CITY OF
GRAND ISLAND
UTILITIES DEPARTMENT

Water Main
Standard Plans

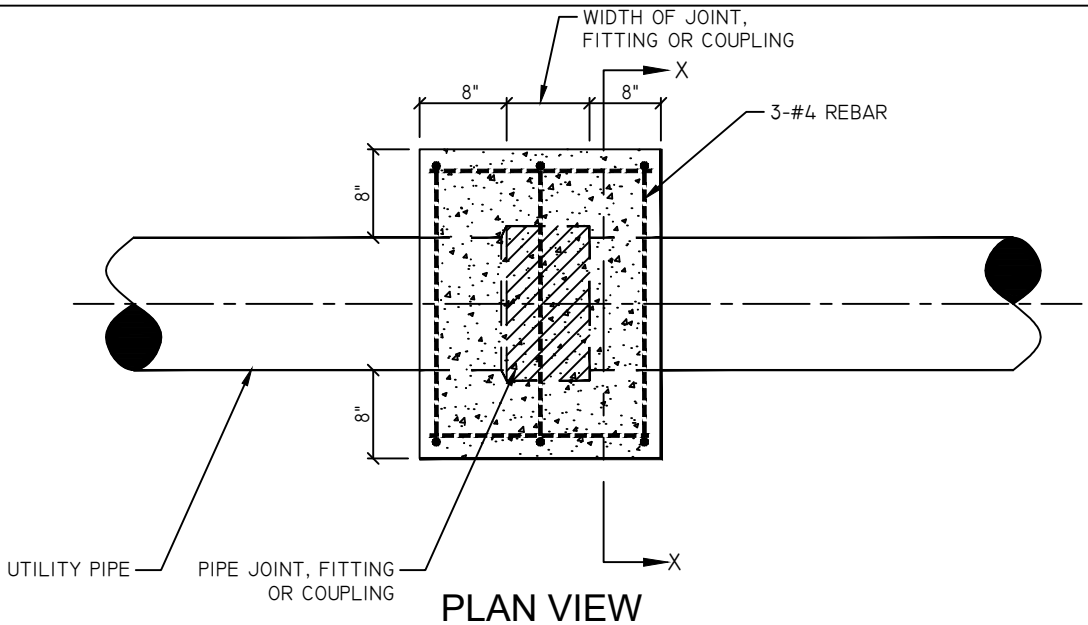
CURRENT REVISION: JANUARY 8, 2024

CITY OF GRAND ISLAND

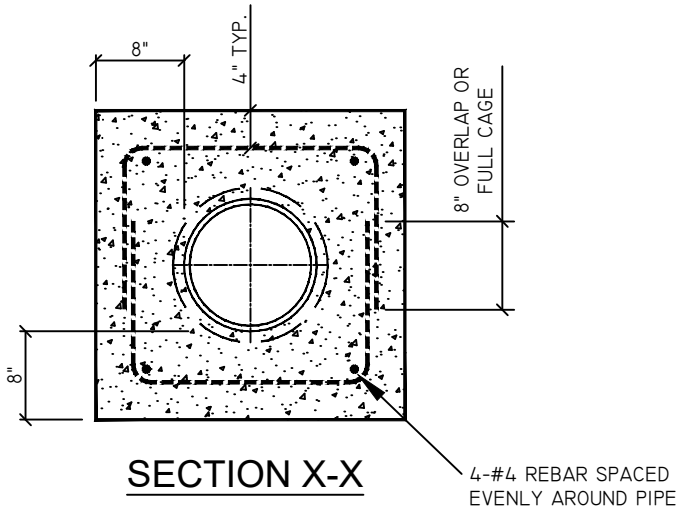
UTILITIES DEPARTMENT

Water Main Standard Plans

Index



PLAN VIEW

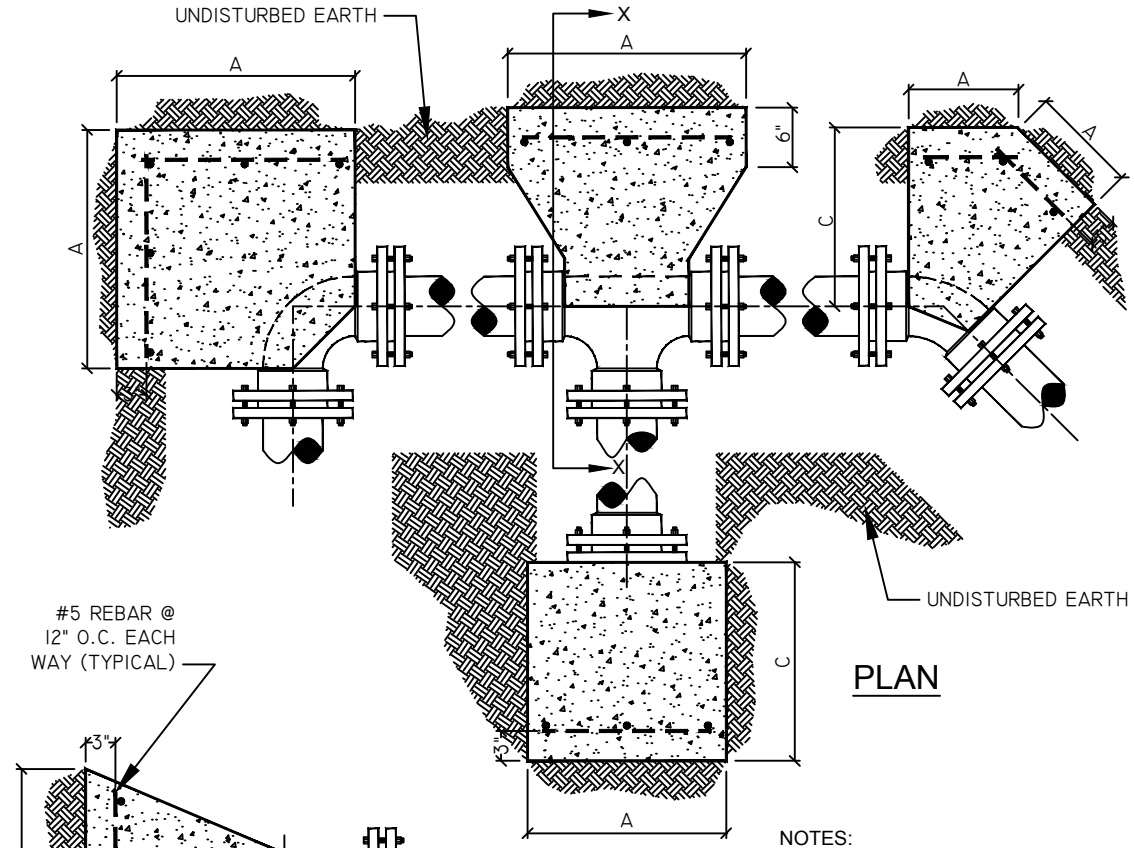


SECTION X-X

NOTES :

1. ALL REINFORCING BARS SHALL CONFORM TO ASTM A615, GRADE 60.
2. CONCRETE COLLARS SHALL BE CAST IN PLACE USING FORMS CONSTRUCTED PRIOR TO CONCRETE PLACEMENT. CONCRETE WILL BE CONSOLIDATED WITH VIBRATORY DEVICE.
3. ALL CONCRETE FOR ENCASEMENTS SHALL COMPLY WITH DIVISION II OF CITY OF GRAND ISLAND SPECIFICATIONS.

CITY OF GRAND ISLAND UTILITIES DEPARTMENT	REVISED: 1/20/2023 DRAWN BY: TDZ CHECKED BY: J.L.R.	JOINT ENCASEMENT	PLAN 133



PLAN

SECTION X-X

NOTES:

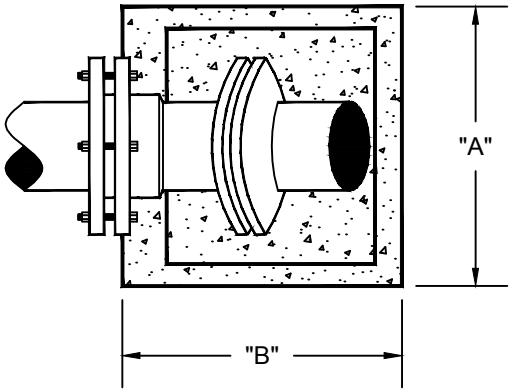
* FOR THRUST BLOCKS DIMENSIONS SEE TABLE ON STANDARD PLAN 134, SHEET 5

NOTES:

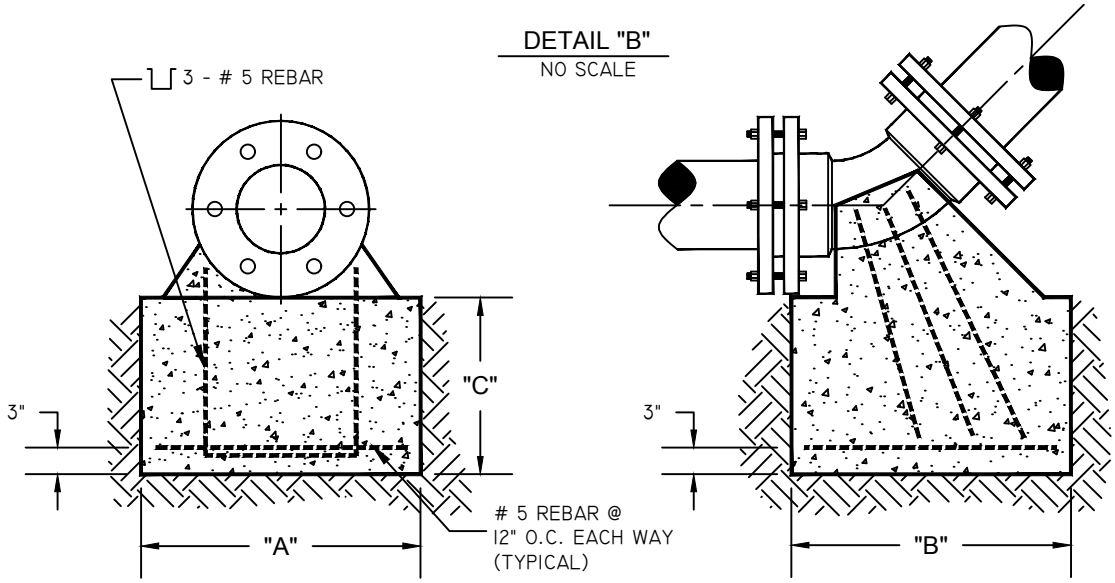
1. ALL THRUST BLOCKS TO BE TYPE 47-B MODIFIED POURED CONCRETE AS PER DIVISION II; "CONCRETE PAVING SPECIFICATIONS"; AND DIVISION VI "WATER MAINS".
2. ALL CONCRETE BLOCKING SHALL BE INSTALLED IN SUCH A MANNER THAT ALL PIPE AND FITTING JOINTS ARE ACCESSIBLE.
3. ALL FITTINGS ARE TO BE WRAPPED IN 8 MIL POLYETHYLENE.
4. ALL THRUST BLOCKS ARE TO BE POURED AGAINST UNDISTURBED SOIL.
5. IF SOIL OTHER THAN SANDY SOIL IS DISCOVERED DURING EXCAVATION, THE THRUST BLOCK SIZE SHALL BE VERIFIED BY THE ENGINEER.
6. TAPPING SLEEVES SHALL BE TREATED AS A TEE AND BLOCKED ACCORDINGLY

CITY OF GRAND ISLAND UTILITIES DEPARTMENT	REVISED: 1/03/2019 DRAWN BY: TDZ CHECKED BY: R.L.S.	CONCRETE BLOCKING FOR FITTINGS HORIZONTAL BLOCKING	PLAN 134 1 of 6

* FOR THRUST BLOCKS DIMENSIONS SEE TABLE ON STANDARD PLAN 134, SHEET 5



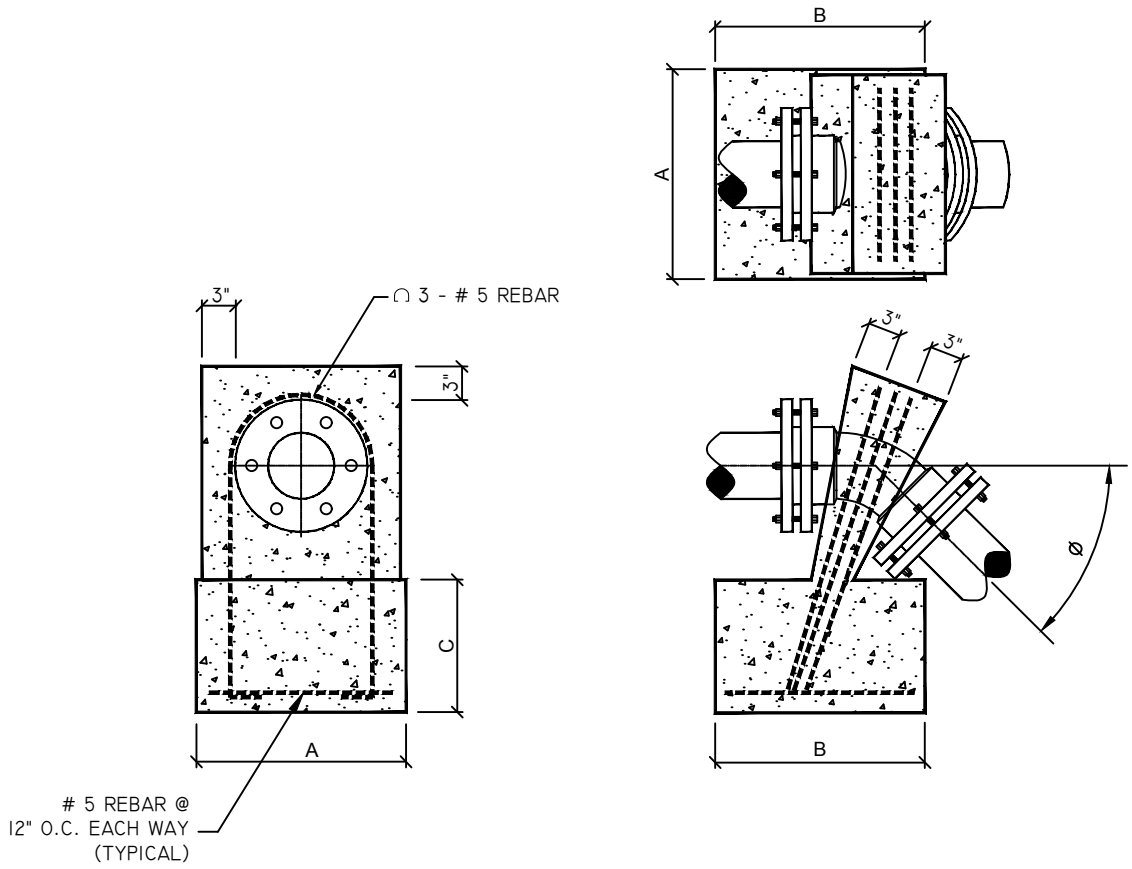
DETAIL "B"
NO SCALE



NOTES :

1. ALL THRUST BLOCKS TO BE TYPE 47-B MODIFIED POURED CONCRETE AS PER DIVISION II; "CONCRETE PAVING SPECIFICATIONS"; AND DIVISION VI "WATER MAINS".
2. ALL CONCRETE BLOCKING SHALL BE INSTALLED IN SUCH A MANNER THAT ALL PIPE AND FITTING JOINTS ARE ACCESSIBLE.
3. ALL FITTINGS ARE TO BE WRAPPED IN 8 MIL POLYETHYLENE.
4. ALL THRUST BLOCKS ARE TO BE POURED AGAINST UNDISTURBED SOIL.
5. ALL REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO A.S.T.M. A-305-507 AND SATISFY THE BENT TEST REQUIREMENTS FOR STRUCTURAL GRADE STEEL.
6. IF SOIL OTHER THAN SANDY SOIL IS DISCOVERED DURING EXCAVATION, THE THRUST BLOCK SIZE SHALL BE VERIFIED BY THE ENGINEER.

CITY OF GRAND ISLAND UTILITIES DEPARTMENT	REVISED: 1/03/2019 DRAWN BY: TDZ CHECKED BY: R.L.S.	CONCRETE BLOCKING FOR FITTINGS VERTICAL UP BLOCKS	PLAN 134 2 of 6



* FOR THRUST BLOCKS DIMENSIONS SEE TABLE ON STANDARD PLAN 134, SHEET 5

NOTES :

1. ALL THRUST BLOCKS TO BE TYPE 47-B MODIFIED POURED CONCRETE AS PER DIVISION II; "CONCRETE PAVING SPECIFICATIONS"; AND DIVISION VI "WATER MAINS".
2. ALL CONCRETE BLOCKING SHALL BE INSTALLED IN SUCH A MANNER THAT ALL PIPE AND FITTING JOINTS ARE ACCESSIBLE.
3. ALL FITTINGS ARE TO BE WRAPPED IN 8 MIL POLYETHYLENE.
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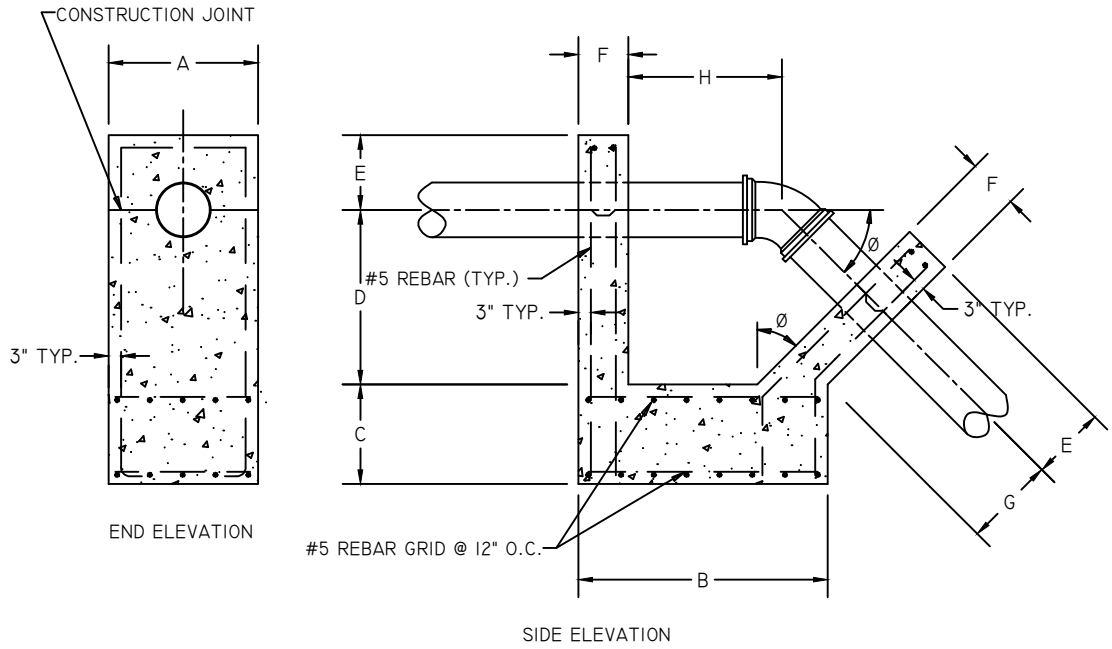
6. IF SOIL OTHER THAN SANDY SOIL IS DISCOVERED DURING EXCAVATION, THE THRUST BLOCK SIZE SHALL BE VERIFIED BY THE ENGINEER.

CITY OF GRAND ISLAND UTILITIES DEPARTMENT	REVISED: 1/03/2019 DRAWN BY: TDZ CHECKED BY: R.L.S.	CONCRETE BLOCKING FOR FITTINGS 4"-10" GRAVITY BLOCKS	PLAN 134 3 of 6



* FOR THRUST BLOCKS DIMENSIONS SEE TABLE ON STANDARD PLAN 134, SHEET 5

NOTES :

1. ALL THRUST BLOCKS TO BE TYPE 47-B MODIFIED POURED CONCRETE AS PER DIVISION II; "CONCRETE PAVING SPECIFICATIONS"; AND DIVISION VI "WATER MAINS".
2. ALL CONCRETE BLOCKING SHALL BE INSTALLED IN SUCH A MANNER THAT ALL PIPE AND FITTING JOINTS ARE ACCESSIBLE.
3. ALL FITTINGS ARE TO BE WRAPPED IN 8 MIL POLYETHYLENE.
4. ALL THRUST BLOCKS ARE TO BE POURED AGAINST UNDISTURBED SOIL.
5. ALL REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO A.S.T.M. A-305-507 AND SATISFY THE BENT TEST REQUIREMENTS FOR STRUCTURAL GRADE STEEL.
6. IF SOIL OTHER THAN SANDY SOIL IS DISCOVERED DURING EXCAVATION, THE THRUST BLOCK SIZE SHALL BE VERIFIED BY THE ENGINEER.

CITY OF GRAND ISLAND UTILITIES DEPARTMENT	REVISED: 1/06/2023 DRAWN BY: TDZ CHECKED BY: R.L.S.	CONCRETE BLOCKING FOR FITTINGS 12"-24" GRAVITY BLOCKS	PLAN 134 4 of 6

HORIZONTAL AND VERTICAL UP BLOCK DIMENSIONS
DESIGN PRESSURE - 200 PSI SOIL TYPE - SANDY SILT (2000 LBS/SF)

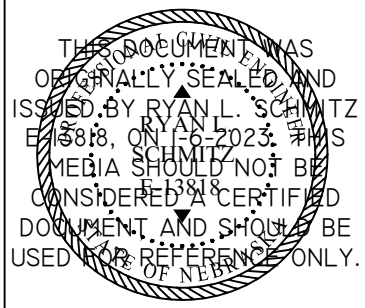
PIPE DIA.	TEES, WYES & PLUGS			90° BENDS			45° BENDS			22-1/2° BENDS			11-1/4° BENDS		
	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
4	16	16	18	19	19	18	14	14	18	12	12	18	12	12	18
6	23	23	20	28	28	20	20	20	20	14	14	20	12	12	20
8	30	30	22	36	36	22	27	27	22	19	19	22	13	13	22
10	37	37	24	44	44	24	33	33	24	23	23	24	17	17	24
12	44	44	26	53	53	26	39	39	26	28	28	26	20	20	26
14	51	51	29	61	61	29	45	45	29	32	32	29	23	23	29
16	59	59	31	70	70	31	51	51	31	37	37	31	26	26	31
18	66	66	33	78	78	33	57	57	33	41	41	33	29	29	33
20	73	73	36	86	86	36	64	64	36	45	45	36	32	32	36
24	87	87	39	103	103	39	76	76	39	54	54	39	38	38	39
30	108	108	44	128	128	44	94	94	44	67	67	44	48	48	44
36	129	129	48	153	153	48	113	113	48	80	80	48	57	57	48

ALL DIMENSIONS ARE IN INCHES

GRAVITY BLOCK DIMENSIONS
DESIGN PRESSURE - 200 PSI SOIL TYPE - SANDY SILT (2000 LBS/SF)

PIPE	45° BENDS									PIPE	22-1/2° BENDS								
DIA.	A	B	C	D	E	F	G	H	C.Y.	DIA.	A	B	C	D	E	F	G	H	C.Y.
4	35	35	24						0.63	4	26	26	24						0.34
6	50	50	24						1.31	6	37	37	24						0.71
8	66	66	24						2.25	8	49	49	24						1.22
10	72	72	30						3.38	10	53	53	30						1.83
12	36	80	30	24	18	12	12	47	4.78	12	36	68	30	27	18	12	15	23	2.59
14	36	94	30	27	18	12	15	63	6.42	14	36	75	30	27	18	12	15	23	3.47
16	36	108	30	33	18	12	18	79	8.30	16	36	76	30	33	18	12	18	32	4.49
18	42	121	30	36	18	12	20	94	10.43	18	42	85	30	36	18	12	20	42	5.64
20	48	135	30	36	18	12	20	108	12.80	20	48	95	30	36	18	12	20	52	6.92
24	52	146	36	51	20	15	24	114	18.26	24	52	99	36	41	20	15	24	52	9.88
30	58	183	36	55	24	15	30	155	28.08	30	58	129	36	46	24	15	30	81	15.20
36	64	220	36	60	28	15	36	197	40.23	36	64	156	36	52	28	15	36	110	21.77

ALL DIMENSIONS ARE IN INCHES (C.Y. = CUBIC YARDS OF CONCRETE REQUIRED)



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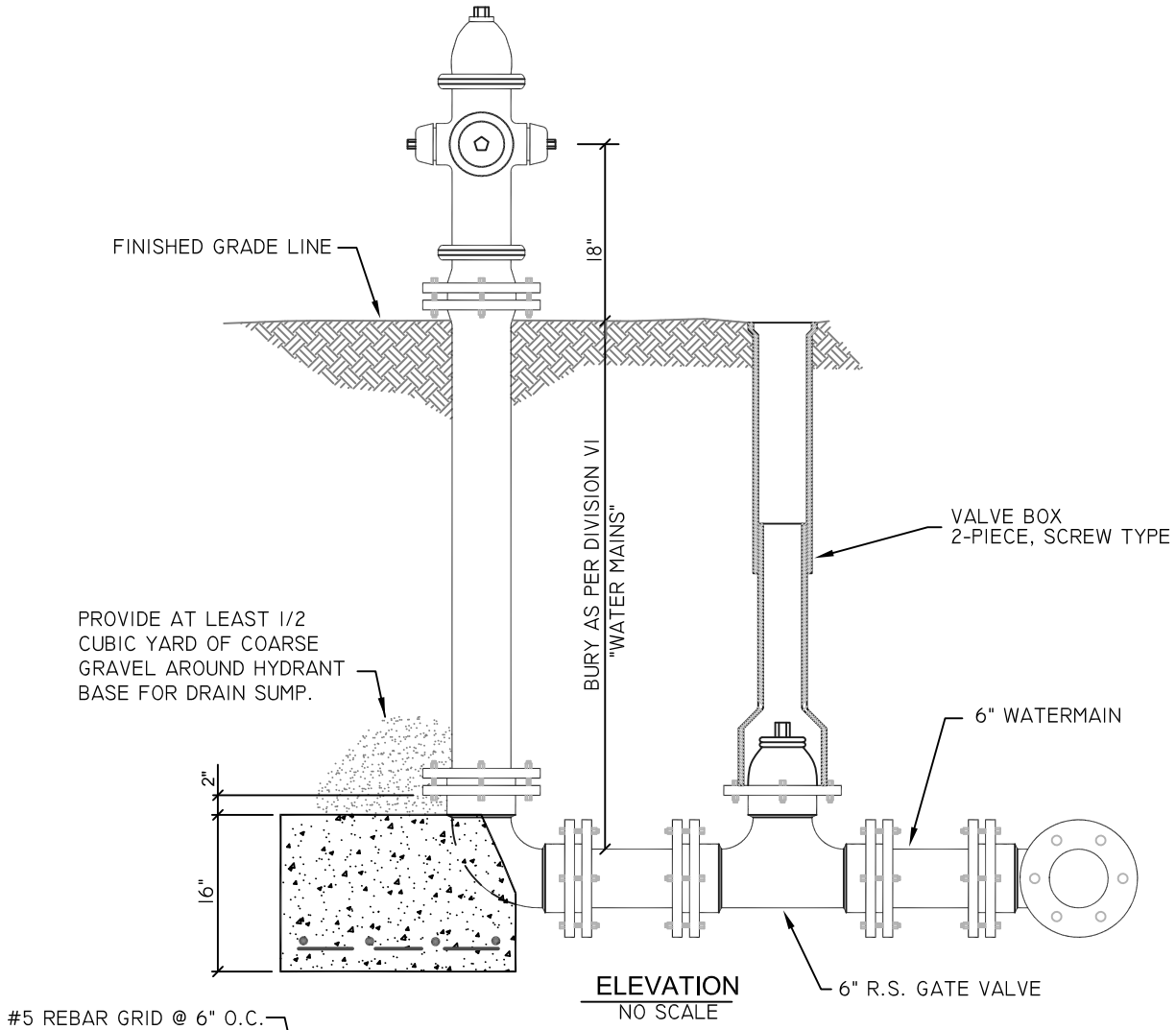
CITY OF GRAND ISLAND
UTILITIES DEPARTMENT

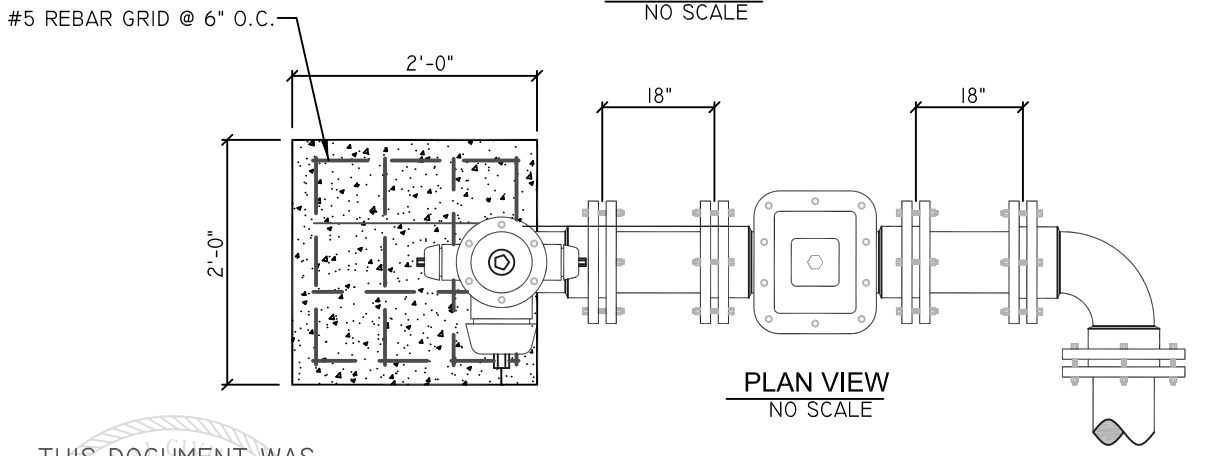
REVISED: 1/6/2023
DRAWN BY: TDZ
CHECKED BY: R.L.S.

CONCRETE BLOCKING FOR FITTINGS
HORZ. & VERT. DIMENSIONS

PLAN 134
5 of 6



ELEVATION
NO SCALE

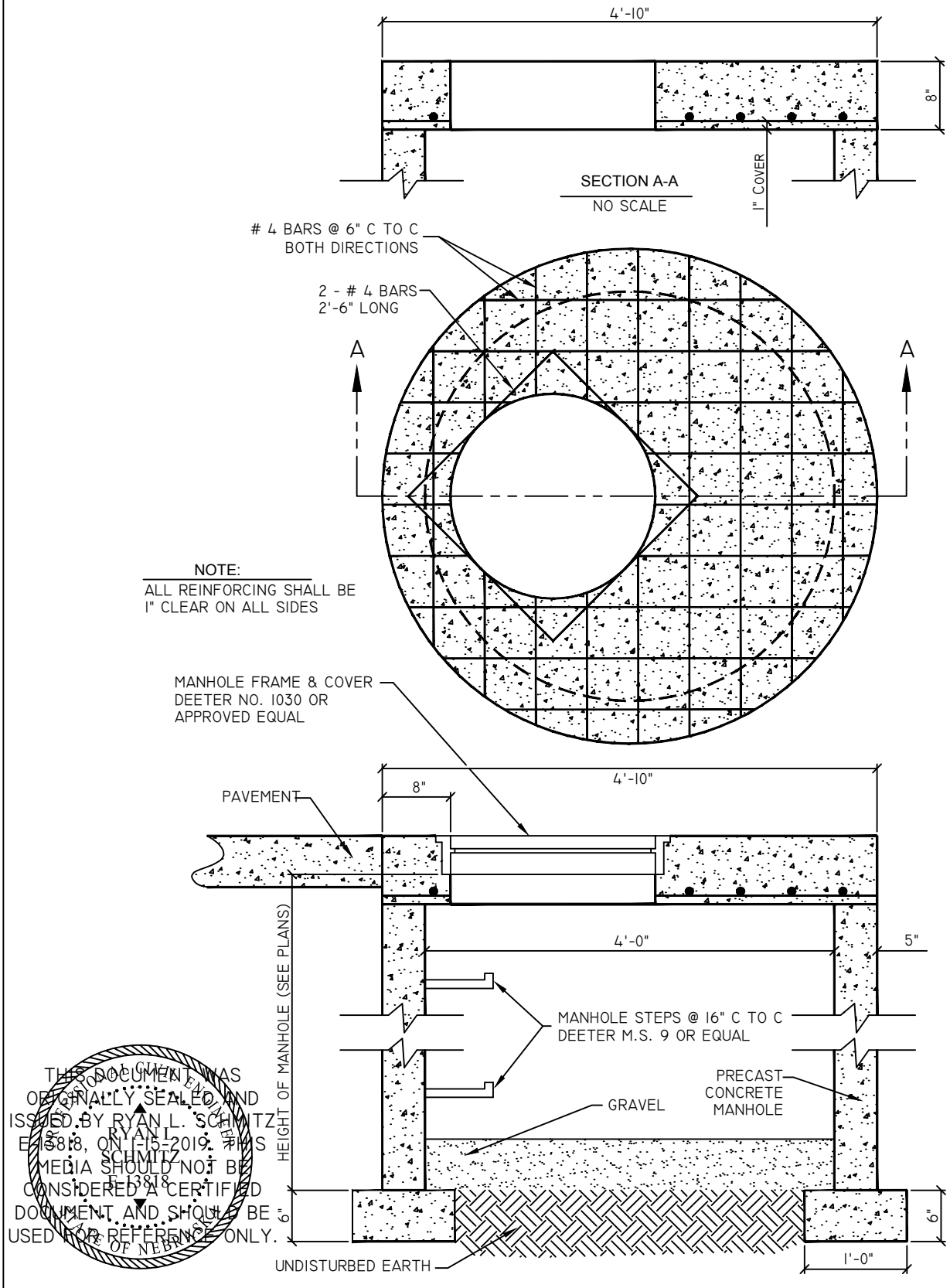


PLAN VIEW
NO SCALE

NOTES :

1. ALL THRUST BLOCKS TO BE TYPE 47-B MODIFIED POURED CONCRETE AS PER DIVISION II; "CONCRETE PAVING SPECIFICATIONS"; AND DIVISION VI "WATER MAINS".
2. ALL CONCRETE BLOCKING SHALL BE INSTALLED IN SUCH A MANNER THAT ALL PIPE AND FITTING JOINTS ARE ACCESSIBLE.
3. ALL FITTINGS ARE TO BE WRAPPED IN 8 MIL POLYETHYLENE.
4. ALL THRUST BLOCKS ARE TO BE POURED AGAINST UNDISTURBED SOIL.

CITY OF GRAND ISLAND UTILITIES DEPARTMENT	REVISED: 12/11/2019 DRAWN BY: TDZ CHECKED BY: R.L.S.	CONCRETE BLOCKING FOR FITTINGS FIRE HYDRANT BLOCKING	PLAN 134 6 of 6



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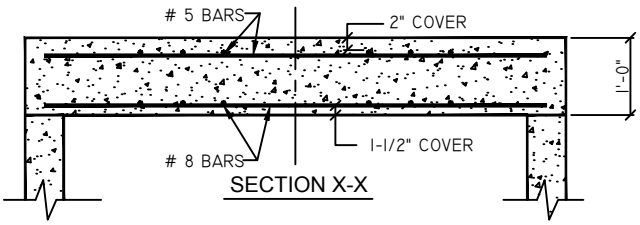
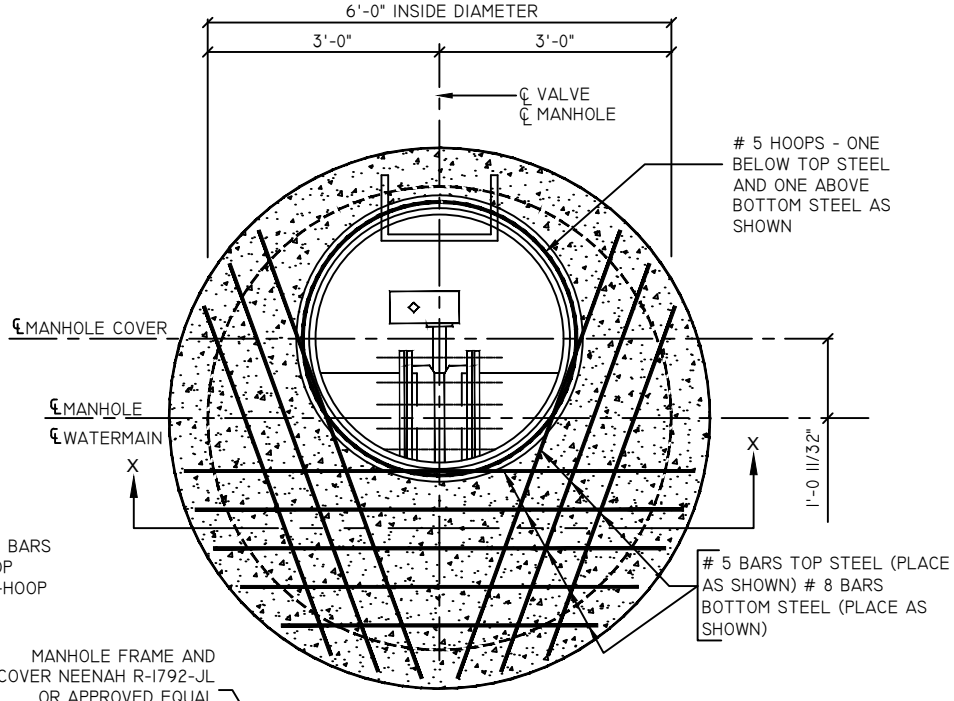
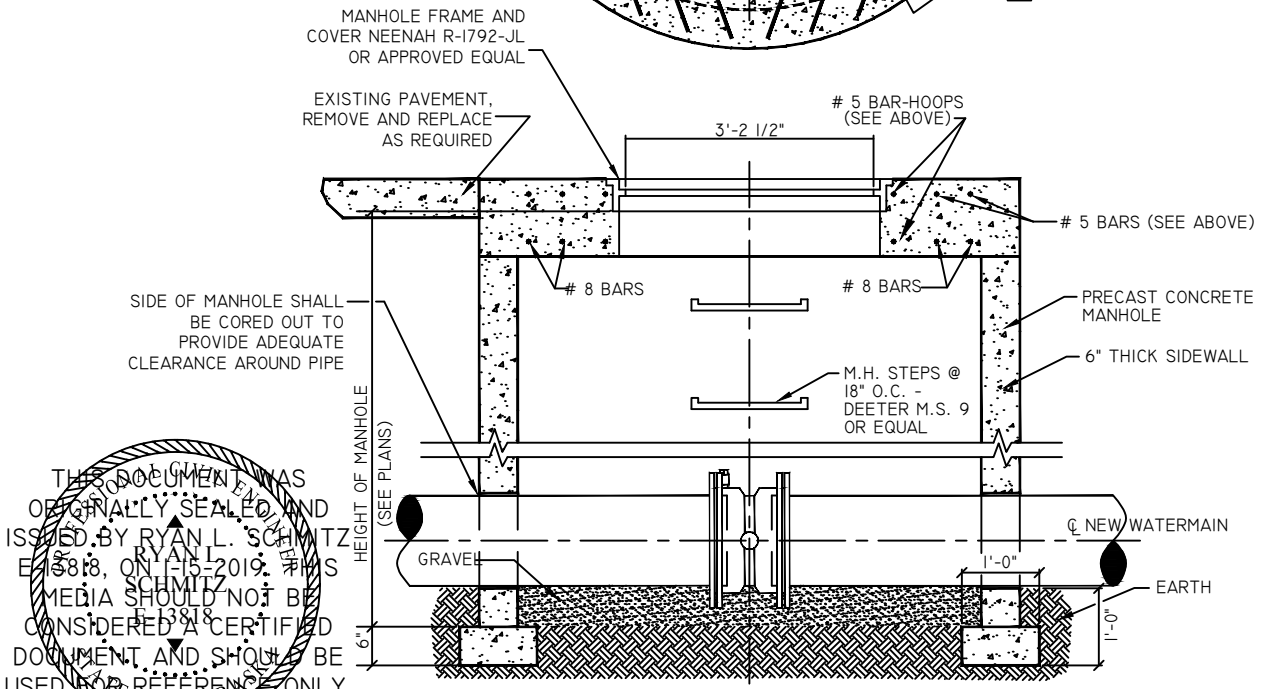
RYAN L. SCHMITZ E-13818 STATE OF NEBRASKA

CITY OF GRAND ISLAND UTILITIES DEPARTMENT	REVISED: 1/07/2019 DRAWN BY: TDZ CHECKED BY: R.L.S.	STANDARD WATER VALVE MANHOLE FOR 8" OR SMALLER VALVES	PLAN 135



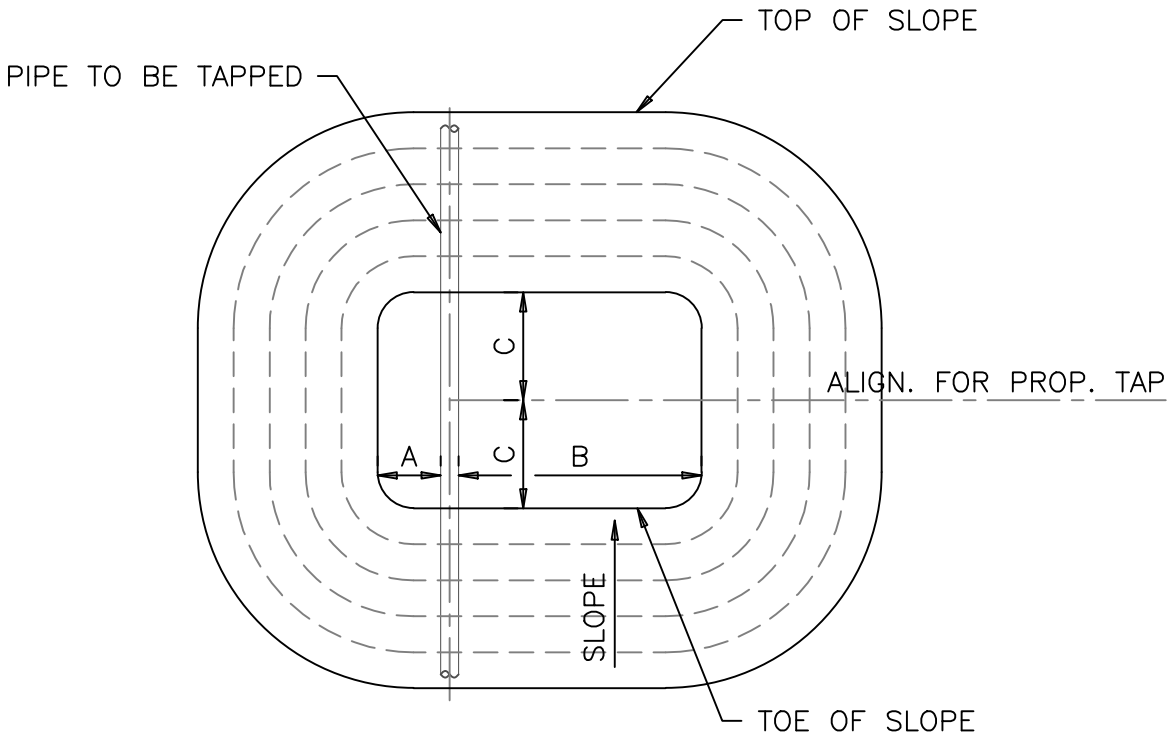
SECTION X-X



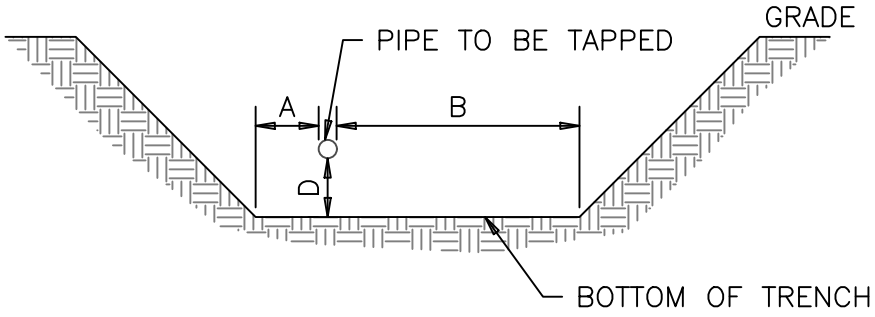


CITY OF GRAND ISLAND UTILITIES DEPARTMENT	REVISED: 1/7/2019 DRAWN BY: TDZ CHECKED BY: R.L.S.	STANDARD WATER VALVE MANHOLE FOR 10" OR LARGER VALVES	PLAN 136

NOTE:
ALL TRENCH SLOPES AND/OR SHORING SYSTEMS SHALL MEET OR EXCEED O.S.H.A. STANDARDS



PLAN VIEW
NO SCALE



PROFILE VIEW
NO SCALE

TAP EXCAVATION MINIMUM DIMENSIONS				
TAP SIZE	A	B	C	D
2" AND SMALLER TAPS	2'–0"	6'–0"	3'–0"	1'–0"
3" – 12" TAPS	2'–0"	8'–0"	3'–0"	1'–0"
LARGER THAN 12" TAPS	2'–0"	12'–0"	5'–0"	1'–0"

CITY OF GRAND ISLAND
UTILITIES DEPARTMENT

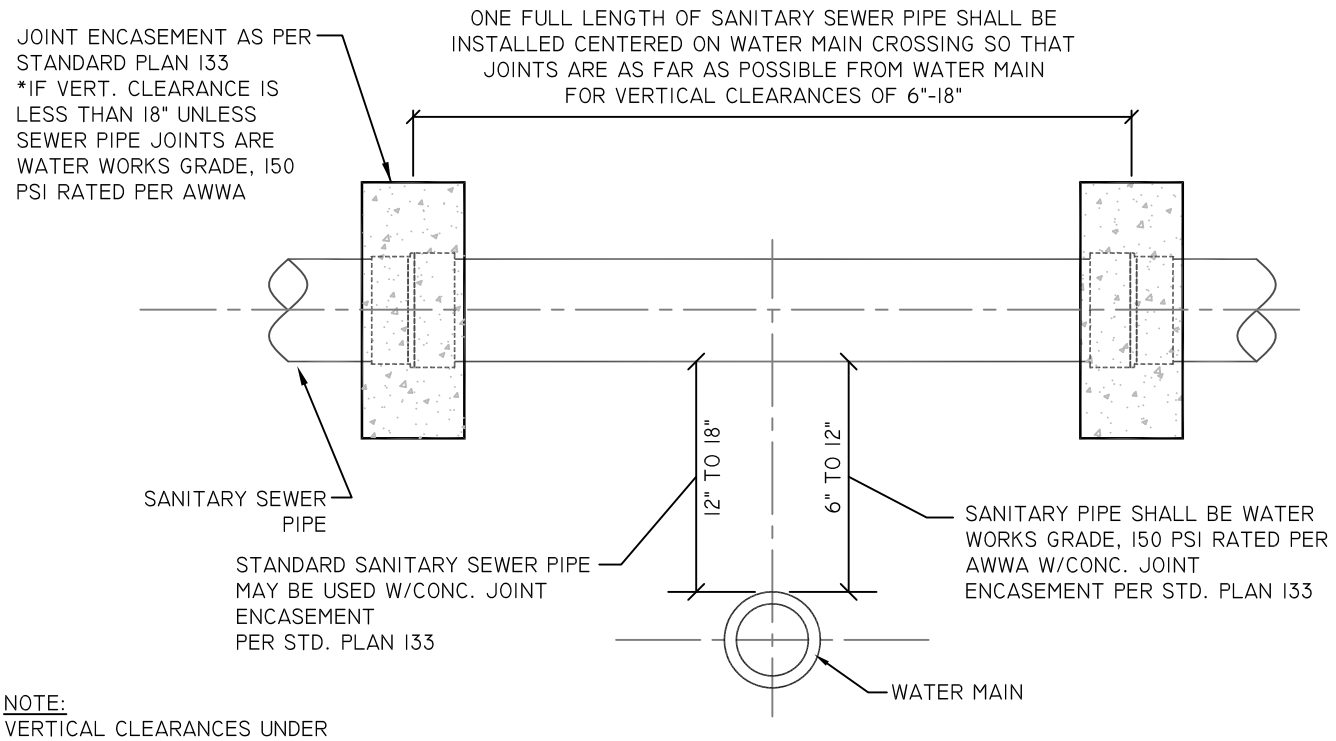
REVISED: 1/26/2021
DRAWN BY: TDZ
CHECKED BY: R.L.S.

WATER MAIN TAP EXCAVATION

PLAN 137
1 of 1

SANITARY SEWER CROSSING OVER WATER MAIN

NO SCALE

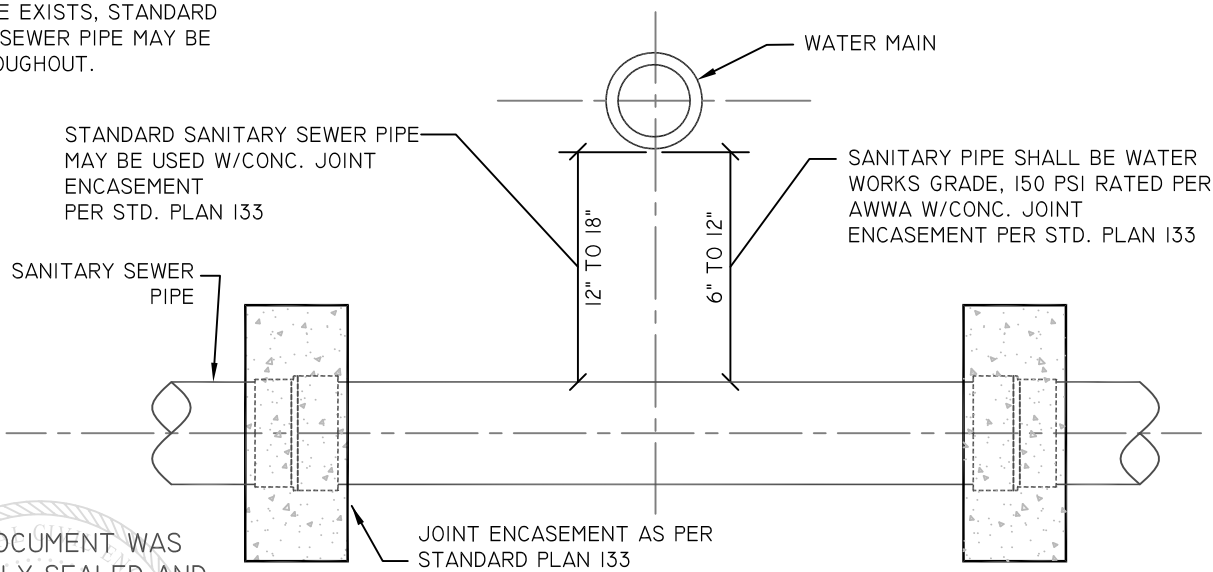


NOTE:
VERTICAL CLEARANCES UNDER 18" SHALL REQUIRE APPROVAL FROM THE UTILITIES DEPT.

NOTE:
WHEN MORE THAN 18" OF VERT. CLEARANCE EXISTS, STANDARD SANITARY SEWER PIPE MAY BE USED THROUGHOUT.

SANITARY SEWER CROSSING UNDER WATER MAIN

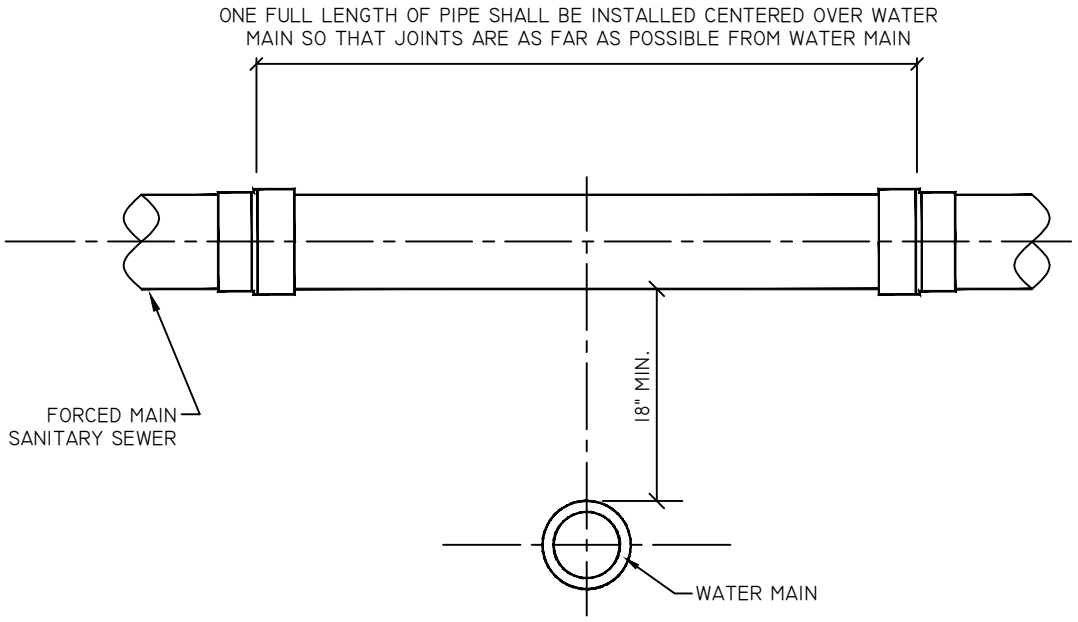
NO SCALE



CITY OF GRAND ISLAND UTILITIES DEPARTMENT	REVISED: 12/11/2019 DRAWN BY: TDZ CHECKED BY: R.L.S.	SEWER - WATER MAIN CROSSING DETAILS	PLAN 138 1 of 4

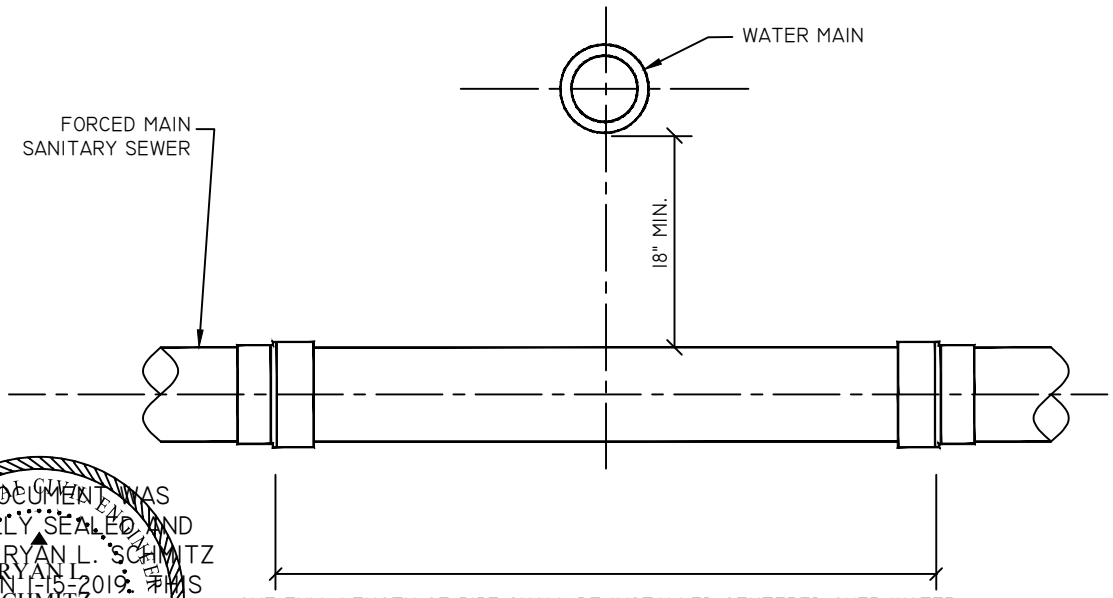
FORCED MAIN SANITARY SEWER CROSSING OVER WATER MAIN

NO SCALE



FORCED MAIN SANITARY SEWER CROSSING UNDER WATER MAIN

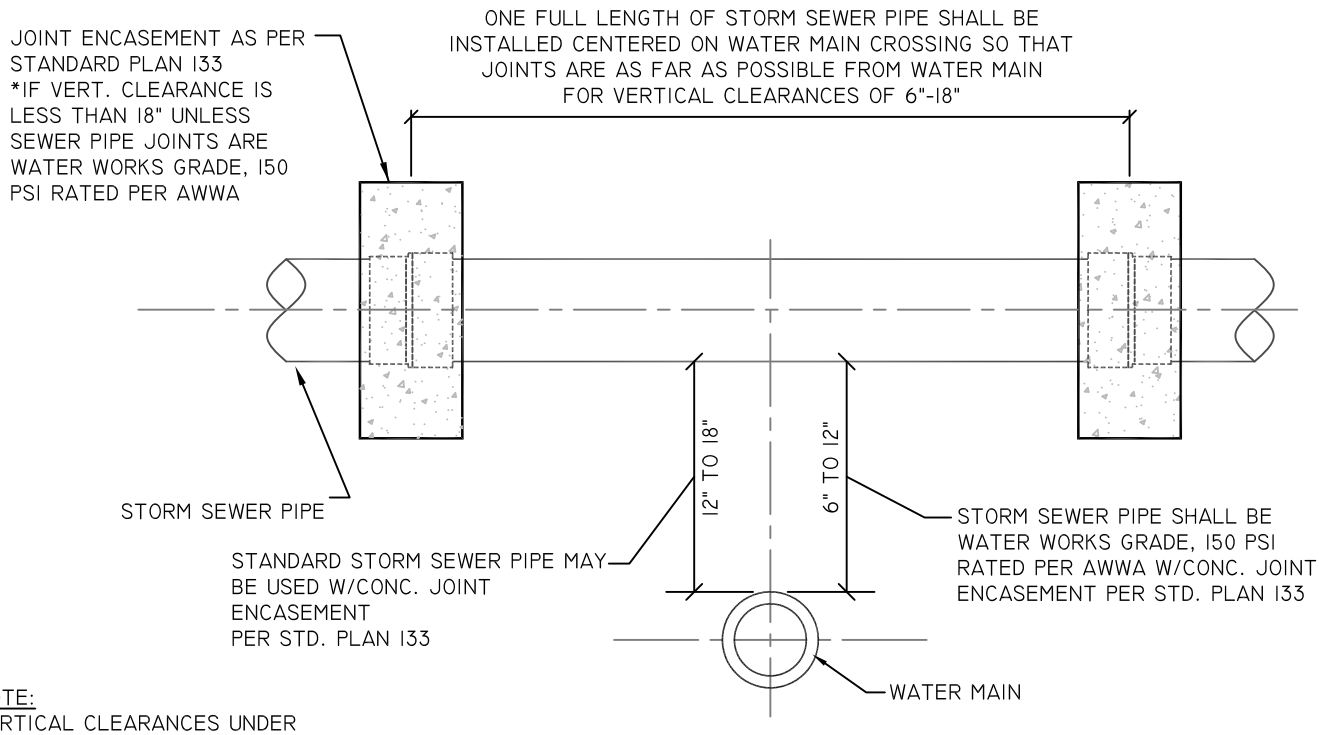
NO SCALE



CITY OF GRAND ISLAND UTILITIES DEPARTMENT	REVISED: 1/7/2019 DRAWN BY: TDZ CHECKED BY: R.L.S.	SEWER - WATER MAIN CROSSING DETAILS	PLAN 138 2 of 4

STORM SEWER CROSSING OVER WATER MAIN

NO SCALE

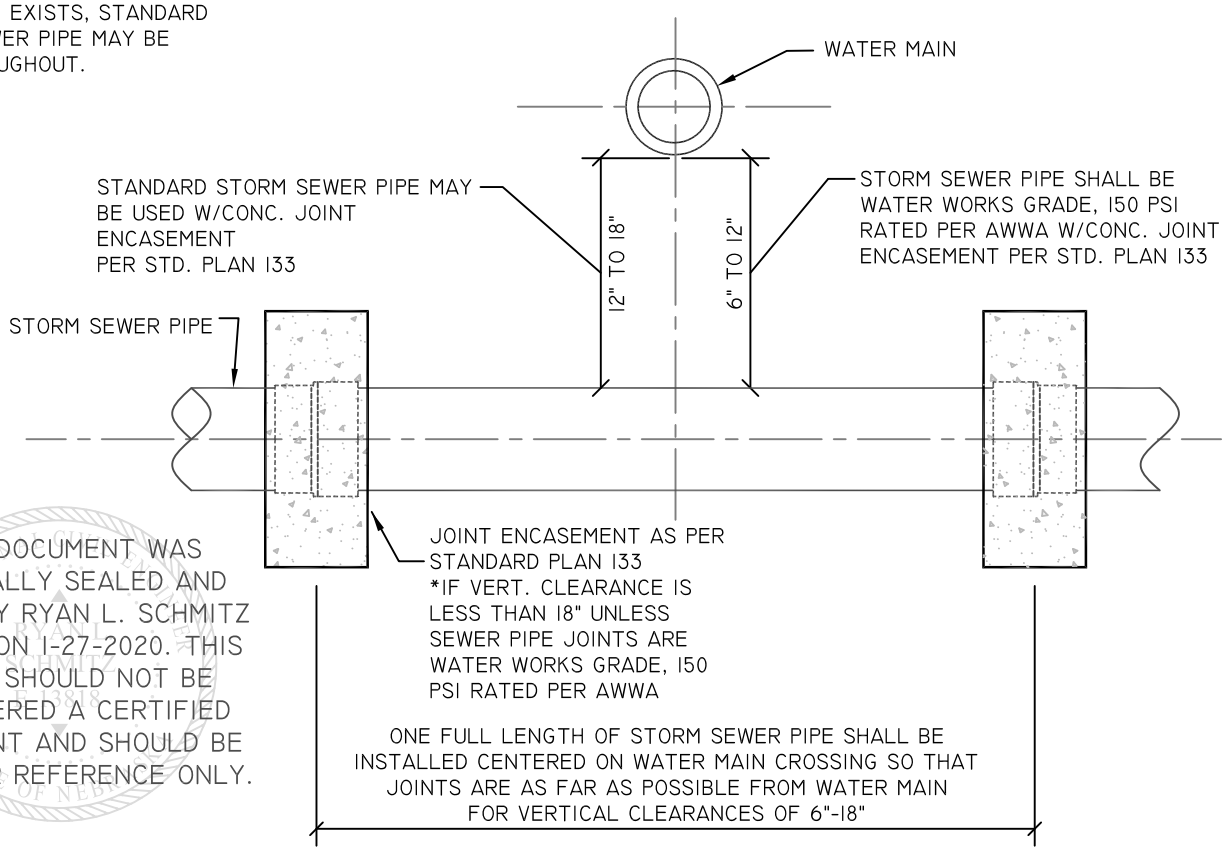


NOTE:
VERTICAL CLEARANCES UNDER 18" SHALL REQUIRE APPROVAL FROM THE UTILITIES DEPT.

NOTE:
WHEN MORE THAN 18" OF VERT. CLEARANCE EXISTS, STANDARD STORM SEWER PIPE MAY BE USED THROUGHOUT.

STORM SEWER CROSSING UNDER WATER MAIN

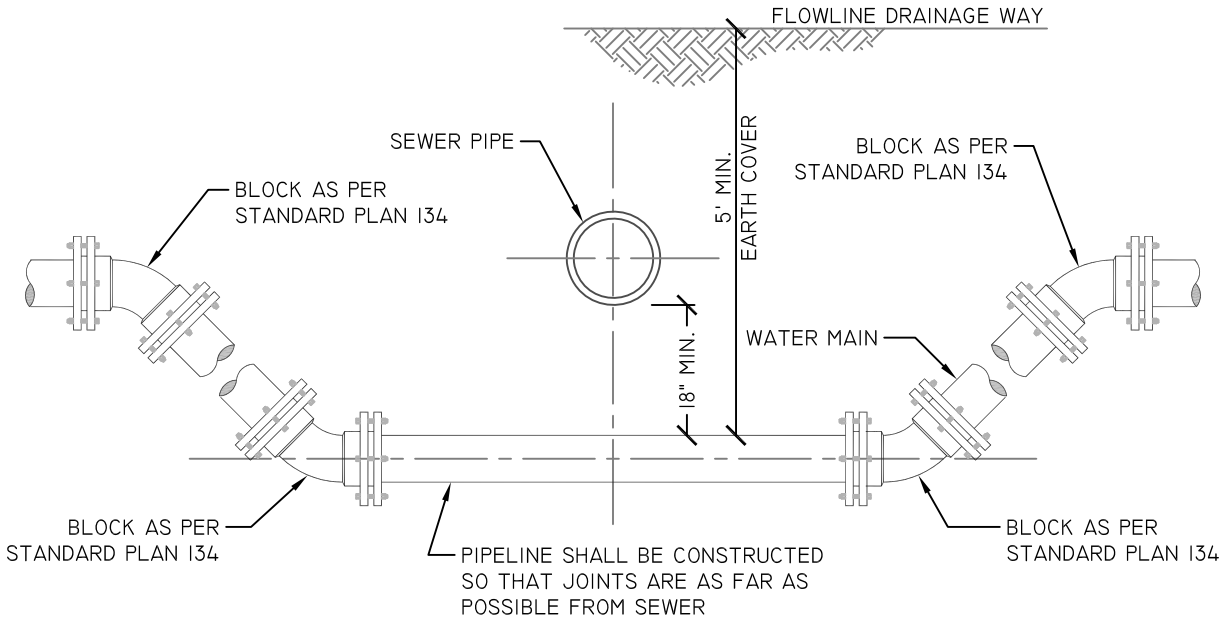
NO SCALE



CITY OF GRAND ISLAND UTILITIES DEPARTMENT	REVISED: 12/11/2019 DRAWN BY: TDZ CHECKED BY: R.L.S.	SEWER - WATER MAIN CROSSING DETAILS	PLAN 138 3 of 4

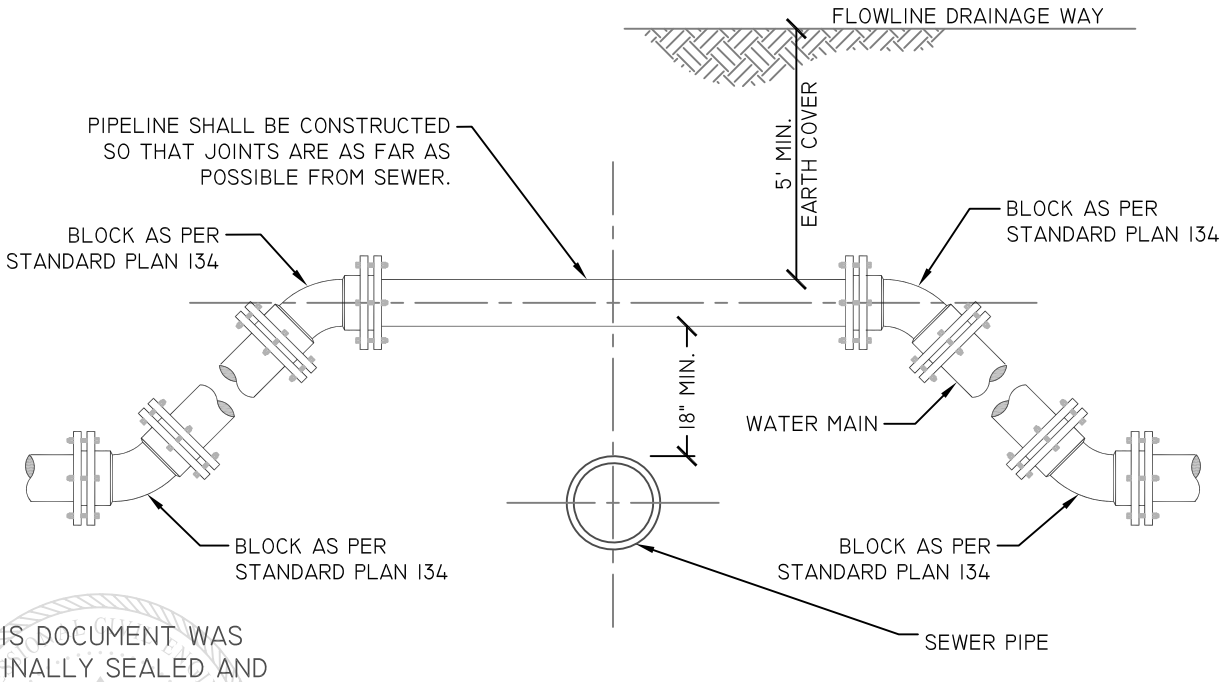
WATER MAIN CROSSING UNDER SEWER / DRAINAGE WAY

NO SCALE



WATER MAIN CROSSING OVER SEWER / DRAINAGE WAY

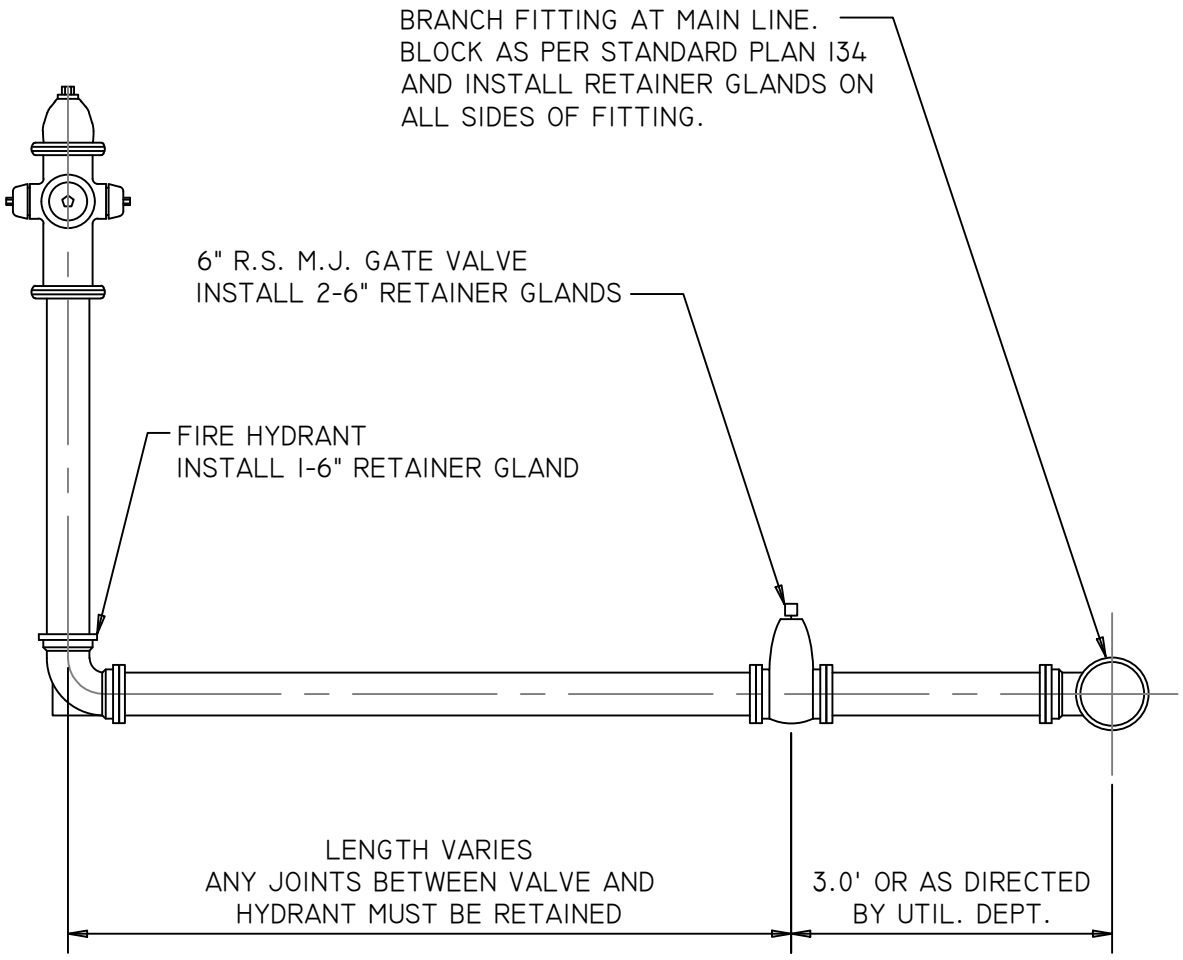
NO SCALE



NOTE:

1. IN BOTH CONFIGURATIONS, THE USE OF RETAINER GLANDS INSTEAD OF OR IN ADDITION TO THRUST BLOCKS MAY BE ACCEPTABLE AT THE DIRECTION OF THE UTILITIES DEPT.
2. FOR 12" AND LARGER WATER MAINS, 22 $\frac{1}{2}$° BENDS SHALL BE USED FOR VERTICAL DEFLECTIONS

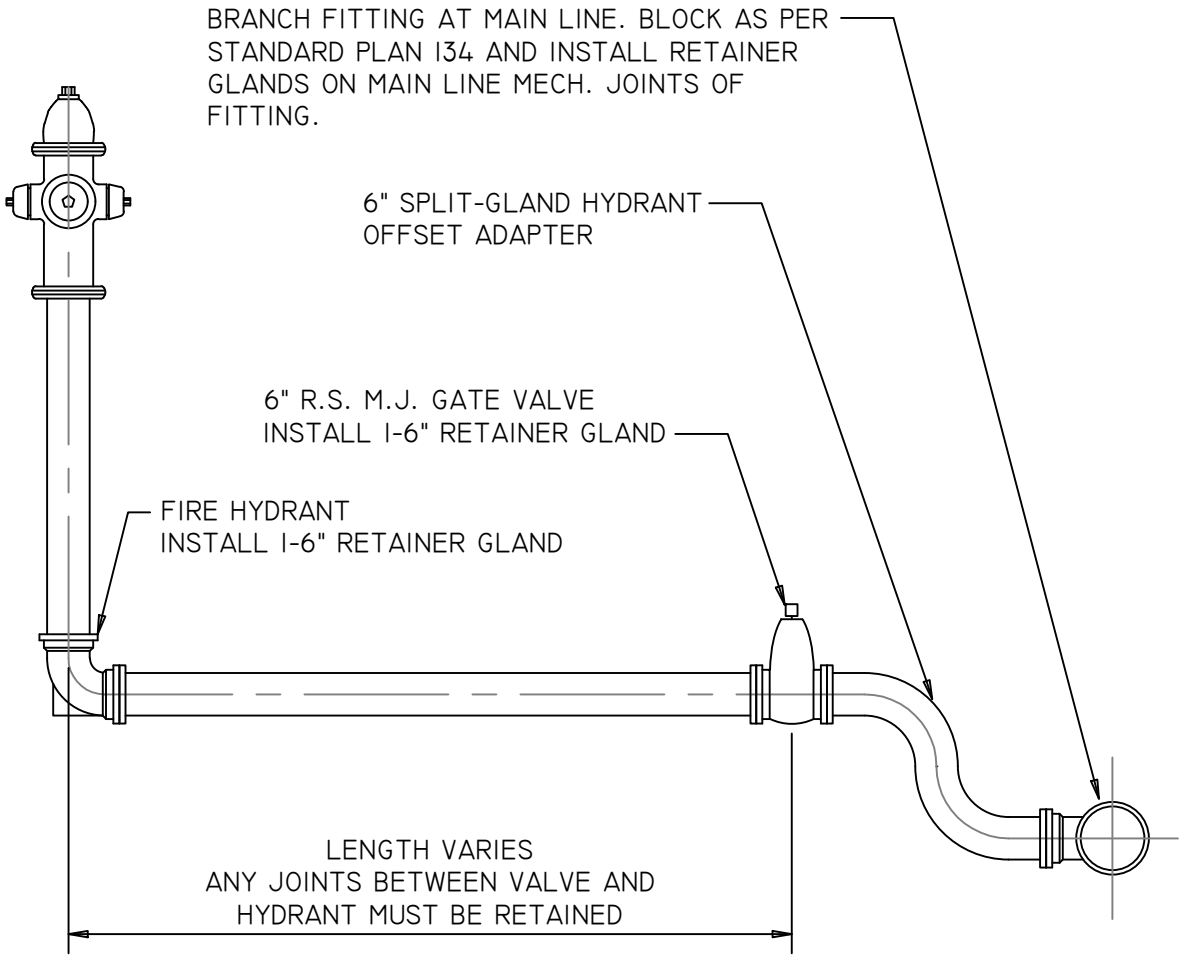
CITY OF GRAND ISLAND UTILITIES DEPARTMENT	REVISED: 12/11/2019 DRAWN BY: TDZ CHECKED BY: R.L.S.	SEWER - WATER MAIN CROSSING DETAILS	PLAN 138 4 of 4



NOTES:

1. CONCRETE THRUST BLOCKS MAY BE USED ON FITTINGS DOWNSTREAM OF BRANCH FITTING AT THE SOLE DISCRETION AND DIRECTION OF THE UTILITIES DEPT. THRUST BLOCK ON BRANCH FITTING MAY BE ELIMINATED ONLY IF MAIN LINE PIPE IS RESTRAINED JOINT PIPE THROUGHOUT AND WITH APPROVAL OF THE UTILITIES DEPT.
2. EACH FIRE HYDRANT INSTALLATION SHALL BE ITEMIZED FOR PAYMENT AT CONTRACT UNIT PRICES FOR ALL INDIVIDUAL MATERIAL AND FITTINGS REQUIRED TO COMPLETE THE ASSEMBLY.
3. THE CONTRACTOR SHALL SET OR TURN ALL FIRE HYDRANTS SO THE PUMPER NOZZLE FACES THE DRIVEN ROADWAY OR AS OTHERWISE DIRECTED BY THE UTILITIES DEPARTMENT.
4. WHERE FIRE HYDRANTS ARE LOCATED IN A HARD SURFACED ISLAND OR PARKING AREA, THE CONTRACTOR SHALL PROVIDE AN 18" BLOCK-OUT AROUND THE HYDRANT BARREL FILLED WITH COMPACTED SOIL.
5. FIRE HYDRANTS SHALL BE INSTALLED A MINIMUM OF 18" FROM THE EDGE OF ANY SIDEWALK AND A MINIMUM OF 6' FROM ANY DRIVING LANE.
6. FIRE HYDRANT SHALL BE SET ON COMMON PAVER BLOCK TO ESTABLISH CORRECT ELEVATION.

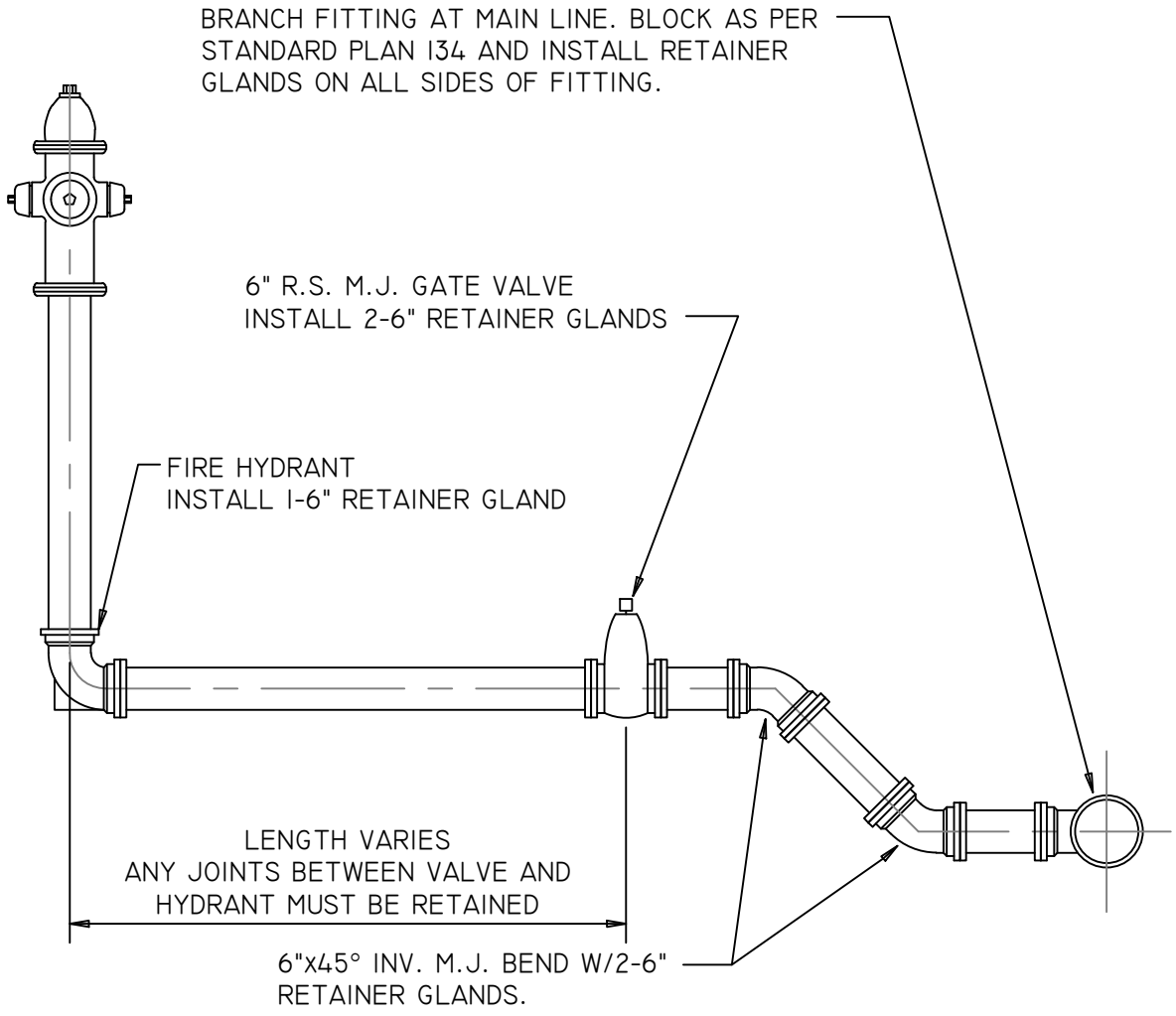
CITY OF GRAND ISLAND UTILITIES DEPARTMENT	REVISED: 1/8/2024 DRAWN BY: TDZ CHECKED BY: J.L.R.	FIRE HYDRANT TYPICAL INSTALLATION TYPE 1	PLAN 140 1 of 5



NOTES:

1. CONCRETE THRUST BLOCKS MAY BE USED ON FITTINGS DOWNSTREAM OF BRANCH FITTING AT THE SOLE DISCRETION AND DIRECTION OF THE UTILITIES DEPT. THRUST BLOCK ON BRANCH FITTING MAY BE ELIMINATED ONLY IF MAIN LINE PIPE IS RESTRAINED JOINT PIPE THROUGHOUT AND WITH APPROVAL OF THE UTILITIES DEPT.
2. EACH FIRE HYDRANT INSTALLATION SHALL BE ITEMIZED FOR PAYMENT AT CONTRACT UNIT PRICES FOR ALL INDIVIDUAL MATERIAL AND FITTINGS REQUIRED TO COMPLETE THE ASSEMBLY.
3. THE CONTRACTOR SHALL SET OR TURN ALL FIRE HYDRANTS SO THE PUMPER NOZZLE FACES THE DRIVEN ROADWAY OR AS OTHERWISE DIRECTED BY THE UTILITIES DEPARTMENT.
4. WHERE FIRE HYDRANTS ARE LOCATED IN A HARD SURFACED ISLAND OR PARKING AREA, THE CONTRACTOR SHALL PROVIDE AN 18" BLOCK-OUT AROUND THE HYDRANT BARREL FILLED WITH COMPACTED SOIL.
5. FIRE HYDRANTS SHALL BE INSTALLED A MINIMUM OF 18" FROM THE EDGE OF ANY SIDEWALK AND A MINIMUM OF 6' FROM ANY DRIVING LANE.
6. FIRE HYDRANT SHALL BE SET ON COMMON PAVER BLOCK TO ESTABLISH CORRECT ELEVATION.
7. FITTINGS AND ETC... FOR VERTICAL ADJUSTMENT MAY BE USED DOWNSTREAM OF THE HYDRANT AUXILARY VALVE WITH APPROVAL OF THE UTILITIES DEPT.

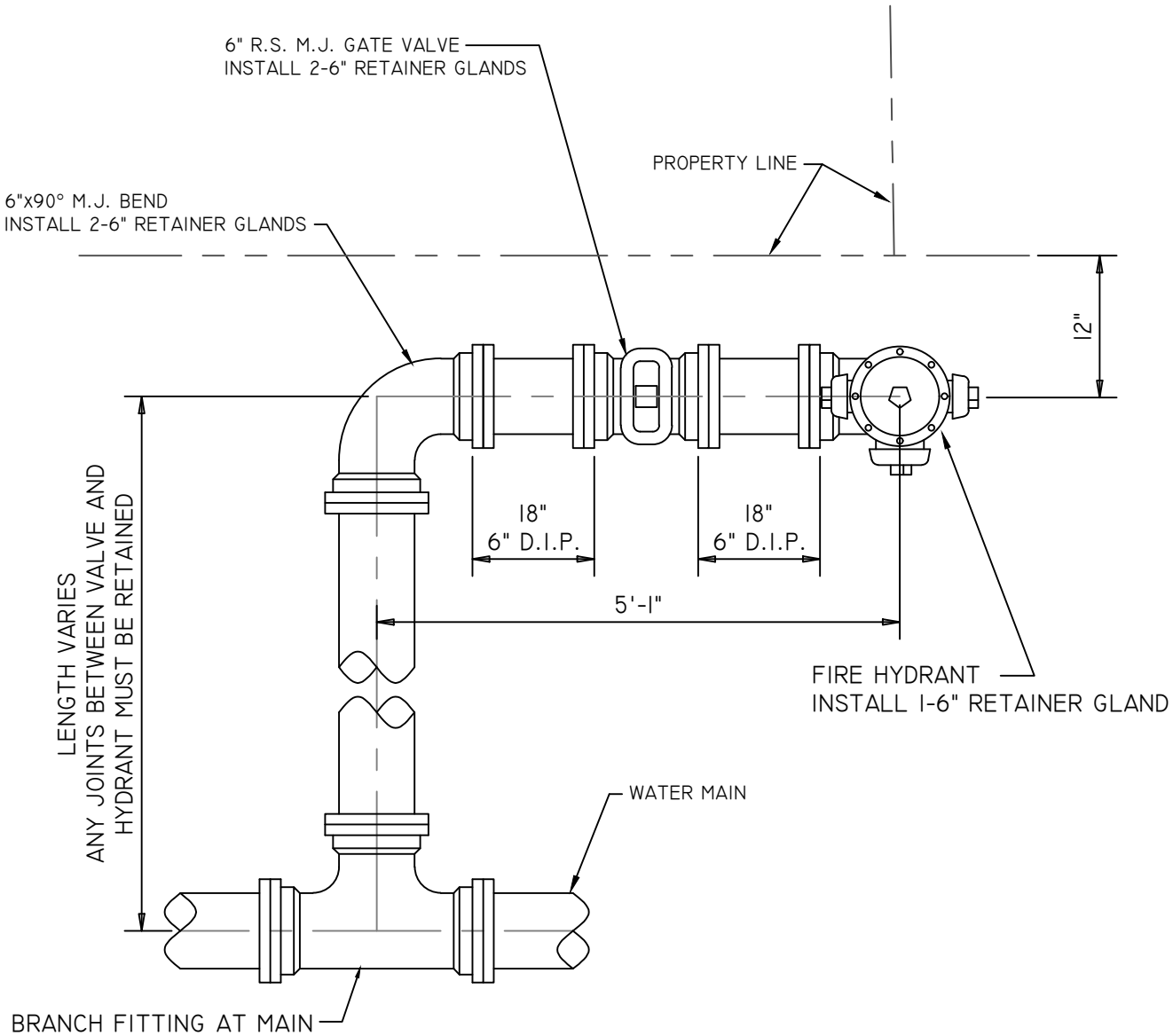
CITY OF GRAND ISLAND UTILITIES DEPARTMENT	REVISED: 1/8/2024 DRAWN BY: TDZ CHECKED BY: J.L.R.	FIRE HYDRANT TYPICAL INSTALLATION TYPE 2	PLAN 140 2 of 5



NOTES:

1. CONCRETE THRUST BLOCKS MAY BE USED ON FITTINGS DOWNSTREAM OF BRANCH FITTING AT THE SOLE DISCRETION AND DIRECTION OF THE UTILITIES DEPT. THRUST BLOCK ON BRANCH FITTING MAY BE ELIMINATED ONLY IF MAIN LINE PIPE IS RESTRAINED JOINT PIPE THROUGHOUT AND WITH APPROVAL OF THE UTILITIES DEPT.
2. EACH FIRE HYDRANT INSTALLATION SHALL BE ITEMIZED FOR PAYMENT AT CONTRACT UNIT PRICES FOR ALL INDIVIDUAL MATERIAL AND FITTINGS REQUIRED TO COMPLETE THE ASSEMBLY.
3. THE CONTRACTOR SHALL SET OR TURN ALL FIRE HYDRANTS SO THE PUMPER NOZZLE FACES THE DRIVEN ROADWAY OR AS OTHERWISE DIRECTED BY THE UTILITIES DEPARTMENT.
4. WHERE FIRE HYDRANTS ARE LOCATED IN A HARD SURFACED ISLAND OR PARKING AREA, THE CONTRACTOR SHALL PROVIDE AN 18" BLOCK-OUT AROUND THE HYDRANT BARREL FILLED WITH COMPACTED SOIL.
5. FIRE HYDRANTS SHALL BE INSTALLED A MINIMUM OF 18" FROM THE EDGE OF ANY SIDEWALK AND A MINIMUM OF 6' FROM ANY DRIVING LANE.
6. FIRE HYDRANT SHALL BE SET ON COMMON PAVER BLOCK TO ESTABLISH CORRECT ELEVATION.
7. FITTINGS AND ETC... FOR VERTICAL ADJUSTMENT MAY BE USED DOWNSTREAM OF THE HYDRANT AUXILARY VALVE WITH APPROVAL OF THE UTILITIES DEPT.

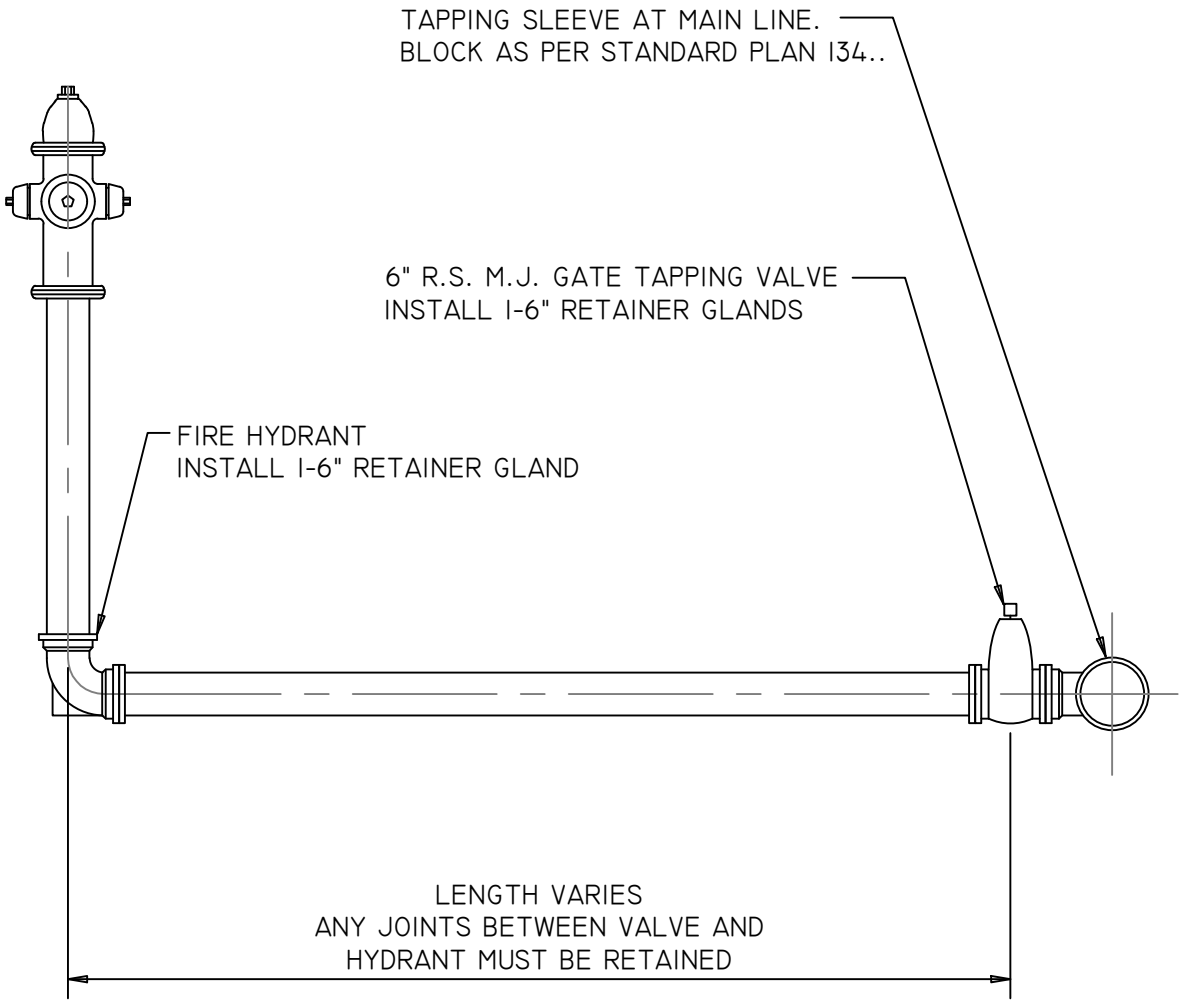
CITY OF GRAND ISLAND UTILITIES DEPARTMENT	REVISED: 1/8/2024 DRAWN BY: TDZ CHECKED BY: J.L.R.	FIRE HYDRANT TYPICAL INSTALLATION TYPE 3	PLAN 140 3 of 5



NOTES:

1. CONCRETE THRUST BLOCKS MAY BE USED ON FITTINGS DOWNSTREAM OF BRANCH FITTING AT THE SOLE DISCRETION AND DIRECTION OF THE UTILITIES DEPT. THRUST BLOCK ON BRANCH FITTING MAY BE ELIMINATED ONLY IF MAIN LINE PIPE IS RESTRAINED JOINT PIPE THROUGHOUT AND WITH APPROVAL OF THE UTILITIES DEPT.
2. EACH FIRE HYDRANT INSTALLATION SHALL BE ITEMIZED FOR PAYMENT AT CONTRACT UNIT PRICES FOR ALL INDIVIDUAL MATERIAL AND FITTINGS REQUIRED TO COMPLETE THE ASSEMBLY.
3. THE CONTRACTOR SHALL SET OR TURN ALL FIRE HYDRANTS SO THE PUMPER NOZZLE FACES THE DRIVEN ROADWAY OR AS OTHERWISE DIRECTED BY THE UTILITIES DEPARTMENT.
4. WHERE FIRE HYDRANTS ARE LOCATED IN A HARD SURFACED ISLAND OR PARKING AREA, THE CONTRACTOR SHALL PROVIDE AN 18" BLOCK-OUT AROUND THE HYDRANT BARREL FILLED WITH COMPACTED SOIL.
5. FIRE HYDRANTS SHALL BE INSTALLED A MINIMUM OF 18" FROM THE EDGE OF ANY SIDEWALK AND A MINIMUM OF 6' FROM ANY DRIVING LANE.
6. FIRE HYDRANT SHALL BE SET ON COMMON PAVER BLOCK TO ESTABLISH CORRECT ELEVATION.

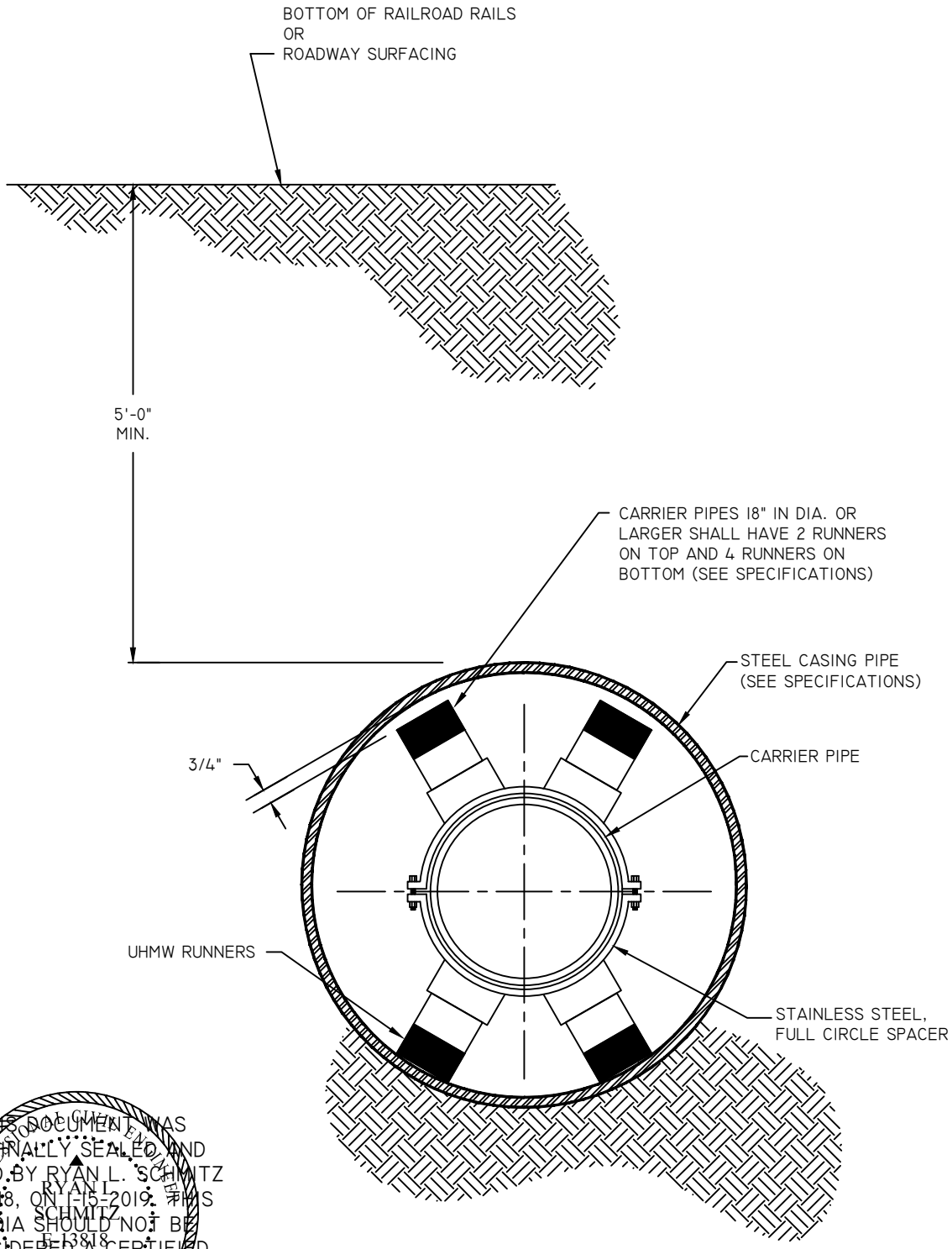
CITY OF GRAND ISLAND UTILITIES DEPARTMENT	REVISED: 1/8/2024 DRAWN BY: TDZ CHECKED BY: J.L.R.	FIRE HYDRANT TYPICAL INSTALLATION TYPE 4	PLAN 140 4 of 5



NOTES:

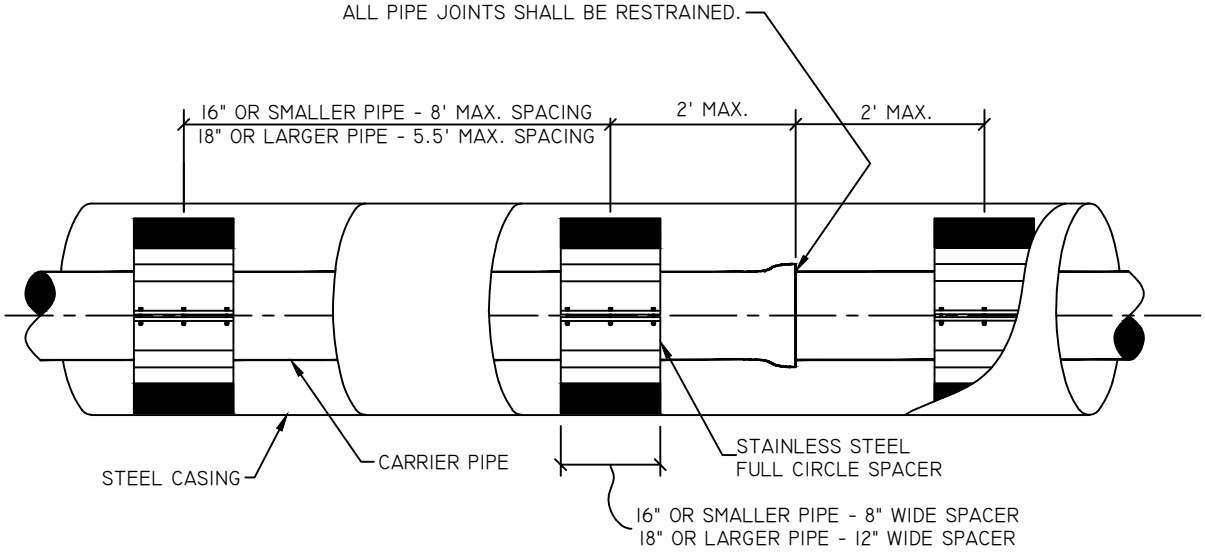
1. CONCRETE THRUST BLOCKS MAY BE USED ON FITTINGS DOWNSTREAM OF BRANCH FITTING AT THE SOLE DISCRETION AND DIRECTION OF THE UTILITIES DEPT. THRUST BLOCK ON BRANCH FITTING MAY BE ELIMINATED ONLY IF MAIN LINE PIPE IS RESTRAINED JOINT PIPE THROUGHOUT AND WITH APPROVAL OF THE UTILITIES DEPT.
2. EACH FIRE HYDRANT INSTALLATION SHALL BE ITEMIZED FOR PAYMENT AT CONTRACT UNIT PRICES FOR ALL INDIVIDUAL MATERIAL AND FITTINGS REQUIRED TO COMPLETE THE ASSEMBLY.
3. THE CONTRACTOR SHALL SET OR TURN ALL FIRE HYDRANTS SO THE PUMPER NOZZLE FACES THE DRIVEN ROADWAY OR AS OTHERWISE DIRECTED BY THE UTILITIES DEPARTMENT.
4. WHERE FIRE HYDRANTS ARE LOCATED IN A HARD SURFACED ISLAND OR PARKING AREA, THE CONTRACTOR SHALL PROVIDE AN 18" BLOCK-OUT AROUND THE HYDRANT BARREL FILLED WITH COMPACTED SOIL.
5. FIRE HYDRANTS SHALL BE INSTALLED A MINIMUM OF 18" FROM THE EDGE OF ANY SIDEWALK AND A MINIMUM OF 6' FROM ANY DRIVING LANE.
6. FIRE HYDRANT SHALL BE SET ON COMMON PAVER BLOCK TO ESTABLISH CORRECT ELEVATION.

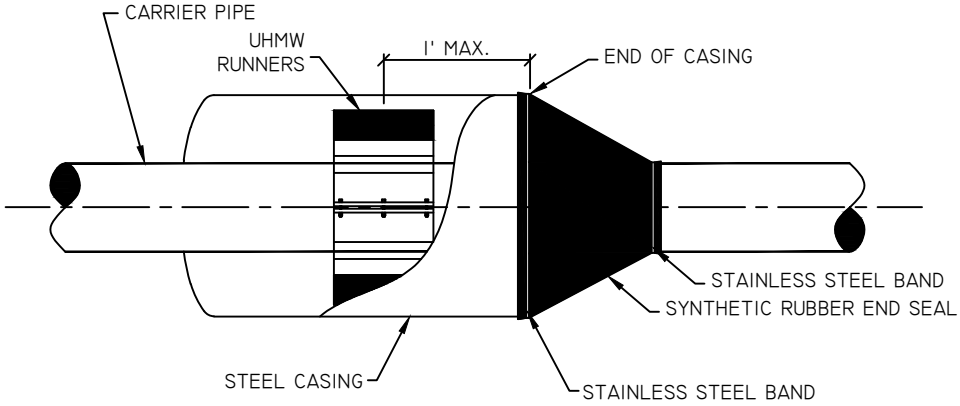
CITY OF GRAND ISLAND UTILITIES DEPARTMENT	REVISED: 1/8/2024 DRAWN BY: TDZ CHECKED BY: J.L.R.	FIRE HYDRANT TYPICAL INSTALLATION TYPE 5	PLAN 140 5 of 5



CITY OF GRAND ISLAND UTILITIES DEPARTMENT	REVISED: 1/7/2019 DRAWN BY: T.D.Z. CHECKED BY: R.L.S.	CARRIER PIPE AND ENCASEMENT	PLAN 141 1 OF 3

NOTE:
CARRIER PIPES 18" IN DIA. OR LARGER SHALL HAVE 2 RUNNERS ON TOP AND 4 RUNNERS ON BOTTOM (SEE SPECIFICATIONS)





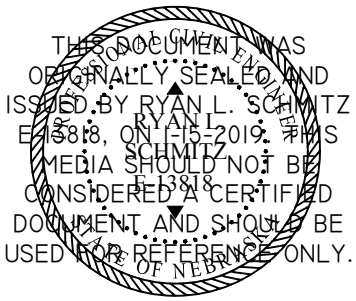
CITY OF GRAND ISLAND UTILITIES DEPARTMENT	REVISED: 1/7/2019 DRAWN BY: T.D.Z. CHECKED BY: R.L.S.	CARRIER PIPE AND ENCASEMENT	PLAN 141 2 OF 3

STANDARD FOR SIZING CASINGS:

CARRIER PIPE DIAMETER	GLAND O.D.	CASING DIAMETER	MINIMUM WALL THICKNESS
4"	9.120	12	0.250
6"	11.120	16	0.313
8"	13.370	18	0.313
10"	15.620	20	0.375
12"	17.880	24	0.438
14"	20.250	24	0.438
16"	22.500	28	0.438
18"	24.750	30	0.500
20"	27.000	32	0.500
24"	31.500	36	0.563
30"	37.180	42	0.563
* ALL DIMENSIONS ARE IN INCHES			

THE INSIDE DIAMETER OF THE CASING PIPE SHALL EXCEED THE OUTSIDE DIAMETER OF THE CARRIER PIPE, JOINTS, OR COUPLINGS, BY 4 (FOUR) INCHES.

THE STEEL CASING PIPE SHALL HAVE A MINIMUM WALL THICKNESS AS BASED ON THE CHART SHOWN. THE CASING SHALL BE ENTIRELY OF 1 (ONE) MATERIAL AND COATED INSIDE AND OUT WITH AN ASPHALT COATING, DOUBLED FULL DIPPED. THE DESIGN OF THE CASING PIPE IS BASED ON SUPER-IMPOSED LOADS AND NOT UPON LOADS WHICH MAY BE ON CASING AS A RESULT OF THE JACKING OPERATIONS. INCREASES IN CASING STRENGTH TO WITHSTAND JACKING LOADS SHALL BE THE RESPONSIBILITY OF THE CONTRATOR.



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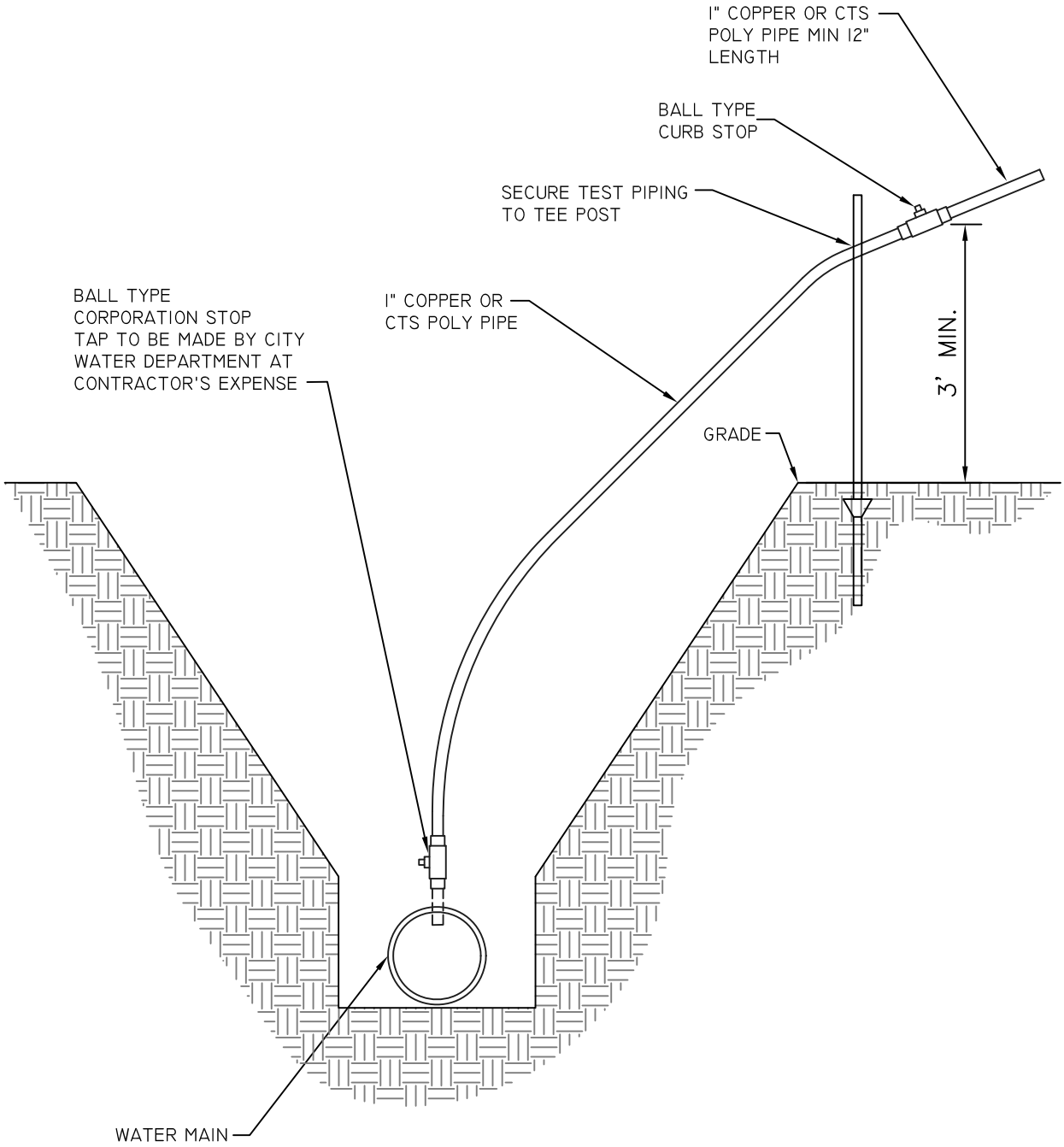
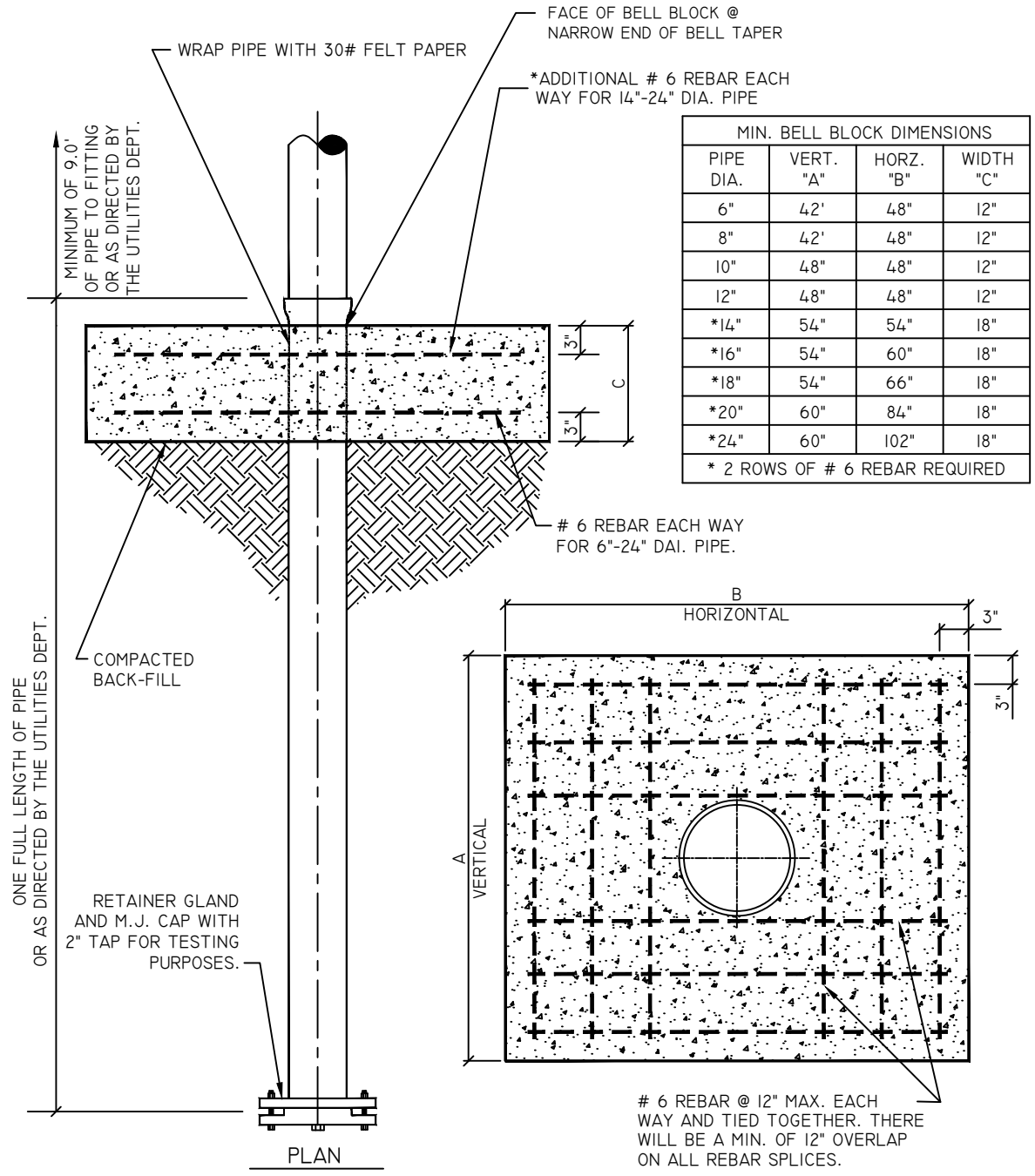
CITY OF GRAND ISLAND UTILITIES DEPARTMENT	REVISED: 1/7/2019 DRAWN BY: T.D.Z. CHECKED BY: R.L.S.	CARRIER PIPE AND ENCASEMENT	PLAN 141 3 OF 3



NOTES:

1. A SERVICE SADDLE SHALL BE REQUIRED FOR ALL 1-½" AND LARGER TAPS ON ALL MAINS REGARDLESS OF PIPE THICKNESS CLASS.
2. ALL TEST TAP LOCATIONS SHALL BE DETERMINED BY THE UTILITIES DEPT.
3. ALL TEST TAPS LOCATED AT MAIN CONNECTION TO CITY WATER SYSTEM SHALL BE LOCATED NO FURTHER THAN 10' FROM THE TIE VALVE.

CITY OF GRAND ISLAND UTILITIES DEPARTMENT	REVISED: 12/11/2019 DRAWN BY: TDZ CHECKED BY: R.L.S.	WATER MAIN TESTING & SAMPLING TAP	PLAN 142

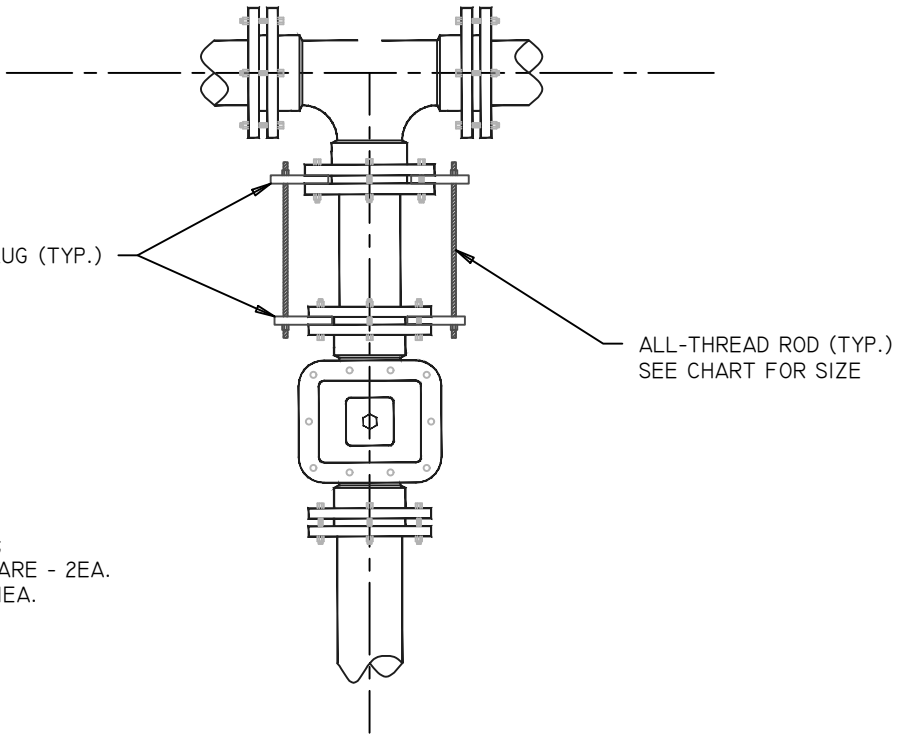


MIN. BELL BLOCK DIMENSIONS			
PIPE DIA.	VERT. "A"	HORZ. "B"	WIDTH "C"
6"	42'	48"	12"
8"	42'	48"	12"
10"	48"	48"	12"
12"	48"	48"	12"
*14"	54"	54"	18"
*16"	54"	60"	18"
*18"	54"	66"	18"
*20"	60"	84"	18"
*24"	60"	102"	18"
* 2 ROWS OF # 6 REBAR REQUIRED			

NOTES:

1. GRANULAR BACKFILL SHALL BE PLACED IN 3" TO 6" VERTICAL LIFTS AND COMPACTED BY APRROVED MECHANICAL TAMPING DEVICE. MINIMUM EARTH COVER SHALL BE 5'-0".
2. ALL THRUST BLOCKS TO BE TYPE 47-B MODIFIED POURED CONCRETE AS PER DIVISION II; "CONCRETE PAVING SPECIFICATIONS"; AND DIVISION VI "WATER MAINS".
3. ALL CONCRETE BLOCKING SHALL BE INSTALLED IN SUCH A MANNER THAT ALL PIPE AND FITTING JOINTS ARE ACCESSIBLE.

CITY OF GRAND ISLAND UTILITIES DEPARTMENT	REVISED: 1/6/2023 DRAWN BY: TDZ CHECKED BY: R.L.S.	BELL JOINT BLOCK	PLAN 143



NOTE:
A SET SHALL INCLUDE;
DUC-LUGS & HARDWARE - 2EA.
ALL-THREAD ROD - IEA.

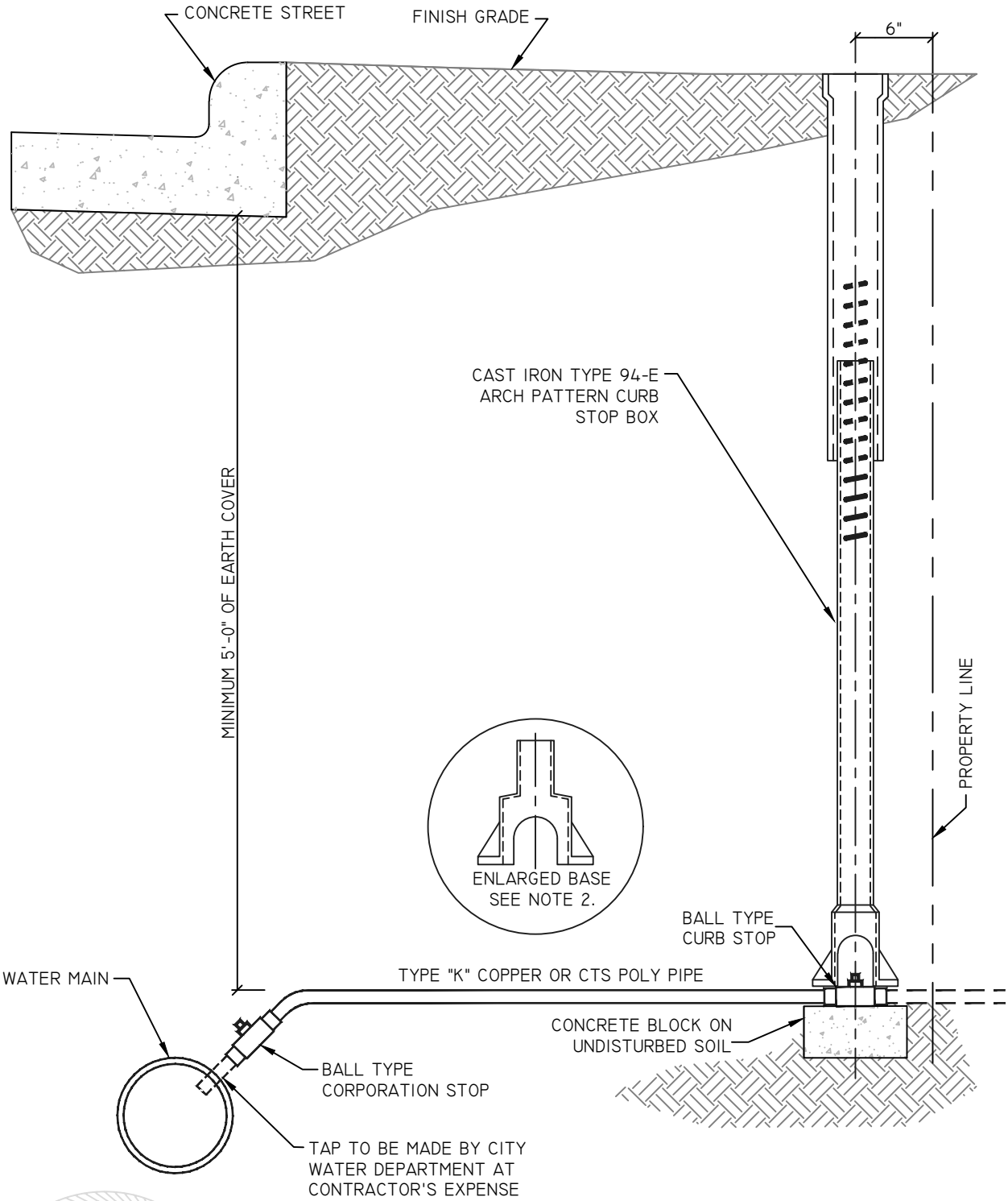
TIE-ROD RESTRAINT REQUIREMENTS AND SIZING DESIGN PRESSURE - 200 PSI		
PIPE DIA.	ALL-THREAD ROD SIZE	NO. SETS PER FITTING
4	3/4	2
6	3/4	2
8	3/4	2
10	3/4	3
12	3/4	4
14	3/4	4
16	3/4	4
18	1	4
20	1	5
24	1	6
30	1-1/4	6
36	1-1/4	9
ALL DIMENSIONS ARE IN INCHES		

CITY OF GRAND ISLAND
UTILITIES DEPARTMENT

REVISED: 2/11/2021
DRAWN BY: TDZ
CHECKED BY: R.L.S.

TIE ROD FITTING RESTRAINT REQUIREMENTS

PLAN 144
1 of 1



NOTES:

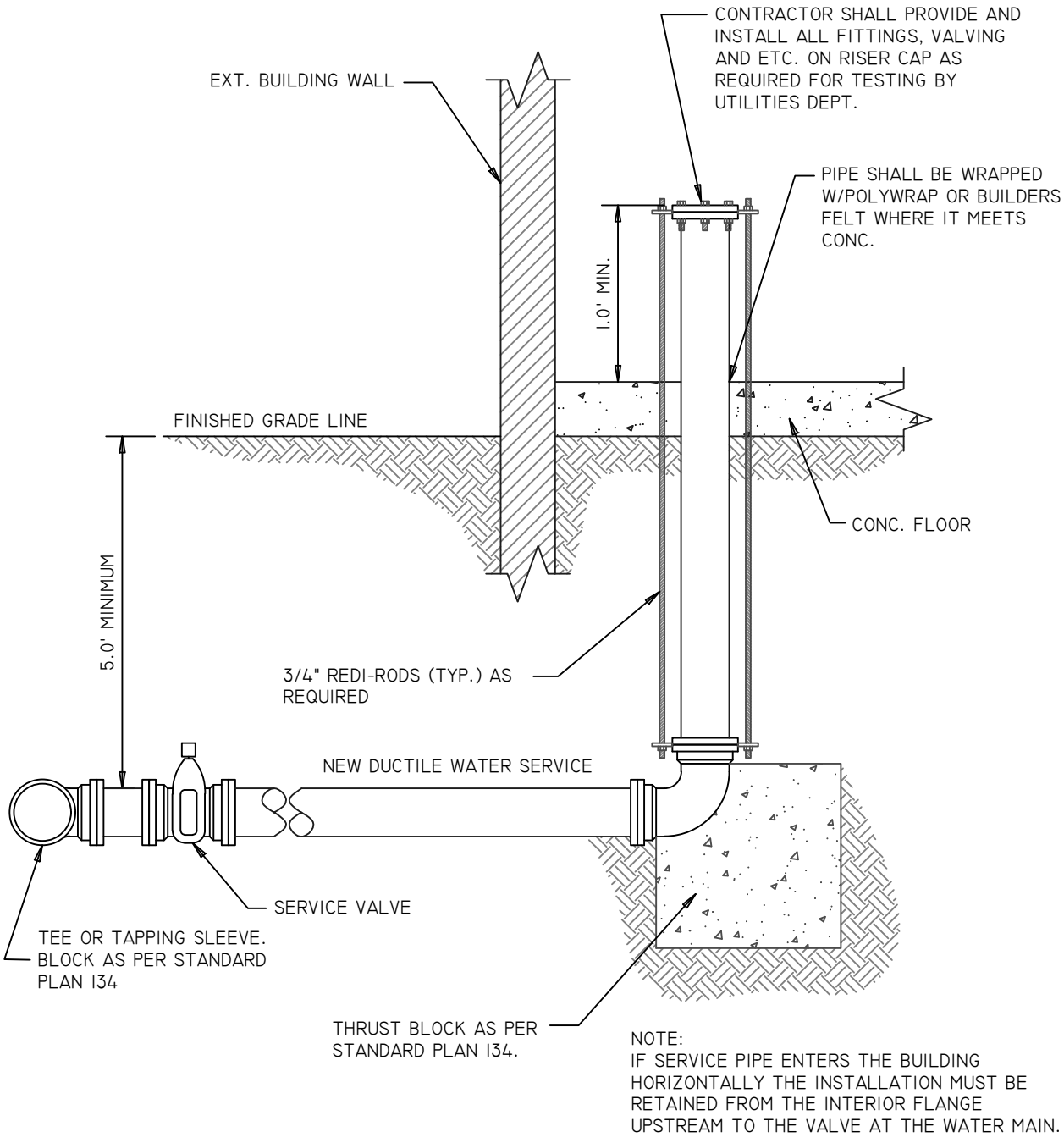
1. A SERVICE SADDLE SHALL BE REQUIRED FOR ALL 1-½" AND LARGER TAPS ON ALL MAINS REGARDLESS OF PIPE THICKNESS CLASS.
2. USE ADDITIONAL ENLARGED BASE WITH STANDARD 94-E BOX ON ALL 1-½" AND 2" CURB STOPS.
3. PIPE STRAIGHTENER INSERTS SHALL BE INSTALLED AT ALL COMPRESSION FITTINGS WHEN CTS POLY PIPE IS USED
4. TRACER WIRE SHALL BE REQUIRED WHEN USING CTS POLY PIPING. REFER TO STANDARD PLAN 163 FOR REQUIREMENTS.

CITY OF GRAND ISLAND
UTILITIES DEPARTMENT

REVISED: 6/14/2023
DRAWN BY: TDZ
CHECKED BY: J.L.R.

2" AND SMALLER WATER SERVICE LINE

PLAN 152



NOTE:
IF SERVICE PIPE ENTERS THE BUILDING HORIZONTALLY THE INSTALLATION MUST BE RETAINED FROM THE INTERIOR FLANGE UPSTREAM TO THE VALVE AT THE WATER MAIN.

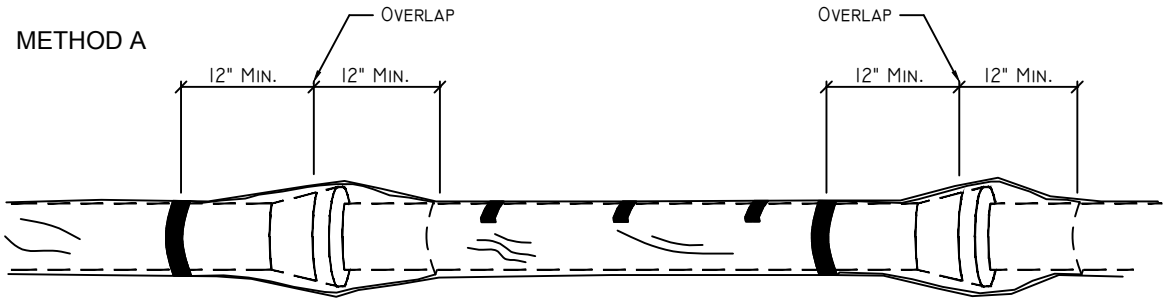
GENERAL NOTES:

1. ALL COMMERCIAL WATER SERVICES LARGER THAN 2" IN DIA. SHALL BE DUCTILE IRON FROM SERVICE VALVE TO METER.

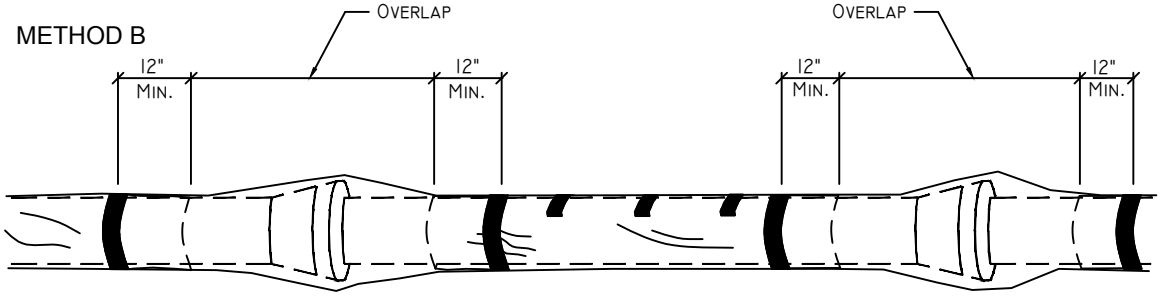
2. DETAILED PLANS FOR NEW AND REPLACEMENT SERVICE LINES SHALL BE PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE "SITE PLAN GUIDELINES FOR PRIVATE DOMESTIC AND PRIVATE FIRE SERVICE MAINS, LARGER THAN 2" DIA." THE WORKING PLANS SHALL BE SUBMITTED FOR REVIEW TO THE AUTHORITY HAVING JURISDICTION BEFORE ANY EQUIPMENT IS INSTALLED OR REMODELED. THE CITY OF GRAND ISLAND UTILITIES DEPARTMENT, BUILDING DIVISION, AND THE CITY OF GRAND ISLAND FIRE DEPARTMENT SHALL BE REFERENCED AS THE AUTHORITY HAVING JURISDICTION (AHJ).

CITY OF GRAND ISLAND UTILITIES DEPARTMENT	REVISED: 1/8/2024 DRAWN BY: TDZ CHECKED BY: J.L.R.	SERVICE LINES LARGER THAN 2" DIA.	PLAN 152 2 OF 2

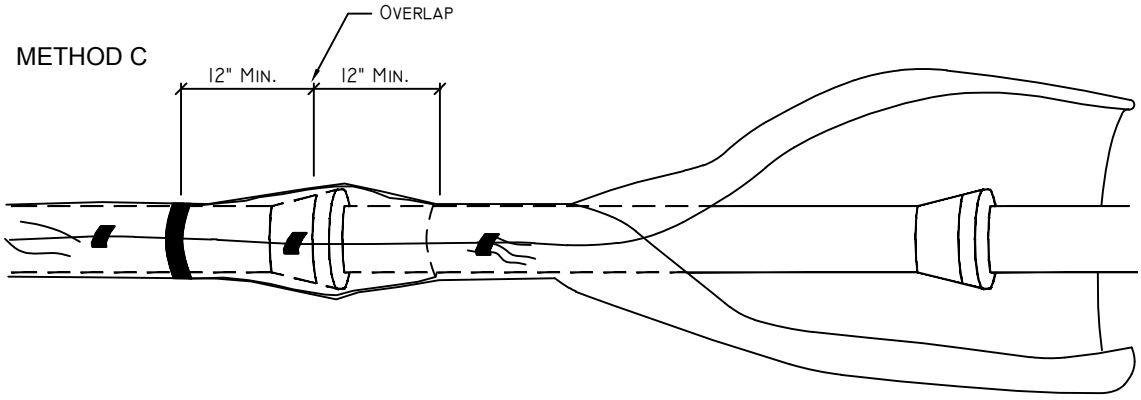
METHOD A



METHOD B



METHOD C



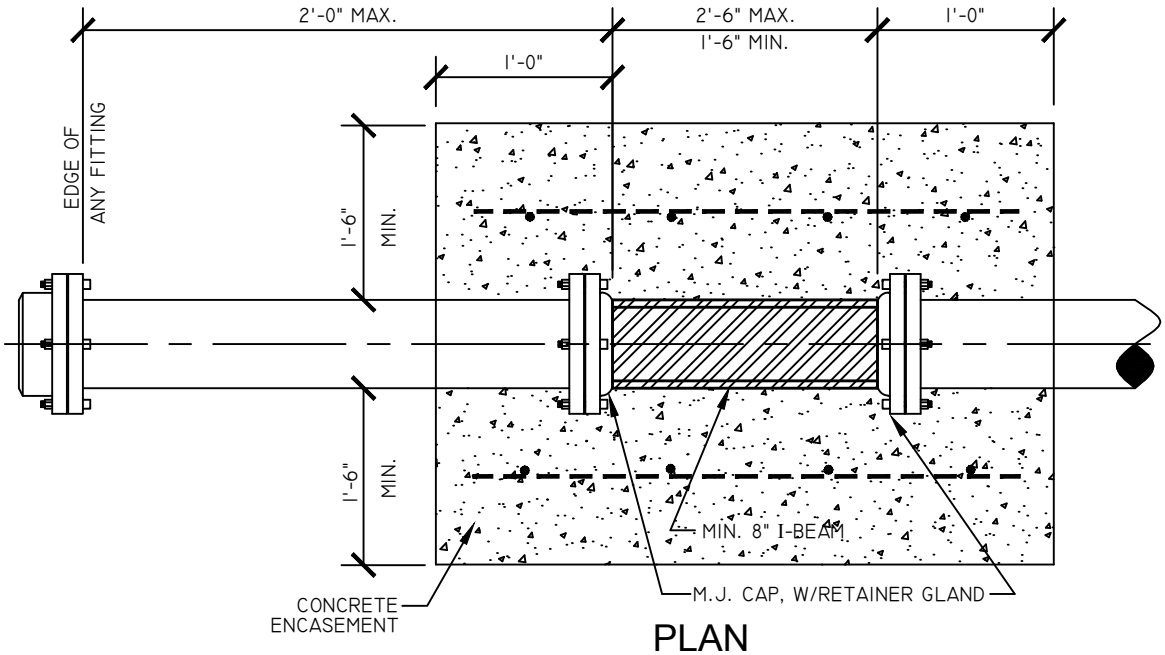
POLYETHYLENE TUBE AND SHEET SIZES NOMINAL THICKNESS OF 0.008 IN. (8 MIL.)		
NOMINAL PIPE DIA. (INCHES)	MIN. POLYETHYLENE WIDTH (INCHES)	
	FLAT TUBE	SHEET
4	16	32
6	20	40
8	24	48
10	27	54
12	30	60
14	34	68
16	37	74
18	41	82
20	45	90
24	54	108
30	67	134
36	81	162

CITY OF GRAND ISLAND
UTILITIES DEPARTMENT

REVISED: 1/7/2019
DRAWN BY: T.D.Z.
CHECKED BY: R.L.S.

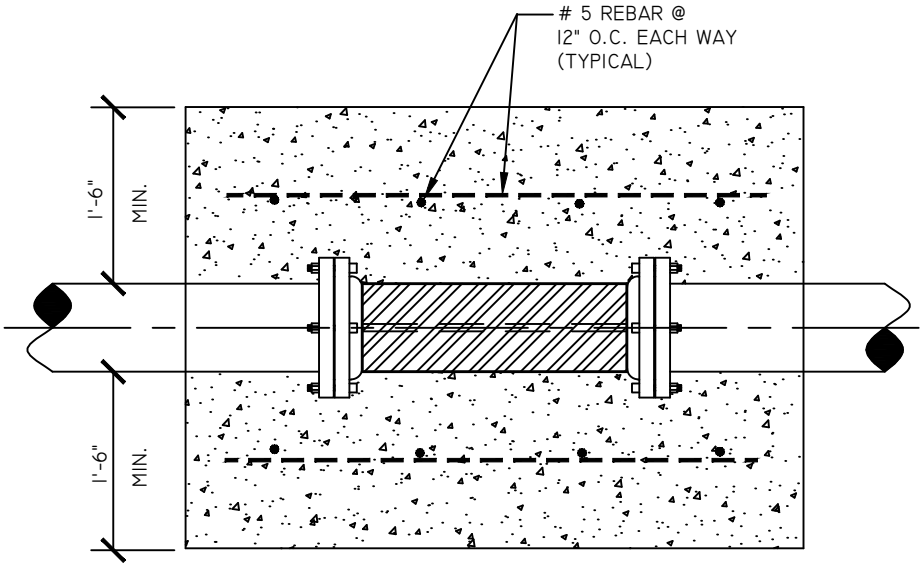
POLYETHYLENE ENCASEMENT

PLAN 155



PLAN

NO SCALE



ELEVATION

NO SCALE

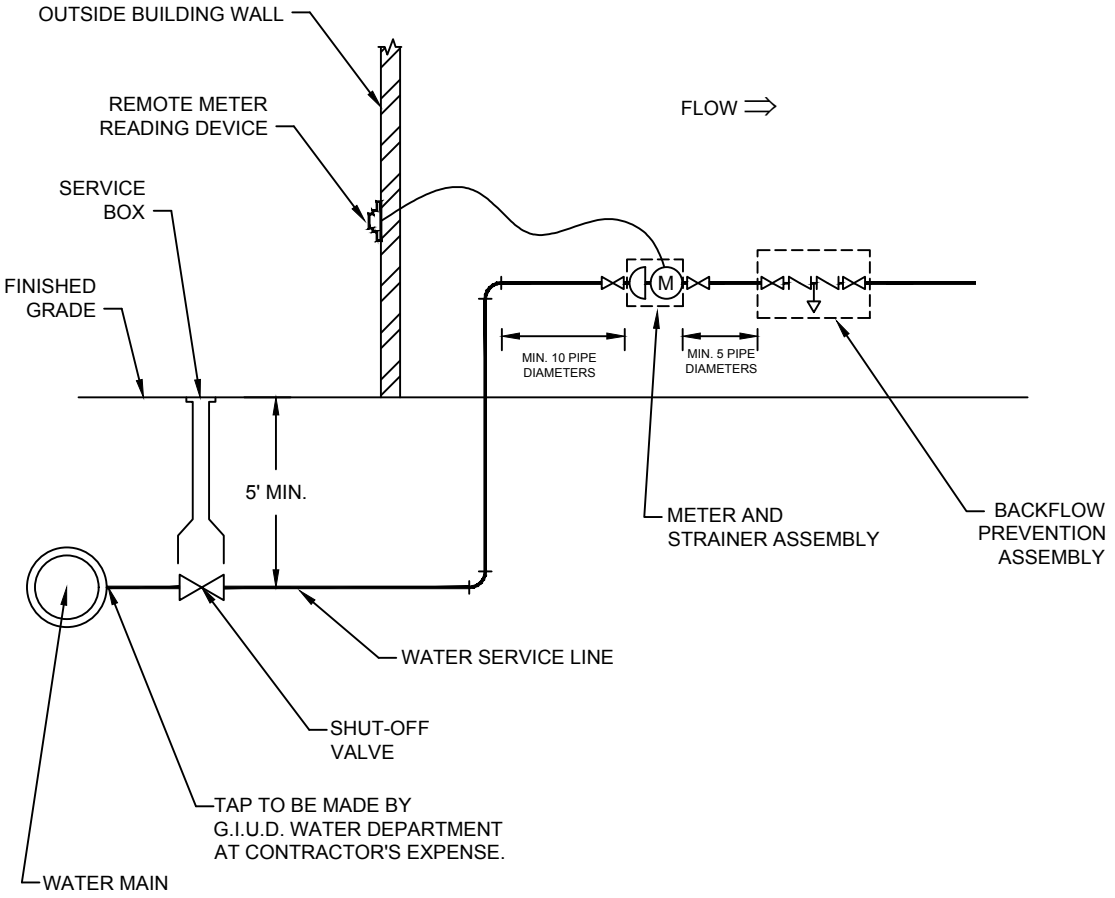
THIS DOCUMENT WAS ORIGINALLY SEALED AND ISSUED BY RYAN L. SCHMITZ E-13818, ON 1-15-2019. THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT AND SHOULD BE USED FOR REFERENCE ONLY.

RYAN L. SCHMITZ E-13818 REGISTERED PROFESSIONAL ENGINEER STATE OF NEBRASKA

GENERAL NOTES

1. ALL THRUST BLOCKS TO BE TYPE 47-B MODIFIED POURED CONCRETE AS PER DIVISION II; "CONCRETE PAVING SPECIFICATIONS"; AND DIVISION VI "WATER MAINS".
2. ALL THRUST BLOCKS ARE TO BE POURED AGAINST UNDISTURBED SOIL.

CITY OF GRAND ISLAND UTILITIES DEPARTMENT	REVISED: 1/8/2019 DRAWN BY: TDZ CHECKED BY: R.L.S.	IN-LINE "I" BEAM BLOCK	PLAN 156



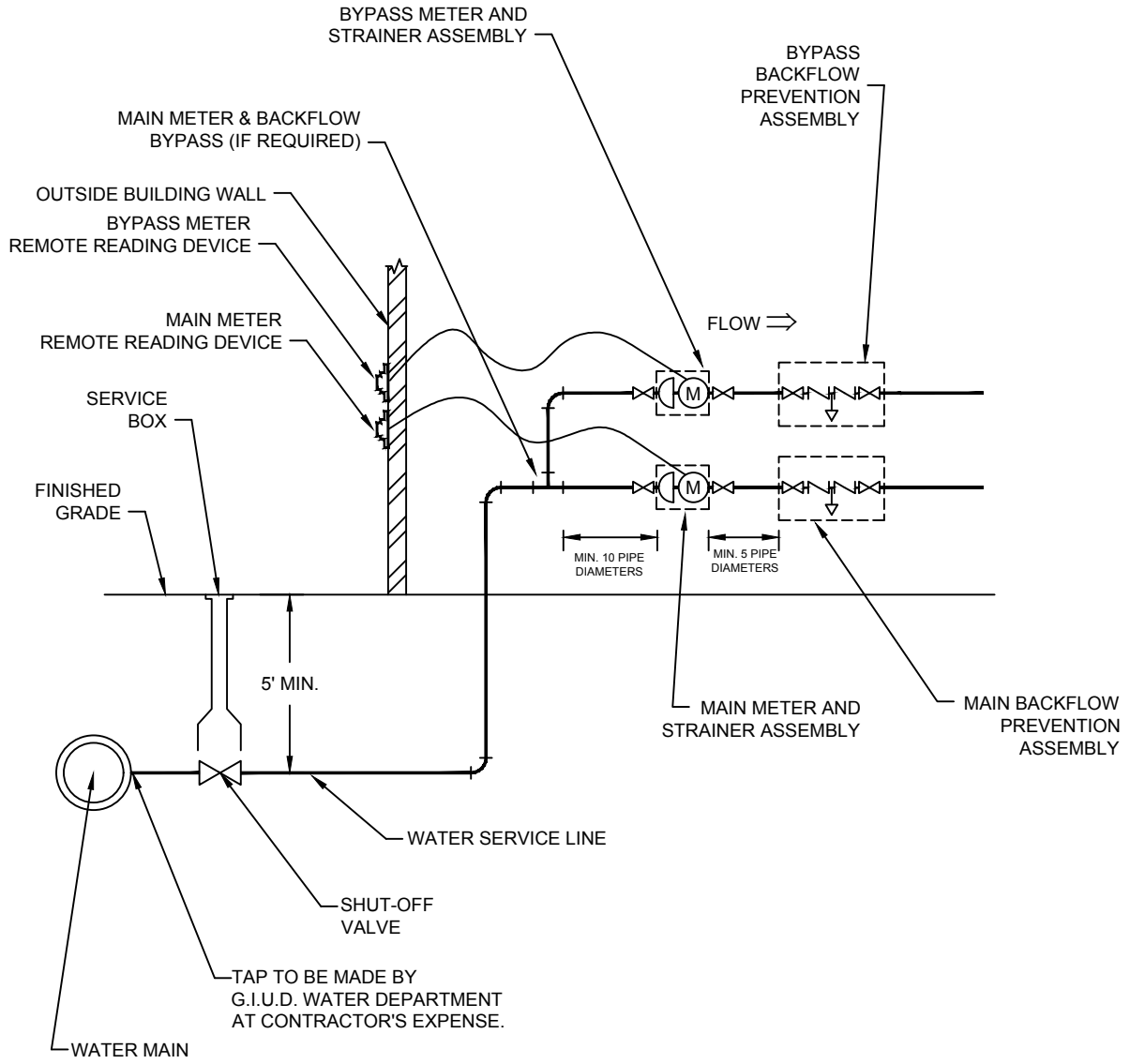
NOTE:
NO ELBOWS, BENDS, NON-CONCENTRIC REDUCERS, CHECK VALVES, BACK FLOW PREVENTERS AND/OR PRESSURE REDUCING DEVICES SHALL BE INSTALLED WITHIN TEN (10) PIPE DIAMETERS UPSTREAM OR FIVE (5) PIPE DIAMETERS DOWNSTREAM OF THE METER SET.

BUTTERFLY VALVES SHALL NOT BE INSTALLED WITHIN FIVE (5) PIPE DIAMETERS UPSTREAM OR THREE (3) PIPE DIAMETERS DOWNSTREAM OF THE METER SET.

FULL PORT BALL VALVES OR GATE VALVES MAY BE INSTALLED IMMEDIATELY UPSTREAM OF THE METER SET, PROVIDED THEY ARE FULLY OPENED AND NOT USED TO THROTTLE FLOW RATES THROUGH THE METER.

ALL OTHER METERING DEVICES SHALL BE INSTALLED DOWNSTREAM OF MAIN WATER METER

CITY OF GRAND ISLAND UTILITIES DEPARTMENT	REVISED: 1/8/2019 DRAWN BY: TDZ CHECKED BY: R.L.S.	WATER METER AND BACKFLOW PREVENTER INSTALLATION	PLAN 157 1 OF 3



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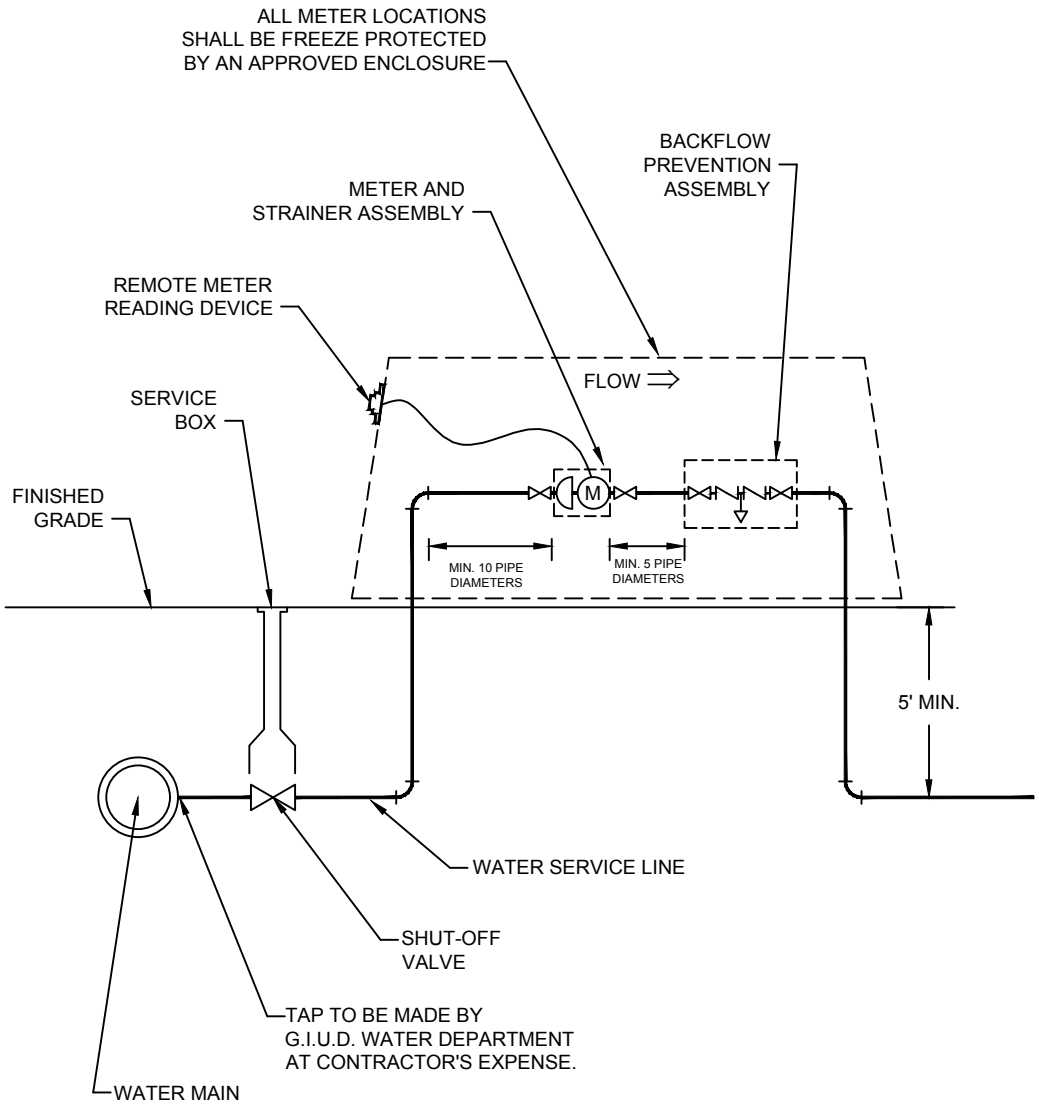
BUTTERFLY VALVES SHALL NOT BE INSTALLED WITHIN FIVE (5) PIPE DIAMETERS UPSTREAM OR THREE (3) PIPE DIAMETERS DOWNSTREAM OF THE METER SET.

FULL PORT BALL VALVES OR GATE VALVES MAY BE INSTALLED IMMEDIATELY UPSTREAM OF THE METER SET, PROVIDED THEY ARE FULLY OPENED AND NOT USED TO THROTTLE FLOW RATES THROUGH THE METER.

THE INSTALLATION OF METER AND BACKFLOW PREVENTER BYPASS LINE SHALL BE APPROVED BY THE WATER DEPARTMENT AND HAVE SEPERATE METER AND BACKFLOW PREVENTER

ALL OTHER METERING DEVICES SHALL BE INSTALLED DOWNSTREAM OF MAIN WATER METER AND BYPASS WATER METER

CITY OF GRAND ISLAND UTILITIES DEPARTMENT	REVISED: 1/8/2019 DRAWN BY: TDZ CHECKED BY: R.L.S.	WATER METER AND BACKFLOW PREVENTER INSTALLATION W/BYPASS	PLAN 157 2 OF 3



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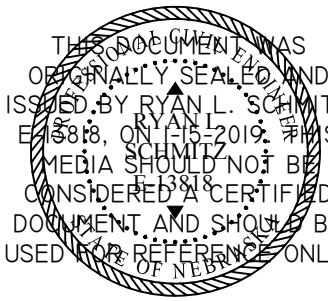
ALL OTHER METERING DEVICES SHALL BE INSTALLED DOWNSTREAM OF MAIN WATER METER



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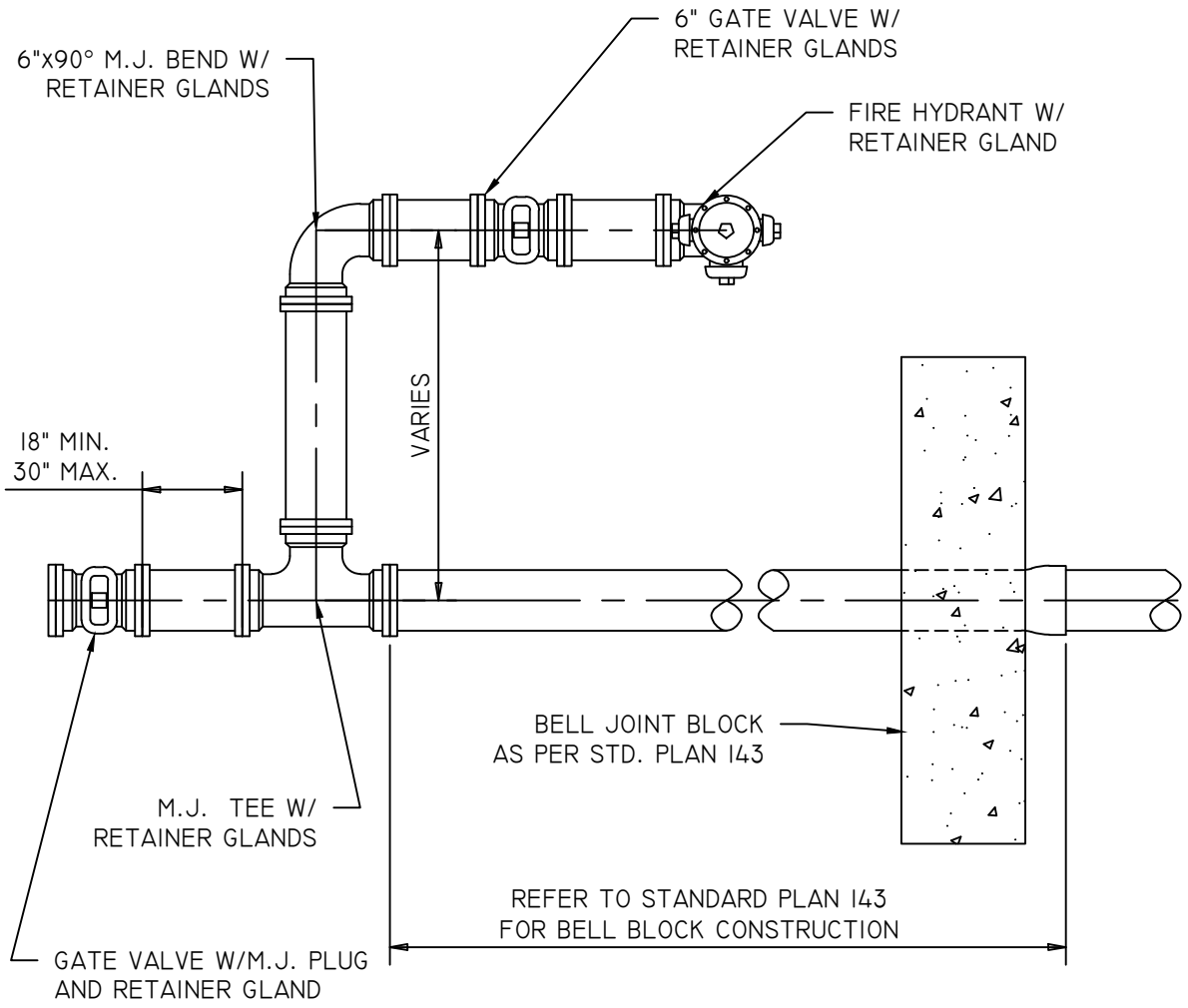
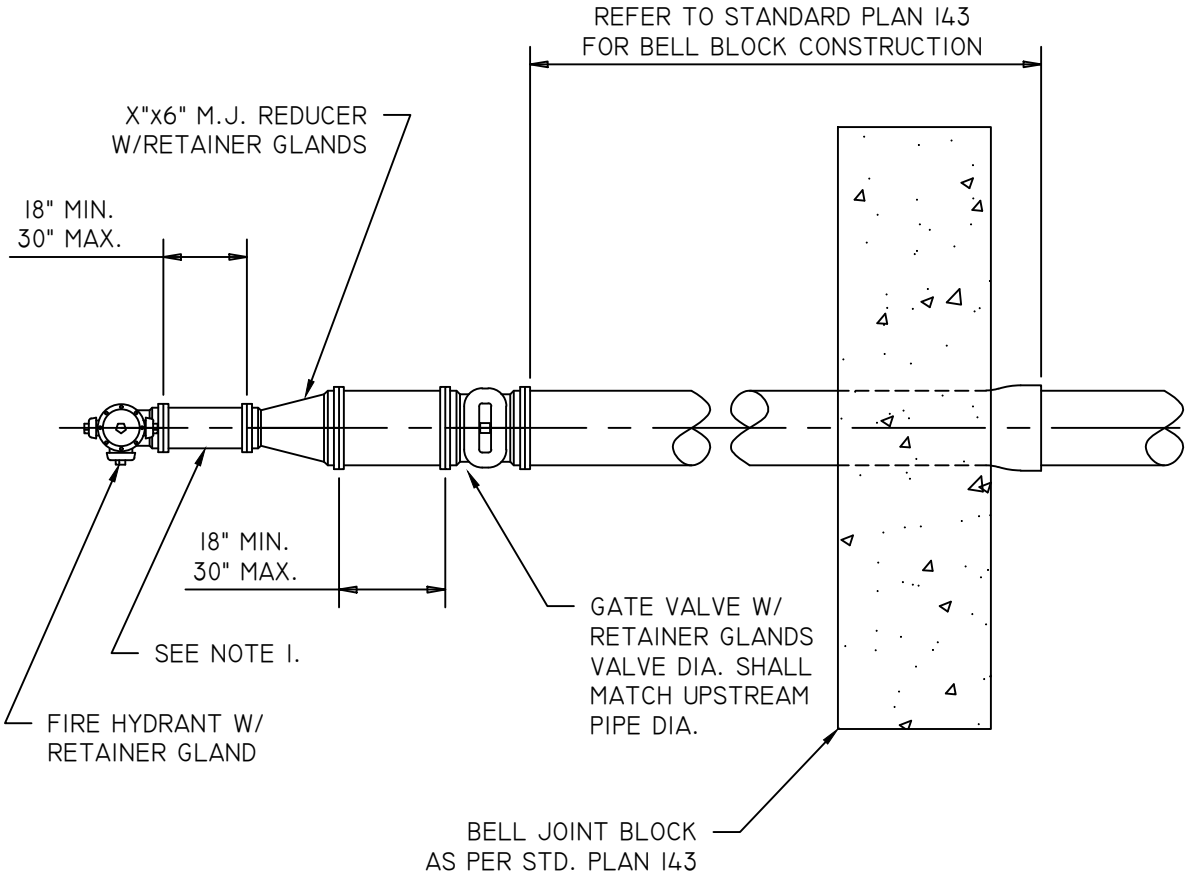
CITY OF GRAND ISLAND UTILITIES DEPARTMENT	REVISED: 1/8/2019 DRAWN BY: TDZ CHECKED BY: R.L.S.	OUTSIDE INSTALLATION FOR WATER METER AND BACKFLOW PREVENTER	PLAN 157 3 OF 3



NOTES:

1. REFER TO STANDARD PLAN 140 FOR FIRE HYDRANT ASSEMBLY CONFIGURATIONS.
2. ALL MECHANICAL JOINTS DOWNSTREAM OF THE BELL JOINT BLOCK SHALL BE INSTALLED WITH RETAINER GLANDS
3. NO SLIP JOINTS MAY BE INSTALLED DOWNSTREAM OF THE BELL JOINT BLOCK.

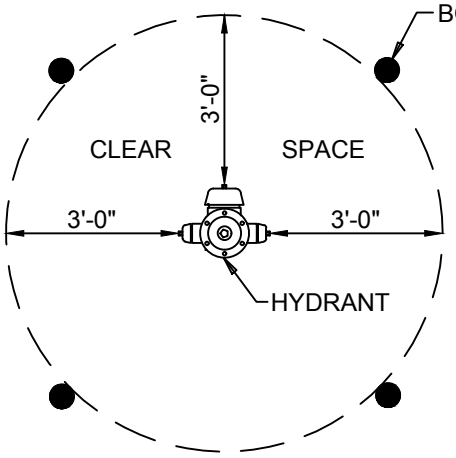
CITY OF GRAND ISLAND UTILITIES DEPARTMENT	REVISED: 1/6/2023 DRAWN BY: TDZ CHECKED BY: R.L.S.	FIRE HYDRANT ON DEAD END W/ RESTRAINED JOINTS	PLAN 158



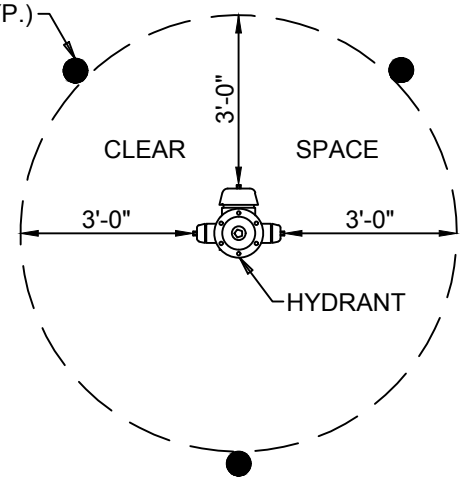
NOTES:

1. IF VERTICAL ADJUSTMENT OF 2.0' OR LESS IS REQUIRED TO BRING FIRE HYDRANT TO GRADE, THE PIPE NIPPLE BETWEEN REDUCER AND FIRE HYDRANT SHALL BE REPLACED WITH RETAINED GRADE-LOK OFFSET FITTING. IF VERTICAL ADJUSTMENT REQUIRED IS GREATER THAN 2.0' THEN 2 INVERTED 6"x45° BENDS WITH RETAINER GLANDS SHALL BE USED FOR ADJUSTMENT.
2. ALL MECHANICAL JOINTS DOWNSTREAM OF THE BELL JOINT BLOCK SHALL BE INSTALLED WITH RETAINER GLANDS
3. NO SLIP JOINTS MAY BE INSTALLED DOWNSTREAM OF THE BELL JOINT BLOCK.

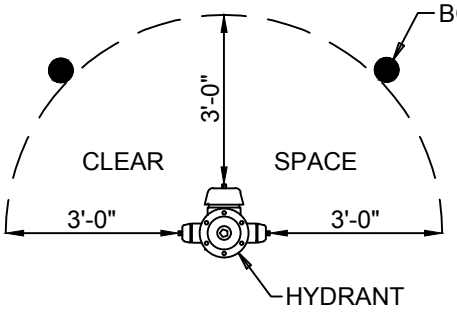
CITY OF GRAND ISLAND UTILITIES DEPARTMENT	REVISED: 1/6/2023 DRAWN BY: TDZ CHECKED BY: R.L.S.	TEMPORARY FIRE HYDRANT ON DEAD- END	PLAN 159



FIRE HYDRANT BOLLARD PROTECTION- TYPE C



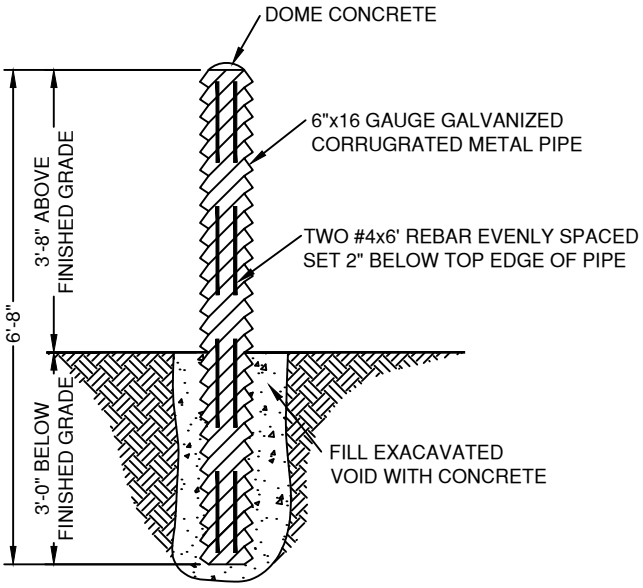
FIRE HYDRANT BOLLARD PROTECTION- TYPE B



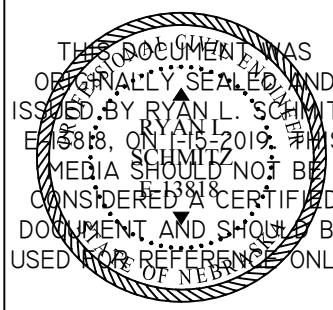
FIRE HYDRANT BOLLARD PROTECTION- TYPE A

NOTE:
PROTECTIVE BOLLARDS SHALL BE PLACED SO THERE IS NO INTERFERENCE WITH THE OPERATION OF THE FIRE HYDRANT OR IT'S AUXILARY VALVE.

TYPE 47-B CONCRETE REQUIRED
VOLUME-1.4 CU. FT.
FILLED WT.-APPROX. 235 LBS. EA.

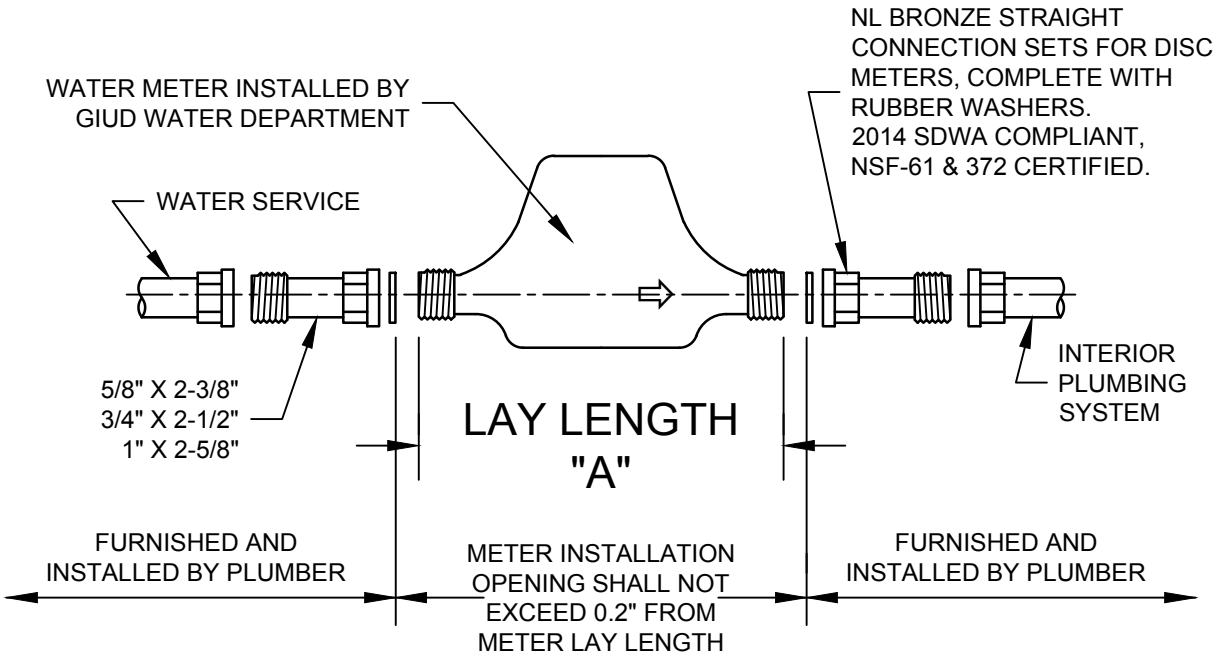


FIRE HYDRANT BOLLARD DETAIL



CITY OF GRAND ISLAND UTILITIES DEPARTMENT	REVISED: 1/8/2019 DRAWN BY: TDZ CHECKED BY: R.L.S.	FIRE HYDRANT BOLLARD PROTECTION	PLAN 160

5/8"; 3/4"; and 1" WATER METER INSTALLATION



	WATER METER SIZE		
	5/8"	**3/4"**	**1"**
DIMENSION "A"	7-1/2"	9"	10-3/4"

All meters, valves, piping and other appurtenances related to a meter installation are the property of the owner and shall be maintained by the owner. The GIUD Water Department may read, inspect or test a meter at any reasonable time or with such frequency as it deems advisable.

The Plumber shall be responsible for furnishing and installing all appropriate plumbing piping, fittings, couplings, unions, and hardware necessary for the installation of the water meter by the City of Grand Island Water Department, including but not limited to: the appropriate size, lead free, brass water meter unions used to install the water meter. Two unions are required to install one water meter.

Water meters shall be set level and in a horizontal position, at a minimum height of one (1) foot and a maximum height of three (3) feet and as near as possible to the point where the water service enters the building. Meters shall not be exposed to damage by freezing.

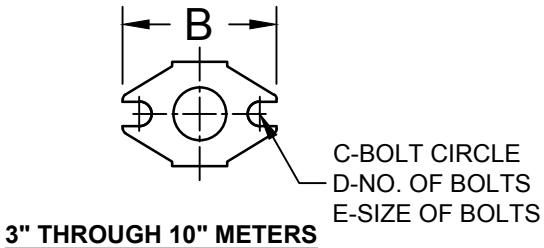
There shall be least 18-inches of clearance above and horizontally around the meter and kept readily accessible. If obstructions exist which interfere with meter installation, reading, testing, maintenance or removal, the GIUD Water Department may discontinue water service until the obstructions are removed.

Valves immediately upstream and downstream of the meter shall only be fully-port ball valves.

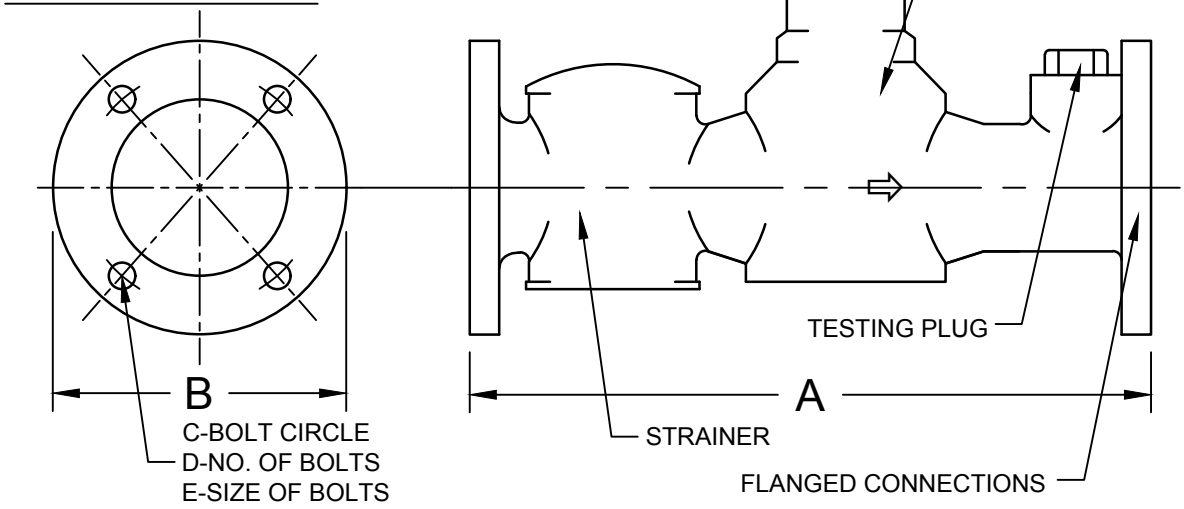
CITY OF GRAND ISLAND UTILITIES DEPARTMENT	REVISED: 1/8/2019 DRAWN BY: TDZ CHECKED BY: R.L.S.	5/8"; 3/4"; and 1" Water Meter Installation	PLAN 161

DIMENSIONS OF 1-1/2" AND LARGER METERS WITH INTEGRAL STRAINER

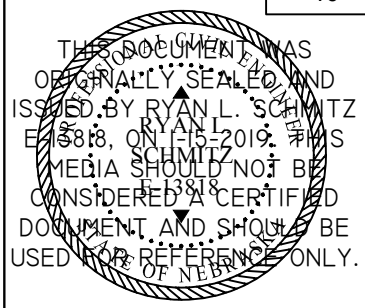
1-1/2" AND 2" METERS



3" THROUGH 10" METERS



Meter and Pipe Size	A	B	C	D	E
1-1/2"	13"	5-1/8"	4"	2	5/8"
2"	17"	5-3/4"	4-1/2"	2	3/4"
3"	19"	7-7/8"	6"	4	5/8"
4"	23"	9-1/8"	7-1/2"	8	5/8"
6"	27"	11"	9-1/2"	8	3/4"
8"	30-1/8"	13-1/2"	11-3/4"	8	3/4"
10"	41-1/8"	16"	14-1/4"	12	7/8"



CITY OF GRAND ISLAND UTILITIES DEPARTMENT	REVISED: 1/8/2019 DRAWN BY: TDZ CHECKED BY: R.L.S.	1-1/2" and Larger Water Meter Installation	PLAN 162 1 OF 2

INSTALLATION REQUIREMENTS FOR 1-1/2" AND LARGER METERS WITH INTEGRAL STRAINER

All meters, valves, piping and other appurtenances related to a meter installation are the property of the owner and shall be maintained by the owner. The GIUD Water Department may read, inspect or test a meter at any reasonable time or with such frequency as it deems advisable.

The Plumber shall be responsible for furnishing and installing all appropriate plumbing piping, fittings, couplings, unions, flanges, and hardware necessary for the installation of the water meter by the City of Grand Island Water Department.

Meters 1-1/2 inches and larger are not be suspended nor supported by the piping. The Plumber shall be responsible for furnishing and installing the appropriate size meter supports.

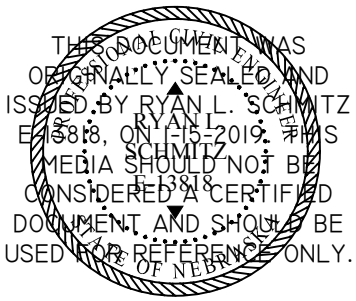
Water meters shall be set level and in a horizontal position, at a minimum height of one (1) foot and a maximum height of three (3) feet and as near as possible to the point where the water service enters the building. Meters shall not be exposed to damage by freezing.

There shall be least eighteen (18) inches of clearance above and horizontally around the meter and kept readily accessible. If obstructions exist which interfere with meter installation, reading, testing, maintenance or removal, the GIUD Water Department may discontinue water service until the obstructions are removed.

One and one half (1-1/2) inch through ten (10) inch meters shall have an integral strainer, and shall be installed with a minimum of five (5) pipe diameters of straight run of pipe or equivalent full open components upstream of the meter-strainer flange; and with a minimum of two and one half (2.5) pipe diameters of straight run of pipe or equivalent full open components downstream of the meter flange. Full open flow components may consist of: straight pipe, full open gate valves, bypass tees and concentric reducers (1 nominal pipe size reduction only).

Fully open gate valves may be located immediately upstream or downstream, provided they are not used to throttle flow rates through the meter.

Install non-concentric reducers, check valves, backflow preventers, PRV (pressure reducing valves), throttling devices, or altitude valves no closer than four (4) pipe diameters downstream of the meter.



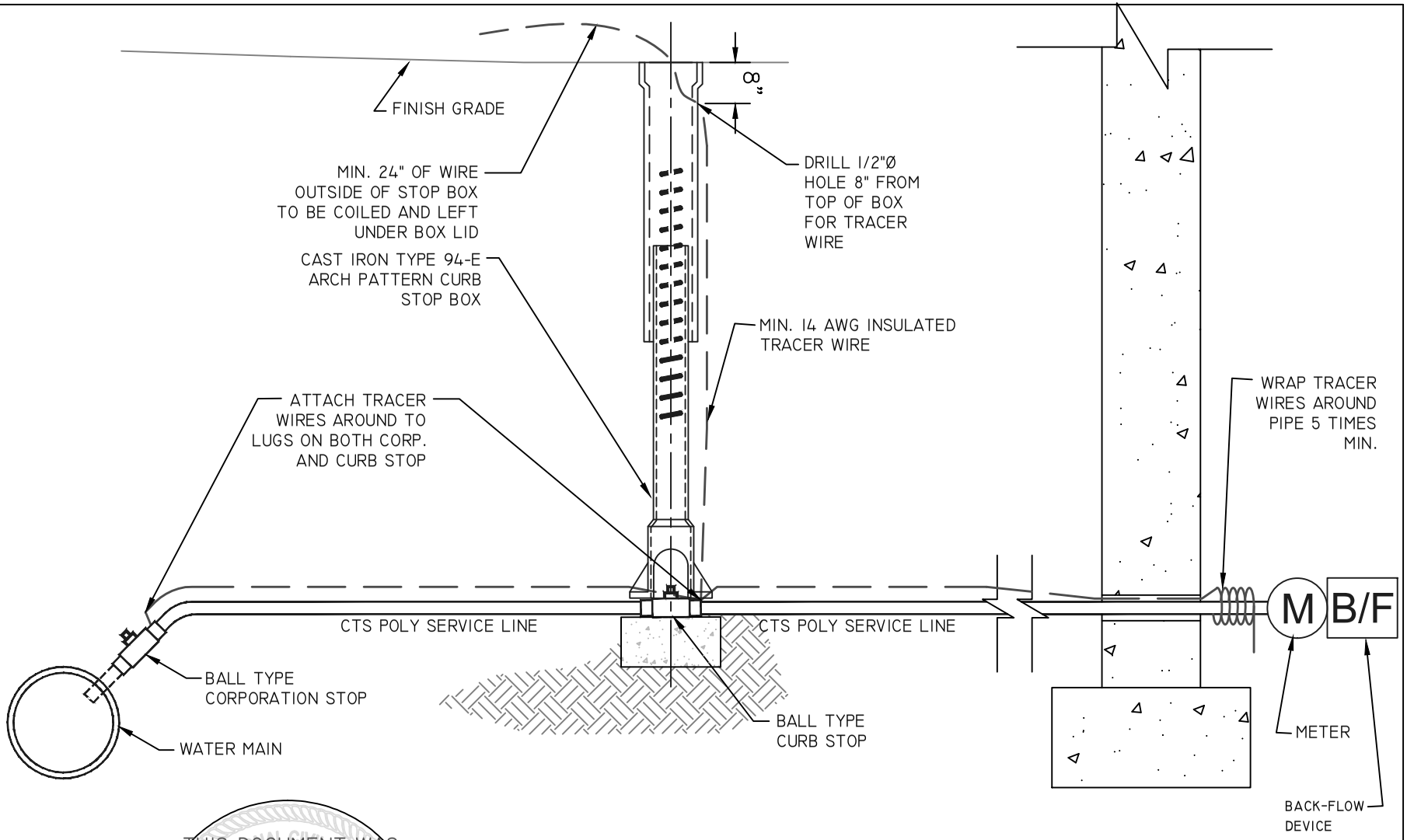
CITY OF GRAND ISLAND UTILITIES DEPARTMENT	REVISED: 1/8/2019 DRAWN BY: TDZ CHECKED BY: R.L.S.	1-1/2" and Larger Water Meter Installation	PLAN 162 2 OF 2

CITY OF GRAND ISLAND
UTILITIES DEPARTMENT

REVISED:
DRAWN BY: TDZ 1/8/2023
CHECKED BY: J.L.R.

POLY WATER SERVICE LINE TRACER WIRE

PLAN 163
1 OF 1



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NOTES:

1. TRACER WIRE SHALL BE MINIMUM 14 GAUGE ISULATED WIRE AND BLUE IN COLOR
2. TRACER WIRE TO BE TAPED TO SERVICE PIPE AT 5' INTERVALS
3. TERMINATIONS UNDER GROUND SHALL BE COATED WITH A DI-ELECTRIC CORROSION INHIBITOR.