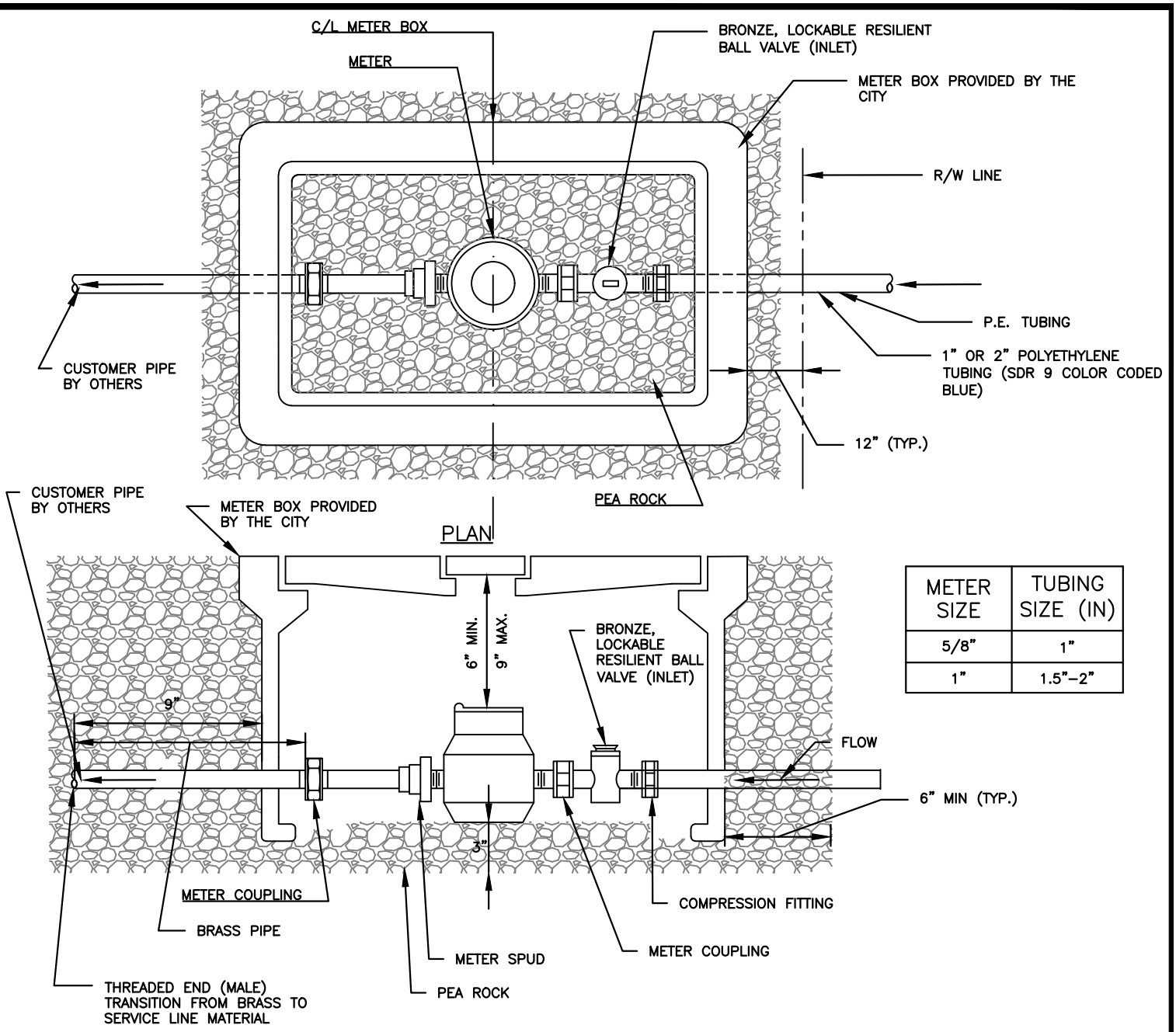
DATE: 08/24	DRAWN: KHA		
CITY OF MARGATE, FLORIDA DEPARTMENT OF ENVIRONMENTAL AND ENGINEERING SERVICES		**SAMPLE POINT**	**W-3**



NOTES:

1. SUCCESSIVE TAPS INTO THE WATER MAIN SHALL BE SPACED NOT LESS THAN 18" ON CENTER, NO TAPS SHALL BE CLOSER THAN 18" TO A JOINT.
2. 1" SERVICE REQUIRES A 2" MINIMUM INSIDE DIAMETER CASING PIPE.
3. 2" SERVICE REQUIRES A 3" MINIMUM INSIDE DIAMETER CASING PIPE.
4. ALL TAPS INTO WATER MAINS REQUIRE A SERVICE SADDLE.
5. ALL CASING PIPE SHALL EXTEND A MINIMUM OF 2' BEYOND THE EDGE OF PAVED STREETS.
6. SERVICE PIPE SHALL BE AT LEAST THE SAME SIZE AS THE WATER METER USED EXCEPT THAT NO SERVICE PIPE SHALL BE SMALLER THAN 1".
7. FOR 1" SERVICE LINES, THE MINIMUM RADIUS SHALL BE 14" FOR 1 1/2" OR 2" SERVICE LINES, THE MINIMUM RADIUS SHALL BE 21"
8. ALL CASING PIPE ENDS SHALL BE FILED SMOOTH WITH NO BURRS AND SEALED WITH URETHANE FOAM.
9. THE POLYETHYLENE SHALL BE ONE CONTINUOUS PIECE FROM THE CORPORATION STOP TO THE CHECK VALVE. NO JOINTS WILL BE PERMITTED BETWEEN THESE POINTS.
10. THIS DETAIL APPLIES ONLY TO RESIDENTIAL ROADS WITH LESS THAN 60' R.O.W. (NO MEDIAN) OR WITHIN EASEMENTS.
11. FOR STATE ROAD R/W AND COUNTY AERIAL AND COLLECTOR ROADS (70' TO 120' R/W), MINIMUM COVER OVER THE POLYETHYLENE TUBING SHALL BE 36"

DATE: 08/24	DRAWN: KHA		
CITY OF MARGATE, FLORIDA DEPARTMENT OF ENVIRONMENTAL AND ENGINEERING SERVICES	**WATER SERVICE CONNECTION FOR 1" TO 2" SERVICES**	**W-4**	



SECTION

METER SIZE	TUBING SIZE (IN)
5/8"	1"
1"	1.5"–2"

NOTES:

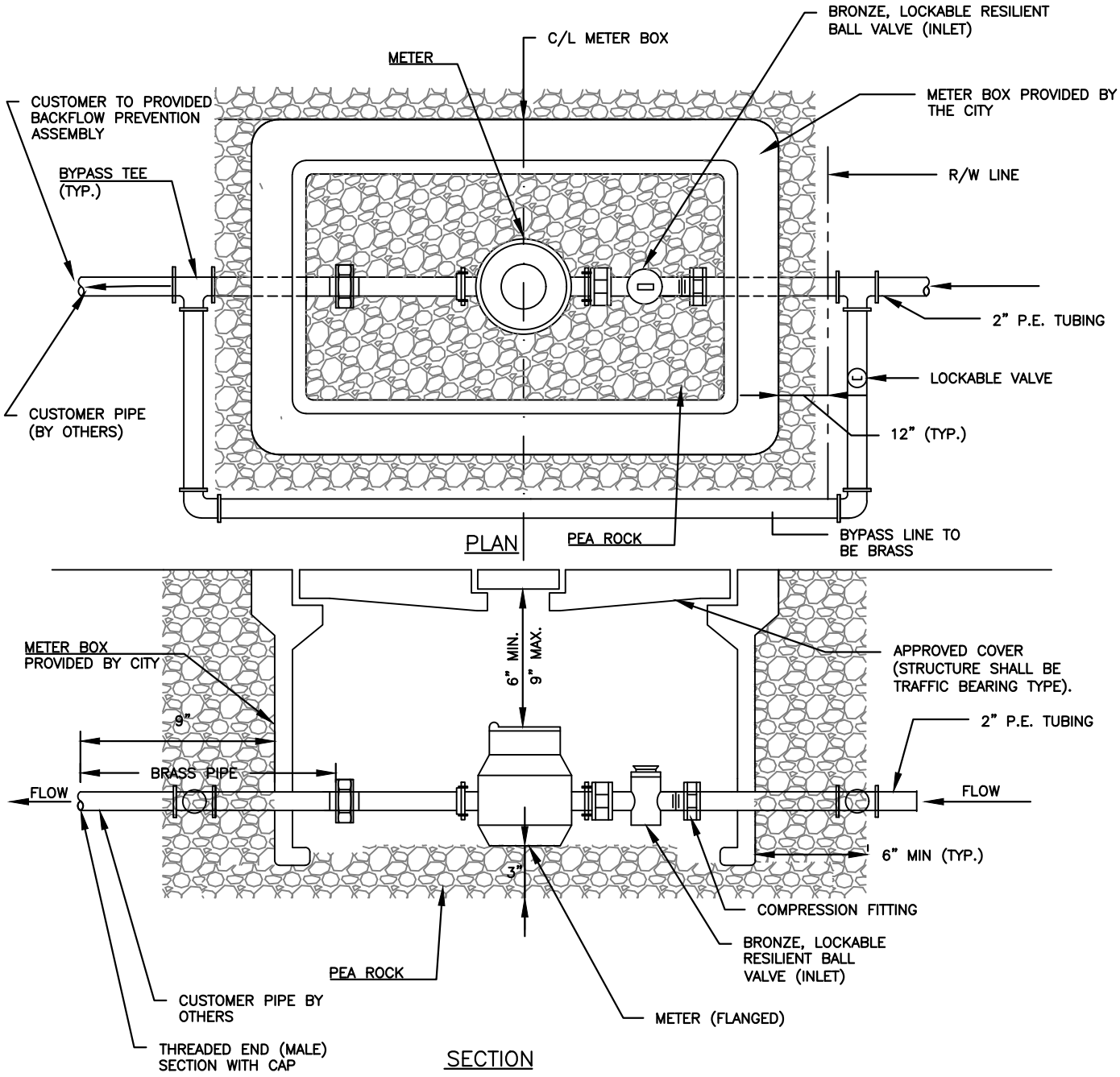
1. LOCATE BOX 12" OUTSIDE OF STREET R/W LINE.
2. CITY RESPONSIBILITY ENDS AT CUSTOMER SIDE OF METER.
3. ALL METERS AND METER SPUDS UP TO 1" SHALL BE FURNISHED AND INSTALLED BY THE CITY (ALL OTHER WORK BY CUSTOMER).
4. ALL STRUCTURES TO BE TRAFFIC BEARING TYPE.
5. CURVE IN SERVICE LINE SHALL BE AS CLOSE TO METER BOX AS PRACTICAL, WITH A MINIMUM RADIUS OF 14" FOR 1" TUBING AND 21" FOR 2" TUBING. 5/8" METERS SHALL HAVE A 1" SERVICE LINE.
6. METER SHALL BE CENTERED IN BOX DIRECTLY UNDER THE ACCESS LID. BALL VALVE AND BOTH METERS COUPLINGS SHALL BE VISIBLE IN THE METER BOX.
7. METER, METER BOX, AND SPUD TO BE PROVIDED BY THE CITY.

DATE: 08/24 | DRAWN: KHA

CITY OF MARGATE, FLORIDA
DEPARTMENT OF ENVIRONMENTAL AND ENGINEERING SERVICES

METER INSTALLATION FOR 5/8" AND 1" METERS

W-5



NOTES:

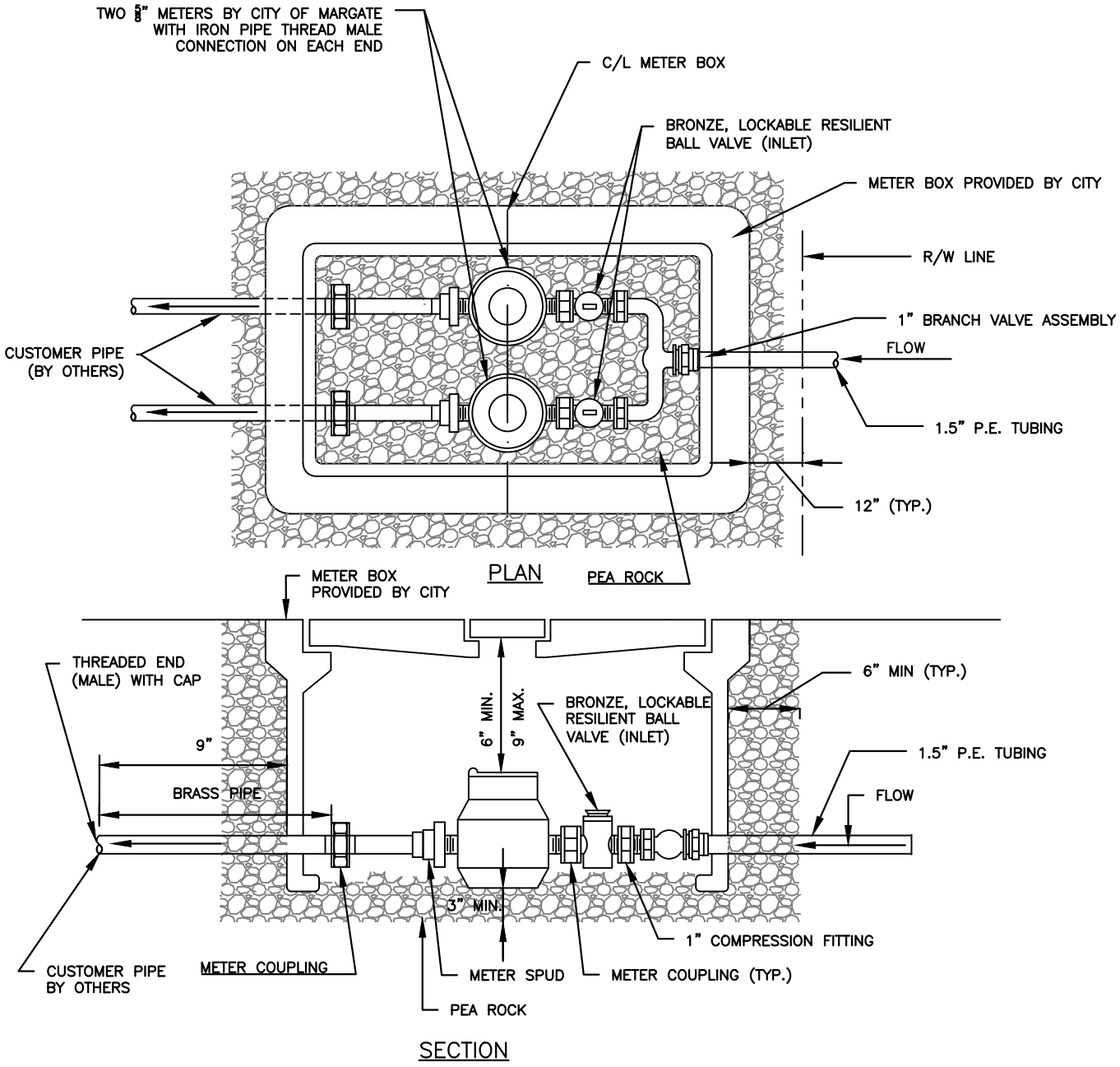
1. LOCATE BOX 12" OUTSIDE OF STREET R/W LINE.
2. CITY RESPONSIBILITY ENDS AT CUSTOMER SIDE OF METER.
3. ALL METERS AND CITY SIDE FLANGE UP TO 2" SHALL BE FURNISHED AND INSTALLED BY THE CITY (ALL OTHER WORK BY CUSTOMER).
4. ALL STRUCTURES TO BE TRAFFIC BEARING TYPE.
5. CURVE IN SERVICE LINE SHALL BE AS CLOSE TO METER BOX AS PRACTICAL, WITH A MINIMUM RADIUS OF 21" FOR 2" TUBING.
6. METER SHALL BE CENTERED IN BOX DIRECTLY UNDER THE ACCESS LID.
7. BYPASS SIZE SHALL ACCOMMODATE EXISTING FLOW RATE FROM BYPASSED LINE.
8. SUBMIT METER BOX CONSTRUCTION AND PIPING DETAILS FOR APPROVAL.
9. VALVES SHALL BE BALL VALVES W/ LOCK WINGS.

DATE: 08/24 | DRAWN: KHA

CITY OF MARGATE, FLORIDA
DEPARTMENT OF ENVIRONMENTAL AND ENGINEERING SERVICES

METER INSTALLATION FOR 1 1/2" AND 2" METERS

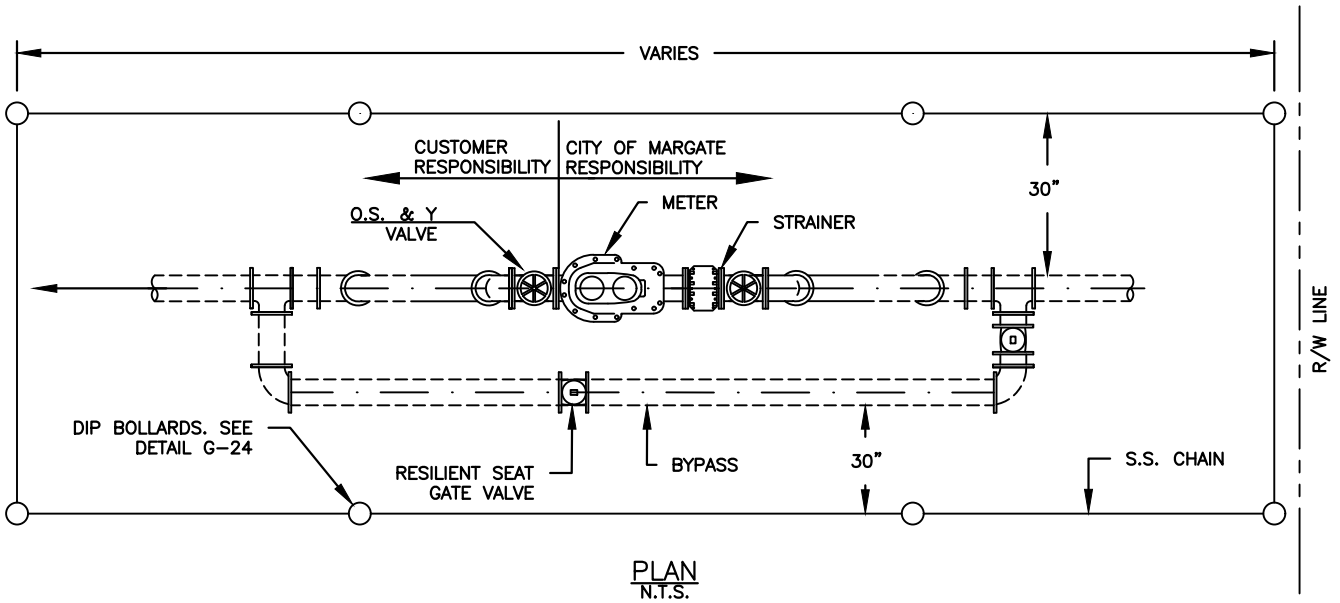
W-6



NOTES:

1. LOCATE BOX 12" OUTSIDE OF STREET R/W LINE.
2. CITY RESPONSIBILITY ENDS AT CUSTOMER SIDE OF METER.
3. ALL METERS INSTALLED BY CITY (INCLUDES METER BOX AND SPUD).
4. ALL STRUCTURES TO BE TRAFFIC BEARING TYPE.
5. CURVE IN SERVICE LINE SHALL BE AS CLOSE TO METER BOX AS PRACTICAL, WITH A MINIMUM RADIUS OF 21" FOR 2" TUBING.
6. METER SHALL BE CENTERED IN BOX DIRECTLY UNDER THE ACCESS LID. BALL VALVE AND METER COUPLINGS SHALL BE VISIBLE INSIDE THE METER BOX.
7. DUAL CHECK ON SINGLE FAMILY HOUSE METERS ONLY. ALL OTHER METERS TO HAVE DOWNSTREAM ABOVE GROUND BACK FLOW PREVENTER.

DATE: 08/24	DRAWN: KHA		
CITY OF MARGATE, FLORIDA DEPARTMENT OF ENVIRONMENTAL AND ENGINEERING SERVICES		**DOUBLE METER BOX INSTALLATION**	**W-7**



PLAN
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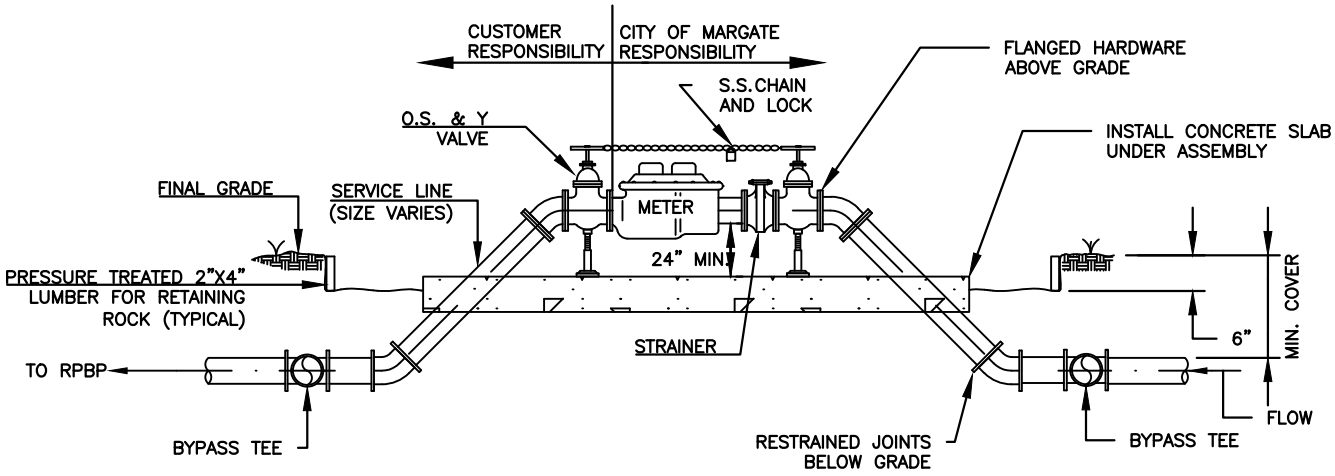
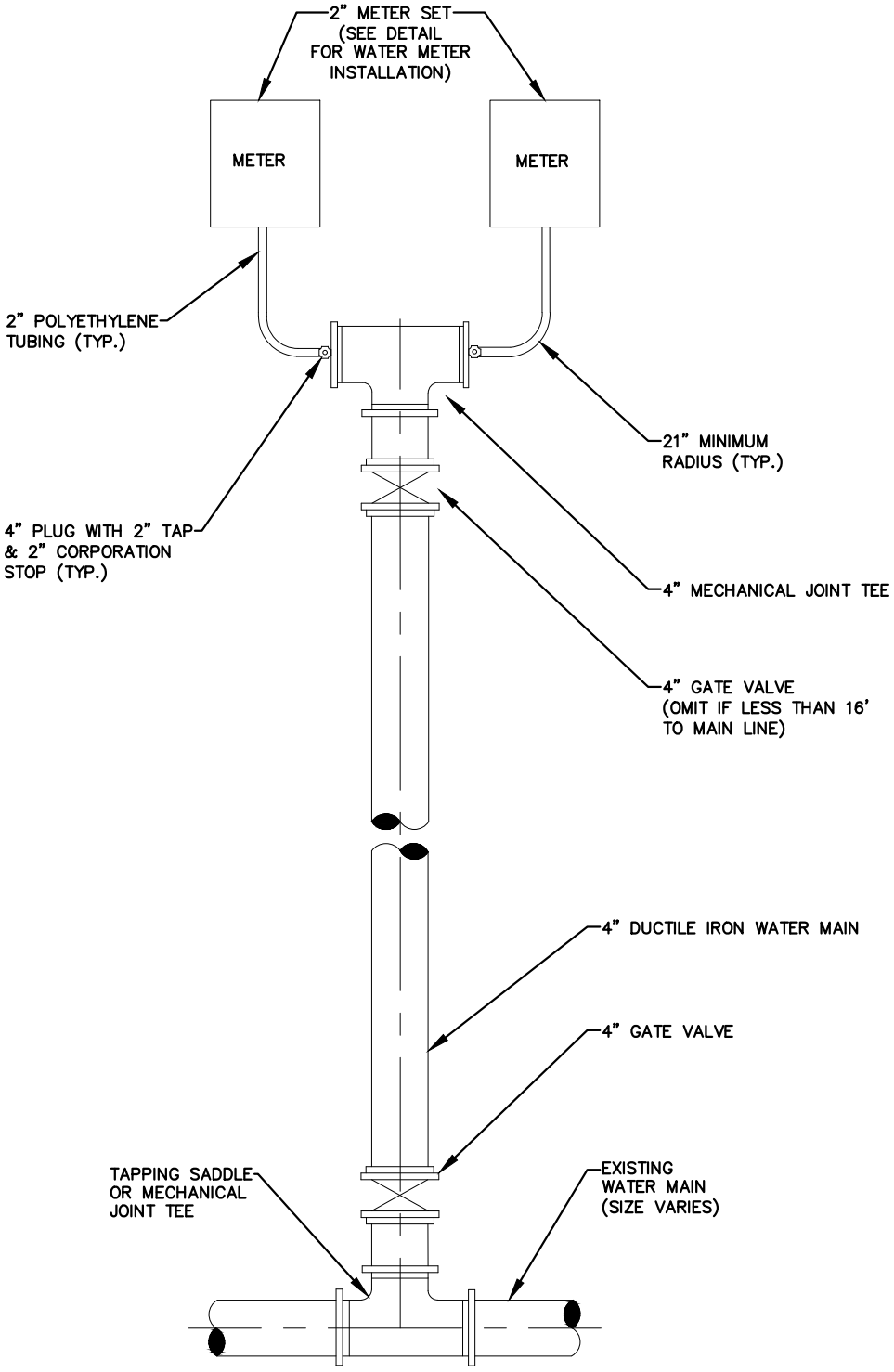


ELEVATION
N.T.S.

NOTES:

1. CITY OF MARGATE RESPONSIBILITY ENDS AFTER THE METER AND BEFORE THE SECOND RESILIENT SEAT GATE VALVE ON BYPASS LINE.
2. ALL ABOVE GRADE D.I.P. PIPING SHALL BE CLASS 53.
3. BOLLARDS SHALL BE SPACED EVENLY APART AS SHOWN ABOVE AND PER DETAIL G-24. CHAIN SHALL BE LOOPED THROUGH EYELETS CAST IN CONCRETE TOP.
4. USE 45° BENDS WHEN WORKING IS NOT LIMITED.
5. BYPASS SHALL BE SAME IN SIZE AND MATERIAL AS THE METER ASSEMBLY SERVICE LINE
6. SUBMIT PIPING DETAILS FOR APPROVAL
7. METERS LARGER THAN 2" SHALL BE FURNISHED BY THE CITY (ALL OTHER WORK BY CUSTOMERS). ALL METERS TO BE PAID FOR BY OWNER.

DATE: 08/24	DRAWN: KHA		
CITY OF MARGATE, FLORIDA DEPARTMENT OF ENVIRONMENTAL AND ENGINEERING SERVICES	**METER INSTALLATION FOR METERS LARGER THAN 2" (ABOVE GROUND)**	**W-8**	



NOTES:

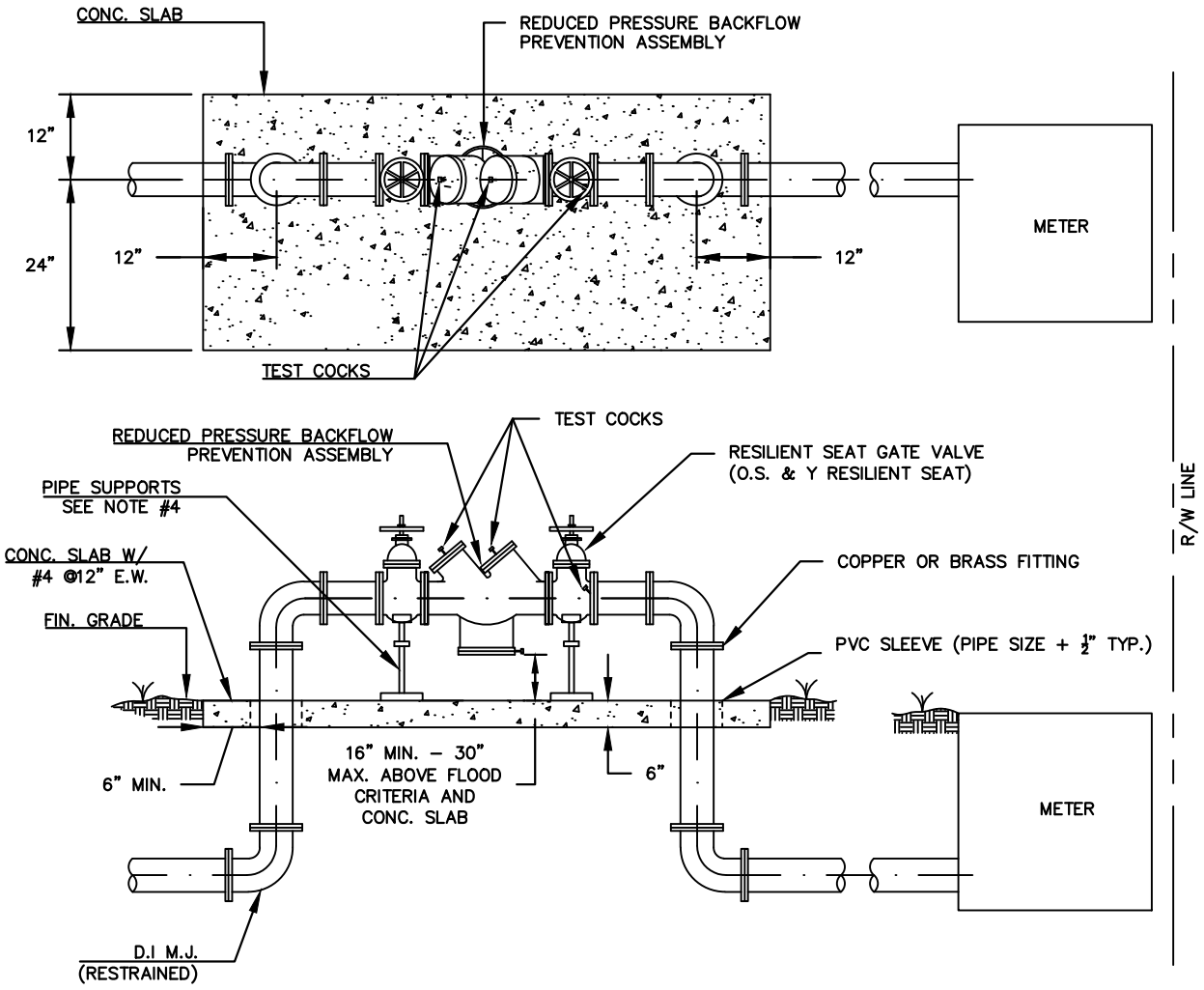
1. ALL JOINTS TO BE RESTRAINED.
2. ALTERNATIVELY, THE EXISTING WATER MAIN CAN BE TAPPED FOR EACH METER WITH 2" CORPORATION STOP AND TUBING.

DATE: 08/24 | DRAWN: KHA

CITY OF MARGATE, FLORIDA
DEPARTMENT OF ENVIRONMENTAL
AND ENGINEERING SERVICES

METER INSTALLATION FOR TWO 2" METERS

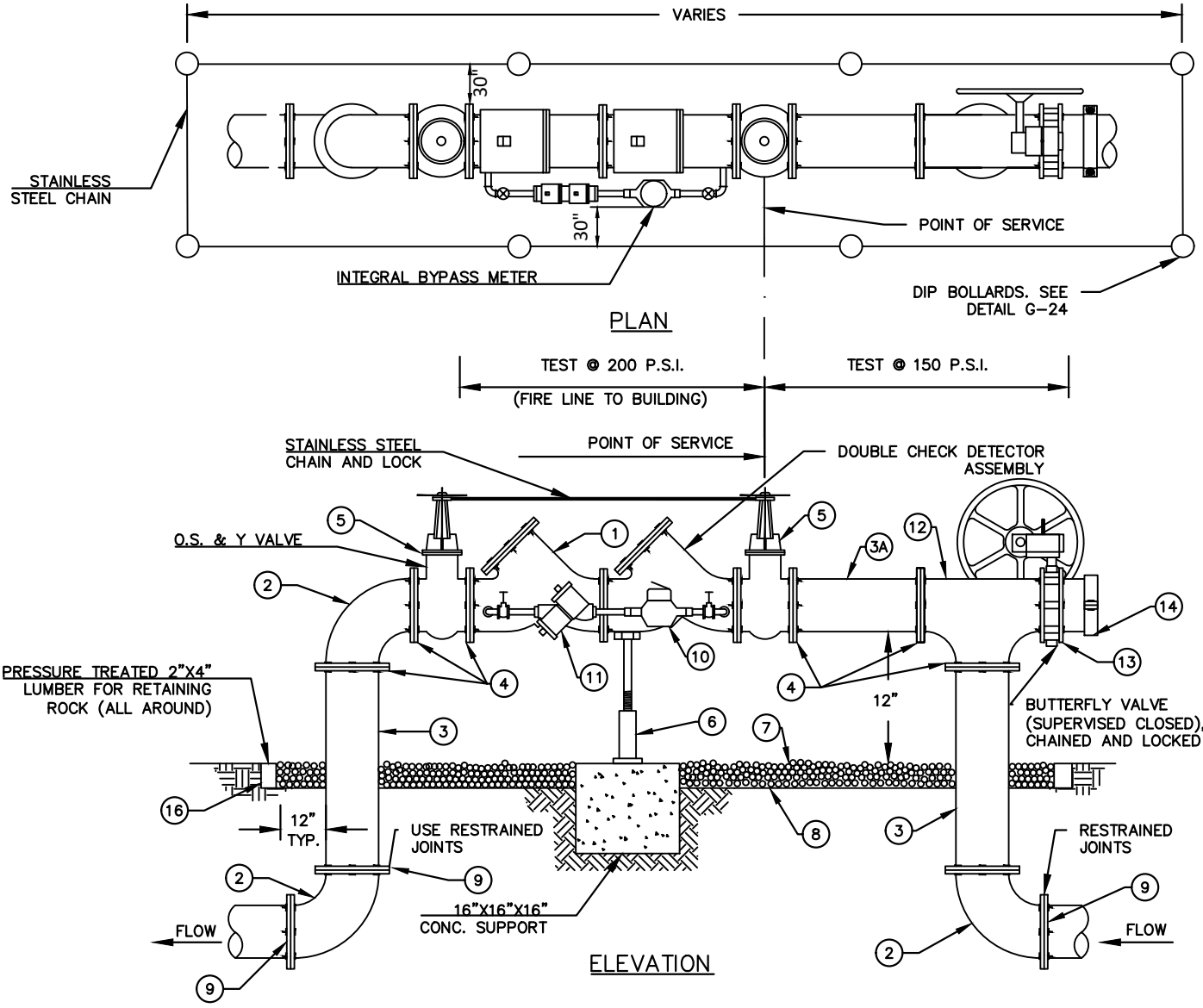
W-9



NOTES:

1. THE ASSEMBLY IS CUSTOMER RESPONSIBILITY AND SHALL BE INSTALLED WITH MINIMUM HORIZONTAL CLEARANCES OF 30 INCHES FREE FROM OBSTRUCTION IN ALL DIRECTIONS.
2. BOLLARDS (SEE DETAIL G–24) SHALL BE INSTALLED IF THE ASSEMBLY IS EXPOSED TO POSSIBLE DAMAGE FROM VEHICULAR TRAFFIC AND APPROVE BY THE DEPARTMENT & THE INSPECTOR.
3. THE ASSEMBLY SHALL BE INSTALLED IN AN ACCESSIBLE LOCATION, APPROVED BY THE DEPARTMENT AND THE CITY INSPECTOR.
4. ADJUSTABLE PIPE SADDLE SUPPORT (GRINNELL FIG.264 OR EQUAL) SIZED TO FIT CURVATURE OF VALVES. THE PIPE SUPPORT SHALL HAVE A STEEL PIPE & FLOOR FLANGE. ATTACH FLOOR FLANGE TO CONCRETE SLAB WITH GALVANIZED EXPANSION BOLTS.
5. PIPING 2" AND SMALLER SHALL BE SCHEDULE 40 BRASS OR TYPE "K" COPPER PIPE WITH FITTINGS. PIPING 4" AND LARGER SHALL BE DUCTILE IRON PIPE WITH FLANGED FITTINGS.
6. ALL OUTLETS SHALL BE PLUGGED WITH BRASS PLUGS.
7. ALL ABOVE–GROUND PIPING, FITTINGS, GATE VALVES AND CHECK VALVES AND THE METER ASSEMBLY SHALL BE PAINTED WITH POLYURETHANE COATING (BLUE).
8. COPPER ALLOY MATERIALS SHALL BE "LEAD FREE" AND IN FULL COMPLIANCE WITH THE FEDERAL "REDUCTION OF LEAD IN DRINKING WATER ACT".

DATE: 08/24	DRAWN: KHA		
CITY OF MARGATE, FLORIDA DEPARTMENT OF ENVIRONMENTAL AND ENGINEERING SERVICES		**REDUCED PRESSURE BACKFLOW PREVENTION ASSEMBLY**	**W-10**



NOTES:

1. ALL ABOVE GRADE PIPING SHALL BE D.I.P. CLASS 53.
2. ALL LOW FLOW METER PIPING SHALL BE BRASS OR COPPER.
3. BOLLARDS SHALL BE SPACED EVENLY APART AS SHOWN ABOVE AND PER DETAIL G-24. CHAIN SHALL BE LOOPED THROUGH EYELETS CAST IN CONCRETE TOP.
4. PIPING AND ASSEMBLY SHALL BE PAINTED WITH LINEAR POLYURETHANE SYSTEM.
5. USE 45° BENDS WHEN WORKING IS NOT LIMITED.
6. FIRE SYSTEM TO BE CONSTRUCTED/TESTED IN ACCORDANCE WITH NFPA STDS. & ALL APPLICABLE CODES.
7. INTEGRAL BYPASS METER MUST COME WITH A RED REGISTER CAP METER.

MATERIALS

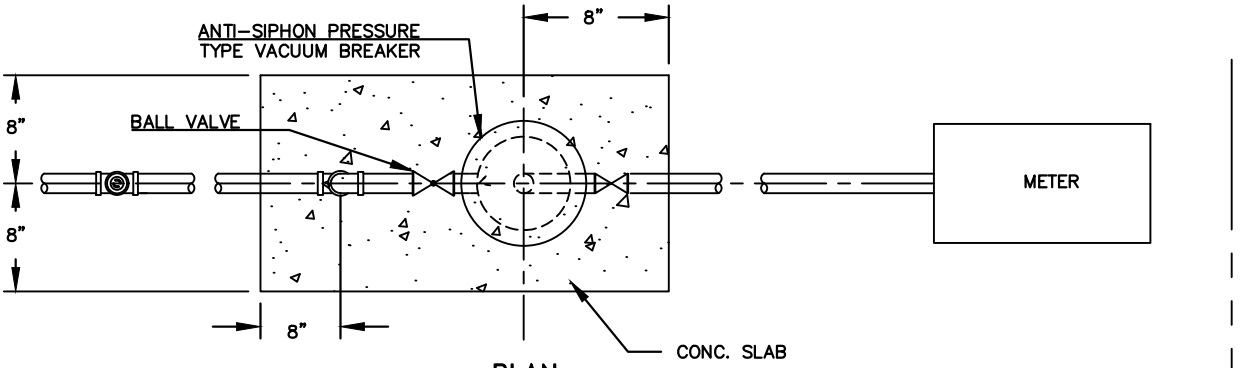
ITEM	DESCRIPTION	ITEM	DESCRIPTION
1	4",6",8" VALVE,DOUBLE CHECK	8	PLASTIC LINER/WEED STOP (5 MILS)
2	4",6",8" BEND-90°	9	RESTRAINED JOINTS
3	4",6",8" D.I.P. SPOOL PIECE	10	LOW FLOW METER AMI-MINET
3A	4",6",8" D.I.P. SPOOL PIECE(24" LONG)	11	VALVE, BYPASS DOUBLE CHECK
4	4",6",8" FLANGE, D.I.P.	12	4",6",8" TEE
5	4",6",8" GATE VALVE (SEE NOTE 6)	13	4",6",8" BUTTERFLY VALVE (SUPERVISED CLOSED), CHAINED AND LOCKED
6	SCREW JACK/ANCHORED		
7	PEA GRAVEL (4" DEEP)	14	4",6",8" CAP

DATE: 08/24 | DRAWN: KHA

CITY OF MARGATE, FLORIDA
DEPARTMENT OF ENVIRONMENTAL AND ENGINEERING SERVICES

DOUBLE CHECK DETECTOR BACKFLOW PREVENTION ASSEMBLY

W-11



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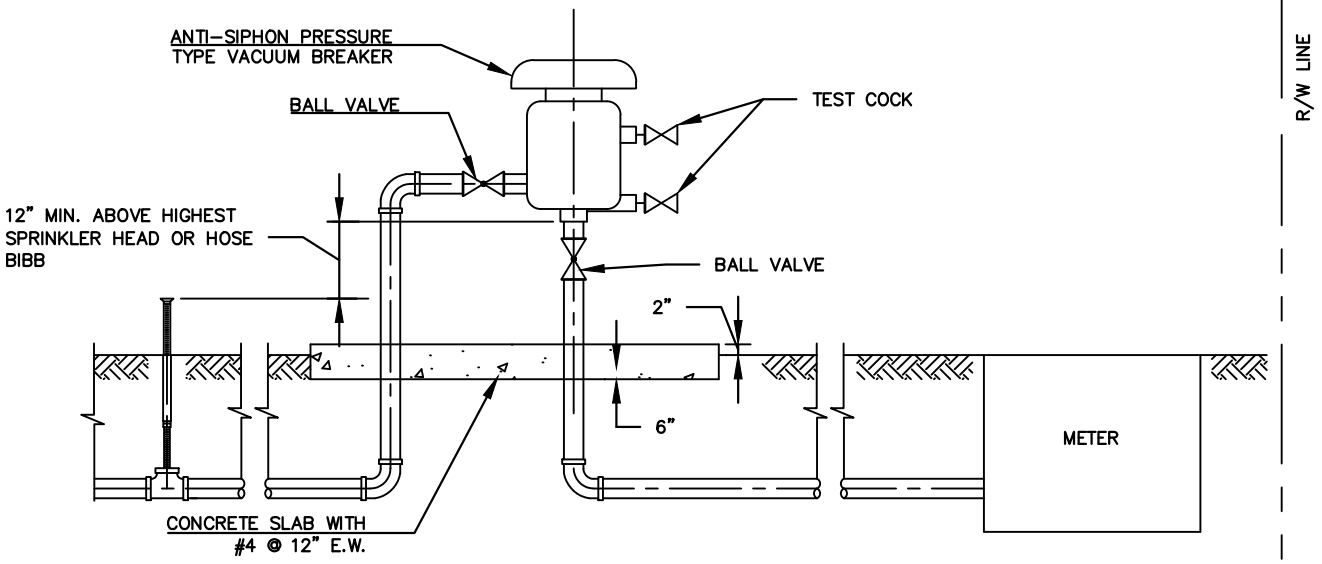
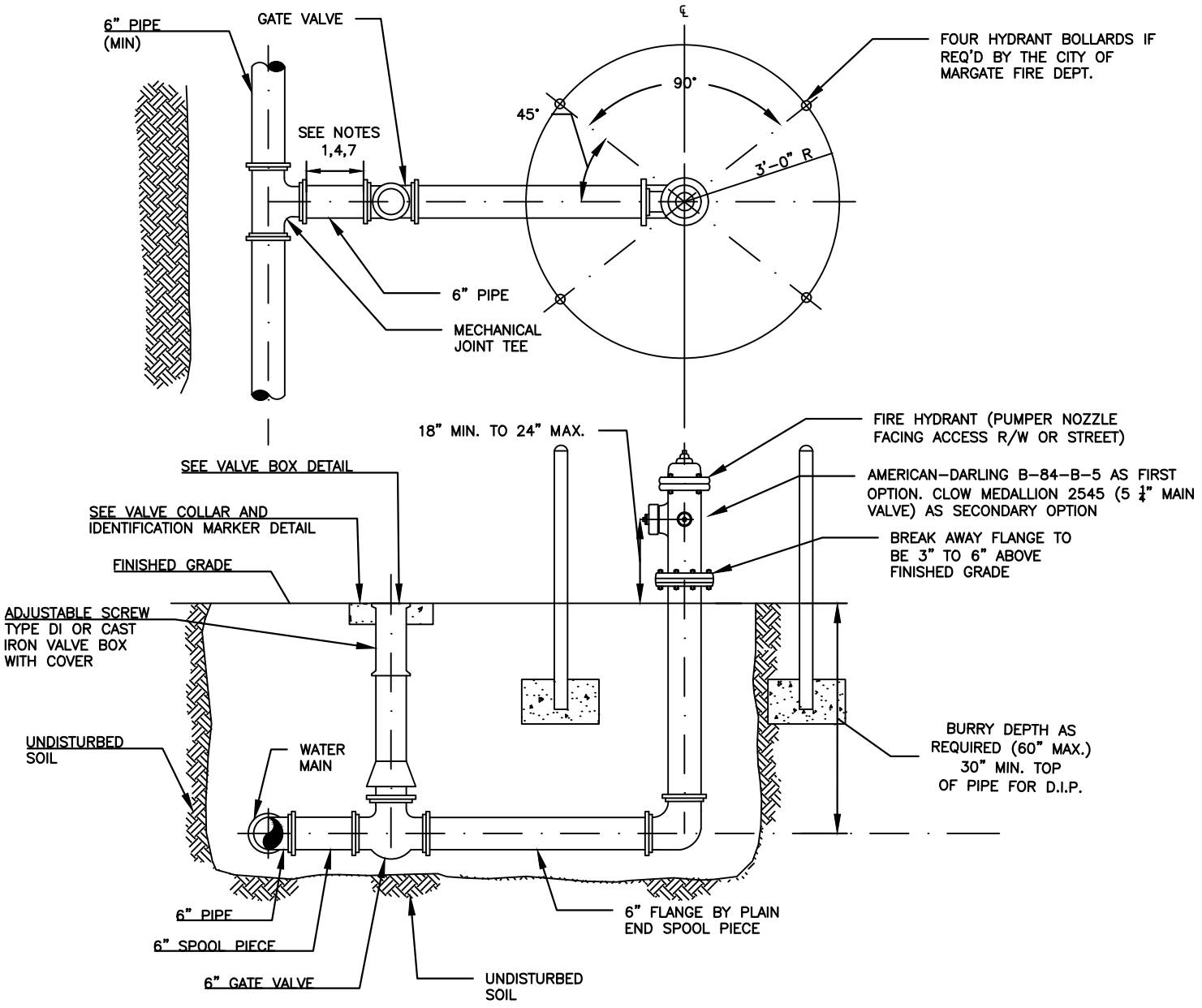


ELEVATION
N.T.S.

NOTES:

1. THE ASSEMBLY SHALL BE INSTALLED WITH MINIMUM HORIZONTAL CLEARANCES OF 30 INCHES FREE FROM OBSTRUCTIONS IN ALL DIRECTIONS.
2. BOLLARDS (SEE DETAIL G-24) SHALL BE INSTALLED IF THE ASSEMBLY IS EXPOSED TO POSSIBLE DAMAGE FROM VEHICULAR TRAFFIC, AS DETERMINED BY THE DEPARTMENT AND THE INSPECTOR.
3. THE ASSEMBLY SHALL BE INSTALLED IN AN ACCESSIBLE LOCATION, APPROVED BY THE DEPARTMENT AND THE INSPECTOR.
4. PIPING SHALL BE BRASS OR COPPER WITH THREADED FITTINGS.
5. ALL EXPOSED METALLIC THREADS SHALL BE PAINTED WITH BITUMASTIC PAINT.
6. THE DEPARTMENT SHALL HAVE UNRESTRICTED AND CONTINUOUS ACCESS TO THE VACUUM BREAKER ASSEMBLY.

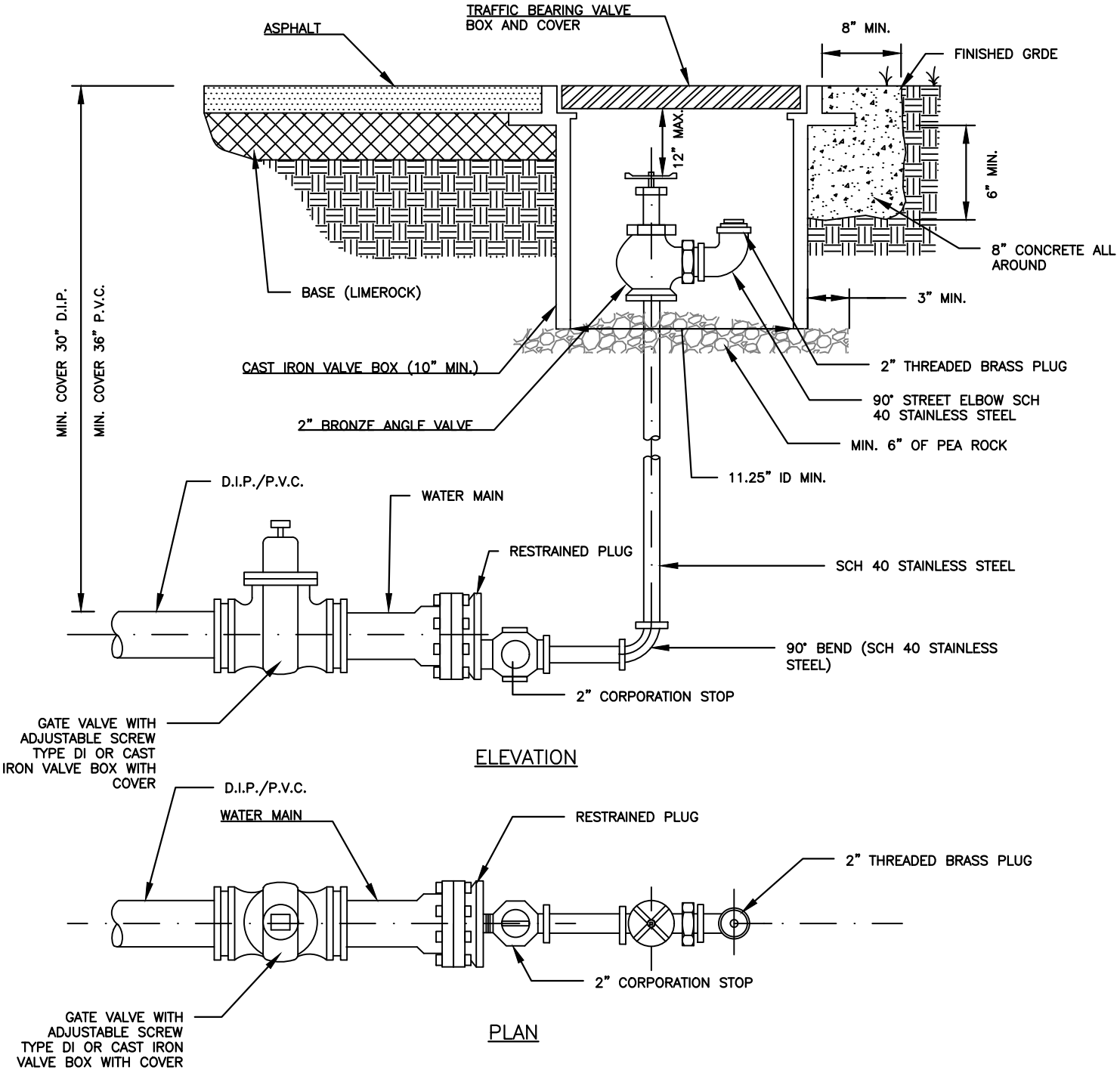
DATE: 08/24	DRAWN: KHA		
CITY OF MARGATE, FLORIDA DEPARTMENT OF ENVIRONMENTAL AND ENGINEERING SERVICES	**PRESSURE VACUUM BREAKER BACKFLOW PREVENTION ASSEMBLY (IRRIGATION ONLY)**	**W-12**	



NOTES:

1. USE RESTRAINT JOINTS FOR ENTIRE ASSEMBLY SHOWN.
2. PAINT BARREL AND BONNET PER CITY REQUIREMENTS.
3. PLACE 3 BLUE RAISED PAVEMENT MARKERS SPACED 12" APART IN ADJACENT ROADWAY.
4. GATE VALVE IS NORMALLY LOCATED NEXT TO TEE.
5. HYDRANT FEED PIPE MAY BE TAPPED FOR A SERVICE LINE UPSTREAM OF THE ISOLATION GATE VALVE.
6. BOLLARDS ARE REQUIRED DEPENDING ON SITE LOCATION, SEE BOLLARD DETAIL.
7. IF DISTANCE FROM MAIN LINE TO FIRE HYDRANT IS GREATER THAN 20 FEET ANOTHER GATE VALVE WILL BE PROVIDED CLOSE TO THE HYDRANT. THIS SECOND VALVE SHALL BE INSTALLED WITHIN 5' OF THE FIRE HYDRANT.
8. HYDRANT SHALL BE LOCATED A MINIMUM OF 5' AND A MAXIMUM OF 15' FROM THE CURB FACE OR, WHEN NO CURB IS PRESENT, FROM THE EDGE OF ACCESS WAY PAVEMENT.
9. HYDRANT SHALL BE LOCATED A MINIMUM OF THREE (3) FEET FROM THE EDGE OF DRIVEWAYS.

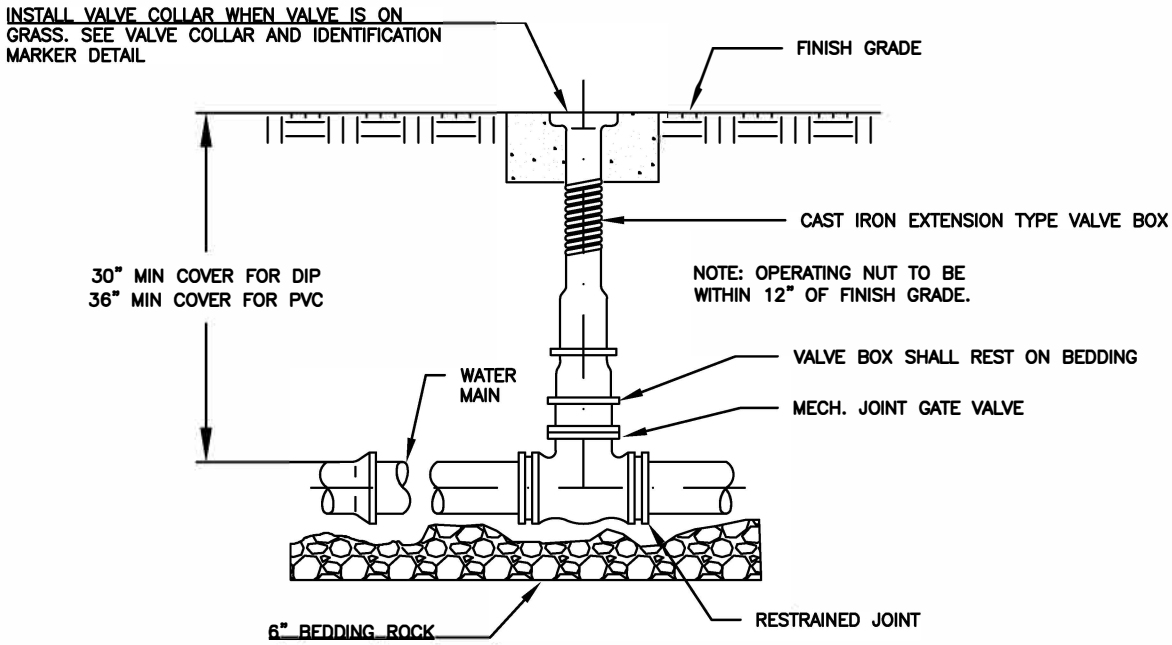
DATE: 08/24	DRAWN: KHA		
CITY OF MARGATE, FLORIDA DEPARTMENT OF ENVIRONMENTAL AND ENGINEERING SERVICES		**FIRE HYDRANT**	**W-13**



NOTES:

1. PIPE JOINT COMPOUND SHALL BE APPLIED TO MALE THREADS ONLY.
2. USE RESTRAINED JOINT PIPE.
3. 2" TAP IN BOTTOM OF PLUG.
4. IN GRASS AREAS USE CONCRETE COLLARS 6" THICK, IN ASPHALT, NO CONCRETE COLLAR IS REQUIRED.

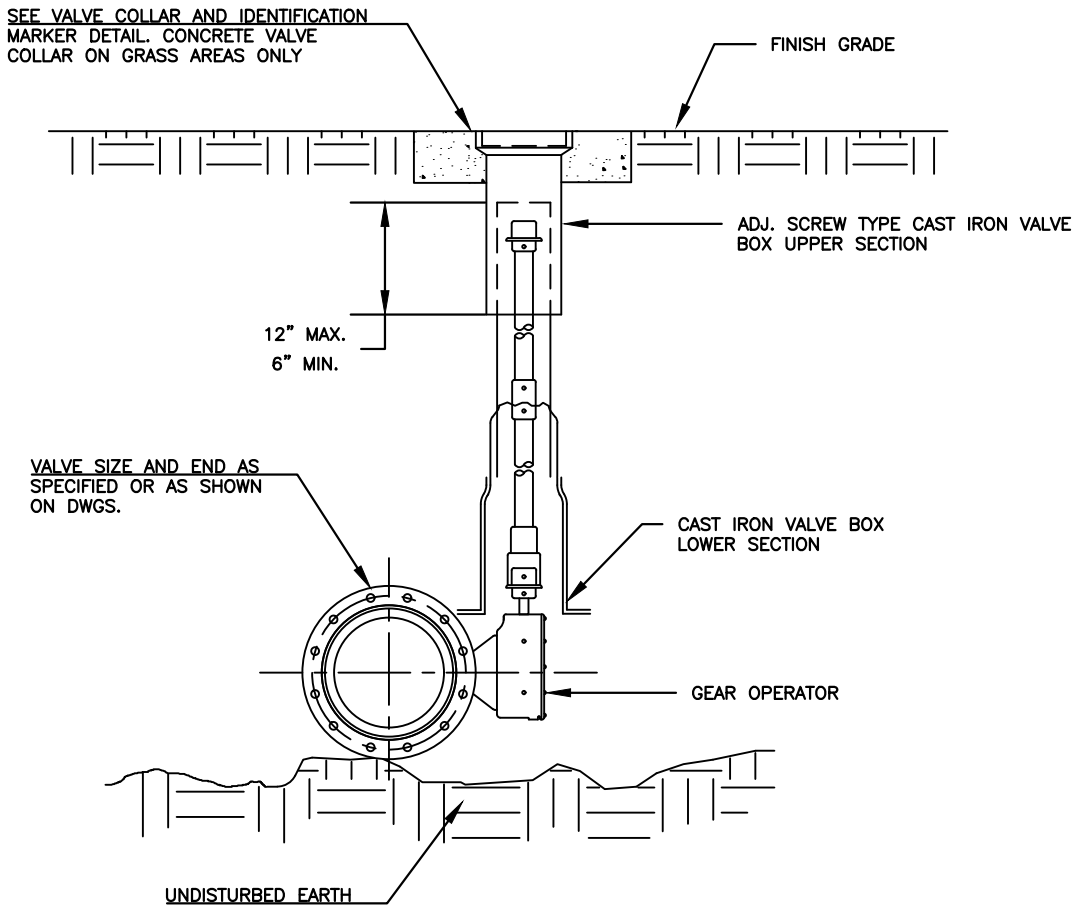
DATE: 08/24	DRAWN: KHA		
CITY OF MARGATE, FLORIDA DEPARTMENT OF ENVIRONMENTAL AND ENGINEERING SERVICES	**TERMINAL BLOW-OFF ASSEMBLY**	**W-14**	



NOTE:

1. PLACE ONE (1) BLUE RAISED PAVEMENT MARKER ADJACENT TO ALL VALVES. WHEN VALVE IS NOT LOCATED IN PAVEMENT PLACE ONE (1) BLUE RAISED PAVEMENT MARKER IN ADJACENT ROADWAY.
2. OPERATOR EXTENSION SHAFT SHALL BE PROVIDED WHEN OPERATING NUT IS MORE THAN 24" BELOW TOP OF VALVE BOX.
3. PVC PIPE AND DUCTILE IRON PIPE ARE ACCEPTABLE FOR VALVE BOX RISER WITH PROPER BEDDING.

DATE: 07/25	DRAWN: KHA		
CITY OF MARGATE, FLORIDA DEPARTMENT OF ENVIRONMENTAL AND ENGINEERING SERVICES		**VERTICAL GATE VALVE**	**W-15**

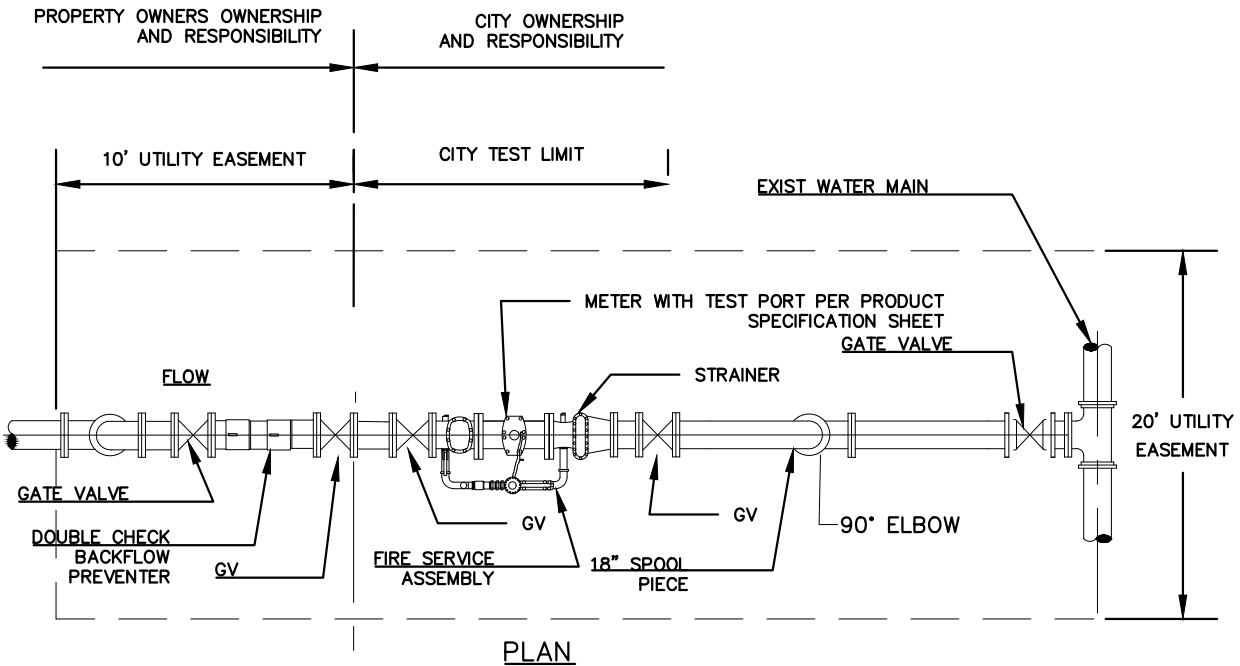


DATE: 08/24 | DRAWN: KHA

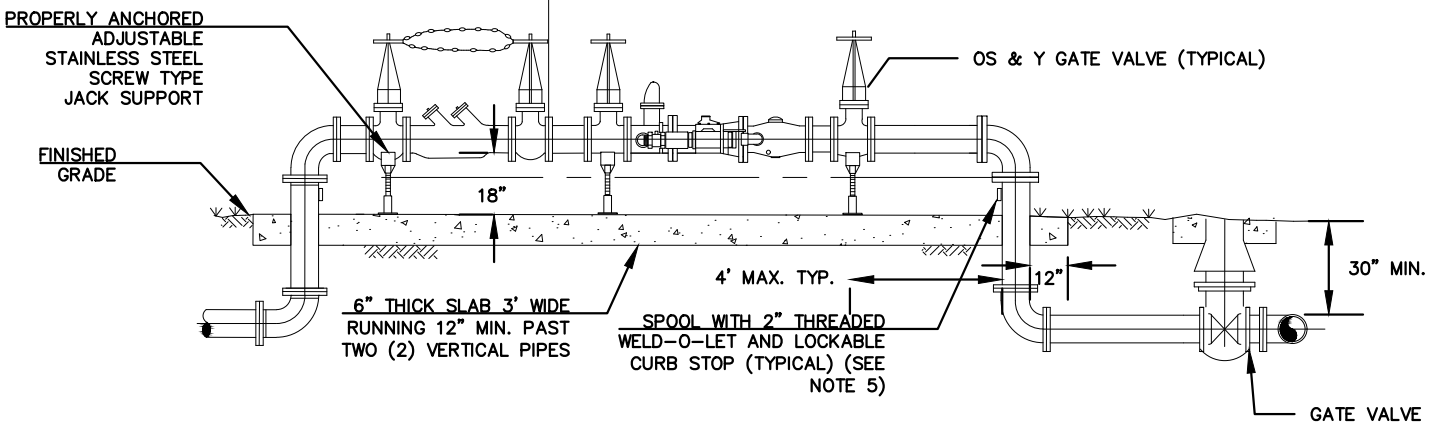
CITY OF MARGATE, FLORIDA
DEPARTMENT OF ENVIRONMENTAL AND ENGINEERING SERVICES

BUTTERFLY VALVE WITH GEAR OPERATOR

W-16



PLAN



PROFILE

NOTES:

1. THE DOUBLE CHECK VALVE SHALL BE PRIVATELY OWNED BY THE PROPERTY OWNER.
2. EASEMENT SHALL BE PROVIDED IN ACCORDANCE WITH WWS MINIMUM REQUIREMENTS.
3. ALL ABOVE-GROUND PIPE SHALL BE FLANGED, DI (DUCTILE IRON) TYPE.
4. ALL PIPE LEADING FROM WATER MAIN TO FLANGED PIPING SHALL BE D.I. PIPE, RESTRAINED JOINTS.
5. ALL ABOVE-GROUND PIPING, FITTINGS, GATE VALVES AND CHECK VALVES AND THE METER ASSEMBLY SHALL BE PAINTED WITH POLYURETHANE COATING (BLUE).

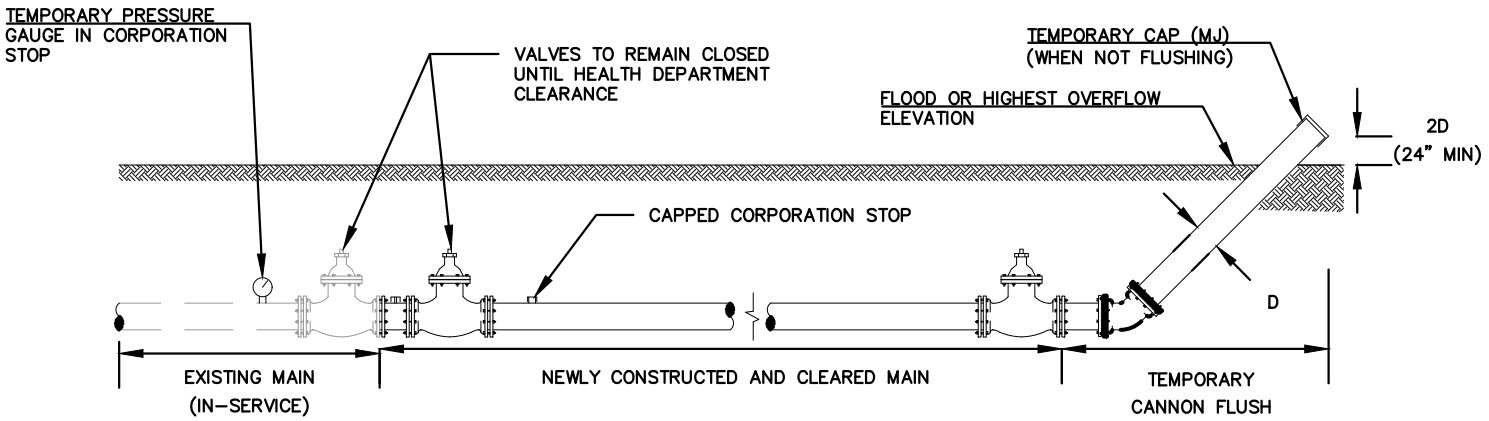
COMBINED DOMESTIC WATER SERVICE AND FIRE PROTECTION

DATE: 08/24 | DRAWN: KHA

CITY OF MARGATE, FLORIDA
DEPARTMENT OF ENVIRONMENTAL AND ENGINEERING SERVICES

TYPE 2 PRIVATE FIRE PROTECTION 4", 6", AND 8" DIAMETER CONNECTION

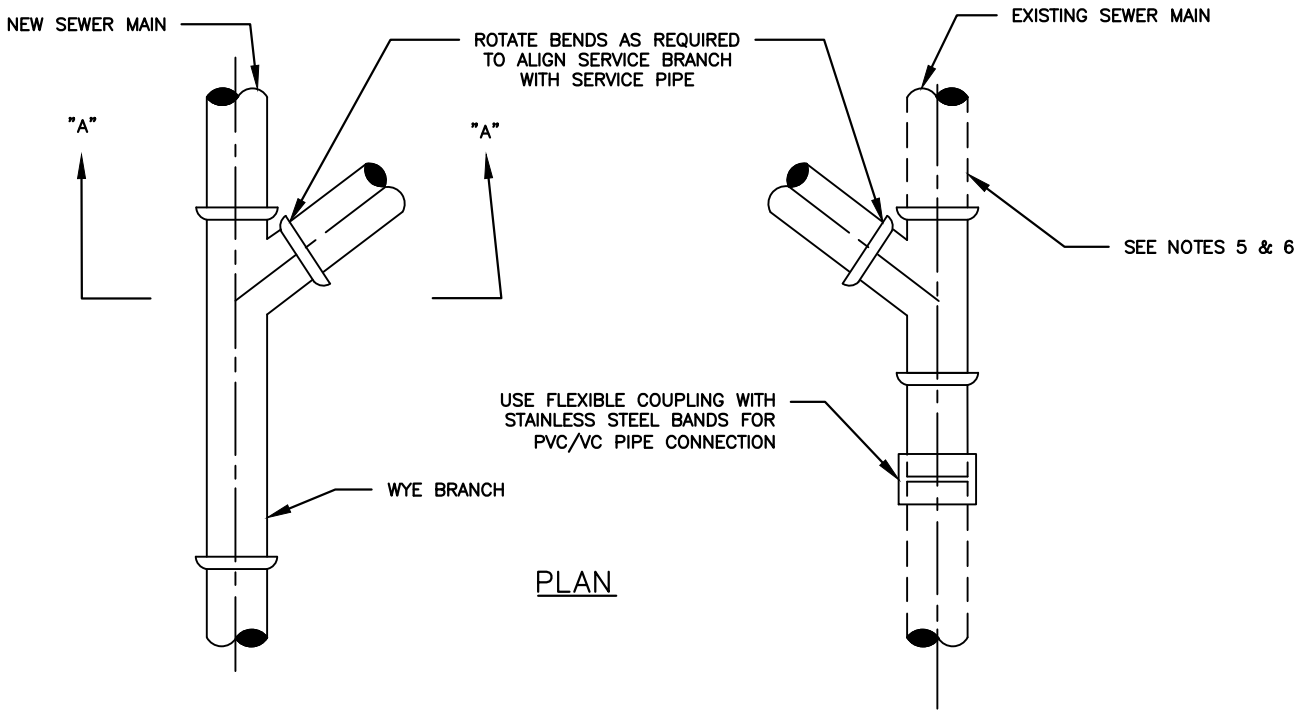
W-17

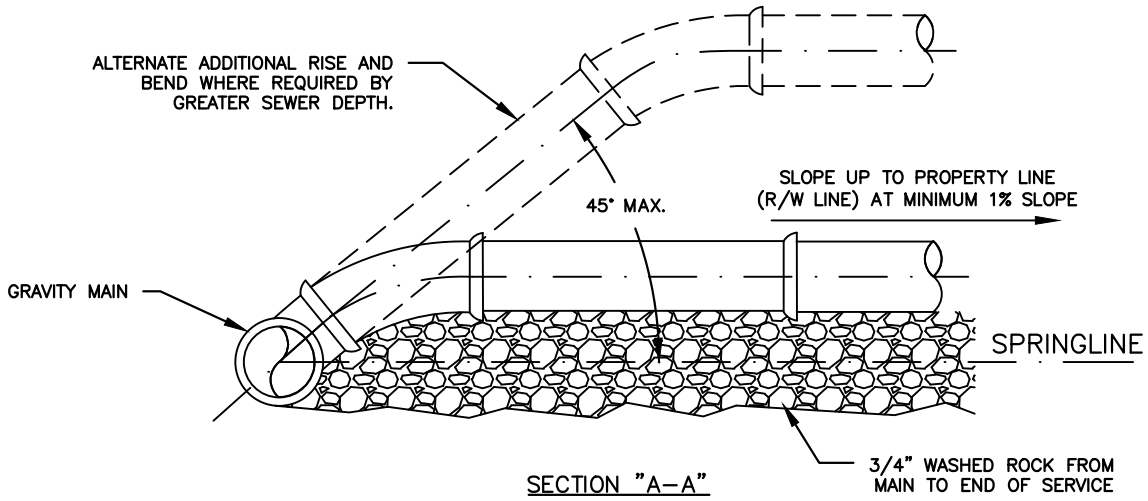


NOTES:

1. UPON COMPLETION OF THE PIPE INSTALLATION FOR ANY SECTION, ALL NEW WATER MAINS SHALL BE CANNON FLUSHED TO REMOVE DIRT AND ANY OTHER FOREIGN MATTER.
2. CANNON FLUSHING OF NEW WATER MAINS SHALL PROCEED ONLY AFTER HEALTH DEPARTMENT CLEARANCE IS RECEIVED.
3. CONTRACTOR IS CAUTIONED THAT GOVERNING AGENCIES OR UTILITIES MAY HAVE REGULATIONS LIMITING OR PROHIBITING DISCHARGE INTO SEWERS, SURFACE WATERS, CANALS, DITCHES AND OTHER CONVEYANCES/RETENTION AREAS. ALL COMPLIANCE WITH GOVERNING AGENCY REQUIREMENTS (INCLUDING PERMITTING, IF REQUIRED) IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
4. INSTALL A TEMPORARY 45° BEND AND ASSOCIATED TEMPORARY PIPING AS SHOWN TO DIRECT THE FLUSHING WATER AWAY FROM THE IMMEDIATE WORK AREA AND EXERCISE DUE CARE SO AS TO ENSURE THAT THE WATER USED IN FLUSHING DOES NOT CAUSE A NUISANCE OR INFLICT PROPERTY DAMAGE.
5. CONTRACTOR SHALL INSTALL A TEMPORARY PRESSURE GAUGE AT OR NEAR THE FILL AND FLUSH LOCATION. CONTRACTOR SHALL MONITOR AND MAINTAIN A MINIMUM PRESSURE OF 40 PSI AT ALL TIMES. THE FILL VALVE SHALL BE OPENED AND CLOSED SLOWLY TO AVOID RAPID PRESSURE CHANGES IN THE WATER SYSTEM.
6. BENDS AND PIPING SHALL BE THE SAME SIZE OR LARGER AS THE LINE BEING FLUSHED.
7. ALL PIPING SHALL BE MECHANICALLY RESTRAINED IN ACCORDANCE WITH CITY STANDARDS.
8. FLUSHING LOCATIONS ARE TO BE PROPOSED BY CONTRACTOR AND APPROVED BY ENGINEER OF RECORD.
9. PRIOR TO THE ACTUAL LINE FLUSHING OPERATION THE CONTRACTOR SHALL SCHEDULE INTENDED WATER USE WITH THE CITY.
10. NO EXISTING VALVES SHALL BE OPERATED, EXCEPT BY AUTHORIZED CITY PERSONNEL.
11. FLUSHING SHALL NOT BE ACCOMPLISHED WITHOUT THE ACTUAL PRESENCE OF THE CITY INSPECTOR.
12. AFTER THE WATER MAIN UNDER CONSTRUCTION HAS BEEN SUCCESSFULLY FLUSHED, THE CONTRACTOR SHALL REMOVE ALL TEMPORARY FACILITIES AND PROCEED WITH THE REMAINING CONSTRUCTION AS SPECIFIED. CLOSE CORPORATION STOPS AND PLUG/CAP WITH BRASS FITTINGS.

DATE: 08/24	DRAWN: KHA		
CITY OF MARGATE, FLORIDA DEPARTMENT OF ENVIRONMENTAL AND ENGINEERING SERVICES		**CANNON FLUSHING**	**W-18**

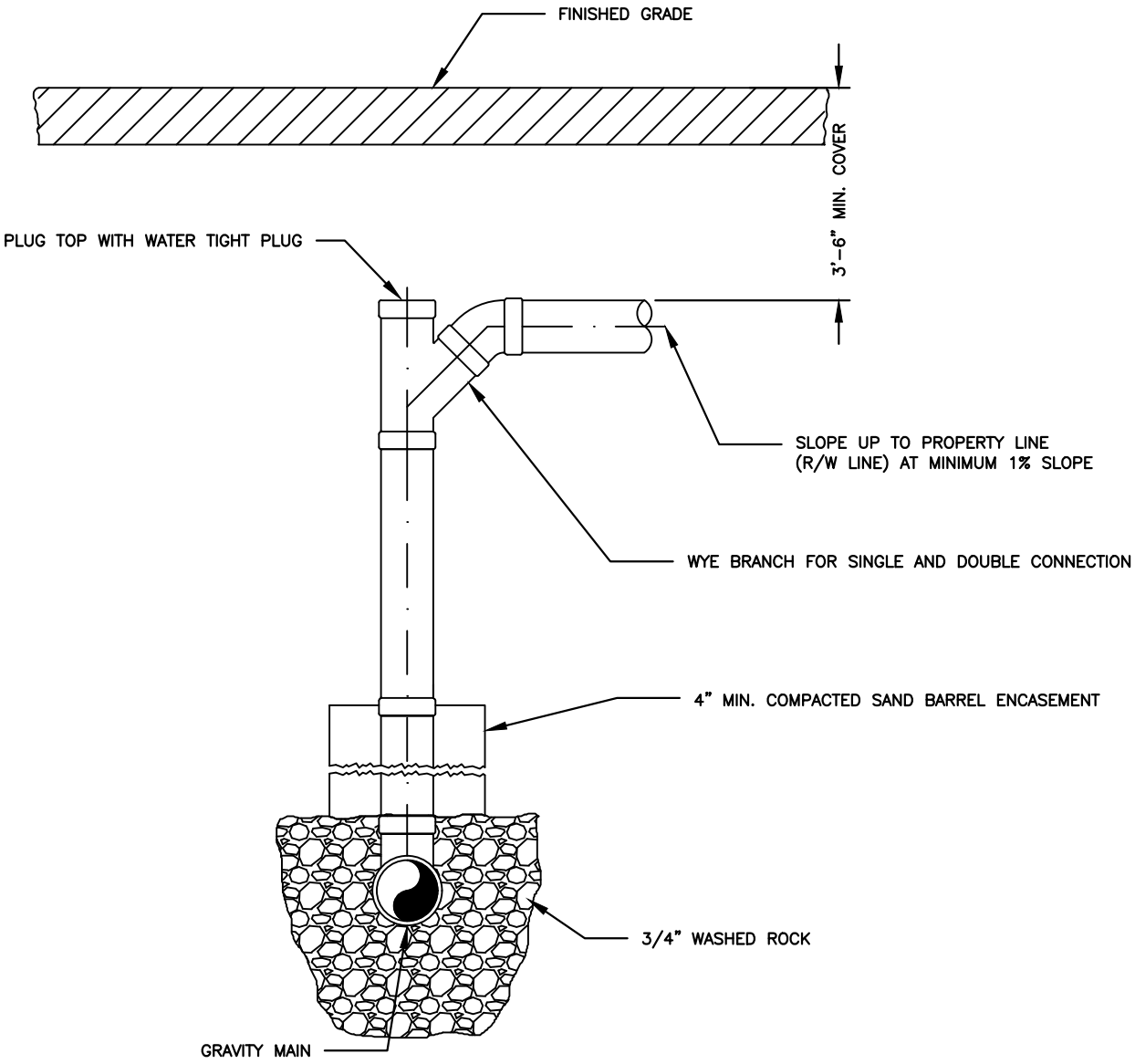




NOTES:

1. SINGLE SERVICE CONNECTIONS SHALL USE 6" MINIMUM DIAMETER PIPE AND FITTINGS.
2. DOUBLE SERVICE CONNECTIONS SHALL USE 6" MINIMUM DIAMETER PIPE AND FITTINGS.
3. USE RISER CONNECTION WHEN INVERT OF SEWER IS MORE THAN 7'–0" DEEP.
4. SINGLE SERVICE CONNECTIONS BELOW 12' DEPTH SHALL BE C–900 PVC UNTIL LESS THAN 12 FOOT DEPTH.
5. WHERE BELL OF WYE AND SPIGOT OF EXISTING MAIN ARE NOT COMPATIBLE, USE A SECOND FLEXIBLE COUPLING.
6. RIGID COUPLINGS MAY BE USED IN LIEU OF FLEXIBLE COUPLINGS.
7. MAINTAIN 36" MINIMUM COVER FROM TOP OF SERVICE TO FINISH GRADE; WHERE NOT TECHNICALLY FEASIBLE CONTACT CITY UTILITY DEPARTMENT.
8. PVC SERVICES SHALL BE INSTALLED IN ACCORDANCE WITH MINIMUM STANDARDS OF THE UNI–BELL HANDBOOK OF PVC PIPE DESIGN AND CONSTRUCTION, LATEST EDITION.
9. PIPE AND FITTINGS SHALL BE PVC SDR–35.

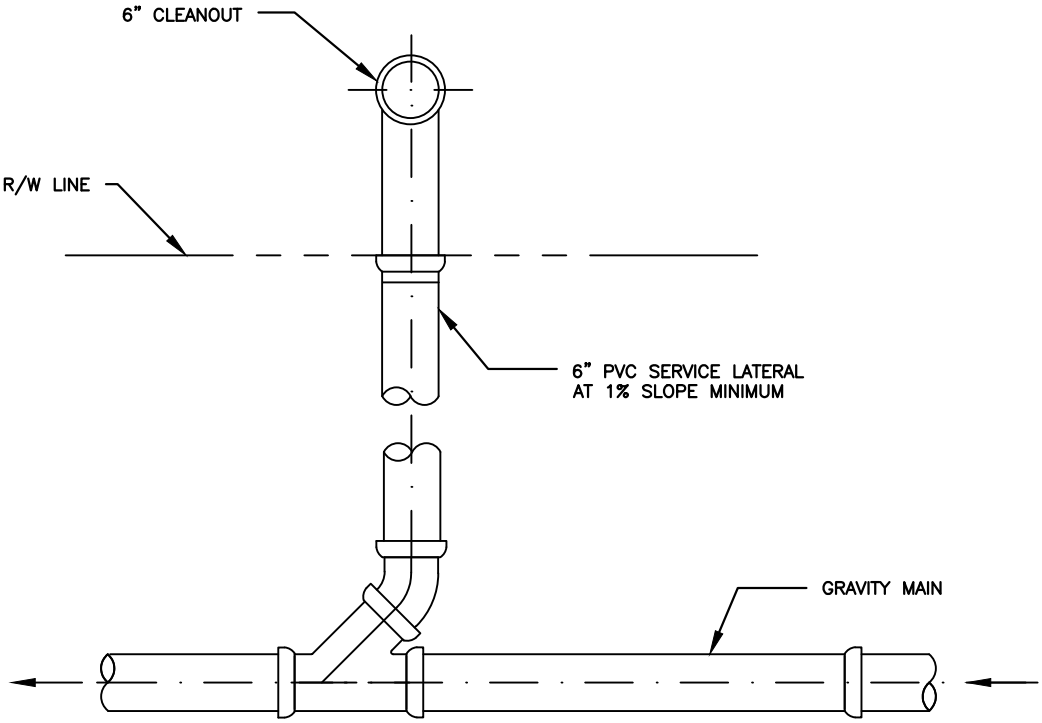
DATE: 08/24	DRAWN: KHA		
CITY OF MARGATE, FLORIDA DEPARTMENT OF ENVIRONMENTAL AND ENGINEERING SERVICES		**WYE SERVICE CONNECTION**	**WW-1**



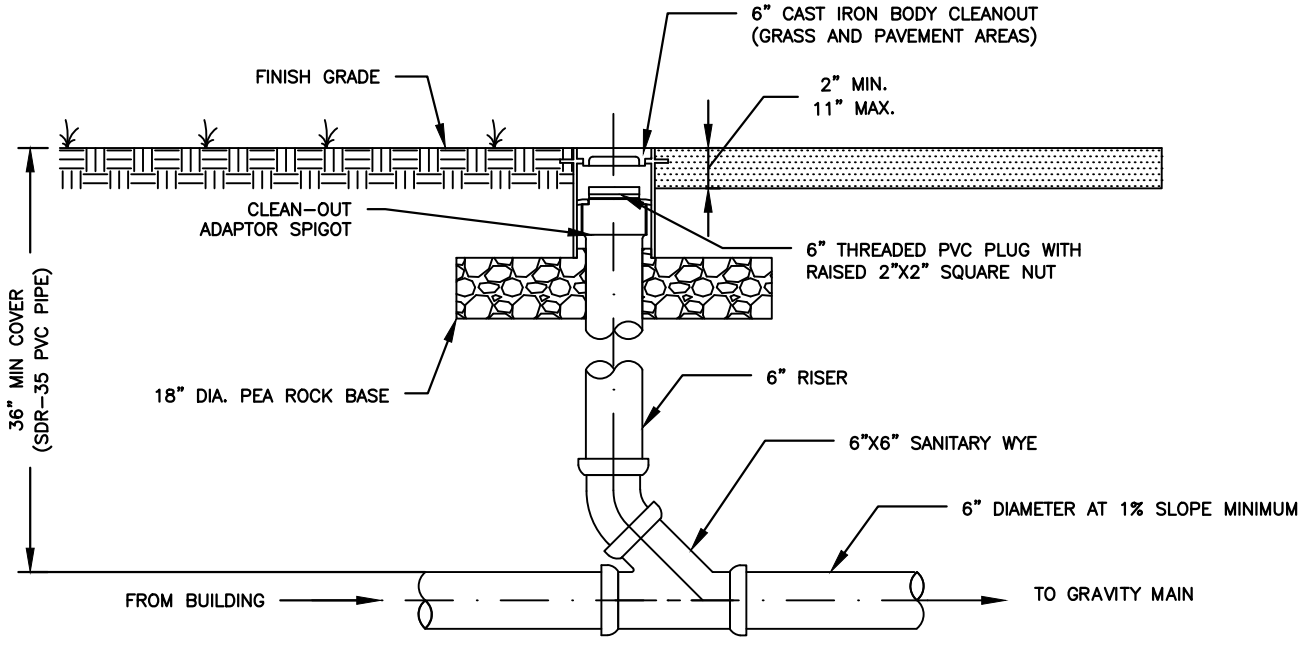
NOTES:

1. SINGLE SERVICE CONNECTIONS SHALL USE 6" PVC MINIMUM DIAMETER PIPE AND FITTINGS.
2. DOUBLE SERVICE CONNECTIONS SHALL USE 6" PVC MINIMUM DIAMETER PIPE AND FITTINGS.
3. USE WYE SERVICE CONNECTION WHERE INVERT OF SEWER IS LESS THAN 7'-0" DEEP.
4. SINGLE SERVICE CONNECTIONS BELOW 12' DEPTH SHALL BE C-900 PVC UNTIL LESS THAN 12 FOOT DEPTH.
5. WHERE BELL OF WYE AND SPIGOT OF EXISTING MAIN ARE NOT COMPATIBLE, USE A SECOND FLEXIBLE COUPLING.
6. RIGID COUPLINGS MAY BE USED IN LIEU OF FLEXIBLE COUPLINGS.
7. MAINTAIN 36" MINIMUM COVER FROM TOP OF SERVICE TO FINISH GRADE; WHERE NOT TECHNICALLY FEASIBLE CONTACT CITY UTILITY DEPARTMENT.
8. PVC SERVICES SHALL BE INSTALLED IN ACCORDANCE WITH MINIMUM STANDARDS OF THE UNI-BELL HANDBOOK OF PVC PIPE DESIGN AND CONSTRUCTION, LATEST EDITION.
9. PIPE AND FITTINGS SHALL BE PVC SDR-35.

DATE: 08/24	DRAWN: KHA		
CITY OF MARGATE, FLORIDA DEPARTMENT OF ENVIRONMENTAL AND ENGINEERING SERVICES		**RISER SERVICE CONNECTION**	**WW-2**



PLAN

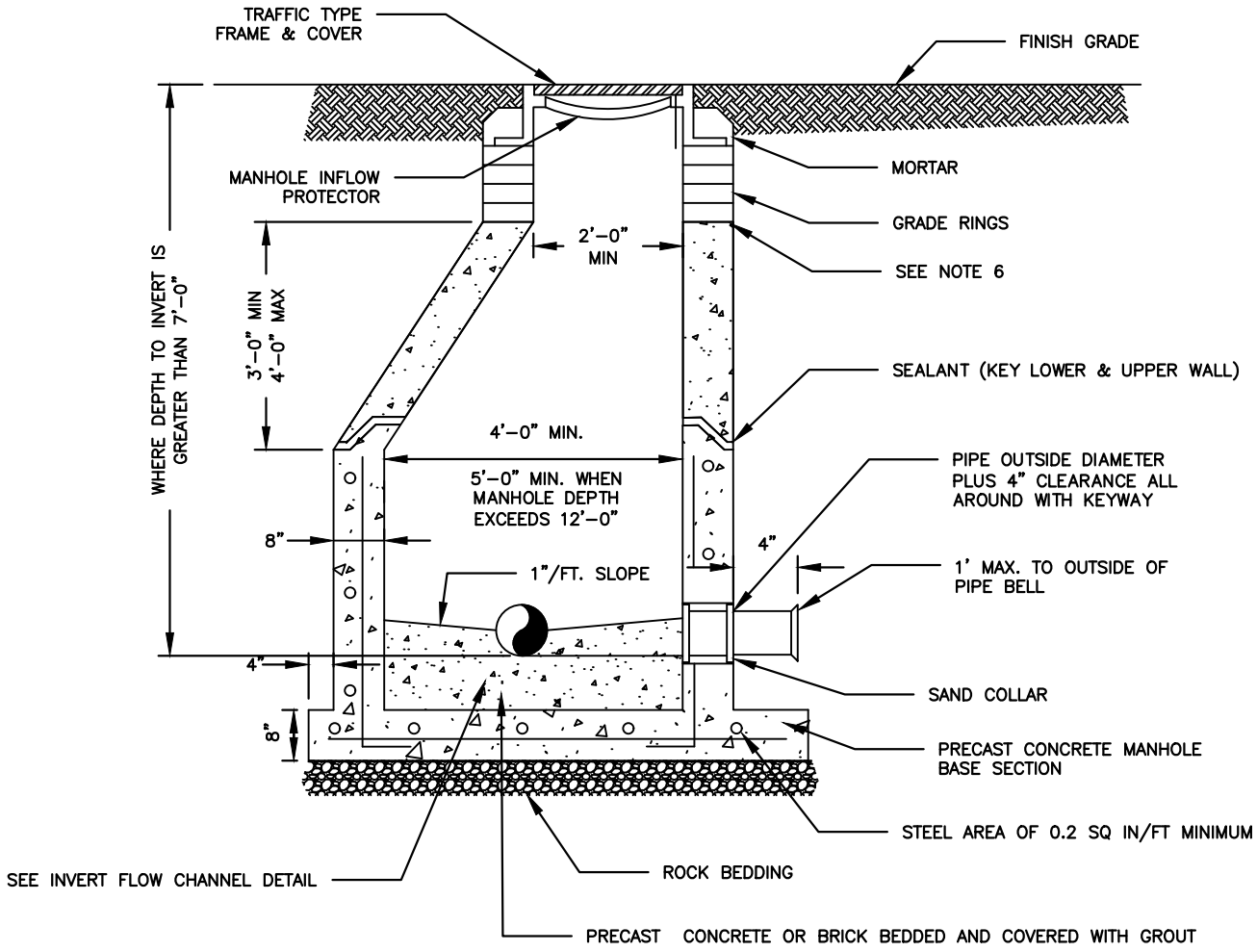


SECTION VIEW

NOTE:

1. PIPING AND FITTINGS SHALL BE PVC SDR-35

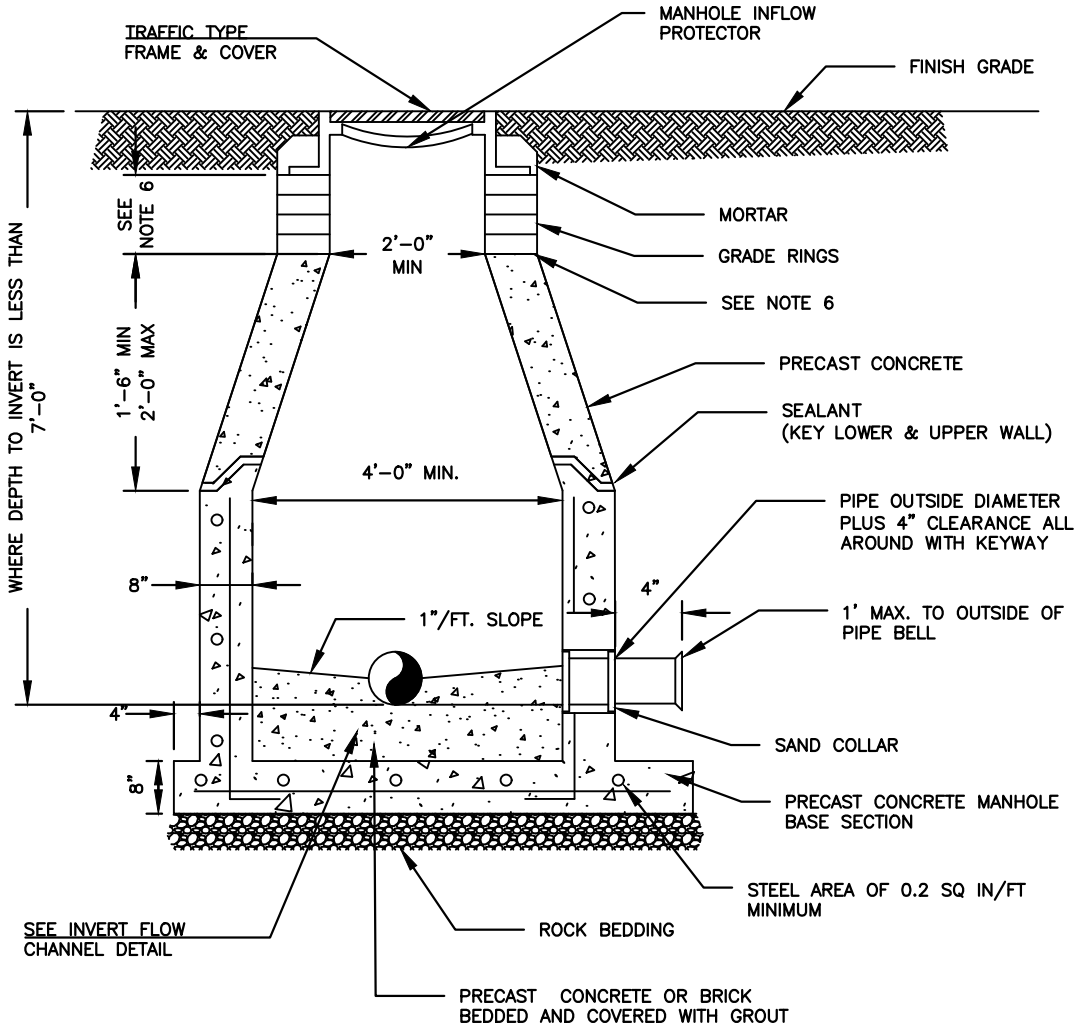
DATE: 08/24	DRAWN: KHA		
CITY OF MARGATE, FLORIDA DEPARTMENT OF ENVIRONMENTAL AND ENGINEERING SERVICES		**CLEANOUT**	**WW-3**



NOTES:

1. MAINTENANCE ACCESS STRUCTURE WALLS TO BE SEAL COATED INSIDE AND OUTSIDE WITH 16 MIL. THICKNESS OF COAL TAR EPOXY. THE 1st COAT IS RED AND THE 2nd COAT IS BLACK.
2. LIFT HOLES ARE NOT ALLOWED.
3. ALL OPENINGS SHALL BE SEALED WITH WATERPROOF EXPANDING GROUT.
4. A FLOW CHANNEL SHALL BE CONSTRUCTED INSIDE MAINTENANCE ACCESS STRUCTURE TO DIRECT INFLUENT INTO FLOW STREAM.
5. ALL CONCRETE SHALL BE TYPE II CEMENT, MEETING LATEST ASTM REQUIREMENTS AND PROVIDED WITH LABORATORY CERTIFICATION ON PRECAST STRUCTURES.
6. THE CHIMNEY AREA SHALL BE MINIMUM OF 4" AND A MAXIMUM OF 12" IN HEIGHT. A MINIMUM OF 3 GRADE RINGS SHALL BE INSTALLED. SET IN 2 STRIPS OF BUTYL JOINT SEALANT STRIPS ON EACH SEALING FACE.
7. SET MAINTENANCE ACCESS STRUCTURE FRAME ON 2 STRIPS OF BUTYL JOINT SEALANT STRIPS PLUS A BED OF PORTLAND CEMENT AND SILICA SAND. APPLY MORTAR ON INSIDE AND OUTSIDE BUTYL JOINT SEALANT.
8. APPLY MORTAR COATING TO INSIDE AND OUTSIDE OF CHIMNEY. BRING MORTAR UP AND OVER FRAME. (SEE NOTE 10 BELOW.)
9. IF CONSHIELD ANTI-MICROBIAL AGENT IS USED IN THE CONCRETE OR MORTAR MIX, INTERIOR COATINGS MAY BE ELIMINATED.
10. PRECAST CONCRETE MANHOLES AND ACCESSORIES SHALL BE AS SPECIFIED.
11. DOGHOUSE MANHOLES WILL NOT BE ACCEPTED BY THE CITY.

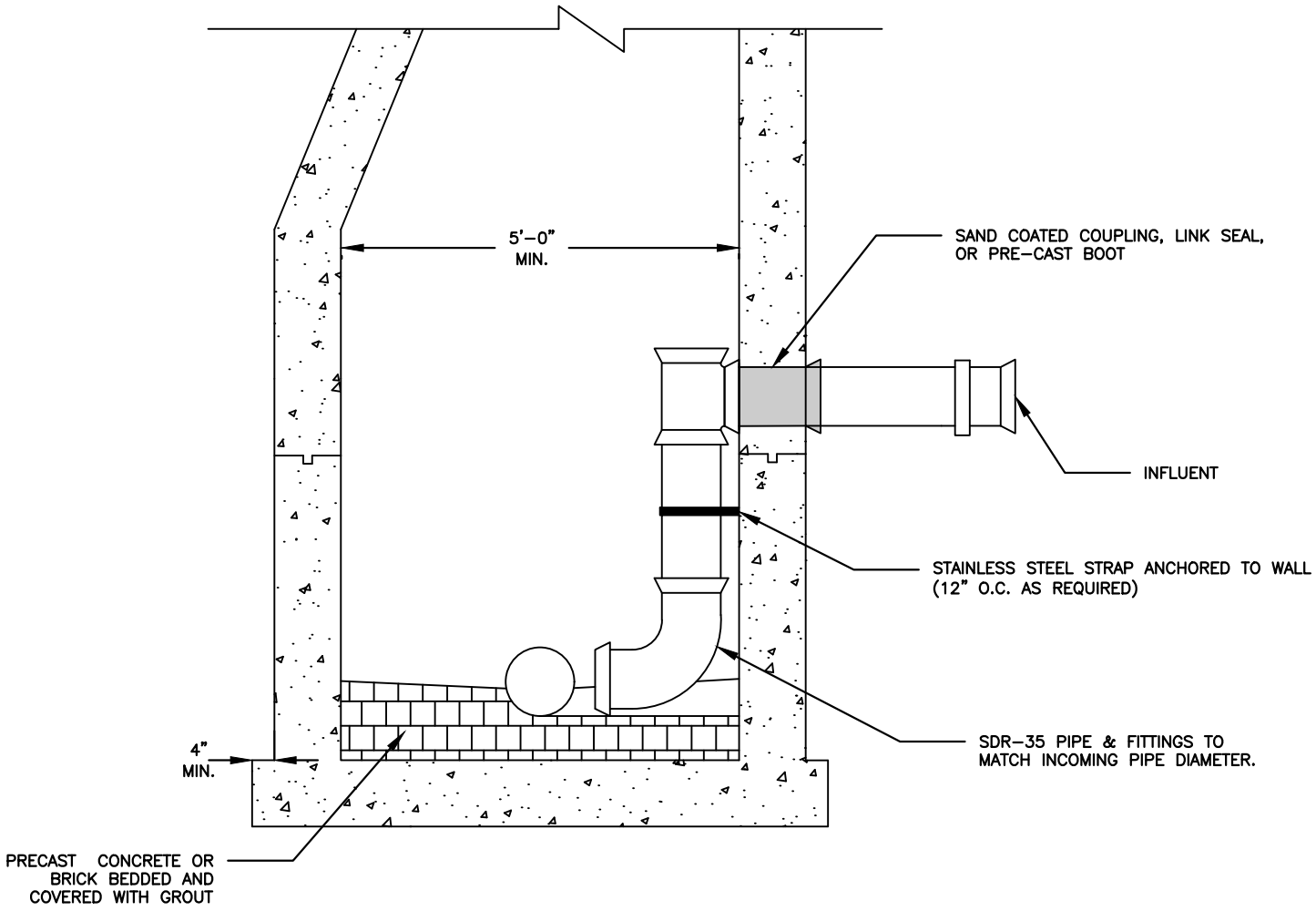
DATE: 08/24	DRAWN: KHA		
CITY OF MARGATE, FLORIDA DEPARTMENT OF ENVIRONMENTAL AND ENGINEERING SERVICES		**STANDARD MANHOLE**	**WW-4**



NOTES:

1. MAINTENANCE ACCESS STRUCTURE WALLS TO BE SEAL COATED INSIDE AND OUTSIDE WITH 16 MIL. THICKNESS OF COAL TAR EPOXY. THE 1st COAT IS RED AND THE 2nd COAT IS BLACK.
2. LIFT HOLES ARE NOT ALLOWED.
3. ALL OPENINGS SHALL BE SEALED WITH WATERPROOF EXPANDING GROUT.
4. A FLOW CHANNEL SHALL BE CONSTRUCTED INSIDE MAINTENANCE ACCESS STRUCTURE TO DIRECT INFLUENT INTO FLOW STREAM.
5. ALL CONCRETE SHALL BE TYPE II CEMENT, MEETING LATEST ASTM REQUIREMENTS AND PROVIDED WITH LABORATORY CERTIFICATION ON PRECAST STRUCTURES.
6. THE CHIMNEY AREA SHALL BE MINIMUM OF 4" AND A MAXIMUM OF 12" IN HEIGHT. A MINIMUM OF 3 GRADE RINGS SHALL BE INSTALLED. SET IN 2 STRIPS OF BUTYL JOINT SEALANT STRIPS ON EACH SEALING FACE.
7. SET MAINTENANCE ACCESS STRUCTURE FRAME ON 2 STRIPS OF BUTYL JOINT SEALANT STRIPS PLUS A BED OF PORTLAND CEMENT AND SILICA SAND. APPLY MORTAR ON INSIDE AND OUTSIDE BUTYL JOINT SEALANT.
8. APPLY MORTAR COATING TO INSIDE AND OUTSIDE OF CHIMNEY. BRING MORTAR UP AND OVER FRAME. (SEE NOTE 10. BELOW.)
9. IF CONSHIELD ANTI-MICROBIAL AGENT IS USED IN THE CONCRETE OR MORTAR MIX, INTERIOR COATINGS MAY BE ELIMINATED.
10. WHERE NOT TECHNICALLY FEASIBLE CONTACT CITY UTILITY DEPARTMENT.
11. DOGHOUSE MANHOLES WILL NOT BE ACCEPTED BY THE CITY

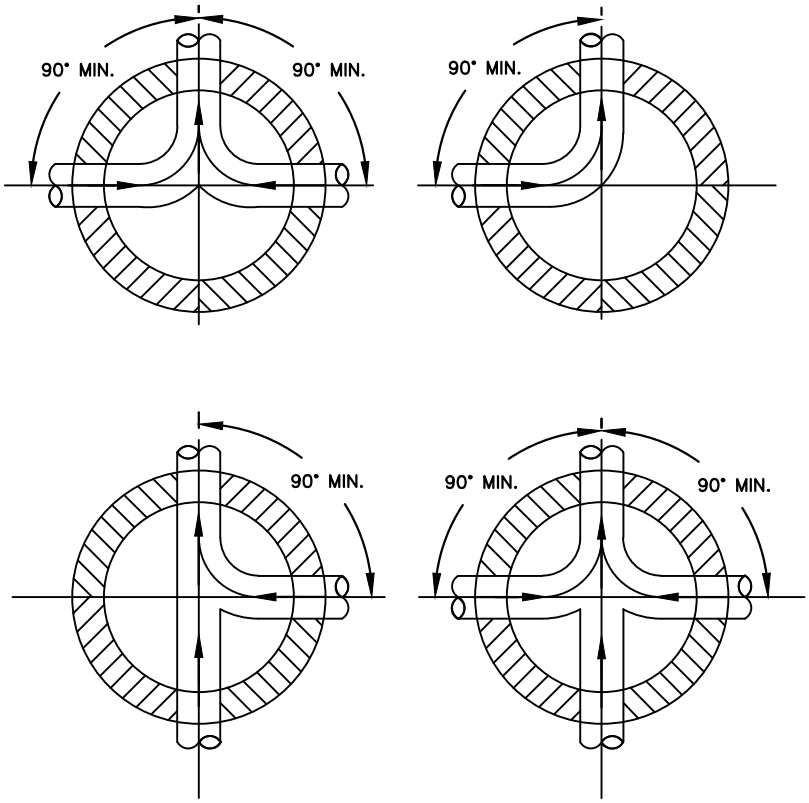
DATE: 08/24	DRAWN: KHA		
CITY OF MARGATE, FLORIDA DEPARTMENT OF ENVIRONMENTAL AND ENGINEERING SERVICES		**SHALLOW MANHOLE**	**WW-5**



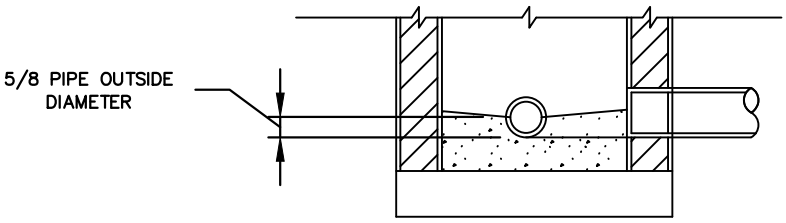
NOTES:

1. THE MANUFACTURER'S PORTION OF THE CONCRETE ENCASEMENT FOR THE DROP CONNECTION SHALL BE POURED INTEGRALLY WITH BOTH THE MAINTENANCE ACCESS STRUCTURE SLAB AND WALL.
2. DROP CONNECTIONS SHALL BE REQUIRED WHENEVER AN INFLUENT SEWER IS LOCATED TWO (2) FEET OR MORE ABOVE THE MAIN INVERT CHANNEL.
3. ALL REQUIREMENTS FOR PRECAST MAINTENANCE ACCESS STRUCTURE WITHOUT DROP CONNECTIONS WILL ALSO APPLY TO PRECAST MAINTENANCE ACCESS STRUCTURE WITH DROP CONNECTIONS. SEE PRECAST MAINTENANCE ACCESS STRUCTURE STANDARD DETAIL FOR OTHER REQUIREMENTS.
4. ALL PIPE TO BE SAME DIAMETER AS INFLUENT SEWER MAIN.
5. APPLY MORTAR COATING TO INSIDE AND OUTSIDE OF CHIMNEY. BRING MORTAR UP AND OVER FRAME.
6. IF CONSHIELD ANTI-MICROBIAL AGENT IS USED IN THE CONCRETE OR MORTAR MIX, INTERIOR COATINGS MAY BE ELIMINATED.

DATE: 08/24	DRAWN: KHA		
CITY OF MARGATE, FLORIDA DEPARTMENT OF ENVIRONMENTAL AND ENGINEERING SERVICES		**INSIDE DROP MANHOLE**	**WW-6**



PLAN OF BOTTOM & FLOW CHANNELS

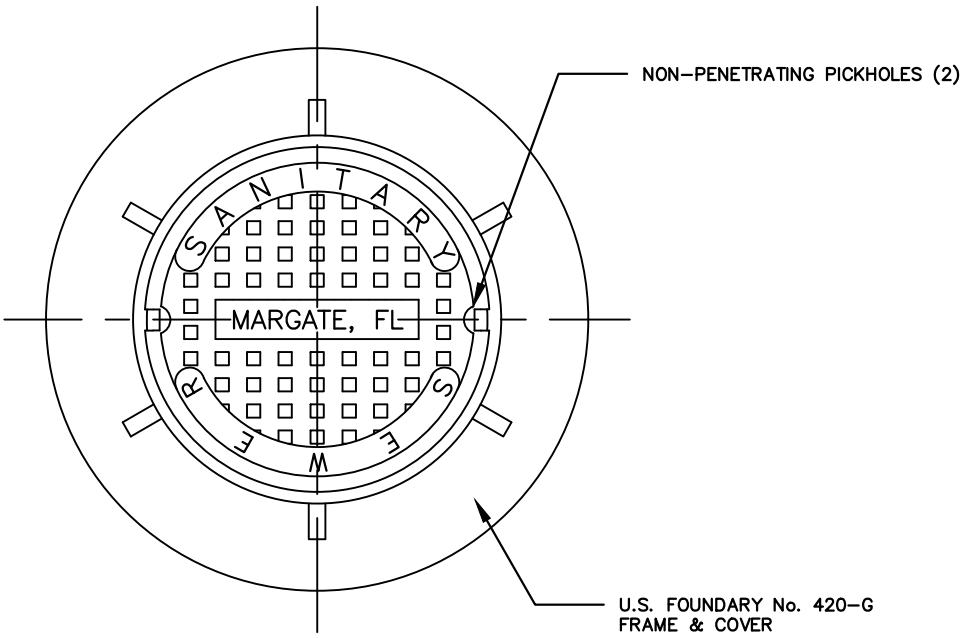


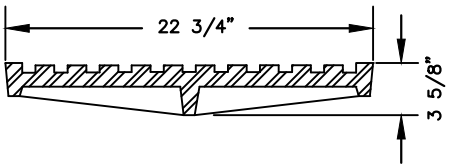
TYPICAL SECTION

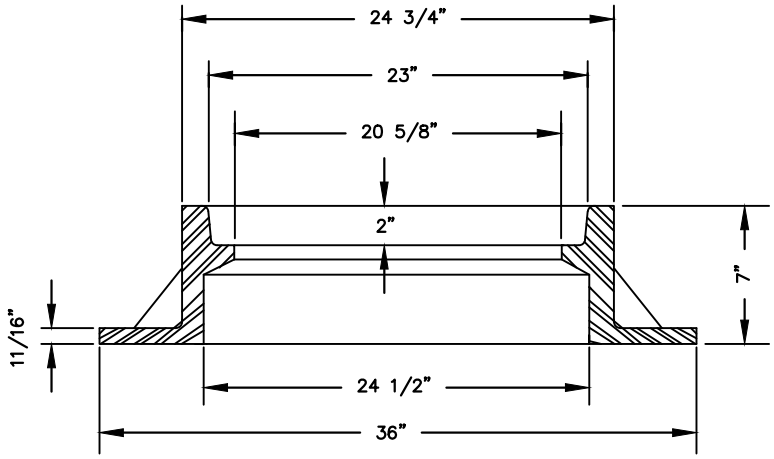
NOTES:

1. PROVIDE SPILLWAY FOR SMOOTH FLOW BETWEEN PIPES WITH DIFFERENT INVERT ELEVATIONS.
2. SLOPE MAINTENANCE ACCESS STRUCTURE SHELF WITH 1" DROP/FT. FROM MAINTENANCE ACCESS STRUCTURE WALL TO CHANNEL.
3. INVERT CHANNEL TO BE CONSTRUCTED FOR SMOOTH FLOW WITH NO OBSTRUCTIONS.
4. ALL CONCRETE SHALL USE TYPE II CEMENT ONLY.
5. CHANNEL SHALL BE PRECAST CONCRETE OR FILLED WITH BRICK COVERED WITH 1" OF MORTAR.
6. INVERT CHANNELS TO BE CONSTRUCTED TO ACCEPT USE OF FLOW PLUGS AND VIDEO CAMERA INSERTION.

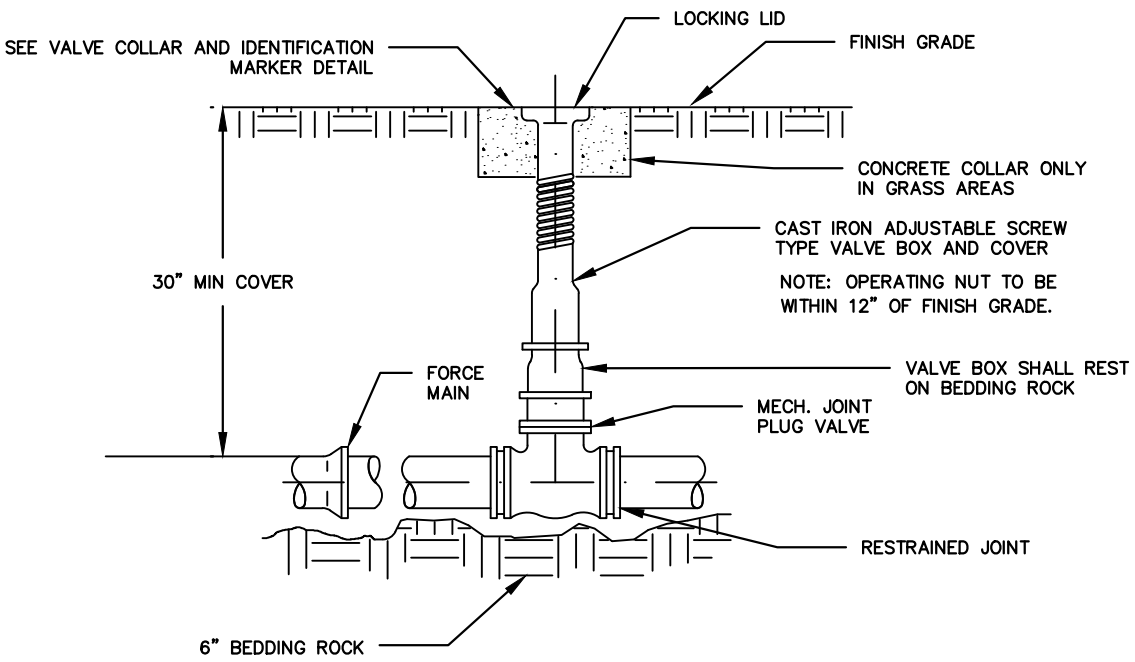
DATE: 08/24	DRAWN: KHA		
CITY OF MARGATE, FLORIDA DEPARTMENT OF ENVIRONMENTAL AND ENGINEERING SERVICES		**INVERT FLOW CHANNEL**	**WW-7**







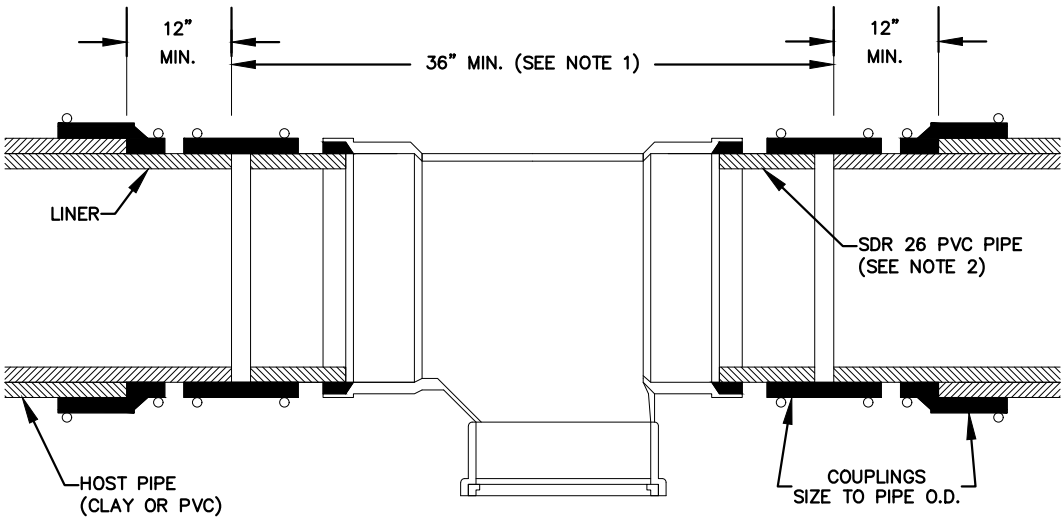
DATE: 08/24	DRAWN: KHA		
CITY OF MARGATE, FLORIDA DEPARTMENT OF ENVIRONMENTAL AND ENGINEERING SERVICES		**GRAVITY SEWER MANHOLE FRAME AND COVER**	**WW-8**



NOTES:

1. WHEN VALVE IS NOT LOCATED IN PAVEMENT PLACE 1 GREEN RAISED PAVEMENT MARKER IN ADJACENT ROADWAY.
2. OPERATOR EXTENSION SHAFT SHALL BE PROVIDED WHEN OPERATING NUT IS MORE THAN 24" BELOW TOP OF VALVE BOX.
3. PVC PIPE AND DUCTILE IRON PIPE ARE ACCEPTABLE FOR VALVE BOX RISER WITH PROPER BEDDING.

DATE: 08/24	DRAWN: KHA		
	CITY OF MARGATE, FLORIDA DEPARTMENT OF ENVIRONMENTAL AND ENGINEERING SERVICES	**GATE OR PLUG VALVE**	**WW-9**



NOTES:

1. FOR MAINS LARGER THAN 8" THIS DIMENSION SHALL BE THE FITTING DIAMETER PLUS 24".
2. FOR DEPTHS GREATER THAN 12 FEET, USE C-900 PVC PIPE

DATE: 08/24	DRAWN: KHA		
CITY OF MARGATE, FLORIDA DEPARTMENT OF ENVIRONMENTAL AND ENGINEERING SERVICES		**SERVICE CONNECTION ON LINED GRAVITY SEWER**	**WW-10**

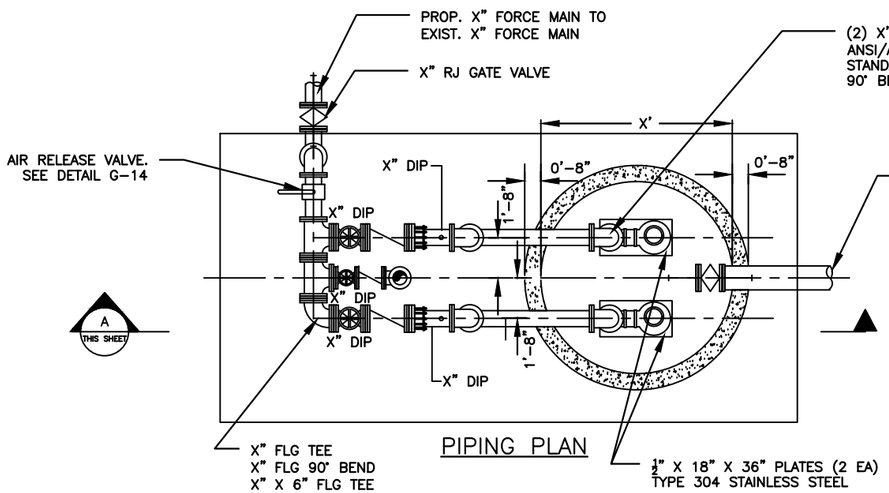
CITY OF MARGATE, FLORIDA
DEPARTMENT OF ENVIRONMENTAL
AND ENGINEERING SERVICES

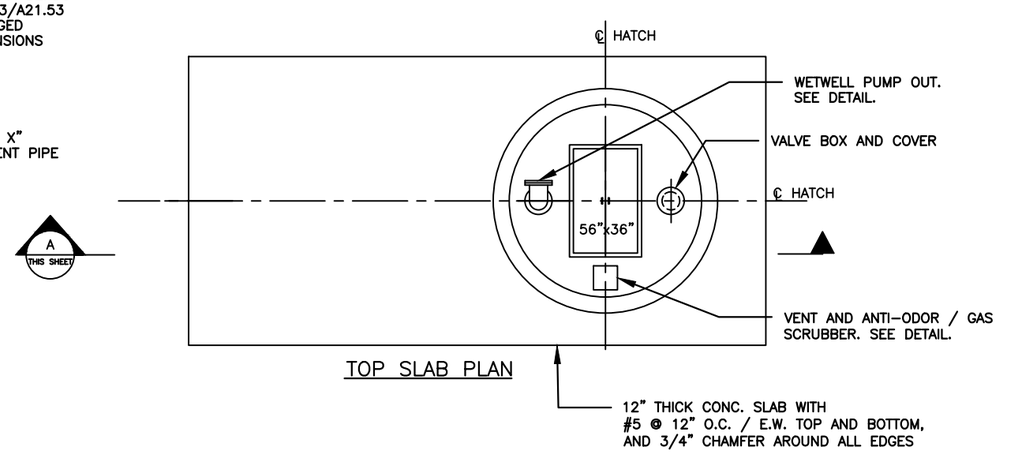
DATE: 08/24

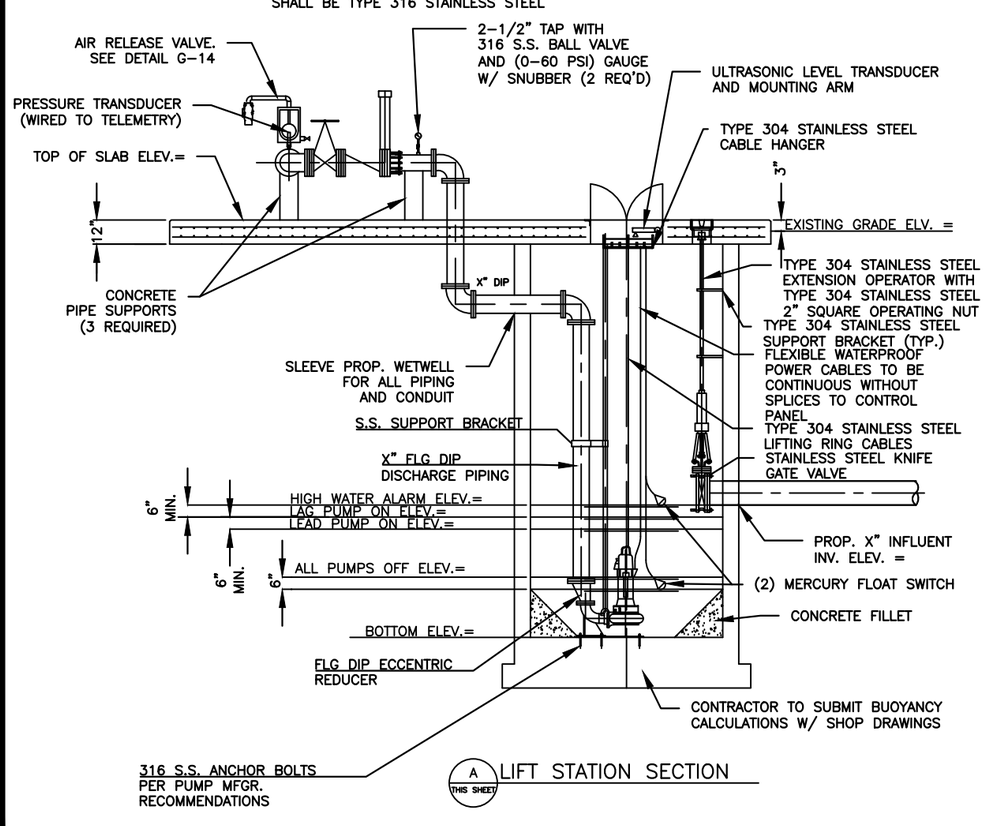
DRAWN: KHA

STANDARD LIFT STATION
WETWELL AND VALVE VAULT

M-1







PIPE DIAMETERS, STRUCTURE SIZES, SLAB DIMENSIONS, HATCH SIZES, ETC. ON THE DETAIL MUST BE ADJUSTED ON A PROJECT-BY-PROJECT BASIS.

GENERAL NOTES:

1. ALL CONSTRUCTION SHALL CONFORM TO THE FLORIDA BUILDING CODE, LATEST REVISION.
2. THE CONTRACTOR SHALL VERIFY ALL INFORMATION SHOWN PRIOR TO CONSTRUCTION AND ANY DISCREPANCY SHALL BE REPORTED TO THE ENGINEER.
3. CONCRETE SHALL NOT HAVE LESS THAN 3000 PSI COMPRESSIVE STRENGTH AT 28 DAYS. PRECAST CONCRTE SHALL BE 4000 PSI CLASS II MINIMUM. REINFORCING STEEL SHALL CONFORM TO ASTM SPEC. A-615 AND SHALL BE DEFORMED ACCORDING TO ASTM SPEC. 305. ALL PIPE OPENINGS SHALL BE CAST AT TIME OF FABRICATION.
4. DUCTILE IRON PIPE SHALL BE AWWA C151, CLASS 350, CERAMIC EPOXY COATED WITH PROTECTO 401 CERAMIC EPOXY LINING.
5. DUCTILE IRON FITTINGS SHALL BE AWWA C110/C153, FLANGED JOINTS, OR RESTRAINED JOINTS WITH MEGALUGS, CERAMIC COATED WITH PROTECTO 401 CERAMIC EPOXY LINING.
6. FOLLOW ALL PROCEDURES FOR SEALING CUT ENDS AND REPAIRING FIELD DAMAGED AREAS OF PROTECTO 401 CERAMIC EPOXY LINED PIPES AND FITTINGS.
7. SEWAGE PUMPS SHALL BE DUPLEX SUBMERSIBLE.
8. SHOP DRAWINGS FOR THE COMPLETE LIFT STATION SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO DELIVERY TO THE JOB SITE.
9. FOUR (4) HARD COPIES AND DIGITAL COPY OF OPERATION AND MAINTENANCE MANUAL ARE TO BE SUBMITTED TO THE CITY AFTER ENGINEER'S APPROVAL.
10. OPENINGS AROUND ALL PIPES SHALL BE SEALED WITH EMBECO MORTAR.
11. ALL UNSUITABLE MATERIAL SHALL BE REMOVED WITHIN THE LIMITS OF CONSTRUCTION.
12. OUTSIDE OF NEW WETWELL AND NEW VALVE BOX SHALL BE COATED WITH COAL TAR EPOXY.
13. INSIDE OF WETWELL, AND VALVE BOX SHALL BE COATED WITH APPROVED COATING SYSTEM.
14. GATE VALVES SHALL BE RESILIANT SEAT, EPOXY COATED.
15. CHECK VALVES SHALL BE IRON BODY, EPOXY COATED, BRONZE MOUNTED, SWING CHECK, LEVER AND WEIGHT.
16. ELECTRICAL PANEL SHALL BE A NEMA 4X STAINLESS STEEL ENCLOSURE, UL LABEL. ALL CONTROL WIRING TO HAVE WIRE NUMBERS. (CITY WILL PROVIDE MANUFACTURER SPECIFICATIONS FOR THE ELECTRICAL PANEL AND TELEMETRY)
17. MOTOR STARTERS, CIRCUIT BREAKERS, AND ELECTRICAL CONTROL DEVICES SHALL BE SIZED PER NEC CODE. (CITY WILL PROVIDE MANUFACTURER SPECIFICATIONS FOR THE ELECTRICAL PANEL AND TELEMETRY)
18. ELECTRICAL PANEL MUST HAVE A STORAGE COMPARTMENT INSIDE PANEL DOOR FOR OPERATION AND MAINTENANCE MANUAL.
19. ELECTRICAL SYSTEM SHALL BE PROTECTED BY A LIGHTNING ARRESTOR AND SURGE CAPACITOR.
20. POWER TOOL OUTLET TO BE MOUNTED IN DEAD FRONT AND MUST BE A GFI RECEPTACLE.
21. SEAL-OFFS TO BE PROVIDED ON ALL ELECTRICAL CONDUITS ENTERING CONTROL PANEL FROM WETWELL.
22. ALL PIPE SUPPORTS, CLAMPS, AND FASTENERS IN THE WETWELL AND VALVE BOX SHALL BE TYPE 304 STAINLESS STEEL. ALL BOLTS, NUTS AND WASHERS SHALL BE TYPE 316 STAINLESS STEEL (UNLESS OTHERWISE NOTED).
23. PUMPS TO HAVE STAINLESS STEEL PLATE IDENTIFICATION.
24. ALL CABLES, WIRES, CORDS, ETC. IN WETWELL SHALL BE PROTECTED BY STAINLESS STEEL BRAIDED SLEEVING FOR THEIR ENTIRE LENGTH. SLEEVING SHALL ACHIEVE ASTM G-21 RATING 0 OR 1 AND HAVE A TENSILE STRENGTH OF 125,000 PSI OR GREATER PER ASTM D-2256.
25. WHEN DESIGNING FUTURE STATIONS, WET WELL SHOULD BE IN LINE WITH GATE FOR QUICK CRANE ACCESS TO PULL PUMPS OUT.
26. JUNCTION BOXES (2) SHALL BE ADDED BETWEEN WET WELL AND CONTROL PANEL. (1) FOR POWER AND (1) FOR CONTROLS.
27. ALL WET WELLS SHALL HAVE FALL PROTECTION SYSTEMS INSTALLED INCLUDING GRATING, POLES, RAILING, ETC.

LIFT STATION DATA TABLE	
PUMP MANUFACTURER	
PUMP MODEL NUMBER	
PUMP IMPELLER, DIA. IN.	
QUANT OF PUMPS PER STATION	
DESIGN FLOW, G.P.M.	
DESIGN TDH, FEET	
MAX DESIGN FLOW, G.P.M.	
MAX DESIGN TDH, FEET	
SHUT OFF HEAD, FEET	
MOTOR MODEL NUMBER	
MAX MOTOR SPEED, R.P.M	
MIN MOTOR HORSEPOWER, H.P.	
MIN MOTOR SERVICE FACTOR	
ELECTRICAL SERVICE	

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DRAWN:KHA

STANDARD LIFT STATION PUMP OUT BYPASS AND ODOR CONTROL

M-2

WETWELL PUMP OUT

SCALE: N.T.S.

VENT AND ANTI-ODOR/GAS SCRUBBER DETAIL

SCALE: N.T.S.

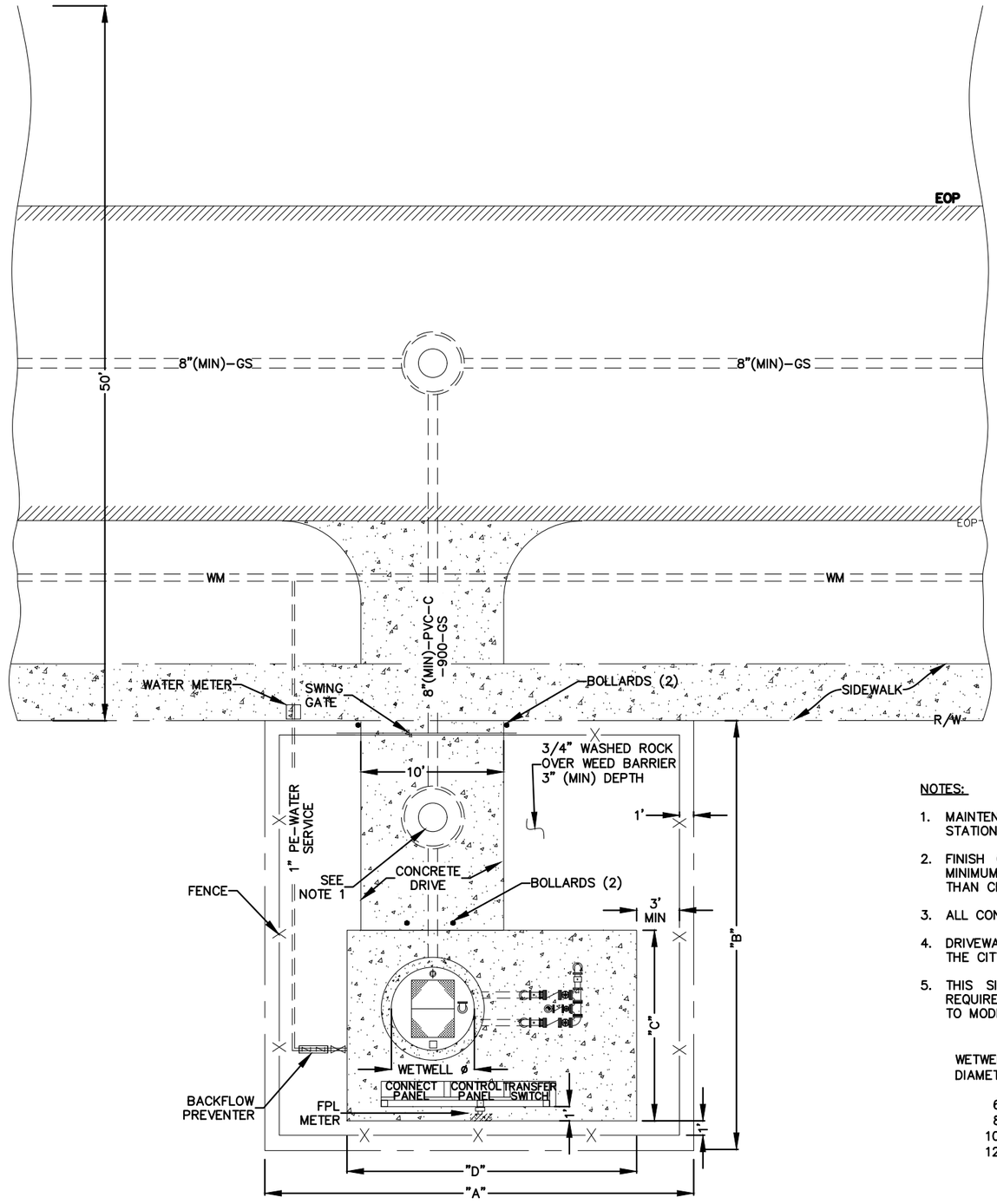
CITY OF MARGATE, FLORIDA
DEPARTMENT OF ENVIRONMENTAL
AND ENGINEERING SERVICES

DATE: 08/24

DRAWN: KHA

LIFT STATION
SITE PLAN

M-3



TYPICAL SITE PLAN
NTS

NOTES:

1. MAINTENANCE ACCESS STRUCTURES SHALL BE INSTALLED WITHIN THE PUMP STATION EASEMENT AS SHOWN UNLESS CITY DIRECTS OTHERWISE.
2. FINISH GRADE ELEVATION FOR WETWELL AND VALVE VAULT SHALL BE A MINIMUM OF ONE FOOT ABOVE THE FEMA 100 YR FLOOD ELEVATION OR NOT LOWER THAN CROWN OF ROAD.
3. ALL CONCRETE SLABS ON GRADE SHALL BE CLASS A.
4. DRIVEWAY SHALL BE 6–INCH THICK CONCRETE, WITHOUT REINFORCEMENT, UNLESS THE CITY DIRECTS OTHERWISE.
5. THIS SITE LAYOUT IS GENERAL IN NATURE AND SHOULD BE MODIFIED AS REQUIRED FOR EACH INDIVIDUAL LIFT STATION. THE CITY RESERVES THE RIGHT TO MODIFY PROPOSED LAYOUT TO MEET OPERATIONAL NEEDS.

WETWELL DIAMETER	"A"	"B"	"C"	"D"
6'	30.00'	30.00'	13.34'	20.25'
8'	30.00'	30.00'	16.34'	22.25'
10'	32.00'	32.00'	19.00'	27.50'
12'	35.00'	35.00'	20.00'	29.00'

CITY OF MARGATE, FLORIDA
DEPARTMENT OF ENVIRONMENTAL
AND ENGINEERING SERVICES

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DRAWN: KHA

CHAIN-LINK FENCING AND MISC. NOTES

M-4

TYPICAL FENCING NOTES:

1. PROVIDE SHOP DRAWINGS FOR REVIEW AND APPROVAL PRIOR TO FABRICATION.
2. ALL FENCING FITTINGS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM 626.
3. POSTS SHALL BE 3.0' (MIN.) EMBEDMENT SET IN 3,000–PSI (MIN.) CONCRETE FOOTERS.
4. ALL MEMBERS SHALL BE A.S.A. SCH. 40 GALVANIZED STEEL (VINYL COATING WHEN SPECIFIED ON PLANS).
5. ALL CHAIN LINE FENCE WALLS/MESH TO BE STRUNG THROUGH STRECHER BARS AND ATTACHED TO END POST WITH CLIPS AT 16" (MAX.) O.C.
6. CONTRACTOR SHALL INSTALL FENCE GROUNDING AND BONDING AS PER ARTICLE 250 OF THE NEC AND BUILDING DEPARTMENT REQUIREMENTS, LATEST EDITION.
7. MESH SHALL BE 9 GA. ALUMINIZED CHAIN LINK WIRE FABRIC 2" X 2" SQUARES ATTACHED TO POSTS AND TOP/BOTTOM RAILS (VINYL COATING WHEN SPECIFIED ON PLANS).
8. MESH SHALL BE WIRE TIED O.C. ALONG PIPE FRAME AT 24" (MAX.) ON TOP, 16" (MAX.) ON SIDES, 12" (MAX.) ALONG BOTTOM, AND AT EVERY POST TO PREVENT CURLING.
9. ALL CHAIN LINK MESH TERMINATION ENDS SHALL BE INSTALLED 1/4" (TYP.) FROM EDGE OF PERIMETER RAIL AND BE "KNUCKLED DOWN" TOP AND BOTTOM.
10. POST CAPS SHALL BE DRIVE–IN TYPE.
11. FRAMING FOR ALL ACCESS GATES SHALL BE WELDED AT ALL JOINTS AND HAVE HEAVY DUTY HINGES, LATCHES, AND LOCKING DEVICES.
12. ALL WELD POINTS SHALL BE CLEANED AND PAINTED WITH POWDERED ZINC PRIMER.
13. FENCE SHALL BE BONDED AND HAVE TWO WELL POINTS.

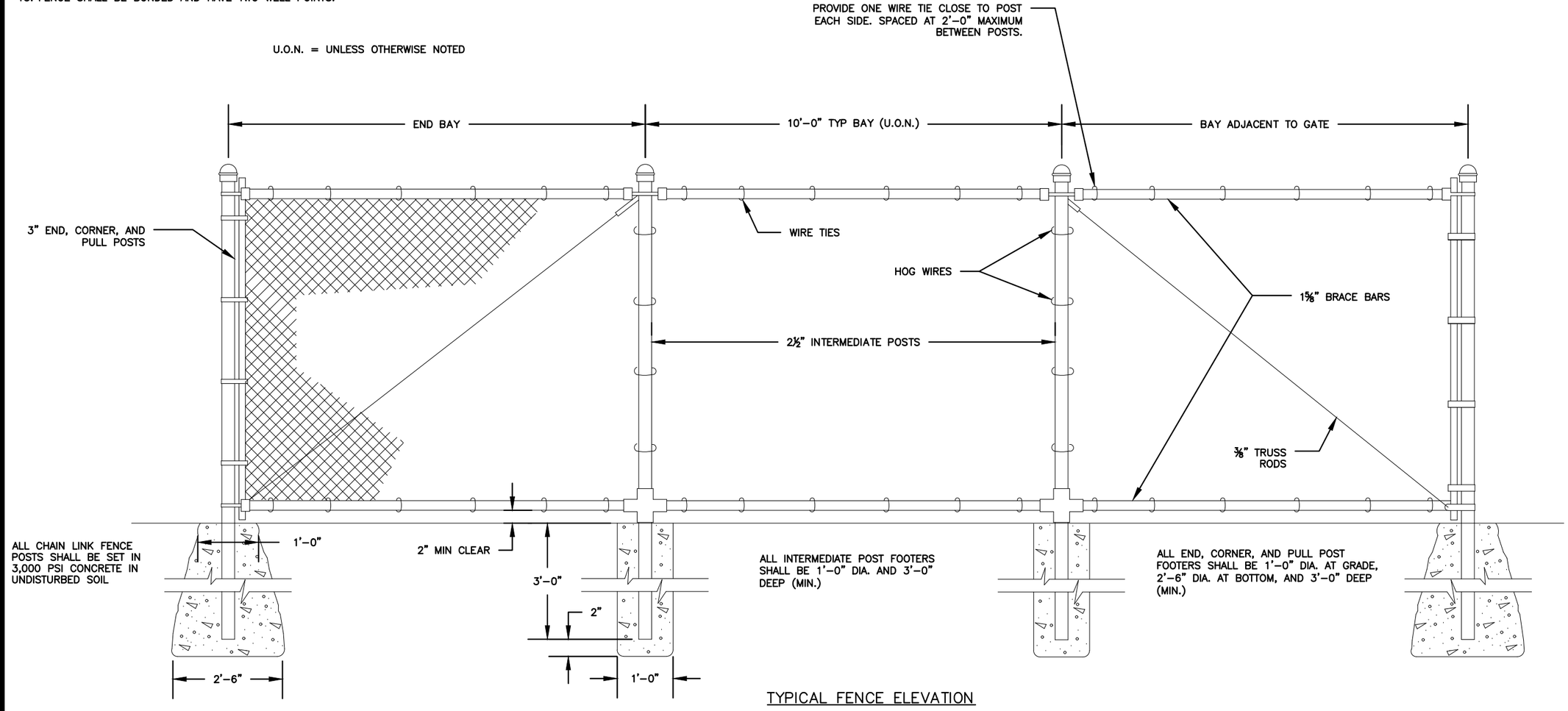
GENERAL NOTES:

1. TYPICAL FENCE POST SPACING IS 10'–0" O.C.
2. WHEN FENCE POSTS CANNOT BE SPACED 10'–0" O.C. OVER THE FULL LENGTH OF A SIDE THEN THE POSTS SHALL BE EVENLY SPACED O.C. WITH EACH POST LESS THAN 10'–0" APART.
3. ALL FABRIC TO BE GREEN POLYOLEFIN COATED #9 GAGE WIRE WOVEN IN A 2" MESH TOP AND BOTTOM EDGE TO BE TWISTED AND BARBED.
4. HEIGHT OF FABRIC TO BE FOR THE ENTIRE HEIGHT OF PROPOSED FENCE.
5. GREEN PVC OR METAL BOTTOM LOCKING PRIVACY SLAT SHALL BE INCLUDED WITH FENCE INSTALLATION.
6. CHAIN LINK FENCE SHALL HAVE GREEN COATED FINISH.

TYPICAL WINDSCREEN NOTES:

1. PROVIDE SHOP DRAWINGS FOR REVIEW AND APPROVAL PRIOR TO FABRICATION.
2. WIND SCREEN MATERIAL SHALL BE BLACK, COMMERCIAL GRADE UV–RESISTANT, HDPE OPEN MESH BLOCKING 80% VISIBILITY.
3. WIND SCREEN TO BE FOR THE ENTIRE HEIGHT OF PROPOSED FENCE INSTALLED CONTINUOUSLY AROUND COURTS ON THE PERIMETER FENCE AND ATTACHED TO FENCE 6" OFF THE BOTTOM OF THE FENCE.
4. ALL EDGES SHALL BE DOUBLE SOWN WITH 1.3" HEAVY TAPE REINFORCEMENT BINDING AND HAVE 1/2" I.D. BRASS GROMMETS THROUGH TAPE EVERY 16" HORIZONTALLY (TOP AND BOTTOM) AND EVERY 12" VERTICALLY (SIDES).
5. WHEN ATTACHING END PIECES TOGETHER, FULLY OVERLAP THE REINFORCING TAPE OF EACH END AND THEN THEY ARE TO BE ROLLED TOGETHER THREE TURNS (ROTATIONS) AND FASTENED WITH GROMMETS AT 12" O.C. BEFORE ATTACHING TO FENCE MESH.
6. HALF MOON AIR VENTS EVERY TEN FEET CENTERED ON SCREEN.
7. ZIP–TIE (HEAVY DUTY BLACK) GROMMETS AND REMOVE ZIP–TIE TRIMMINGS AND OLD ZIP–TIES.

U.O.N. = UNLESS OTHERWISE NOTED



TYPICAL FENCE ELEVATION

CITY OF MARGATE, FLORIDA
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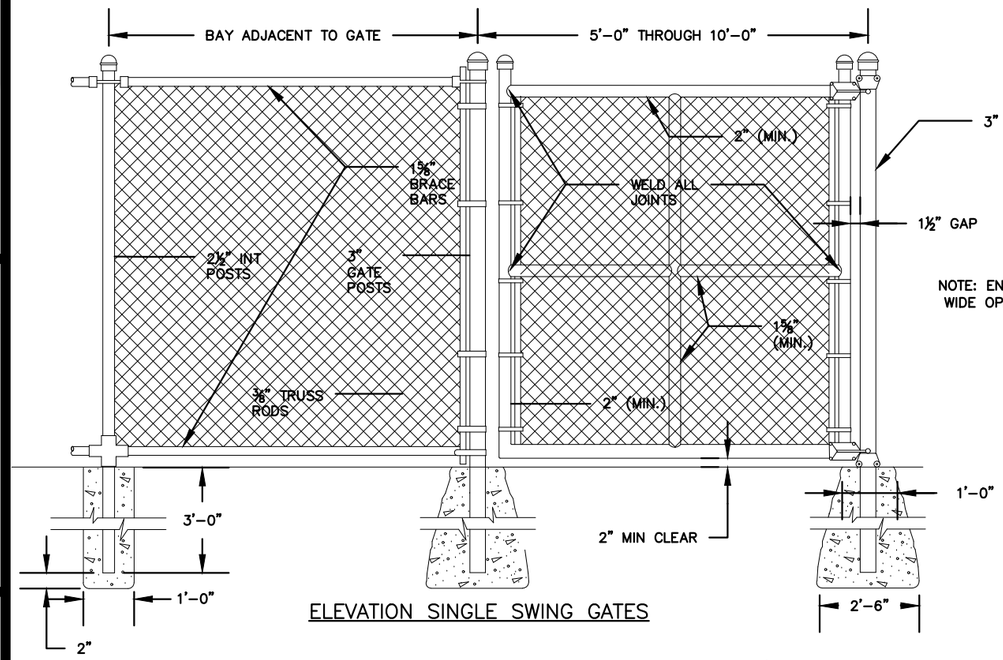
DATE: 08/24

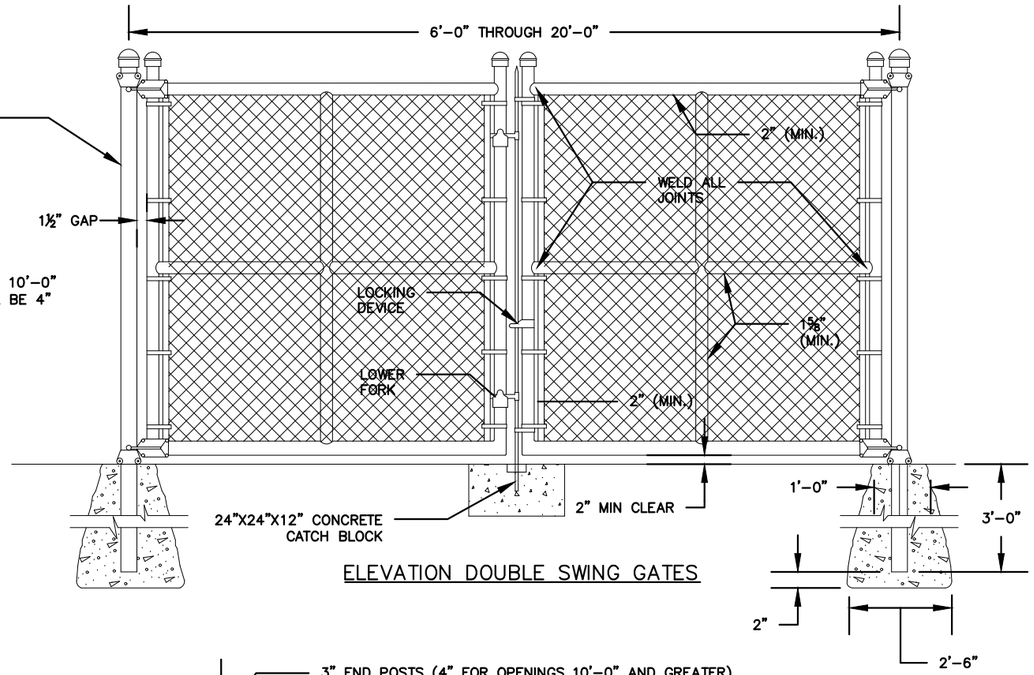
DRAWN: KHA

CHAIN-LINK FENCING ACCESS GATES

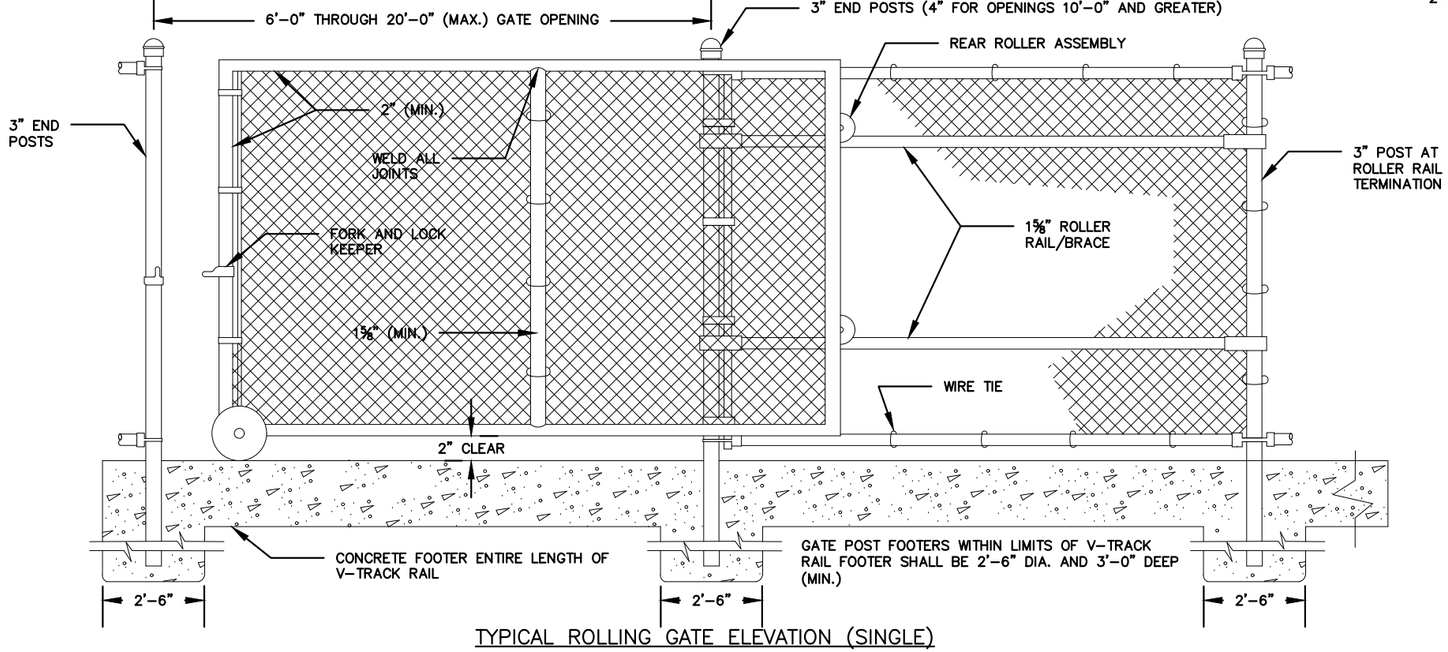


ELEVATION SINGLE SWING GATES

NOTE: END POSTS FOR 10'–0" WIDE OPENINGS SHALL BE 4"



ELEVATION DOUBLE SWING GATES



TYPICAL ROLLING GATE ELEVATION (SINGLE)

NOTE: 4" END POSTS FOR OPENINGS 10'–0" AND GREATER

GENERAL NOTES:

1. ALL FABRIC TO BE GREEN POLYOLEFIN COATED #9 GAGE WIRE WOVEN IN A 2" MESH TOP AND BOTTOM EDGE TO BE TWISTED AND BARBED.
2. HEIGHT OF FABRIC TO BE FOR THE ENTIRE HEIGHT OF PROPOSED FENCE.
3. GREEN PVC OR METAL BOTTOM LOCKING PRIVACY SLAT SHALL BE INCLUDED WITH FENCE INSTALLATION.
4. CHAIN LINK FENCE SHALL HAVE GREEN COATED FINISH.
5. GATE FRAMING JOINTS SHALL BE FULLY WELDED.

CITY OF MARGATE, FLORIDA
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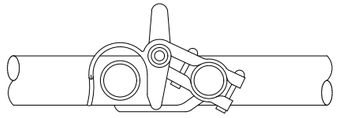
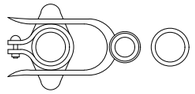
CHAIN-LINK FENCING COMPONENTS AND HARDWARE

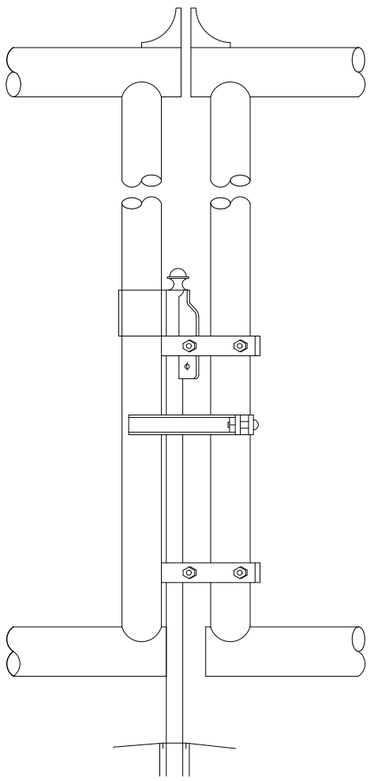
M-6



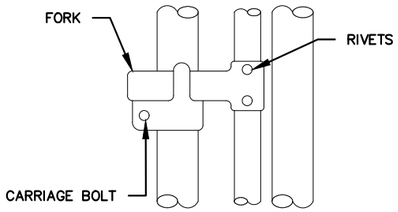
PLAN OF LOCK IN CLOSED POSITION



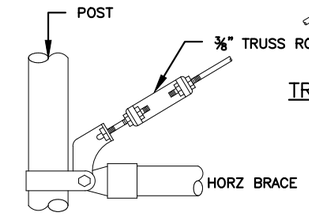
PLAN AT FORK



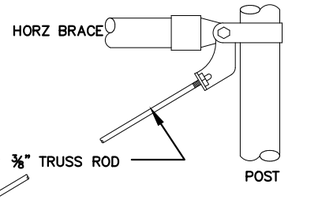
ELEVATION OF LOCKING DEVICE FOR DOUBLE GATES



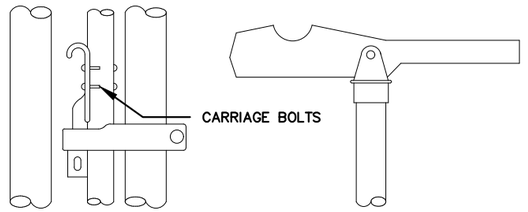
ELEVATION OF FORK



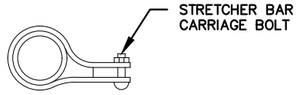
CLAMP FOR BRACE RAIL



TRUSS ROD & BAND

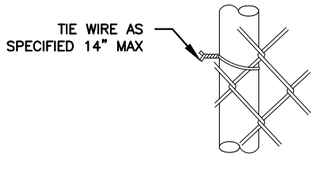


GATE KEEPER

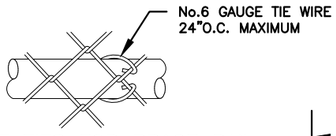


PLAN AT BRACE

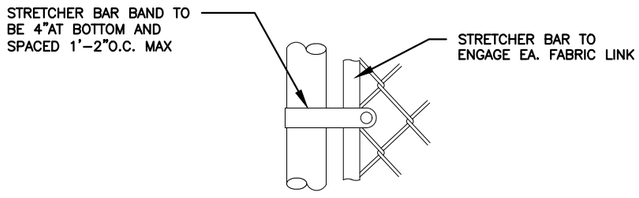
PLAN AT LOCK KEEPER



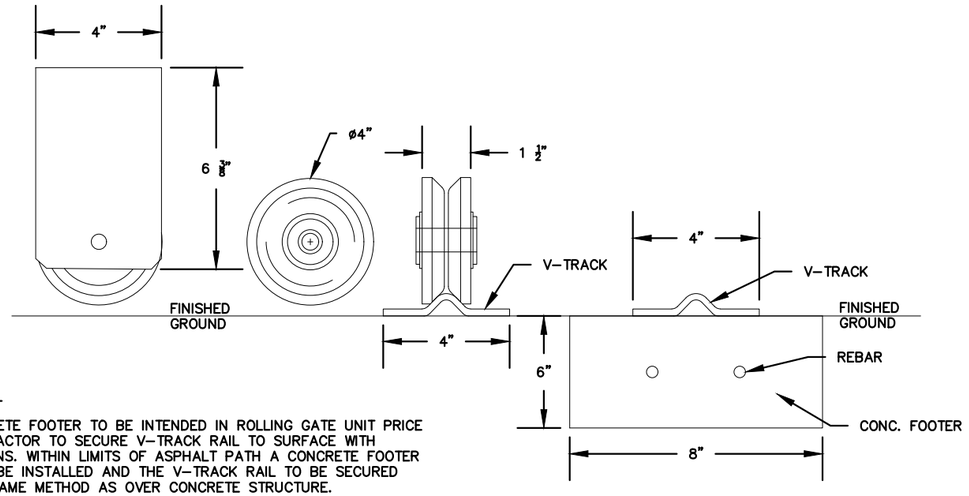
WIRE TIES FOR POST



WIRE TIES FOR BRACE RAIL



END OR GATE POST DETAIL



NOTES:

CONCRETE FOOTER TO BE INTENDED IN ROLLING GATE UNIT PRICE CONTRACTOR TO SECURE V–TRACK RAIL TO SURFACE WITH TAPCONS. WITHIN LIMITS OF ASPHALT PATH A CONCRETE FOOTER IS TO BE INSTALLED AND THE V–TRACK RAIL TO BE SECURED WITH SAME METHOD AS OVER CONCRETE STRUCTURE.

CITY OF MARGATE, FLORIDA
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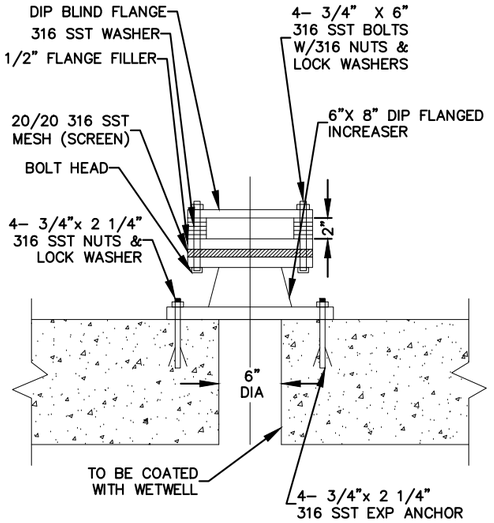
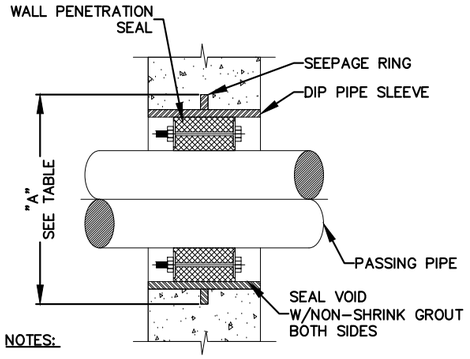
LIFT STATION
STANDARD DETAILS

M-7



NOTE:
THE PENETRATION FOR THE VENT ASSEMBLY SHALL BE LOCATED 1' INSIDE THE INTERIOR WETWELL WALL AND CENTERED OPPOSITE FROM THE DISCHARGE PIPING.

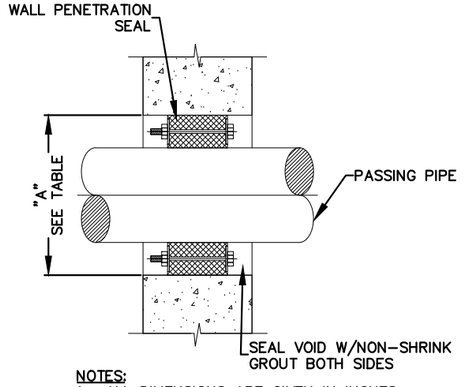
6" WETWELL VENT DETAIL
NTS



NOTES:
1. ALL DIMENSIONS ARE GIVEN IN INCHES.
2. USE ON NEW CONSTRUCTION, UNLESS OTHERWISE APPROVED BY THE CITY.

PIPE SIZE	NOMINAL SLEEVE DIA	"A"
2	4	6
2–1/2	4	7
3	5	7–1/2
4	6	9
6	10	13
8	12	15
10	14	17
12	16	19
14	18	21
16	20	23–1/2
18	22	25
20	24	27–1/2
24	28	32

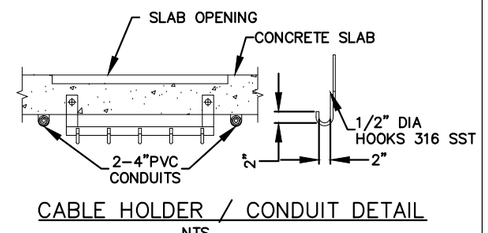
WALL SLEEVE PENETRATION DETAIL
NTS



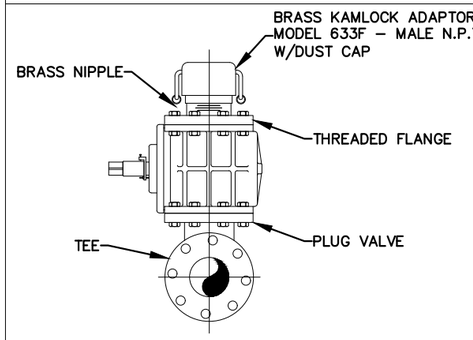
NOTES:
1. ALL DIMENSIONS ARE GIVEN IN INCHES.
2. USE ON EXISTING CONSTRUCTION.

PIPE SIZE	"A"
2	4
2–1/2	4
3	5
4	6
6	10
8	12
10	14
12	16
14	18
16	20
18	24
20	24
24	30

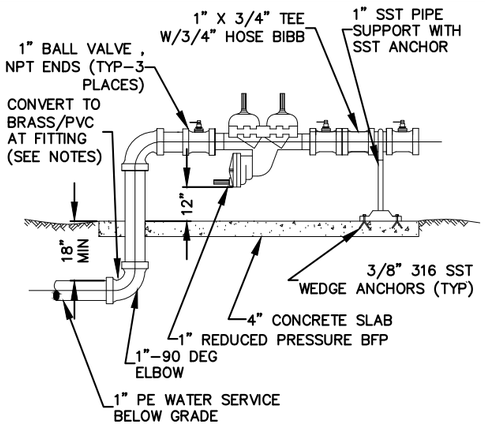
CORE DRILL PENETRATION DETAIL
NTS



CABLE HOLDER / CONDUIT DETAIL
NTS

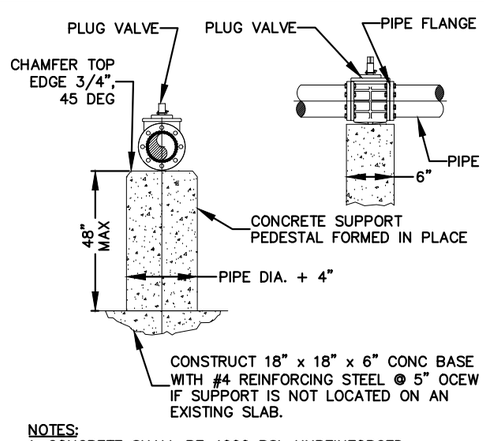


PUMP OUT CONNECTION DETAIL
NTS



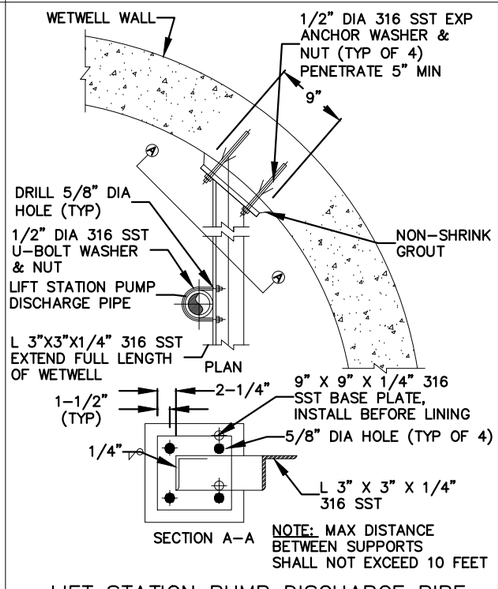
NOTES:
1. BACKFLOW PREVENTER LOCATED INSIDE FENCED AREA SHALL BE FEBCO MODEL 825YA (OR APPROVED EQUAL) AND SHALL USE SCHED 40 BRASS FOR ALL ABOVEGROUND PIPE/FITTINGS AND VALVES.
2. BACKFLOW PREVENTER LOCATED OUTSIDE FENCED AREA SHALL BE UV RESISTANT COMPOSITE PLASTIC UBS RP–500 (OR APPROVED EQUAL) AND SHALL USE SCHED 40 PVC FOR ALL ABOVE GROUND PIPE/FITTINGS.

BACKFLOW PREVENTER DETAILS
NTS

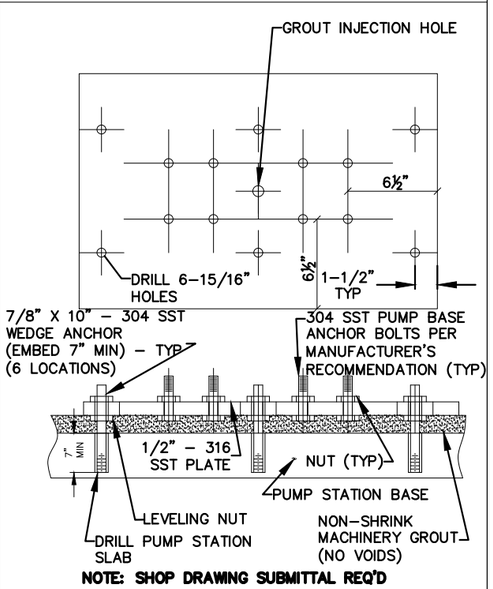


NOTES:
1. CONCRETE SHALL BE 4000 PSI, UNREINFORCED.
2. SEE PLANS AND SECTIONS FOR PIPE ELEVATION REQUIREMENT.
3. PIPE SUPPORT SUITABLE FOR PIPE SIZES 3" THROUGH 24" DIA.
4. SUPPORT STRAIGHT PIPE SECTION, FITTING OR PLUG VALVE. DO NOT PLACE UNDER CHECK VALVE.

PIPE SUPPORT – CONCRETE PEDESTAL DETAIL
NTS



LIFT STATION PUMP DISCHARGE PIPE SUPPORT DETAIL
NTS



NOTE: SHOP DRAWING SUBMITTAL REQ'D

PUMP PLATFORM DETAIL
NTS

CITY OF MARGATE, FLORIDA
DEPARTMENT OF ENVIRONMENTAL
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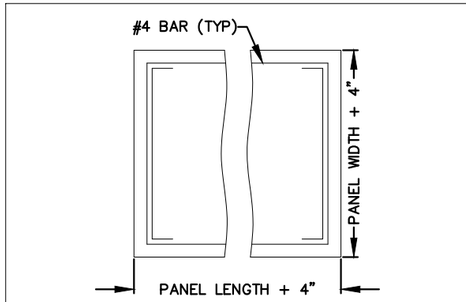
DATE: 08/24

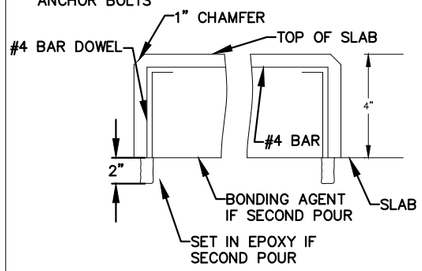
DRAWN: KHA

LIFT STATION
STANDARD DETAILS

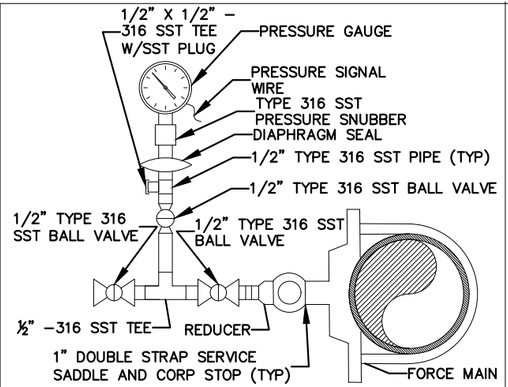
M-8



NOTE: VERIFY REBAR DOES NOT CONFLICT WITH PANEL ANCHOR BOLTS



ELECTRICAL PANEL SLAB DETAIL
NTS



PRESSURE GAUGE: ASHCROFT 45–2279–SSH–04L–XX# OR APPROVED EQUAL
SNUBBER: ASHCROFT 50–1112SE
DIAPHRAGM SEAL: ASHCROFT TYPE 50–100SS–04T–XCG

NOTES:
1. TAP PIPE PER MANUFACTURER'S RECOMMENDATIONS AT SPRINGLINE.
2. ALL PIPE AND FITTINGS SHALL BE SCHEDULE 80 STAINLESS STEEL.
3. INSTALL PRESSURE GAUGE AND DIAPHRAGM SEAL PER MANUFACTURER'S REQUIREMENTS.
4. PRESSURE RANGE FOR GAUGE TO BE BASED ON OPERATING CONDITIONS.

PRESSURE GAUGE DETAIL
NTS

CITY OF MARGATE, FLORIDA
DEPARTMENT OF ENVIRONMENTAL
AND ENGINEERING SERVICES

DATE: 08/24

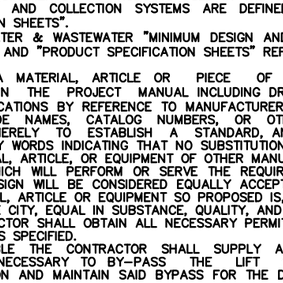
DRAWN: KHA

PUMP STATION NOTES

M-9

GENERAL

1. ALL CONSTRUCTION AND MATERIALS SHALL COMPLY WITH THE CITY OF MARGATE "MINIMUM DESIGN AND CONSTRUCTION STANDARDS" AND APPLICABLE LOCAL AND NATIONAL CODES.
2. MINIMUM REQUIREMENTS FOR PRODUCTS USED IN THE CITY OF MARGATE DISTRIBUTION AND COLLECTION SYSTEMS ARE DEFINED IN "PRODUCT SPECIFICATION SHEETS".
3. FOR ALL WATER & WASTEWATER "MINIMUM DESIGN AND CONSTRUCTION STANDARDS" AND "PRODUCT SPECIFICATION SHEETS" REFER TO THE CITY DETAILS.
4. WHENEVER A MATERIAL, ARTICLE OR PIECE OF EQUIPMENT IS IDENTIFIED IN THE PROJECT MANUAL INCLUDING DRAWINGS (PLANS) AND SPECIFICATIONS BY REFERENCE TO MANUFACTURER'S OR VENDOR'S NAME, TRADE NAMES, CATALOG NUMBERS, OR OTHERWISE, IT IS INTENDED MERELY TO ESTABLISH A STANDARD, AND UNLESS IT IS FOLLOWED BY WORDS INDICATING THAT NO SUBSTITUTION IS PERMITTED, ANY MATERIAL, ARTICLE, OR EQUIPMENT OF OTHER MANUFACTURERS AND VENDORS WHICH WILL PERFORM OR SERVE THE REQUIREMENTS OF THE GENERAL DESIGN WILL BE CONSIDERED EQUALLY ACCEPTABLE, PROVIDED THE MATERIAL, ARTICLE OR EQUIPMENT SO PROPOSED IS, IN THE OPINION OF THE THE CITY, EQUAL IN SUBSTANCE, QUALITY, AND FUNCTION.
5. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS TO COMPLETE THE WORK AS SPECIFIED.
6. IF APPLICABLE THE CONTRACTOR SHALL SUPPLY ALL LABOR AND EQUIPMENT NECESSARY TO BY-PASS THE LIFT STATION DURING CONSTRUCTION AND MAINTAIN SAID BYPASS FOR THE DURATION OF ITS USE.
7. COMPLIANCE TO "TRENCH SAFETY ACT" IS REQUIRED FOR ALL EXCAVATIONS IN EXCESS OF 5 FEET DEEP. CONTRACTOR SHALL COMPLY WITH THE U.S. DEPARTMENT OF LABOR OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATIONS STANDARDS OSHA 29 CFR 1910.146, 'PERMIT-REQUIRED CONFINED SPACES' AND OSHA 29 CFR 1926, 'SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION.'
8. PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL NOTIFY:
   SUNSHINE STATE 1 CALL 811
   CITY OF MARGATE DEES .....(954)-972-0828
9. THE CONTRACTOR SHALL ATTACH PUMP GUIDE RAILS AS PER MANUFACTURER'S RECOMMENDATIONS.
10. ALL VALVES ARE TO BE TAGGED, STATING TYPE OF VALVE AND NUMBER OF TURNS TO OPERATE. IF THE VALVE IS BURIED, A BRASS PLATE WILL BE CAST IN THE CONCRETE APRON AROUND THE VALVE COVER. IF THE VALVE IS LOCATED IN A PIT, THE TAG SHALL BE HUNG FROM THE VALVE WITH A PLASTIC STRAP.
11. ALL VALVE BOXES SHALL HAVE LOCKING LIDS.
12. HDPE, PVC, AND DUCTILE IRON PIPE AND FITTINGS SHALL CONFORM TO THE CITY PRODUCT SPECIFICATION SHEETS.
13. ALL JOINTS SHALL BE RESTRAINED IN ACCORDANCE WITH THE PLANS, SPECIFICATIONS AND IN COMPLIANCE WITH AWWA STANDARDS.
14. COMPLETE "AS-BUILT" INFORMATION RELATIVE TO VALVES, FITTINGS, LENGTH OF PIPE AND THE LIKE, SHALL BE ACCURATELY RECORDED BY THE CONTRACTOR AND SUBMITTED TO THE ENGINEER PRIOR TO FINAL ACCEPTANCE OF THE WORK. ALL ELEVATIONS SHALL BE TAKEN BY AN INDEPENDENT REGISTERED LAND SURVEYOR OR PROFESSIONAL SURVEYOR AND MAPPER AND INCLUDED IN THE "AS-BUILT" INFORMATION FURNISHED BY THE CONTRACTOR. FINAL APPROVAL OF THE PROJECT IS SUBJECT TO THE FINAL REVIEW AND APPROVAL OF THE "AS-BUILT" INFORMATION FURNISHED TO THE REGULATORY AGENCIES AND THE CITY.
15. ALL ELEVATIONS SHOWN ON THE CONSTRUCTION DRAWINGS ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988, (N.A.V.D. 88), HORIZONTAL DATUM NAD83 (HARN) FLORIDA EAST (0901) – US FOOT, UNLESS OTHERWISE NOTED.
16. CONTRACTOR SHALL PROVIDE AN IDENTIFICATION SIGN AS SHOWN. SIGN SHALL BE PERMANENTLY ATTACHED TO THE FENCE, IF AVAILABLE, OR CONTROL PANEL WHERE VISIBLE FROM THE STREET. LIFT STATION IDENTIFICATION NUMBER TO BE UPDATED BASED ON THE PROJECT.



**LIFT STATION TO BE NUMBERED 1-56 (EXCLUDE 16)

SIGN DETAIL
NTS

17. ENGINEER SHALL PROVIDE FLOATATION CALCULATIONS FOR EACH STRUCTURE TO BE CONSTRUCTED.

PUMPS AND CONTROL PANEL

1. PUMPS AND ALL APPURTENANCES REQUIRED TO MAKE A COMPLETE AND OPERATING SYSTEM SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR. PUMPS WILL TO BE SUPPLIED WITH 60 FT CABLES, REFER TO THE CITY "LIFT STATION STANDARD PUMPS".
2. CONTROL PANEL, CONNECTION PANEL AND TRANSFER SWITCH WITH LOUVERED ENCLOSURE ARE TO BE PROVIDED BY THE CONTRACTOR AND MANUFACTURED BY CHAMPION CONTROLS INC. TO THE CITY SPECIFICATIONS (NO SUBSTITUTION).

CAST-IN-PLACE CONCRETE

1. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH FLORIDA BUILDING CODE (FBC), AMERICAN CONCRETE INSTITUTE (ACI) 318 AND THE CONTRACT SPECIFICATIONS.
2. COMPLETE ENGINEERING AND PRODUCT DATA SHALL BE SUBMITTED TO THE ENGINEER ON ALL ADMIXTURES, CURING COMPOUNDS, HARDENERS, SEALERS, REINFORCING STEEL AND WATER STOPS IN ACCORDANCE WITH THE SPECIFICATIONS.
3. REINFORCEMENT STEEL SHALL CONFORM TO THE REQUIREMENTS OF ASTM A-615.
4. CONCRETE COVER FOR STEEL REINFORCEMENT SHALL BE AS SPECIFIED ON ACI 318.
5. PIPES, INSERTS, AND OTHER METAL OBJECTS SHOWN SHALL BE BUILT INTO, SET IN, OR ATTACHED TO THE CONCRETE. ALL REQUIRED HOLES SHALL BE CAST AT TIME OF CONSTRUCTION.
6. ALL CAST-IN-PLACE CONCRETE SHALL BE ACCURATELY FORMED AND PROPERLY PLACED AND FINISHED AS SHOWN ON THE DRAWINGS AND SPECIFIED HEREIN.
7. CONCRETE SHALL BE EITHER CLASS A OR CLASS B, AS INDICATED ON THE DRAWINGS OR SPECIFIED IN THESE SPECIFICATIONS. IN GENERAL CLASS A CONCRETE SHALL BE USED FOR REINFORCED CONCRETE CAST-IN-PLACE IN FORMS FOR SLABS, FOOTINGS, FOUNDATIONS, MAINTENANCE ACCESS STRUCTURES AND SIMILAR REINFORCED CONCRETE STRUCTURES COMING UNDER THE SCOPE OF ACI 318. CLASS B CONCRETE SHALL BE PLAIN CONCRETE AND SHALL BE USED FOR PIPE CRADLES, PIPE AND CONDUIT ENCASEMENT, BEDDING, GRADE CORRECTION, ANCHORS, COLLARS, THRUST BLOCKS, MASSIVE SECTIONS AND OTHER NON-REINFORCED CONCRETE.
8. CONCRETE INGREDIENTS SHALL BE SELECTED, PROPORTIONED, AND MIXED IN SUCH A MANNER AS WILL PRODUCE A WATERTIGHT DURABLE CONCRETE THAT WILL DEVELOP THE FOLLOWING MINIMUM COMPRESSIVE STRENGTHS AT AN AGE OF 28 DAYS WHEN SAMPLED, CURED AND TESTED IN ACCORDANCE WITH THE PROCEDURES SPECIFIED IN ASTM C 31 AND C 39:

CLASS OF CONCRETE	AGE	AVERAGE OF THREE CONSECUTIVE SPECIMENS	MINIMUM ANY ONE SPECIMEN
A	28 DAYS	4,000 PSI	3,500 PSI
B	28 DAYS	3,000 PSI	2,500 PSI

FINISHING UNFORMED SURFACES

1. NO SURFACE TREATMENT WILL BE REQUIRED FOR BURIED CONCRETE NOT FORMING AN INTEGRAL PART OF STRUCTURE EXCEPT THAT REQUIRED TO OBTAIN THE SURFACE ELEVATIONS OR CONTOURS AND SURFACES FREE OF LAITANCE. THE UNFORMED SURFACES OF ALL OTHER CONCRETE SHALL BE SCREEDED AND GIVEN AN INITIAL FLOAT FINISH FOLLOWED BY ADDITIONAL FLOATING FOLLOWED BY TROWELING WHERE REQUIRED. CARE SHALL BE TAKEN THAT NO EXCESS WATER IS PRESENT WHEN THE FINISH IS MADE. NO SPECIAL CONCRETE OR CEMENT MORTAR TOPPING COURSE SHALL BE USED UNLESS SO SHOWN ON THE DRAWING.
2. SCREEDING: SCREEDING SHALL PROVIDE A CONCRETE SURFACE CONFORMING TO THE PROPER ELEVATION AND CONTOUR WITH ALL AGGREGATES COMPLETELY EMBEDDED IN MORTAR. ALL SCREEDED SURFACES SHALL BE FREE OF SURFACE IRREGULARITIES WITH A HEIGHT OR DEPTH IN EXCESS OF 1/4 INCH AS MEASURED FROM A 10-FOOT STRAIGHT EDGE.
3. FLOATING: SCREEDED SURFACES SHALL BE GIVEN AN INITIAL FLOAT FINISH AS SOON AS THE CONCRETE HAS STIFFENED SUFFICIENTLY FOR PROPER WORKING. INITIAL FLOATING SHALL BE FOLLOWED BY A SECOND FLOATING AT THE TIME OF INITIAL SET. THE SECOND FLOATING SHALL PRODUCE A FINISH OF UNIFORM TEXTURE AND COLOR. UNLESS ADDITIONAL FINISHING IS SPECIFICALLY REQUIRED, THE COMPLETED FINISH FOR UNFORMED SURFACES SHALL BE THE FLOAT FINISH PRODUCED BY THE SECOND FLOATING.
4. BROOMING: SURFACES OF EQUIPMENT BASES AND SLABS ON GRADE SHALL BE GIVEN A LIGHT BROOM FINISH PROVIDING A NONSLIP SURFACE. BROOMING SHALL BE DONE AFTER THE SECOND FLOATING AND FOR TRAFFIC AREAS SHALL BE AT RIGHT ANGLES TO THE NORMAL TRAFFIC DIRECTION.
5. EDGING: ALL PERMANENTLY EXPOSED EDGES OF UNFORMED SURFACES SHALL BE CHAMFERED WITH A 3/4 INCH APPROVED EDGING TOOL UNLESS OTHER EDGE TREATMENT IS INDICATED ON THE DRAWINGS.
6. CURING: ALL CONCRETE SHALL BE PROTECTED FROM LOSS OF MOISTURE BY CURING FOR AT LEAST 14 DAYS FOLLOWING PLACEMENT. CURING OPERATIONS SHALL TAKE PLACE IMMEDIATELY AFTER CONCRETE FINISHING IS COMPLETE OR FORMS ARE REMOVED. BREAKING OF FORM TIES OR OTHERWISE BREAKING THE SEAL BETWEEN THE CONCRETE SURFACE AND THE FORM SHALL BE CONSIDERED FORM REMOVAL.

PRE-CAST CONCRETE

1. WALL AND SLAB THICKNESSES SHOWN ON THESE STANDARDS ARE MINIMUMS. MANUFACTURER IS SOLELY RESPONSIBLE FOR STRUCTURAL DESIGN.
2. PRE-CAST UNITS SHALL CONFORM TO THE REQUIREMENTS OF ASTM C-478
3. LIFTING HOLES THROUGH THE STRUCTURE ARE NOT PERMITTED
4. THE BOTTOM SLAB SHALL BE CAST MONOLITHICALLY WITH THE LOWER WALL SECTION
5. ALL STRUCTURES SHALL BE DESIGNED TO SUPPORT AN H-20 WHEEL LOADING
6. COMPLETE ENGINEERING AND PRODUCT DATA, SHALL BE SUBMITTED TO THE ENGINEER.

ACCESS HATCH

1. EACH HATCH SHALL BE DESIGNED ACCORDING TO THE OPENINGS SHOWN ON THE DRAWINGS. THE ALUMINUM ACCESS FRAMES SHALL BE MANUFACTURED FROM 1/4-INCH THICK, EXTRUDED 6063-T5 ALUMINUM.
2. THE FRAME SHALL BE DRAINABLE WITH A 1 1/2-INCH THREADED DRAIN COUPLING LOCATED ON CORNER FRAME.
3. THE DOOR PANELS SHALL CLOSE FLUSH AND SHALL BE 1/4-INCH THICK 5086-H34 ALUMINUM DIAMOND (CHECKER) PLATE REINFORCED FOR AASHTO H-20-44 WHEEL LOADS.
4. REMOVABLE ALUMINUM CROSS-BEAMS SHALL BE PROVIDED BY THE HATCH SUPPLIER AS REQUIRED TO ACCOMPLISH THE STATED LOADING.
5. THE DOORS SHALL HAVE HEAVY DUTY STAINLESS STEEL BUTT HINGES WITH TAMPER-PROOF FASTENERS.
6. ALL HARDWARE SHALL BE MADE OF TYPE 316 STAINLESS STEEL.
7. EACH DOOR SHALL HAVE SPRING OPERATORS, SUCH THAT THE MAXIMUM LIFTING EFFORT IS LESS THAN 25 POUNDS.
8. THE HATCH SUPPLIER SHALL PROVIDE THE NUMBER OF SPRING OPERATORS AS REQUIRED TO ACCOMPLISH THE MAXIMUM LIFTING REQUIREMENT.
9. EACH DOOR SHALL OPEN TO 90 DEGREE AND LOCK AUTOMATICALLY WITH A STAINLESS STEEL, POSITIVE LOCKING ARM AND A STAINLESS STEEL RELEASE HANDLE.
10. EACH DOOR SHALL HAVE A RECESSED STAINLESS STEEL LIFTING HANDLE AND RECESSED OVERSIZED PADLOCK BOX.
11. THE HATCH SHALL BE PROVIDED WITH A TYPE 316 STAINLESS STEEL SLAM-LOCK WITH A REMOVABLE HANDLE.
12. ALL ACCESS DOORS SHALL BE DESIGNED WITH A NEOPRENE GASKET ON THE INSIDE LIP OF THE FRAME PERIMETER, TO FORM AN ESSENTIALLY AIR-TIGHT SEAL.
13. ALL ACCESS DOORS SHALL BE EQUIPPED WITH A MINIMUM OF FOUR (4) STAINLESS STEEL CARRIAGE BOLTS WITH WELDED NUTS TO SECURE THE DOORS IN THE DOWN POSITION. BOLTS SHALL BE PER THE MANUFACTURERS RECOMMENDATION.

WETWELL REHABILITATION

1. SURFACE PREPARATION
   A. ANY LOOSE, UNSOUND, OR CRACKED BRICK OR CONCRETE SHALL BE CHISELED OR HAMMERED OUT.
   B. ALL SURFACES TO RECEIVE EITHER THE ONE COMPONENT REINFORCED MORTAR OR EPOXY LINING SHALL BE STRUCTURALLY SOUND AND SHALL BE CLEANED TO REMOVE LAITANCE, GREASE. LOOSE MORTAR, PAINT OR OTHER SURFACE CONTAMINANTS USING SAND BLASTING, HYDRO-GRIT BLASTING AT 3,500 PSI MINIMUM OR OTHER MECHANICAL SCARIFICATION TECHNIQUES APPROVED BY THE ENGINEER.
   C. SURFACE SHALL BE TESTED BY THE CONTRACTOR, IN THE PRESENCE OF THE ENGINEER,USING A SURFACE pH TESTER EQUAL TO INSTA-CHECK SURFACE pH PENCIL AS MANUFACTURED BY PHYDRION. SURFACE SHALL INDICATE A pH=7.0 OR GREATER.
   D. ALL ACTIVE LEAKS IN THE STRUCTURE SHALL BE STOPPED USING CHEMICAL GROUTING AND HYDRAULIC CEMENT.
   E. ALL CRACKS, VOIDS AND REMOVED STEP HOLES SHALL BE FILLED USING A WATER RESISTANT FAST-SETTING CEMENT PATCH.
2. REBUILDING CONCRETE SURFACES
   A. THE CONCRETE SHALL BE RETURNED TO ITS ORIGINAL WALL THICKNESS USING A ONE COMPONENT MORTAR, MINIMUM INSTALLED THICKNESS SHALL BE 1/2".
   B. ONE COMPONENT REINFORCED WET MORTAR: THE ONE COMPONENT MORTAR SHALL BE MICROSILICA ENHANCED, FIBER REINFORCED AND BE DESIGNED FOR CORROSIVE ENVIRONMENTS WITH A pH=2.0 OR HIGHER. REINFORCED MORTAR SHALL HAVE THE FOLLOWING MINIMUM PHYSICAL PROPERTIES:
      1. FLEXURAL STRENGTH 1000 PSI @ 28 DAYS ASTM C78-84
      2. COMPRESSIVE STRENGTH 9000 PSI @ 28 DAYS ASTM C109-92
      3. DENSITY (WET): 130 LB/CU. FT. ASTM C138-92
      4. SPLITTING TENSILE STRENGTH: 700 PSI @ 28 DAYS ASTM C496-90
      5. SLANT SHEAR BOND STRENGTH: 2250PSI @ 28 DAYS ASTM C882-91
      6. SULFATE RESISTANCE WEIGHTLOSS pH 1.0 <.97% ASTM C-267
         84 DAY IMMERSION pH 2.0 <.30%
         pH 3.0 <.18%
   C. MATERIAL SHALL BE BASF SP15, OR APPROVED EQUAL.

PAINTING & COATINGS:

1. WETWELL & VALVE VAULT EXTERIOR: THE EXTERIOR OF WET WELL & VALVE VAULTS SHALL BE COATED WITH TWO (2), 10 MILS (DFT) EACH COAT OF A BITUMASTIC COATING (20 MILS TOTAL DFT). BITUMASTIC COATING SHALL BE CARBOLINE (KOPPERS) 300M, OR APPROVED EQUAL.
2. WETWELL INTERIOR, OPTION A: THE INTERIOR OF A NEW OR REHABILITATED WET WELL, WHERE DIRECTED BY THE CITY, SHALL BE COATED WITH TWO (2) COATS, 15 MILS (DFT) EACH, OF A BITUMASTIC COATING (30 MILS DFT, TOTAL). BITUMASTIC COATING SHALL BE CARBOLINE (KOPPERS) 300M, OR APPROVED EQUAL.
3. WETWELL INTERIOR, OPTION B: THE INTERIOR OF A NEW OR REHABILITATED WET WELL, WHERE DIRECTED BY THE CITY, SHALL BE COATED WITH A SPRAYABLE, HIGH BUILD, MOISTURE TOLERANT, CHEMICAL RESISTANT EPOXY COATING DESIGNED TO BE APPLIED ON DRY OR DAMP CONCRETE SURFACES AND YIELDING A HARD DURABLE CHEMICAL RESISTANT FINISH TO A pH OF 1.0, EPOXY COATING SHALL BE BASF SEWER GUARD HBS 100, OR OTHER APPROVED MATERIAL ON THE CITY PRODUCT SPECIFICATION SHEETS. APPLY MATERIAL USING A 30:0 OR 45:1 AIRLESS SPRAYER TO A MINIMUM DRY THICKNESS OF 60 MILS IN TWO 30 MILS COATS.
4. VALVE VAULT CONCRETE INTERIOR SURFACES: THE INTERIOR CONCRETE SURFACES OF VALVE VAULTS SHALL BE COATED WITH A 100% SOLIDS POLYAMINE EPOXY SPECIFICALLY DESIGNED FOR WASTEWATER IMMERSION AND LOW PERMEATION TO H2S GAS. MATERIAL SHALL BE IN CONFORM WITH THE PRODUCT SPECIFICATION SHEETS, OR APPROVED EQUAL, APPLIED IN TWO (2) COATS, 15.0 MILS (DFT) EACH,(30.0 MILS DFT, TOTAL). FINAL COLOR TO BE BEIGE. SURFACE PREPARATION, PRIMING AND APPLICATION SHALL BE IN ACCORDANCE WITH THE MORE STRINGENT OF THE MANUFACTURERS RECOMMENDATIONS OR LISTED IN THE PRODUCT SPECIFICATION SHEETS.
5. DUCTILE IRON PIPE AND FITTINGS: DIP EXTERIOR SURFACES SHALL BE COATED WITH A 100% POLYAMINE EPOXY SPECIFICALLY DESIGN FOR WASTEWATER IMMERSION AND LOW PERMEATION TO H2S GAS. MATERIAL SHALL BE IN CONFORM WITH THE PRODUCT SPECIFICATION SHEETS, OR APPROVED EQUAL, APPLIED IN TWO (2) COATS 20 MILS (DFT) EACH (40.0 MIL DFT, TOTAL). DIP INTERIOR SURFACES SHALL BE COATED WITH 40 MILS (DFT) OF PROTECTO 401.
6. VALVES SHALL RECEIVE ONLY THE FINAL 20 MIL (DFT) COAT. FINAL COLOR TO BE BEIGE. SURFACE PREPARATION, PRIMING AND APPLICATION SHALL BE IN ACCORDANCE WITH THE MORE STRINGENT OF THE MANUFACTURER'S RECOMMENDATIONS OR THE CITY SPECIFICATIONS. SURFACE PREPARATION AND APPLICATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION. CERTIFICATION OF MANUFACTURER SHALL BE PROVIDED.

ELECTRICAL NOTES:

1. CONTROL PANEL ELECTRICAL SYSTEM SHALL BE COMPLETELY AND EFFECTIVELY GROUNDED AS REQUIRED BY NEC.
2. ALL ELECTRICAL INSTALLATIONS SHALL BE IN ACCORDANCE WITH THE NEC AND SHALL COMPLY WITH ALL NATIONAL AND LOCAL RULES, ORDINANCES, AND CODES AT TIME OF INSTALLATION.
3. ALL SERVICE CONDUCTORS SHALL BE STRANDED COPPER TYPE THWN.
4. ALL ENCLOSURES SHALL BE 316 STAINLESS STEEL WATERTIGHT NEMA 3R RIGHT SIDE OPENING. ALL MOUNTING HARDWARE MUST BE 316 SST.
5. USE T & B CORROSION RESISTANT-LIQUIDTIGHT-STRAIN RELIEF THERMO-PLASTIC FLEXIBLE CORD & CABLE CONNECTOR ON THE INSIDE OF THE TOP CONNECTION PANEL TO FIT APPROPRIATE CABLE SIZE. TRANSFER SWITCH MAY BE MOUNTED ON EITHER END BUT GENERATOR RECEPTACLE MUST BE ON OUTSIDE. (STATE LEFT OR RIGHT SIDE GEN. RECPT. WHEN ORDERING.)
6. ALL PUMP MOTORS SHALL BE 3 PHASE. WHEN THE LOCAL POWER COMPANY CANNOT PROVIDE 3 PHASE POWER TO THE STATION, A "ROTOPHASE" PHASE CONVERTER SHALL BE SUPPLIED TO PROVIDE 3 PHASE POWER TO THE STATION.
7. ALL CONTROL CIRCUIT WIRES SHALL BE TERMINATED WITH FORK TYPE CRIMP-ON CONNECTORS AND SHALL HAVE AN ADJACENT HEAT SHRINK NUMBER, CORRESPONDING EACH CONNECTOR WITH NUMBERS AS INDICATED ON THE SCHEMATIC. NO CONCEALED WIRING SHALL BE PERMITTED BEHIND THE SUB PANEL.
8. EACH DEVICE IN THE CONTROL CIRCUIT SHALL BE IDENTIFIED WITH THE PROPER CONTROL CIRCUIT ABBREVIATION AS SHOWN IN THE TABLE AND ON THE SCHEMATIC.
9. FROM THE REAR SIDE OF THE DEAD FRONT HINGED PANEL, ALL WIRES SHALL BE NEATLY LACED TOGETHER INTO A HARNESS AND TERMINATED INTO A TERMINAL STRIP.
10. DRIVEN GROUND ROD WHICH DOES NOT HAVE A RESISTANCE TO GROUND OF 10 OHMS OR LESS SHALL BE AUGMENTED UNTIL THE RESISTANCE TO GROUND IS 10 OHMS OR LESS. LIGHTENING ARRESTER LEADS TO BE ATTACHED TO THE MCB AS PER MOST RECENT NEC ARTICLE # 280.
11. ALL BRANCH CIRCUITS SHALL HAVE PROPER SIZE WIRING.
12. WHEN CONNECTIONS ARE COMPLETE IN THE CONNECTION BOX, COAT THE TERMINAL BLOCKS AND WIRE ENDS WITH PROTECTIVE COMPOUND, NO-OXIDE OR EQUAL, TO PREVENT CORROSION.
13. SCHEMATIC DRAWINGS SHALL BE PLACED IN STATION ARE TO BE ENCASED BETWEEN TWO PIECES OF 3/16" PLEXIGLASS.
14. ELECTRICAL SERVICE SHALL BE A MINIMUM OF 100 AMPS OF # 1 THWN STRANDED COPPER WIRE IN RIGID ALUMINUM CONDUIT-MINIMUM SIZE = 1 1/2". INTERMEDIATE METAL CONDUIT UNACCEPTABLE.
15. UNDERGROUND SERVICE PULL BOXES ARE TO BE INSTALLED AT EACH 250 FEET OF SERVICE PULL. VOLTAGE DROP TO BE LIMITED TO A MAXIMUM OF 3 PERCENT DROP.
16. BUBBLER TUBING SHALL BE CLEAR, 1/4" TYGON (OR APPROVED EQUAL). BACK-UP SENSOR TUBING TO BE RED.
17. TUBBING FITTINGS SHALL BE SWAGELOK BRASS FITTINGS (OR APPROVED EQUAL).
18. COLOR CODING:
   A. SINGLE PHASE 120/240V-BLACK, WHITE, AND RED.
   B. THREE PHASE 120/240V 4 WIRE-HI LEG CENTER AND ORANGE, WHENEVER NEUTRAL IS PRESENT. IN THE ABSENCE OF NEUTRAL, THEY WILL BE MARKED BLACK, RED, AND BLUE AND/OR A-B-C. WILL CONSTITUTE CLOCKWISE ROTATION OF ALL 3-PHASE MOTORS. THIS IS TO ASSURE PHASE RELATION THROUGHOUT THE SYSTEM.
   C. 120/208V, 4 WIRE, THREE PHASE SHALL BE BLACK, WHITE, RED, AND BLUE WHERE THE NEUTRAL IS PRESENT. IF THE NEUTRAL IS ABSENT, BLACK, RED, AND BLUE AND/OR A-B-C WILL CONSTITUTE CLOCKWISE ROTATION OF ALL THREE PHASE MOTORS, THIS IS TO ASSURE PHASE RELATION THROUGHOUT THE SYSTEM.
   D. 277/480V, 4-WIRE-BROWN, ORANGE, YELLOW AND WHITE WHEN THE NEUTRAL IS PRESENT. IF THE NEUTRAL IS ABSENT, A-B-C WILL CONSTITUTE CLOCKWISE ROTATION OF ALL THREE PHASE MOTORS. THIS IS TO ASSURE PHASE RELATION THROUGHOUT THE SYSTEM.
19. FABRICATE ANTENNA MAST FROM A 21 FOOT LENGTH OF 2½" DIAMETER SCHEDULE 40 ALUMINUM PIPE. PAINT LOWER THREE (3) FEET WITH ASPHALTUM PAINT, CAP THE TOP OF PIPE.
20. RUN 3/4 INCH RIGID ALUMINUM CONDUIT UP THE MAST FOR THE ANTENNA CABLE TO WITHIN 16 INCHES OF THE TOP. RUN SECOND 3/4 INCH CONDUIT UP THE MAST FOR ALARM AND FLOOD LIGHTS AS SHOWN. USE STAINLESS STEEL UNISTRUT AND CLAMPS TO HOLD CONDUITS TO THE MAST.
21. MOUNT FLOOD LIGHT AND FLASHING RED LIGHT ON THE ANTENNA MAST AT TEN (10) FEET AND EIGHT (8) FEET ABOVE GRADE.
22. TEST PUMPS AS FOLLOWS:
   A. TECHNICIAN MUST BE PRESENT TO CONDUCT TESTS.
   B. MEGGER MOTORS, MOTORS SHALL BE 20 MEGOHMS OR MORE TO GROUND, DO NOT MEGGER LOW VOLTAGE CONTROLS.
   C. CHECK VOLTAGE, CHECK PUMP ROTATION, RECORD VOLTAGE AND AMPS UNDER LOAD.
   D. DEMONSTRATE PROPER OPERATION OF ALL CONTROLS.
   E. CONDUCT DRAWDOWN TESTS AS REQUIRED.
   F. CHECK OPERATION WITH OWNER'S PORTABLE GENERATOR AND CHANGE WIRE CONNECTIONS IN THE PANEL TO GIVE CORRECT ROTATION.

WHERE CONFLICTS EXIST BETWEEN THESE NOTES AND THE CITY "MINIMUM DESIGN AND CONSTRUCTION STANDARDS", THE MINIMUM STANDARDS WILL GOVERN.

CITY OF MARGATE, FLORIDA
DEPARTMENT OF ENVIRONMENTAL
AND ENGINEERING SERVICES

DATE: 08/24

DRAWN: KHA

ELECTRICAL SITE PLAN

E-1

TO BE COMPLETED
BY ENGINEER OF RECORD

SITE PLAN
SCALE:

TO BE COMPLETED
BY ENGINEER OF RECORD

ELECTRICAL RISER DIAGRAM
NTS

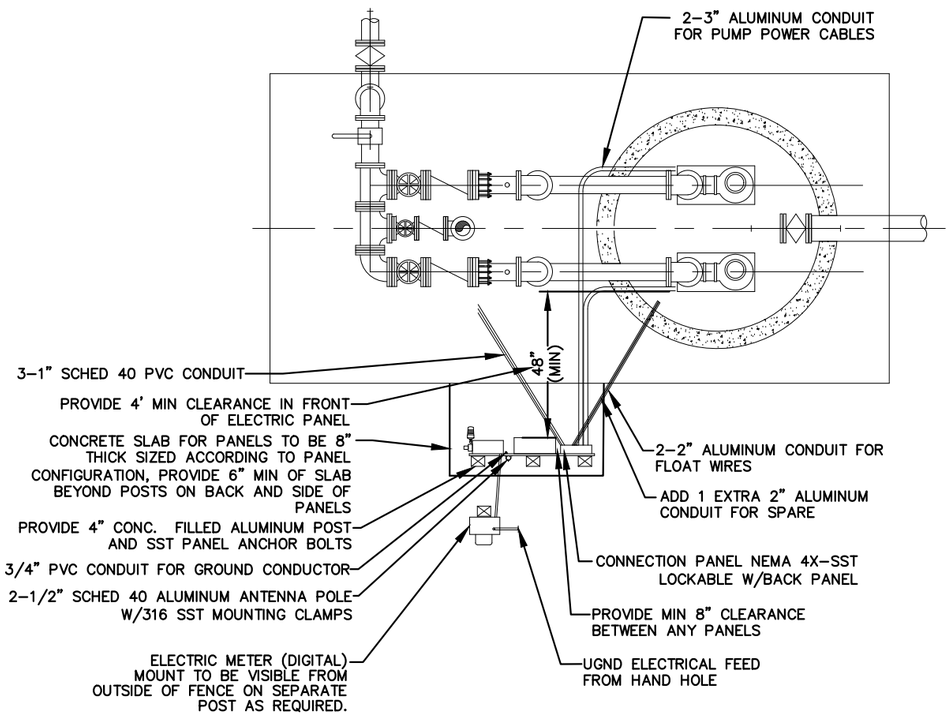
CITY OF MARGATE, FLORIDA
DEPARTMENT OF ENVIRONMENTAL
AND ENGINEERING SERVICES

DATE: 08/24

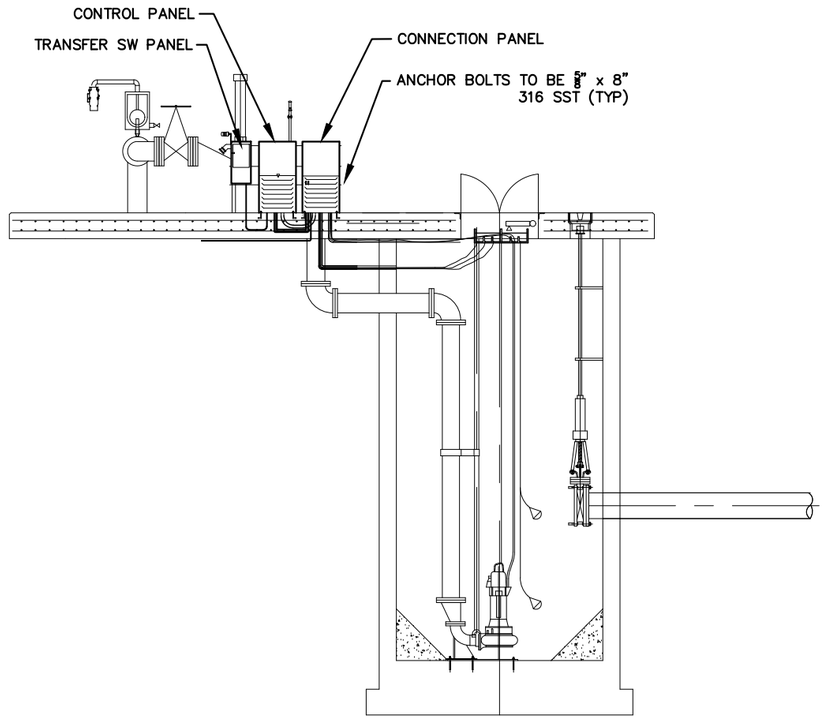
DRAWN: KHA

ELECTRICAL PLAN AND CONNECTION PANEL

E-2



PLAN VIEW
NTS



ELEVATION
NTS

FLORIDA LICENSED PROFESSIONAL ENGINEER TO REVIEW AND MODIFY ELECTRICAL DESIGN AS REQUIRED TO ACCOMPLISH CONSTRUCTION IN ACCORDANCE WITH APPLICABLE CODES AND STANDARDS.

NOTES:

1. AREA INSIDE WETWELL IS CONSIDERED A CLASS 1, DIVISION 2 AREA IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE
2. ALL OTHER AREAS ARE NOT CLASSIFIED
3. NO PENETRATIONS SHALL BE PERMITTED IN THE TOP OF ANY PANEL BOX
4. CONTROL PANEL/CONNECTION PANEL AND TRANSFER SWITCH TO BE MANUFACTURED BY CHAMPION CONTROLS, INC. TO THE CITY SPECIFICATIONS (NO SUBSTITUTION).

CITY OF MARGATE, FLORIDA
DEPARTMENT OF ENVIRONMENTAL
AND ENGINEERING SERVICES

DATE: 08/24

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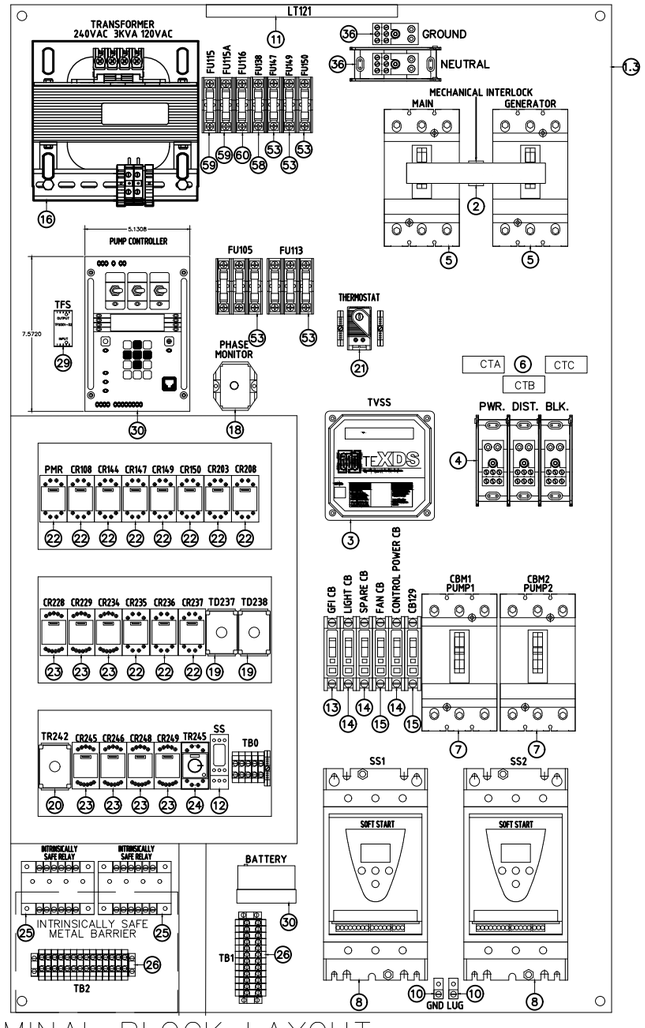
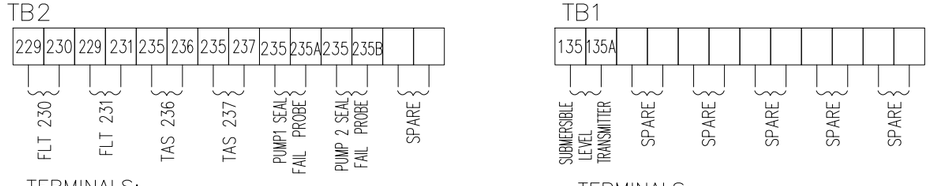
ELECTRICAL PANEL LAYOUT
(FOR 230 OR 480V)*

E-3

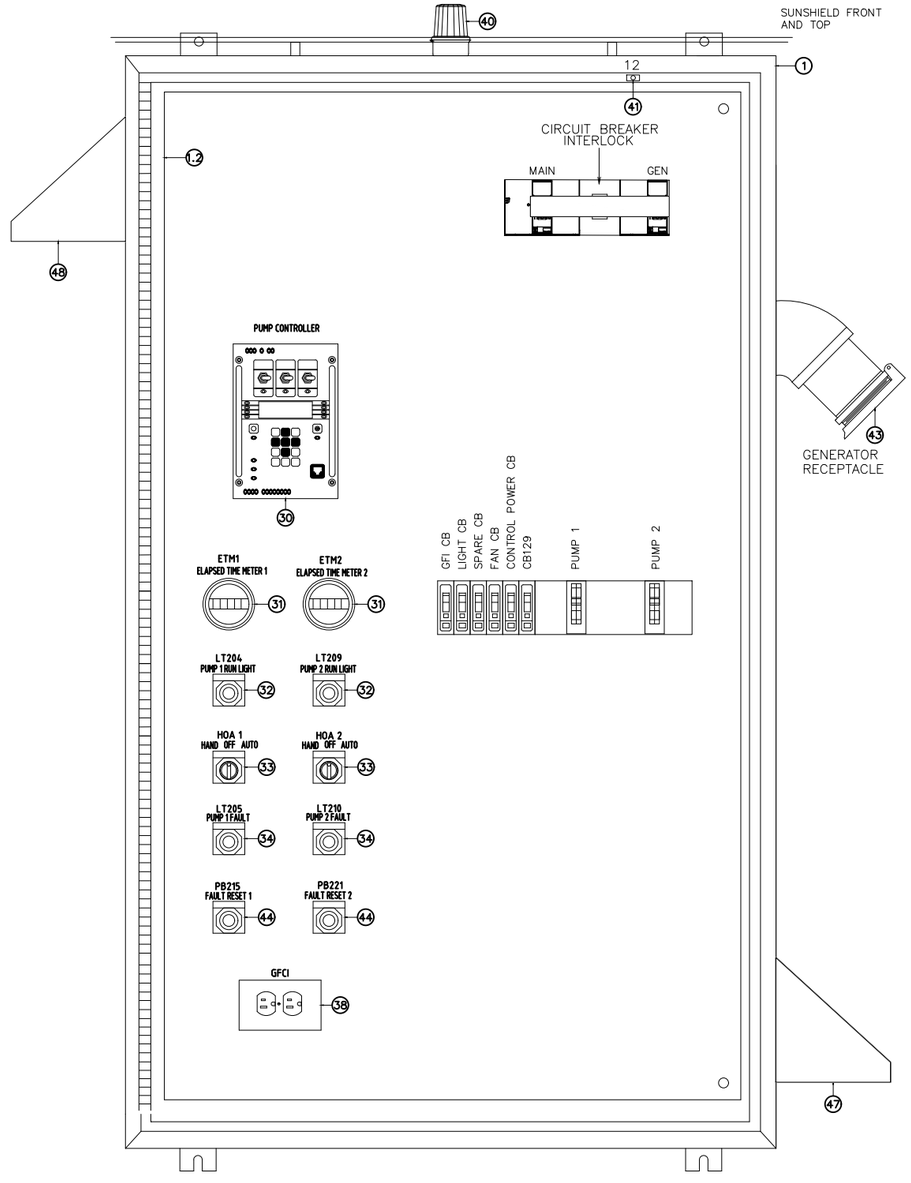
BACK PANEL LAYOUT



TERMINAL BLOCK LAYOUT



INNER DOOR LAYOUT



BACK PANEL LAYOUT NOTES:
1 ENCLOSURE SHALL BE NEMA 4X, 3PL, SUNSHIELD 316L STAINLESS STEEL, DOOR STOP KIT
2 APPROX. DIMENSIONS ARE 60"H X 36"W X 16"D

FIELD WIRING TERMINALS USE COPPER, 75°C MINIMUM WIRE
TORQUE ALL FIELD WIRING TERMINALS TO 18–20 IN–LBS.

*DETAIL IS FOR REFERENCE ONLY. PANEL TO BE DESIGNED BY THE ELECTRICAL ENGINEER FOR PROJECT SPECIFIC VOLTAGE REQUIREMENTS. PANEL TO BE FROM CHAMPION CONTROLS OR APPROVED EQUAL.

CITY OF MARGATE, FLORIDA
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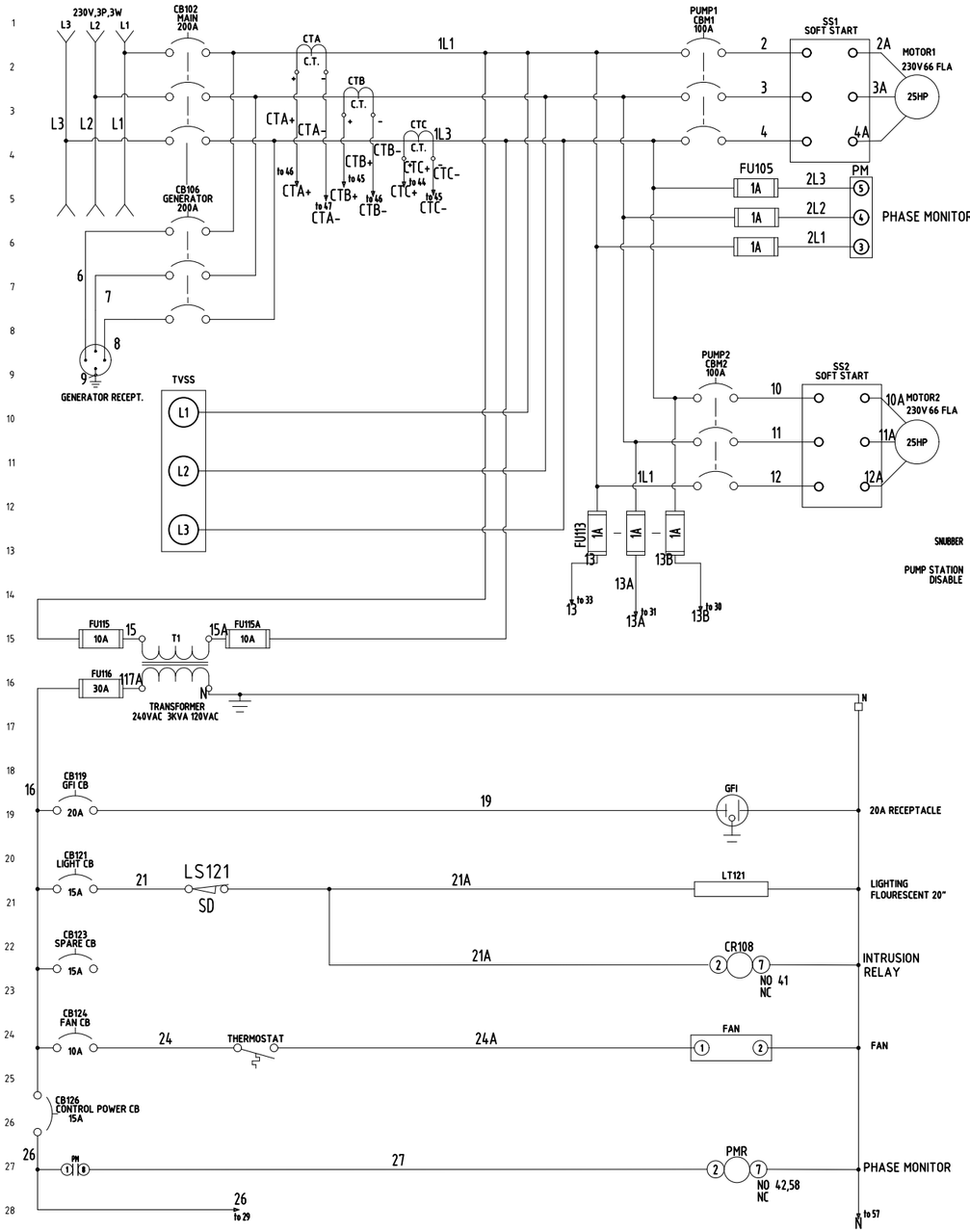
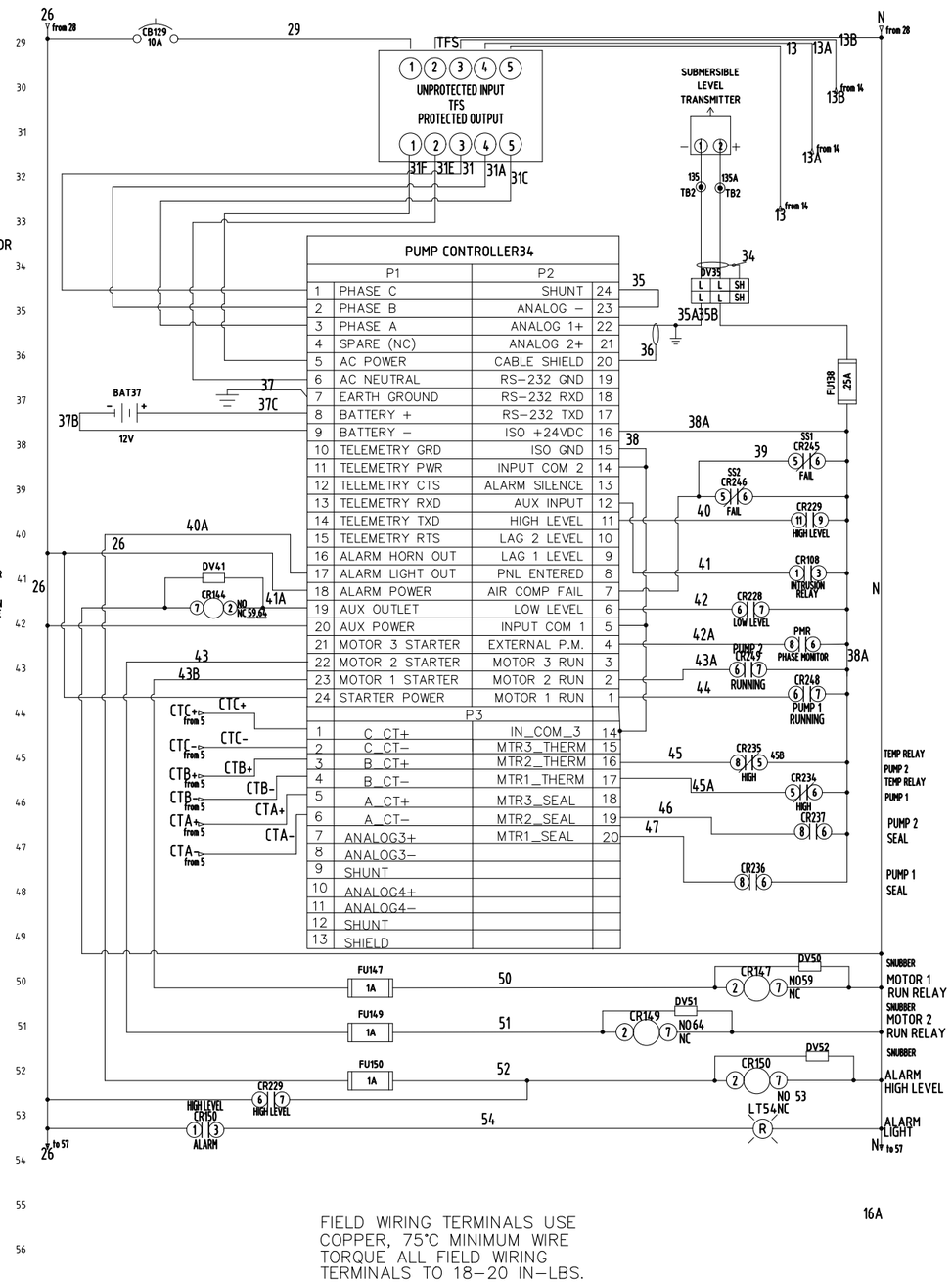
DATE: 08/24

DRAWN: KHA

ELECTRICAL SCHEMATIC 1
(FOR 230 OR 480V)*

E-4





FIELD WIRING TERMINALS USE COPPER, 75°C MINIMUM WIRE TORQUE ALL FIELD WIRING TERMINALS TO 18–20 IN–LBS.

16A

*DETAIL IS FOR REFERENCE ONLY. PANEL TO BE DESIGNED BY THE ELECTRICAL ENGINEER FOR PROJECT SPECIFIC VOLTAGE REQUIREMENTS. ELECTRICAL SCHEMATIC TO BE FROM CHAMPION CONTROLS OR APPROVED EQUAL.

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DATE: 08/24

DRAWN: KHA

ELECTRICAL SCHEMATIC 2
(FOR 230 OR 480V)*

E.5

FIELD WIRING TERMINALS USE COPPER, 75°C MINIMUM WIRE TORQUE ALL FIELD WIRING TERMINALS TO 18–20 IN–LBS.

*DETAIL IS FOR REFERENCE ONLY. PANEL TO BE DESIGNED BY THE ELECTRICAL ENGINEER FOR PROJECT SPECIFIC VOLTAGE REQUIREMENTS. ELECTRICAL SCHEMATIC TO BE FROM CHAMPION CONTROLS OR APPROVED EQUAL.

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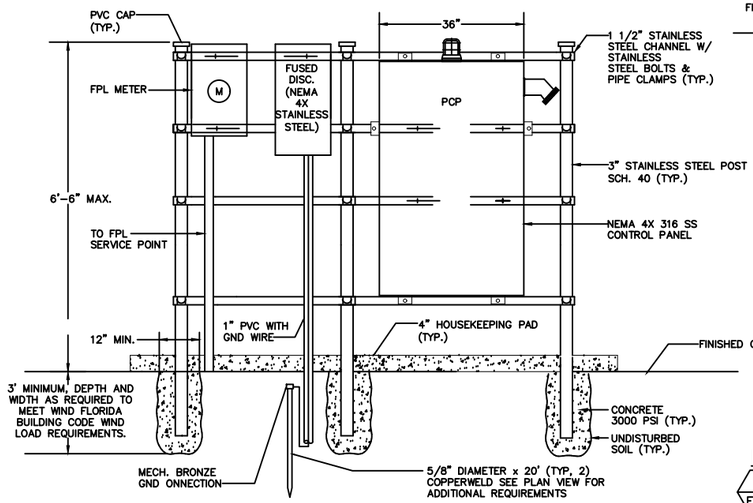
ELECTRICAL DETAILS 1

E-6

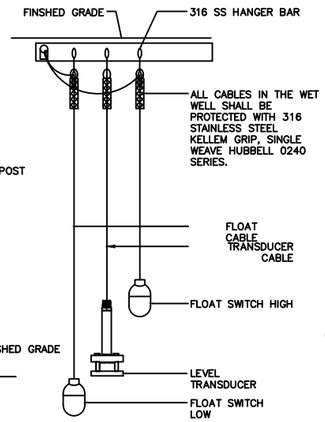


1 E-06 SERVICE RACK DETAIL
N.T.S.

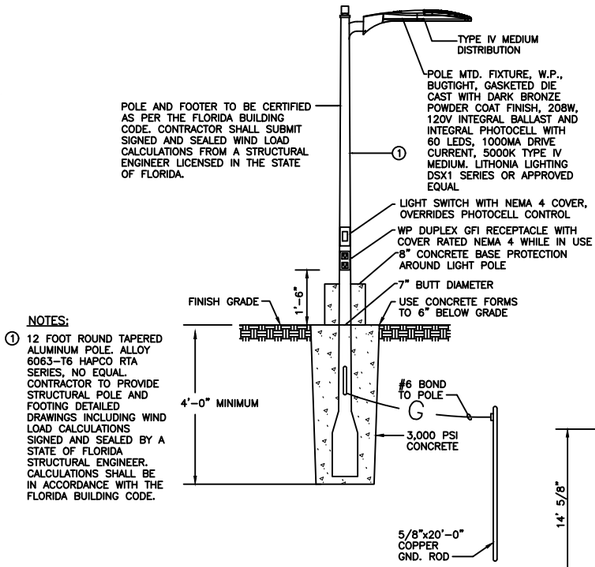
NOTES:

① ALL MOUNTING HARDWARE SHALL BE OF 316 STAINLESS STEEL, UNLESS OTHERWISE NOTED.

② CONTRACTOR SHALL SUBMIT SIGNED AND SEALED WIND LOAD CALCULATIONS FROM A STRUCTURAL ENGINEER LICENSED IN THE STATE OF FLORIDA. ELECTRICAL EQUIPMENT SERVICE RACK TO BE CERTIFIED PER FLORIDA BUILDING CODE.



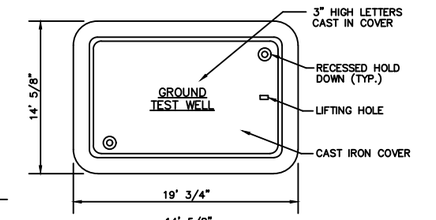
2 E-06 FLOAT SWITCH/TRANSDUCER MOUNTING DETAIL
N.T.S.

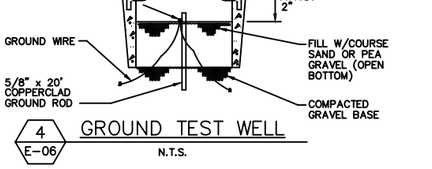


NOTES:

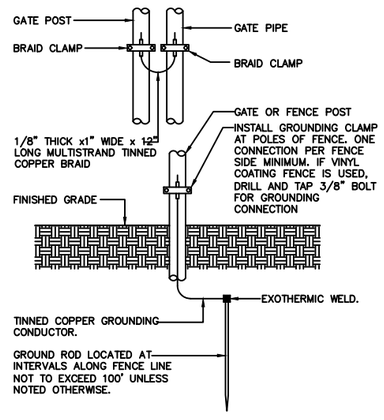
① 12 FOOT ROUND TAPERED ALUMINUM POLE. ALLOY 6063-T6 HAPCO RTA SERIES, NO EQUAL. CONTRACTOR TO PROVIDE STRUCTURAL POLE AND FOOTING DETAILED DRAWINGS INCLUDING WIND LOAD CALCULATIONS SIGNED AND SEALED BY A STATE OF FLORIDA STRUCTURAL ENGINEER. CALCULATIONS SHALL BE IN ACCORDANCE WITH THE FLORIDA BUILDING CODE.

3 E-06 TYPE 'A' POLE MOUNTED FIXTURE DETAIL
N.T.S.

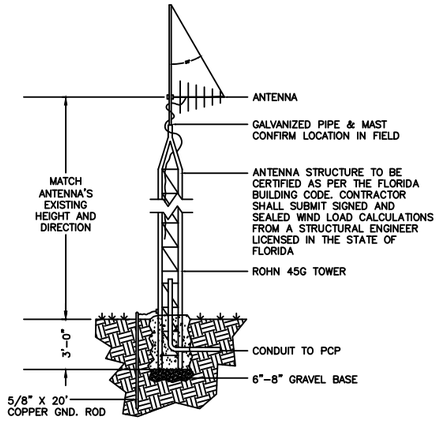




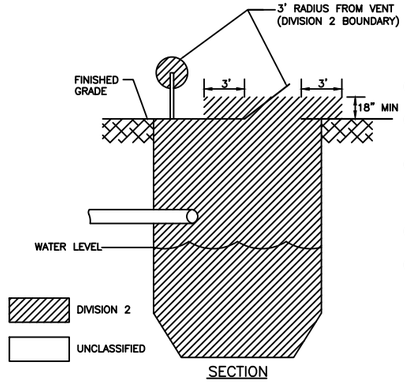
4 E-06 GROUND TEST WELL
N.T.S.



5 E-06 TYPICAL GATE OR FENCE POST GROUNDING
N.T.S.



6 E-06 RTU ANTENNA & MAST INSTALLATION



NOTES:

① THE AREA INSIDE THE WET WELL IS A HAZARDOUS, CLASS 1, DIV. 2 LOCATION.

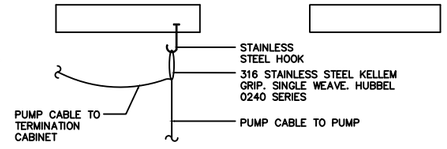
② THE AREA WITHIN 3 FEET FROM THIS HATCH AND 1.5 FEET ABOVE THE WET WELL SLAB IS A HAZARDOUS, CLASS 1, DIV. 2 LOCATION.

③ THE AREA WITHIN A 3 FOOT RADIUS FROM THE VENT OPENING IS A HAZARDOUS, CLASS 1, DIV. 2 LOCATION. THE AREA WITHIN A 5 FOOT 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 PROVIDE WIRING METHODS AND MATERIALS SUITABLE FOR A CLASS 1, DIVISION 2 AREA WITHIN ALL HAZARDOUS AREAS. USE CROUSE-HINDS MODEL EYSR RETROFIT SEALING FITTING.

7 E-06 NFPA BOUNDARY CLASSIFICATION



8 E-06 PUMP CABLE MOUNTING DETAIL
N.T.S.

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ELECTRICAL DETAILS 2

E-7

GUIDE RAIL AND PUMP CONDUIT

NTS

3" PIPE CUP

NTS