

Davie County Utility Details

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Rev. 12/6/2021

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TRENCH AND UTILITY NOTES

1. FOLLOW ALL OSHA GUIDELINES FOR SAFETY. FOR SHORING, FIELD DETERMINE SOIL CLASSIFICATION TYPE.
2. PERFORM ALL WORK TO NCDOT STANDARDS.
3. PROVIDE CONTINUOUS TRAFFIC FLOW IN AT LEAST ONE LANE DURING CONSTRUCTION.
4. PROVIDE TRAFFIC CONTROL IN ACCORDANCE WITH THE 'NORTH CAROLINA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES'.
5. PROVIDE NEAT SAWCUT EDGES WHEN PAVING IS REMOVED. PAVEMENT OPEN CUT SHALL BE 7 FT WIDE MINIMUM.
6. RESTORE AND REPAIR DAMAGED DRIVES, WALKS AND FIXTURES.
7. SEE TRENCH BACKFILL DETAIL FOR SOIL COMPACTION.
8. EACH DAY CLEAN UP AND KEEP STREETS FREE OF ALL DEBRIS EXCEPT AS APPROVED BY ENGINEER.
9. REMOVE ROCK IN ACCORDANCE WITH ALL SAFETY REGULATIONS AND COORDINATE BLASTING WITH ENGINEER
10. COORDINATE EXISTING FIBER OPTICAL CABLE CONFLICTS WITH UTILITY COMPANIES.
11. WHEN DIGGING BESIDE UTILITY POLES CONTACT THE UTILITY COMPANY FOR THEM TO STABILIZE POLE AND ADJUST GUY WIRE TO ACCOMMODATE NEW PIPE.
12. VERIFY LOCATION OF UTILITIES.
'NC ONE CALL CENTER' '811' OR (800)632-4949
13. UTILITY REPAIR PHONE NUMBERS IN DAVIE COUNTY ARE:

DUKE ENERGY (W-S)	(336)917-2556
ENERGY UNITED ELECTRIC CORP.	(336)751-2136
PIEDMONT NATURAL GAS	(336)726-7761
AT&T FIBER	(800)924-9420
CENTURY LINK	(336)526-3294
QWEST COMMUNICATIONS	(336)210-4402
SPECTRUM (CHARTER)	(336)785-3390
YADKIN VALLEY TELEPHONE	(336)463-5074
WAKE FOREST UNIV MEDICAL	(336)716-4657
MOCKSVILLE WATER	(336)751-2519
DAVIE COUNTY WATER	(336)753-6090

DAVIE COUNTY PUBLIC UTILITIES
daviecountync.gov (336)753-6090

TRENCH AND UTILITY NOTES

SHEET: 1 OF 1 05/20/20 GSB

1.01

EMBEDMENT SOIL MATERIAL CLASSIFICATIONS

CLASS	TYPE	DESCRIPTION OF SOIL MATERIAL
I *	--	MANUFACTURED ANGULAR, GRANULAR MATERIAL, ¼ TO 1½ INCHES (6 TO 40MM) SIZE, INCLUDING MATERIALS HAVING REGIONAL SIGNIFICANCE SUCH AS CRUSHED STONE OR ROCK, BROKEN CORAL, CRUSHED SLAG, CINDERS OR CRUSHED SHELLS.
II **	GW	WELL-GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES. 50% OR MORE RETAINED ON NO. 4 SIEVE. MORE THAN 95% RETAINED ON NO. 200 SIEVE. CLEAN.
	GP	POORLY GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES. 50% OR MORE RETAINED ON NO. 4 SIEVE. MORE THAN 95% RETAINED ON NO. 200 SIEVE. CLEAN.
	SW	WELL-GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES. MORE THAN 50% PASSES NO.4 SIEVE. MORE THAN 95% RETAINED ON NO. 200 SIEVE. CLEAN.
	SP	POORLY GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES. MORE THAN 50% PASSES NO. 4 SIEVE. MORE THAN 95% RETAINED ON NO. 200 SIEVE. CLEAN.
III ***	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES. 50% OR MORE RETAINED ON NO. 4 SIEVE. MORE THAN 50% RETAINED ON NO. 200 SIEVE.
	GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES. 50% OR MORE RETAINED ON NO. 4 SIEVE. MORE 50% RETAINED ON NO. 200 SIEVE.
	SM	SILTY SANDS, SAND-SILT MIXTURES. MORE THAN 50% PASSES NO.4 SIEVE. MORE THAN 50% RETAINED ON NO. 200 SIEVE.
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES. MORE THAN 50% PASSED NO. 4 SIEVE. MORE THAN 50% RETAINED ON NO. 200 SIEVE.
IV	ML	INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS. LIQUID LIMIT 50% OR LESS. 50% OR MORE PASSES NO. 200 SIEVE.
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS. LIQUID LIMIT 50% OR LESS. 50% OR MORE PASSES NO. 200 SIEVE.
	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDS OR SILTS, ELASTIC SILTS. LIQUID LIMIT GREATER THAN 50%. 50% OR MORE PASSES NO. 200 SIEVE.
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS, LIQUID LIMIT GREATER THAN 50%. 50% OR PASSES NO. 200 SIEVE.
V	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY. LIQUID LIMIT 50% OR LESS. 50% OR MORE PASSES NO. 200 SIEVE.
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY. LIQUID LIMIT GREATER THAN 50%. 50% OR MORE PASSES NO. 200 SIEVE.
	PT	PEAT, MUCK AND OTHER HIGHLY ORGANIC SOILS.

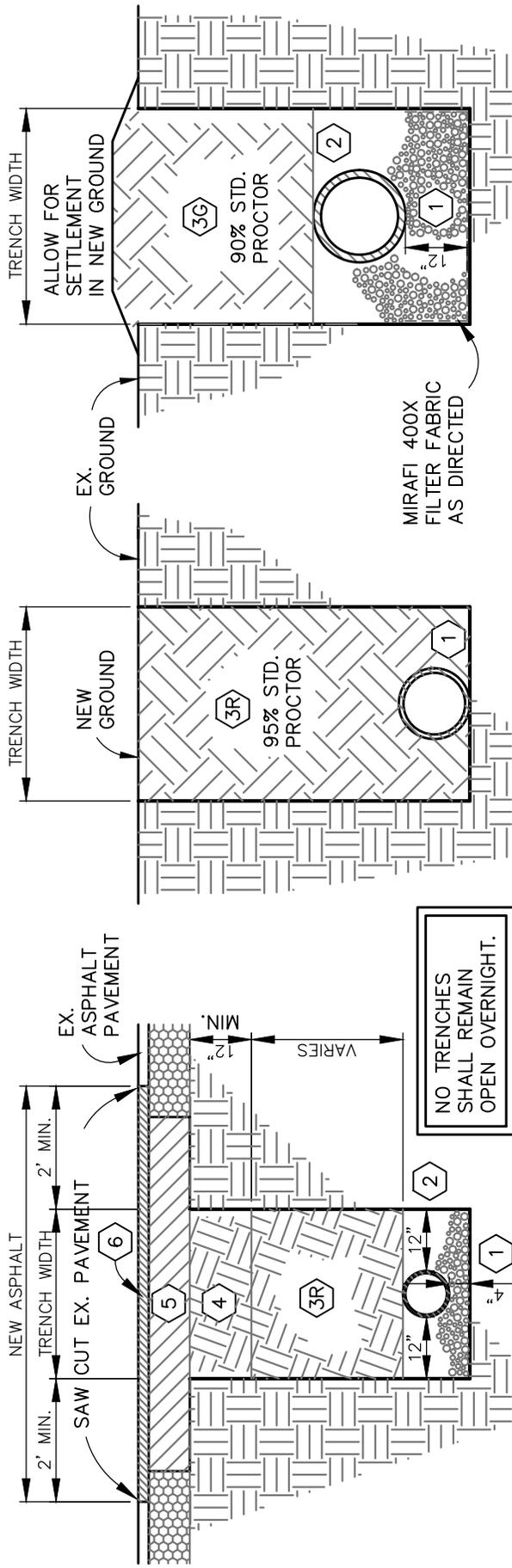
- * SOILS DEFINED AS CLASS 1 MATERIALS ARE NOT DEFINED IN ASTM D2487.
- ** IN ACCORDANCE WITH ASTM D2487, LESS THAN 5% PASS NO. 200 SIEVE.
- *** IN ACCORDANCE WITH ASTM D2487, LESS THAN 12% PASS NO. 200 SIEVE. SOILS WITH 5% TO 12% PASS NO. 200 SIEVE FALL IN BORDERLINE CLASSIFICATION, E.G., GP-GC.

DAVE COUNTY PUBLIC UTILITIES
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EMBEDMENT SOIL MATERIAL
CLASSIFICATION

SHEET: 1 OF 1 05/20/20
GSB

1.02



**FLEXIBLE SEWER
INSIDE PAVEMENT AREA**

**WATER & RIGID SEWER
INSIDE SHOULDER AREA**

**FLEXIBLE SEWER
OUTSIDE ROADWAY AREA**

CONTRACTOR SHALL COMPLY WITH ALL OSHA REGULATIONS FOR TRENCH SHORING AND SLOPING. A "COMPETENT PERSON" AS DEFINED BY OSHA SHALL BE ON SITE AT ALL TIMES WHEN ANY WORKER IS IN A TRENCH.

SEE EMBEDMENT SOIL MATERIAL CLASSIFICATIONS TABLE FOR SOIL CLASSES. ADD WATER TO EACH LAYER AS NEEDED OR DIRECTED FOR COMPACTION AND MECHANICALLY TAMP THOROUGHLY.

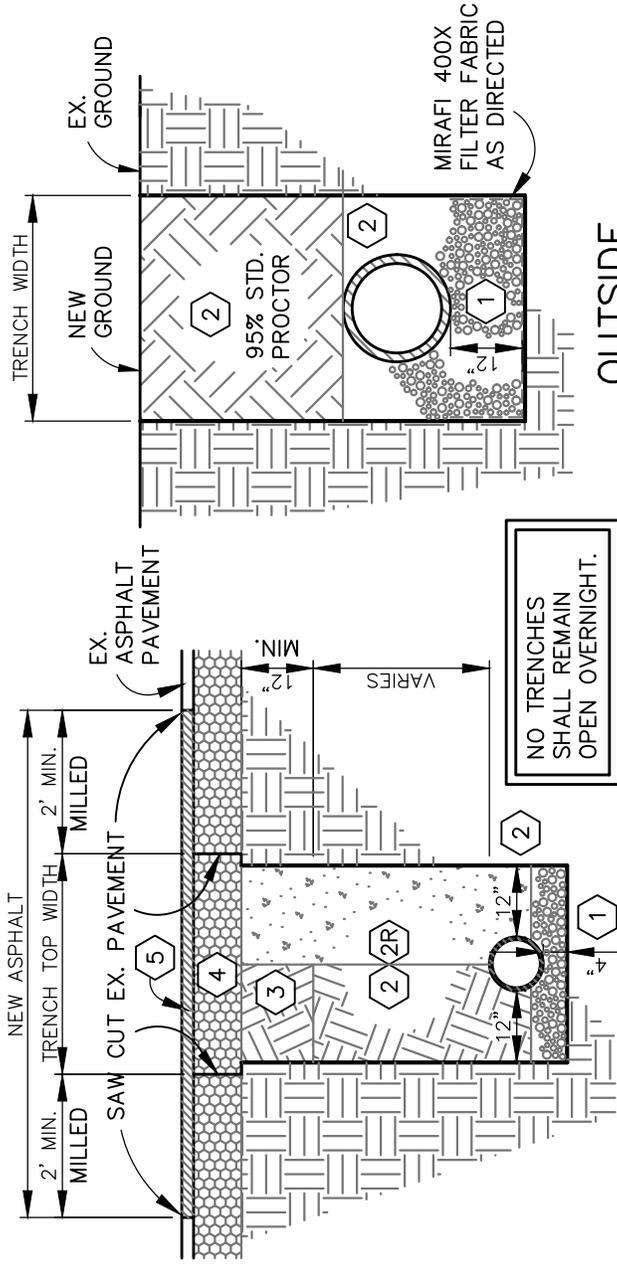
KEYNOTE FOR BEDDING PIPE

- 1 PROVIDE CLASS I, II OR III SOIL FOR BEDDING. DIG BELL HOLES IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
- A. FOR COMPETENT TRENCH BOTTOM AS DETERMINED BY ENGINEER
 - 1. PLACE FLEXIBLE SEWER PIPE ON 4" BEDDING OVER COMPETENT SOIL BOTTOM.
 - 2. PLACE RIGID SEWER AND FLEXIBLE AND RIGID WATER PIPE ON COMPETENT SOIL BOTTOM.
- B. FOR NON COMPETENT TRENCH BOTTOM, PLACE ALL PIPE ON 12" BEDDING OVER MIRAFI 400X FILTER FABRIC OR AS DIRECTED BY ENGINEER.
- C. SEWER PIPE REFERS TO BOTH STORM AND SANITARY. RIGID PIPE IS DUCTILE AND CONCRETE. FLEXIBLE PIPE IS PVC AND HDPE.

KEYNOTES FOR TRENCH BACKFILL

- 2 PROVIDE CLASS I, II OR III SOIL BACKFILL. COMPACT SOIL IN 6" LAYERS TO 95% OF STANDARD PROCTOR AROUND ALL FLEXIBLE SEWER PIPE.
- 3R PROVIDE CLASS I, II, III OR IV SOIL BACKFILL. COMPACT IN 6" LAYERS TO 95% STANDARD PROCTOR DENSITY
- 3G PROVIDE CLASS I, II, III OR IV SOIL BACKFILL. COMPACT IN 6" LAYERS TO 90% STANDARD PROCTOR DENSITY.
- 4 PROVIDE CLASS I, II, III OR IV SOIL BACKFILL. COMPACT IN 6" LAYERS TO 100% STANDARD PROCTOR DENSITY FOR TOP 1 FT OF SUBGRADE.
- 5 SEE PAVING DESIGN TABLE FOR SUB-BASE, BASE AND BINDER.
- 6 SEE PAVING DESIGN TABLE FOR SURFACE COURSE.

STD. TRENCH BACKFILL
32 TRNCHFL



INSIDE PAVEMENT AREA

OUTSIDE PAVEMENT AREA

CONTRACTOR SHALL COMPLY WITH ALL OSHA REGULATIONS FOR TRENCH SHORING AND SLOPING. A "COMPETENT PERSON" AS DEFINED BY 'OSHA' SHALL BE ON SITE AT ALL TIMES WHEN ANY WORKER IS IN A TRENCH.

SEE EMBEDMENT SOIL MATERIAL CLASSIFICATIONS TABLE FOR SOIL CLASSES. ADD WATER TO EACH LAYER AS NEEDED OR DIRECTED FOR COMPACTION AND MECHANICALLY TAMP THOROUGHLY.

KEYNOTE FOR BEDDING PIPE

- 1 PROVIDE CLASS I, II, III SOIL FOR BEDDING. DIG BELL HOLES IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
- A. PLACE PIPE ON COMPETENT SOIL BOTTOM.
- B. FOR NON COMPETENT TRENCH BOTTOM. PLACE PIPE ON 12" BEDDING OVER MIRAFI 400X FILTER FABRIC AS DIRECTED BY ENGINEER.

KEYNOTES FOR TRENCH BACKFILL

- 2 PROVIDE CLASS I, II, III OR IV SOIL BACKFILL. COMPACT SOIL IN 6" LAYERS TO 95% STANDARD PROCTOR DENSITY IN ALL PAVED AND SHOULDER AREAS AND TO 90% STANDARD PROCTOR DENSITY FOR ALL OTHER AREAS.
- 2R PROVIDE FLOWABLE FILL FOR HEAVY DUTY ASPHALT REPAIR, SEE PAVING DESIGN TABLE FOR SUBGRADE.
- 3 PROVIDE CLASS I, II, III OR IV SOIL BACKFILL. COMPACT SOIL IN 6" LAYERS TO 100% STANDARD PROCTOR DENSITY FOR TOP 1 FT OF SUBGRADE.
- 4 SEE PAVING DESIGN TABLE FOR PAVING.
- 5 SEE PAVING DESIGN TABLE FOR SURFACE COURSE.

TRENCH BACKFILL

32 TRNCHFL-W

PIPE CONSTRUCTION NOTES:

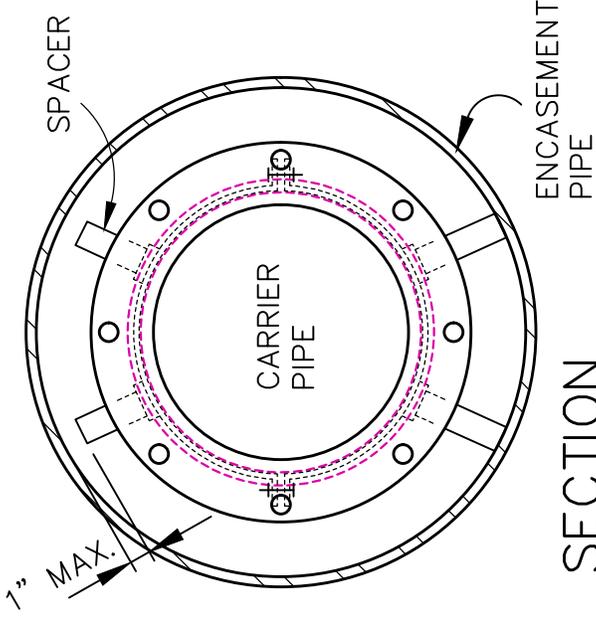
1. FITTINGS SHALL BE CLASS 51 DUCTILE IRON MECHANICAL JOINTS WITH AN APPROPRIATE TRANSITION GASKET TO PVC WHERE APPLICABLE.
2. WHEN CONNECTING DUCTILE IRON PIPE TO PVC PIPE, USE AN APPROPRIATE TRANSITION GASKETS TO PVC BELL END AND A SLEEVE WITH APPROPRIATE GASKETS AT THE PLAIN END.
3. DEFLECTION AT THE JOINTS SHALL NOT EXCEED 14" FOR LENGTH OF PIPE OR 80% OF MANUFACTURER'S RECOMMENDATION, WHICHEVER IS LESS.
4. CASING PIPES SHALL BE BORED UNLESS OTHERWISE NOTED. SEE CASING PIPE SPACERS DETAIL.
5. FOR JURISDICTIONAL DRAINAGE CROSSINGS, USE PIPE CROSSING STREAM INSTALLATION DETAIL AND JURISDICTIONAL STREAM CROSSING DETAIL
6. FOR NON-JURISDICTIONAL DRAINAGE CROSSING, USE PIPE CROSSING STREAM INSTALLATION DETAIL AND DITCH CROSSING DETAIL.
7. PROVIDE JOINT RESTRAINT AT ALL BENDS, TEES AND CAPS. JOINT RESTRAINT SHALL BE A COMBINATION OF CONCRETE THRUST BLOCKING ACCORDING TO DETAILS SHOWN AND MECHANICAL JOINT RESTRAINT AS APPROVED BY THE ENGINEER. MECHANICAL JOINT RESTRAINTS SHALL BE PLACED AT MULTIPLE LOCATIONS ON EACH SIDE OF FITTINGS ACCORDING TO MANUFACTURER'S RECOMMENDATION.
8. MECHANICAL JOINT RESTRAINT SHALL BE
 - A. FOR DI PIPE TO MJ: CLOW MJ FIELD LOK, MEGLUG #1100, MIDCO #4 RESTRAINT, SMITH-BLAIR #981 OR STAR PIPE #3000, #3000S.
 - B. FOR C900 PIPE TO MJ: CLOW MJ FIELD LOK, MEGLUG #2000PV, MIDCO #4 RESTRAINT, SMITH-BLAIR #981 OR STAR PIPE #4000, #1000C, #1200.
 - C. FOR SDR-21 PIPE TO MJ: MEGLUG #2000PV MIDCO #4 RESTRAINT, SMITH-BLAIR #981 OR STAR PIPE #4000, #1000S. NOT APPLICABLE TO NEW PROJECTS.
 - D. FOR PIPE BELL/SPIGOT RESTRAINT: SMITH-BLAIR #932, STAR PIPE #4100P, #1100.
8. CONCRETE THRUST BLOCK RESTRAINT AND SUBSURFACE SUPPORT SHALL BE 4000 PSI CLASS 'B' CONCRETE WITH 5% AIR ENTRAINMENT, 0.45 WATER/CEMENT RATIO AND PLACED AT A SLUMP NO GREATER THAN 3".
9. CONTRACTOR SHALL SUBMIT TO ENGINEER THE MODEL, MANUFACTURER AND TYPICAL PLACEMENT OF RESTRAINT SYSTEM TO BE USED ON PROJECT.

MATERIAL:

1. ENCASUREMENT PIPE: STEEL PIPE ASTM A139 GRADE B WITH DIAMETER AND WALL THICKNESS PER TABLE OR NOTE. SEE NCDOT ENCASUREMENT PROVISIONS FOR ADDITIONAL REQUIREMENTS.
2. CARRIER PIPE: DUCTILE IRON M/J RESTRAINT.
3. SPACERS: CASCADE MFG CCS-ER. PROVIDE FOR RADIAL RESTRAINT OF CARRIER PIPE INSIDE ENCASUREMENT PIPE
4. END SEALS: CASCADE MFG MODEL CCES.

INSTALLATION:

1. INSTALL (3) THREE SPACERS PER JOINT OF DUCTILE IRON PIPE: (1) ONE AT EACH END AND (1) ONE IN THE MIDDLE OF PIPE.

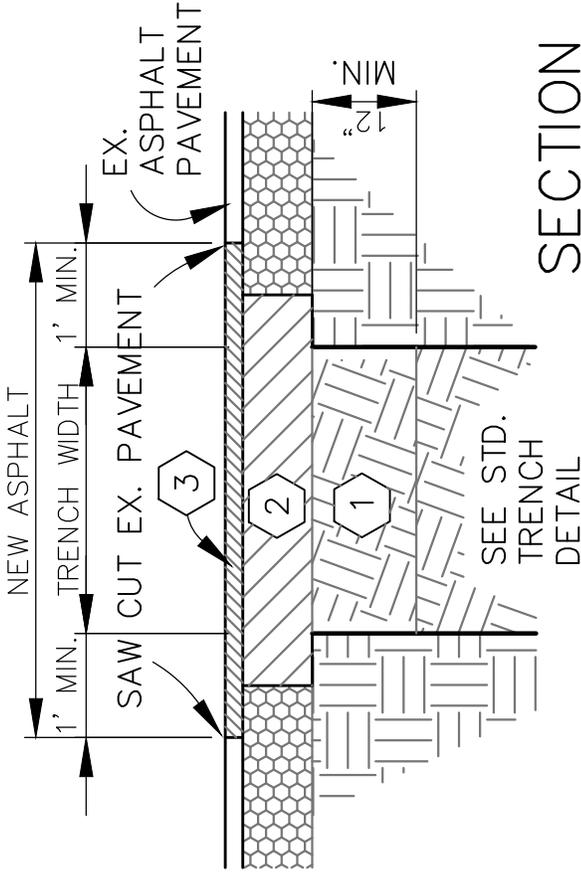


SECTION

**ENCASUREMENT PIPE
& SPACER DETAIL**

12

SPACER-DOT



SECTION

KEYNOTES

- 1 FOR TOP 1 FT OF SUBGRADE, PROVIDE FLOWABLE CLASS I, II, III OR IV SOIL BACKFILL COMPACTED IN 6" LAYERS TO 100% STANDARD PROCTOR DENSITY.
- 2 SEE PAVEMENT DATA TABLE FOR SUB-BASE, BASE AND BINDER.
- 3 SEE PAVEMENT DATA TABLE FOR SURFACE COURSE.

DO NOT USE FOR DIRECTIONAL BORING.

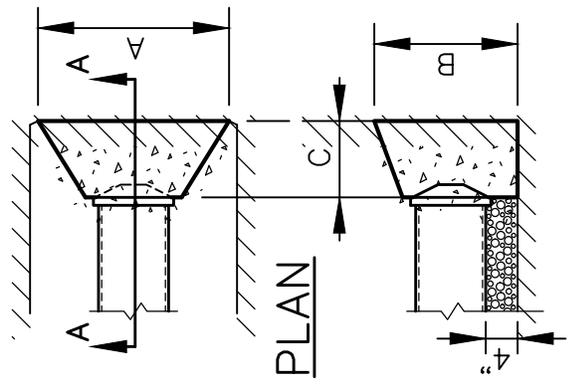
SITE PAVEMENT REPAIR DETAIL

32 DTL PAV REPAIR TBL

<u>PAVING DESIGN</u>	
	ASPHALT
	HEAVY DUTY
TOP COURSE	1.5" S-9.5B
BINDER	2.5" I-19.0B
SUB BASE	5.5" B-25.0B
SUBGRADE	BACKFILL IN 9" MAX. LIFTS

CONCRETE DIMENSIONS		MIN DIM FOR PIPE DIA(D)∅					
DIM		2-4"	6"	8"	10"	12"	16"
A		19"	19"	24"	28"	35"	44"
B		15"	15"	18"	21"	25"	33"
C		6"	6"	8"	8"	10"	12"

COVER FITTING WITH PLASTIC BEFORE PLACING CONCRETE

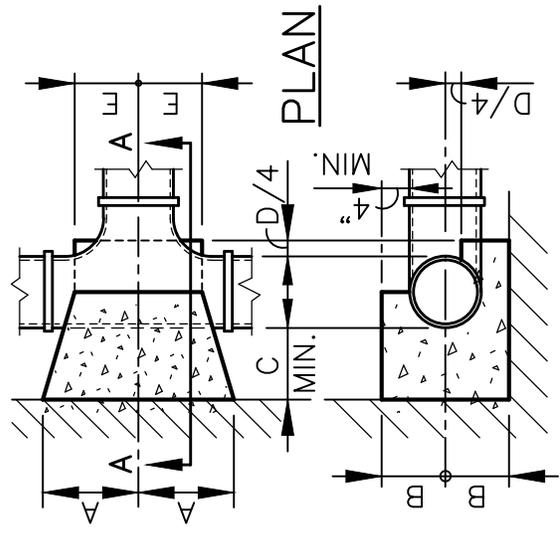


SECTION A-A

CAP THRUST BLOCK
THRBK1

CONCRETE DIMENSIONS		MIN DIM FOR PIPE DIA(D)∅					
DIM		2-4"	6"	8"	10"	12"	16"
A		6"	6"	8"	12"	12"	16"
B		8"	8"	10"	12"	15"	20"
C		8"	8"	9"	10"	12"	14"
E		6"	6"	8"	8"	8"	10"

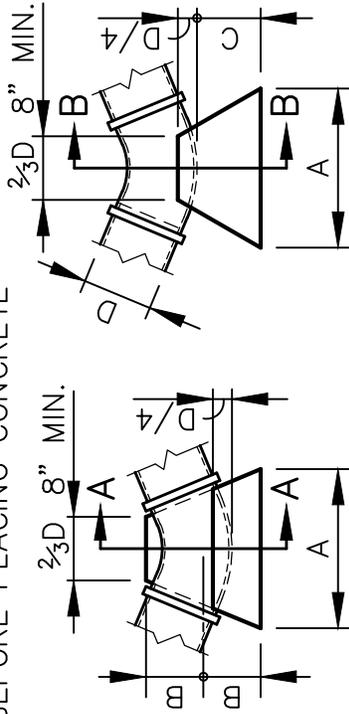
COVER FITTING WITH PLASTIC BEFORE PLACING CONCRETE



SECTION A-A

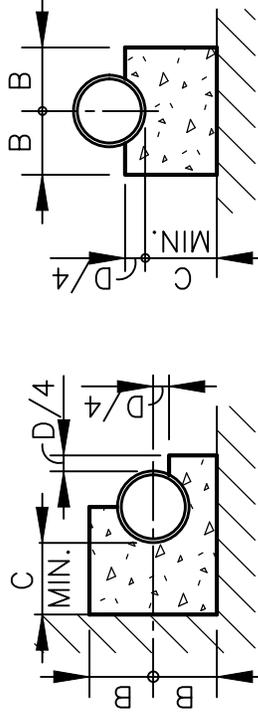
TEE THRUST BLOCK
THRBK2

COVER FITTING WITH PLASTIC
BEFORE PLACING CONCRETE



PLAN

ELEVATION



SECTION A-A

HORIZONTAL

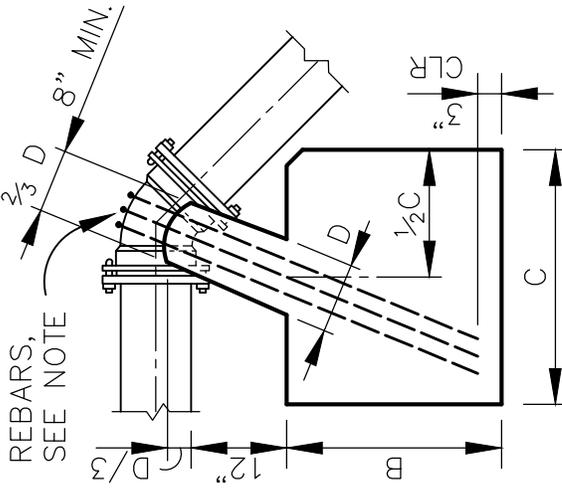
SECTION B-B

VERTICAL

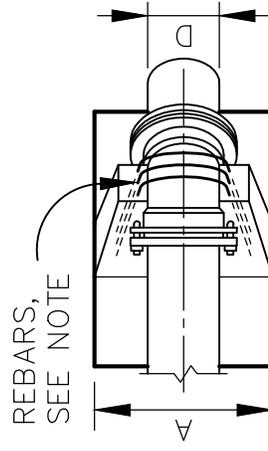
CONCRETE DIMENSIONS

BEND DEG	DIM	MIN DIM FOR PIPE DIA(D)φ			
		2-4"	6"	8"	10" 12" 16"
1/32 11 1/4°	A	6"	6"	8"	10" 12" 16"
	B	7"	7"	8"	10" 12" 16"
	C	7"	7"	8"	10" 12" 16"
1/16 22 1/2°	A	9"	9"	12"	18" 21" 27"
	B	7"	7"	8"	10" 12" 16"
	C	8"	8"	9"	10" 11" 14"
1/8 45°	A	15"	15"	20"	25" 30" 40"
	B	7"	7"	8"	9" 11" 15"
	C	8"	8"	9"	10" 11" 15"
1/4 90°	A	18"	18"	24"	31" 36" 49"
	B	8"	8"	12"	14" 16" 21"
	C	9"	9"	10"	11" 12" 16"

**COMPRESSION THRUST
BLOCKS AT BENDS** THRBK3



ELEVATION



PLAN

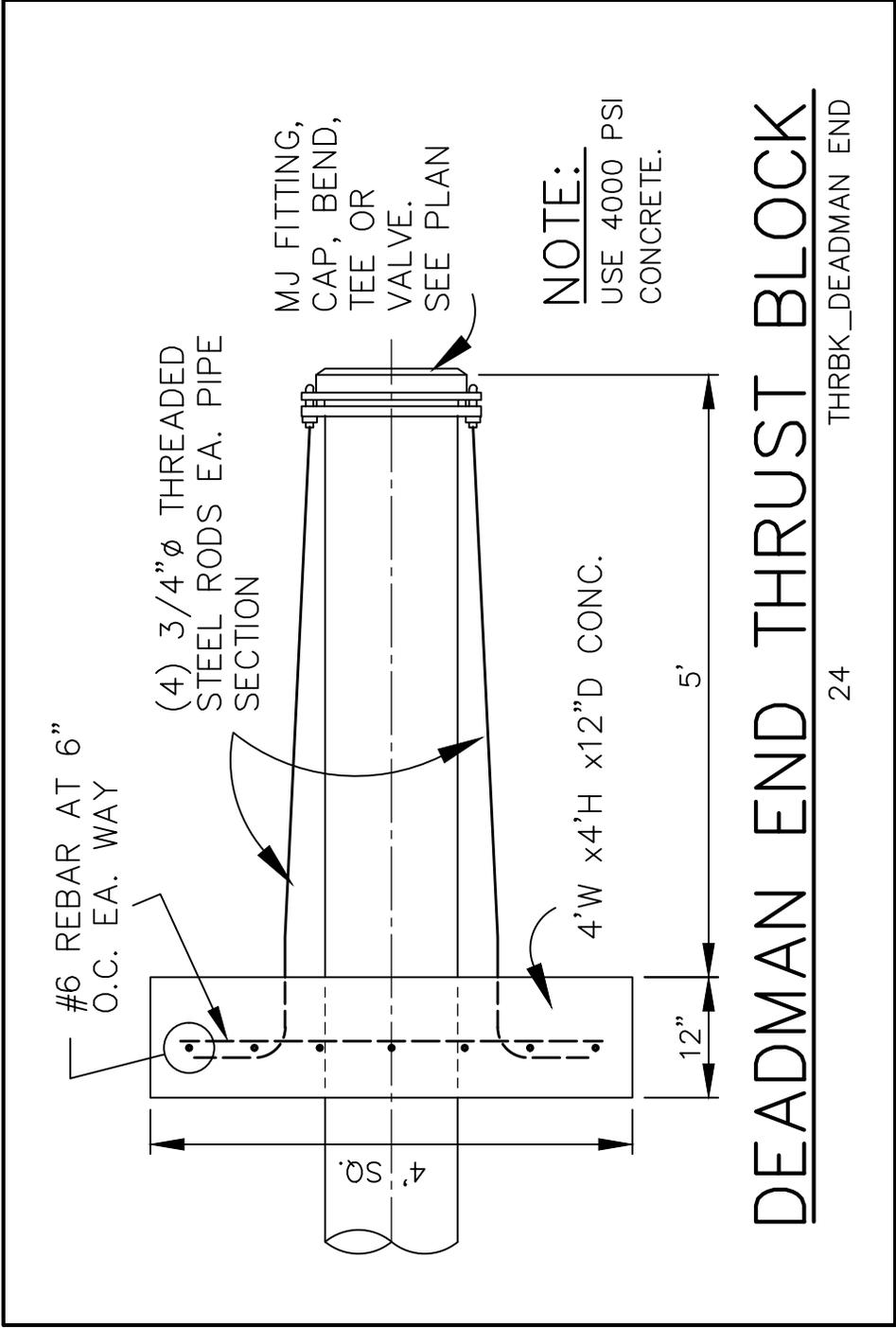
CONCRETE DIMENSIONS				
BEND DEG	DIM	MIN DIM FOR PIPE DIA(D)ϕ		
		2-4"	6"	8"
1/32 11 1/4°	A	16"	18"	17"
	B	15"	15"	15"
	C	21"	24"	30"
1/16 22 1/2°	A	20"	24"	40"
	B	21"	21"	27"
	C	27"	30"	32"
1/8 45°	A	24"	30"	36"
	B	30"	30"	33"
	C	30"	36"	48"

NOTES:

1. EMBED 3-#6 REINFORCING STEEL MIN. OF 20" STRAIGHT OR 10" W/ 180° STD. HOOK
2. COVER FITTING WITH PLASTIC BEFORE PLACING CONCRETE

TENSION THRUST BLOCKS ANCHORAGE AT BENDS

32 THRBK4



PIPE LENGTH CALCULATION AIDE			
PIPE DIA.	22½° 'C2'	BOTH 22½° 2x'C2'='E'	90° + 22½° 'A' + 'C2' = 'E'
6"	2"	4"	9"
8"	2.5"	5"	11.5"
10"	3"	6"	13.5"
12"	3.5"	7"	16"
16"	3.75"	7.5"	20"

HORIZ. DIST. (X) = (2.414 x 'Y') + 'E'
PIPE LENGTH (L) = (2.613 x 'Y') - 'E'

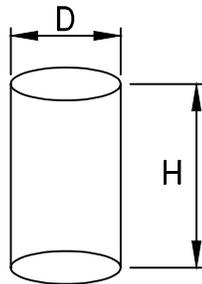
CALCULATION STEPS:

1. VERIFY VERTICAL DIFFERENCE BETWEEN THE TWO PIPES ('Y').
2. DETERMINE ('E') FOR END CONDITIONS & PIPE SIZE
3. CALCULATE THE REQUIRED HORIZONTAL DISTANCE (X).
4. CALCULATE THE REQUIRED LENGTH OF SLOPED PIPE (L).

FOR COMPACT
M.J. FITTING

WATER MAIN GENERAL NOTES:

1. STANDARD WATER MAIN SHALL BE DR14 305 PSI C900 PVC WITH DUCTILE IRON FITTINGS OR CEMENT LINED ASPHALTIC COATED DUCTILE IRON FOR PUSH CLASS 50 AND MJ CLASS 51.
2. NCDENR PER SECTION .0904 REQUIRES PVC WATER MAIN TO HAVE 30" MINIMUM GROUND COVER.
3. NCDOT REQUIRES 36" MINIMUM COVER IN ROADWAY AREA.
4. DUCTILE IRON PIPE SHALL BE USED IF WATER MAIN DOES NOT MEET OR EXCEED THE FOLLOWING SEPARATION:
 - A. 18" VERTICAL ABOVE CROSSING STORM OR SANITARY SEWER PIPE.
 - B. 10' HORIZONTAL SEPARATION FROM PARALLEL SEWER PIPE.
 - C. 10' HORIZONTAL FROM STREAM, LAKE OR WATER IMPOUNDMENTS.
5. CENTER ONE 20' SECTION OF DUCTILE IRON PIPE AT ALL CULVERT PIPE CROSSINGS. MAINTAIN 18" VERTICAL CLEARANCE BETWEEN NEW WATER LINE AND EXISTING PIPES.
6. PROVIDE A TRACER WIRE ABOVE THE PIPE. THE TRACER WIRE SHALL
 - A. BE SOLID NO.12 COPPER WITH 30 MILS BLUE HDPE INSULATION.
 - B. BE FASTENED AT 10 FT INTERVALS TO THE PIPE WITH ZIP TIES.
 - C. HAVE CONTINUOUS ELECTRICAL CONNECTION.
7. PROVIDE A CONTINUOUS WARNING TAPE 12" ABOVE THE PIPE.
8. DISINFECT, FLUSH AND PRESSURE TEST WATER MAIN UNDER UTILITY INSPECTION AS FOLLOWS:
 - A. DISINFECT SYSTEM BY MAINTAINING DISINFECTANT AT 50 PPM IN SYSTEMS FOR 24 HOURS.
 - B. FLUSH SYSTEM THOROUGHLY TO 0 PPM, TAKE SAMPLE FROM FLUSHED SYSTEM AND SEND TO LAB FOR BACTERIOLOGICAL TEST.
 - C. PRESSURE TEST THE SYSTEM AT 175 PSI OR GREATER. MAINTAIN FOR AT LEAST 3 HOURS. ADD SUFFICIENT WATER TO BRING BACK TO STARTING PRESSURE. WATER ADDED SHALL NOT EXCEED THE GPH/1000 FT OF LINE TESTED PER THE TABLE. PRESSURE TESTING MUST BE OBSERVED BY THE A UTILITY REPRESENTATIVE AND DOCUMENTED IN THE CONSTRUCTION RECORDS BY THE CONTRACTOR.



Allowable Leakage Gal/1000 ft

Pipe Dia. in.	20'L pipe gal/hr			Gals of Water Added for D & H
	Gals for			
	1 hr	2 hrs	3 hrs	
4	0.33	0.66	0.99	inches
6	0.5	1.00	1.50	.0034 x D ² (H)
8	0.67	1.34	2.01	feet
12	1	2.00	3.00	5.875 x D ² (H)

SUPPLEMENTAL SPECIFICATIONS

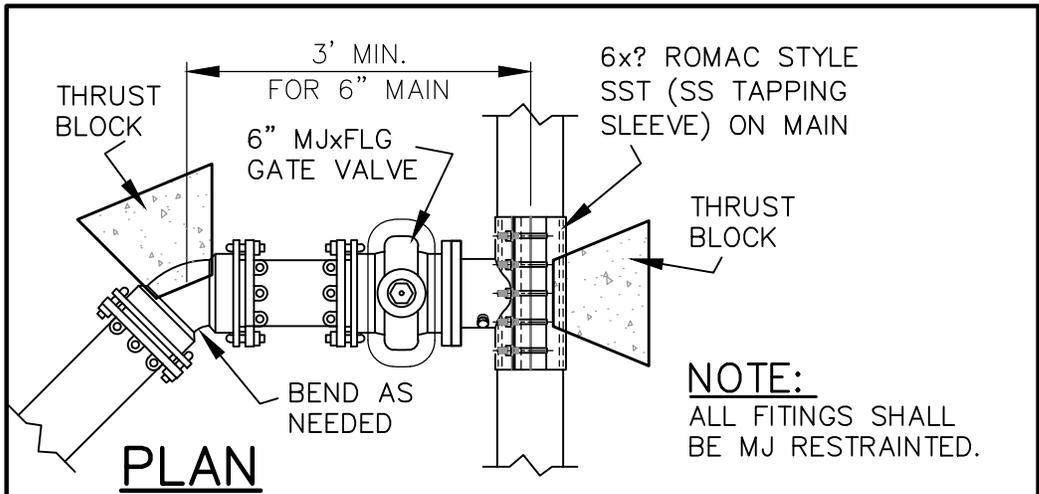
- THE FOLLOWING SPECIFICATIONS SHALL APPLY TO THE DETAILS PROVIDED BY DAVIE COUNTY.
1. WATER DISTRIBUTION MATERIALS MUST BE MANUFACTURED TO AND MEET THE APPROPRIATE AWWA STANDARDS, SECTION C OR ANSI/NSF STANDARD 61, DRINKING WATER SYSTEM COMPONENTS.
 2. PVC PIPES AND FITTINGS SHALL MEET THE LATEST AWWA C900 STANDARDS.
 3. DUCTILE IRON PIPE & APPURTENANCES SHALL MEET, BASED ON DEVICE, THE LATEST AWWA C100 SERIES STANDARDS.
 4. FIRE HYDRANTS SHALL MEET THE LATEST AWWA C502 STANDARDS.
 5. GATE VALVES SHALL MEET THE LATEST AWWA C509 STANDARDS.
 6. METERS MUST SHALL THE LATEST AWWA C700 STANDARDS.
 7. SERVICE CONNECTIONS SHALL MEET THE LATEST AWWA C800 STANDARDS.
 8. INSTALLATION OF PVC PIPES AND FITTINGS SHALL MEET THE LATEST AWWA C605 STANDARDS.
 9. INSTALLATION OF DUCTILE IRON PIPE AND APPURTENANCES SHALL MEET THE LATEST AWWA C600 STANDARDS.
 10. NEW WATER MAINS SHALL BE DISINFECTED AS OUTLINED IN RULE .1001 AND RULE .1003.
 11. HYDROSTATIC PRESSURE TESTING SHALL BE COMPLETED ON ANY PRESSURE PIPES CARRYING LIQUIDS AND BE COMPLETED PER THE LATEST AWWA C600 OR AWWA C605 STANDARDS.
 12. AFTER DISINFECTION, WATER STORAGE OR DISTRIBUTION FACILITIES SHALL NOT BE PLACED INTO SERVICE UNTIL BACTERIOLOGICAL TEST RESULTS OF REPRESENTATIVE WATER SAMPLES SHALL BE ANALYZED BY A STATE CERTIFIED LABORATORY PER RULE .1001.

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 daviecountync.gov

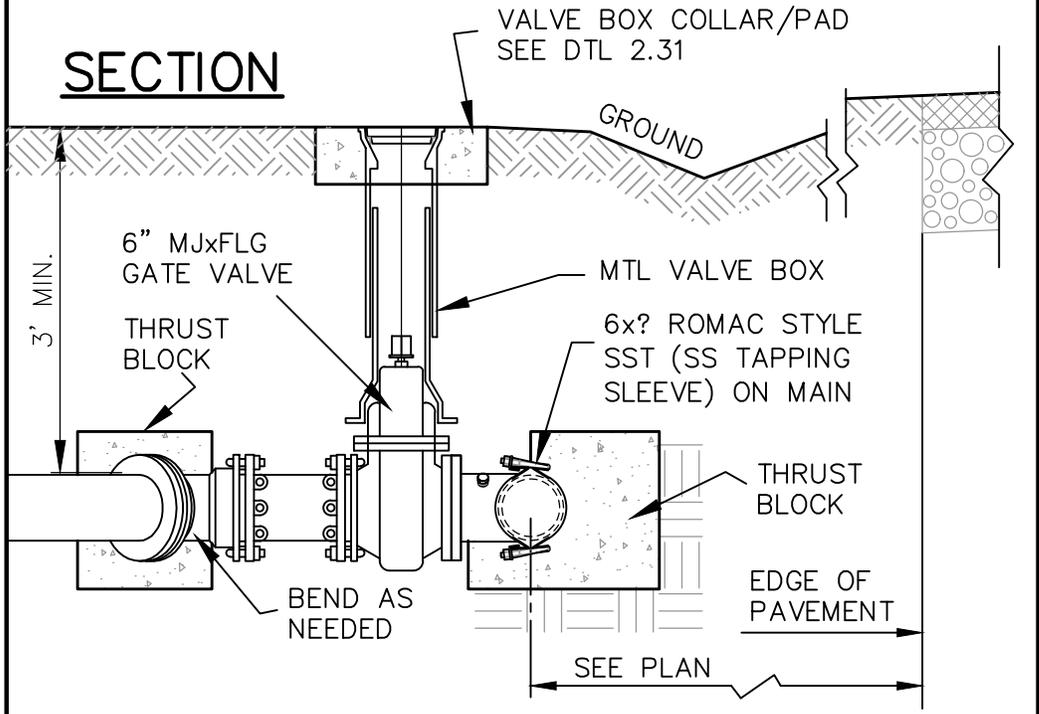
WATER MAIN GENERAL NOTES
 & SUPPLEMENTAL SPECIFICATIONS

SHEET: 1 OF 1 10/07/22
 GSB

2.01



NOTE:
ALL FITINGS SHALL BE MJ RESTRAINED.



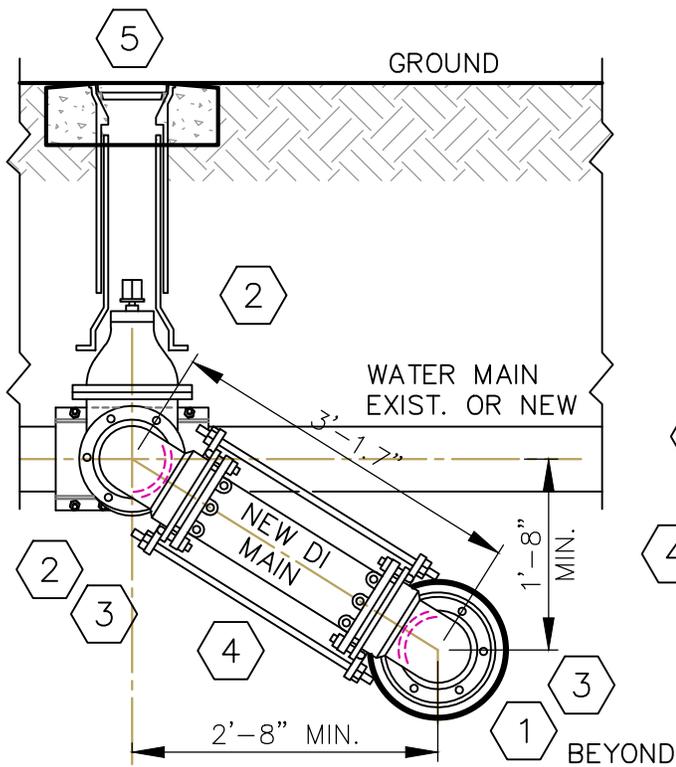
NEW TAPPING TEE, VALVE & BEND ON EXISTING MAIN

24 W-TEE-TAP_VAL+BND DC

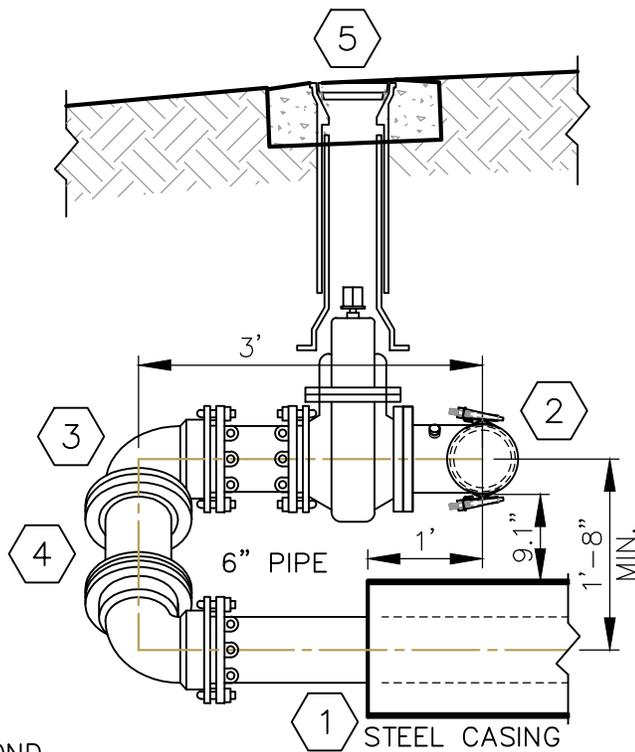
DAVE COUNTY PUBLIC UTILITIES
daviecountync.gov (336)753-6090

NEW TAPPING TEE, VALVE & BEND ON EXISTING MAIN

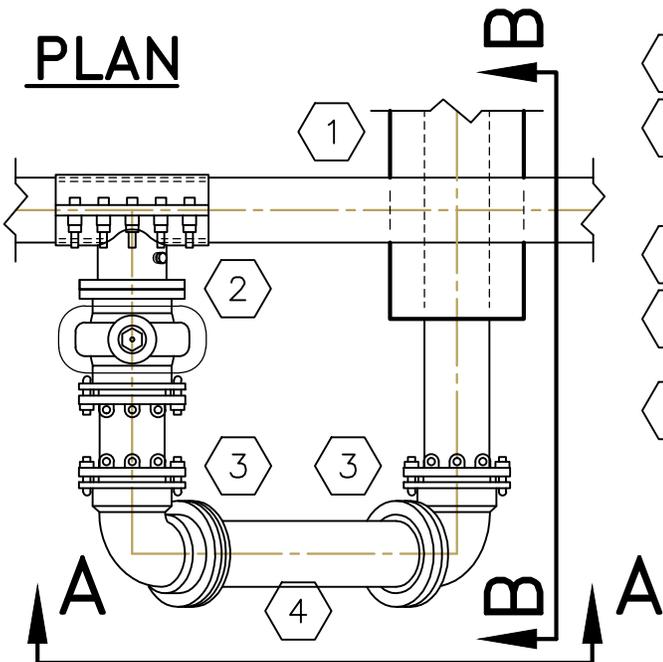
SHEET: 1 OF 1 10/07/22 GSB
2.02



SECTION A-A



SECTION B-B



PLAN

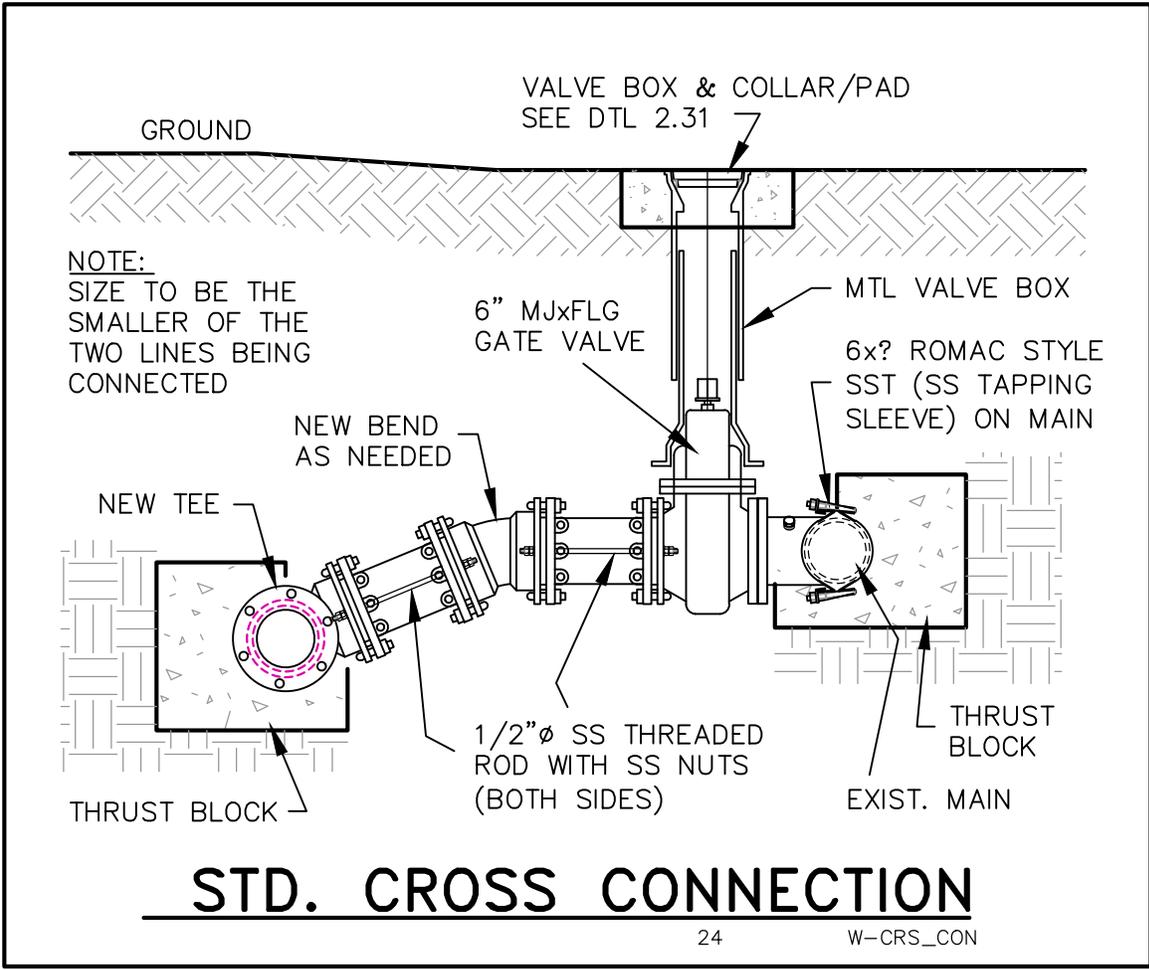
KEYNOTES:

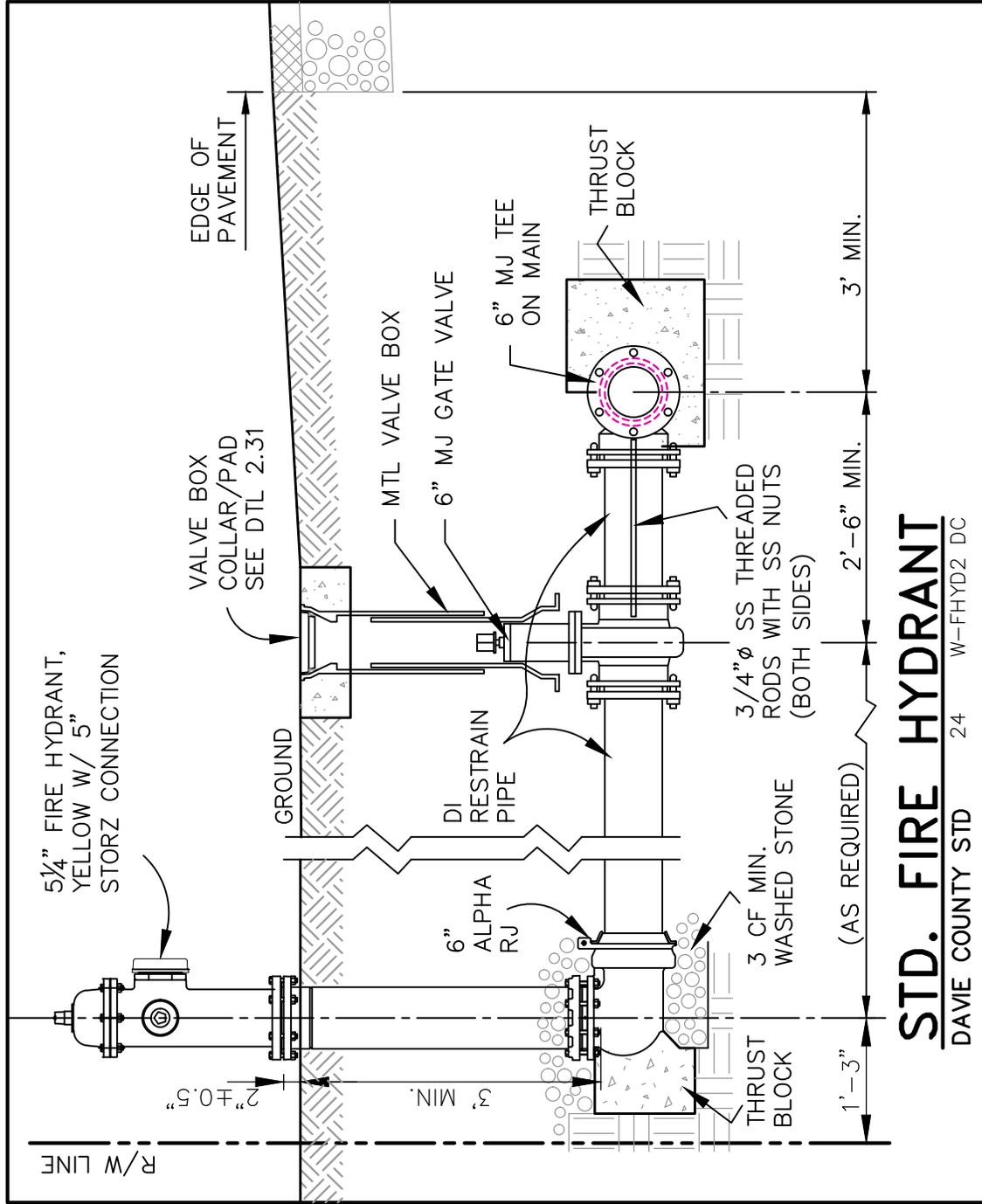
- 1 STEEL CASING PIPE
- 2 ROMAC SST TAPPING SLEEVE/TEE, GATE VALVE & VALVE BOX: SEE PLAN FOR SIZE
- 3 90° BEND MJ RESTRAINED
- 4 TWO(2) 3/4"Ø SS THREADED RODS WITH SS NUTS TYP. EA. SPOOL PIECE
- 5 VALVE BOX & COLLAR/PAD, SEE DTL 2.31

NOTE: ALL FITTINGS SHALL BE MJ RESTRAINED.

STD. 'U' CONNECTION

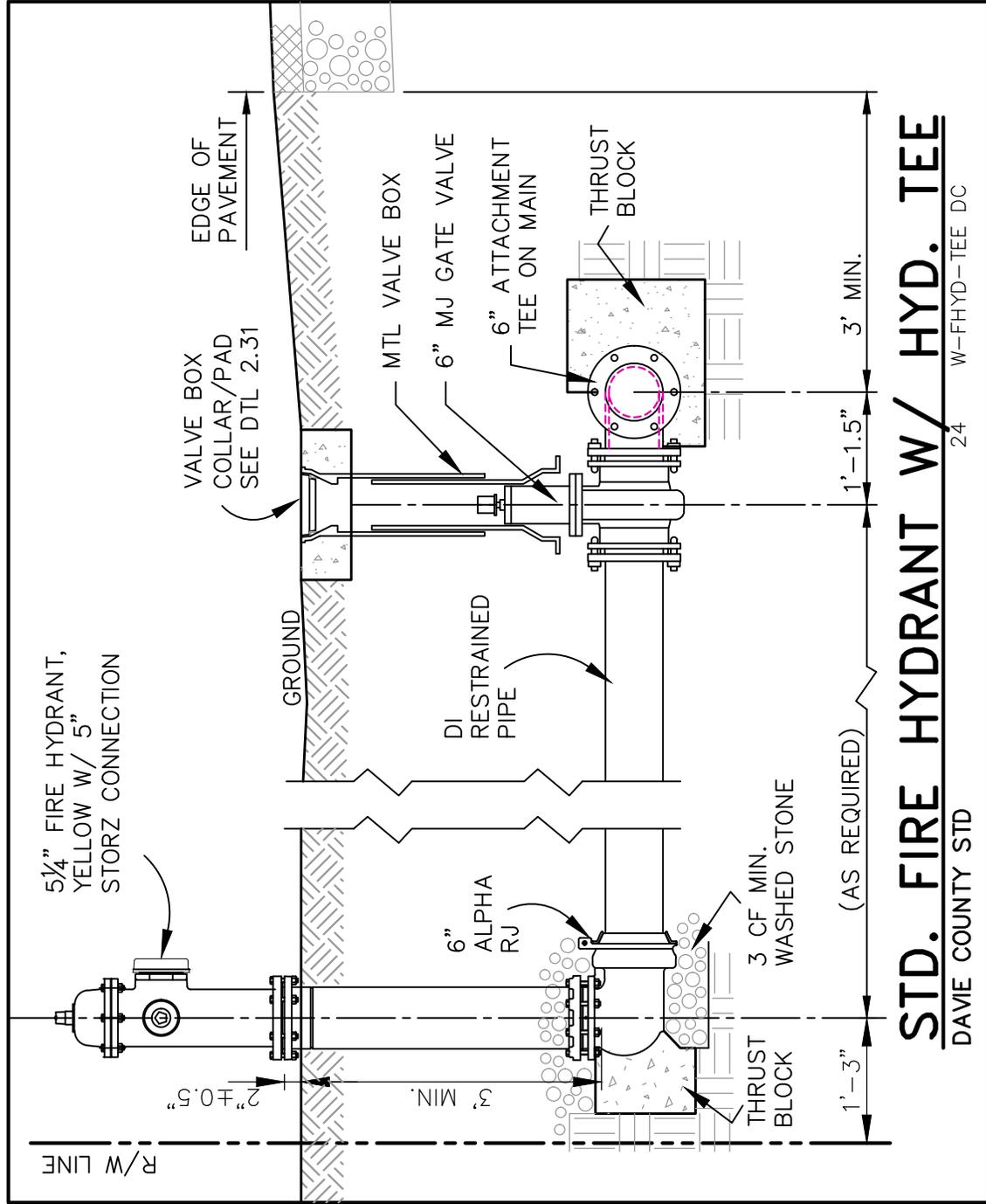
24 W-UCON





STD. FIRE HYDRANT

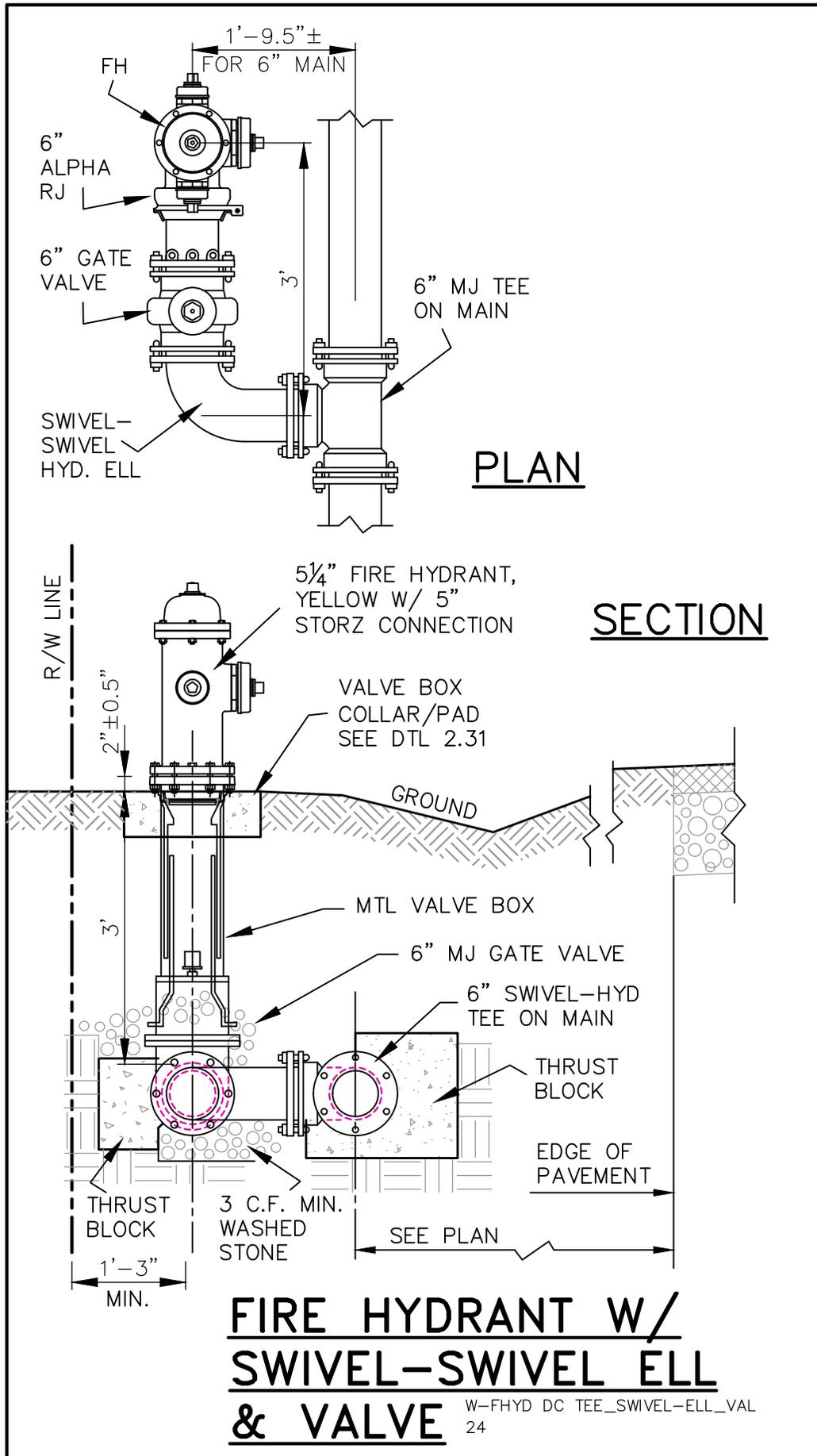
DAVIE COUNTY STD 24 W-FHYD2 DC

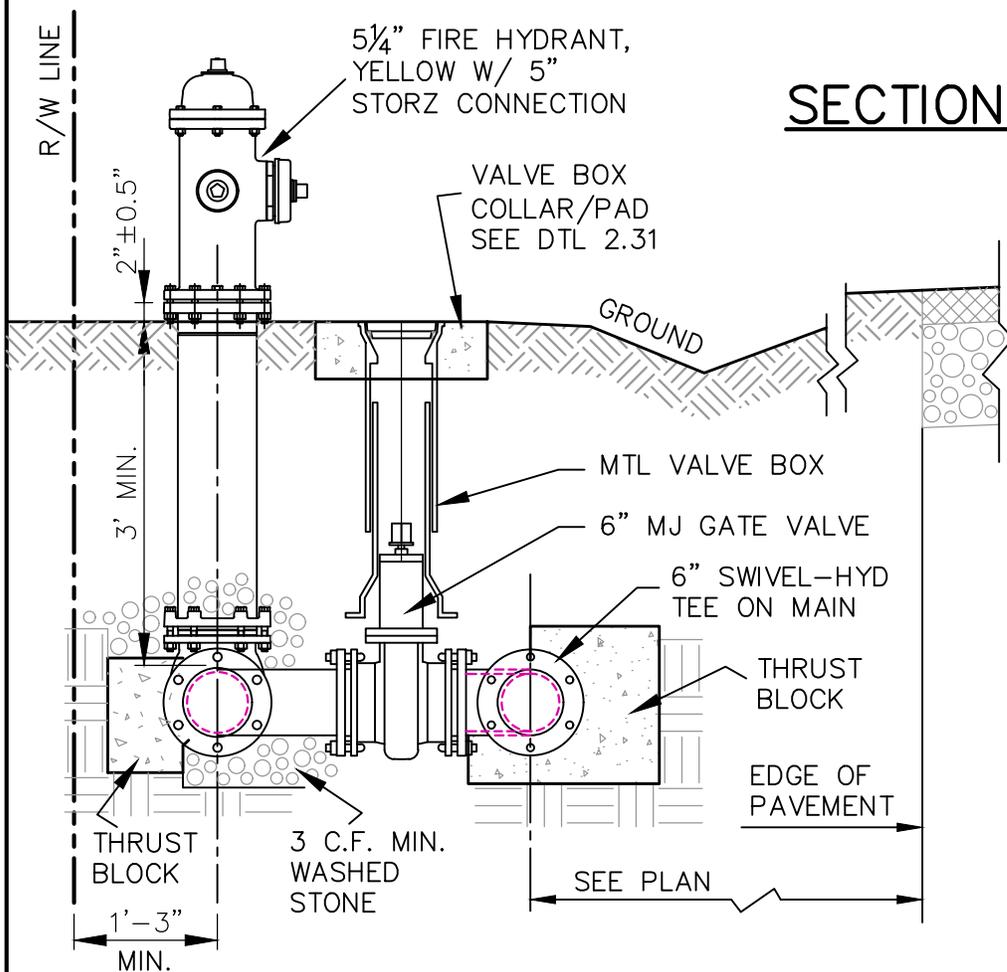
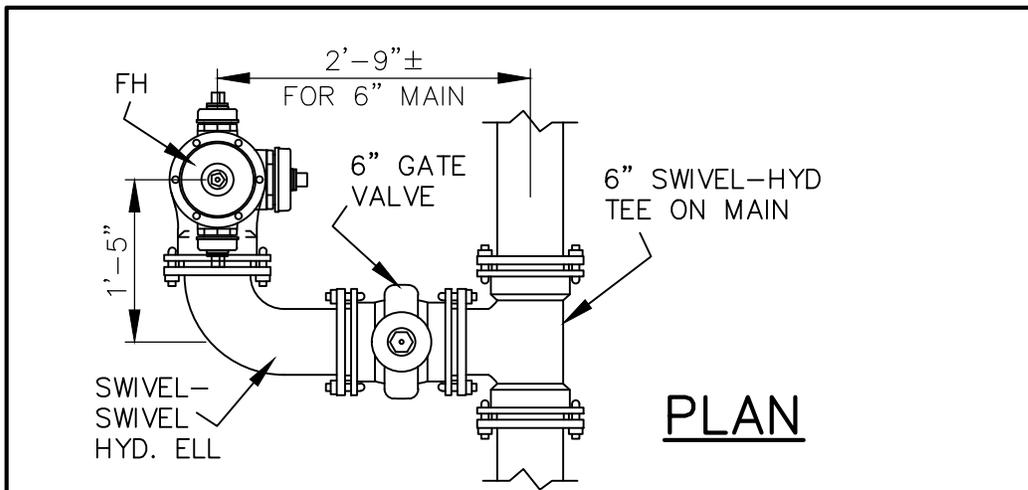


STD. FIRE HYDRANT W/ HYD. TEE

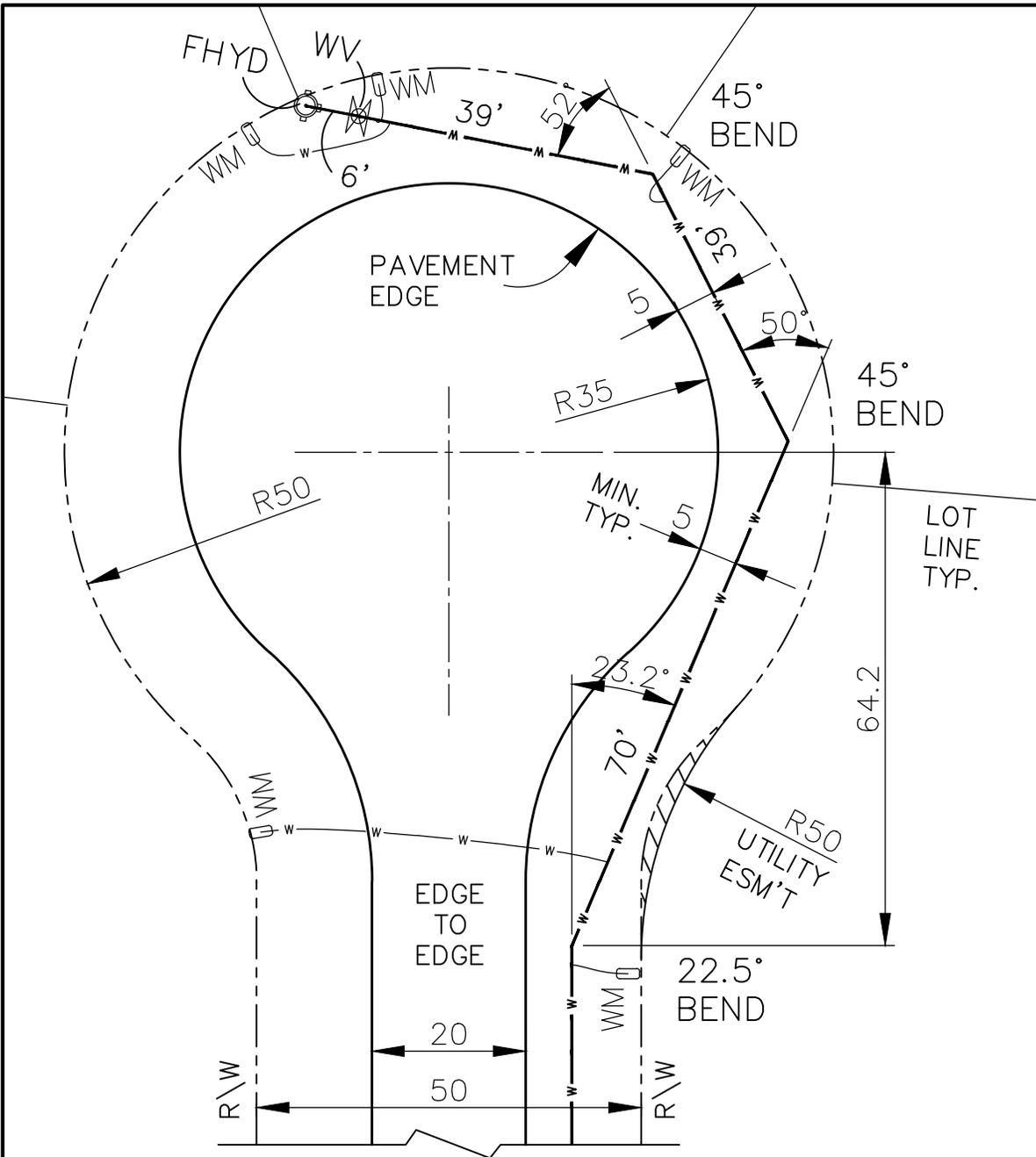
DAVIE COUNTY STD

24 W-FHYD-TEE DC





**FIRE HYDRANT W/ HYD. TEE,
VALVE & SWIVEL-SWIVEL ELL**

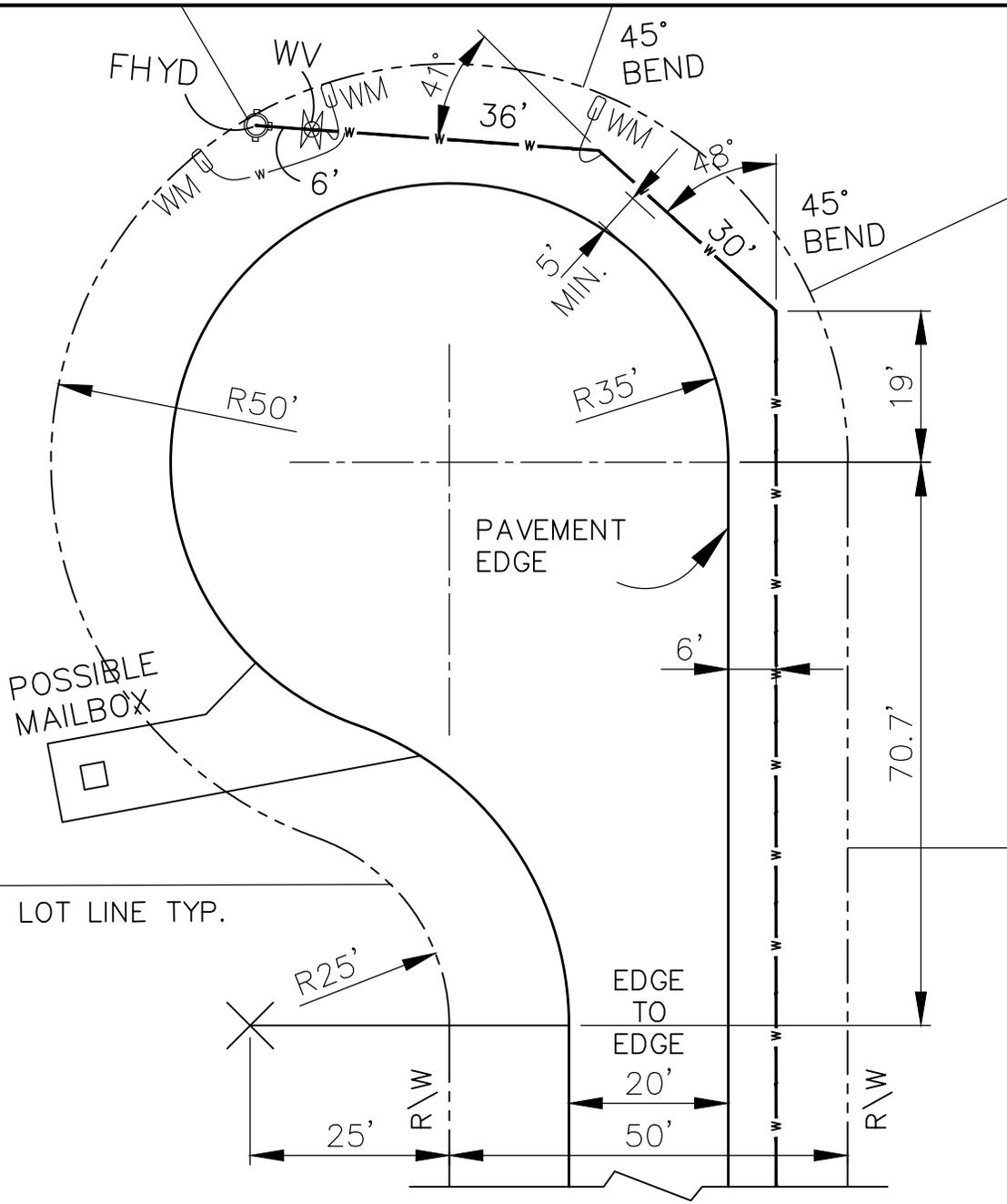


WATER LAYOUT IN STD. 35' RAD CUL-DE-SAC

30 W-RdculCtr 50_50-35E NOT TO SCALE

NOTES:

1. CUL-DE-SAC DIMENSIONS MAY VARY.
2. WATER MAIN SHALL BE A MINIMUM OF 5 FT FROM PAVEMENT EDGE.
3. MINIMIZE THE NUMBER OF JOINTS AND ALLOW 6 DEG MAXIMUM DEFLECTION AT EACH JOINT.
4. PROVIDE A UTILITY EASEMENT ON PLAT.



WATER LAYOUT IN 'P' SHAPE

35' RAD CUL-DE-SAC

30 W-RdculP 50_50-35 NOT TO SCALE

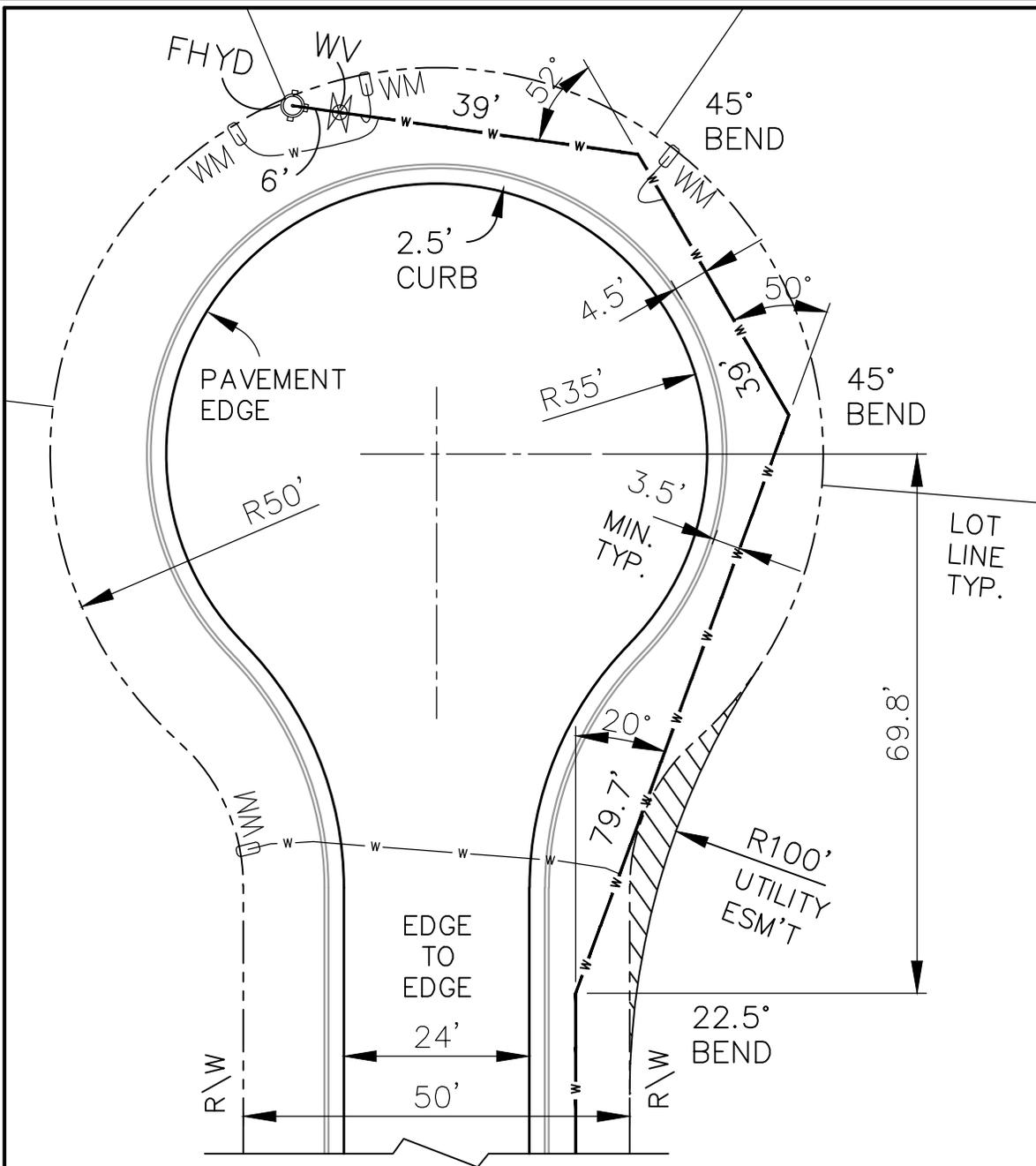
NOTES:

1. CUL-DE-SAC DIMENSIONS MAY VARY.
2. WATER MAIN SHALL BE A MINIMUM OF 5 FT FROM PAVEMENT EDGE.
3. MINIMIZE THE NUMBER OF JOINTS AND ALLOW 6 DEG MAXIMUM DEFLECTION AT EACH JOINT.

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 daviecountync.gov

WATER MAIN LAYOUT IN
 'P' SHAPE CUL-DE-SAC

SHEET: 1 OF 1 05/24/21
 GSB
2.12



WATER LAYOUT IN STD. CURB & GUTTER 37' RAD CUL-DE-SAC

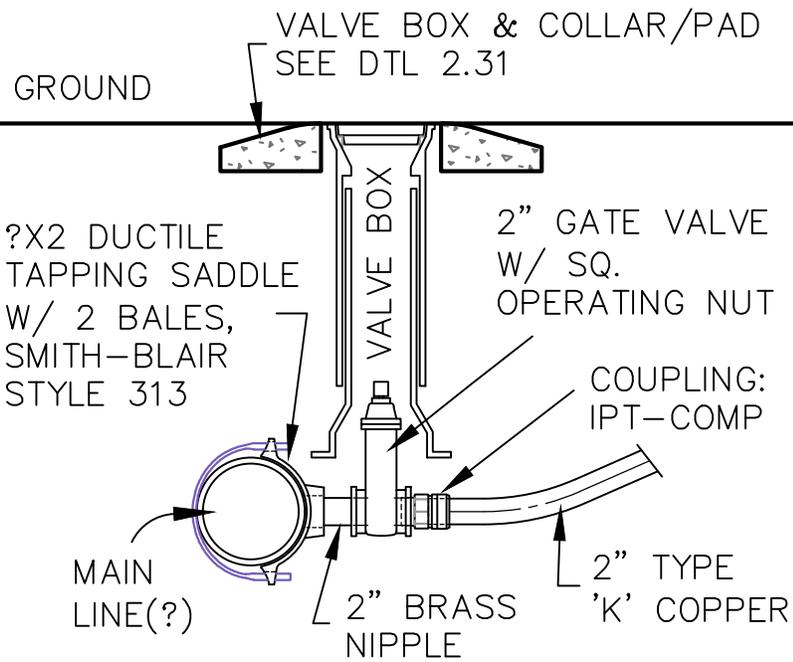
30 W-RdculCtrCrb 50_50-37E NOT TO SCALE

NOTES:

1. CUL-DE-SAC DIMENSIONS MAY VARY.
2. WATER MAIN SHALL BE A MINIMUM OF 3.5 FT FROM BACK OF CURB.
3. MINIMIZE THE NUMBER OF JOINTS AND ALLOW 6 DEG MAXIMUM DEFLECTION AT EACH JOINT.
4. PROVIDE A UTILITY EASEMENT ON PLAT.

NOTES:

- 1. INSTALL SADDLE AND VALVE PRIOR TO DISINFECTING MAIN LINE.

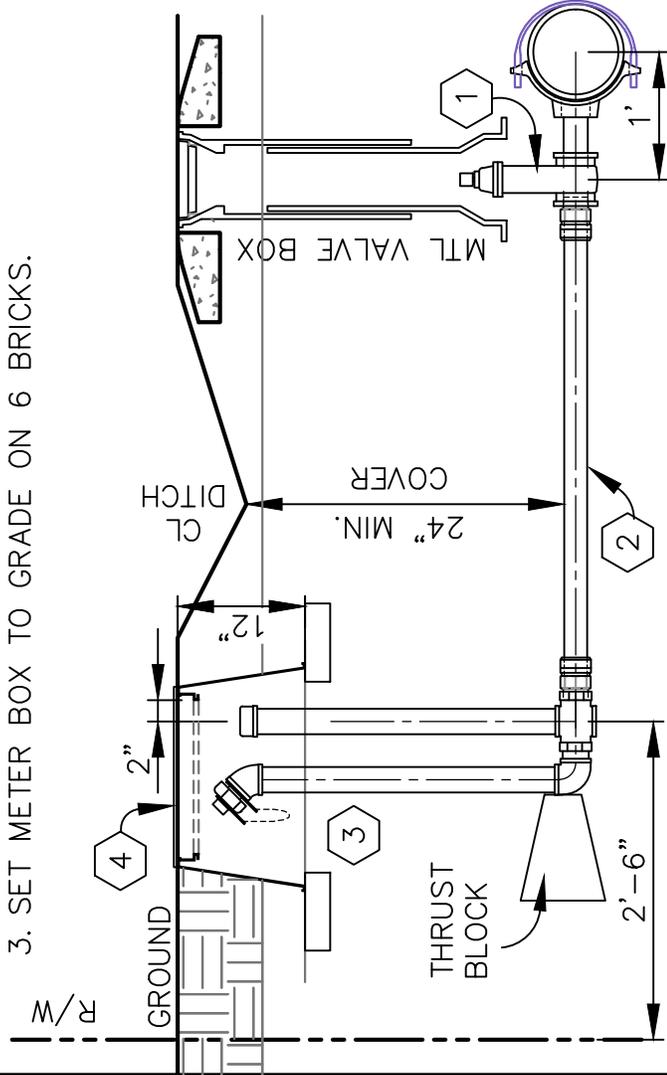


TYP. 2" WATER CONNECTION

24 W-2WTR CON DC

GENERAL NOTES

- 1. INSTALL ALL PIPING PRIOR TO DISINFECTING MAIN LINE.
- 2. PROVIDE RESTRAINED FITTINGS AT ALL JOINTS
- 3. SET METER BOX TO GRADE ON 6 BRICKS.



MATERIAL KEYNOTES

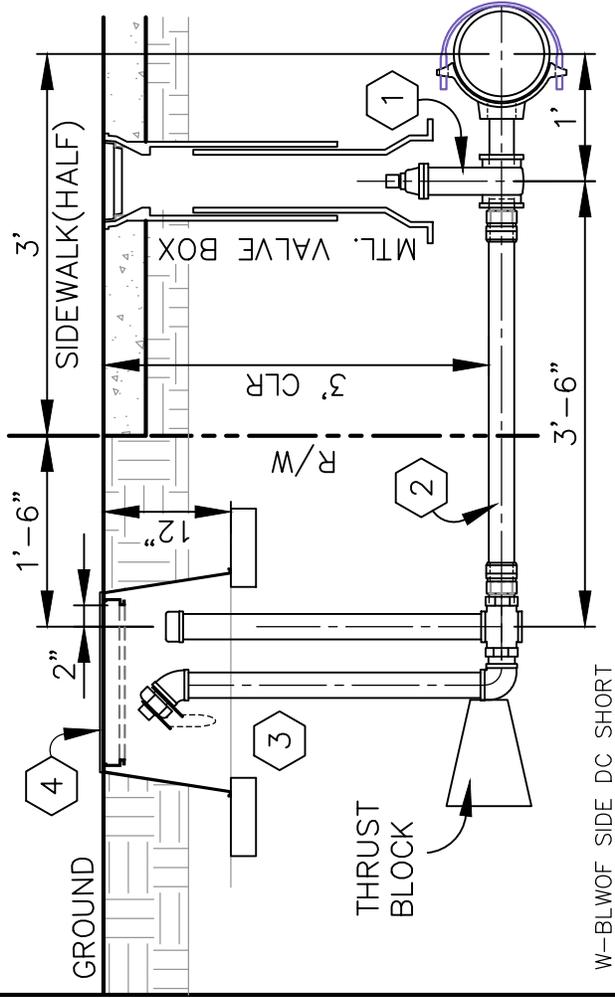
- 1 TYPICAL 2" CONNECTION, SEE DTL 2.21.
- 2 2"φ SCH 40 BRASS PIPE OR TYPE 'K' COPPER WITH COMP-IPT ENDS.
- 3 FLUSHING HYDRANT: MUELLER A-410 WITH 2.5' BURY DEPTH OR GIL INDUSTRIES 2" HIDDEN.
- 4 BOX: 'NDS' D1200-CI 14x19x12 W/ HEAVY DUTY CAST IRON LID OR EQUAL.

**SIDE BLOW-OFF
HYDRANT²⁴
DAVE CO. STD**

W-BLWOF SIDE DC

GENERAL NOTES

1. INSTALL ALL PIPING PRIOR TO DISINFECTING MAIN LINE.
2. PROVIDE RESTRAINED FITTINGS AT ALL JOINTS.
3. SET METER BOX TO GRADE ON 6 BRICKS.



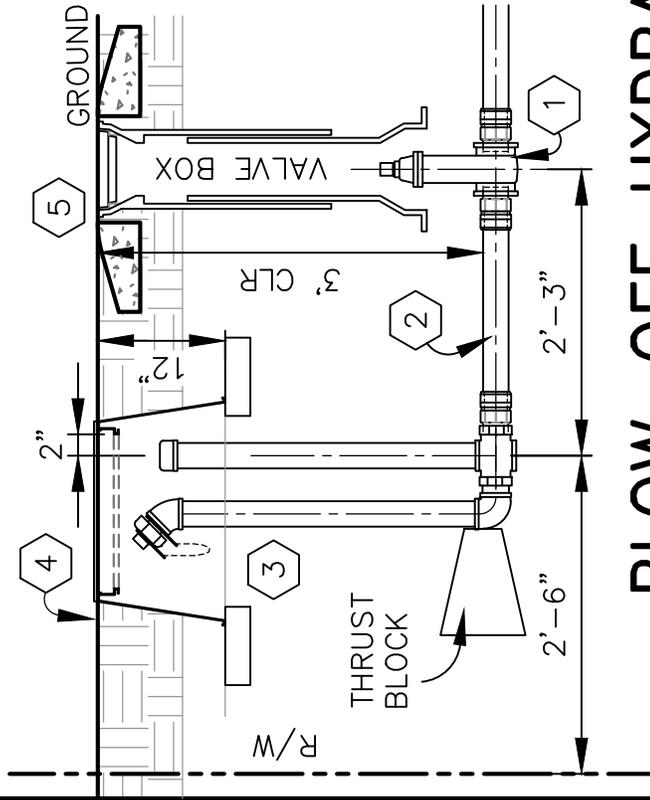
MATERIAL KEYNOTES

- 1 TYPICAL 2" CONNECTION, SEE DTL 2-21.
- 2 2" ϕ SCH 40 IPT BRASS PIPE OR TYPE 'K' STICK COPPER WITH COMP-IPT ENDS.
- 3 FLUSHING HYDRANT: MUELLER A-410 WITH 2.5' BURY DEPTH OR GIL INDUSTRIES 2" HIDDEN.
- 4 BOX: 'NDS' D1200-CI 14x19x12 W/ HEAVY DUTY CAST IRON LID OR EQUAL.

SHORT SIDE BLOW-OFF HYDRANT²⁴ DAVE CO. STD

GENERAL NOTES

1. INSTALL ALL PIPING PRIOR TO DISINFECTING MAIN LINE.
2. PROVIDE RESTRAINED FITTINGS AT ALL JOINTS.
3. SET METER BOX TO GRADE ON 6 BRICKS.



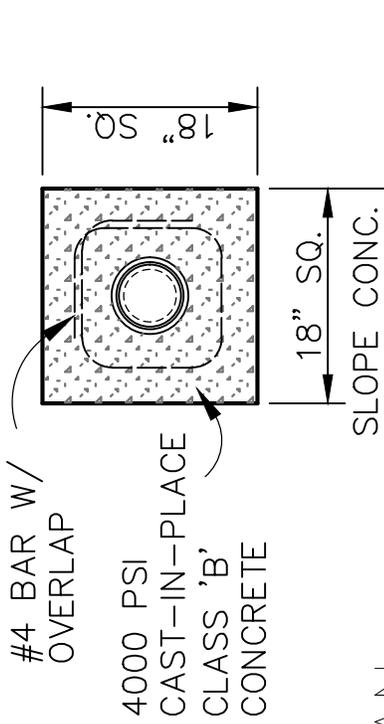
MATERIAL KEYNOTES

- 1 2" THREADED GATE VALVE WITH SQ. OPERATING NUT.
- 2 2" ϕ SCH 40 IPT BRASS OR TYPE 'K' COPPER PIPE WITH COMP-IPT ENDS.
- 3 FLUSHING HYDRANT: MUELLER A-410 WITH 2.5' BURY DEPTH OR GIL INDUSTRIES 2" HIDDEN.
- 4 BOX: 'NDS' D1200-CI 14x19x12 W/ HEAVY DUTY CAST IRON LID OR EQUAL.
- 5 VALVE BOX & COLLAR/PAD SEE DTL 2.31

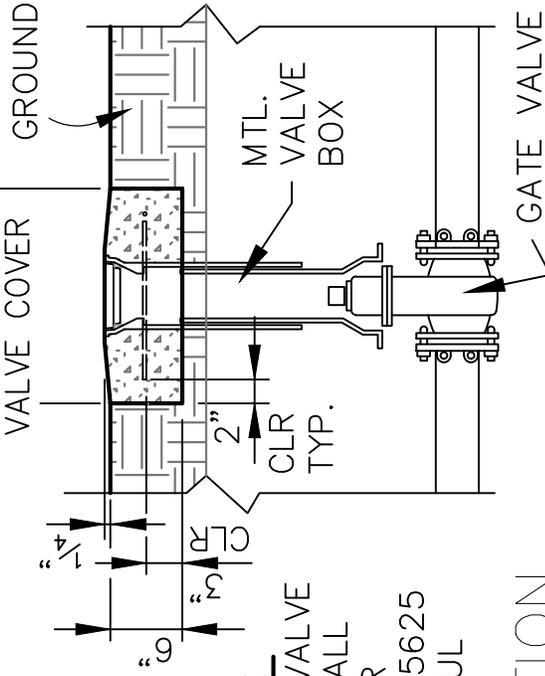
BLOW-OFF HYDRANT AT 2" END

DAVE CO. STD

24 W-BLWOF 2END DC



PLAN



NOTE:

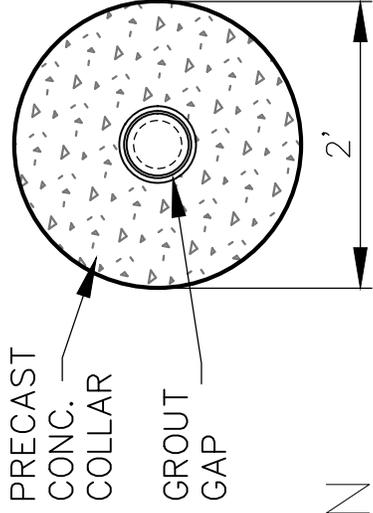
METAL VALVE
BOX SHALL
BE STAR
PIPE VB5625
OR EQAUL

SECTION

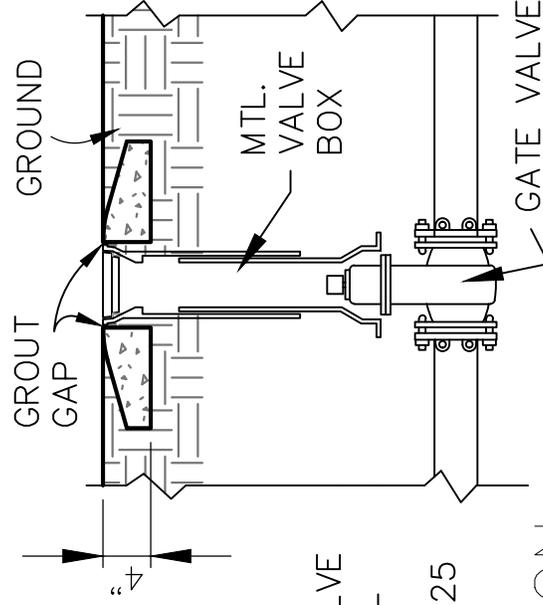
VALVE BOX PAD

CAST-IN-PLACE IN PAVED AREA

24 W-VALBX-PAD-DC



PLAN



NOTE:

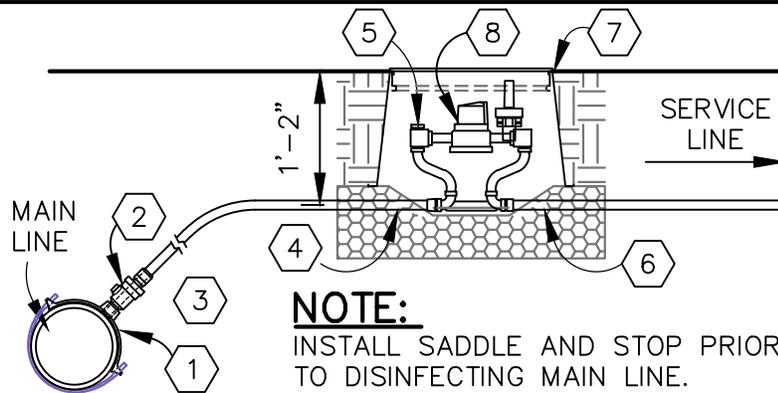
METAL VALVE
BOX SHALL
BE STAR
PIPE VB5625
OR EQAUL

SECTION

VALVE BOX COLLAR

PRECAST IN UNPAVED AREA

24 W-VALBX-COLLAR-DC

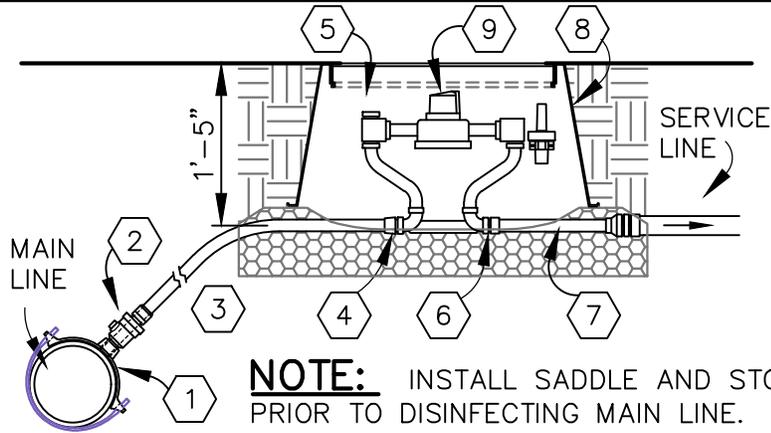


WATER SERVICE MATERIAL

- ① TAP: SMITH-BLAIR STYLE 313 3/4" CC THREADS.
- ② CORP. STOP: MUELLER H-15006N INSTA-TITE.
- ③ SERVICE PIPE: 3/4" 200 PSI SDR-9 CTS PE
- ④ FITTING: MUELLER H-14230N INSTA-TITE.
- ⑤ METER YOKE: MUELLER 5/8x3/4 B-2404NR-2 7" HGT. WITH 300 PSI BALL ANGLE VALVE
- ⑥ FITTING: MUELLER H-14222N F.I.P.
- ⑦ METER BOX: 'NDS' D1200-CI 14x19x12 W/ HEAVY DUTY CAST IRON LID OR EQUAL SET TO GRADE ON 6 BRICKS.
- ⑧ METER: MUELLER HERSEY 5/8x3/4 420 SI, IB, ME8 (MI.NET NODE AMR) IN GALS.

3/4" WATER SERVICE

DAVE COUNTY STD 24 W-MTR DC 300



NOTE: INSTALL SADDLE AND STOP PRIOR TO DISINFECTING MAIN LINE.

MATERIAL KEYNOTES

- ① TAP: SMITH-BLAIR STYLE 313 1" CC THREADS
- ② CORP. STOP: MUELLER H15006
- ③ PIPE: 1" 200 PSI SDR-9 CTS PE
- ④ FITTING: MUELLER H14230
- ⑤ METER YOKE: MUELLER 1" B-2404R-2AN 10" HGT. WITH 300 PSI BALL ANGLE VALVE
- ⑥ FITTING: MUELLER H14222
- ⑦ OUTLET PIPE: TYPE "K" COPPER PIPE
- ⑧ METER BOX: 13X24X15 PLASTIC BOX & LID EQUAL TO 'NDS' PRO 125BCDWB SET TO GRADE ON 6 BRICKS.
- ⑨ METER: MUELLER HERSEY 452B ME8 (MI.NET NODE AMR) IN GALS.

1" WATER SERVICE

DAVE COUNTY STD

24

W-MTR1 DC 300

MATERIAL KEYNOTES

1.5" WATER METER

24

METER

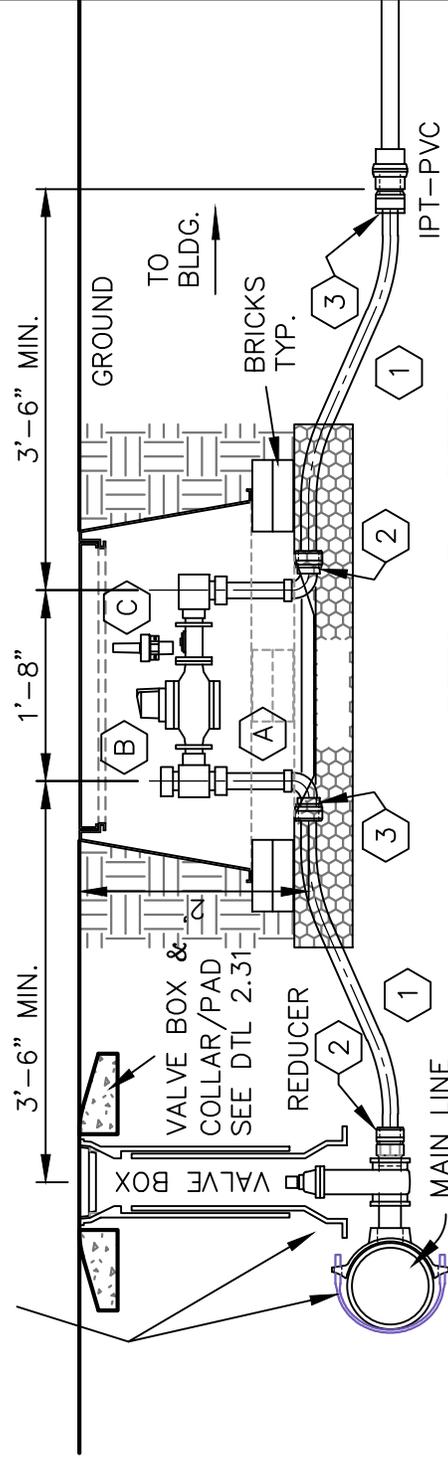
W-MTR1.5 DC 300

1 PIPE: 1.5" TYPE 'K' COPPER

2 COUPLING: IPT-COMP

3 COUPLING: COMP-IPT

TYP. 2" WATER CONNECTION, SEE DTL 2.21.



METER KEYNOTES

- A SETTER: MUELLER 1.5" B2423-2N 12" HGT. WITH 300 PSI BALL ANGLE VALVE INLET, ANGLE CHECK VALVE OUTLET AND BALL VALVE BYPASS
- B METER BOX: 17x30x18 PLASTIC BOX & LID EQUAL TO 'NDS' PRO 126BCDWB
- C METER: MUELLER FLANGED MVR100 WITH ME8 (MI.NET NODE AMR) IN GALS.

NOTES:

1. INSTALL SADDLE AND VALVE PRIOR TO DISINFECTING MAIN LINE.
2. SET METER BOX TO GRADE ON 12 BRICKS. (TWO BRICKS HIGH UNDER CORNERS & LONG SIDES)

MATERIAL KEYNOTES

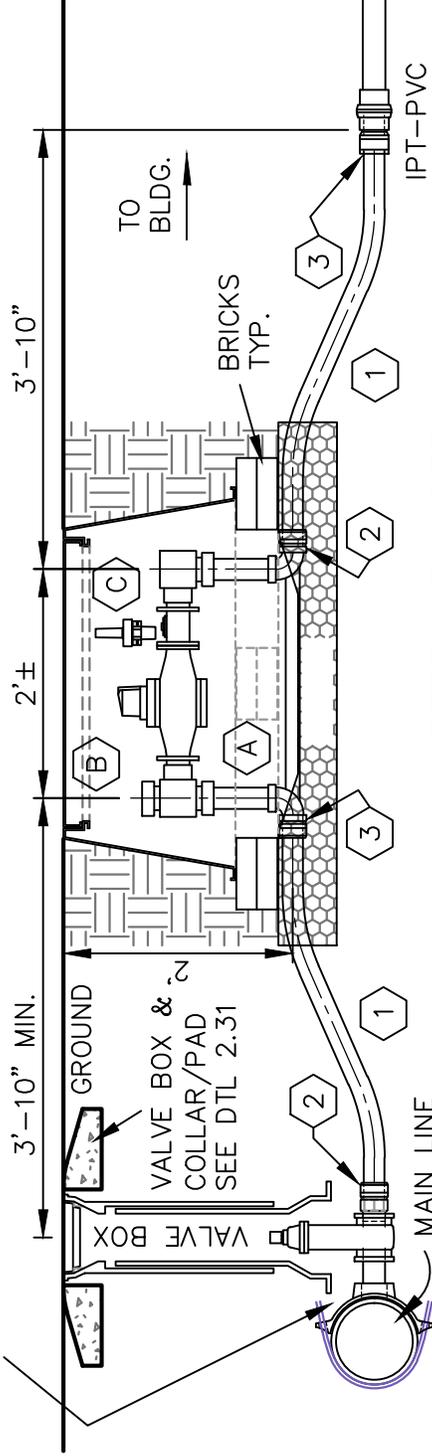
- ① PIPE: 2" TYPE 'K' COPPER
- ② COUPLING: IPT-COMP
- ③ COUPLING: COMP-IPT

2" WATER

METER
W-MTR2 DC 300

24

TYP. 2" WATER CONNECTION, SEE DTL 2.21.



NOTES:

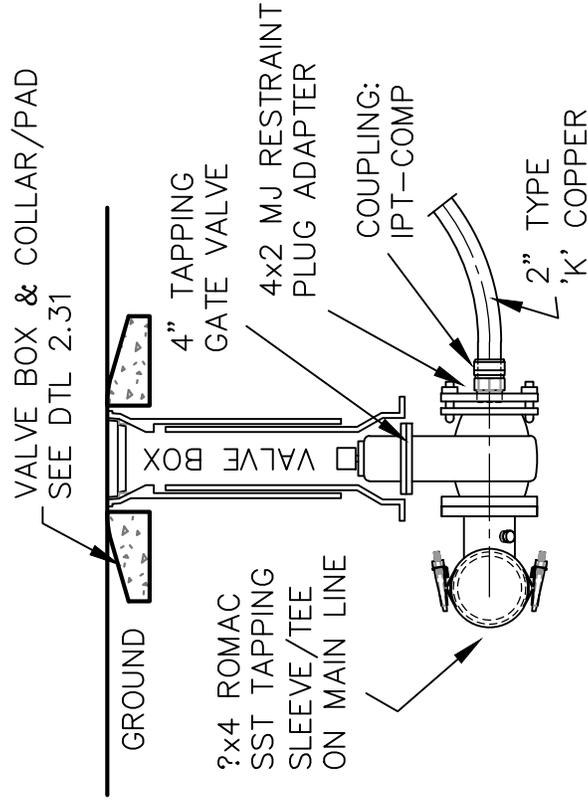
1. INSTALL SADDLE AND VALVE PRIOR TO DISINFECTING MAIN LINE.
2. SET METER BOX TO GRADE ON 12 BRICKS (TWO BRICKS HIGH UNDER CORNERS & LONG SIDES)

METER KEYNOTES

- ① SETTER: MUELLER 2" B2423-2N 12" HGT. WITH 300 PSI BALL ANGLE VALVE INLET, ANGLE CHECK VALVE OUTLET AND BALL VALVE BYPASS
- ② METER BOX: 17x30x18 PLASTIC BOX & LID EQUAL TO 'NDS' PRO 126BCDWB
- ③ METER: MUELLER FLANGED MVR160 WITH ME8 (MI.NET NODE AMR) IN GALS.

NOTES:

- 1. INSTALL SADDLE AND VALVE PRIOR TO DISINFECTING MAIN LINE.



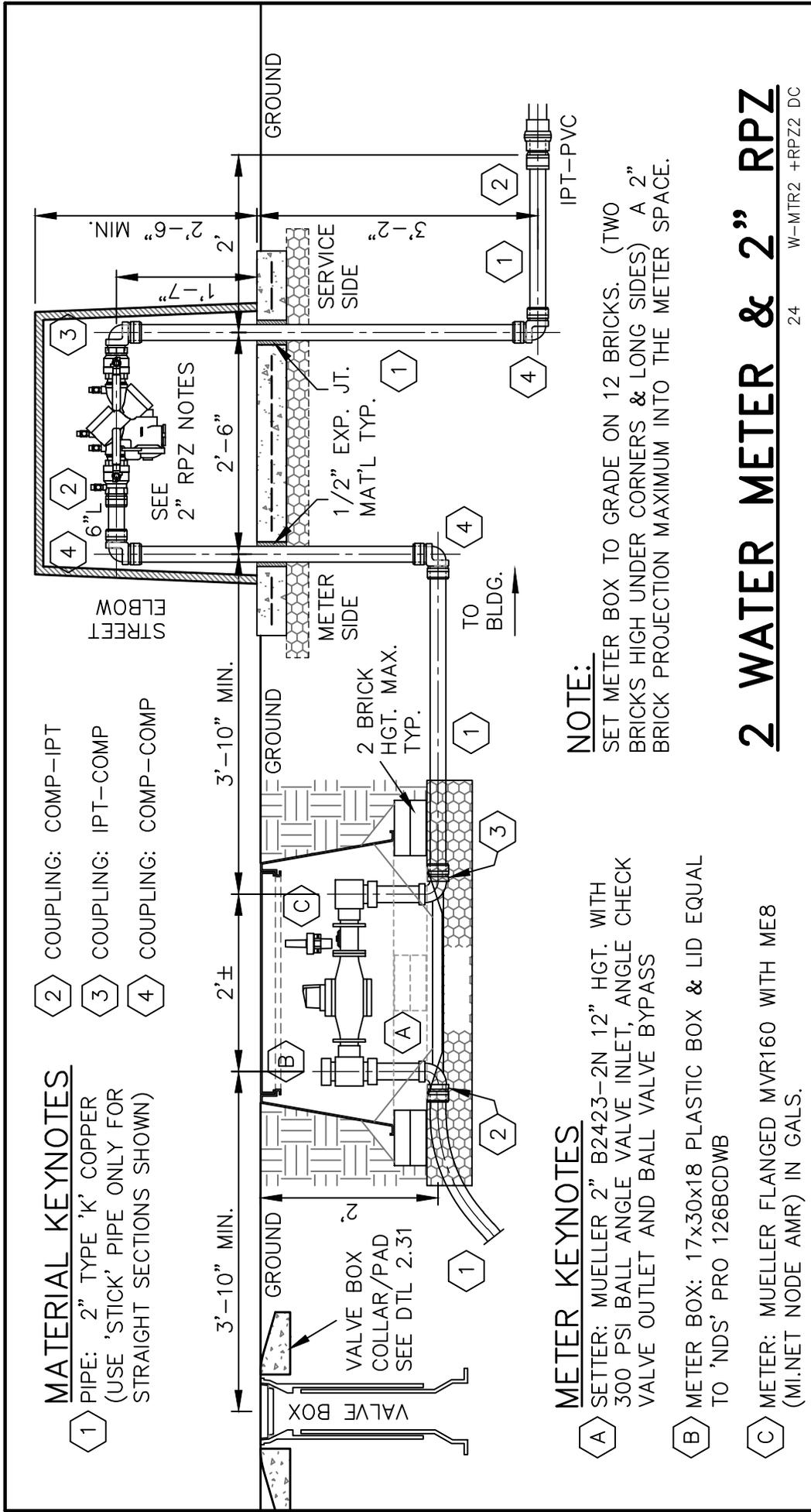
**3" WATER SERVICE W/
4" TEE-TAP & 2" METER**

24 W-SRVC3 4TEE-TAP+2MTR DC

MATERIAL KEYNOTES

1 PIPE: 2" TYPE 'K' COPPER
(USE 'STICK' PIPE ONLY FOR STRAIGHT SECTIONS SHOWN)

- 2 COUPLING: COMP-IPT
- 3 COUPLING: IPT-COMP
- 4 COUPLING: COMP-COMP



METER KEYNOTES

- A SETTER: MUELLER 2" B2423-2N 12" HGT. WITH 300 PSI BALL ANGLE VALVE INLET, ANGLE CHECK VALVE OUTLET AND BALL VALVE BYPASS
- B METER BOX: 17x30x18 PLASTIC BOX & LID EQUAL TO 'NDS' PRO 126BCDWB
- C METER: MUELLER FLANGED MVR160 WITH ME8 (MI.NET NODE AMR) IN GALS.

NOTE:

SET METER BOX TO GRADE ON 12 BRICKS. (TWO BRICKS HIGH UNDER CORNERS & LONG SIDES) A 2" BRICK PROJECTION MAXIMUM INTO THE METER SPACE.

2 WATER METER & 2" RPZ

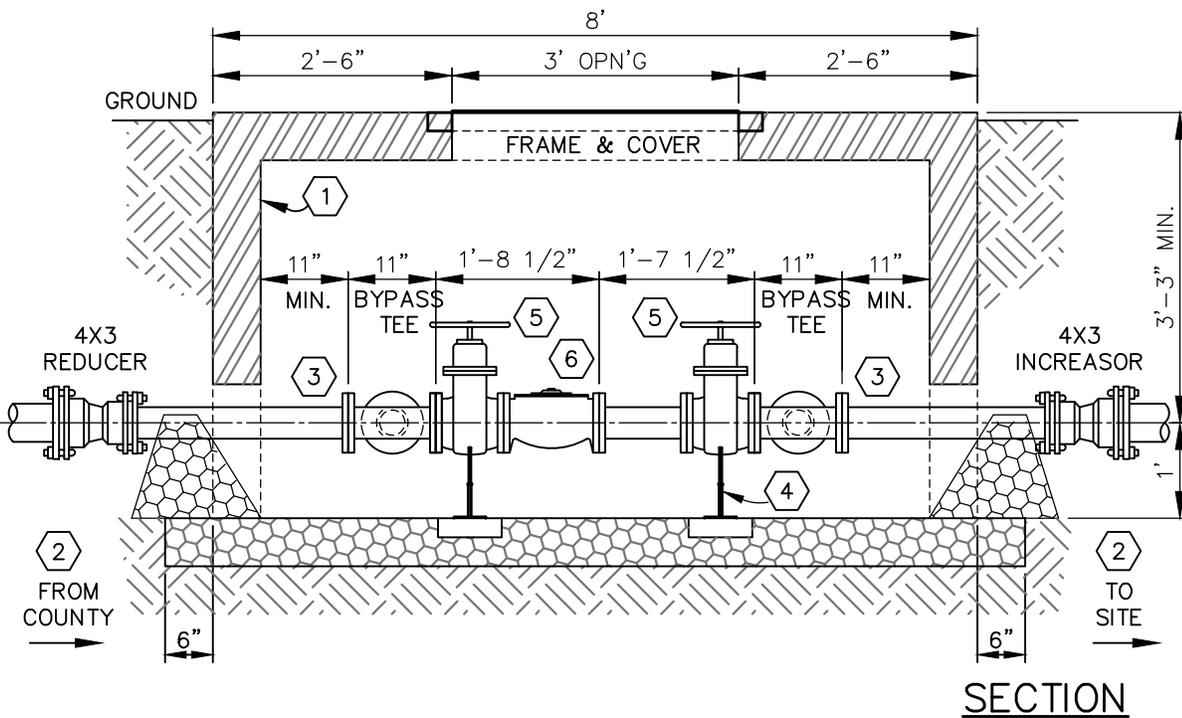
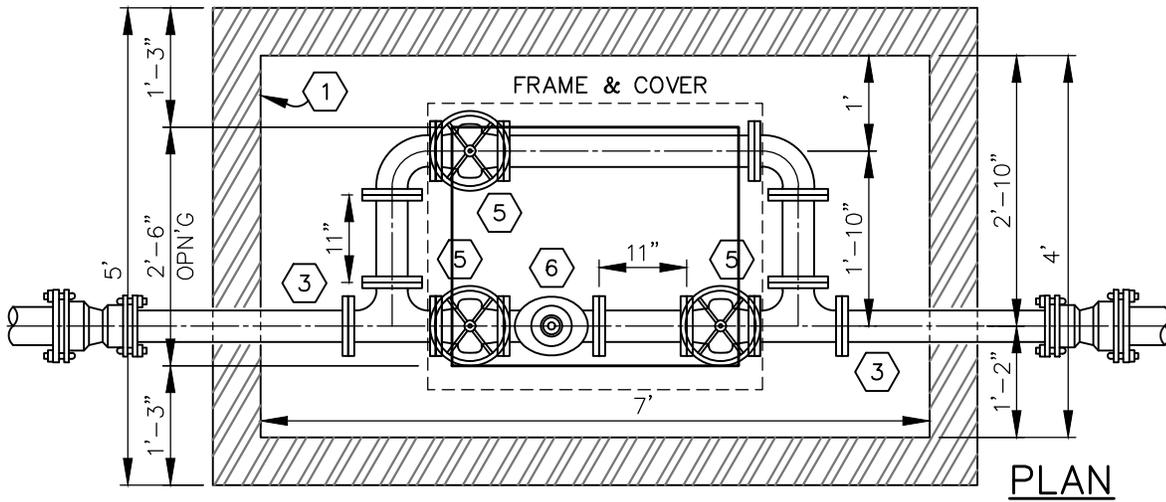
24 W-MTR2 +RPZ2 DC

2" RPZ NOTES:

1. BACKFLOW PREVENTER LOCATION REQUIRES PRIOR APPROVAL, MUST BE ON THE PROPERTY SIDE AND MUST NOT OBSTRUCT SIGHT DISTANCE. PROVIDE 36" CLEAR OUTSIDE OF ENCLOSURE ON ALL SIDES.
2. SLAB SHALL BE 3000 PSI CONCRETE, 51"LONG x 25"WIDE x 4"THICK WITH 6x6-W1.4XW1.4 WWF OVER 3" COMPACTED CRUSHED STONE.
3. REDUCED PRESSURE BACKFLOW PREVENTER SHALL BE A **'WATTS' 2" 909M1-QT** (OR EQUAL). SHUT-OFF VALVES SHALL BE FULL PORT, LINE SIZE AND 1/4 TURN BRONZE UNION BALL VALVES. NO BY-PASS WILL BE ACCEPTED.
4. PIPE RISERS AND BENDS SHALL BE 'STICK' TYPE 'K' COPPER OR BRASS FOR A MINIMUM OF 5 FT EACH SIDE OF VALVES.
5. THE ABOVE GROUND ENCLOSURE SHALL BE **'HOT-BOX' #HF013039028** (OR EQUAL) FIBERGLASS, INSULATED TO R8, HAVE A FLIP-TOP ACCESS, LOCKABLE SS HASP & (2)TWO DRAIN PORTS AT GRADE. COLOR BEIGE.
6. PROVIDE GFI RECEPTACLE MOUNTED 21" MINIMUM ABOVE THE SLAB.
7. THE ENCLOSURE SHALL BE HEATED WITH A 90W, 120V, 18 FT LONG HEAT TRACE CABLE.

2" RPZ NOTES:

1. BACKFLOW PREVENTER LOCATION REQUIRES PRIOR APPROVAL, MUST BE ON THE PROPERTY SIDE AND MUST NOT OBSTRUCT SIGHT DISTANCE. PROVIDE 36" CLEAR OUTSIDE OF ENCLOSURE ON ALL SIDES.
2. SLAB SHALL BE 3000 PSI CONCRETE, 51"LONG x 25"WIDE x 4"THICK WITH 6x6-W1.4XW1.4 WWF OVER 3" COMPACTED CRUSHED STONE.
3. REDUCED PRESSURE BACKFLOW PREVENTER SHALL BE A 'WATTS' 2" 909M1-QT (OR EQUAL). SHUT-OFF VALVES SHALL BE FULL PORT, LINE SIZE AND 1/4 TURN BRONZE UNION BALL VALVES. NO BY-PASS WILL BE ACCEPTED.
4. PIPE RISERS AND BENDS SHALL BE 'STICK' TYPE 'K' COPPER OR BRASS FOR A MINIMUM OF 5 FT EACH SIDE OF VALVES.
5. THE ABOVE GROUND ENCLOSURE SHALL BE 'HOT-BOX' #HF013039028 (OR EQUAL) FIBERGLASS, INSULATED TO R8, HAVE A FLIP-TOP ACCESS, LOCKABLE SS HASP & (2)TWO DRAIN PORTS AT GRADE. COLOR BEIGE.
6. PROVIDE GFI RECEPTACLE MOUNTED 21" MINIMUM ABOVE THE SLAB.
7. THE ENCLOSURE SHALL BE HEATED WITH A 90W, 120V, 18 FT LONG HEAT TRACE CABLE.



WATER SERVICE MATERIAL

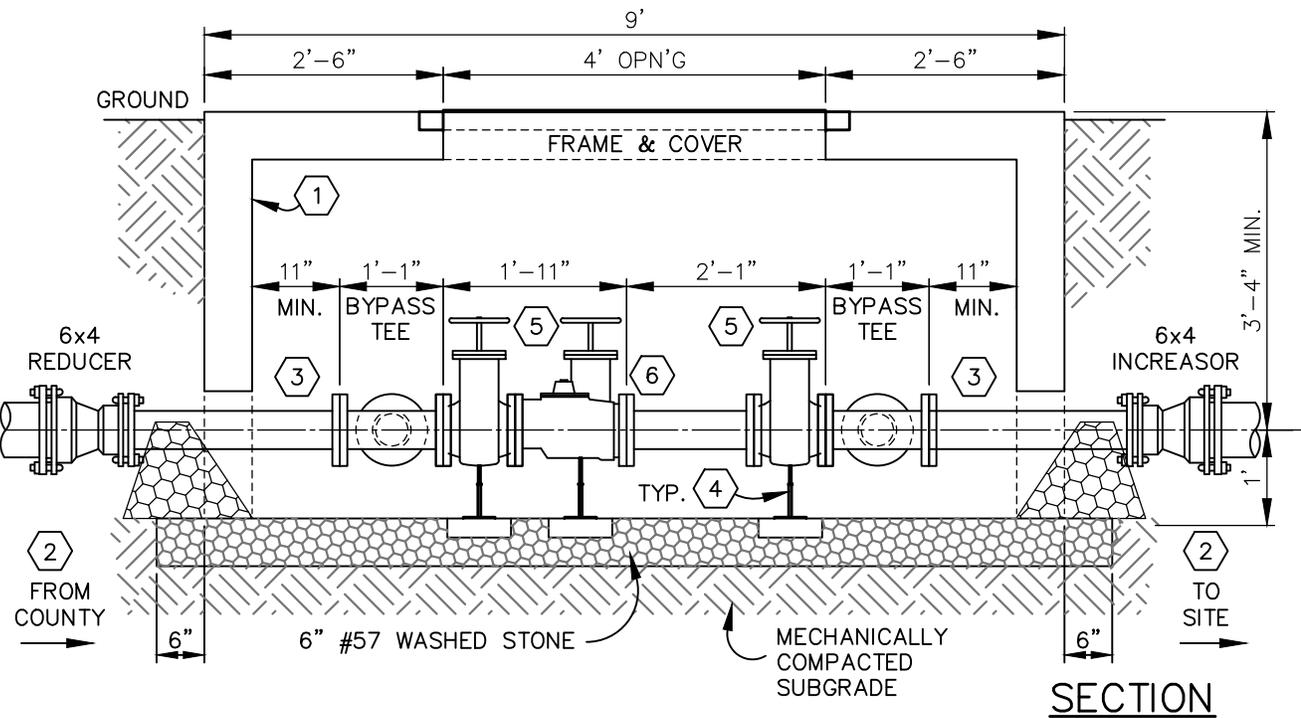
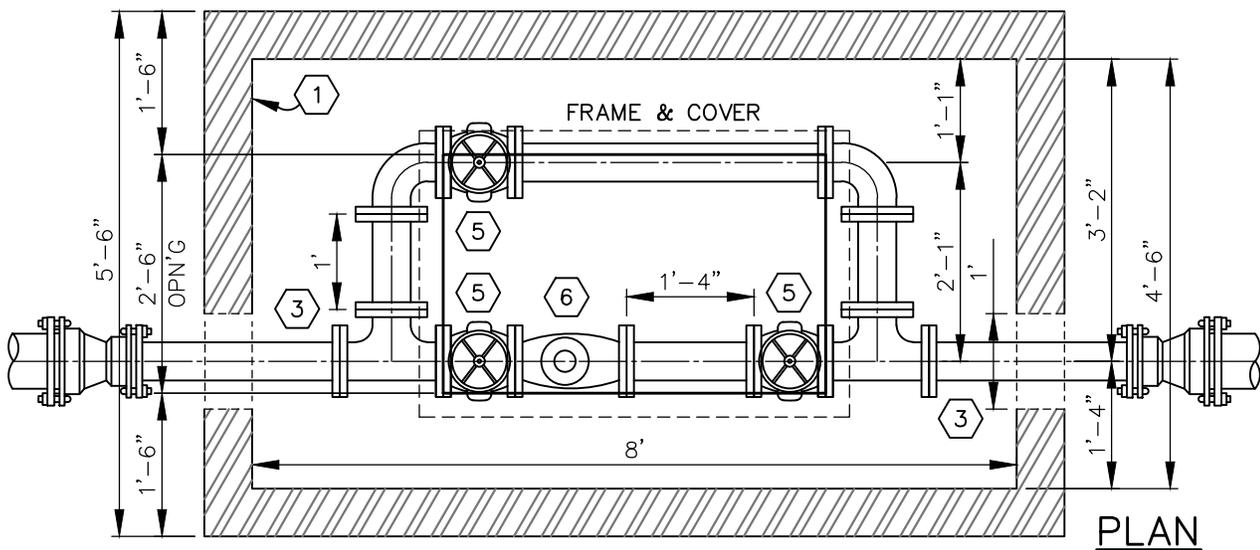
- ① METER VAULT: STAY-RIGHT TANK CO. 7'x4' (INSIDE), PRECAST REINFORCED CONCRETE VAULT FOR HEAVY TRAFFIC WITH 2.5'x3' ALUMINUM ACCESS HATCH EQUAL TO HALLIDAY S1S3036. ALLOW 3" CLEAR BETWEEN PIPE AND VAULT.
- ② WATER PIPE: CLASS 350 DUCTILE IRON PIPE INTO AND OUT OF CONCRETE VAULT. MAKE TRANSITION TO PVC PIPE OUTSIDE VAULT.
- ③ FLANGE TRANSITION COUPLING.
- ④ ADJUSTABLE PIPE SUPPORT: GRINNELL OR EQUAL AT EACH VALVE AS SHOWN WITH MINIMUM THREE BRICKS WIDE UNDER EACH SUPPORT.
- ⑤ VALVES: BRONZE NFS, OCC, AWWA GATE VALVES.
- ⑥ METER: 3" MUELLER MODEL MVR350 WITH ME8 (MI.NET NODE AMR) IN GALS.

3" WATER METER VAULT IN 4" MAIN

DAVE COUNTY STD.

24

W-MTR3+BYPASS 4MAIN DC 300



WATER SERVICE MATERIAL

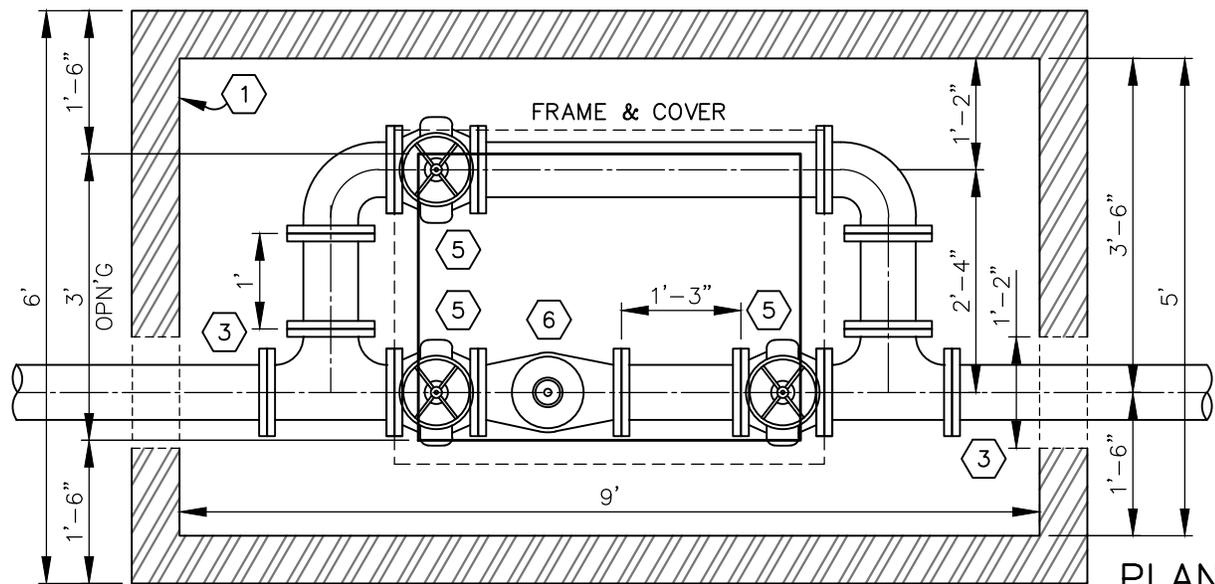
- ① METER VAULT: STAY-RIGHT TANK CO. 8'x4.5' (INSIDE), PRECAST REINFORCED CONCRETE VAULT FOR HEAVY TRAFFIC WITH 2.5'x4' ALUMINUM ACCESS HATCH EQUAL TO HALLIDAY S1S3048. ALLOW 3" CLEAR BETWEEN PIPE AND VAULT.
- ② WATER PIPE: CLASS 350 DUCTILE IRON PIPE INTO AND OUT OF CONCRETE VAULT. MAKE TRANSITION TO PVC PIPE OUTSIDE VAULT.
- ③ FLANGE TRANSITION COUPLING.
- ④ ADJUSTABLE PIPE SUPPORT: GRINNELL OR EQUAL AT EACH VALVE AS SHOWN WITH MINIMUM THREE BRICKS WIDE UNDER EACH SUPPORT.
- ⑤ VALVES: BRONZE NFS, OCC, AWWA GATE VALVES.
- ⑥ METER: 4" MUELLER MODEL MVR650 WITH ME8 (MI.NET NODE AMR) IN GALS.

4" WATER METER VAULT IN 6" MAIN

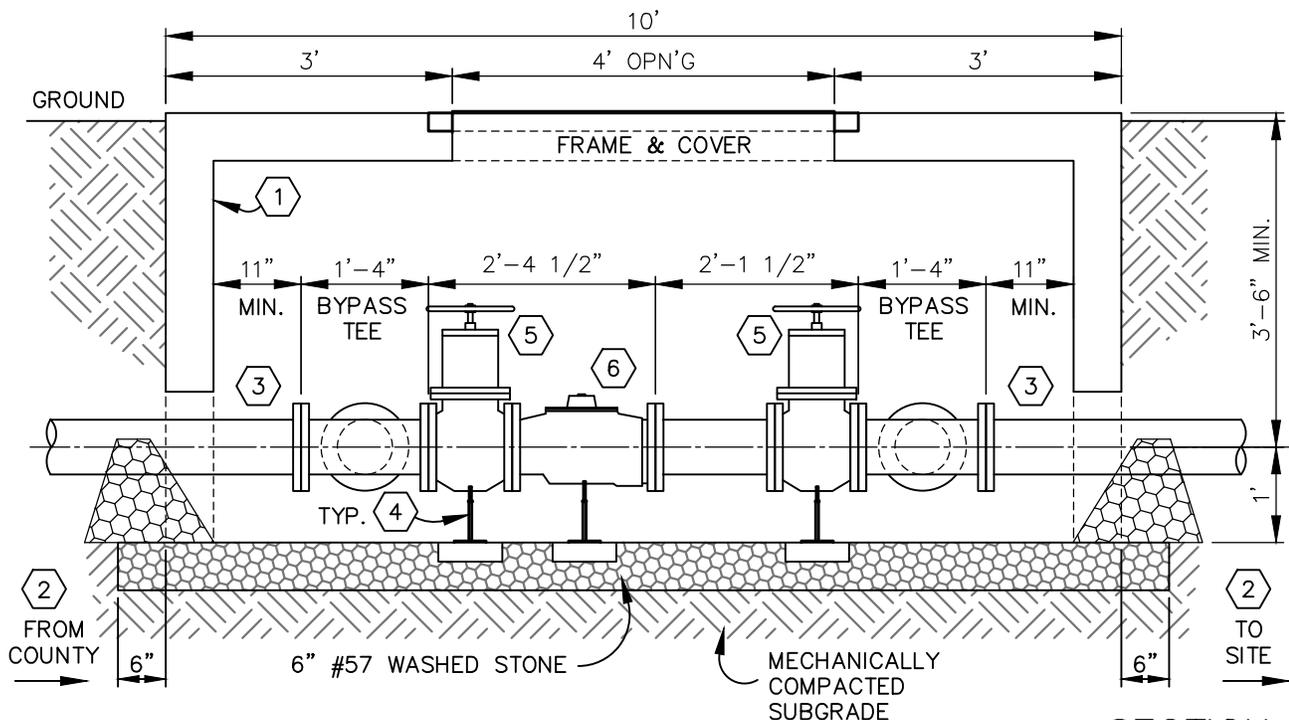
DAVIE COUNTY STD.

24

W-MTR4+BYPASS 6MAIN DC



PLAN



SECTION

WATER METER MATERIAL

- ① METER VAULT: STAY-RIGHT TANK CO. 9'x5' (INSIDE), PRECAST REINFORCED CONCRETE VAULT FOR HEAVY TRAFFIC WITH 3'x4' ALUMINUM ACCESS HATCH EQUAL TO HALLIDAY SIS3648. ALLOW 3" CLEAR BETWEEN PIPE AND VAULT.
- ② WATER PIPE: CLASS 350 DUCTILE IRON PIPE INTO AND OUT OF CONCRETE VAULT. MAKE TRANSITION TO PVC PIPE OUTSIDE VAULT.
- ③ FLANGE TRANSITION COUPLING.
- ④ ADJUSTABLE PIPE SUPPORT: GRINNELL OR EQUAL AT EACH VALVE AS SHOWN WITH MINIMUM THREE BRICKS WIDE UNDER EACH SUPPORT.
- ⑤ VALVES: BRONZE NFS, OCC, AWWA GATE VALVES.
- ⑥ METER: 6" MUELLER MODEL MVR1300 WITH ME8 (MI.NET NODE AMR) IN GALS.

6" WATER METER VAULT

DAVIE COUNTY STD. 24 W-MTR6+BYPASS DC 300

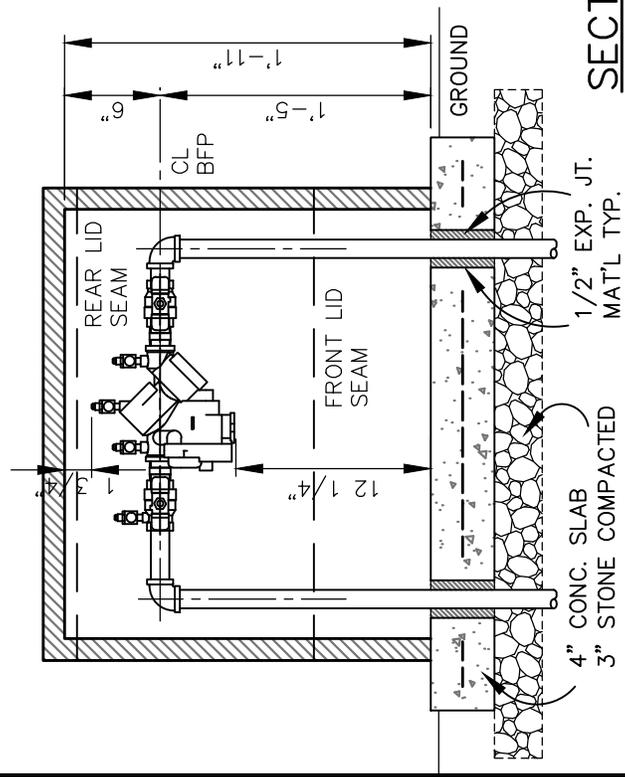
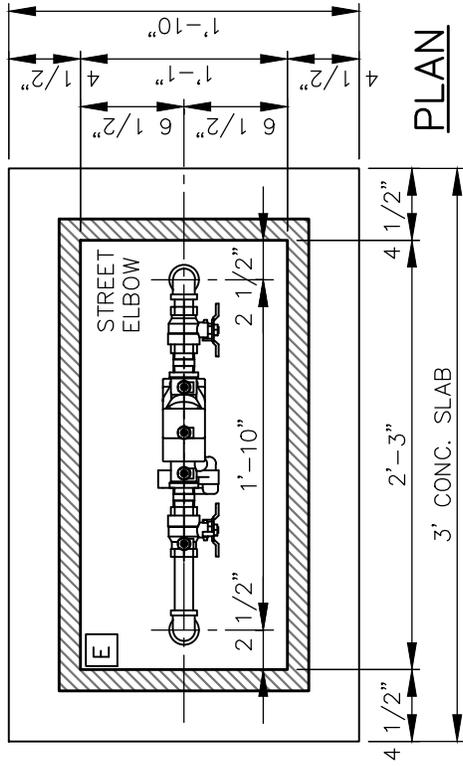
NOTES:

1. ALL DIMENSIONS ARE APPROXIMATE.
2. BACKFLOW PREVENTER LOCATION REQUIRES PRIOR APPROVAL, MUST BE WITHIN 10 FT OF METER ON THE PROPERTY SIDE AND MUST NOT OBSTRUCT SIGHT DISTANCE. PROVIDE 36" CLEAR OUTSIDE OF ENCLOSURE ON ALL SIDES.
3. SLAB SHALL BE 3000 PSI CONCRETE, 36" LONG x 22" WIDE x 4" THICK WITH 6x6-W1.4XW1.4 WWF OVER 3" COMPACTED CRUSHED STONE.
4. REDUCED PRESSURE BACKFLOW PREVENTER SHALL BE A 'WATTS' 1" 909-Q1 (OR EQUAL). SHUT-OFF VALVES SHALL BE FULL PORT, LINE SIZE AND 1/4 TURN BRONZE UNION BALL VALVES.
5. PIPE RISERS AND BENDS SHALL BE TYPE 'K' COPPER OR BRASS FOR A MINIMUM OF 5 FT EACH SIDE OF VALVES.
6. THE ENCLOSURE SHALL BE A 'HOT-BOX' #HF013027023 (OR EQUAL) FIBERGLASS AND HAVE A FLIP-TOP ACCESS, LOCKABLE SS HASP & (2) TWO DRAINPORTS.
7. REQUIRED ELECTRICAL RECEPTACLE INDICATED BY [E] SHALL BE MOUNTED A MINIMUM OF 16" ABOVE THE SLAB.
8. THE ENCLOSURE SHALL BE HEATED WITH A 60W, 120V, 12 FT LONG HEAT TRACE CABLE.

1" REDUCED PRESSURE BACKFLOW PREVENTER

W-BX_RPBFP HB1 100 909-QT

12



SECTION

1" REDUCED PRESSURE BACKFLOW PREVENTER

NOTES:

1. ALL DIMENSIONS ARE APPROXIMATE.
2. BACKFLOW PREVENTER LOCATION REQUIRES PRIOR APPROVAL, MUST BE WITHIN 10 FT OF METER ON THE PROPERTY SIDE AND MUST NOT OBSTRUCT SIGHT DISTANCE. PROVIDE 36" CLEAR OUTSIDE OF ENCLOSURE ON ALL SIDES.
3. SLAB SHALL BE 3000 PSI CONCRETE, 51" LONG x 25" WIDE x 4" THICK WITH 6x6-W1.4XW1.4 WWF OVER 3" COMPACTED CRUSHED STONE.
4. REDUCED PRESSURE BACKFLOW PREVENTER SHALL BE A 'WATTS' 1.5" 909M1-QI (OR EQUAL). SHUT-OFF VALVES SHALL BE FULL PORT, LINE SIZE AND 1/4 TURN BRONZE UNION BALL VALVES.
5. PIPE RISERS AND BENDS SHALL BE TYPE 'K' COPPER OR BRASS FOR A MINIMUM OF 5 FT EACH SIDE OF VALVES.
6. THE ENCLOSURE SHALL BE A 'HOT-BOX' #HF013039028 (OR EQUAL) FIBERGLASS AND HAVE A FLIP-TOP ACCESS, LOCKABLE SS HASP & (2) TWO DRAINPORTS. COLOR BEIGE.
7. NO BY-PASS OF BACKFLOW PREVENTER WILL BE ACCEPTED.
8. REQUIRED ELECTRICAL RECEPTACLE INDICATED BY [E] SHALL BE GFI MOUNTED A MINIMUM OF 30" ABOVE THE SLAB.
9. THE ENCLOSURE SHALL BE HEATED WITH A 90W, 120V, 18 FT LONG HEAT TRACE CABLE.

1.5" REDUCED PRESSURE BACKFLOW PREVENTER

16

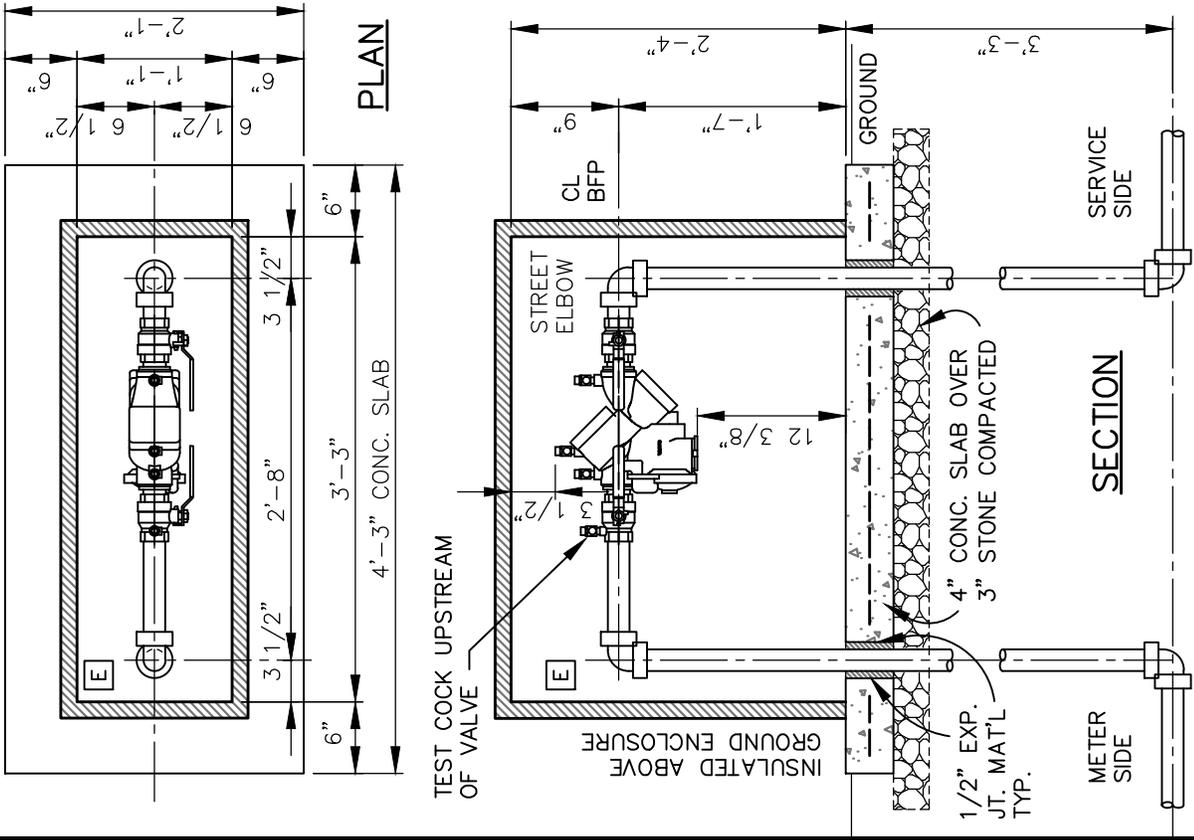
W-BX_RPBFP HB2 150 909M1-QT

1.5" REDUCED PRESSURE BACKFLOW PREVENTER

SHEET: 1 OF 1 05/20/20 GSB

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PLAN

SECTION

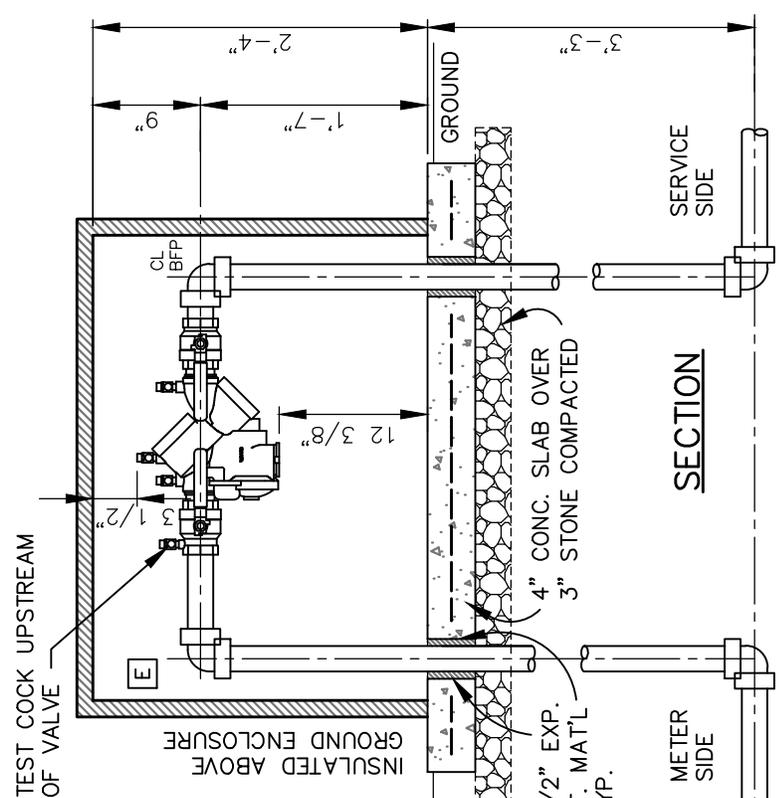
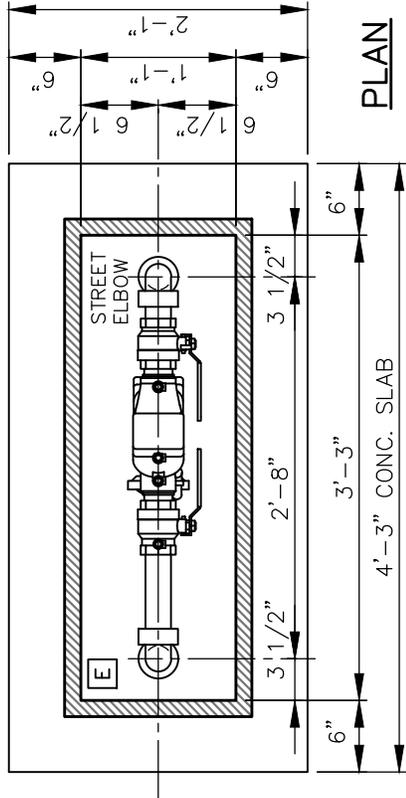
NOTES:

1. ALL DIMENSIONS ARE APPROXIMATE.
2. BACKFLOW PREVENTER LOCATION REQUIRES PRIOR APPROVAL, MUST BE WITHIN 10 FT OF METER ON THE PROPERTY SIDE AND MUST NOT OBSTRUCT SIGHT DISTANCE. PROVIDE 36" CLEAR OUTSIDE OF ENCLOSURE ON ALL SIDES.
3. SLAB SHALL BE 3000 PSI CONCRETE, 51" LONG x 25"WIDE x 4" THICK WITH 6x6-W1.4XW1.4 WWF OVER 3" COMPACTED CRUSHED STONE.
4. REDUCED PRESSURE BACKFLOW PREVENTER SHALL BE A 'WATTS' 2" 909M1-Q1 (OR EQUAL). SHUT-OFF VALVES SHALL BE FULL PORT, LINE SIZE AND 1/4 TURN BRONZE UNION BALL VALVES.
5. PIPE RISERS AND BENDS SHALL BE TYPE 'K' COPPER OR BRASS FOR A MINIMUM OF 5 FT EACH SIDE OF VALVES.
6. THE ENCLOSURE SHALL BE A 'HOT-BOX' #HF013039028 (OR EQUAL) FIBERGLASS AND HAVE A FLIP-TOP ACCESS, LOCKABLE SS HASP & (2) TWO DRAINPORTS AT GRADE. COLOR BIEGE.
7. NO BY-PASS OF BACKFLOW PREVENTER WILL BE ACCEPTED.
8. REQUIRED ELECTRICAL RECEPTACLE INDICATED BY [E] SHALL BE GFI MOUNTED A MINIMUM OF 21" ABOVE THE SLAB.
9. THE ENCLOSURE SHALL BE HEATED WITH A 90W, 120V, 18 FT LONG HEAT TRACE CABLE.

2" REDUCED PRESSURE BACKFLOW PREVENTER

16

W-BX_RPBFP HB2 200 909M1-QT



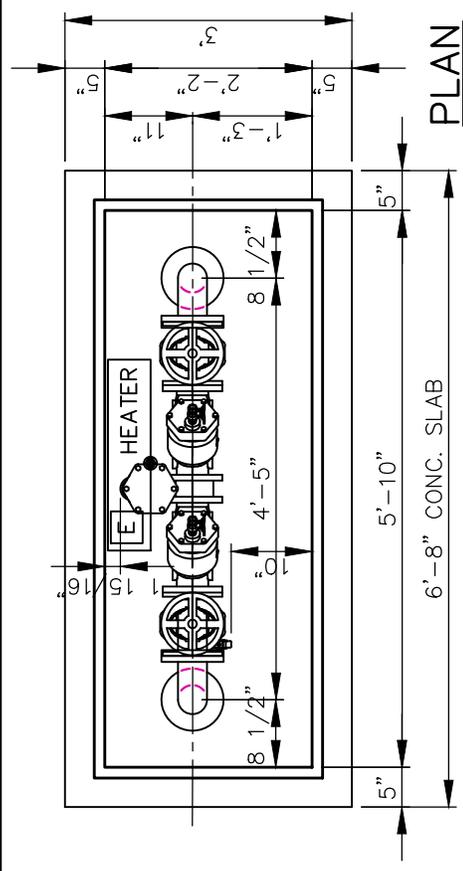
NOTES:

1. ALL DIMENSIONS ARE APPROXIMATE.
2. BACKFLOW PREVENTER LOCATION REQUIRES PRIOR APPROVAL, MUST BE WITHIN 10 FT OF METER ON THE PROPERTY SIDE AND MUST NOT OBSTRUCT SIGHT DISTANCE. PROVIDE 36" CLEAR OUTSIDE OF ENCLOSURE ON ALL SIDES.
3. SLAB SHALL BE 3000 PSI CONCRETE, 80" LONG x 36" WIDE x 4" THICK WITH 6x6-W4XW4 WWF OVER 3" COMPACTED CRUSHED STONE.
4. REDUCED PRESSURE BACKFLOW PREVENTER (RP) SHALL BE A 'CLA-VAL' 3" RP-4 (OR EQUAL) WITH AWWA 'NRS' RESILIENT WEDGE GATE VALVES.
5. PIPE RISERS AND BENDS SHALL BE DUCTILE IRON FOR A MINIMUM OF 8 FT EACH SIDE OF GATE VALVES. ALL BELOW GROUND FITTINGS SHALL BE RESTRAINED MECHANICAL JOINTS.
6. THE ABOVE GROUND ENCLOSURE SHALL BE A 'HOT-BOX' #HF026070045 (OR EQUAL) FIBERGLASS, INSULATED TO R8, HAVE A FLIP-TOP ACCESS, LOCKABLE SS HASP & (2) TWO DRAINPORTS AT GRADE. COLOR BEIGE.
7. NO BY-PASS OF BACKFLOW PREVENTER WILL BE ACCEPTED.
8. REQUIRED ELECTRICAL RECEPTACLE INDICATED BY [E] SHALL BE A GFI MOUNTED A MINIMUM OF 30" ABOVE THE SLAB.
9. THE ENCLOSURE SHALL BE HEATED WITH A 1000W, 120V AND 1 PH HEATERS.

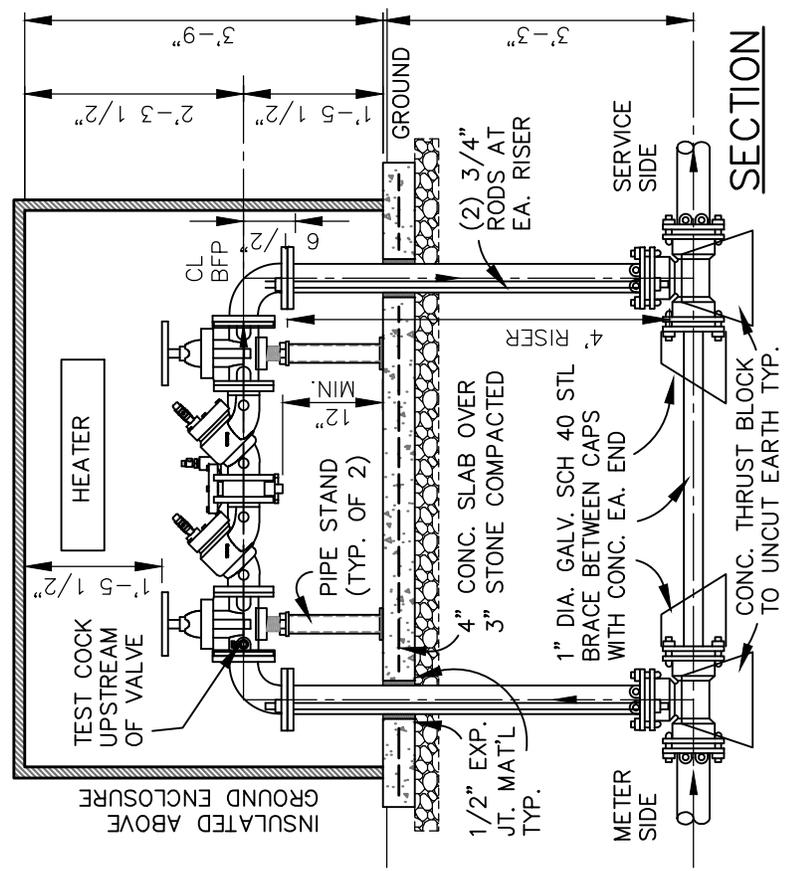
3" REDUCED PRESSURE BACKFLOW PREVENTER

24

W-BX_RPBFP HB3 3_RP-4



PLAN



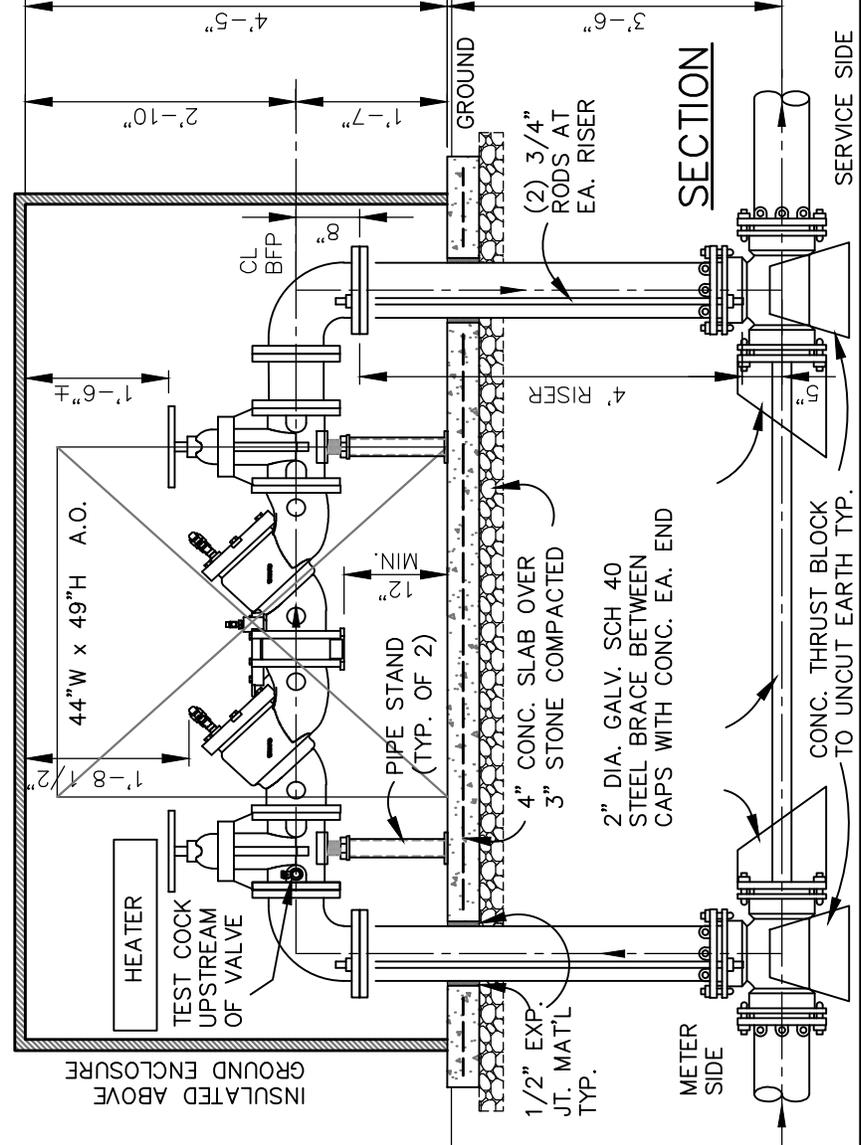
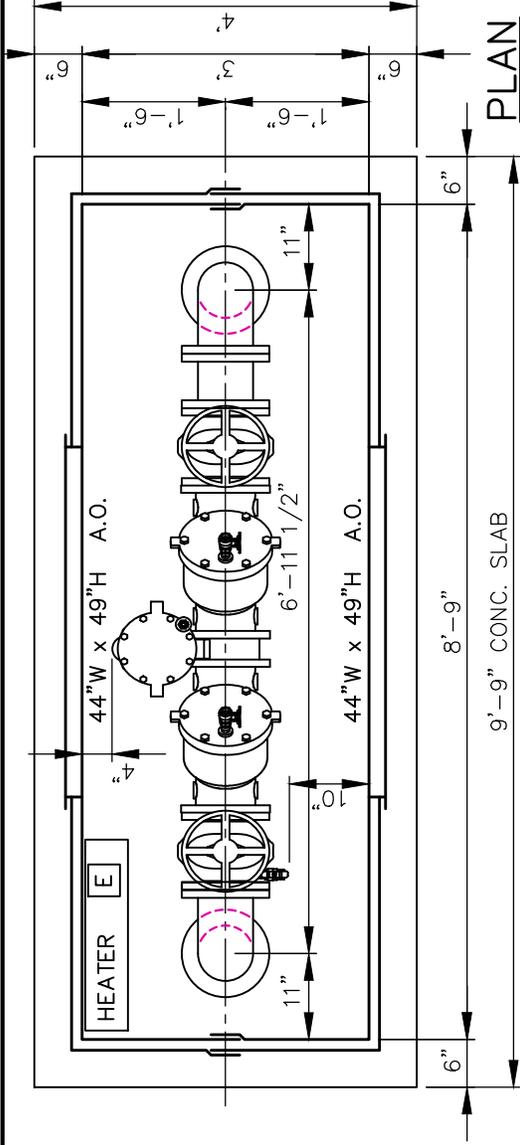
SECTION

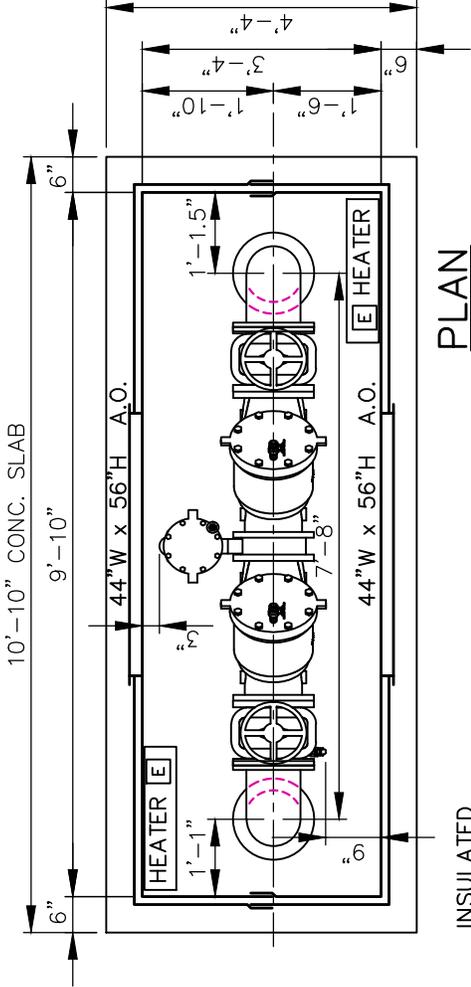
NOTES:

1. ALL DIMENSIONS ARE APPROXIMATE.
2. BACKFLOW PREVENTER LOCATION REQUIRES PRIOR APPROVAL, MUST BE WITHIN 10 FT OF METER ON THE PROPERTY SIDE AND MUST NOT OBSTRUCT SIGHT DISTANCE. PROVIDE 36" CLEAR OUTSIDE OF ENCLOSURE ON ALL SIDES.
3. SLAB SHALL BE 3000 PSI CONCRETE, 117"LONG x 48"WIDE x 4"THICK WITH 6x6-W1.4XW1.4 WWF OVER 3" COMPACTED CRUSHED STONE.
4. REDUCED PRESSURE BACKFLOW PREVENTER (RP) SHALL BE A 'CLA-VAL' 6" RP-4 (OR EQUAL) WITH AWWA 'NRS' RESILIENT WEDGE GATE VALVES.
5. PIPE RISERS AND BENDS SHALL BE DUCTILE IRON FOR A MINIMUM OF 8 FT EACH SIDE OF GATE VALVES. ALL BELOW GROUND FITTINGS SHALL BE RESTRAINED MECHANICAL JOINTS.
6. THE ABOVE GROUND ENCLOSURE SHALL BE A 'HOT-BOX' #HA036105053 (OR EQUAL) ALUMINUM, IN TWO REMOVABLE PARTS JOINED ALONG THE LONGITUDINAL CENTERLINE, INSULATED TO R8, HAVE AN ACCESS OPENING 'A.O.' ON BOTH SIDES AS SHOWN, LOCKABLE SS HASP AND (2)TWO DRAIN PORTS AT GRADE. COLOR BEIGE.
7. NO BY-PASS OF BACKFLOW PREVENTER WILL BE ACCEPTED.
8. TWO REQUIRED ELECTRICAL RECEPTACLE INDICATED BY [E] SHALL BE A GFI MOUNTED A MINIMUM OF 30" ABOVE THE SLAB.
9. THE ENCLOSURE SHALL BE HEATED WITH ONE 1900W, 120V AND 1 PH HEATERS.

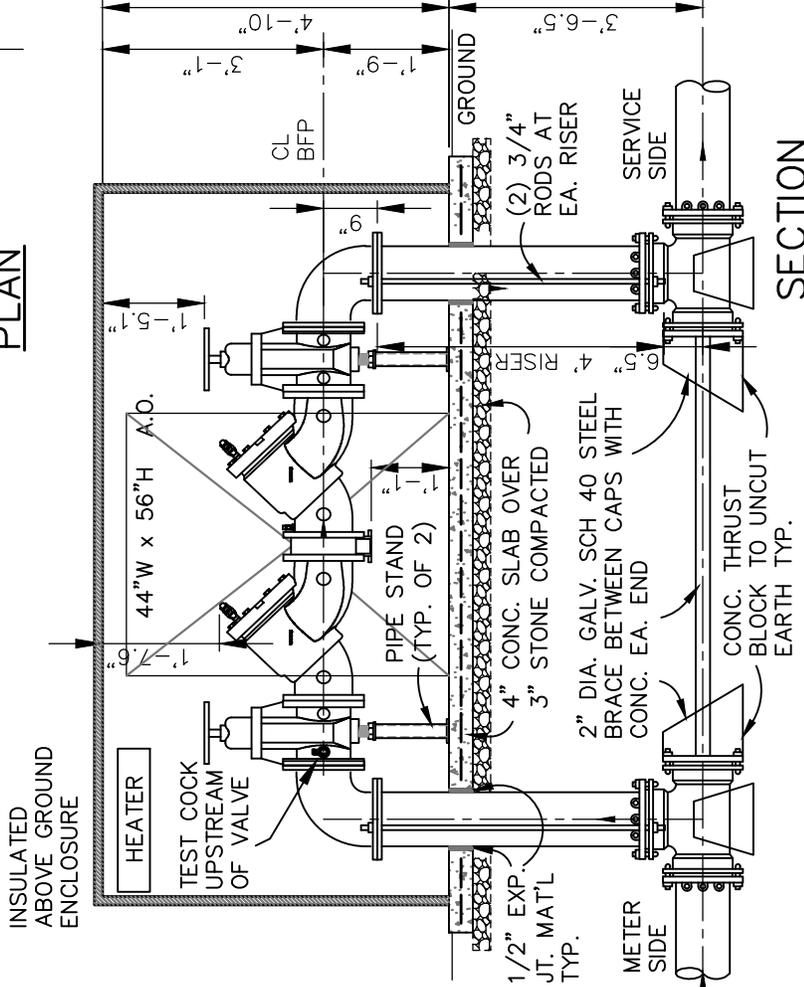
6" REDUCED PRESSURE BACKFLOW PREVENTER 24

W-BX_RPBFP HB6 6_RP-4





PLAN



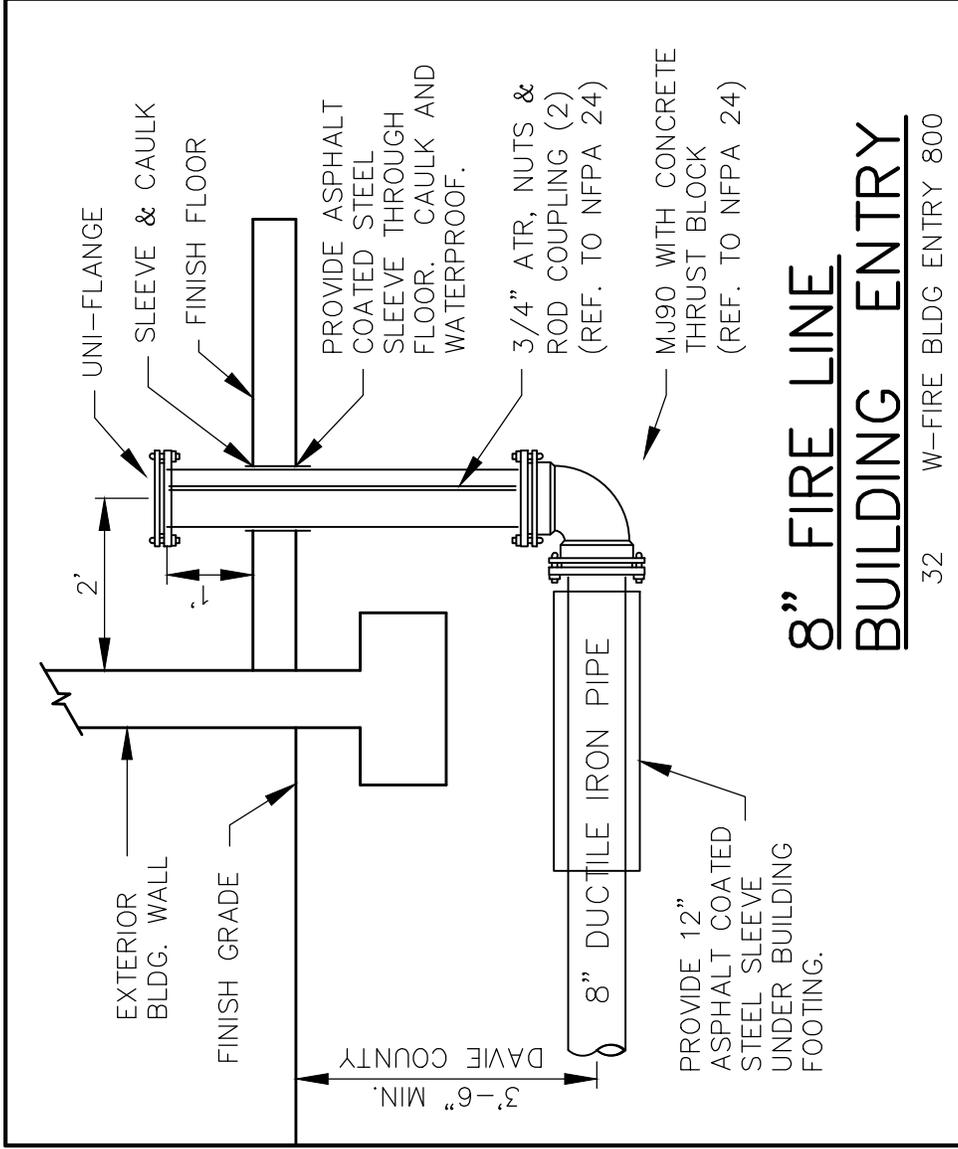
SECTION

NOTES:

1. BACKFLOW PREVENTER LOCATION REQUIRES PRIOR APPROVAL, MUST BE WITHIN 10 FT OF METER ON THE PROPERTY SIDE AND MUST NOT OBSTRUCT SIGHT DISTANCE. PROVIDE 36" CLEAR OUTSIDE OF ENCLOSURE ON ALL SIDES.
2. SLAB SHALL BE 3000 PSI CONCRETE, 117" LONG x 48"WIDE x 4" THICK WITH 6x6-W4XW4 WWF OVER 3" COMPACTED CRUSHED STONE.
3. REDUCED PRESSURE BACKFLOW PREVENTER (RP) SHALL BE A 'CLA-VAL' 8" RP-4 (OR EQUAL) WITH AWWA 'NRS' RESILIENT WEDGE GATE VALVES.
4. PIPE RISERS AND BENDS SHALL BE DUCTILE IRON FOR A MINIMUM OF 8 FT EACH SIDE OF GATE VALVES. ALL BELOW GROUND FITTINGS SHALL BE RESTRAINED MECHANICAL JOINTS.
5. THE ABOVE GROUND ENCLOSURE SHALL BE A 'HOT-BOX' #HA040118058 (OR EQUAL) ALUMINUM, IN TWO REMOVABLE PARTS JOINED ALONG THE LONGITUDINAL CENTERLINE, INSULATED TO R8, HAVE AN ACCESS OPENING 'A.O.' ON BOTH SIDES AS SHOWN, LOCKABLE SS HASP AND (2) TWO DRAIN PORTS AT GRADE. COLOR BEIGE.
6. NO BY-PASS OF BACKFLOW PREVENTER WILL BE ACCEPTED.
7. TWO REQUIRED ELECTRICAL RECEPTACLE INDICATED BY [E] SHALL BE A GFI MOUNTED A MINIMUM OF 30" ABOVE THE SLAB.
8. THE ENCLOSURE SHALL BE HEATED WITH TWO 1500W, 120V AND 1 PH HEATERS.

8" REDUCED PRESSURE BACKFLOW PREVENTER

W-BX_RPBFP HB8 8_RP-4



8" FIRE LINE BUILDING ENTRY

32 W-FIRE BLDG ENTRY 800

GRAVITY SEWER GENERAL NOTES:

1. STANDARD GRAVITY SANITARY SEWER SHALL BE SDR-35 PVC WHERE APPROPRIATE.
2. DUCTILE IRON PIPE SHALL BE USED IF SANITARY SEWER DOES NOT MEET OR EXCEED THE FOLLOWING SEPARATION:
 - A. 36" MINIMUM GROUND COVER
 - B. 24" VERTICAL FROM STORM SEWER PIPE (CROSSING OR PARALLEL)
 - C. 18" VERTICAL UNDER OR 10' HORIZONTAL FROM WATER MAIN.
 - D. 10' HORIZONTAL FROM STREAM, LAKE OR WATER IMPOUNDMENTS. COMPLY WITH 15A NCAC 02T.0305 (f).
3. CENTER ONE 20' SECTION OF PIPE AT ALL PIPE CROSSINGS.
4. WHEN CONNECTING DUCTILE IRON PIPE TO PVC PIPE, USE AN APPROPRIATE TRANSITION GASKETS TO PVC BELL END AND A SLEEVE WITH APPROPRIATE GASKETS AT THE PLAIN END.
5. WATERTIGHT AND SEALED FRAME AND COVERS ARE REQUIRED WHERE THE RIM ELEVATION IS LESS THAN 1 FOOT ABOVE THE 100 YEAR FLOOD ELEVATION OR AS INDICATED ON THE APPROVED PROFILE. U.S. FOUNDRY & MANUFACTURING CORPORATION MODEL #USF 668-KL-BWT.
6. WHERE ANTI-SEEP COLLARS ARE REQUIRED, THEY SHALL BE PLACED A MINIMUM OF 8 FT FROM MANHOLES.
7. FOR MANHOLES IN ROAD RIGHT-OF-WAY, SET FRAME AND COVER TO SHOULDER GRADE IN A COMPACTED CONDITION.
8. OUTSIDE ROAD RIGHT-OF-WAY PROVIDE A PERMANENT EASEMENT OF 30' FOR GRAVITY SEWER AND 25' FOR SEWER FORCEMAIN WITH AN ADDITIONAL 10' CONSTRUCTION EASEMENT.
9. SEWER SERVICE SCH 40 PVC PIPE AND FITTINGS SHALL HAVE FULLY PRIMED MEDIUM VISCOSITY GLUED JOINTS.
10. ALL SEWER CONNECTIONS THAT CROSS UNDER AN EXISTING ROAD SHALL BE BORED.

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GRAVITY SEWER
GENERAL NOTES

PAGE 1

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GRAVITY SEWER TESTING NOTES:

1. FOR THE GRAVITY PIPE, PERFORM STRAIGHTNESS, LEAKAGE AND DEFLECTION TEST ON THE SEWER PIPE IN ACCORDANCE WITH TO 'NCDEQ' REGULATIONS.
 - A. LEAKAGE TEST: USE NO MORE THAN 4 PSI AIR PRESSURE. OBSERVE AND RECORD THE TIME FOR A 1 PSI DROP. THE TIME SHALL NOT EXCEED THE VALUE IN THE AIR LEAKAGE TABLE:
MINIMUM TIME (MINUTES-SECONDS) ALLOWED FOR PRESSURE DROP FROM 3.5 TO 2.5 PSIG FOR VARIOUS PIPE LENGTHS AND DIAMETER.
 - B. DEFLECTION TEST SHALL EASILY PASS A STANDARD MANDREL FOR THE INDICATED NOMINAL PIPE SIZE WITH ALLOWANCE FOR NO MORE THAN 4% DEFLECTION.
 - C. TESTS MUST BE OBSERVED BY THE A UTILITY REPRESENTATIVE AND DOCUMENTED IN THE CONSTRUCTION RECORDS BY THE CONTRACTOR.

2. FOR THE MANHOLES, PERFORM VACUUM TEST ON SEWER MANHOLES IN ACCORDANCE WITH TO 'NCDEQ' REGULATIONS.
 - A. TEMPORARILY PLUG ALL PIPES ENTERING THE MANHOLE AND PLACE THE TEST HEAD INSIDE THE RIM OF THE CAST IRON FRAME AND INFLATE.
 - B. THE PRESSURE GAUGE SHALL BE LIQUID FILLED, HAVING A 3.5 INCH DIAMETER FACE WITH A READING FROM ZERO TO THIRTY INCHES OF MERCURY
 - C. A VACUUM OF AT LEAST TEN INCHES OF MERCURY (10" Hg) SHALL BE DRAWN ON THE MANHOLE.
 - D. SHUT THE VALVE OF THE VACUUM LINE TO THE MANHOLE OFF AND DISCONNECT THE VACUUM LINE FROM THE PUMP.
 - E. THE MANHOLE SHALL BE CONSIDERED TO PASS THE VACUUM TEST IF THE VACUUM READING DOES NOT DROP MORE THAN 1" Hg (i.e. FROM 10" Hg TO 9" Hg) DURING THE MINIMUM TEST TIMES FROM THE TABLE BELOW.
 - F. IF A MANHOLE FAILS THE VACUUM TEST, THE MANHOLE SURFACES SHALL BE PROPERLY REPAIRED.
 - G. THIS PROCESS SHALL CONTINUE UNTIL A SATISFACTORY TEST IS OBTAINED.
 - H. ALL TEMPORARY PLUGS SHALL BE REMOVED AFTER EACH TEST.
 - I. TESTS MUST BE OBSERVED BY THE A UTILITY REPRESENTATIVE AND DOCUMENTED IN THE CONSTRUCTION RECORDS BY THE CONTRACTOR.

MINIMUM VACUUM TEST TIMES

MH Depth	MH DIAMETERS		
	4'	5'	6'
ft			
15 or less	50"	1' 05"	1' 20"
15.01 to 30	1' 30"	1' 45"	2' 10"

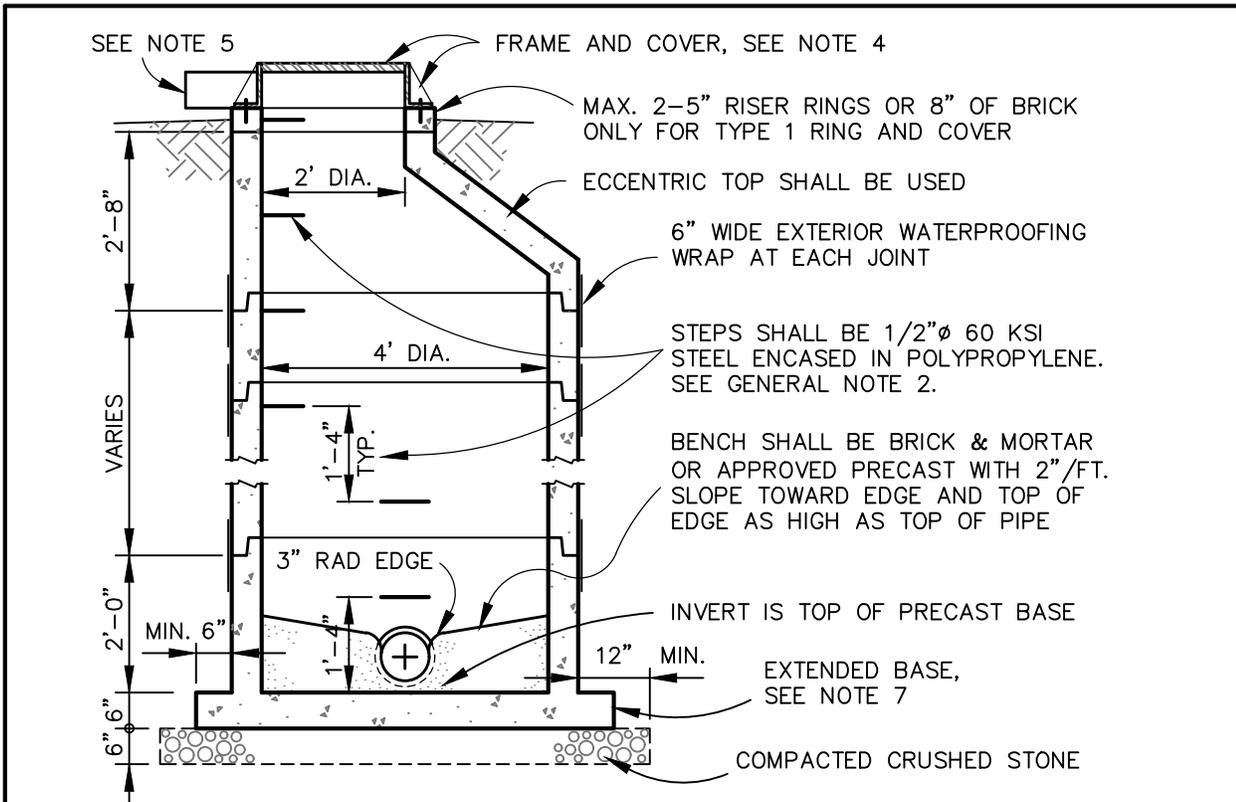
GRAVITY SEWER TESTING NOTES:

1. FOR THE GRAVITY PIPE, PERFORM STRAIGHTNESS, LEAKAGE AND DEFLECTION TEST ON THE SEWER PIPE IN ACCORDANCE WITH TO 'NCDEQ' REGULATIONS.
 - A. LEAKAGE TEST: USE NO MORE THAN 4 PSI AIR PRESSURE. OBSERVE AND RECORD THE TIME FOR A 1 PSI DROP. THE TIME SHALL NOT EXCEED THE VALUE IN THE AIR LEAKAGE TABLE:
MINIMUM TIME (MINUTES-SECONDS) ALLOWED FOR PRESSURE DROP FROM 3.5 TO 2.5 PSIG FOR VARIOUS PIPE LENGTHS AND DIAMETER.
 - B. DEFLECTION TEST SHALL EASILY PASS A STANDARD MANDREL FOR THE INDICATED NOMINAL PIPE SIZE WITH ALLOWANCE FOR NO MORE THAN 4% DEFLECTION.
 - C. TESTS MUST BE OBSERVED BY THE A UTILITY REPRESENTATIVE AND DOCUMENTED IN THE CONSTRUCTION RECORDS BY THE CONTRACTOR.

2. FOR THE MANHOLES, PERFORM VACUUM TEST ON SEWER MANHOLES IN ACCORDANCE WITH TO 'NCDEQ' REGULATIONS.
 - A. TEMPORARILY PLUG ALL PIPES ENTERING THE MANHOLE AND PLACE THE TEST HEAD INSIDE THE RIM OF THE CAST IRON FRAME AND INFLATE.
 - B. THE PRESSURE GAUGE SHALL BE LIQUID FILLED, HAVING A 3.5 INCH DIAMETER FACE WITH A READING FROM ZERO TO THIRTY INCHES OF MERCURY
 - C. A VACUUM OF AT LEAST TEN INCHES OF MERCURY (10" Hg) SHALL BE DRAWN ON THE MANHOLE.
 - D. SHUT THE VALVE OF THE VACUUM LINE TO THE MANHOLE OFF AND DISCONNECT THE VACUUM LINE FROM THE PUMP.
 - E. THE MANHOLE SHALL BE CONSIDERED TO PASS THE VACUUM TEST IF THE VACUUM READING DOES NOT DROP MORE THAN 1" Hg (i.e. FROM 10" Hg TO 9" Hg) DURING THE MINIMUM TEST TIMES FROM THE TABLE BELOW.
 - F. IF A MANHOLE FAILS THE VACUUM TEST, THE MANHOLE SURFACES SHALL BE PROPERLY REPAIRED.
 - G. THIS PROCESS SHALL CONTINUE UNTIL A SATISFACTORY TEST IS OBTAINED.
 - H. ALL TEMPORARY PLUGS SHALL BE REMOVED AFTER EACH TEST.
 - I. TESTS MUST BE OBSERVED BY THE A UTILITY REPRESENTATIVE AND DOCUMENTED IN THE CONSTRUCTION RECORDS BY THE CONTRACTOR.

MINIMUM VACUUM TEST TIMES

MH Depth	MH DIAMETERS		
	4'	5'	6'
ft			
15 or less	50"	1' 05"	1' 20"
15.01 to 30	1' 30"	1' 45"	2' 10"



GENERAL NOTES:

1. MANHOLE COMPONENTS SHALL MEET LATEST REVISION OF ASTM C-478.
2. ASSEMBLE RISERS SO ALL STEPS WILL HAVE A 16" SPACING THE FULL HEIGHT OF MANHOLE. FIRST STEP SHALL BE MAXIMUM 22" ABOVE BENCH. MH STEPS AND COVER SHALL BE ALIGNED OVER OUTLET PIPE.
3. PROVIDE APPROVED GASKET AT ALL VERTICAL JOINTS. FILL ALL OUTSIDE AND INSIDE JOINTS AND LIFT HOLES WITH NON-SHRINK GROUT.
4. FRAME AND COVER SHALL BE U.S. FOUNDRY #669-KL AND HAVE "SANITARY SEWER" LABEL AND (2)1"Ø VENT HOLES. USE #669-KL-BWTL WITHOUT HOLES FOR WATERTIGHT LIDS. PROVIDE ROPE MASTIC BETWEEN FRAME AND CONCRETE. IF FRAME IS NOT SURROUND BY CONSTRUCTION MATERIAL, PROVIDE (4) 3/8"x1.5" 304 SS LAG ANCHOR BOLTS THRU FRAME AND INTO CONCRETE WITH LEAD SHIELD ANCHORS.
5. WHERE MANHOLE TOP COULD BE SUBJECT TO VEHICULAR TRAFFIC, PROVIDE CONCRETE COLLAR WITH MINIMUM 6"D x12"W WITH TOP OF CONCRETE BEING 1.5" BELOW RIM.
6. GRADE TO DRAIN AWAY FROM MANHOLE RING AND COVER AS NEEDED.
7. TYPICAL MANHOLES ARE TO BE EXTENDED BASE UNLESS OTHERWISE APPROVED BY COUNTY ENGINEER OF RECORD.

PRECAST SANITARY SEWER MANHOLE

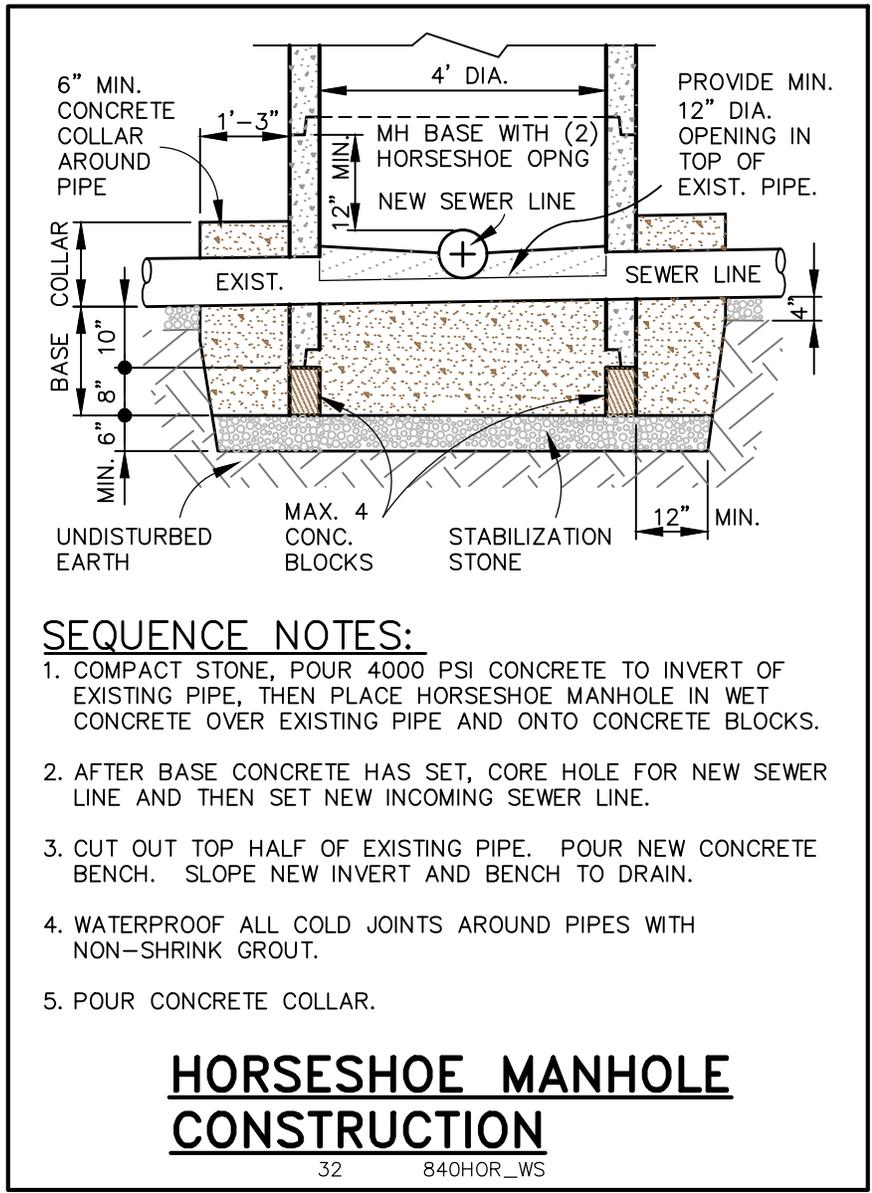
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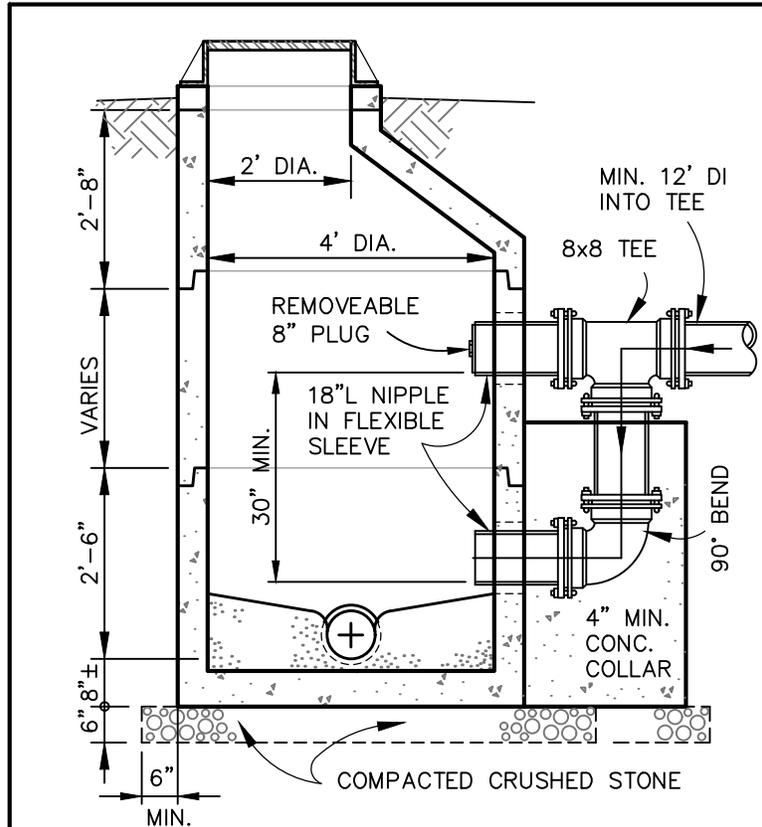
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PRECAST SANITARY
SEWER MANHOLE

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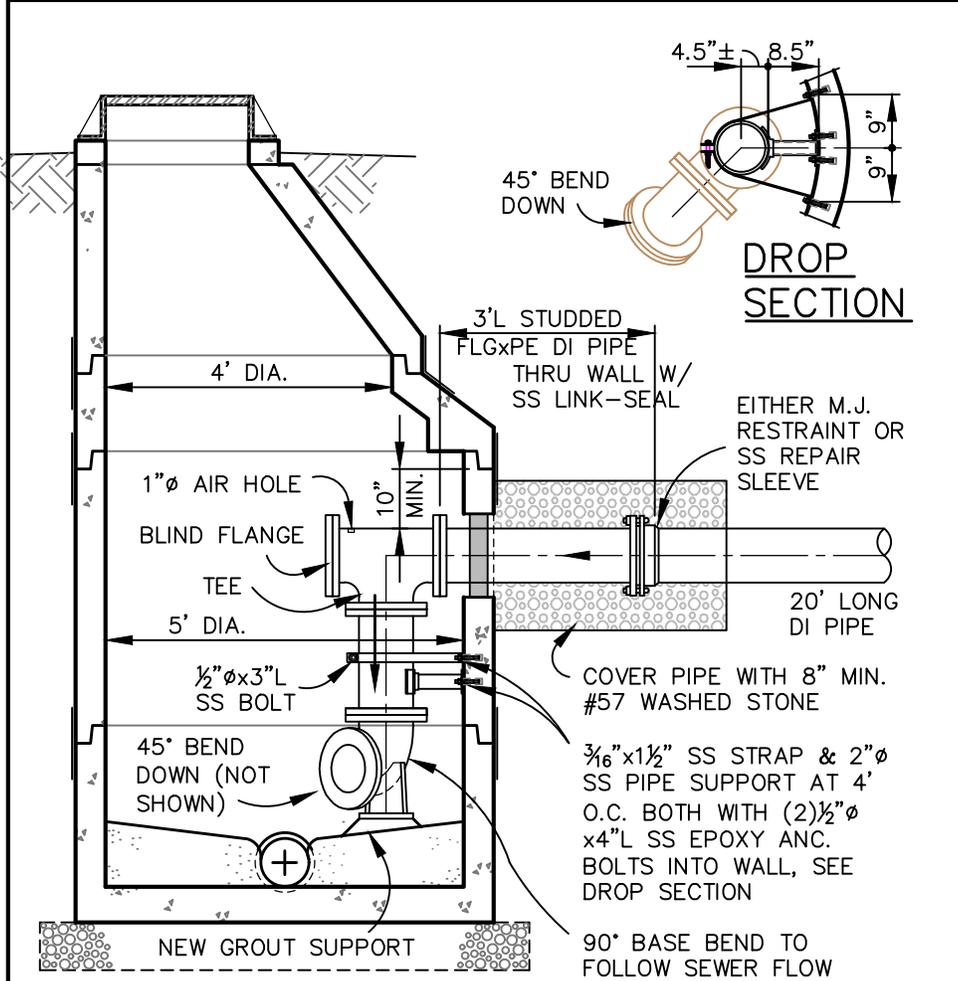


GENERAL NOTES:

1. SEE STANDARD PRECAST SANITARY SEWER MANHOLE FOR ADDITIONAL MANHOLE DETAILS.
2. ALL PIPE AND FITTINGS SHALL BE DUCTILE IRON. PROVIDE MINIMUM OF 12 FT OF DUCTILE IRON PIPE UPSTREAM OF TEE.
3. CONCRETE ENCASEMENT FOR OUTSIDE DROP MANHOLES SHALL BE STANDARD SUBSURFACE SUPPORT CONCRETE AS SPECIFIED IN NOTES FOR TRENCH AND PIPING.

**OUTSIDE DROP
PRECAST MANHOLE**

REF. NCDOT RSD 840.67 32 840-67oD



GENERAL NOTES:

1. ALL PIPE AND FITTINGS INSIDE MANHOLE SHALL BE FLANGED DUCTILE IRON.
2. LOCATE STEPS & MH TOP AS NEEDED.

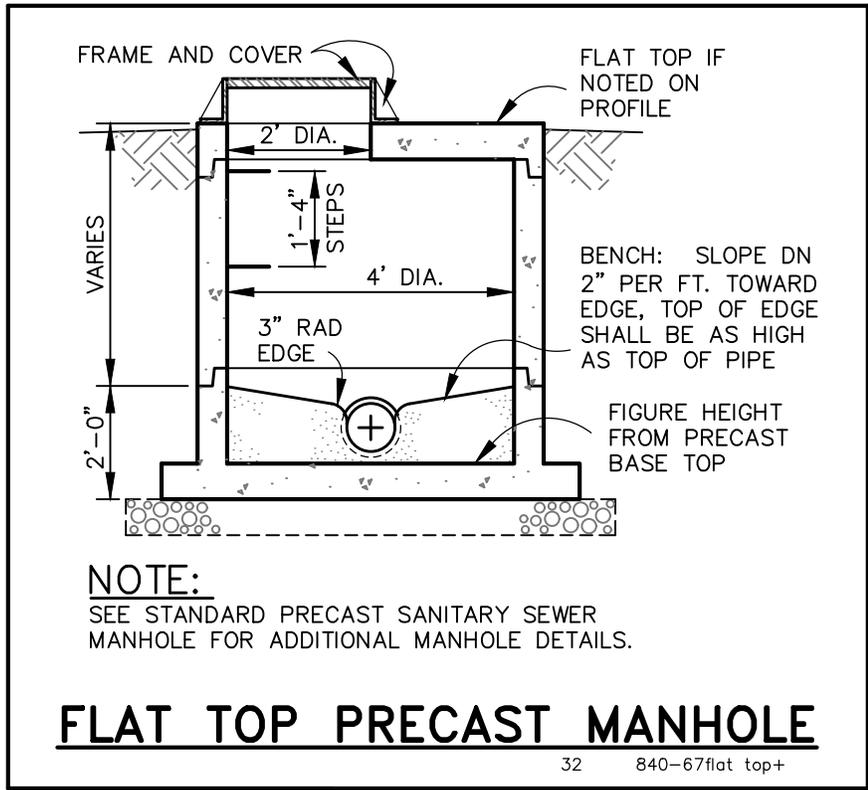
8" INSIDE DROP PRECAST MANHOLE

REF. NCDOT 840.67 32 840-67ID_8PIPSUPRT

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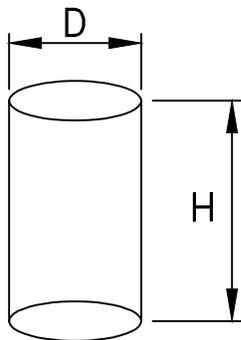
8" INSIDE DROP PRECAST MANHOLE

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FORCEMAIN GENERAL NOTES:

1. STANDARD SEWER FORCEMAIN SHALL BE PVC C-900 OR FUSIBLE HDPE WHERE APPROVED.
2. DUCTILE IRON PIPE SHALL BE USED IF SANITARY SEWER DOES NOT MEET OR EXCEED THE FOLLOWING SEPARATION:
 - A. 36" MINIMUM GROUND COVER
 - B. 24" VERTICAL FROM STORM SEWER PIPE (CROSSING OR PARALLEL)
 - C. 18" VERTICAL UNDER OR 10' HORIZONTAL FROM WATER MAIN.
 - D. 10' HORIZONTAL FROM STREAM, LAKE OR WATER IMPOUNDMENTS.
COMPLY WITH 15A NCAC 02T.0305 (f).
2. CENTER ONE 20' SECTION OF DUCTILE IRON PIPE AT ALL CROSSINGS.
3. FOR AIR VALVES IN ROAD RIGHT-OF-WAY, SET MANHOLE FRAME AND COVER TO SHOULDER GRADE WITH SURROUNDING SOIL OR STONE IN A COMPACTED CONDITION.
4. PROVIDE TRACER WIRE 12" ABOVE PIPE WITH CONTINUOUS CONNECTION.
5. PRESSURE TEST THE SYSTEM AT 150 PSI OR GREATER. MAINTAIN FOR AT LEAST THREE HOURS. ADD SUFFICIENT WATER TO BRING BACK TO STARTING PRESSURE AFTER THREE HOURS. WATER ADDED SHALL NOT EXCEED THE GPH/1000 FT OF LINE TESTED PER THE FOLLOWING TABLE. PRESSURE TESTING MUST BE OBSERVED BY THE A UTILITY REPRESENTATIVE AND DOCUMENTED IN THE CONSTRUCTION RECORDS BY THE CONTRACTOR.



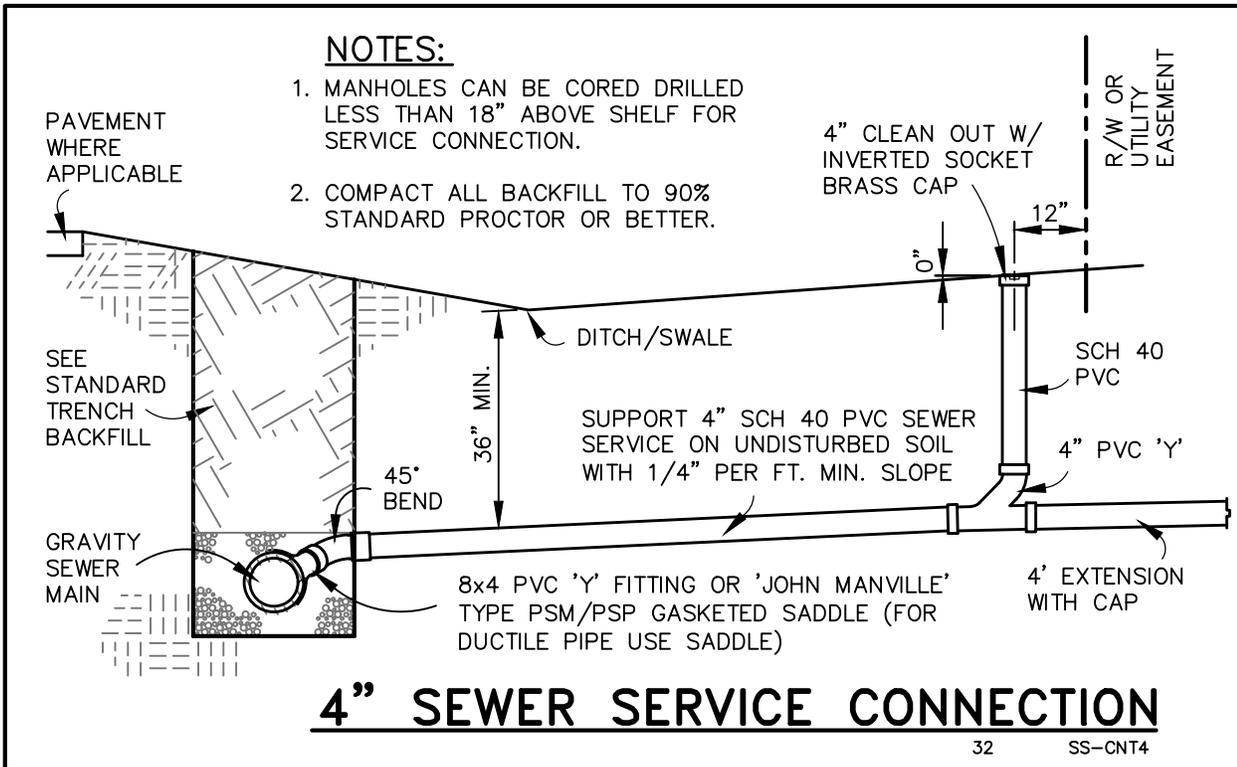
Allowable Leakage Gal/1000 ft

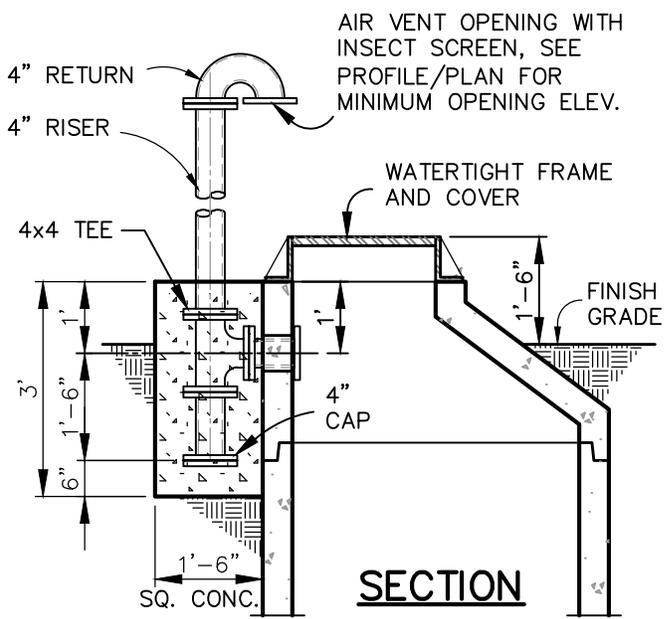
Pipe Dia. in.	20'L pipe gal/hr			Gals of Water Added for D & H
	Gals for			
	1 hr	2 hrs	3 hrs	
4	0.33	0.66	0.99	inches
6	0.5	1.00	1.50	.0034 x D ² (H)
8	0.67	1.34	2.01	feet
12	1	2.00	3.00	5.875 x D ² (H)

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SEWER FORCEMAIN
 GENERAL NOTES

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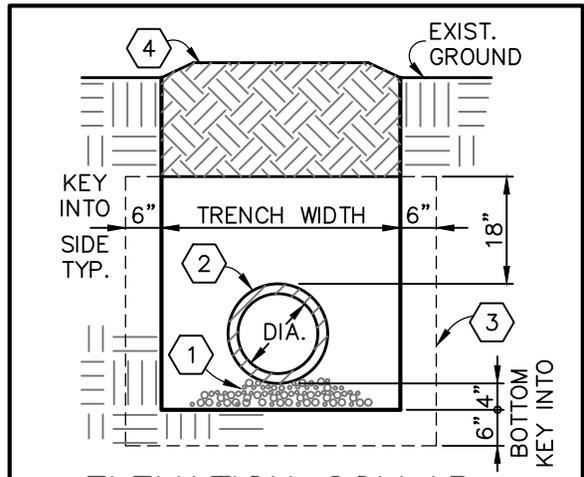
AIR VENT OPENING WITH
 INSECT SCREEN, SEE
 PROFILE/PLAN FOR
 MINIMUM OPENING ELEV.

GENERAL NOTES:

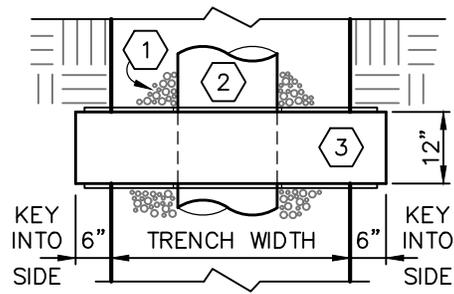
1. ALL PIPE AND BENDS SHALL BE DUCTILE IRON.
2. AIR VENT OPENING SHALL BE 1 FOOT MINIMUM ABOVE THE 100 YEAR FLOOD ELEVATION.
3. MOUNT 4"Ø FLANGE NIPPLE WITH (4)3/4"x4"L STAINLESS STEEL WEDGE ANCHORS TO THE INSIDE WALL.
4. ENCASUREMENT FOR VENT PIPE SHALL BE STANDARD SUBSURFACE SUPPORT CONCRETE AS SPECIFIED IN NOTES FOR TRENCH AND PIPING.
5. USE 4"Ø FLANGE RETURN WITH SS INSECT SCREEN OVER VENT OPENING.

VENT FOR SANITARY SEWER MANHOLE

32 840-67VENT



ELEVATION COLLAR



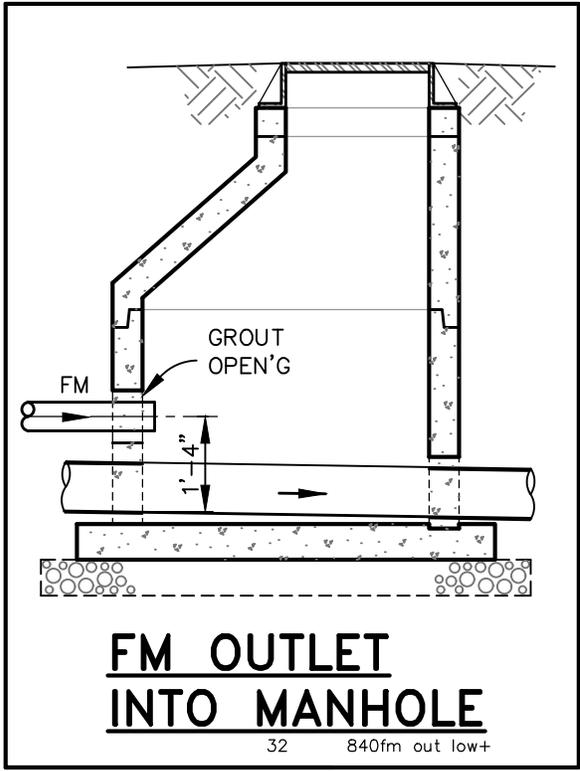
PLAN COLLAR

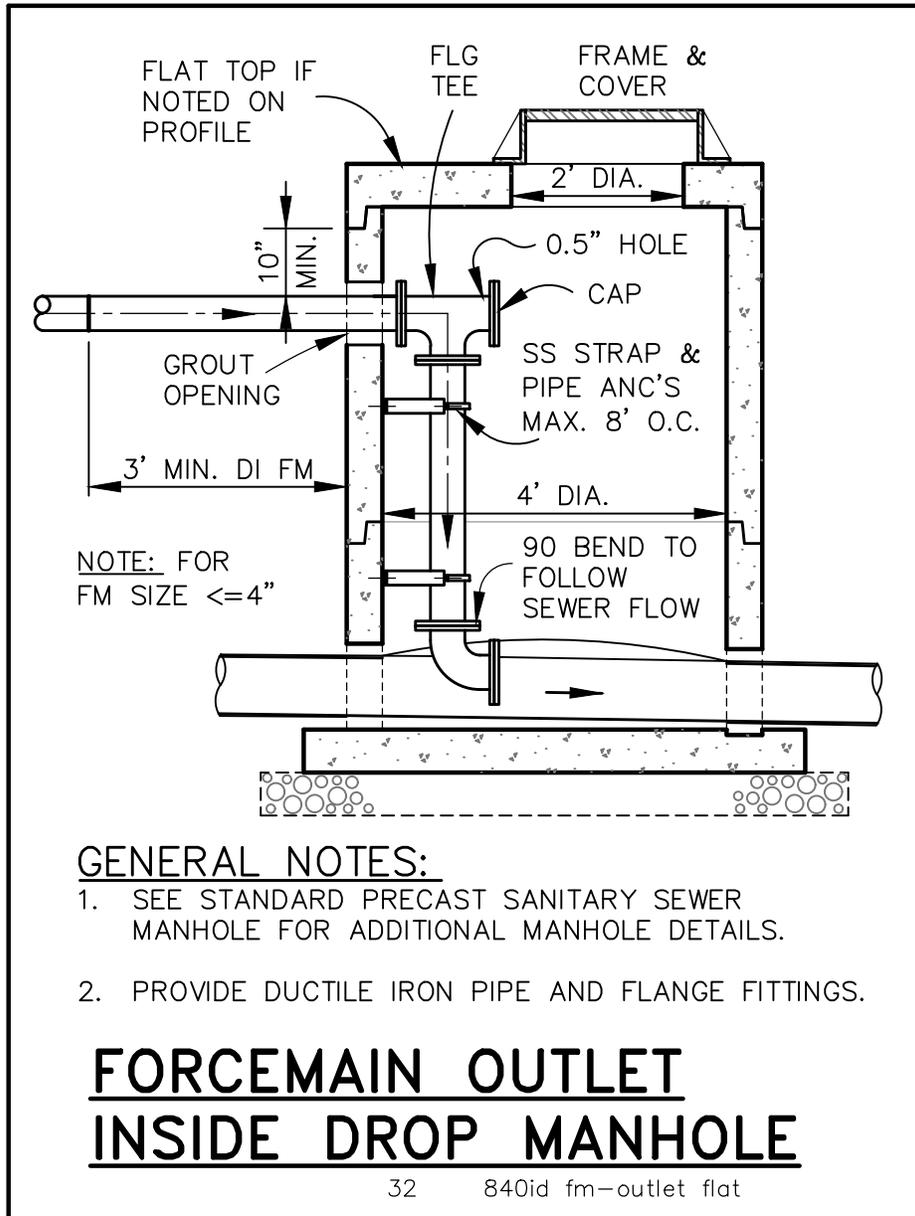
KEYNOTES

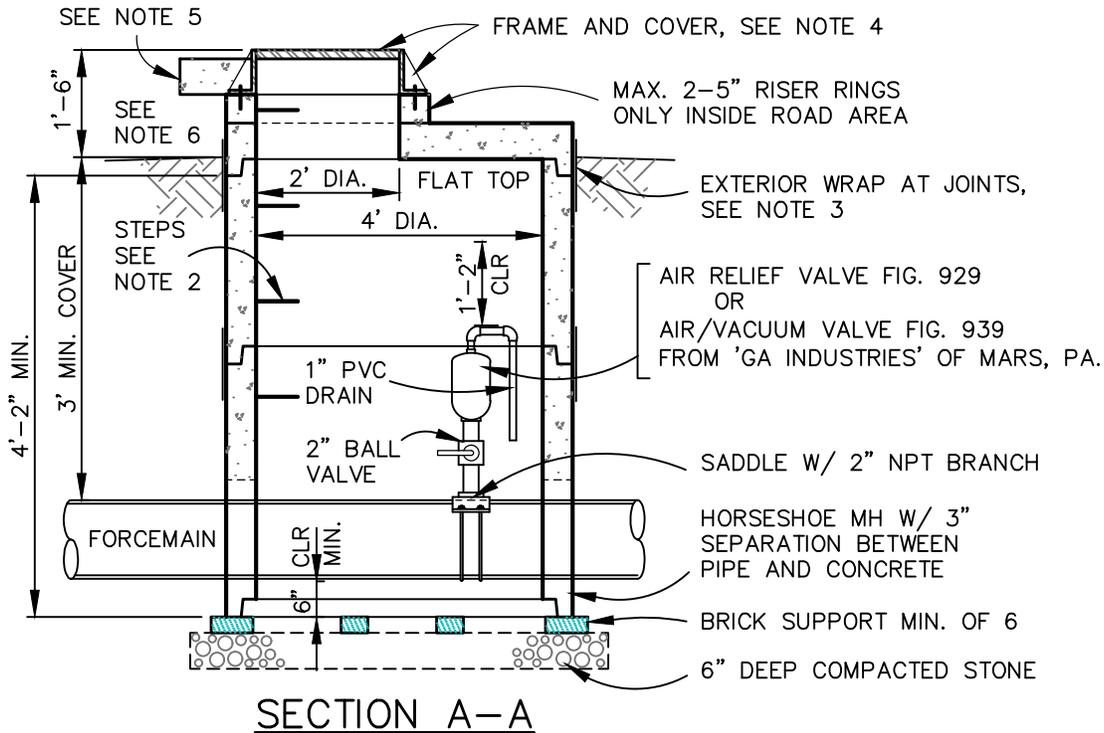
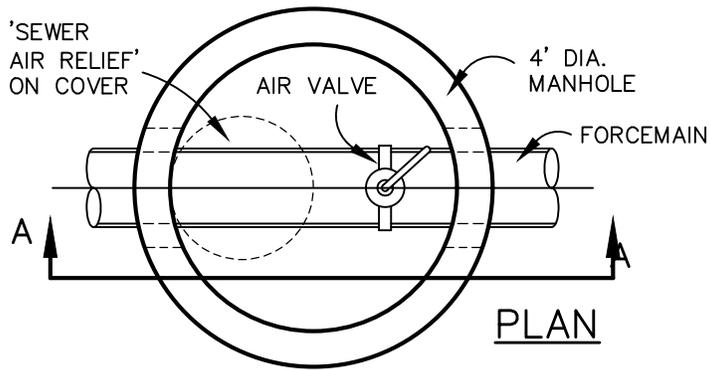
- ① PLACE BEDDING MATERIAL AGAINST THE TEMPORARY PLYWOOD FORM.
- ② SANITARY SEWER PIPE, DIA. VARIES
- ③ SAKRETE MIXED IN HOLE
- ④ SEE STANDARD TRENCH BACKFILL

**ANTISEEP/
ANCHOR COLLAR**

32 ANTISEEP SAKRETE







NOTES:

1. MANHOLE COMPONENTS SHALL MEET REQUIREMENTS OF AASHTO M199.
2. STEPS SHALL BE 1/2"Ø 60 KSI STEEL ENCASED IN POLYPROPYLENE. ASSEMBLE RISERS SO ALL STEPS WILL HAVE A 16" SPACING THE FULL HEIGHT OF MANHOLE. FIRST STEP SHALL BE MAXIMUM 20" ABOVE FORCEMAIN. MH STEPS AND COVER SHALL BE ALIGNED AS SHOWN.
3. PROVIDE BUTYL RUBBER GASKET IN ALL JOINTS. FILL ALL JOINTS AND LIFT HOLES WITH NON-SHRINK GROUT. PROVIDE 12" WIDE EXTERIOR WATERPROOFING WRAP AT EACH JOINT.
4. FRAME AND COVER SHALL BE U.S. FOUNDRY #669-KL AND HAVE "SEWER AIR RELIEF" LABEL AND (2)1"Ø VENT HOLES. USE #668-KL-BWT WITHOUT HOLES FOR WATERTIGHT LIDS. PROVIDE ROPE MASTIC BETWEEN FRAME AND CONCRETE. IF FRAME IS NOT SURROUNDED BY SOIL OR CONSTRUCTION MATERIAL, PROVIDE (4) 3/8"x1 1/2" 304 SS LAG ANCHOR BOLTS THRU FRAME AND INTO CONCRETE WITH LEAD SHIELD ANCHORS.
5. WHERE MANHOLE TOP COULD BE SUBJECT TO VEHICULAR TRAFFIC, PROVIDE CONCRETE COLLAR WITH MINIMUM 6"D x12"W WITH TOP OF CONCRETE BEING 1 1/2" BELOW RIM. GRADE TO DRAIN AWAY FROM FRAME AND COVER.
6. OUTSIDE ROAD AREA THE TOP OF FRAME AND COVER SHALL BE A MINIMUM 18" ABOVE THE GROUND.

**AIR RELIEF VALVE &
AIR/VACUUM VALVE MANHOLE**

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**AIR RELIEF VALVE &
AIR/VACUUM VALVE MANHOLE**

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