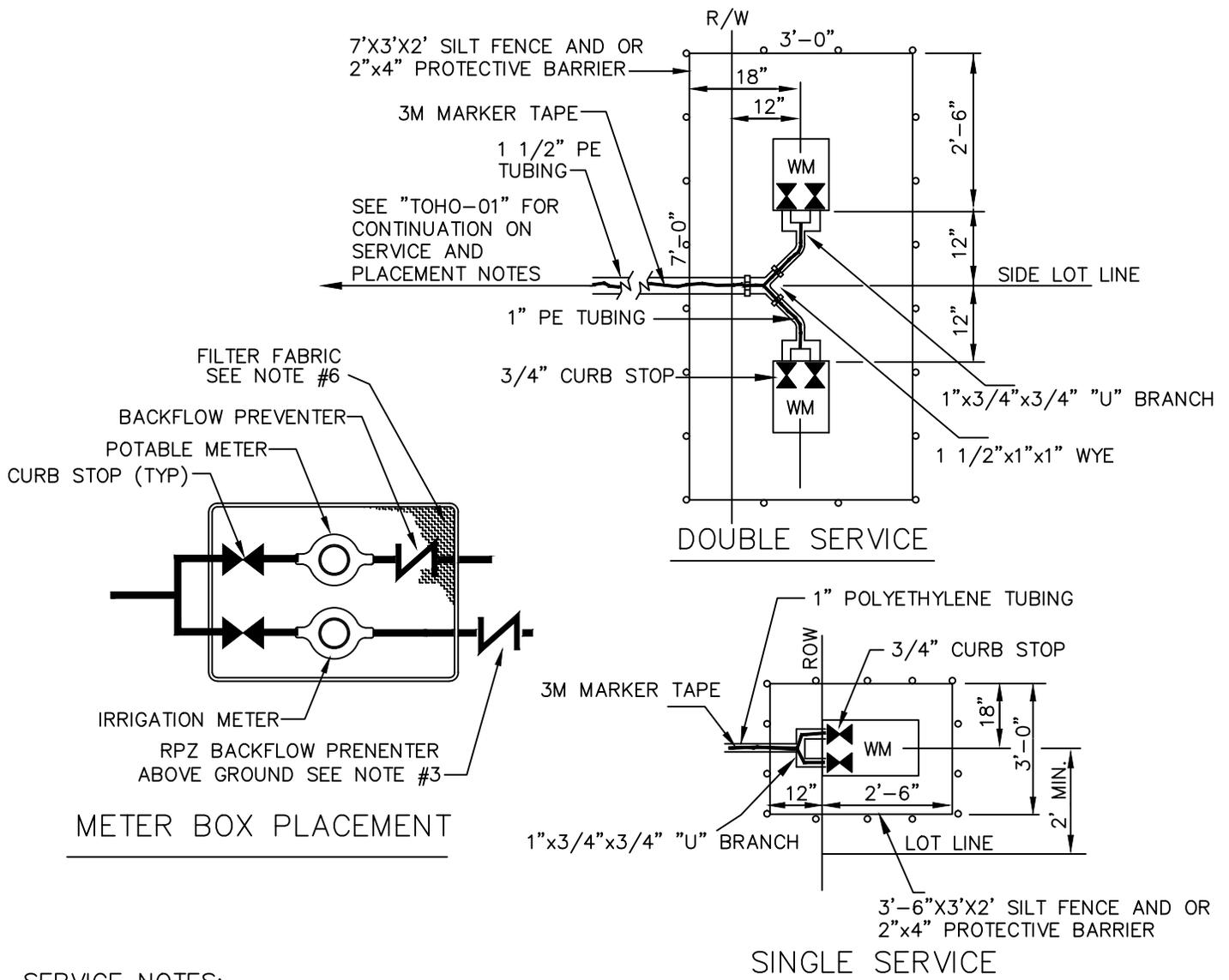


SERVICE NOTES:

1. CORP STOPS SHALL BE NO LEAD BRASS. INLET SHALL BE MATCHED TO TAPPING SADDLE AND OUTLET SHALL BE FIP THREAD AND PACK JOINT ADAPTER W/ CLAMP SCREW RETAINER
2. CURB STOPS SHALL BE LOCKING TYPE, STRAIGHT BALL VALVE, NO LEAD BRASS WITH SWIVEL METER NUT CONNECTION.
3. SERVICE WYES SHALL BE NO LEAD BRASS PACK JOINT W/ CLAMP SCREW RETAINER
4. METER COUPLINGS SHALL NOT BE USED
5. SERVICE LINE SHALL BE CONTINUOUS, NO FITTINGS ARE PERMITTED ON THE POLY LINE BETWEEN THE CORP STOP AND THE CURB STOP OR BETWEEN THE CORP STOP AND THE WYE
6. NO CURB STOPS SHALL BE INSTALLED UNDER AN IMPERVIOUS SURFACE OR STRUCTURE
7. SERVICE TAPS SHALL BE A MINIMUM OF 18" FROM JOINTS, FITTINGS, OR OTHER TAPS ON THE MAIN.
8. SERVICE TUBING SHALL BE POLYETHYLENE DR9, 200PSI. BLUE FOR POTABLE, PURPLE FOR REUSE
9. PLACE APPROVED 3M MARKER TAPE TO THE CURB STOP(S) TIED INTO THE MARKER TAPE AT THE MAIN
10. SERVICE LINES SHALL BE MARKED IN THE CURB OR SIDEWALK IMMEDIATELY ADJACENT TO PARKING SPACES WITH A 3" TALL "W" FOR WATER OR A 3" TALL "R" FOR REUSE
11. THIS DETAIL IS INTENDED FOR 3/4" AND 1" METERS ONLY. FOR 1.5" OR 2" METERS REFER TO TOHO-02
12. THIS DETAIL IS INTENDED FOR SINGLE OR DOUBLE SERVICE CONNECTIONS ONLY. FOR GROUPS OF 3 -8 METERS REFER TO TOHO-03.0, TOHO-03.1, AND TOHO-03.2

METER AND METER BOX PLACEMENT NOTES

1. METERS 3/4" TO 1" ARE PAID FOR BY THE DEVELOPER AND INSTALLED BY TOHO
2. METER BOX(ES), SERVICE LINES, AND ALL ASSOCIATED APPURTENANCES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR OR DEVELOPER
3. TOHO PROVIDES APPROVED IN-GROUND BACKFLOW DEVICES ON ALL 3/4" AND 1" METERS
4. CURB STOP SHALL BE INSTALLED WITH THE OPERATING NUT FACING UP
5. PLACE FILTER FABRIC UNDER THE METER BOX EXTENDING 1' IN ALL DIRECTIONS. WRAP THE EXCESS AROUND THE SIDES OF THE BOX AND TAPE TIGHT TO THE BOX
6. NO PLANTINGS, STRUCTURES, OR OTHER UTILITIES, INCLUDING BUT NOT LIMITED TO TELECOM PEDESTALS, ELECTRICAL TRANSFORMERS OR POLES, ETC. SHALL BE INSTALLED WITHIN 36" OF ANY SIDE OF THE METER BOX
7. BUILDER SHALL MAKE FINAL HORIZONTAL AND VERTICAL ADJUSTMENTS TO METER ASSEMBLY AND BOX
 - 7.1. METER SHALL BE APPROXIMATELY 7" BELOW FINISHED GRADE AND CENTERED IN THE BOX
 - 7.2. SINGLE SERVICE BOX SHALL BE PERPENDICULAR TO THE CURB OR SIDEWALK
 - 7.3. DOUBLE SERVICE BOXES SHALL BE PARALLEL TO THE CURB OR SIDEWALK
 - 7.4. TOP OF METER BOX SHALL BE FLUSH WITH FINISH GRADE
8. METER BOX LID SHALL BE SOLID PLASTIC WITH NO METAL ACCESS DOOR, BLACK FOR WATER, PURPLE FOR REUSE

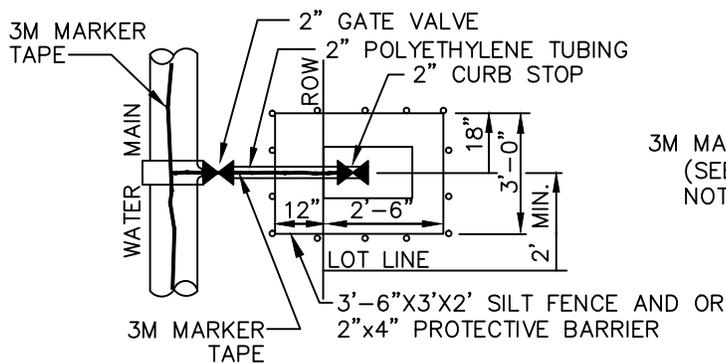


SERVICE NOTES:

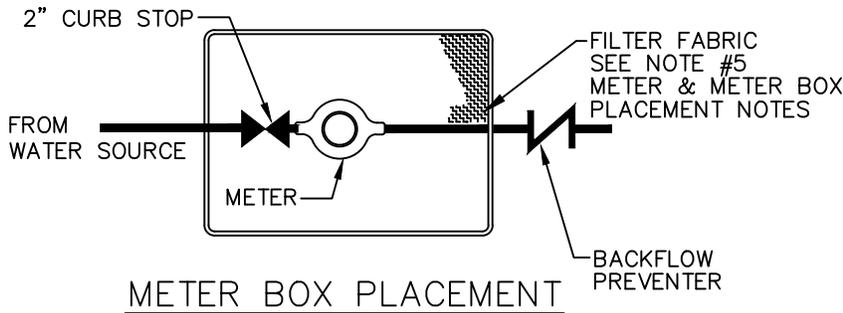
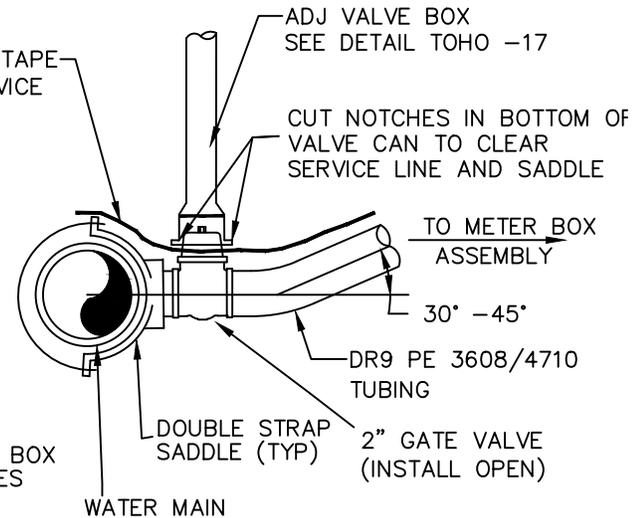
1. REFER TO TYPICAL RESIDENTIAL WATER SERVICE TOHO-01 FOR SERVICE NOTES

METER AND METER BOX PLACEMENT NOTES

1. METERS 3/4" TO 1" ARE PAID FOR BY THE DEVELOPER AND INSTALLED BY TOHO
2. METER BOX(ES), SERVICE LINES, AND ALL ASSOCIATED APPURTENANCES ARE BE THE RESPONSIBILITY OF THE CONTRACTOR AND/OR DEVELOPER
3. APPROVED BACKFLOW DEVICES ARE REQUIRED ON ALL IRRIGATION SERVICES COVERED BY THIS DETAIL
 - 3.1. IRRIGATION BACKFLOW DEVICES ARE THE RESPONSIBILITY OF THE CONTRACTOR AND/OR DEVELOPER
 - 3.1. RPZ BACKFLOW DEVICES SHALL BE INSTALLED A MINIMUM OF 12" ABOVE THE 100 YEAR FLOOD LEVEL
 - 3.2. PVB BACKFLOW DEVICES SHALL BE INSTALLED A MINIMUM OF 12" ABOVE THE HIGHEST OUTLET
4. TOHO PROVIDES APPROVED IN-GROUND BACKFLOW DEVICES FOR 3/4" AND 1" POTABLE METERS COVERED BY THIS DETAIL
5. CURB STOP SHALL BE INSTALLED WITH THE OPERATING NUT FACING UP
6. PLACE FILTER FABRIC UNDER THE METER BOX EXTENDING 1' IN ALL DIRECTIONS. WRAP THE EXCESS AROUND THE SIDES OF THE BOX AND TAPE TIGHT TO THE BOX
7. NO PLANTINGS, STRUCTURES, OR OTHER UTILITIES, INCLUDING BUT NOT LIMITED TO TELECOM PEDESTALS, ELECTRICAL TRANSFORMERS OR POLES, ETC. SHALL BE INSTALLED WITHIN 36" OF ANY SIDE OF THE METER BOX
8. BUILDER SHALL MAKE FINAL HORIZONTAL AND VERTICAL ADJUSTMENTS TO METER ASSEMBLY AND BOX
 - 8.1. METER SHALL BE APPROXIMATELY 7" BELOW FINISHED GRADE AND CENTERED IN THE BOX
 - 8.2. SINGLE SERVICE BOX SHALL BE PERPENDICULAR TO THE CURB OR SIDEWALK
 - 8.3. DOUBLE SERVICE BOXES SHALL BE PARALLEL TO THE CURB OR SIDEWALK
 - 8.4. TOP OF METER BOX SHALL BE FLUSH WITH FINISH GRADE
9. METER BOX LID SHALL BE SOLID PLASTIC WITH NO METAL ACCESS DOOR, BLACK FOR WATER, PURPLE FOR REUSE



SINGLE SERVICE



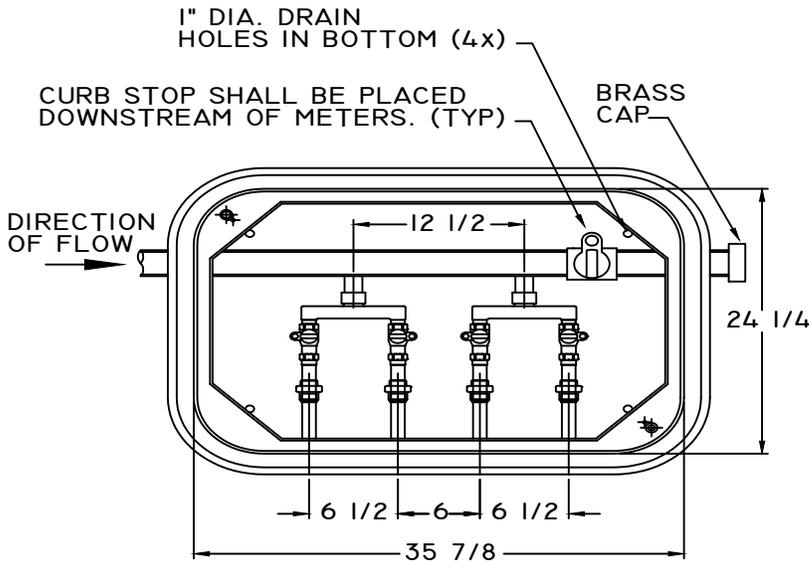
METER BOX PLACEMENT

SERVICE NOTES:

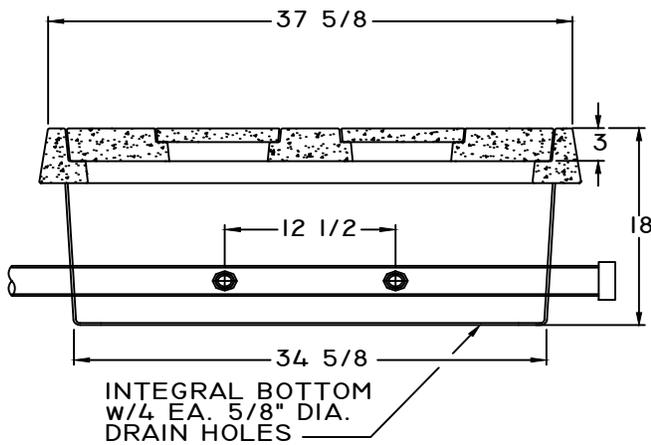
1. GATE VALVES SHALL BE RESILIENT WEDGE, CAST IRON, EPOXY COATED, THREADED WITH 2" OPERATING NUT
2. CURB STOPS SHALL BE LOCKING TYPE, STRAIGHT BALL VALVE, NO LEAD BRASS. 1.5" AND 2" SHALL BE 2 BOLT FLANGE METER CONNECTION, 3/4" AND 1" SHALL BE SWIVEL METER NUT CONNECTION.
3. METER COUPLINGS SHALL NOT BE USED
4. SERVICE LINE SHALL BE CONTINUOUS, NO FITTINGS ARE PERMITTED ON THE POLY LINE BETWEEN THE GATE VALVE AND THE CURB STOP OR BETWEEN THE GATE VALVE AND THE WYE
5. NO CURB STOPS OR WYES SHALL BE INSTALLED UNDER AN IMPERVIOUS SURFACE
6. SERVICE SHALL NOT TERMINATE UNDER AN IMPERVIOUS SERVICE OR UNDER ANY STRUCTURE
7. SERVICE TAPS SHALL BE A MINIMUM OF 18" FROM JOINTS, FITTINGS, OR OTHER TAPS ON THE MAIN.
8. SERVICE TUBING SHALL BE POLYETHYLENE DR9, 200PSI. BLUE FOR POTABLE WATER, PURPLE FOR REUSE WATER
9. PLACE APPROVED 3M MARKER TAPE TO THE CURB STOP(S) TIED TO THE MARKER TAPE AT THE MAIN
10. SERVICE LINES SHALL BE MARKED IN THE CURB OR SIDEWALK IMMEDIATELY ADJACENT TO PARKING SPACES WITH A 3" TALL "W" FOR WATER OR A 3" TALL "R" FOR REUSE
11. THIS DETAIL IS INTENDED FOR SINGLE OR DOUBLE SERVICE CONNECTIONS ONLY. FOR GROUPS OF 3 -8 METERS REFER TO TOHO-03.0, TOHO-03.1, AND TOHO-03.2

METER AND METER BOX PLACEMENT NOTES

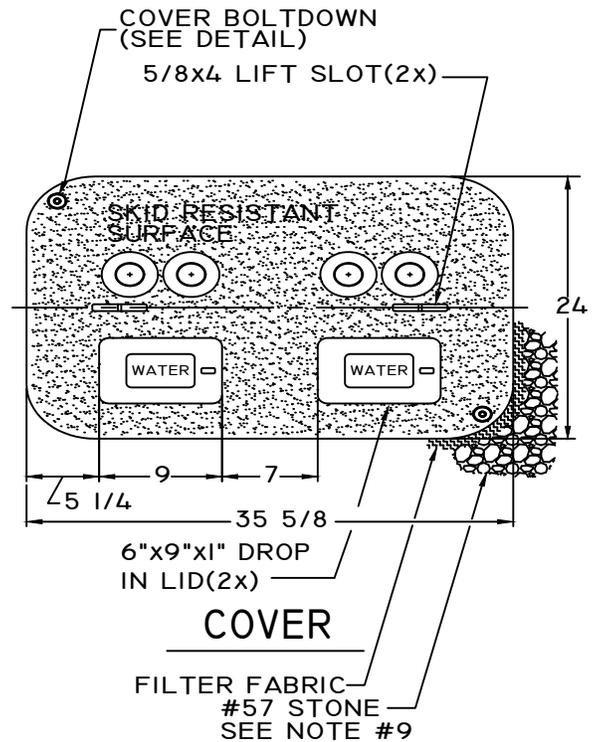
1. METERS 3/4" TO 2" ARE PAID FOR BY THE DEVELOPER AND INSTALLED BY TOHO
2. METER BOX(ES), SERVICE LINES, AND ALL ASSOCIATED APPURTENANCES ARE BE THE RESPONSIBILITY OF THE CONTRACTOR AND/OR DEVELOPER
3. APPROVED BACKFLOW DEVICES ARE REQUIRED ON ALL COMMERCIAL SERVICES AND ARE THE RESPONSIBILITY OF THE CONTRACTOR AND/OR DEVELOPER
 - 3.1. RPZ BACKFLOW DEVICES SHALL BE INSTALLED A MINIMUM OF 12' ABOVE THE 100 YEAR FLOOD LEVEL
 - 3.2. PVB BACKFLOW DEVICES SHALL BE INSTALLED A MINIMUM OF 12" ABOVE THE HIGHEST OUTLET
4. CURB STOP SHALL BE INSTALLED WITH THE OPERATING NUT FACING UP
5. PLACE FILTER FABRIC UNDER THE METER BOX EXTENDING 1' IN ALL DIRECTIONS. WRAP THE EXCESS AROUND THE SIDES OF THE BOX AND TAPE TIGHT TO THE BOX
6. NO PLANTINGS, STRUCTURES, OR OTHER UTILITIES, INCLUDING BUT NOT LIMITED TO TELECOM PEDESTALS, ELECTRICAL TRANSFORMERS OR POLES, ETC. SHALL BE INSTALLED WITHIN 36" OF ANY SIDE OF THE METER BOX
7. BUILDER SHALL MAKE FINAL HORIZONTAL AND VERTICAL ADJUSTMENTS TO METER ASSEMBLY AND BOX
 - 7.1. METER SHALL BE APPROXIMATELY 7" BELOW FINISHED GRADE AND CENTERED IN THE BOX
 - 7.2. METER BOXES SHALL BE PERPENDICULAR TO THE CURB OR SIDEWALK
 - 7.3. TOP OF METER BOX SHALL BE FLUSH WITH FINISH GRADE
8. METER BOX LID SHALL BE SOLID PLASTIC WITH NO METAL ACCESS DOOR, BLACK FOR WATER, PURPLE FOR REUSE



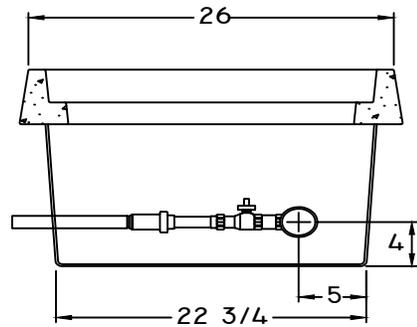
TOP VIEW



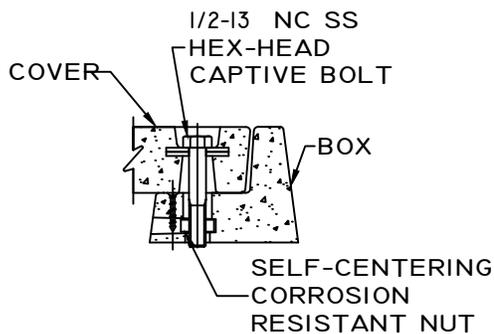
SECTION



COVER



SECTION

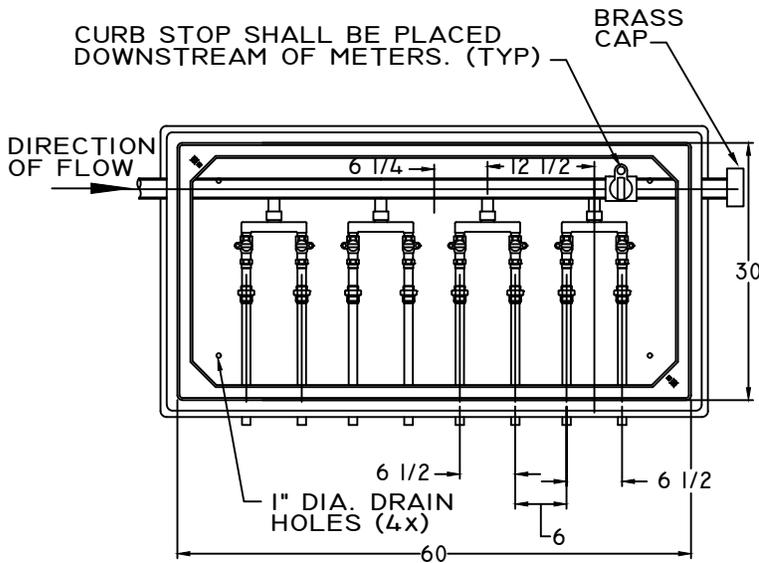


COVER BOLTDOWN DETAIL

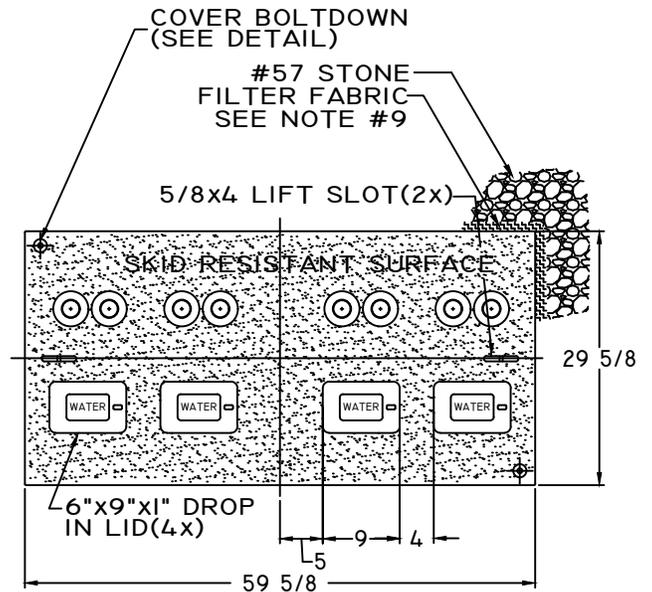
• MATERIAL: FIBERGLASS REINFORCED POLYMER CONCRETE & FIBERGLASS REINFORCED POLYMER

NOTES:

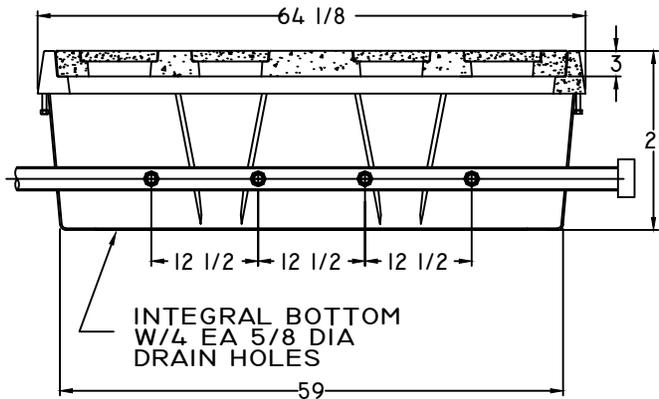
1. THIS DETAIL IS INTENDED FOR GROUPS OF 3 TO 4 - 3/4" METERS.
2. SEE TYPICAL RESIDENTIAL WATER SERVICE DETAIL TOHO-01 FOR ADDITIONAL REQUIREMENTS
3. CURB STOP SUPPLIED INSIDE THE VAULT SHALL BE PLACED ON THE DOWNSTREAM SIDE OF THE INTERIOR MANIFOLD
4. CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING METER VAULTS ARE PROPERLY ORIENTED PER THE TOHO APPROVED DRAWINGS AND DETAILS
5. VAULT SHALL BE SET TO SOD GRADE
6. ALL PIPE AND FITTINGS INSIDE THE VAULT SHALL BE NO LEAD BRASS
7. METER VAULTS MUST BE ORDERED WITH THE APPROPRIATE METER SIZE(S) SPECIFIED. NO ALTERATIONS TO THE INTERIOR MANIFOLD ARE PERMITTED AFTER DELIVERY
8. CURB STOP ON 2" WATER SERVICE SHALL BE INSTALLED WITH THE OPERATING NUT FACING UP
9. PLACE #57 STONE A MINIMUM OF 6" DEEP EXTENDING 1' BEYOND ALL EDGES OF THE VAULT. PLACE FILTER FABRIC UNDER THE VAULT ABOVE THE #57 STONE EXTENDING 1' BEYOND ALL EDGES.
10. PLACE APPROVED 3M MARKER TAPE TO THE CURB STOP AND TIED INTO THE TAPE AT THE MAIN



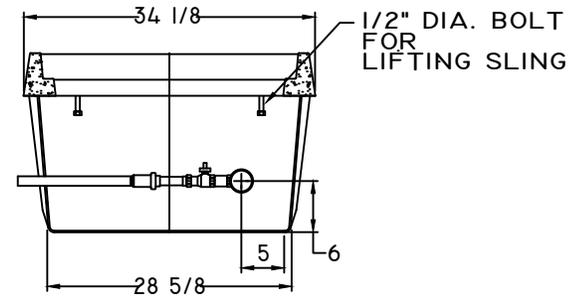
TOP VIEW



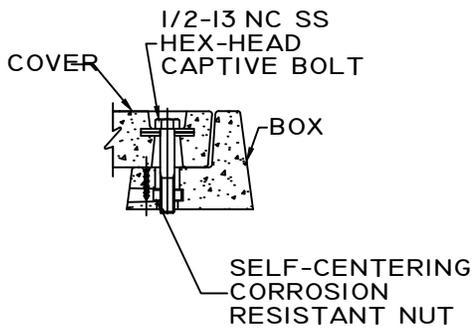
COVER



SECTION



SECTION

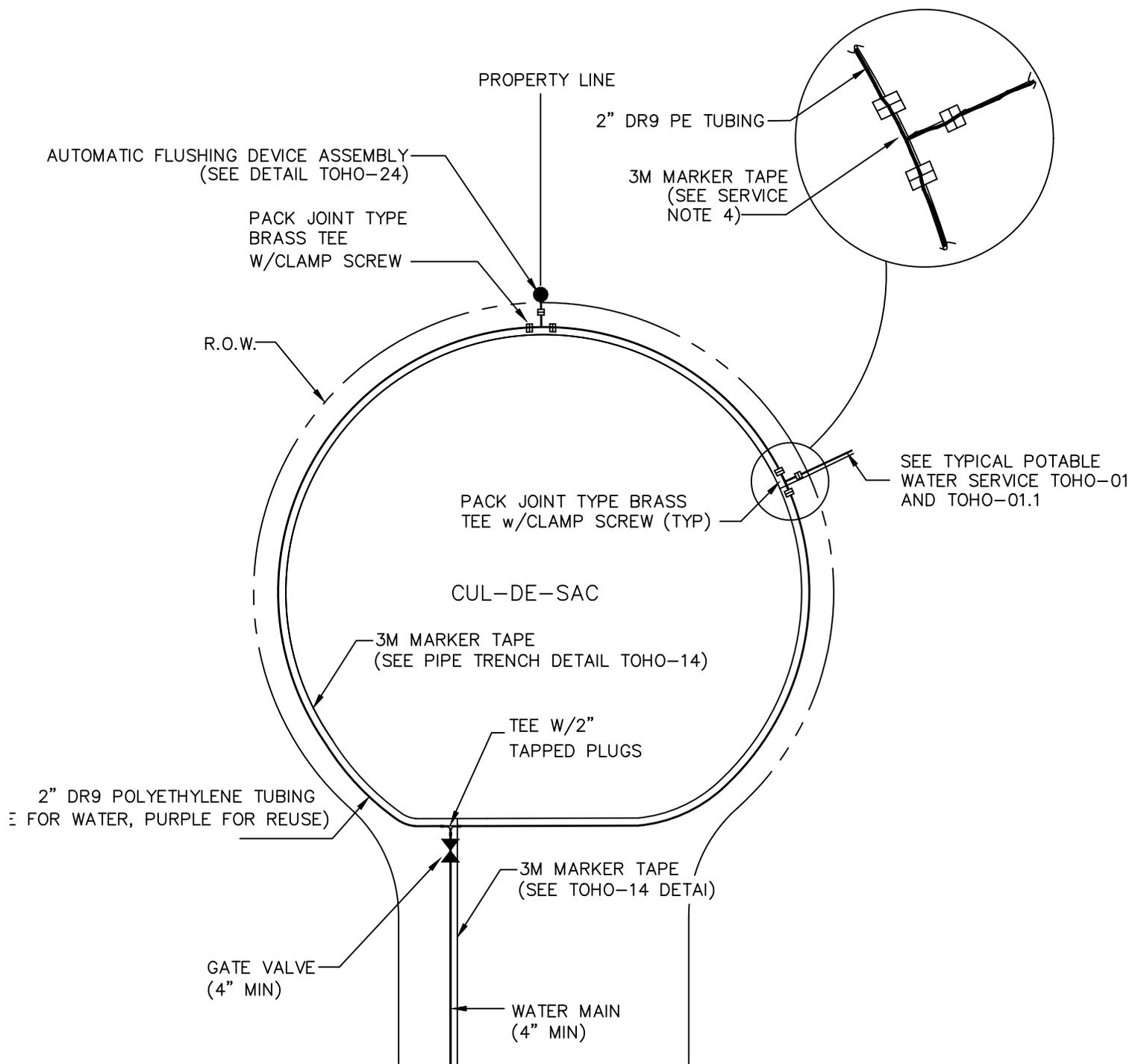


COVER BOLTDOWN DETAIL

NOTES:

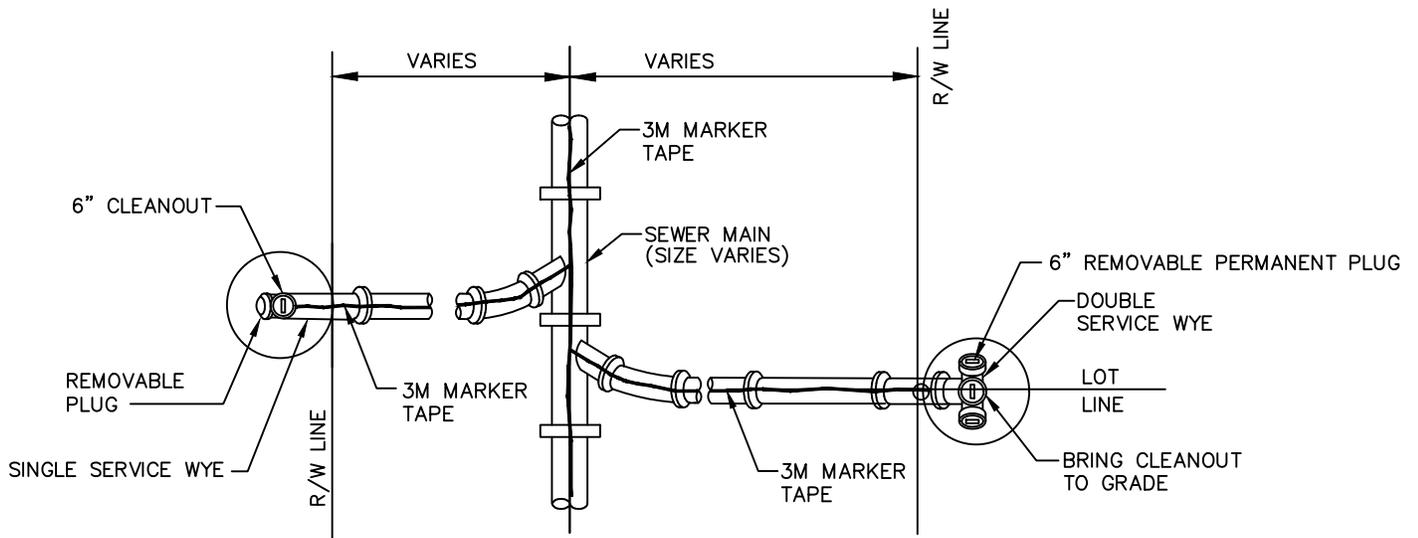
1. THIS DETAIL IS INTENDED FOR GROUPS OF 7 TO 8 - 3/4" METERS.
2. SEE TYPICAL RESIDENTIAL WATER SERVICE DETAIL TOHO-01 FOR ADDITIONAL REQUIREMENTS
3. CURB STOP SUPPLIED INSIDE THE VAULT SHALL BE PLACED ON THE DOWNSTREAM SIDE OF THE INTERIOR MANIFOLD
4. CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING METER VAULTS ARE PROPERLY ORIENTED PER THE TOHO APPROVED DRAWINGS AND DETAILS
5. VAULT SHALL BE SET TO SOD GRADE
6. ALL PIPE AND FITTINGS INSIDE THE VAULT SHALL BE NO LEAD BRASS
7. METER VAULTS MUST BE ORDERED WITH THE APPROPRIATE METER SIZE(S) SPECIFIED. NO ALTERATIONS TO THE INTERIOR MANIFOLD ARE PERMITTED AFTER DELIVERY
8. CURB STOP ON 2" WATER SERVICE SHALL BE INSTALLED WITH THE OPERATING NUT FACING UP
9. PLACE #57 STONE A MINIMUM OF 6" DEEP EXTENDING 1' BEYOND ALL EDGES OF THE VAULT. PLACE FILTER FABRIC UNDER THE VAULT ABOVE THE #57 STONE EXTENDING 1' BEYOND ALL EDGES.
10. PLACE APPROVED 3M MARKER TAPE TO THE CURB STOP AND TIED INTO THE TAPE AT THE MAIN

- MATERIAL: FIBERGLASS REINFORCED POLYMER CONCRETE & FIBERGLASS REINFORCED POLYMER

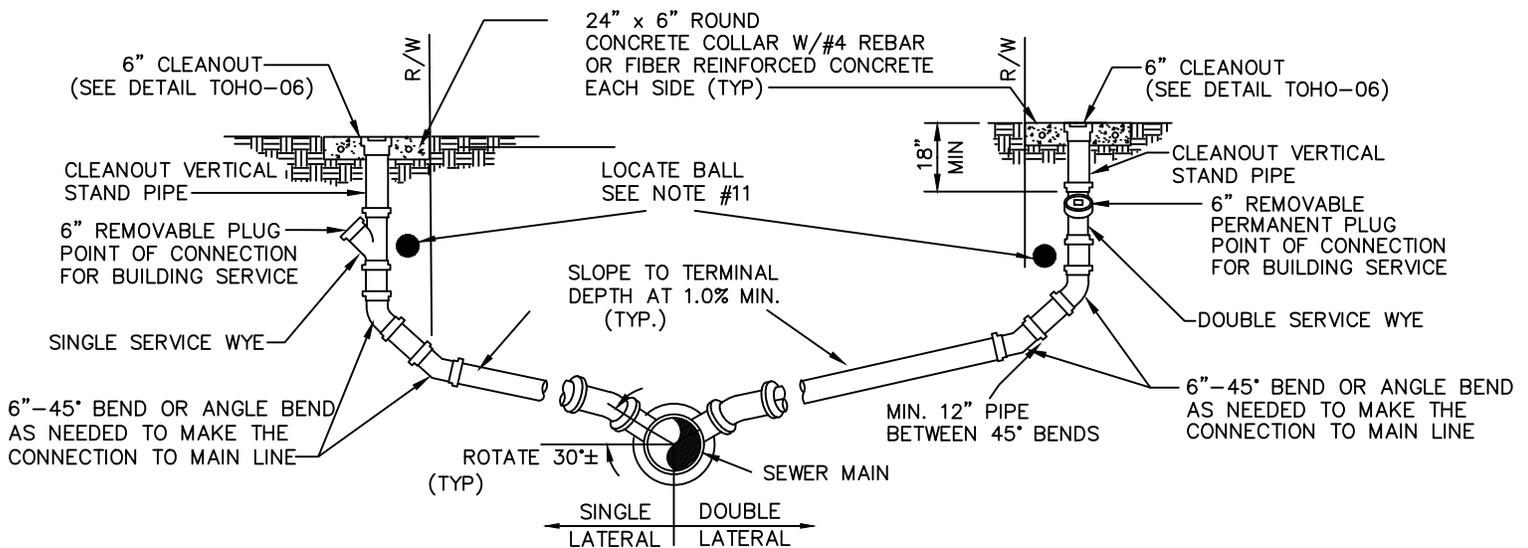


NOTES:

1. THIS DETAIL APPLIES ONLY WHEN THE WATER MAIN CANNOT BE LOOPED AND WILL ONLY BE ALLOWED AT THE DISCRETION OF TOHO
2. AN AUTOMATIC FLUSHING DEVICE (AFD) WILL BE INSTALLED BY THE CONTRACTOR AND/OR DEVELOPER ON THE POTABLE WATER LOOP ONLY
3. THE AFD SHALL BE SET BEHIND THE RIGHT-OF-WAY LINE AND ON A SIDE PROPERTY LINE
4. PLACE APPROVED 3M MARKER TAPE OVER THE 2" MAIN. MARKER TAPE SHALL TIE INTO THE MARKER TAPE AT THE GATE VALVE AND TERMINATE AT ALL CURB STOPS ALONG THE LOOP, INCLUDING TO THE AFD SERVICE
5. THE MAXIMUM NUMBER OF 3/4" METERS ON A 2" LOOP SHALL BE 8
6. ALL TEES, STOPS, AND WYES DOWNSTREAM OF THE TEE W/ 2" TAPPED PLUGS SHALL BE NO LEAD BRASS PACK JOINT TYPE W/ CLAMP SCREW

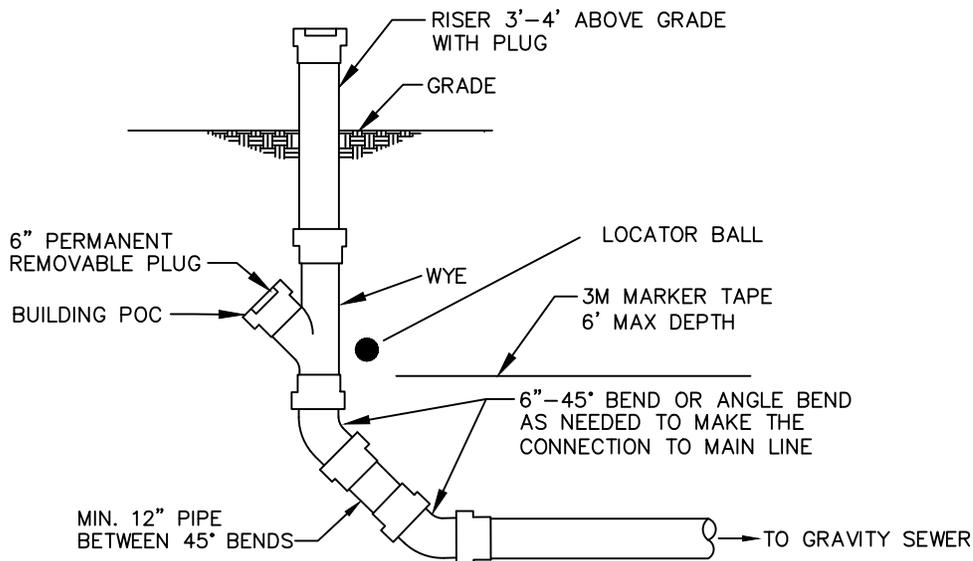


PLAN

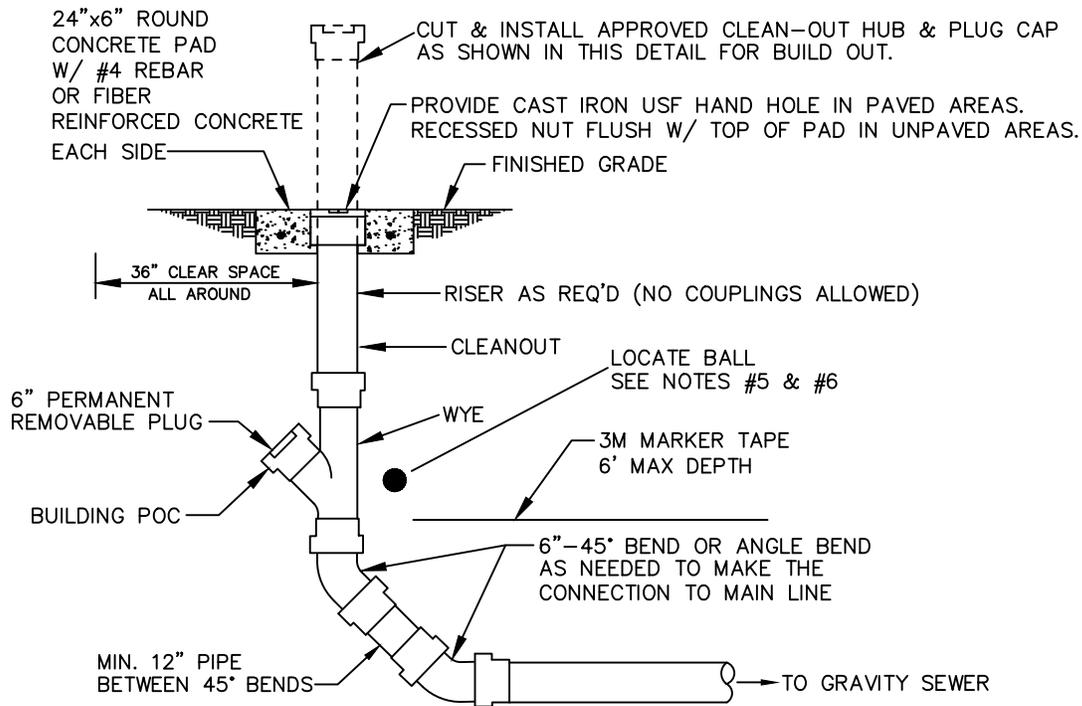


NOTES:

1. ALL RESIDENTIAL AND COMMERCIAL LATERALS SHALL BE 6".
2. THE SINGLE 6" RISER DENOTES THE END OF TOHO'S MAINTENANCE RESPONSIBILITY
3. THE SINGLE 6" TOHO CLEANOUT SHALL BE PLACED ON THE LOT LINE AND WITHIN 24" OF THE RIGHT-OF-WAY LINE
4. NO CLEANOUTS SHALL BE PLACED WITHIN A RIGHT-OF-WAY OR IN A SIDEWALK
5. LATERALS SHALL NOT EXCEED 100' FROM THE MAIN TO TOHO'S CLEANOUT
6. CONNECTIONS TO THE TOHO CLEANOUT'S VERTICAL STANDPIPE ARE NOT PERMITTED
7. FITTINGS USED SHALL NOT EXCEED 45 DEGREES. A MINIMUM OF 12" OF PIPE IS REQUIRED BETWEEN ALL FITTINGS
8. THE SERVICE WYE ON THE 6" VERTICAL STANDPIPE SHALL BE BETWEEN 18" AND 48" FROM FINISHED GRADE
9. NO PLANTINGS, STRUCTURES, OR OTHER UTILITIES, INCLUDING BUT NOT LIMITED TO TELECOM PEDESTALS, ELECTRICAL TRANSFORMERS OR POLES, OR OTHER CLEANOUTS USED FOR TESTING PURPOSES SHALL BE INSTALLED WITHIN 36" OF ANY SIDE OF THE TOHO CLEANOUT.
10. PLACE TOHO APPROVED 3M MARKER TAPE FROM THE MAIN TO THE SINGLE OR DOUBLE SERVICE WYE.
 - 10.1. TAPE SHALL BE BURIED NO DEEPER THAN 6'
 - 10.2. IF MARKER TAPE IS INSTALLED MORE THAN 18" ABOVE A LATERAL DUE TO DEPTH OF THE PIPE, ADDITIONAL TOHO APPROVED WARNING TAPE SHALL BE REQUIRED 12" - 18" ABOVE THE PIPE
11. PROVIDE TOHO APPROVED LOCATE BALLS AT ALL SINGLE AND DOUBLE SERVICE WYES
12. SEE SANITARY CLEANOUT DETAIL TOHO-06 FOR ADDITIONAL NOTES AND REQUIREMENTS



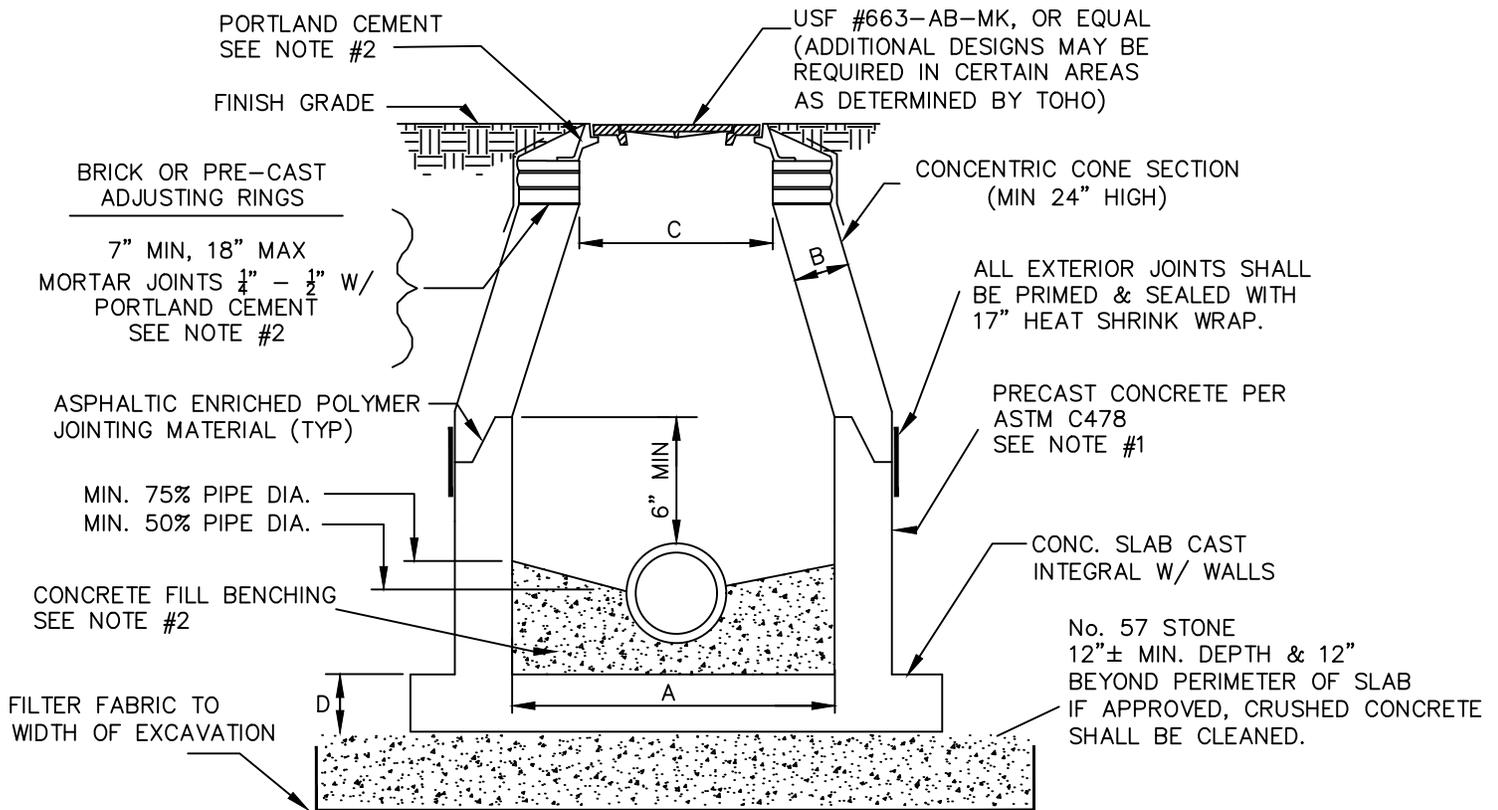
UN-DEVELOPED LOT



LOT BUILD OUT

NOTES:

1. SITE CONTRACTOR SHALL LEAVE THE CLEANOUT RISER 3' - 4' ABOVE FINISHED GRADE. AT LOT BUILD OUT THE RISER SHALL BE CUT AND CAPPED WITH A CLEANOUT HUB AND CAP INSTALLED IN A CONCRETE PAD SET FLUSH WITH FINISH GRADE
2. CLEANOUT CAPS SHALL HAVE BE SLOTTED OR HAVE A RECESSED NUT
3. LATERALS SHALL BE MARKED WITH A 3" HIGH "S" IN THE CURB OR SIDEWALK ADJACENT TO A PARKING SPACE WHERE THE LATERAL CROSSES THE CURB OR SIDEWALK.
4. NO PLANTINGS, STRUCTURES, OR OTHER UTILITIES, INCLUDING BUT NOT LIMITED TO TELECOM PEDESTALS, ELECTRICAL TRANSFORMERS OR POLES, OR OTHER CLEANOUTS USED FOR TESTING PURPOSES SHALL BE INSTALLED WITHIN 36" OF ANY SIDE OF THE TOHO CLEANOUT.
5. PROVIDE TOHO APPROVED LOCATE BALLS AT ALL SINGLE AND DOUBLE SERVICE WYES
6. PLUMBER SHALL CONNECT TO SERVICE WYE WITH GASKETED PUSH FITTING ONLY. GLUE OR NON GASKETED FITTINGS SHALL NOT BE PERMITTED
7. SEE SANITARY SEWER LATERAL DETAIL TOHO-05 FOR ADDITIONAL NOTES AND REQUIREMENTS



NOTES:

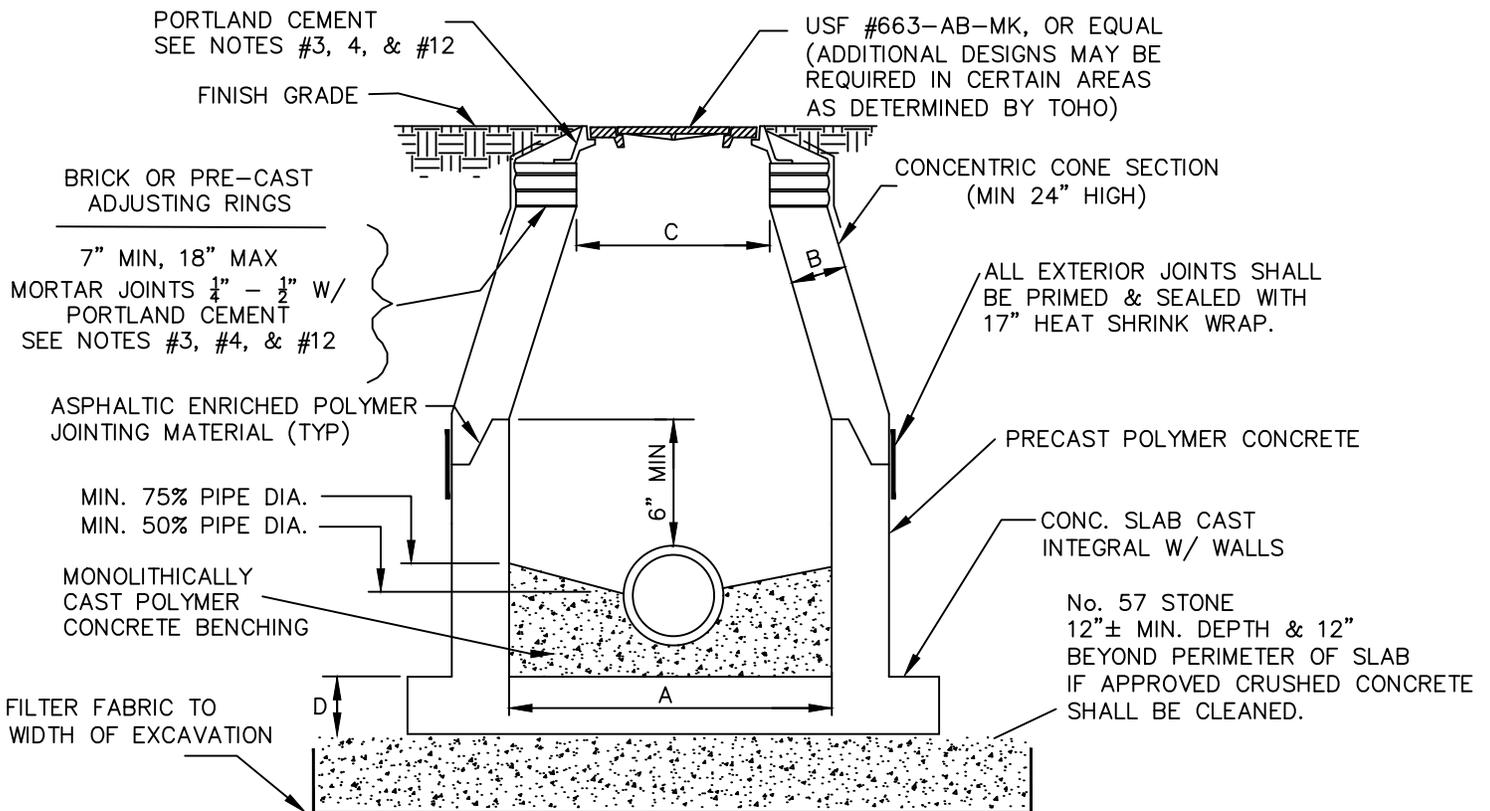
1. PRECAST CONCRETE SHALL BE TYPE 2 CEMENT, 4000 PSI WITH XYPEX ADMIX C-1000 RED, XYPEX XYCRYLIC ADMIX, OR APPROVED EQUAL
2. ALL PORTLAND CEMENT, GROUT, OR CONCRETE FILL USED INSIDE OR OUTSIDE OF A NON-POLYMER MANHOLE SHALL REQUIRE XYPEX C-1000 RED, XYPEX XYCRYLIC ADMIX OR APPROVED EQUAL
3. ALL OPENINGS, CHIPS, LIFT HOLES, ETC. SHALL BE SEALED WITH PORTLAND CEMENT WITH XYPEX ADMIX C-1000 RED, XYPEX XYCRYLIC ADMIX, OR APPROVED EQUAL
4. LIFT HOLES ARE NOT PERMITTED THROUGH PRECAST SECTIONS
5. REINFORCING STEEL PER ASTM C478 (MOST RECENT EDITION) SHALL BE REQUIRED
6. DESIGNS MUST MINIMUM OF 50% UNINTERRUPTED WALL AREA ON ANY HORIZONTAL PLANE AND A MINIMUM OF 12" BETWEEN WALL PENETRATIONS
7. CONCENTRIC FLAT SLAB TRANSITIONS TO THE CONE SECTION ARE ALLOWED AT THE DISCRETION OF TOHO
8. SERVICE LATERALS SHALL BE PERMITTED DIRECTLY INTO MANHOLES MATCHING THE CROWN ELEVATION OF THE OUTFLOW PIPE ONLY. DROPS OR FILLETED FLUMES ARE NOT PERMITTED FOR LATERALS
9. THIS DETAIL SHALL NOT APPLY TO THE FOLLOWING MANHOLES. REFERENCE THE POLYMER MANHOLE DETAIL TOHO-07.1 FOR ADDITIONAL REQUIREMENTS:
 - 9.1. MANHOLES 12' OR DEEPER
 - 9.2. MANHOLES THAT RECEIVE FORCE MAINS
 - 9.3. MANHOLES WITH DROP CONNECTIONS
 - 9.4. MANHOLES WITHIN 400' UPSTREAM OR DOWNSTREAM OF 9.2 OR 9.3 ABOVE
10. WHERE MANHOLES ARE NOT IN PAVED AREAS OR COMPLETELY PROTECTED FROM VEHICULAR TRAFFIC, A CONCRETE COLLAR PER TOHO-26 SHALL BE REQUIRED

M.H. DEPTH	A*	B	C	D
UP TO 11.99'	48"	6"	36"	8"
* >12', < 15'	60"	8"	36"	10"

* MH'S 12' OR DEEPER ONLY
ALLOWED ON CASE-BY-CASE BASIS
W/ EXECUTIVE DIRECTOR APPROVAL.

MANHOLE SIZE:

(UP TO 12" PIPE = 48" ϕ), (UP TO 24" PIPE = 60" ϕ), (OVER 24" PIPE = 72" ϕ).



NOTES:

1. THIS DETAIL SHALL APPLY TO THE FOLLOWING MANHOLES:
 - 1.1. MANHOLES 12' OR DEEPER
 - 1.2. MANHOLES THAT RECEIVE FORCE MAINS
 - 1.3. MANHOLES WITH DROP CONNECTIONS
 - 1.4. MANHOLES WITHIN 400' UPSTREAM OR DOWNSTREAM OF 10.2 OR 10.3 ABOVE
2. PRECAST BASE, RISER(S), AND CONE SECTIONS SHALL BE POLYMER CONCRETE.
3. ALL GROUT FILL USED INSIDE A POLYMER MANHOLE SHALL BE POLYMER GROUT AS SPECIFIED BY THE MANHOLE PRECASTER
4. ALL PORTLAND CEMENT, GROUT, OR CONCRETE FILL USED OUTSIDE OF A POLYMER MANHOLE SHALL REQUIRE XYPEX ADMIX C-1000 RED, XYPEX XYCRYLIC ADMIX, OR APPROVED EQUAL
5. ALL INTERIOR OPENINGS, CHIPS, LIFT HOLES, ETC. SHALL BE SEALED WITH POLYMER GROUT AS SPECIFIED BY THE MANHOLE PRECASTER
6. LIFT HOLES ARE NOT PERMITTED THROUGH PRECAST SECTIONS
7. REINFORCEMENT OF THE PRECAST BASE, RISER(S), AND CONE SHALL BE DESIGNED BY THE MANHOLE PRECASTER AND APPROVED BY TOHO
8. MANHOLE DESIGNS MUST MAINTAIN A MINIMUM OF 50% UNINTERRUPTED WALL AREA ON ANY HORIZONTAL PLANE AND A MINIMUM OF 12" BETWEEN WALL PENETRATIONS
9. CONCENTRIC FLAT SLAB TRANSITIONS TO THE CONE SECTION ARE ALLOWED AT THE DISCRETION OF TOHO
10. SERVICE LATERALS SHALL BE PERMITTED DIRECTLY INTO MANHOLES MATCHING THE CROWN ELEVATION OF THE OUTFLOW PIPE ONLY. DROPS OR FILLETED FLUMES ARE NOT PERMITTED FOR LATERALS
11. WHERE MANHOLES ARE NOT IN PAVED AREAS OR COMPLETELY PROTECTED FROM VEHICULAR TRAFFIC, A CONCRETE COLLAR PER TOHO-26 SHALL BE REQUIRED
12. POLYMER GROUT AS SPECIFIED BY THE MANHOLE PRECASTER SHALL BE USE TO SKIM COAT THE INTERIOR SURFACE OF THE BRICK RISER / ADJUSTMENT RING(S)

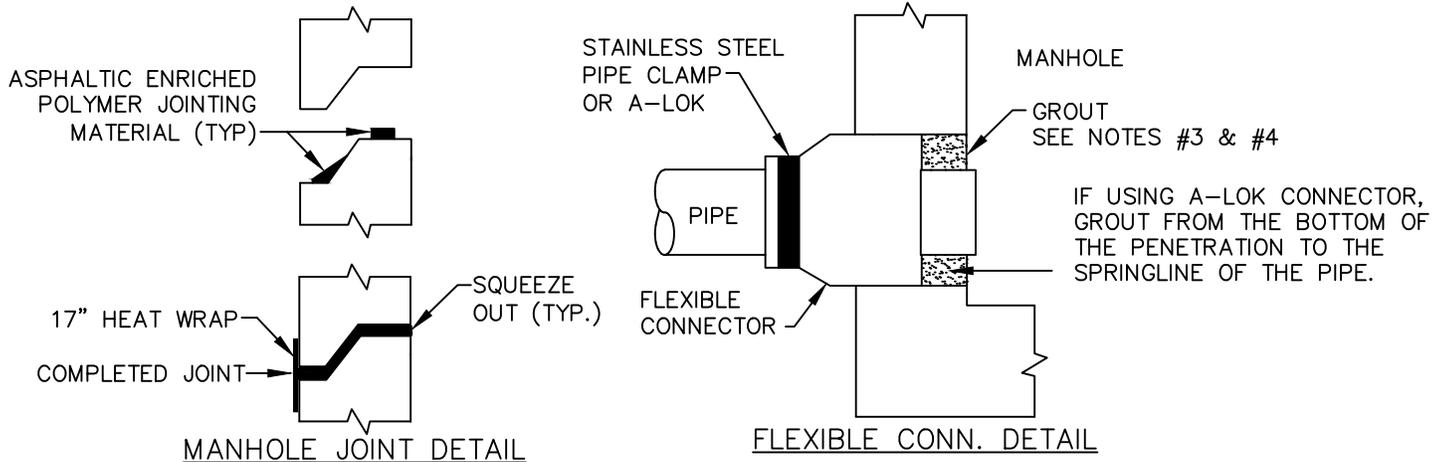
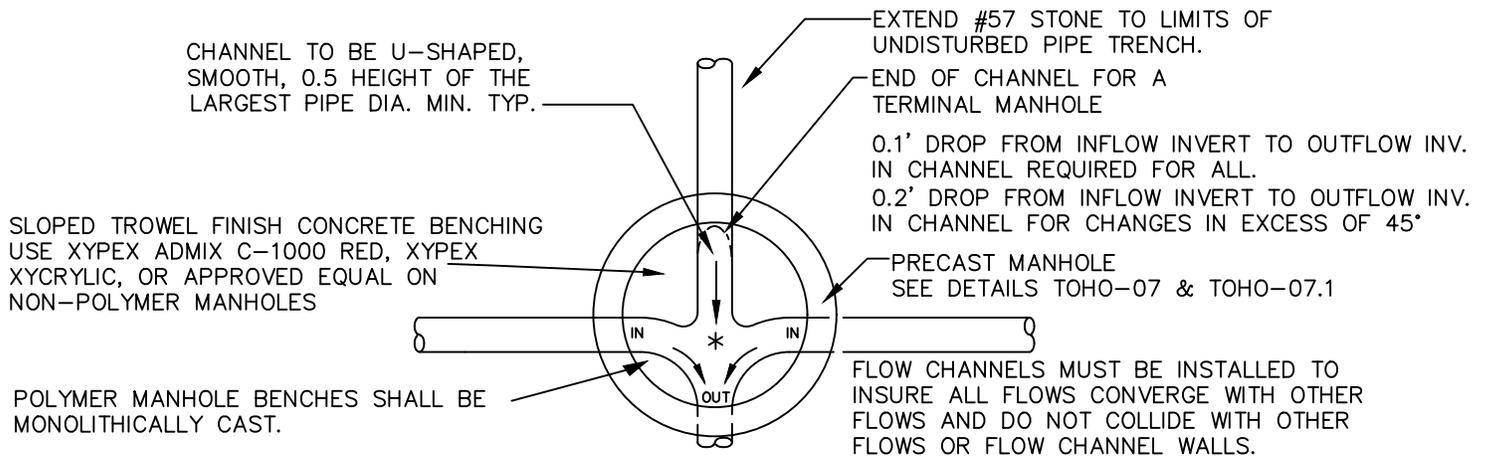
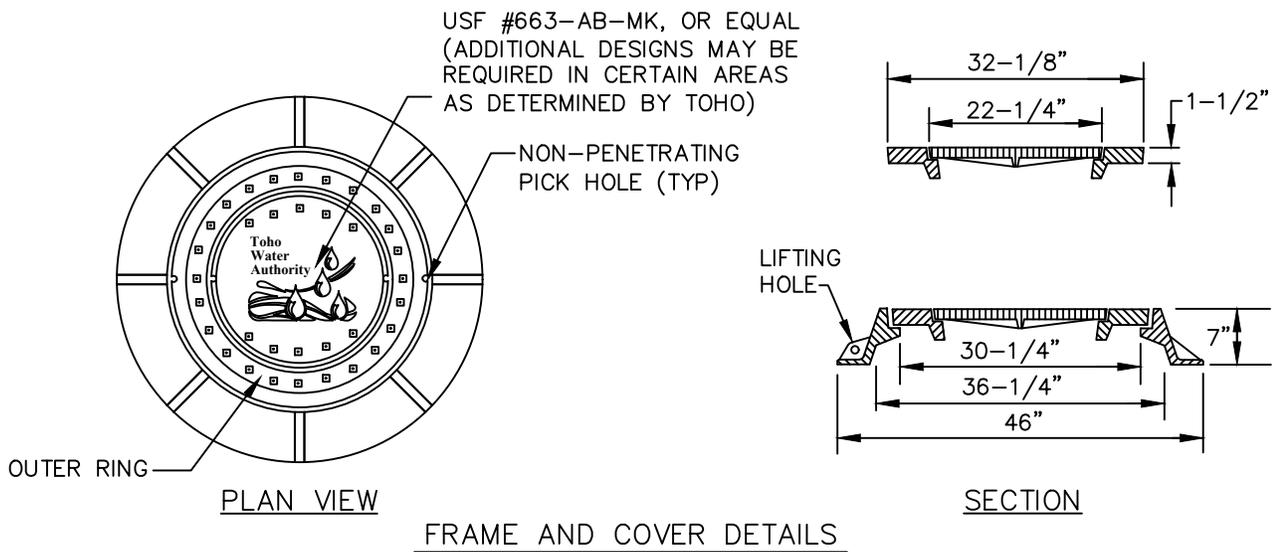
M.H. DEPTH	A*	B (MIN)	C	D (MIN)**
UP TO 11.99'	48"	2"	36"	6"
* >12', < 15'	60"	2"	36"	6"

* MH'S 12' OR DEEPER ONLY
ALLOWED ON CASE-BY-CASE BASIS
W/ EXECUTIVE DIRECTOR APPROVAL.

** BASE DEPTH AND REINFORCEMENT
TO BE DESIGNED BY MANHOLE
PRECASTER AND APPROVED BY
TOHO

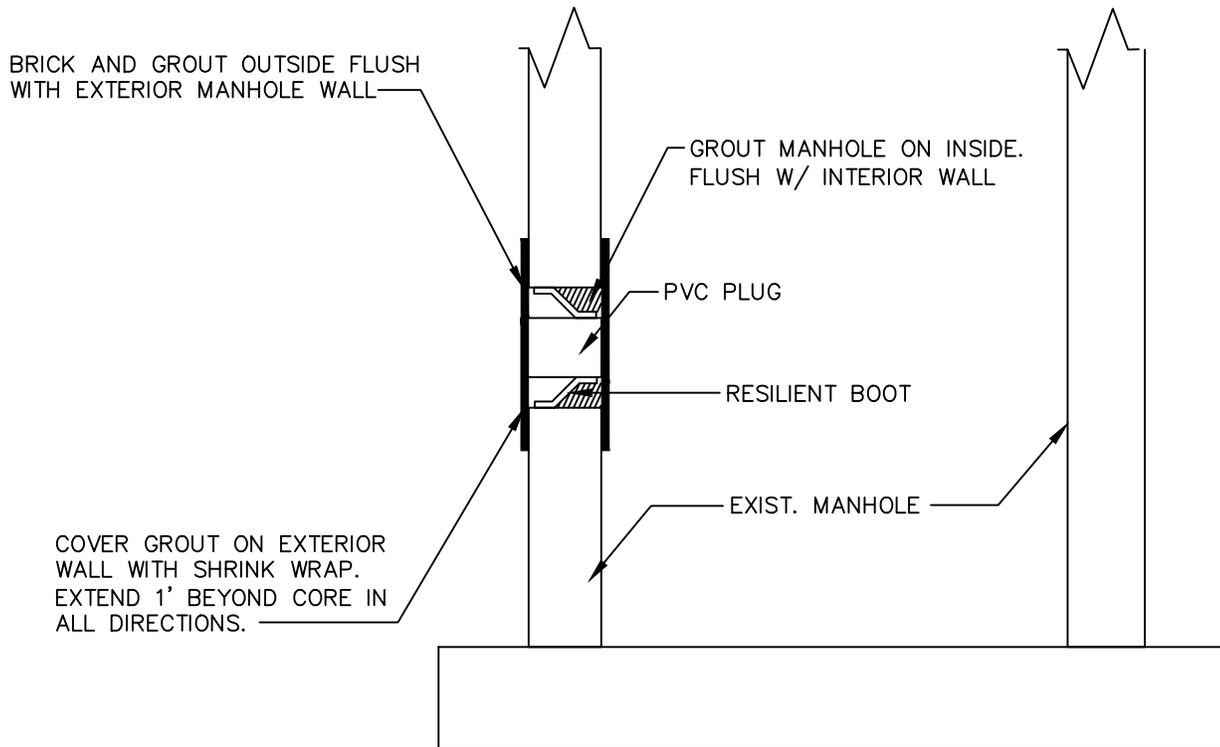
MANHOLE SIZE:

(UP TO 12" PIPE = 48" ϕ), (UP TO 24" PIPE = 60" ϕ), (OVER 24" PIPE = 72" ϕ).

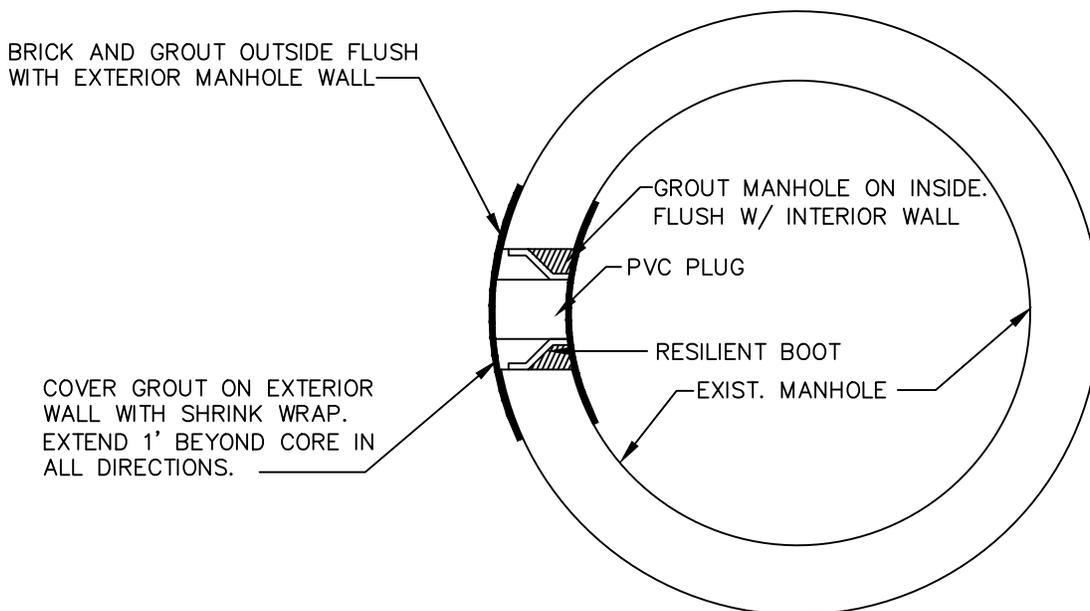


NOTES:

1. ALL EXTERIOR JOINTS SHALL BE CLEANED, PRIMED, AND SEALED WITH 17" HEAT SHRINK WRAP
2. EXCESS JOINT COMPOUND SHALL BE TRIMMED FROM INTERIOR WALLS
3. ALL PORTLAND CEMENT, GROUT, OR CONCRETE FILL USED INSIDE NON-POLYMER MANHOLES OR OUTSIDE OF NON-POLYMER AND POLYMER MANHOLES SHALL REQUIRE XYPEX XYCRYLIC ADMIX OR EQUAL
4. ALL PORTLAND CEMENT, GROUT, OR CONCRETE FILL USED INSIDE POLYMER MANHOLES SHALL REQUIRE POLYMER GROUT AS SPECIFIED BY THE MANHOLE PRECASTER
5. A-LOK CONNECTORS SHALL BE GROUTED FROM THE SPRINGLINE OF THE PIPE DOWN
6. CONCENTRIC FLAT SLAB TRANSITIONS TO THE CONE SECTION SHALL BE APPROVED BY TOHO ON A CASE-BY-CASE BASIS
7. CONNECTIONS TO BRICK MANHOLES SHALL BE COMPLETED UTILIZING SDR35 OR SDR 26 SAND COLLAR(S) AND 4,000PSI CONCRETE WITH XYPEX XYCRYLIC ADMIX OR EQUAL



SECTION VIEW

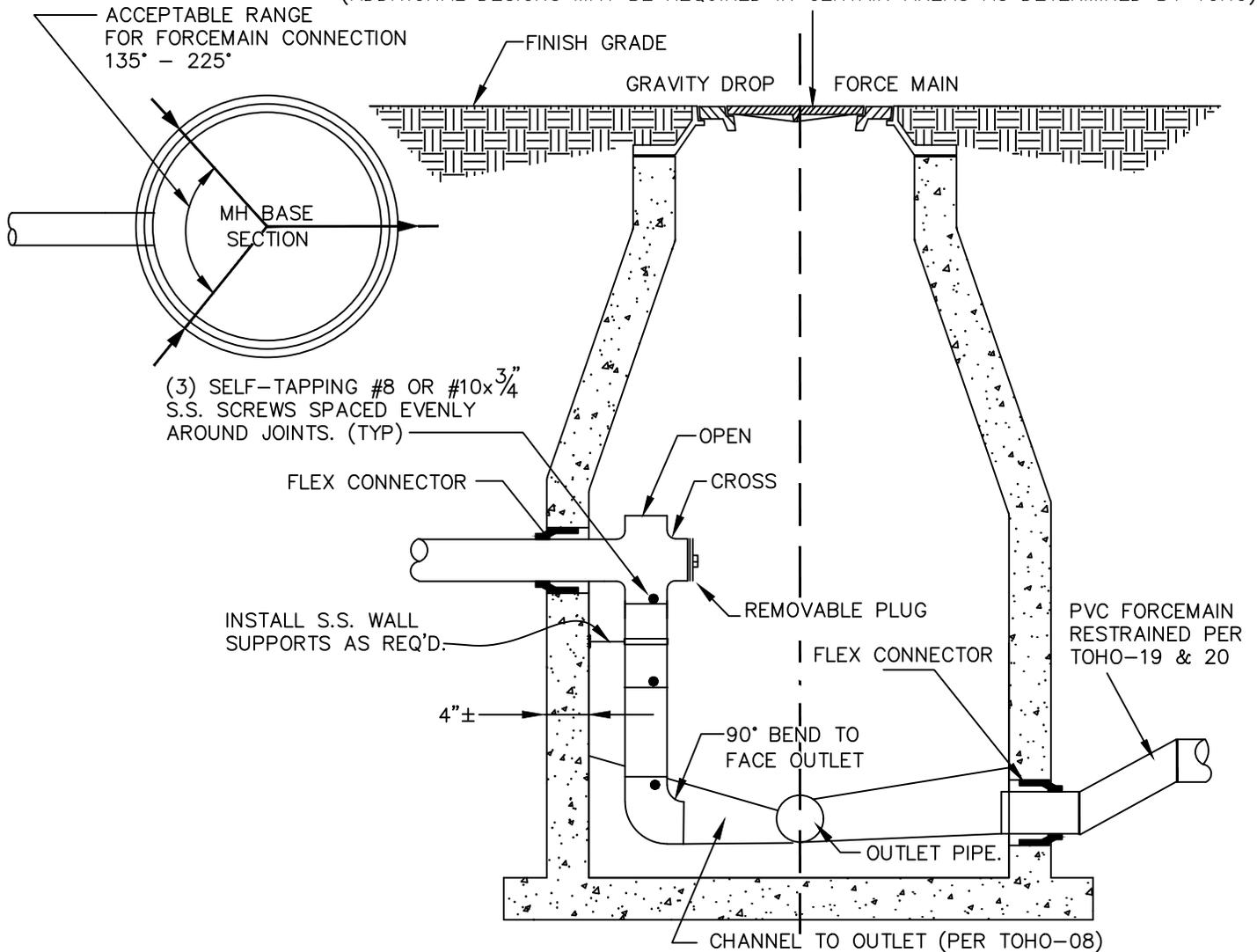


PLAN VIEW

NOTES:

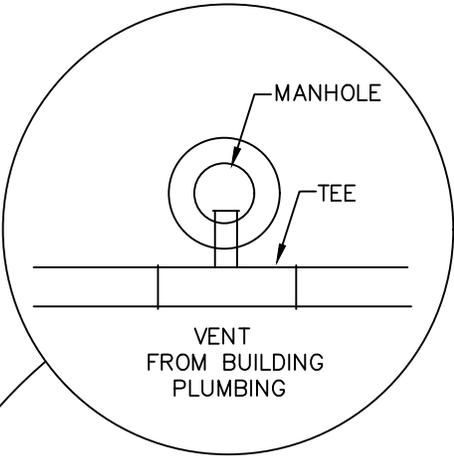
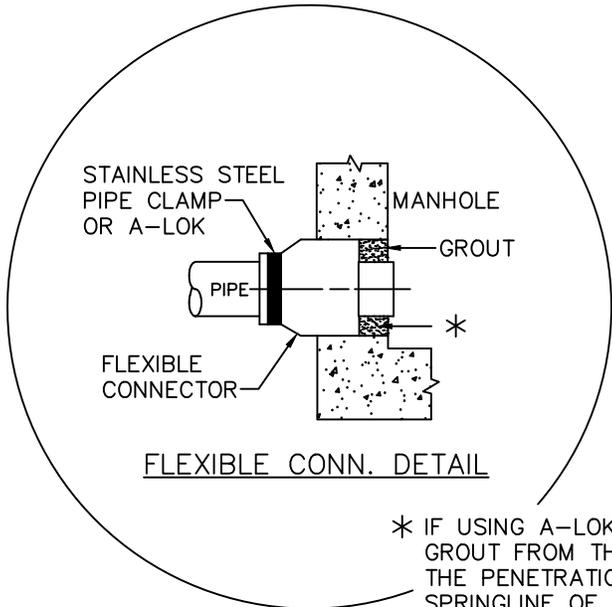
1. ALL GROUT FILL USED INSIDE A POLYMER MANHOLE SHALL BE POLYMER GROUT AS SPECIFIED BY THE MANHOLE PRECASTER
2. ALL PORTLAND CEMENT, GROUT, OR CONCRETE FILL USED INSIDE A STANDARD PRECAST OR OUTSIDE OF A STANDARD OR POLYMER MANHOLE SHALL REQUIRE XYPEX ADMIX C-1000 RED, XYPEX XYCRYLIC ADMIX, OR APPROVED EQUAL
3. WHERE ABANDONED CORE IS WITHIN 1' OF THE BOTTOM OF THE STRUCTURE, THE BENCH SHALL BE CONSTRUCTED TO COVER THE REPAIR

USF #663-AB-MK, OR EQUAL
(ADDITIONAL DESIGNS MAY BE REQUIRED IN CERTAIN AREAS AS DETERMINED BY TOHO)

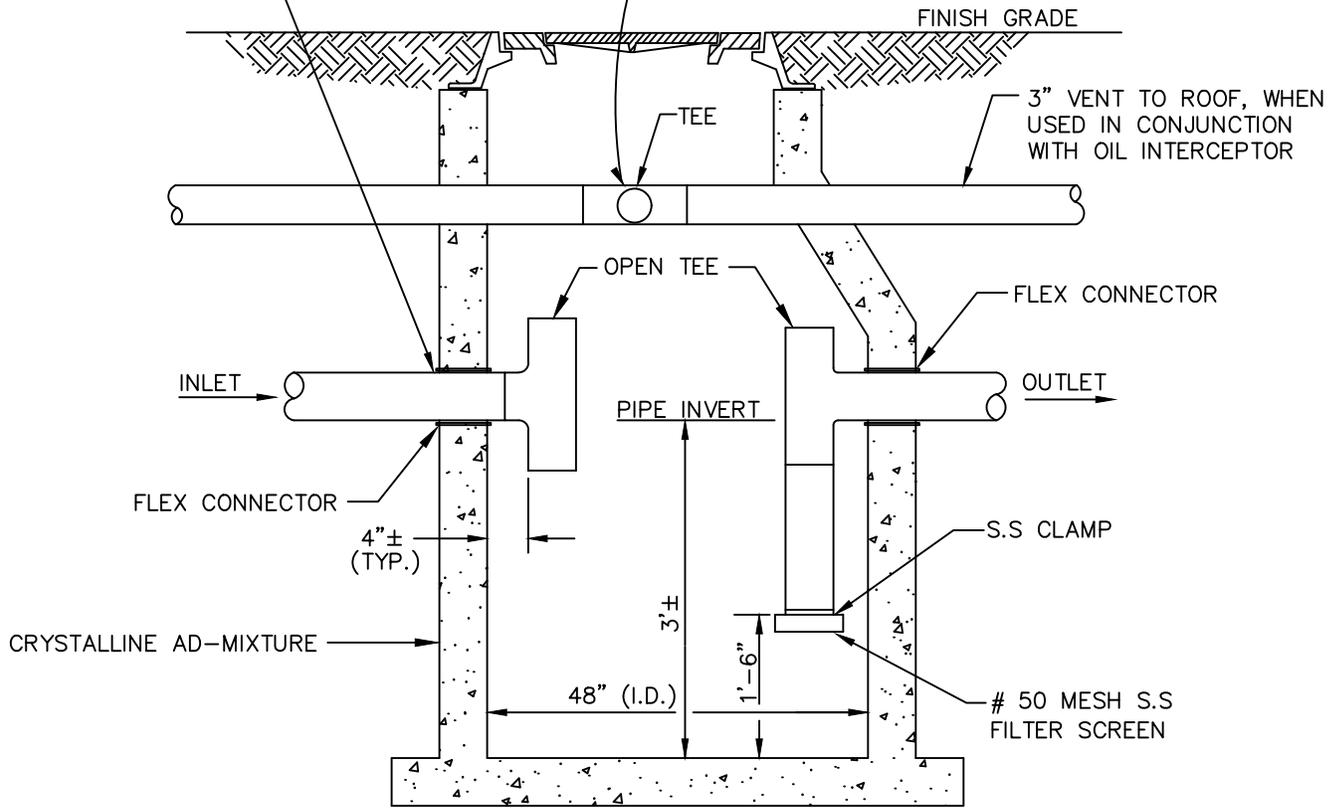


Notes:

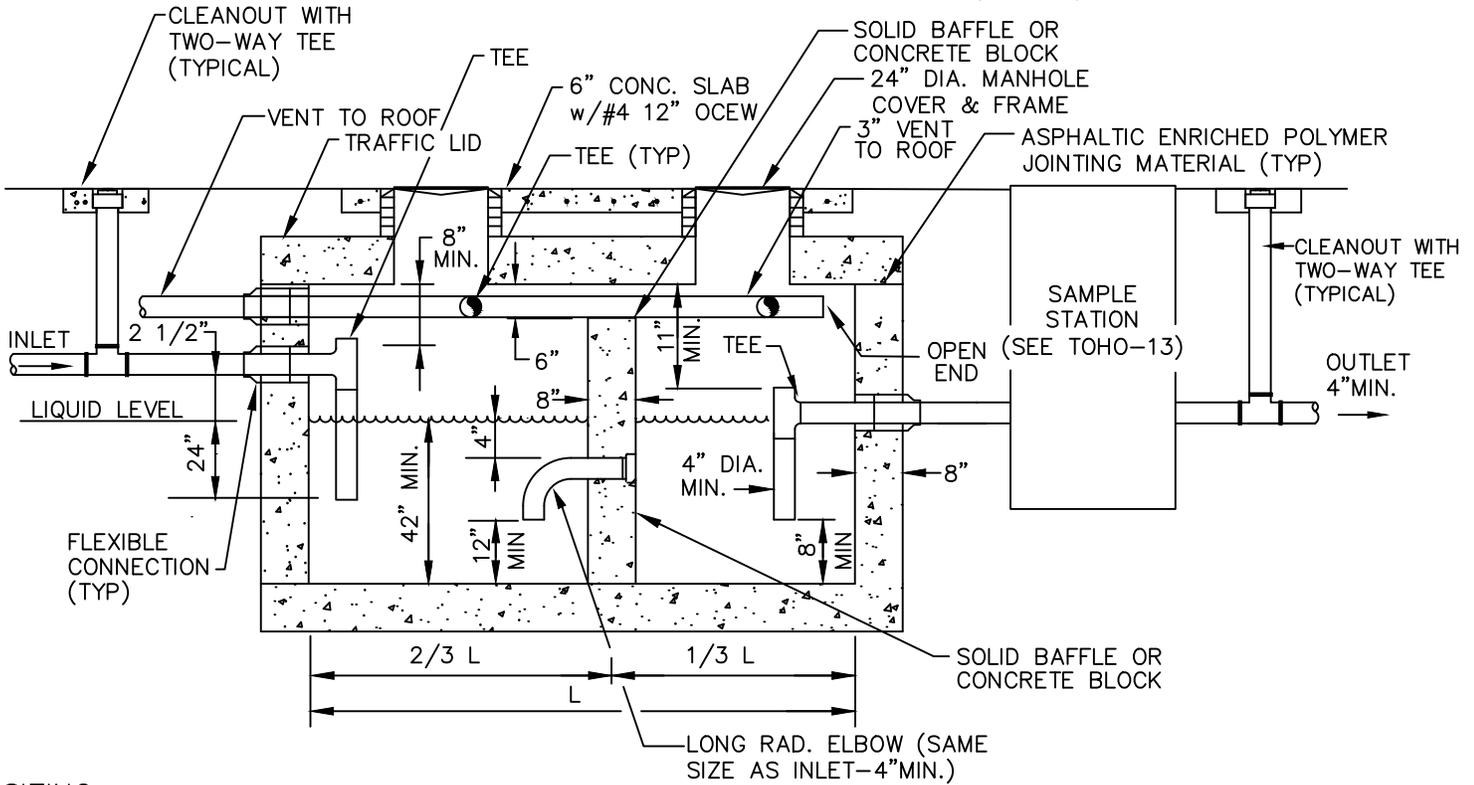
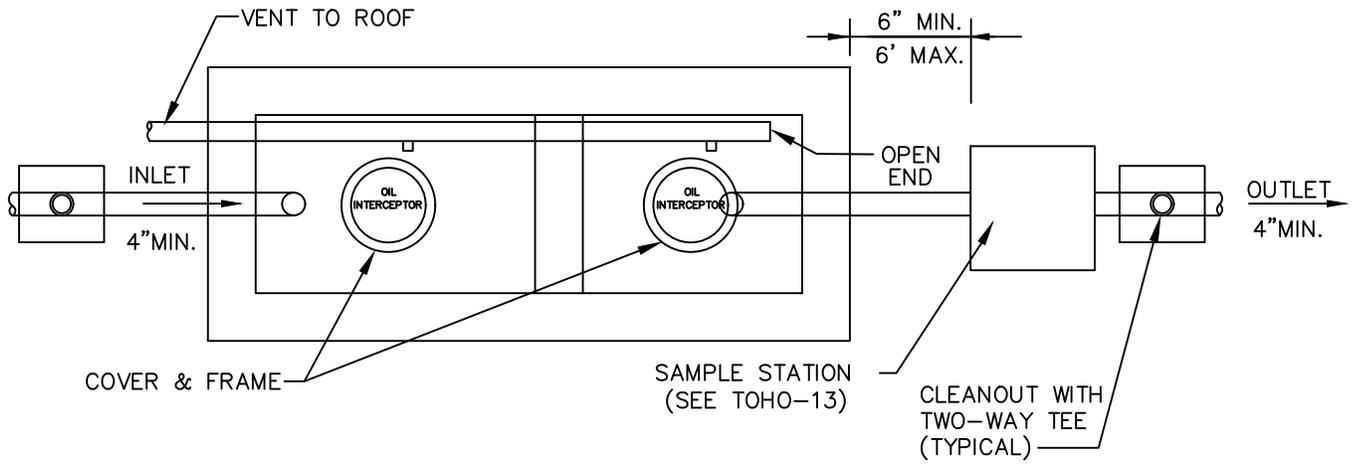
1. WHEN PROVIDING A DROP OR FORCE MAIN CONNECTION TO AN EXISTING MANHOLE, REFER TO STANDARD MANHOLE DETAIL TOHO-07 AND MISCELLANEOUS MANHOLE DETAIL TOHO-08 FOR ADDITIONAL REQUIREMENTS
2. WHEN PROVIDING A DROP OR FORCE MAIN CONNECTION TO A NEW MANHOLE, REFER TO POLYMER MANHOLE DETAIL TOHO-07.1, AND MISCELLANEOUS MANHOLE DETAIL TOHO-08 FOR ADDITIONAL REQUIREMENTS
3. MANHOLE SHALL BE 60" DIAMETER MINIMUM
4. PIPING LARGER THAN 12" SHALL HAVE EXTERIOR DROP CONNECTION DESIGNED BY AN ENGINEER AND APPROVED BY TOHO
5. EACH SECTION OF INTERIOR DROP PIPING SHALL HAVE NO LESS THAN 2 SUPPORTS SPACED NO FURTHER APART THAN 8'
6. INTERIOR DROP PIPING SHALL BE GASKETED BELL AND SPIGOT MATCHING THE INCOMING PIPE SIZE AND DIMENSION RATIO
7. ALL NEW MANHOLES WITH A DROP OR FORCE MAIN CONNECTION AND/OR ALL NEW MANHOLES THAT ARE WITHIN 400' UPSTREAM AND DOWNSTREAM OF A NEW OR EXISTING DROP OR FORCE MAIN CONNECTION SHALL REQUIRE POLYMER MANHOLES PER DETAIL TOHO-07.1
8. ALL EXISTING MANHOLES THAT RECEIVE A NEW DROP CONNECTION OR FORCE MAIN CONNECTION OR EXISTING MANHOLES WITHIN 400' UPSTREAM AND DOWNSTREAM OF A NEW MANHOLE WITH A DROP OR FORCE MAIN CONNECTION SHALL REQUIRE A TOHO APPROVED SPRAY ON OR TROWEL ON LINER
9. FORCE MAIN CONNECTIONS SHALL BE ALLOWED AT EFFLUENT INVERT ELEVATION +0.1' AND FROM 135 TO 225 DEGREES FROM THE EFFLUENT OUTLET.
10. DROP FORCE MAIN CONNECTIONS SHALL BE APPROVED BY TOHO ON A CASE-BY-CASE BASIS



* IF USING A-LOK CONNECTOR, GROUT FROM THE BOTTOM OF THE PENETRATION TO THE SPRINGLINE OF THE PIPE.



- NOTES:**
1. REFER TO STANDARD MANHOLE TOHO-07 AND MISCELLANEOUS MANHOLE TOHO-08 FOR ADDITIONAL REQUIREMENTS
 2. SAND/MUD TRAP SHALL BE INSTALLED UPSTREAM OF THE OIL INTERCEPTOR IF USED IN CONJUNCTION

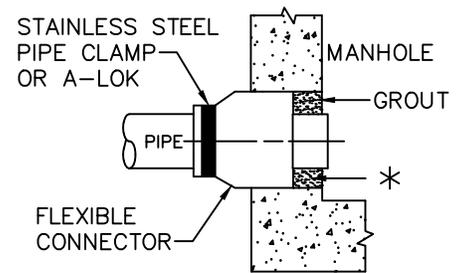


SIZING

*750 GALLON MINIMUM LIQUID CAPACITY (42" LIQUID DEPTH)
 SIZING SHALL BE PER SECTION 20.6 OF TOHO WATER AUTHORITY SPECIFICATIONS.

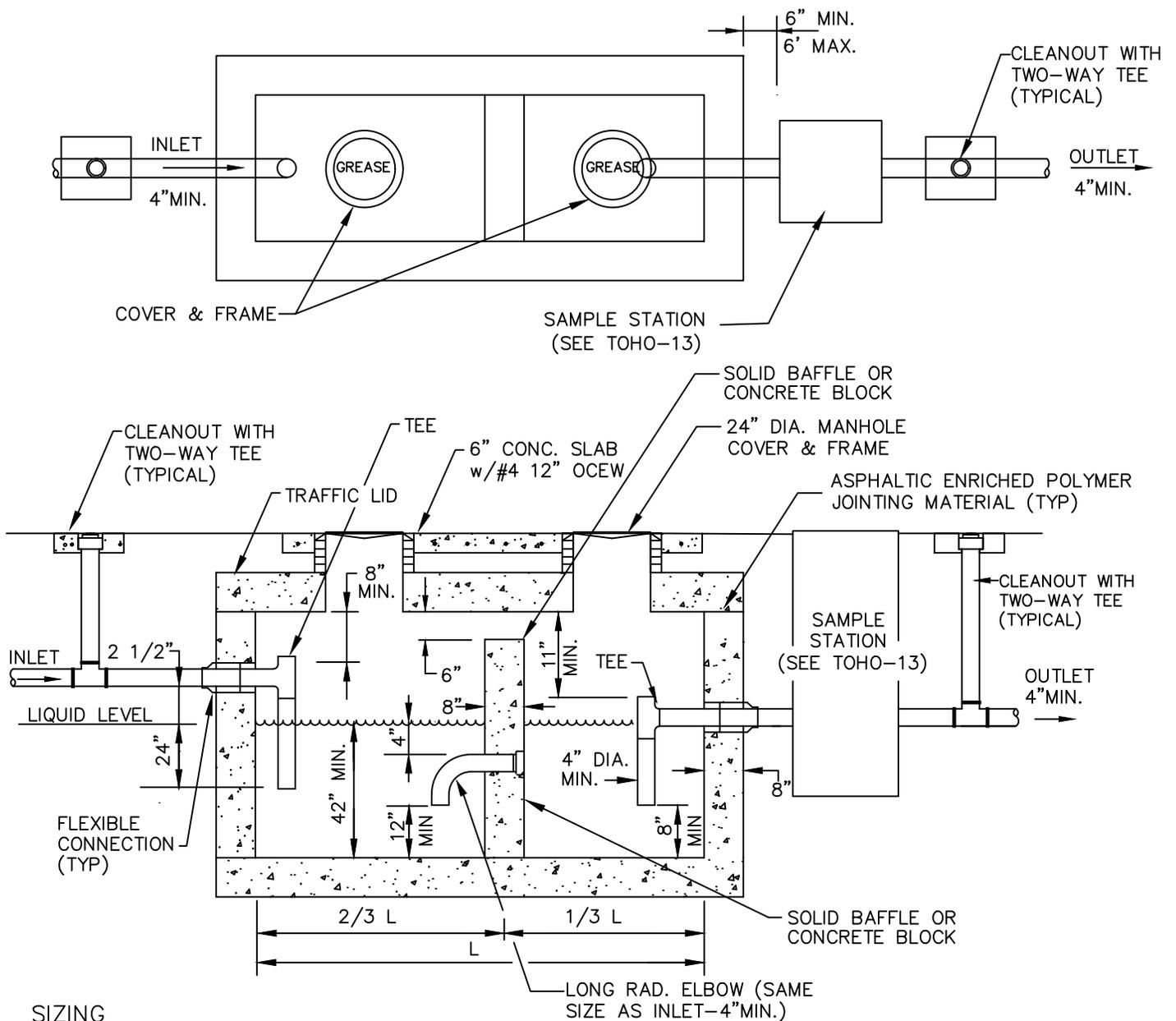
NOTES:

1. STRUCTURE SHALL CONFORM WITH F.D.O.T. DESIGN STANDARDS PROVIDE FOR A MINIMUM H-20 LOADING.
2. CAST-IN-PLACE STRUCTURES SHALL BE DESIGNED BY FLORIDA LICENSED ENGINEER.
3. PRECAST STRUCTURES SHALL CONFORM TO ASTM C478
4. OIL INTERCEPTOR SHALL BE 2 COMPARTMENT TYPE WITH A 1/3-2/3 SPLIT.
5. LIDS SHALL BE LABELED "OIL INTERCEPTOR".
6. INSTALLATION SHALL BE IN ACCORDANCE WITH STANDARD PLUMBING CODES.
7. INLET AND OUTLET PIPING REQUIRE A TWO-WAY CLEANOUT TEE.
8. CLEAN-OUTS SHALL BE PROVIDED BETWEEN ALL STRUCTURES WHERE MULTIPLE INTERCEPTORS ARE INSTALLED IN SERIES.
9. SAMPLE STATION SHALL BE INSTALLED DOWNSTREAM OF THE FINAL INTERCEPTOR WHERE MULTIPLE INTERCEPTORS ARE INSTALLED.
10. A-LOK CONNECTORS SHALL BE GROUTED FROM SPRINGLINE OF PIPE DOWN ONLY.



FLEXIBLE CONN. DETAIL

* IF USING A-LOK CONNECTOR, GROUT FROM THE BOTTOM OF THE PENETRATION TO THE SPRINGLINE OF THE PIPE.

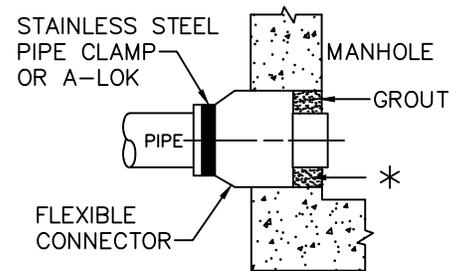


SIZING

*750 GALLON MINIMUM LIQUID CAPACITY (42\"/>

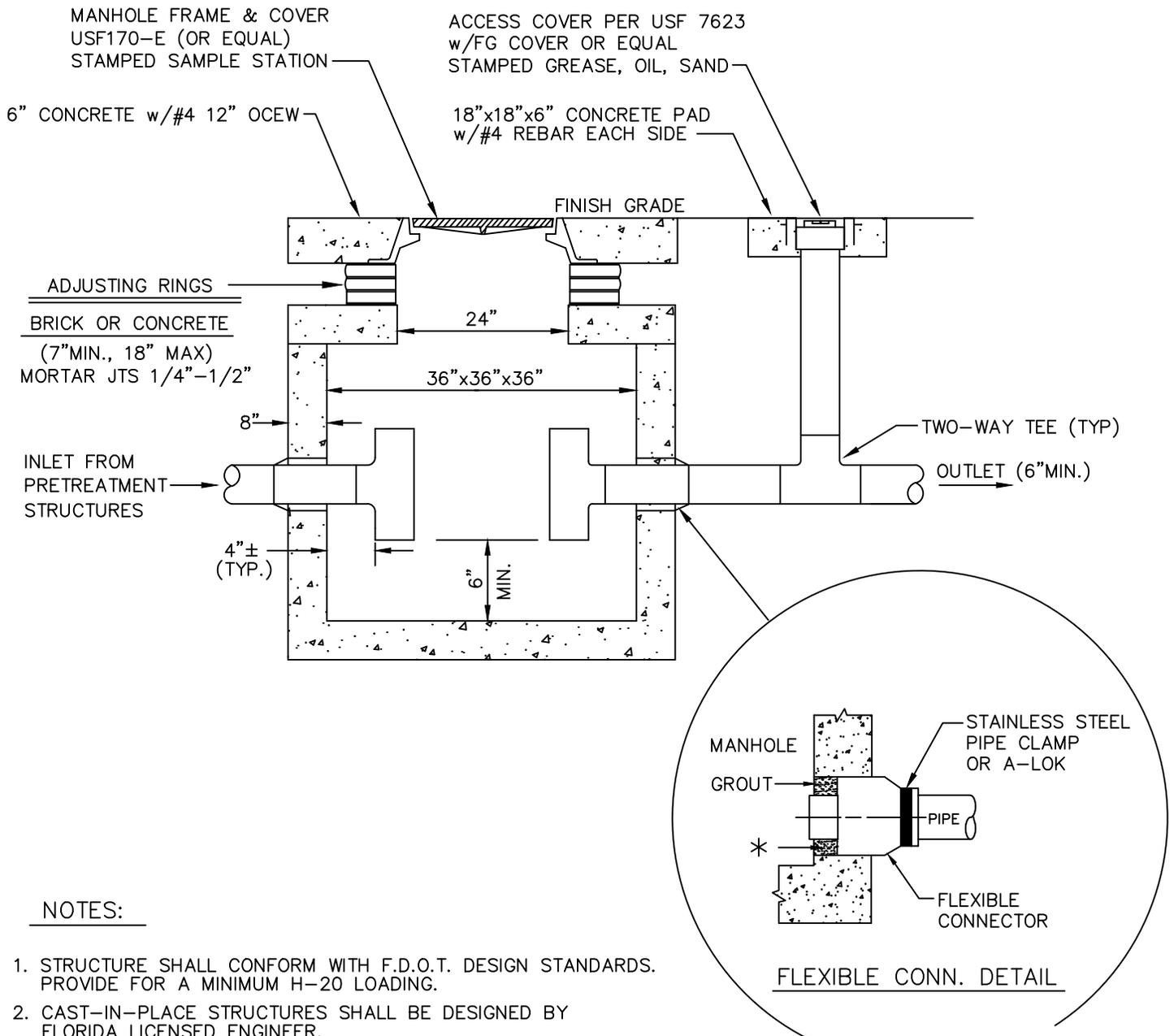
NOTES:

1. STRUCTURE SHALL CONFORM WITH F.D.O.T. DESIGN STANDARDS. PROVIDE FOR A MINIMUM H-20 LOADING.
2. CAST-IN-PLACE STRUCTURES SHALL BE DESIGNED BY FLORIDA LICENSED ENGINEER.
3. PRECAST STRUCTURES SHALL CONFORM TO ASTM C478
4. GREASE TRAP SHALL BE 2 COMPARTMENT TYPE WITH 1/3-2/3 SPLITT.
5. LIDS SHALL BE LABELED "GREASE".
6. INSTALLATION SHALL BE IN ACCORDANCE WITH STANDARD PLUMBING CODES.
7. INLET AND OUTLET PIPING REQUIRE A TWO-WAY CLEANOUT TEE.
8. CLEAN-OUTS SHALL BE PROVIDED BETWEEN ALL STRUCTURES WHERE MULTIPLE INTERCEPTORS ARE INSTALLED IN SERIES.
9. SAMPLE STATION SHALL BE INSTALLED DOWNSTREAM OF THE FINAL INTERCEPTOR WHERE MULTIPLE INTERCEPTORS ARE INSTALLED.
10. A-LOK CONNECTORS SHALL BE GROUTED FROM SPRINGLINE OF PIPE DOWN ONLY.



FLEXIBLE CONN. DETAIL

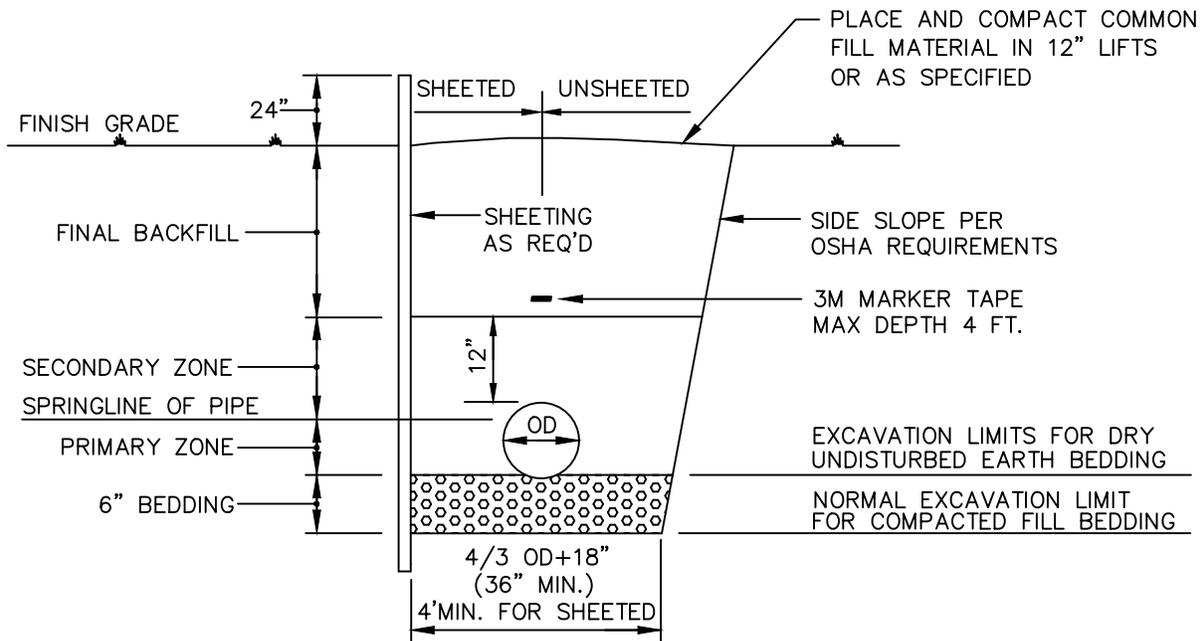
* IF USING A-LOK CONNECTOR, GROUT FROM THE BOTTOM OF THE PENETRATION TO THE SPRINGLINE OF THE PIPE.



NOTES:

1. STRUCTURE SHALL CONFORM WITH F.D.O.T. DESIGN STANDARDS. PROVIDE FOR A MINIMUM H-20 LOADING.
2. CAST-IN-PLACE STRUCTURES SHALL BE DESIGNED BY FLORIDA LICENSED ENGINEER.
3. PRECAST STRUCTURES SHALL CONFORM TO ASTM C478
4. LIDS SHALL BE LABELED "SAMPLE STATION".
5. INSTALLATION SHALL BE IN ACCORDANCE WITH STANDARD PLUMBING CODES.
6. INLET AND OUTLET PIPING REQUIRE A TWO-WAY CLEANOUT TEE.
7. SAMPLE STATION SHALL BE PLACED DOWNSTREAM OF ALL PRETREATMENT STRUCTURES.
8. A-LOK CONNECTORS SHALL BE GROUTED FROM SPRINGLINE OF PIPE DOWN ONLY.

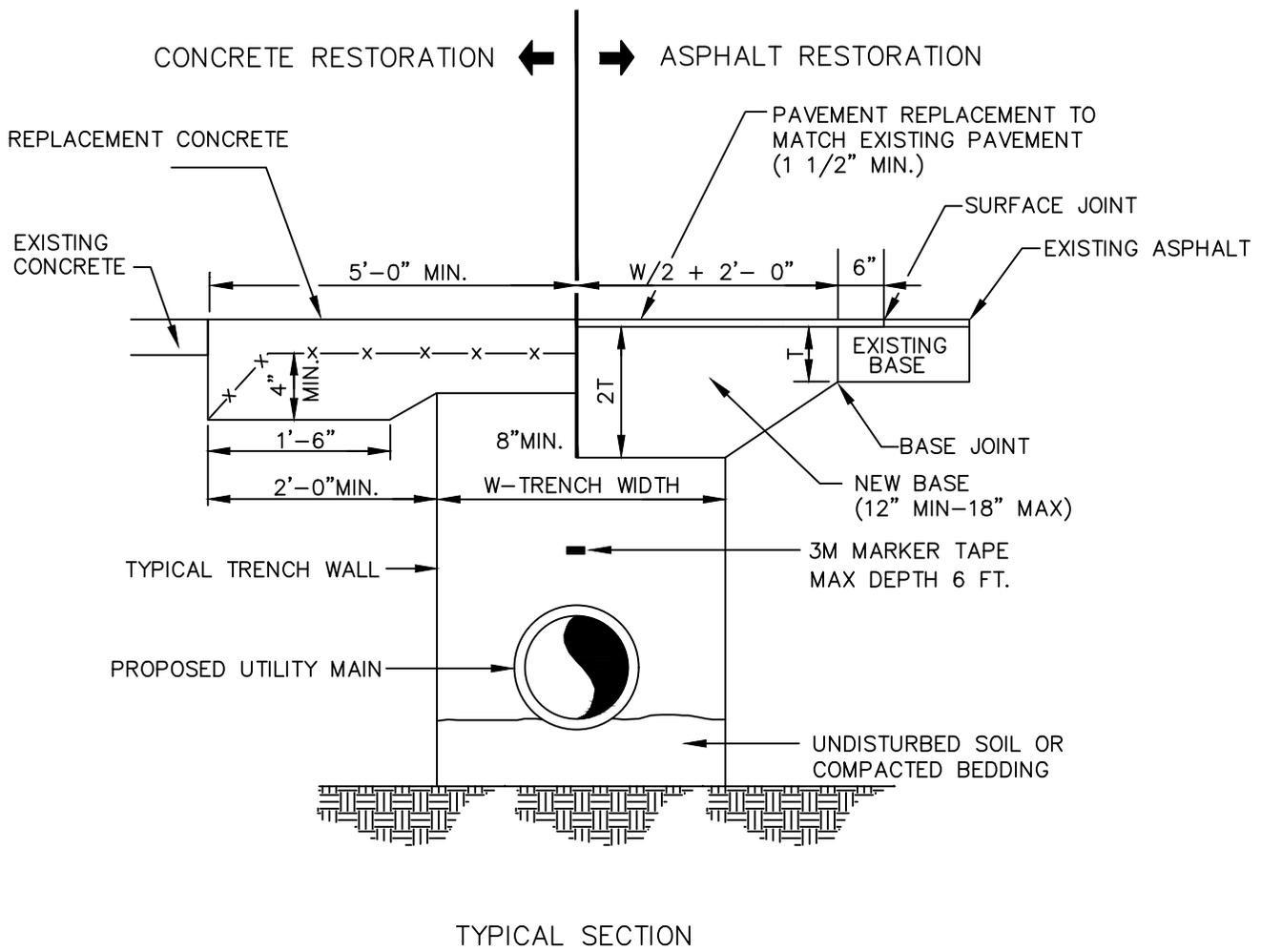
* IF USING A-LOK CONNECTOR, GROUT FROM THE BOTTOM OF THE PENETRATION TO THE SPRINGLINE OF THE PIPE.



SEE TOHO STANDARDS & SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

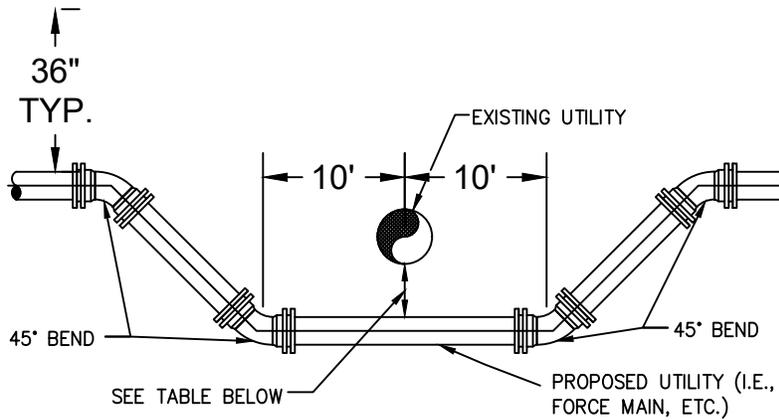
NOTES:

1. BEDDING SHALL BE #57 STONE IF PIPE BEDDING IS YIELDING
2. PRIMARY & SECONDARY ZONES SHALL BE INDIVIDUALLY COMPACTED LAYERS OF CLEAN FILL
3. COMPACTION OF BACKFILL BENEATH PAVEMENT SHALL BE 98% OF AASHTO T-180, ALL OTHER AREAS SHALL BE 95% OF AASHTO T-180 UNLESS OTHERWISE REQUIRED BY AN AUTHORITY HAVING JURISDICTION
4. PLACE APPROVED 3M MARKER TAPE OR EQUAL DIRECTLY ABOVE THE CENTERLINE OF THE PIPE.
 - 4.1. TAPE SHALL BE 12"-18" ABOVE THE PIPE
 - 4.2. TAPE SHALL NOT EXCEED 6' DEPTH
 - 4.3. IF TOP OF PIPE IS GREATER THAN 7' DEEP, AN ADDITIONAL LAYER OF WARNING TAPE SHALL BE PROVIDED 12"-18" OVER THE PIPE AND THE MARKER TAPE SHALL BE PLACED AT A DEPTH OF 4'-5'
5. SLOPES, BENCHING, OR SHORTING SHALL BE PER OSHA REQUIREMENTS



NOTES:

1. SURFACE AND BASE CUTS SHALL BE SAW CUT
2. LONGITUDINAL OR DIAGONAL CUTS REQUIRE OVERLAY/RESURFACING OF THE COMPLETE WIDTH OF THE ROAD
3. CUTS AT INTERSECTIONS REQUIRE COMPLETE OVERLAY/RESURFACING TO THE END OF ALL RETURN TURNOUTS AND/OR 10' BEYOND THE CUT(S), WHICHEVER IS GREATER
4. CUTS THRU TURNOUTS AND CUL-DE-SACS REQUIRE COMPLETE OVERLAY/RESURFACING
5. COMPACTION OF BACKFILL SHALL BE 98% OF AASHTO T-180
6. ACE APPROVED 3M MARKER TAPE OR EQUAL DIRECTLY ABOVE THE CENTERLINE OF THE PIPE.
 - 6.1. TAPE SHALL BE 12"–18" ABOVE THE PIPE
 - 6.2. TAPE SHALL NOT EXCEED 6' DEPTH
 - 6.3. IF TOP OF PIPE IS GREATER THAN 7' DEEP, AN ADDITIONAL LAYER OF WARNING TAPE SHALL BE PROVIDED 12"–18" OVER THE PIPE AND THE MARKER TAPE SHALL BE PLACED AT A DEPTH OF 4'–5'
7. SLOPES, BENCHING, OR SHORTING SHALL BE PER OSHA REQUIREMENTS
8. THIS DETAIL APPLIES TO OPEN CUTS NOT LOCATED WITHIN PUBLIC RIGHTS-OF-WAY OR OTHERWISE NOT DICTATED BY ANOTHER AUTHORITY HAVING JURISDICTION



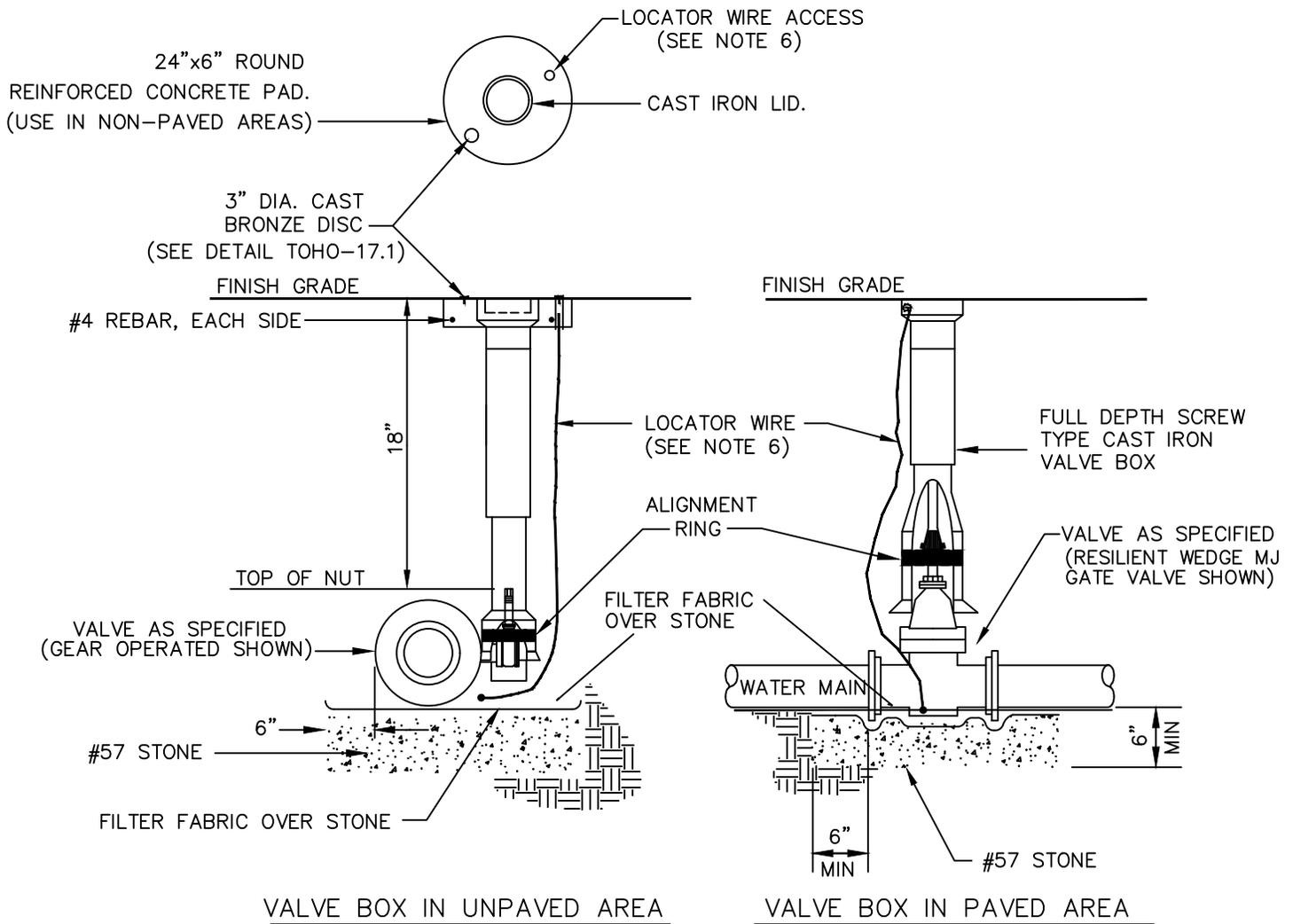
UTILITY CROSSING DETAIL

NOTES:

1. PIPE RESTRAINTS SHALL BE PER THE THRUST RESTRAINT DETAIL TOHO-19 AND THE RESTRAINED JOINT TABLE TOHO-20
2. THE TABLE BELOW OUTLINES MINIMUM SEPARATIONS; ADDITIONAL SEPARATION DISTANCES BASED ON PIPE SIZE(S) AND LOCATION MAY BE REQUIRED AT TOHO'S DISCRETION

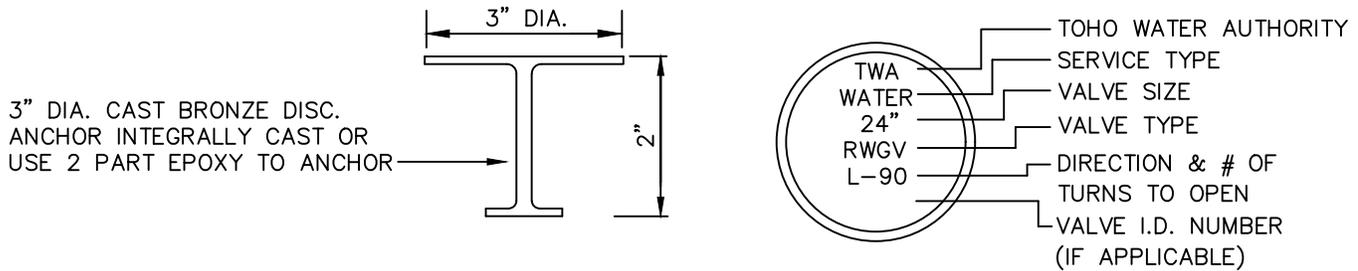
PROPOSED UTILITY	MINIMUM HORIZONTAL & VERTICAL SEPARATION REQUIREMENTS							
	POTABLE WATER		RECLAIMED WATER		SANITARY SEWER (GRAVITY & F.M.)		STORM DRAIN	
	HORIZ.	VERT.	HORIZ.	VERT.	HORIZ.	VERT.	HORIZ.	VERT.
POTABLE WATER	3'	6"	3'	12"	6' ALLOWED 10' PREFERRED	12"	3'	12"
RECLAIMED WATER	3'	12"	12"	6"	3'	12"	3'	6"
SANITARY SEWER	6' ALLOWED 10' PREFERRED	12"	3'	12"	3'	6"	3'	6"

1. THIS TABLE REPRESENTS THE MINIMUM SEPARATION REQUIREMENTS AS DESCRIBED IN F.D.E.P. RULES OF THE FLORIDA ADMINISTRATION CODE (F.A.C.) AND TOHO'S SEPARATION REQUIREMENTS TO FACILITATE FUTURE MAINTENANCE. THESE REQUIREMENTS SHALL APPLY BETWEEN PROPOSED UTILITY LINES AND EXISTING OR PROPOSED UTILITY LINES
2. RECLAIMED WATER IS DEFINED AS UNRESTRICTED PUBLIC ACCESS REUSE WATER AS DEFINED BY F.A.C. 17-610. OTHER TYPES OF RECLAIMED WATER ARE CONSIDERED RAW SEWAGE AND SEPARATIONS LISTED FOR SANITARY SEWER SHALL APPLY
3. ALL SEPARATION DISTANCES ARE FROM OUTSIDE OF PIPE TO OUTSIDE OF PIPE UNLESS OTHERWISE SPECIFIED. ACCEPTABLE VARIANCES:
 - 3.1. AT TOHO'S DISCRETION, THE HORIZONTAL SEPARATION DISTANCE BETWEEN WATER MAINS AND GRAVITY SANITARY SEWER MAINS MAY BE REDUCED TO 3' WHERE THE BOTTOM OF THE WATER MAIN IS LAID AT LEAST 6" ABOVE THE TOP OF THE SEWER MAIN
 - 3.2. AT TOHO'S DISCRETION THE VERTICAL SEPARATION FOR WATER MAINS AND STORM SEWER MAINS OR GRAVITY SEWER MAINS MAY BE REDUCED TO 6" IF THE WATER MAIN IS LOCATED ABOVE THE STORM SEWER OR GRAVITY SEWER MAIN(S)
4. WHERE POTABLE WATER AND SANITARY SEWER MAINS OR RECLAIM WATER MAINS CROSS, THE WATER MAIN SHALL BE CENTERED ON THE CROSSING. ALL WATER MAIN JOINTS SHALL BE AT LEAST 6' AWAY FROM ALL SEWER OR RECLAIM JOINTS AND AT LEAST 3' AWAY FROM ALL STORM SEWER JOINTS
5. NO WATER PIPE SHALL PASS THROUGH OR COME IN CONTACT WITH ANY PART OF A SEWER OR STORM MANHOLE, STRUCTURE, OR PIPE
6. IF 36" MINIMUM DEPTH OF COVER IS NOT MAINTAINED, SPECIAL PROTECTION OR PIPE MATERIAL UPGRADE MAY BE REQUIRED AT THE DIRECTION OF TOHO



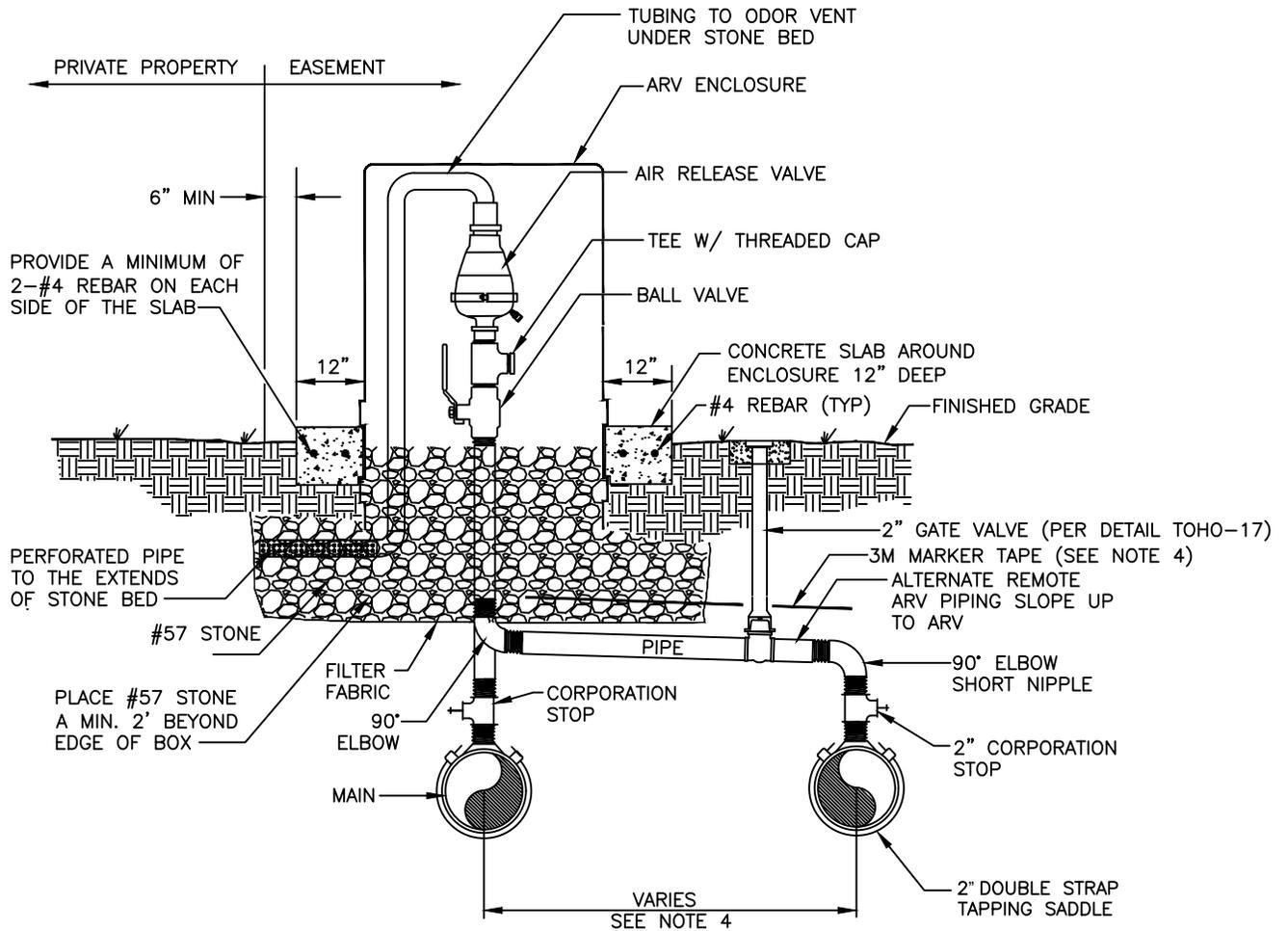
NOTES:

1. #57 STONE BEDDING SHALL BE REQUIRED A MINIMUM DEPTH OF 6" BELOW ALL VALVES. PLACE FILTER FABRIC OVER STONE PRIOR TO SETTING VALVE
2. MAINTAIN A MINIMUM HORIZONTAL SEPARATION OF 3' FROM ALL PLANTINGS, STRUCTURES, OTHER UTILITY FIXTURES, ETC. AROUND ALL VALVES
3. OPERATING NUT SHALL BE BOLTED, SHEER PINS ARE NOT PERMITTED
4. WHERE THE OPERATING NUT CANNOT BE SET AT A MAXIMUM DEPTH OF 18", A BOLT ON VALVE NUT RISER SHALL BE REQUIRED
5. FULL DEPTH CAST IRON SCREW TYPE ADJUSTABLE VALVE BOXES ARE REQUIRED. PVC OR DIP EXTENSIONS/RISERS SHALL NOT BE PERMITTED
6. LOCATOR WIRE ACCESS FOR DIRECTIONAL BORE OR JACK AND BORE APPLICATIONS:
 - 6.1. IN UNPAVED AREAS USE 2" SCH80 PVC, FEMALE ADAPTER COUPLING AND 2" BRASS PLUG W/ RECESSED NUT SET IN THE VALVE PAD
 - 6.2. IN PAVED AREAS TERMINATE THE LOCATE WIRE INSIDE THE TOP PORTION OF THE VALVE BOX
 - 6.3. PROVIDE A MINIMUM OF 12" OF EXTRA WIRE ABOVE FINISHED GRADE
7. PRIVATELY MAINTAINED WATER SYSTEMS SHALL HAVE 'PRIVATE' STAMPED ON THE BRONZE DISC
8. DEDICATED FIRE LINES SHALL HAVE 'FIRE' STAMPED ON THE BRONZE DISC AND THE VALVE COVER SHALL BE PAINTED RED



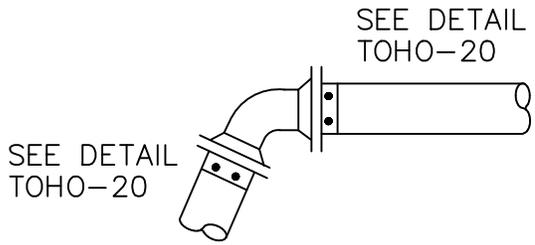
NOTES:

1. WHERE A VALVE FALLS WITHIN A PAVED AREA, THE BRONZE DISC SHALL BE PLACED BY THE CONTRACTOR AT THE DIRECTION OF TOHO BASED ON SITE FACTORS AND CONSTRAINTS
2. DISCS SHOULD BE SET IN VALVE PADS DURING CONSTRUCTION OF THE PAD
3. IF EPOXY IS USED TO SET A DISC THE ANCHOR MUST REMAIN AND A HOLE SHALL BE DRILLED IN THE PAD AND FILLED WITH EPOXY PRIOR TO SETTING THE DISC

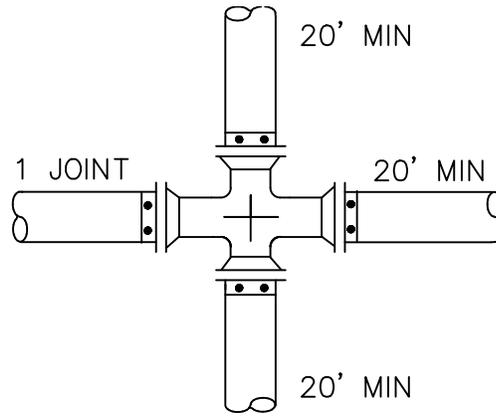


NOTES:

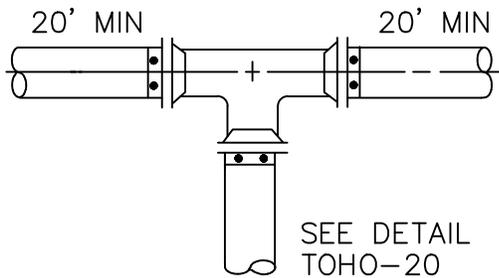
1. FOR SANITARY FORCE MAIN ARVs ALL SADDLES, STOPS, FITTINGS, PIPING, ETC. SHALL BE STAINLESS STEEL SIZED TO THE ARV INLET
2. WHERE DESIGNATED APPROPRIATE BY TOHO, WATER OR REUSE MAIN ARVs MAY BE REQUIRED. WATER AND REUSE ARV SADDLES, STOPS, FITTINGS, AND PIPING MATERIAL SHALL BE AT THE DIRECTION OF TOHO
3. PLACE #57 STONE BEDDING UNDER THE ENCLOSURE AND PAD. PLACE FILTER FABRIC UNDER, AROUND, AND OVER THE #57 STONE PRIOR TO PLACING THE ENCLOSURE AND PAD
4. PLACE APPROVED 3M MARKER TAPE ABOVE THE OFFSET PIPE, NOT TO EXCEED A DEPTH OF 6' AND TIED INTO THE MARKER TAPE ON THE MAIN
5. ENCLOSURE VENTS MUST BE CAPABLE OF ALLOWING THE SAME AIRFLOW AS THE ARV AS MEASURED IN CFM
6. OFFSET REQUIREMENT AND DISTANCE SHALL BE DETERMINED BY TOHO BASED ON FIELD CONDITIONS AND SITE CONSTRAINTS
7. THIS DETAIL APPLIES TO 2" ARVs FOR 12" OR SMALLER MAINS. MAINS LARGER THAN 12" SHALL HAVE ARVs INSTALLED PER TOHO-18.1



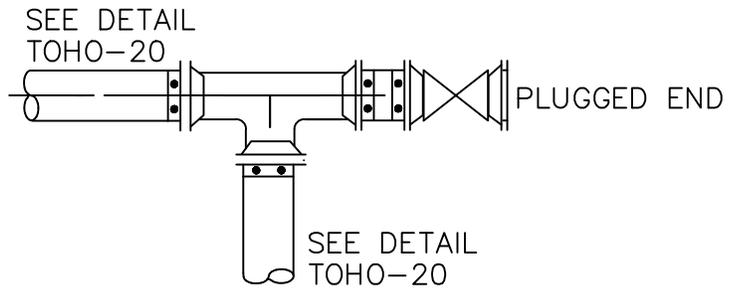
BENDS



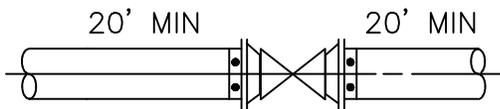
CROSS



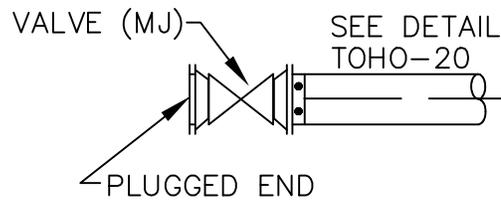
TEE



TEE AND VALVE



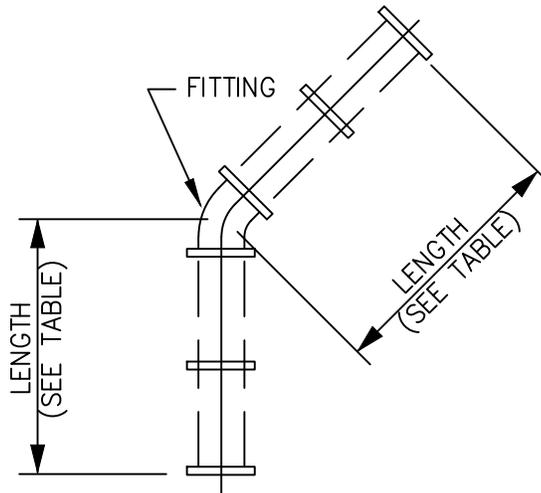
IN-LINE VALVE



DEAD END
WITH OR WITHOUT BLOW-OFF

NOTES:

1. MECHANICAL PIPE RESTRAINT SYSTEMS SHALL BE REQUIRED. THRUST BLOCKS WILL ONLY BE PERMITTED ON A CASE-BY-CASE BASIS AS DETERMINED BY TOHO
2. ALL MECHANICAL JOINT FITTINGS (TEES, BENDS, CROSSES, ELBOWS, ETC.) AND VALVES SHALL BE RESTRAINED
3. RESTRAIN THRU VALVES



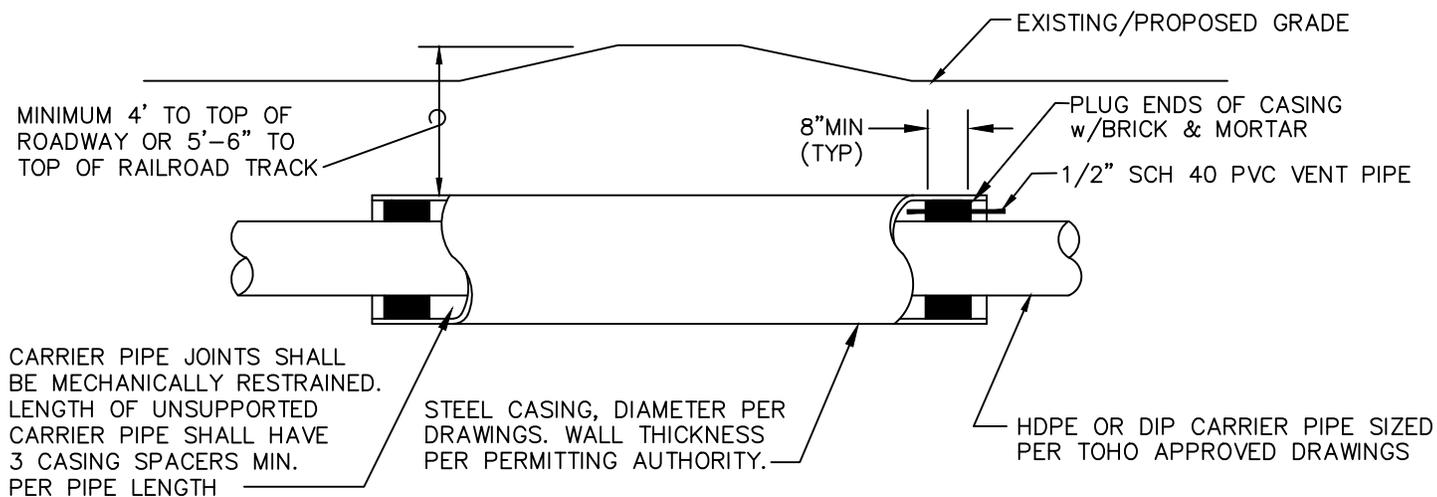
MINIMUM LENGTH (IN FEET) OF RESTRAINED PIPE REQUIRED

PIPE SIZE (DIAMETER IN INCHES)	BENDS										OTHER FITTINGS						
	90°		45°		22 1/2°		11 1/4°		VERTICAL BENDS		DEAD END		CROSS OR VALVE		TEE BRANCH		
	100psi	150psi	100psi	150psi	100psi	150psi	100psi	150psi	100psi	150psi	100psi	150psi	100psi	150psi	100psi	150psi	
4"	20'	20'	20'	20'	20'	20'	20'	20'	20'	20'	20'	40'	40'	20'	20'	40'	40'
6"	20'	40'	20'	20'	20'	20'	20'	20'	20'	20'		40'	60'	20'	20'	40'	40'
8"	20'	40'	20'	20'	20'	20'	20'	20'	20'	40'	40'	40'	80'	20'	20'	40'	40'
12"	40'	40'	20'	20'	20'	20'	20'	20'	20'	40'	60'	60'	100'	20'	20'	40'	40'
14"	40'	60'	20'	20'	20'	20'	20'	20'	20'	40'	60'	80'	120'	20'	20'	40'	40'
16"	40'	60'	20'	20'	20'	20'	20'	20'	20'	40'	60'	80'	120'	20'	20'	40'	60'
20"	40'	60'	20'	40'	20'	20'	20'	20'	20'	60'	80'	100'	160'	20'	20'	40'	80'
24"	60'	80'	20'	40'	20'	20'	20'	20'	20'	60'	80'	120'	180'	20'	20'	40'	100'
30"	60'	80'	40'	40'	20'	20'	20'	20'	20'	80'	100'	140'	200'	20'	20'	60'	140'

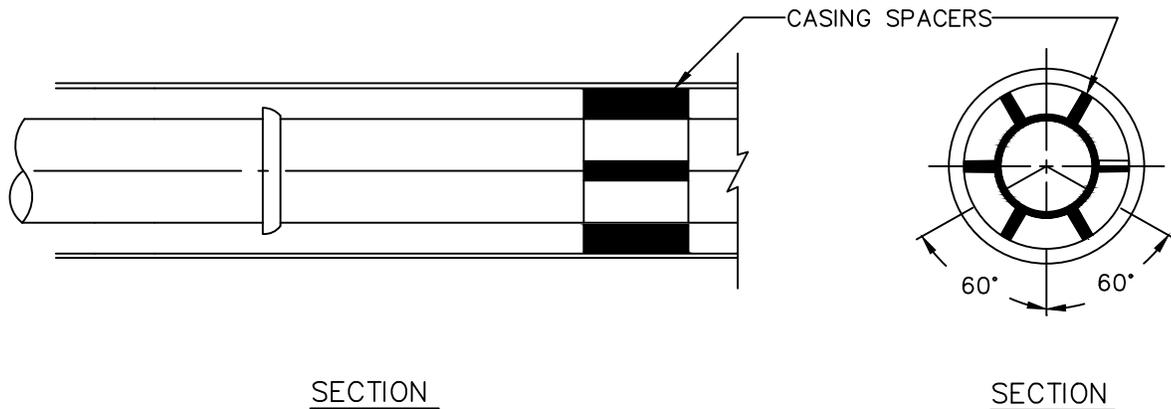
NOTES:

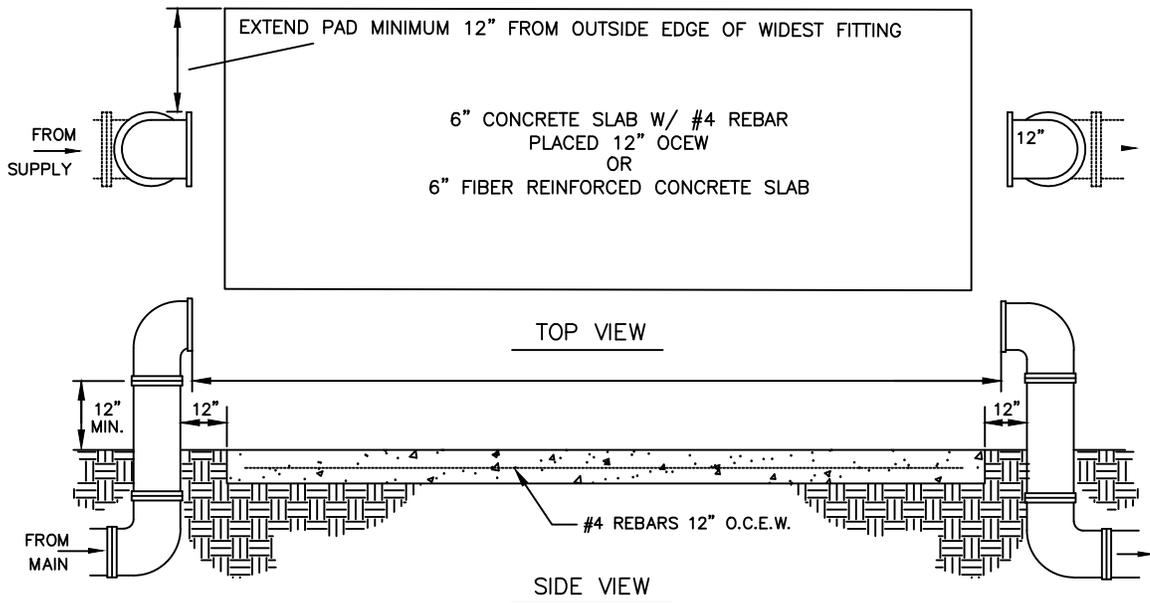
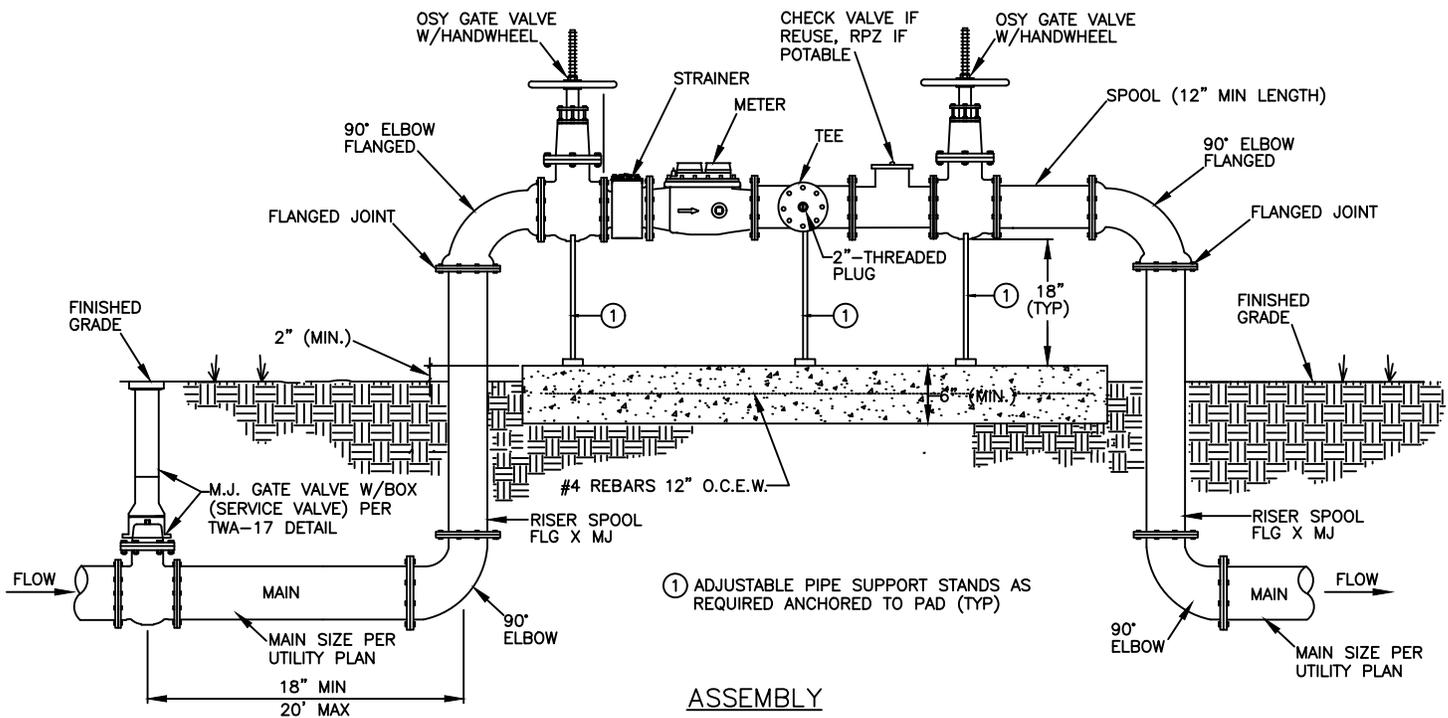
1. THE ABOVE THRUST RESTRAINT TABLE SHALL BE USED FOR THE FOLLOWING TRENCH CONDITIONS:
 MINIMUM 50% SOIL RETAINED ON A NUMBER 200 SIEVE
 MINIMUM 95% COMPACTION, AASHTO T-180
 MINIMUM 3' OF COVER
2. THE ABOVE TABLE SPECIFIES THE LENGTH OF RESTRAINED PIPE SECTIONS REQUIRED, IN EACH DIRECTION OF PIPE ON EXTENDED CENTERLINE OF FITTING (SEE DETAIL Z)
3. WHERE CONDITIONS VARY FROM THE ABOVE TABLE, A FLORIDA REGISTERED PROFESSIONAL ENGINEER MUST DETERMINE THE REQUIRED LENGTH OF OF RESTRAINED PIPE.
4. ALL FITTINGS, VALVES AND RESTRAINED PIPE SHALL BE RESTRAINED WITH TOHO APPROVED MATERIALS

SEE DRAWINGS FOR JACK & BORE LOCATION.



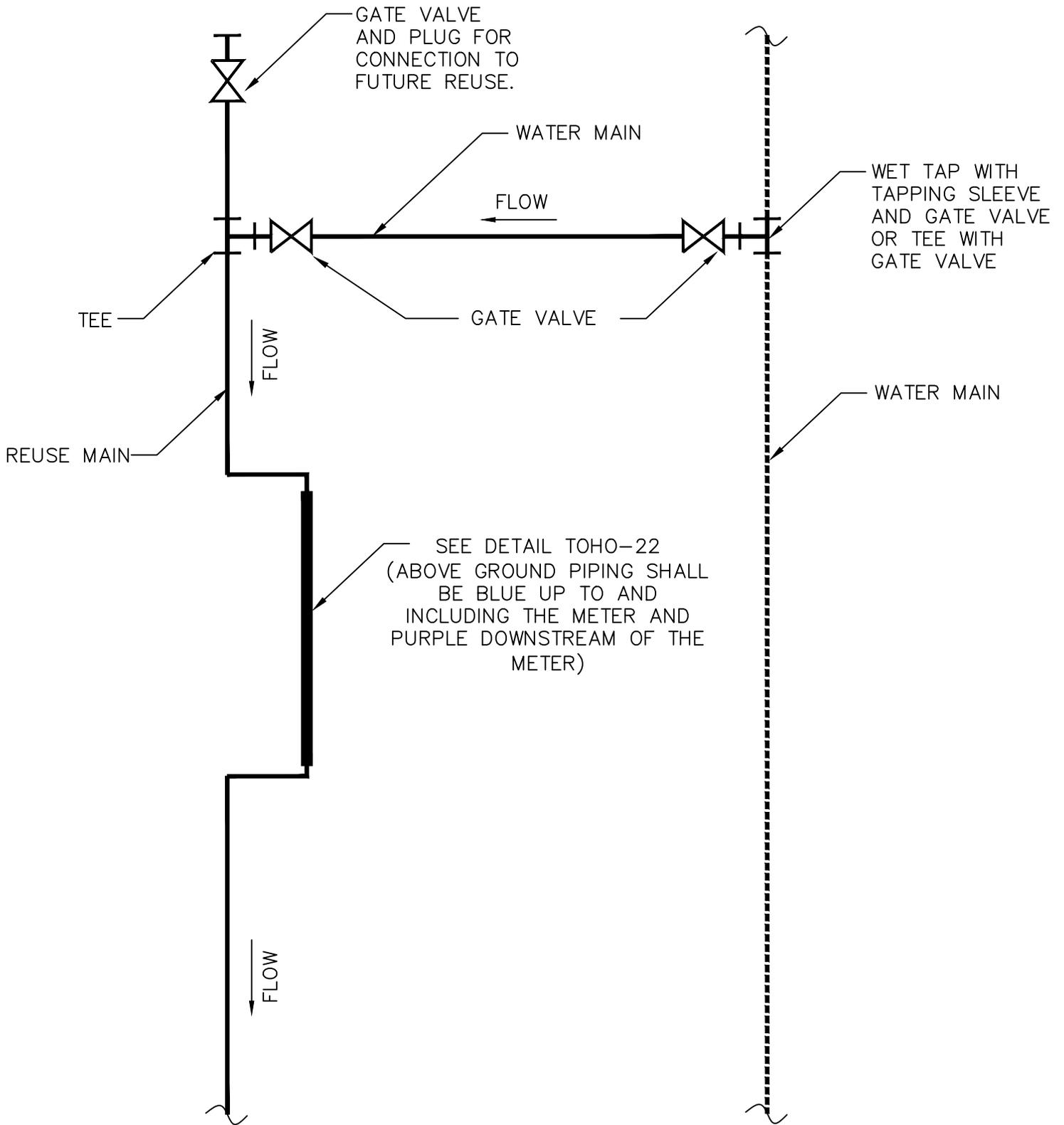
TYPICAL JACK AND BORE SECTION





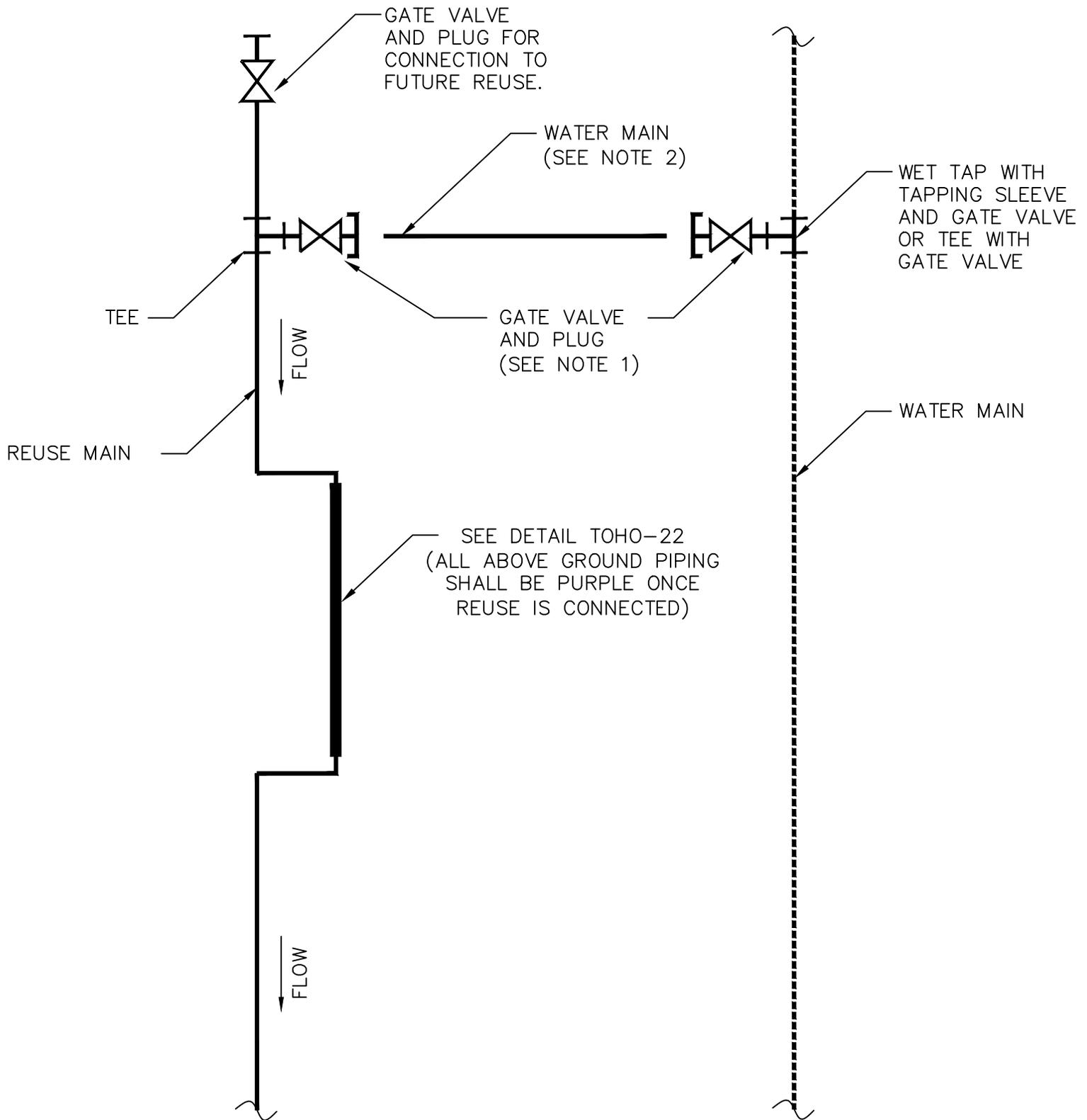
NOTES:

1. ALL FITTINGS INCLUDING BUT NOT LIMITED TO THE STRAINER, METER, CHECK VALVE, TEE, ETC. SHALL BE THE RESPONSIBILITY OF THE DEVELOPER AND/OR CONTRACTOR TO PROVIDE AND INSTALL
2. GALVANIZED PIPE IS NOT ALLOWED
3. PROTECTIVE BOLLARD(S) MAY BE REQUIRED AT THE DISCRETION OF TOHO
4. MAINTAIN A MINIMUM 3' CLEARANCE AROUND ALL SIDES OF THE ASSEMBLY FREE OF PLANTINGS, STRUCTURES, OTHER UTILITIES, ETC.
5. IF CHEMICAL INJECTION IS USED, THE CHECK VALVE SHALL BE REPLACED WITH A REDUCED PRESSURE ZONE (RPZ) BACKFLOW DEVICE
6. IF JUMPED TO POTABLE, A REDUCED PRESSURE ZONE (RPZ) BACKFLOW DEVICE WILL BE REQUIRED WHERE A CHECK VALVE IS SHOWN IN THE ABOVE DETAIL
7. IF JUMPED TO POTABLE, ABOVE GROUND PIPING UP TO AN INCLUDING THE METER SHALL BE PAINTED BLUE, DOWNSTREAM OF THE METER SHALL BE PURPLE



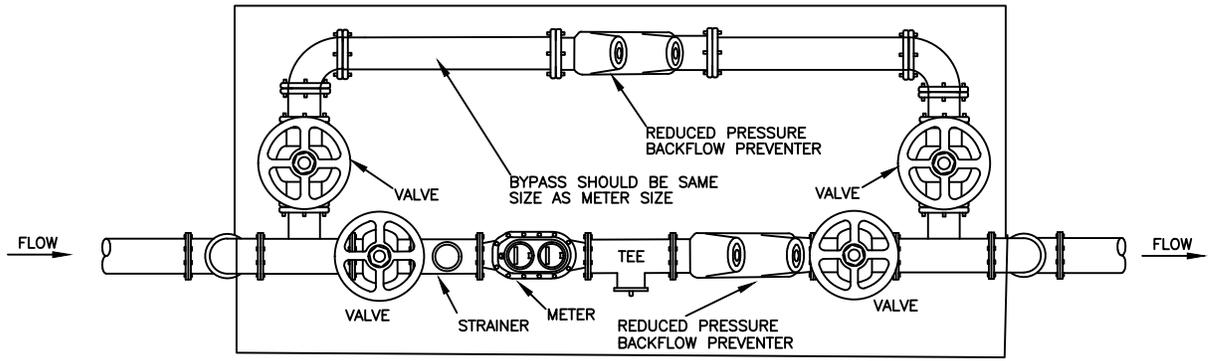
NOTES:

SEE DETAIL TOHO-22.2 FOR JUMPER CONFIGURATION WHEN REUSE BECOMES AVAILABLE FOR CONNECTION.



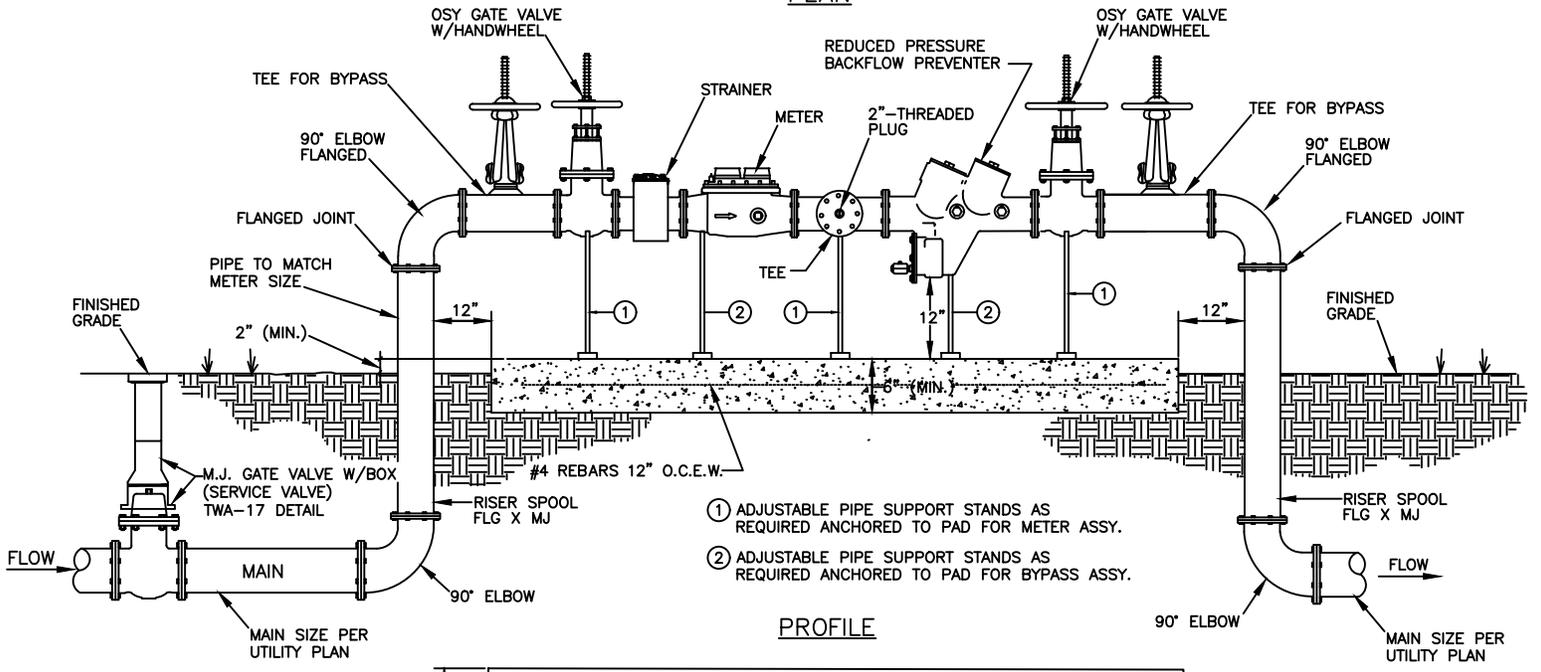
NOTES:

1. BOTH VALVES TO BE CLOSED PLUGGED AND ABANDONED IN PLACE BY DEVELOPER PRIOR TO CONNECTING TO REUSE.
2. PIPE SHALL BE REMOVED OR GROUTED AND ABANDONED IN PLACE PRIOR TO CONNECTING TO REUSE.

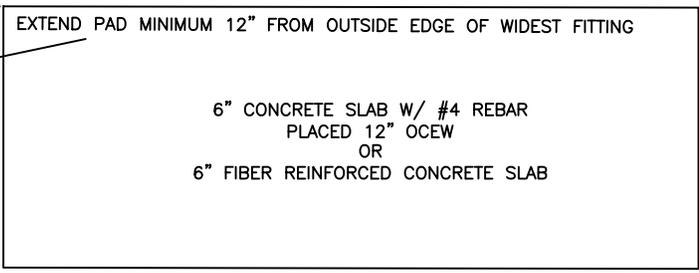


* EXTEND PAD MINIMUM 12" FROM OUTSIDE EDGE OF WIDEST FITTING ON BOTH LONG SIDES

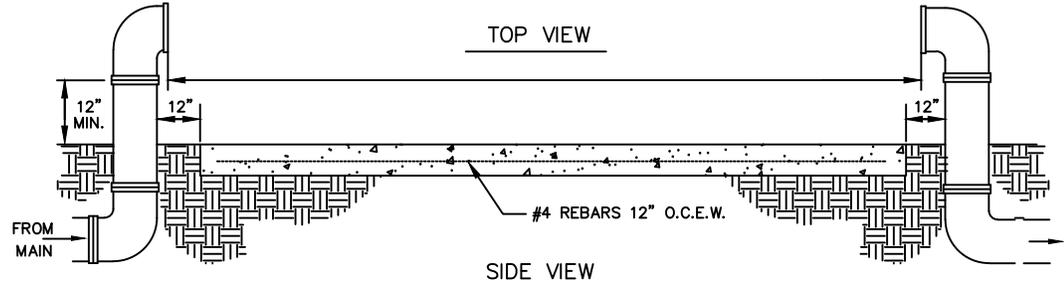
PLAN



PROFILE



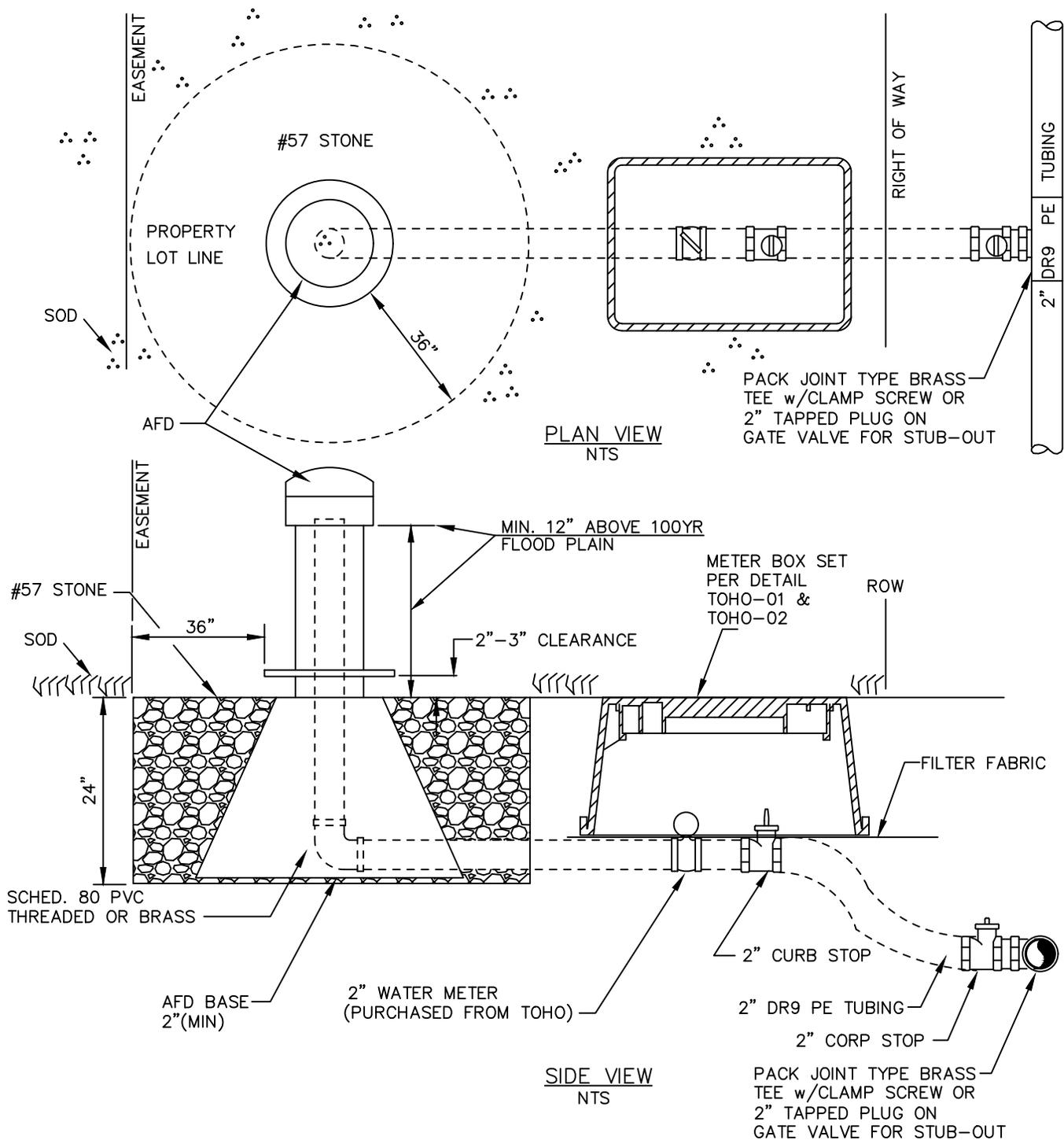
TOP VIEW



SIDE VIEW

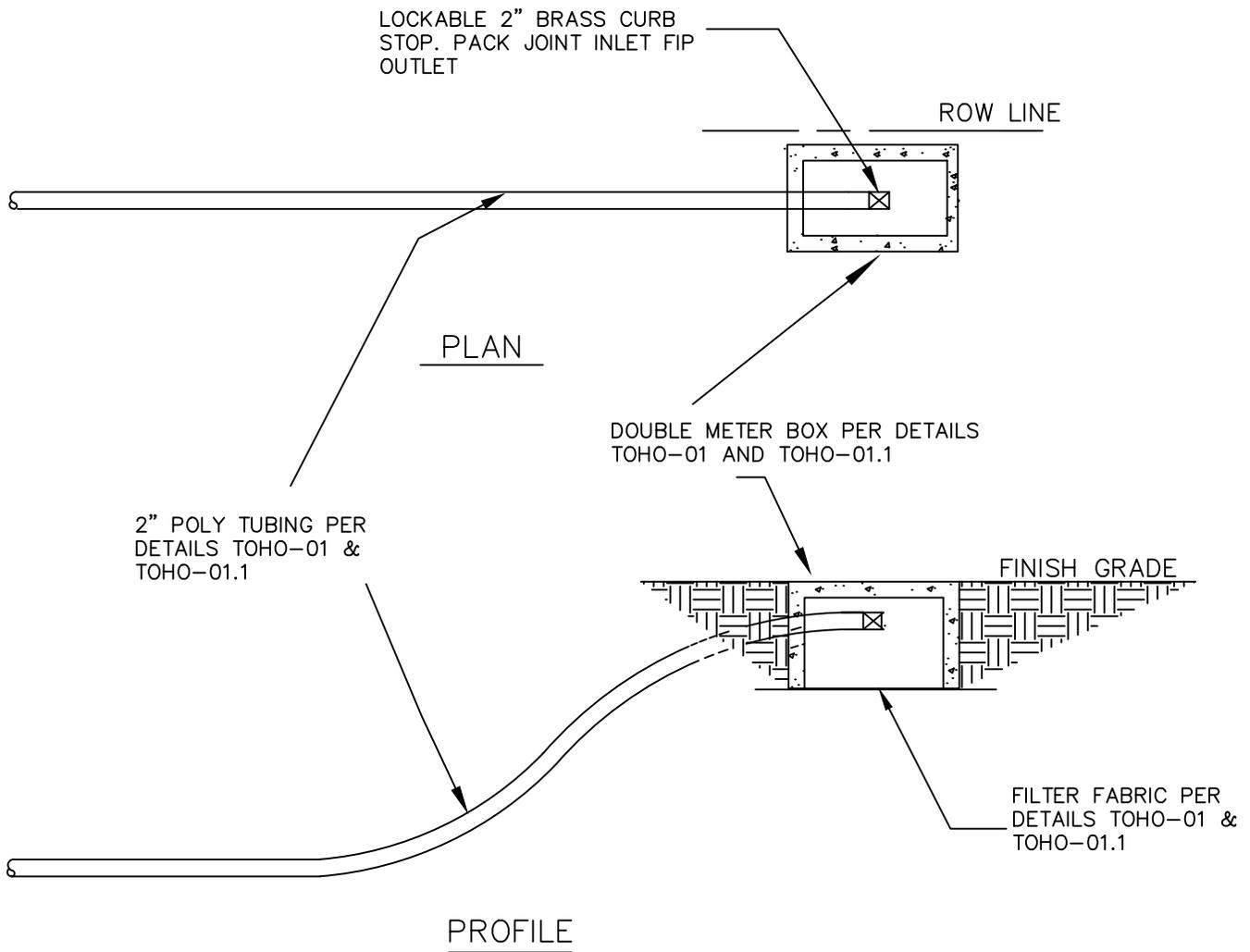
NOTES:

1. ALL PIPING, VALVES, FITTINGS, AND BACKFLOWS INCLUDED IN THE ASSEMBLY SHALL MATCH THE SIZE OF THE METER
2. ALL FITTINGS INCLUDING BUT NOT LIMITED TO THE STRAINER, CHECK VALVE, TEE, ETC. SHALL BE THE RESPONSIBILITY OF THE DEVELOPER AND/OR CONTRACTOR TO PROVIDE AND INSTALL
3. GALVANIZED PIPE IS NOT ALLOWED
4. PROTECTIVE BOLLARD(S) MAY BE REQUIRED AT THE DISCRETION OF TOHO
5. MAINTAIN A MINIMUM 3' CLEARANCE AROUND ALL SIDES OF THE ASSEMBLY FREE OF PLANTINGS, STRUCTURES, OTHER UTILITIES, ETC.



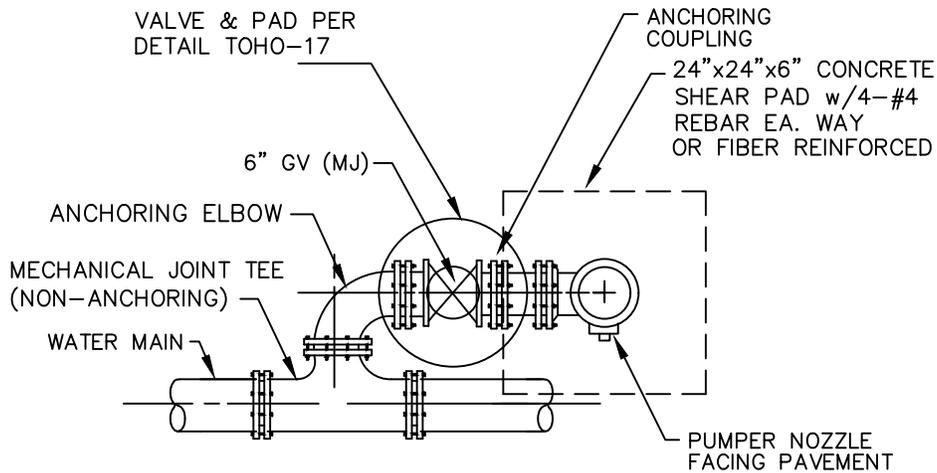
NOTES:

1. NO PLANTINGS, STRUCTURES, OR OTHER UTILITIES, INCLUDING BUT NOT LIMITED TO TELECOM PEDESTALS, ELECTRICAL TRANSFORMERS OR POLES, ETC. SHALL BE INSTALLED WITHIN 36" OF ANY SIDE OF THE FLUSHING DEVICE OR METER BOX
2. BOLLARDS SHALL BE REQUIRED ON A CASE-BY-CASE BASIS AS DIRECTED BY TOHO
3. FLUSHING DEVICES SHALL BE SET BEHIND THE RIGHT-OF-WAY LINE AND CENTERED ON A LOT LINE
4. ALL SOD WITHIN 20 LINEAL FEET IN ALL DIRECTIONS MUST BE INSTALLED BEFORE THE FLUSHING DEVICE CAN BE ACTIVATED
5. TOHO REQUIRES BLUETOOTH CONTROLLERS FOR ALL FLUSHING DEVICES

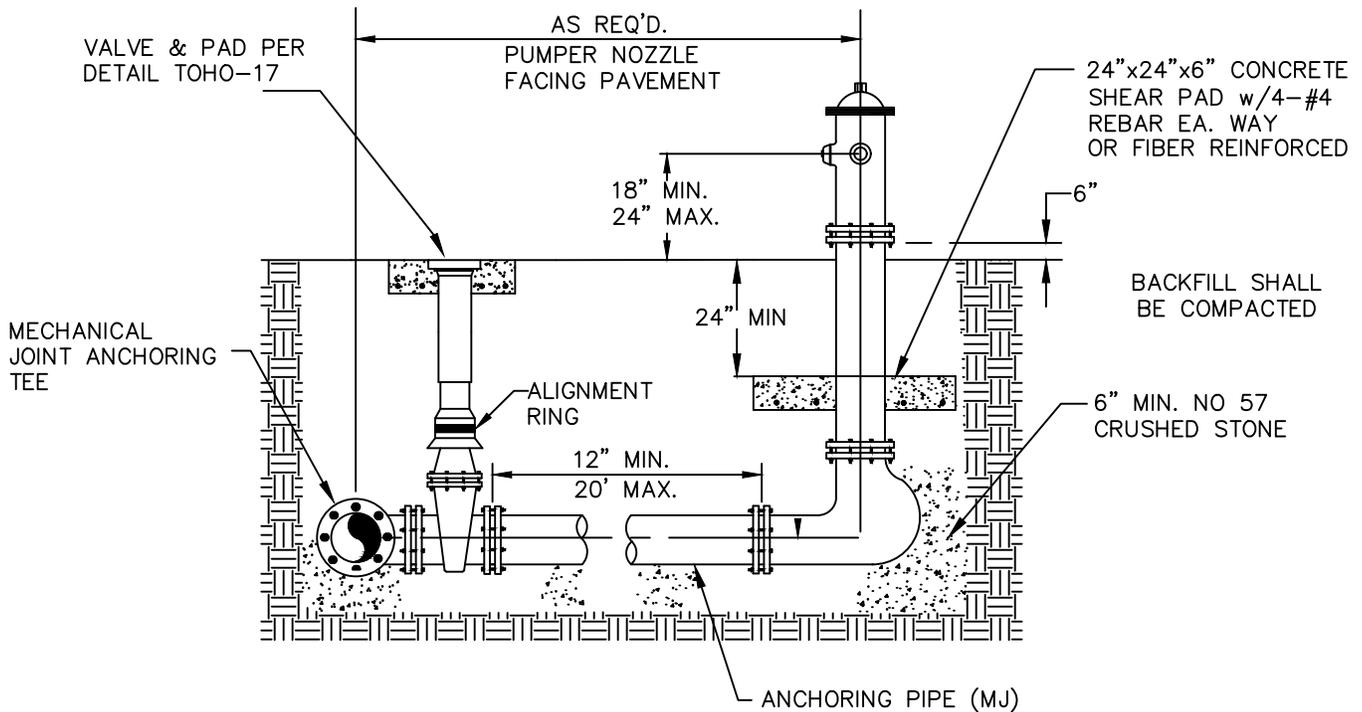


NOTES:

1. BLOWOFF SHALL TERMINATE WITH A 2" LOCKABLE CURB STOP IN A PLASTIC DOUBLE METER BOX. BOX SHALL BE SET PER DETAILS TOHO-01, TOHO-01.1, & TOHO-0.2
2. MAIN SHALL BE PIGGED PRIOR TO INSTALLING BLOWOFF
3. ALL SADDLES, STOPS, & FITTINGS SHALL BE NO LEAD BRASS PACK JOINT W/ CLAMP SCREW RETAINER. NO GALVANIZED PIPE OR FITTINGS ALLOWED



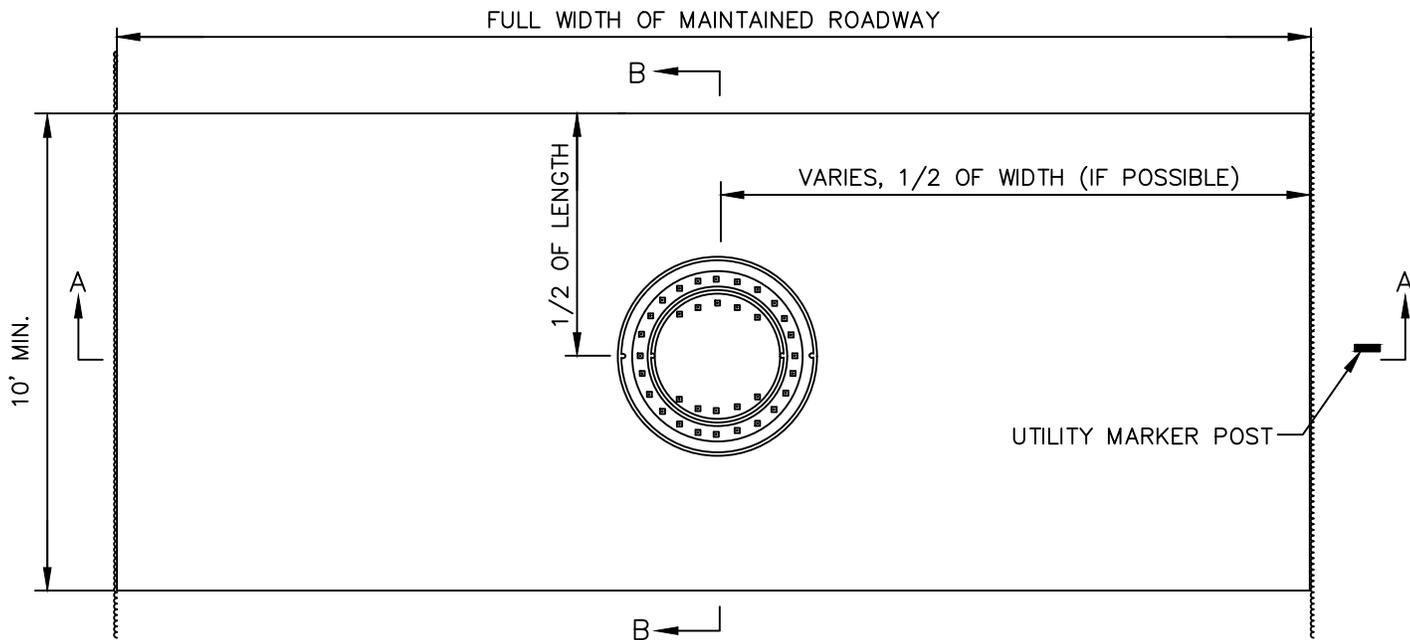
LIMITED RIGHT-OF-WAY CONDITION



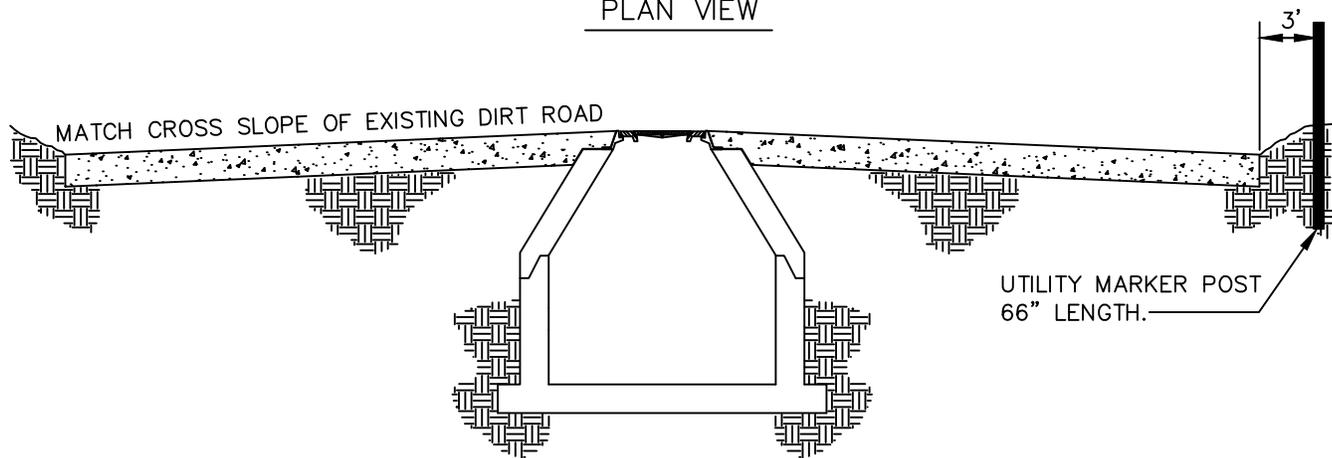
TYPICAL CONDITION

NOTES:

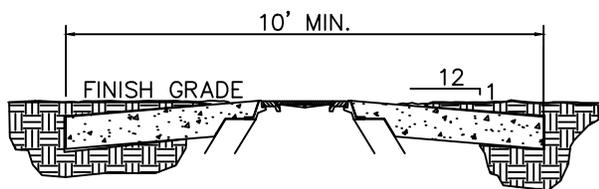
1. HYDRANT SHALL BE SUPPLIED WITHOUT A WEEP HOLE OR WITH A PERMANENTLY PLUGGED WEEP HOLE
2. CLEARANCE BETWEEN BOTTOM OF BOLTS AND FINISH GRADE SHALL BE 6" MINIMUM
3. CLEARANCE BETWEEN PUMPER NOZZLE CENTER AND FINISH GRADE SHALL BE 18" MINIMUM AND 24" MAXIMUM
4. PLANTING CLEAR AREA(S) SHALL BE PER APPLICABLE FIRE CODE(S)
5. IF HYDRANT IS LOCATED MORE THAN 20 LINEAR FEET FROM THE MAIN, AN ADDITIONAL GATE VALVE SHALL BE REQUIRED IMMEDIATELY UPSTREAM OF THE HYDRANT
6. VALVE, VALVE BOX, & PAD SHALL BE INSTALLED PER VALVE & BOX TOHO-17



PLAN VIEW



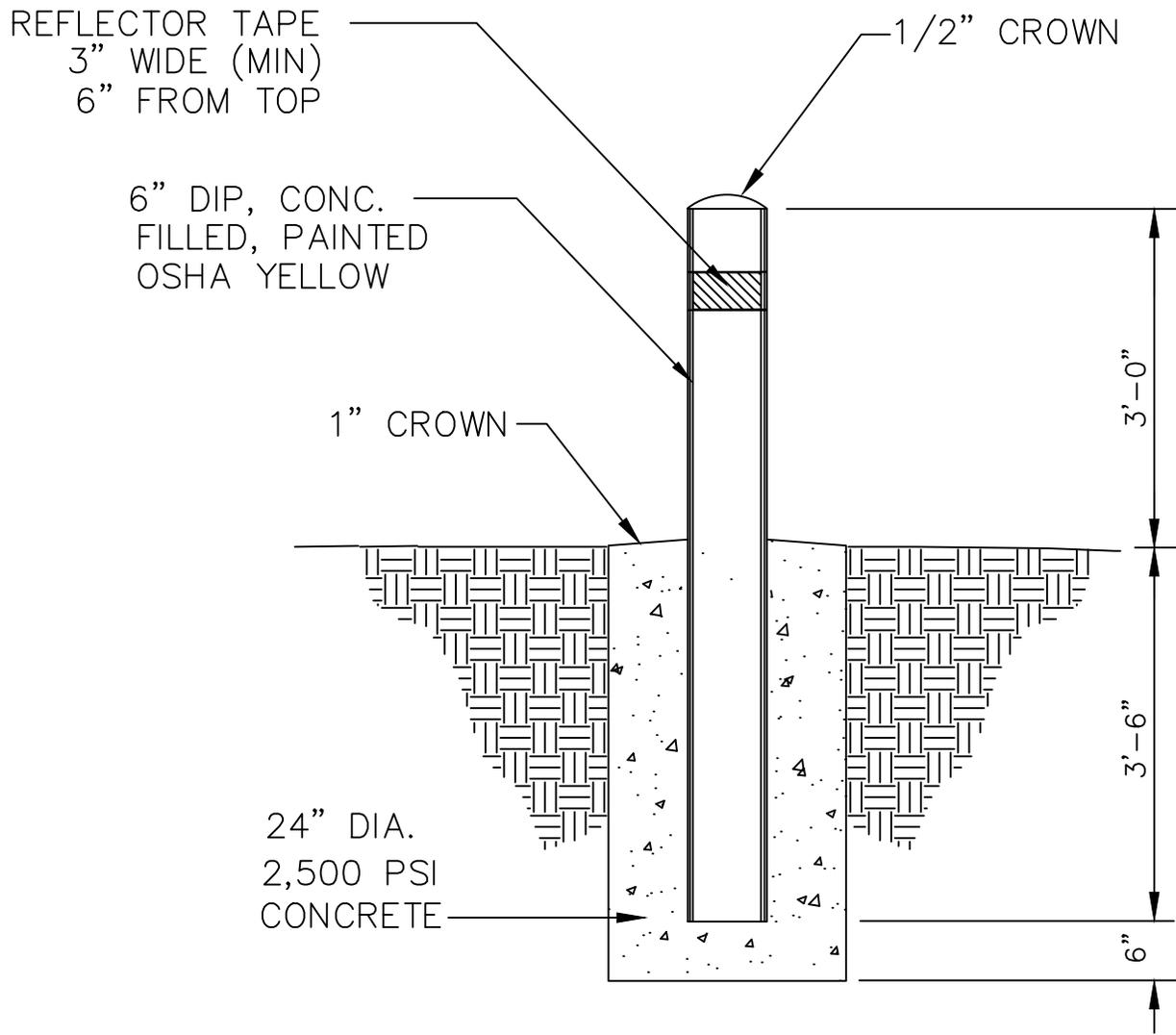
SECTION A-A

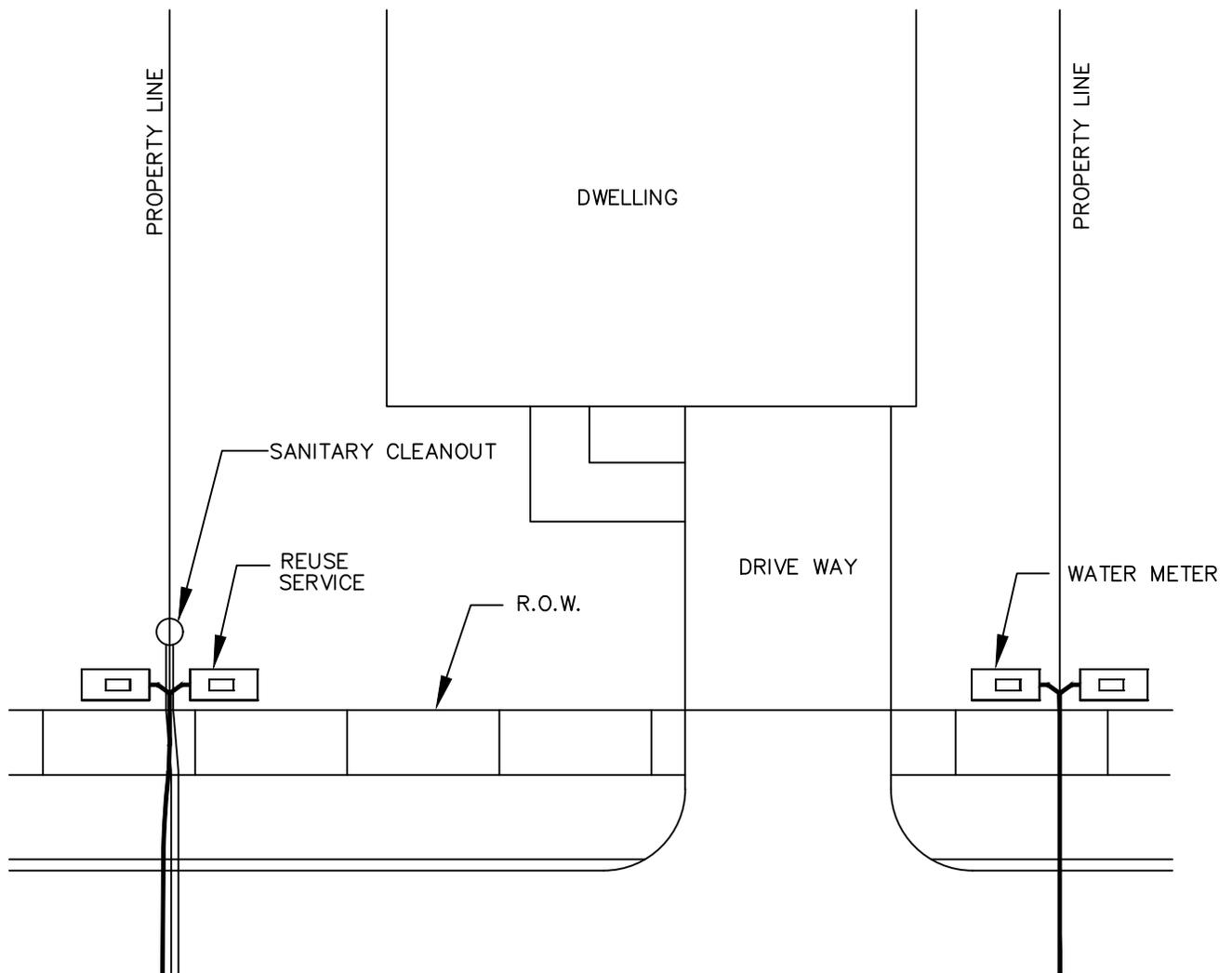


SECTION B-B

NOTES:

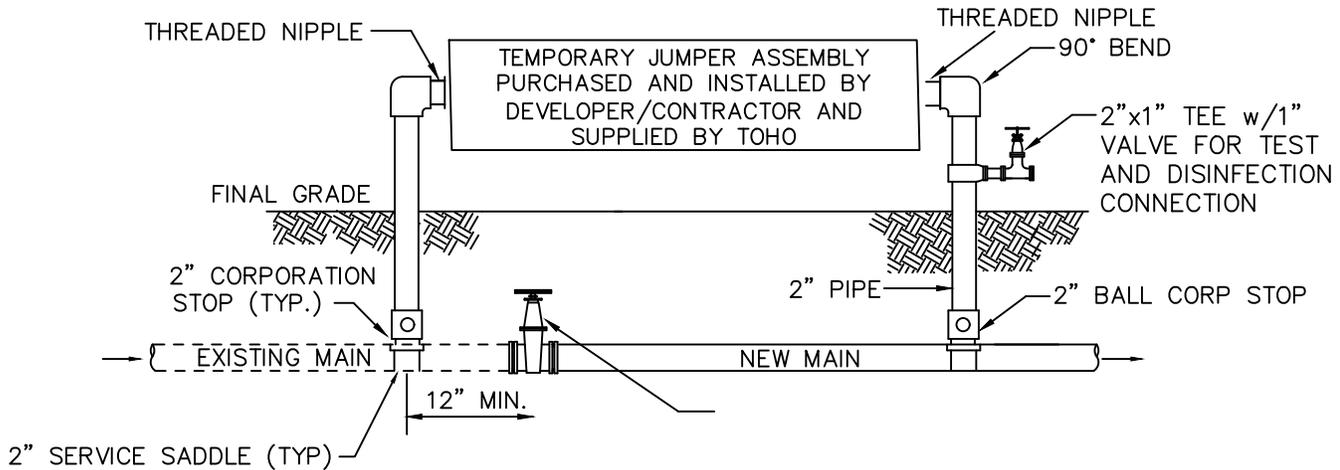
1. SLAB SHALL BE 8" MINIMUM REINFORCED WITH #4 REBAR, 12" OCEW OR EQUIVALENT WIRE MESH
2. FIBER REINFORCED CONCRETE IS NOT PERMITTED
3. UTILITY MARKER POST SHALL BE PLACED 3' OFF THE EDGE OF THE ROADWAY BUT NOT OUTSIDE OF THE RIGHT-OF-WAY
4. IF MANHOLE IS NOT LOCATED WITHIN A ROAD, THE MINIMUM PAD WIDTH SHALL BE 10'X10' AND THE TOP OF THE PAD SHALL BE 6" ABOVE FINISH GRADE





NOTES:

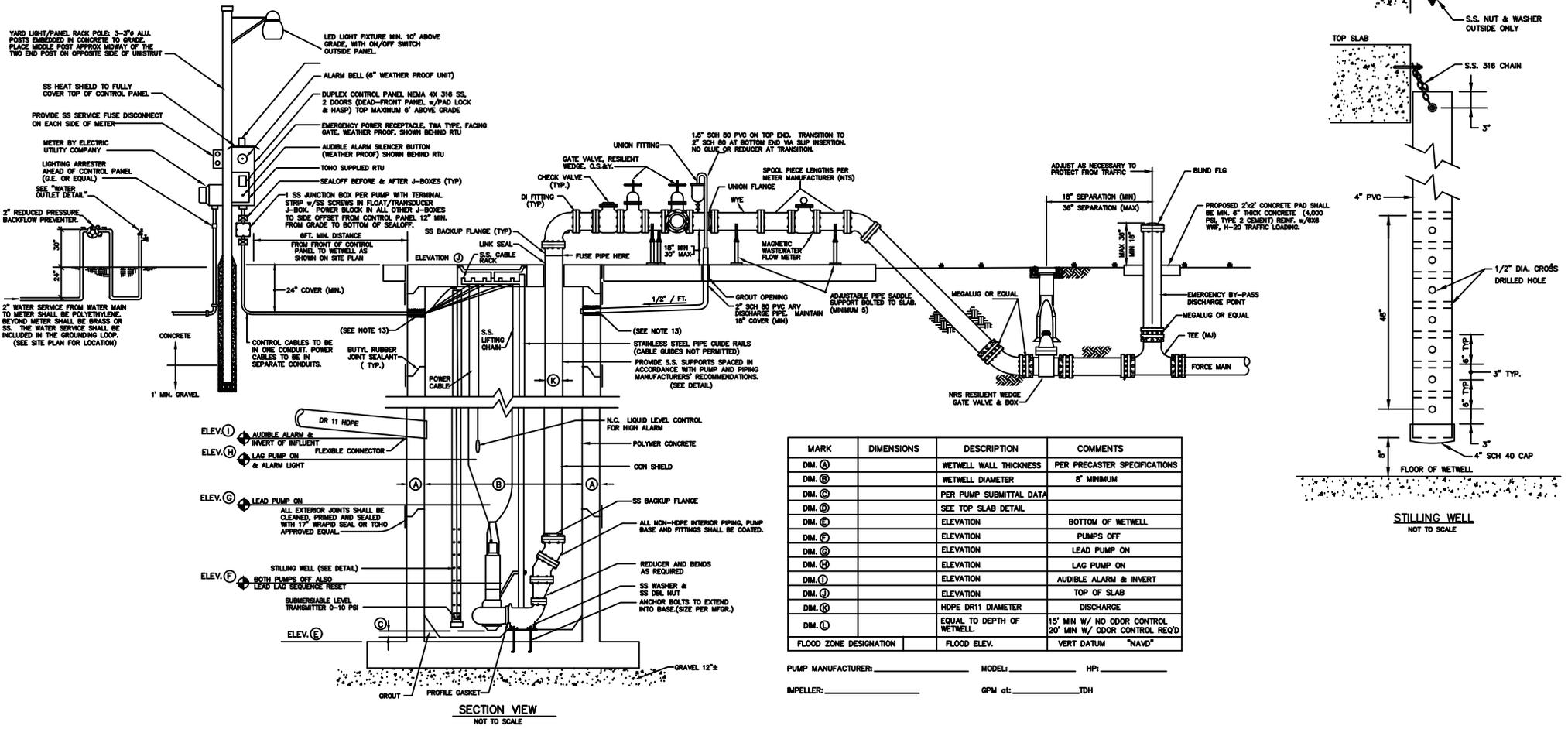
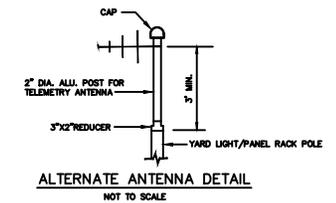
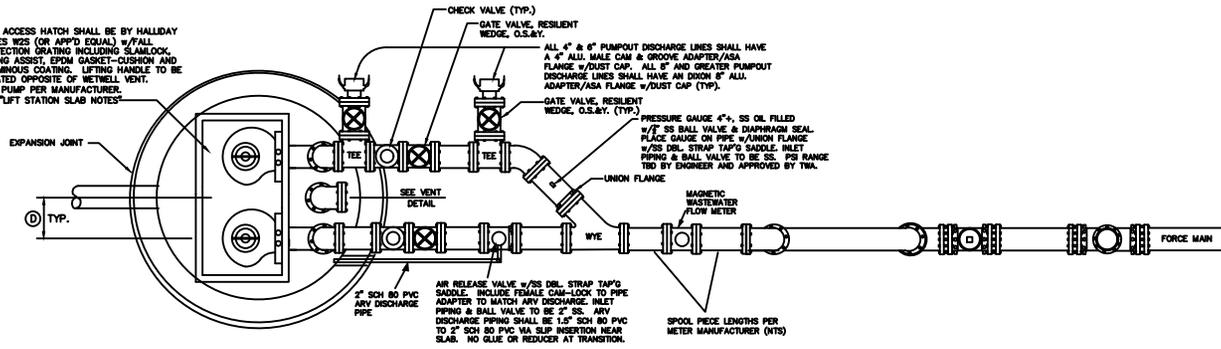
1. PRIOR TO SETTING METERS THE PROPERTY CORNERS AND BACK OF SIDEWALK SHALL BE STAKED
2. ALL METER BOXES SHALL BE SET PER DETAILS TOHO-01 & TOHO-01.1
3. ALL CLEANOUTS SHALL BE SET PER DETAIL TOHO-06
4. EXISTING HYDRANTS, AUTOMATIC FLUSHING DEVICES, OR VALVES SHALL BE MAINTAINED BY THE HOMEBUILDER AT FINISHED GRADE BETWEEN THE PROPERTY LINES AND FROM THE CENTER OF THE ROAD TO 10' BEHIND THE RIGHT-OF-WAY
5. NO PLANTINGS, STRUCTURES, OR OTHER UTILITIES, INCLUDING BUT NOT LIMITED TO TELECOM PEDESTALS, ELECTRICAL TRANSFORMERS OR POLES, ETC. SHALL BE INSTALLED WITHIN 36" OF ANY METER BOX, CLEANOUT, VALVE, OR AUTOMATIC FLUSHING DEVICE



NOTES:

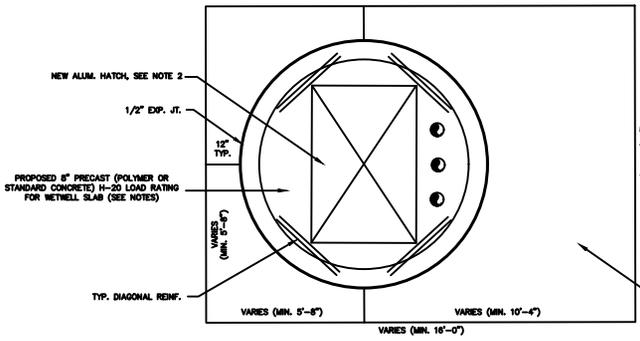
1. A TEMPORARY JUMPER CONNECTION IS REQUIRED AT ALL CONNECTIONS BETWEEN EXISTING ACTIVE POTABLE AND REUSE WATER MAINS AND PROPOSED WATER AND REUSE MAIN IMPROVEMENTS
2. THE DETAIL ABOVE IS TO BE USED FOR PIGGING, FILLING, FLUSHING, AND PULLING SAMPLES FROM NEW WATER MAINS. UNTIL SUCH TIME AS FDEP HAS CLEARED THE POTABLE WATER MAIN FOR USE OR TOHO HAS CLEARED THE POTABLE OR REUSE MAIN FOR USE IF NO FDEP PERMIT IS REQUIRED, THE JUMPER MUST REMAIN ON AND THE VALVE BETWEEN THE OLD AND NEW SYSTEMS MUST REMAIN CLOSED
3. THE DEVELOPER AND/OR CONTRACTOR WILL PURCHASE THE TEMPORARY JUMPER ASSEMBLY FROM TOHO. ONLY JUMPERS PURCHASED DIRECTLY THRU TOHO ARE ALLOWED
4. THE INSTALLATION AND MAINTENANCE OF THE TEMPORARY JUMPER IS THE RESPONSIBILITY OF THE DEVELOPER AND/OR THE CONTRACTOR
5. 2" TAPS AND SERVICES UPSTREAM AND DOWNSTREAM OF THE JUMPER ASSEMBLY SHALL BE PER DETAIL TOHO-01
6. GALVANIZED PIPE AND/OR FITTINGS ARE NOT ALLOWED
7. ABANDONED JUMPER CONNECTIONS MUST BE INCLUDED ON THE FINAL RECORD DRAWINGS

- NOTES:**
- ALL ITEMS NOT SPECIFIED ON THESE SHEETS SHALL MEET TOHO STANDARDS AND SPECIFICATIONS.
 - ALL LIFT STATION NET WELLS SHALL BE PRECAST POLYMER CONCRETE.
 - NO LIFTING HOLES ARE PERMITTED THRU WALLS OR TOP SLAB.
 - ALL ABOVE GROUND FORCE MAIN PIPING SHALL BE FLANGED DUCTILE IRON.
 - ALL TAPS SHALL BE STAINLESS STEEL TAPPING SADDLES.
 - ALL CONDUIT SHALL BE RIGID ALUMINUM EXCEPT FOR THE CONDUIT FROM THE TRANSFORMER TO THE 2ND DISCONNECT AFTER THE METER.
 - FINISHED GRADE INSIDE THE FENCED AREA SHALL BE A MINIMUM OF 12" ABOVE THE 100 YEAR FLOOD AND 6" ABOVE THE GROUND ELEVATION AT ANY FORCE POST.
 - ALL PENETRATIONS, INTERIOR OPENINGS, CHIPS, LIFT HOLES, ETC. SHALL BE SEALED WITH POLYMER GROUT AS SPECIFIED BY THE MANUFACTURER.
 - SEE PANEL DRAWING(S) FOR TELEMETRY SYSTEM DETAILS.
 - TELEMETRY SHALL BE PAID FOR BY THE DEVELOPER AND FURNISHED, INSTALLED, AND PROGRAMMED BY TOHO.
 - ALL ENCLOSURE PENETRATIONS SHALL BE MADE ON THE BOTTOM OF THE ENCLOSURE, TOP AND SIDE PENETRATIONS ARE NOT PERMITTED EXCEPT ON TYS. USE MYERS HUBS EXCEPT BETWEEN METER AND DISCONNECT AND TYS.
 - ALL BOXES AND ENCLOSURES SHALL BE NEMA 4X 316 SS RACK TO UTILIZE SS STRUT CHANNEL, SS HARDWARE, AND VINYL DEDCAPS.



MARK	DIMENSIONS	DESCRIPTION	COMMENTS
DIM. (A)		WETWELL WALL THICKNESS	PER PRECASTER SPECIFICATIONS
DIM. (B)		WETWELL DIAMETER	8' MINIMUM
DIM. (C)			PER PUMP SUBMITTAL DATA
DIM. (D)		SEE TOP SLAB DETAIL.	
DIM. (E)		ELEVATION	BOTTOM OF WETWELL
DIM. (F)		ELEVATION	PUMPS OFF
DIM. (G)		ELEVATION	LEAD PUMP ON
DIM. (H)		ELEVATION	LAG PUMP ON
DIM. (I)		ELEVATION	AUDIBLE ALARM & INVERT
DIM. (J)		ELEVATION	TOP OF SLAB
DIM. (K)		HDPE DR11 DIAMETER	DISCHARGE
DIM. (L)		EQUAL TO DEPTH OF WETWELL.	15' MIN W/ NO ODOR CONTROL REQ'D 20' MIN W/ ODOR CONTROL REQ'D
FLOOD ZONE DESIGNATION		FLOOD ELEV.	VERT DATUM "NAVD"

PUMP MANUFACTURER: _____ MODEL: _____ HP: _____
 IMPELLER: _____ GPM at _____ TDH _____

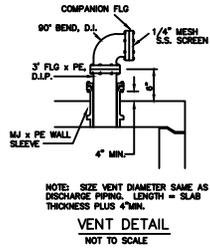


TYPICAL LIFT STATION SLAB DETAIL

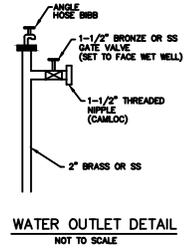
NOT TO SCALE

- LIFT STATION SLAB NOTES:
- 1) SAWCUT 2" DEEP JOINT AS SHOWN, SAW CUTTING TO BE PERFORMED IMMEDIATELY AFTER PLACEMENT, AS SOON AS THE CONCRETE IS FIRM ENOUGH TO SUPPORT THE SAW AND TO NOT BE TORN OR DAMAGED BY THE BLADE.
 - 2) ALUMINUM ACCESS HATCH SHALL BE BY HALLIDAY MODEL SERIES W25 WITH FALL PROTECTION GRATING OR TWA APPROVED EQUAL, APPLY A BUTYRUS COATING INSIDE. ALUMINUM IS IN CONTACT WITH CONCRETE.
 - 3) PROVIDE SARCUTS EVERY 12" IN LENGTH AND WIDTH OF ACCESS DRIVEWAY AND LIFT STATION SLAB AND AS SHOWN.
 - 4) SEE CIVIL DRAWINGS FOR SLAB LOCATION AND DIMENSIONS.
 - 5) TOP SLAB SHALL BE POLYMER OR STANDARD CONCRETE, ALL OTHER WELL CONCRETE SECTIONS SHALL BE POLYMER ONLY.

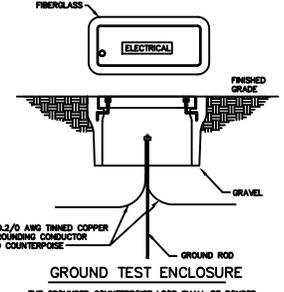
PROPOSED LIFT STATION SLAB SHALL BE MIN. 6" THICK CONCRETE (4,000 PSI, TYPE 2 CEMENT) REINF. #6/8 W/23/2.0 W/F, H-20 TRAFFIC LOADING. STABILIZE SUBGRADE TO MIN. 12"



VENT DETAIL
NOT TO SCALE



WATER OUTLET DETAIL
NOT TO SCALE

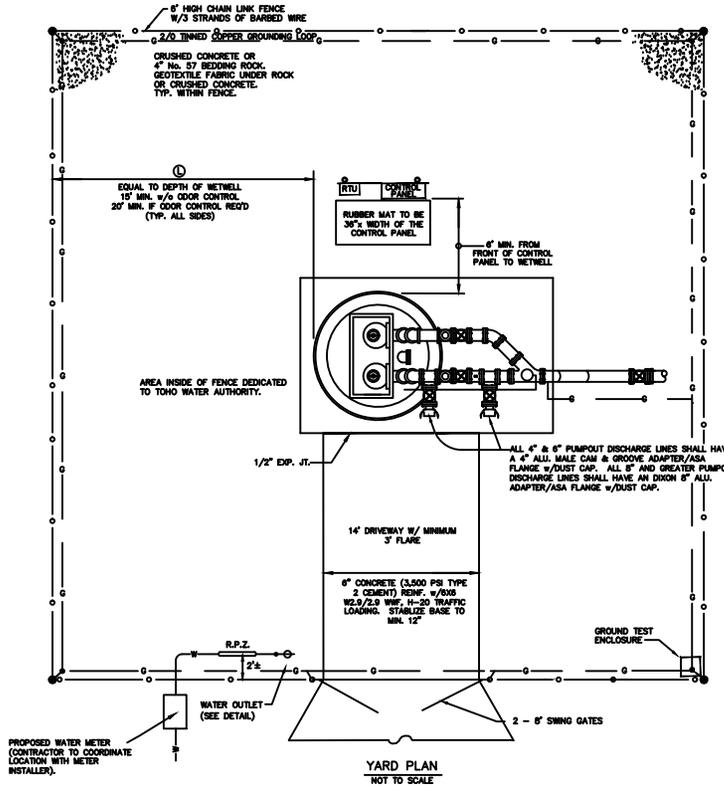


GROUND TEST ENCLOSURE

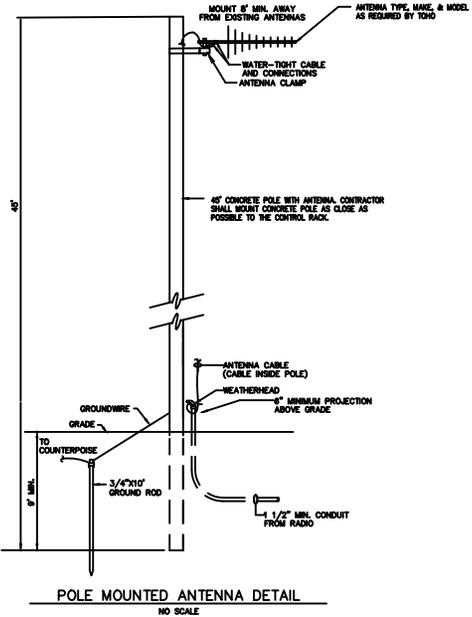
THE GROUNDED COUNTERPOISE LOOP SHALL BE BONDED BY CABLEWELL TO GROUND RODS AND GROUND WIRE PITS.

THE FOLLOWING SHALL BE MECHANICALLY BONDED TO THE COUNTERPOISE LOOP:

- | | |
|---|--------------------------------|
| 1. CORNER POSTS | 8. MAIN DISCONNECT SWITCH |
| 2. GATE POSTS, GATE AND FENCE | 9. UTILITY COMPANY TRANSFORMER |
| 3. WATER SERVICE | 10. OPERATOR |
| 4. CONTROL PANEL | 11. ODOOR CONTROL |
| 5. NET WELL HATCH AND HANDRAIL | 12. SERVICE DISCONNECT SWITCH |
| 6. DISCHARGE PIPING | 13. TELEMETRY PANEL |
| 7. ALL CONDUIT ENTRIES (METAL) INTO CONTROL PANEL BY MEANS OF GROUNDING BUSHINGS. | 14. TELEMETRY MAST |



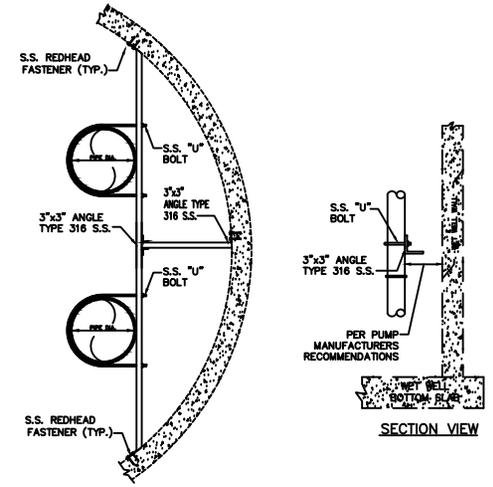
YARD PLAN
NOT TO SCALE



POLE MOUNTED ANTENNA DETAIL
NO SCALE

NOTES:

1. YARD PIPING PLAN IS A GENERIC PLAN SHOWING REQUIRED PIPING AND MINIMUM CLEARANCES, SEPARATIONS, AND SITE SIZING REQUIREMENTS.
2. A SITE SPECIFIC YARD PLAN IS REQUIRED.
3. A SITE SPECIFIC PLAN IS REQUIRED THAT IDENTIFIES THE LOCATION OF THE DRIVEWAY, ACCESS ROADS, AND ALL OTHER RELEVANT SITE FEATURES. LAYOUT MUST INCLUDE SITE GRADING TO SHOW DRAINAGE AWAY FROM THE NET WELL AND SLAB AND THE SITE IN GENERAL.
4. A LAYOUT DEVIATING FROM THIS DETAIL SHALL BE DRAWN TO SCALE AND SHOW WETWELL PUMPS AND INFLUENT AND EFFLUENT PIPING TO ENSURE SUFFICIENT SPACE WITHIN THE WETWELL TO ACCOMMODATE ALL MECHANICAL EQUIPMENT AND PIPING.
5. ELECTRICAL TRANSFORMERS MUST BE LOCATED OUTSIDE OF THE FENCED AREA.
6. PROPOSED 1/4 DRIVEWAY W/ MINIMUM 3' FLARE MUST EXTEND TO A PAVED PUBLIC OR PRIVATE ROADWAY.
7. LIFT STATION SITES LOCATED ON ROADS WITH POSTED SPEED LIMITS OF 25MPH OR GREATER REQUIRE DRIVE-THRU OR TURNAROUND ACCESS.
8. ENGINEER SHALL PROVIDE A TRANSPORT AUTO-TURN OR AUTODESK VEHICLE TRACKING ANALYSIS FOR A COMBINATION SEWER CLEANING VACTOR TRUCK.

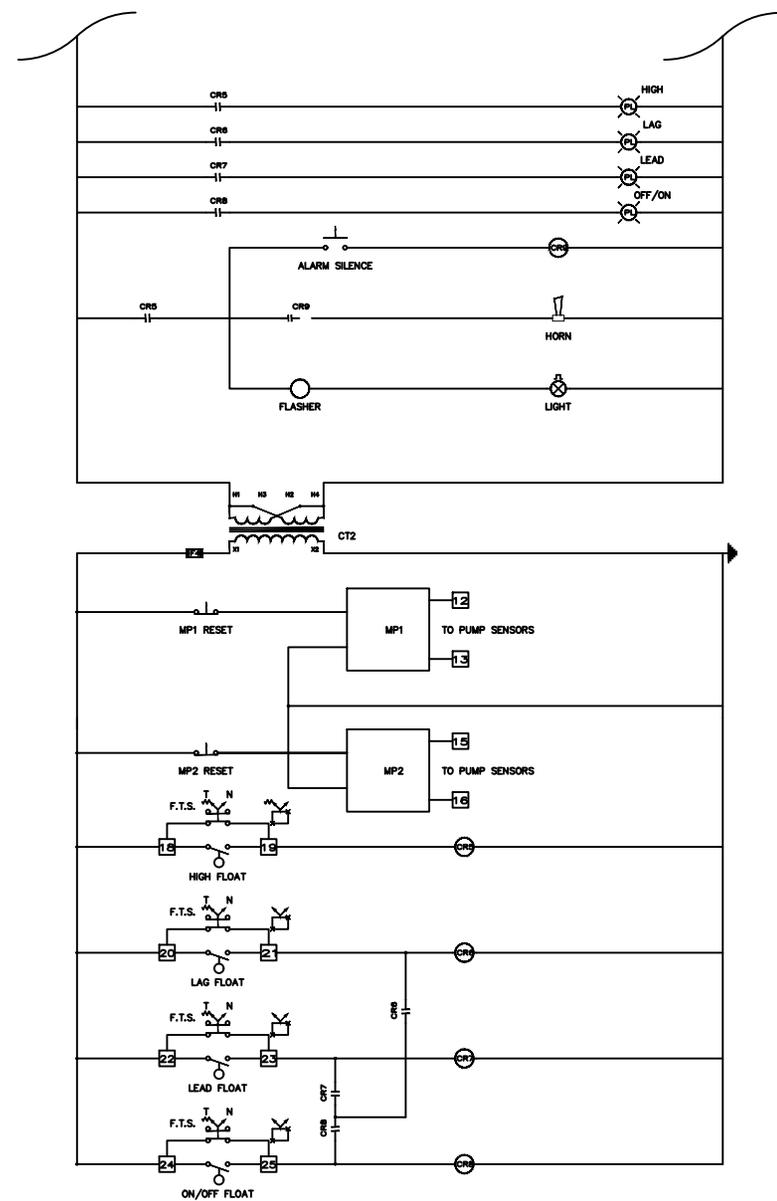
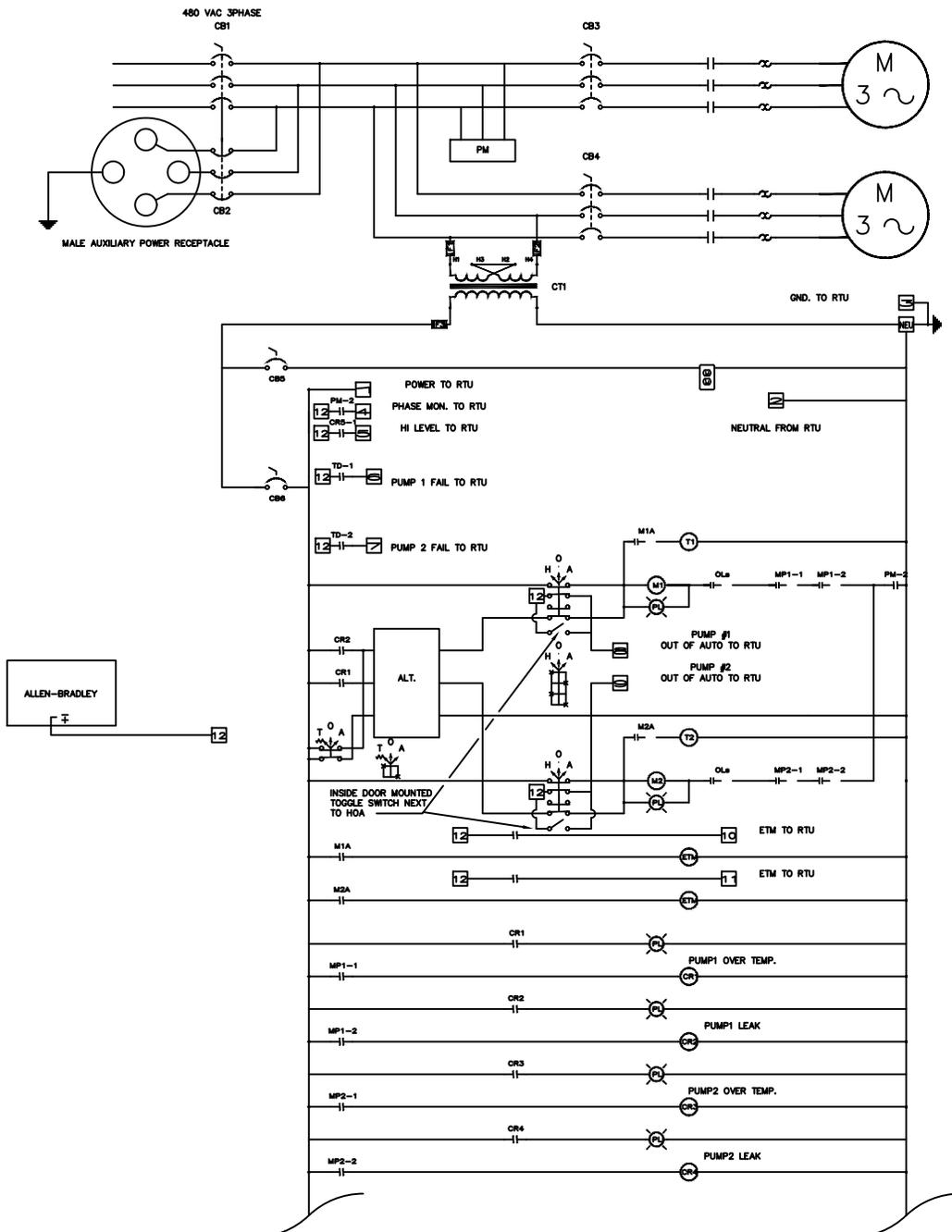


TOP VIEW

NOTES:

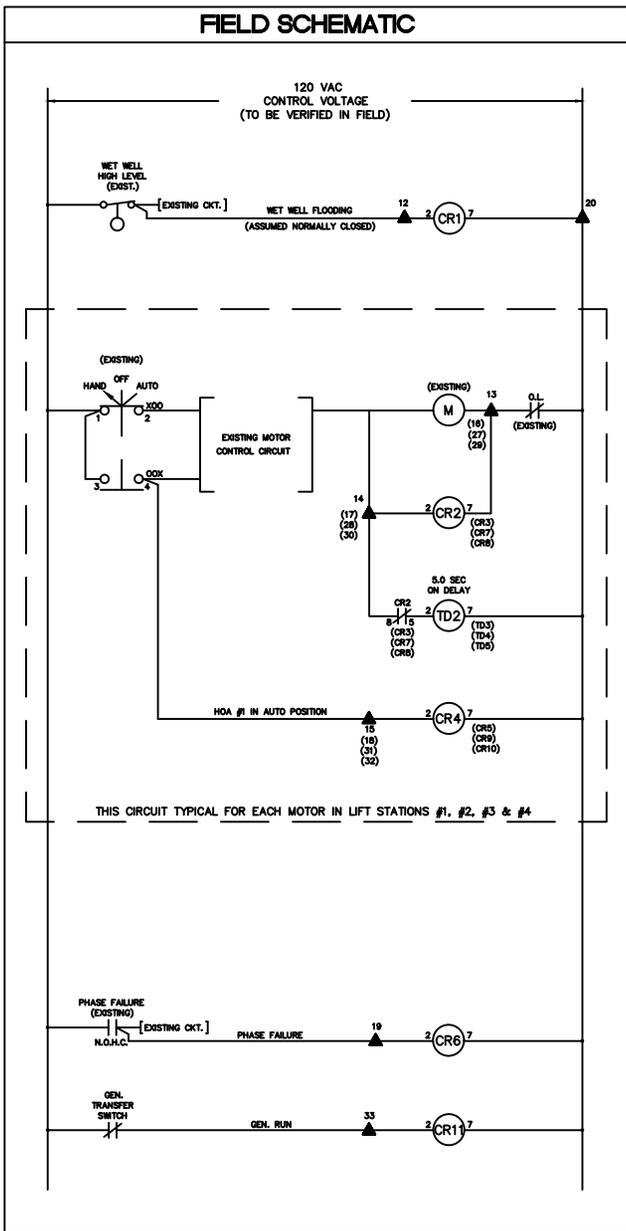
1. ALL COMPONENTS AND BRACKET ASSEMBLY SHALL BE GRADE 316 STAINLESS STEEL.
2. BRACKETS SHALL BE SPACED AS INDICATED IN THE CONSTRUCTION DRAWING OR AT THE DIRECTION OF TWA.
3. PIPE SIZES AND MATERIALS SHALL BE AS INDICATED IN THE CONSTRUCTION DRAWINGS.
4. A MINIMUM OF 2 BRACKETS REQUIRED. MAX 10' SPACING.
5. WELD ALL CONNECTIONS EXCEPT U-BOLTS.

PIPE FASTENING BRACKET
NOT TO SCALE

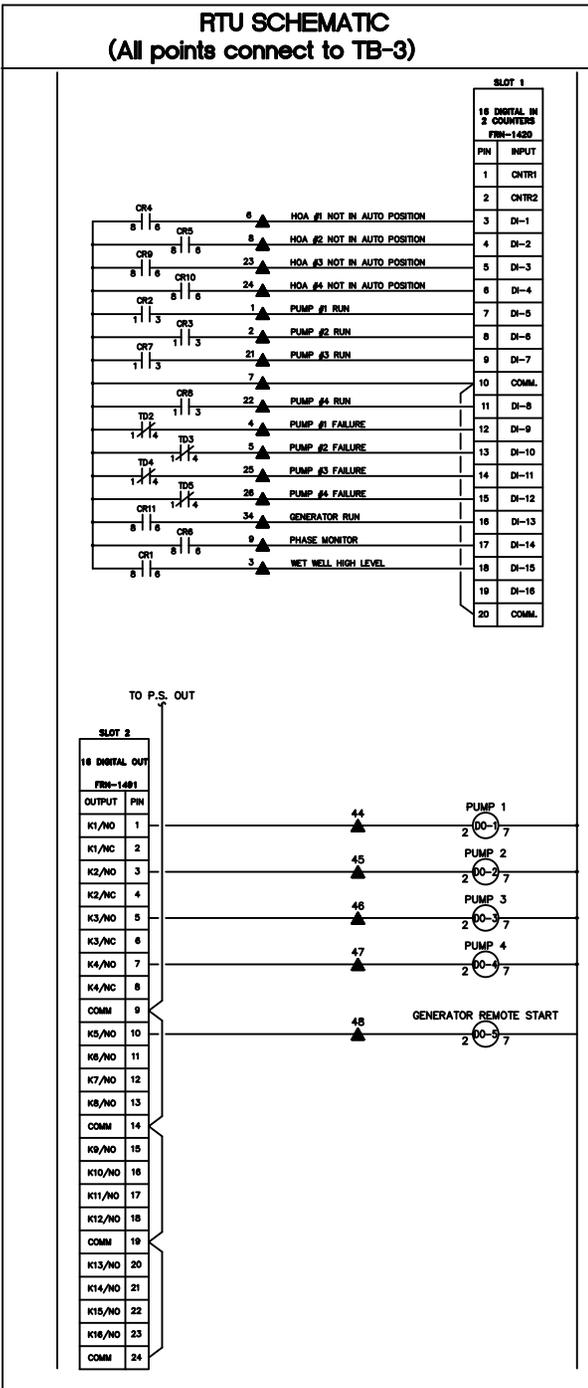


TYPICAL LIFT STATION CONTROL PANEL SCHEMATIC TOHO-31.2

FIELD SCHEMATIC

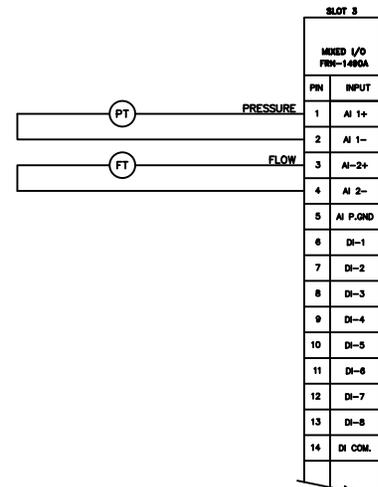


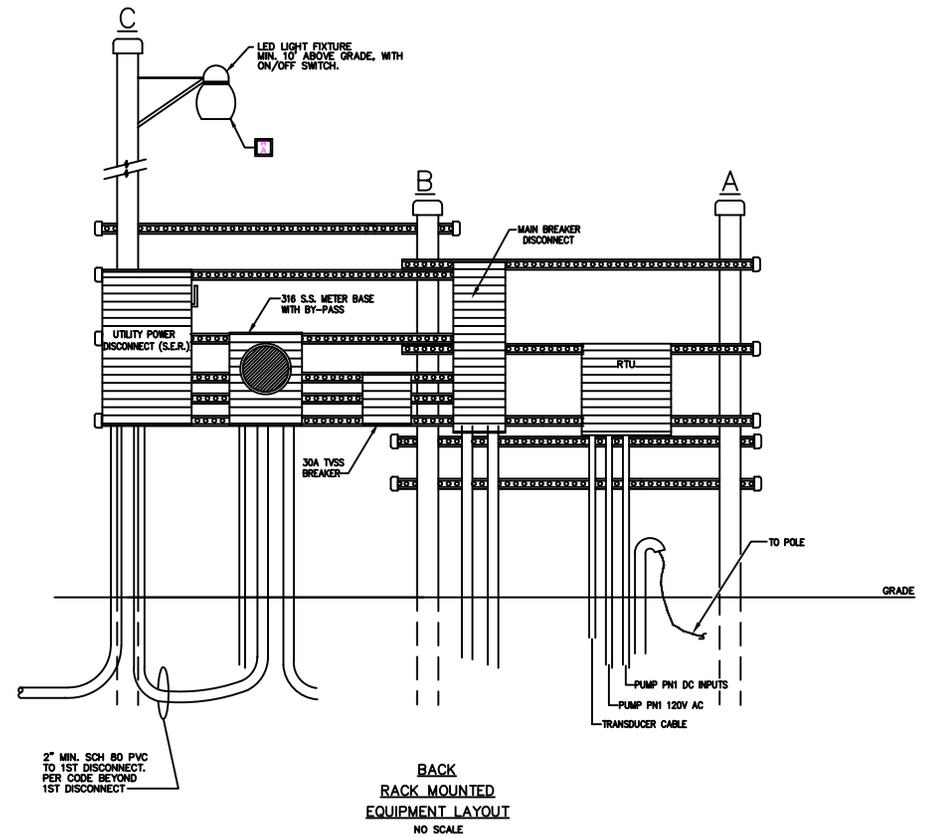
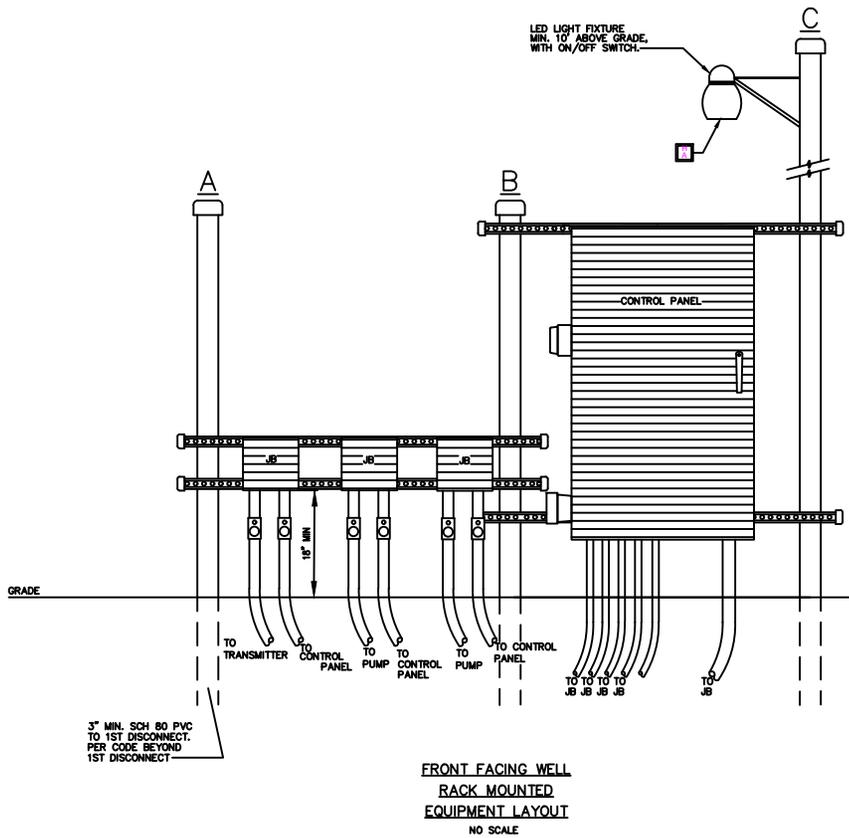
RTU SCHEMATIC (All points connect to TB-3)

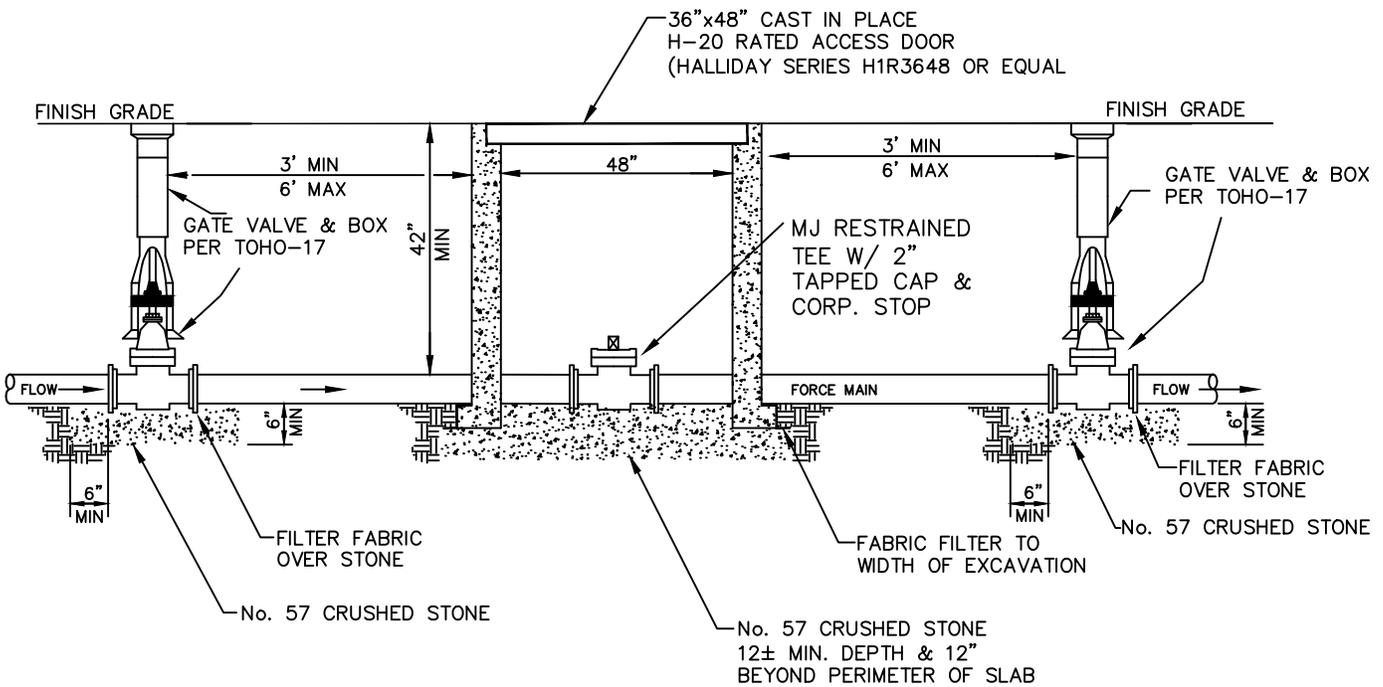
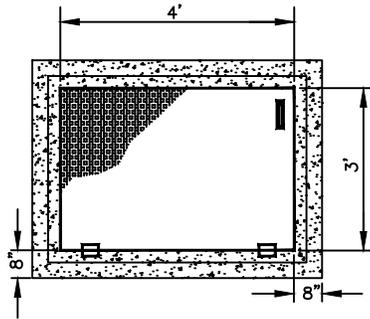


INSTALLATION NOTES:

1. INSTALLER TO VERIFY CONTROL VOLTAGE IN ORDER TO DETERMINE RELAY COIL VOLTAGES.
 2. INSTALLER TO VERIFY DATA SHEETS AS TO WHAT OPTIONS ARE TO BE INSTALLED AT EACH LIFT STATION
 3. INSTALLER TO VERIFY THAT ALL SIGNALS ARE NORMALLY CLOSED, CONTACT OPENS ON SIGNAL.
(i.e. SOME SIGNALS MAY BE GENERATED AS NORMALLY OPEN FROM FIELD LIMIT SWITCH.)
 4. TYPICAL RELAY PIN OUT IS AS FOLLOWS:
-
5. ALL CONTROL RELAYS TO BE P & B #KRP11AN OR EQUAL.
 6. ALL TIME DELAY RELAYS TO BE DIGI SWITCH TYPE TDM OR EQUAL.
 7. ▲ - TB2 LOCATED IN JUNCTION BOX. TO BE PRE-WIRED IN SHOP.



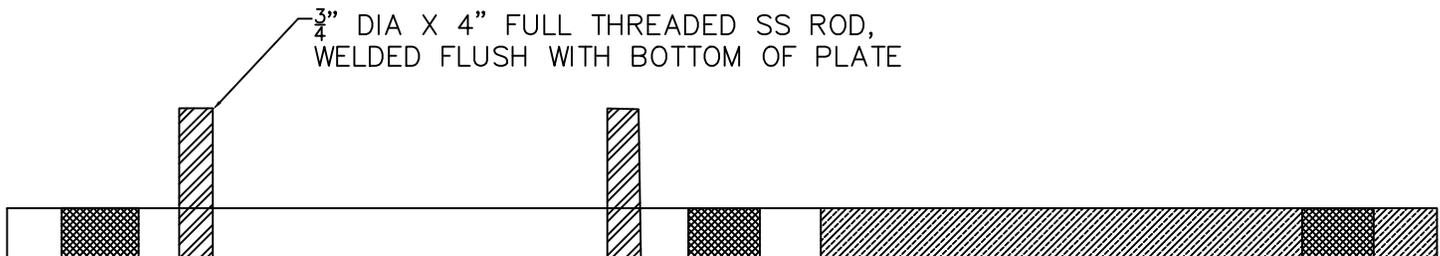
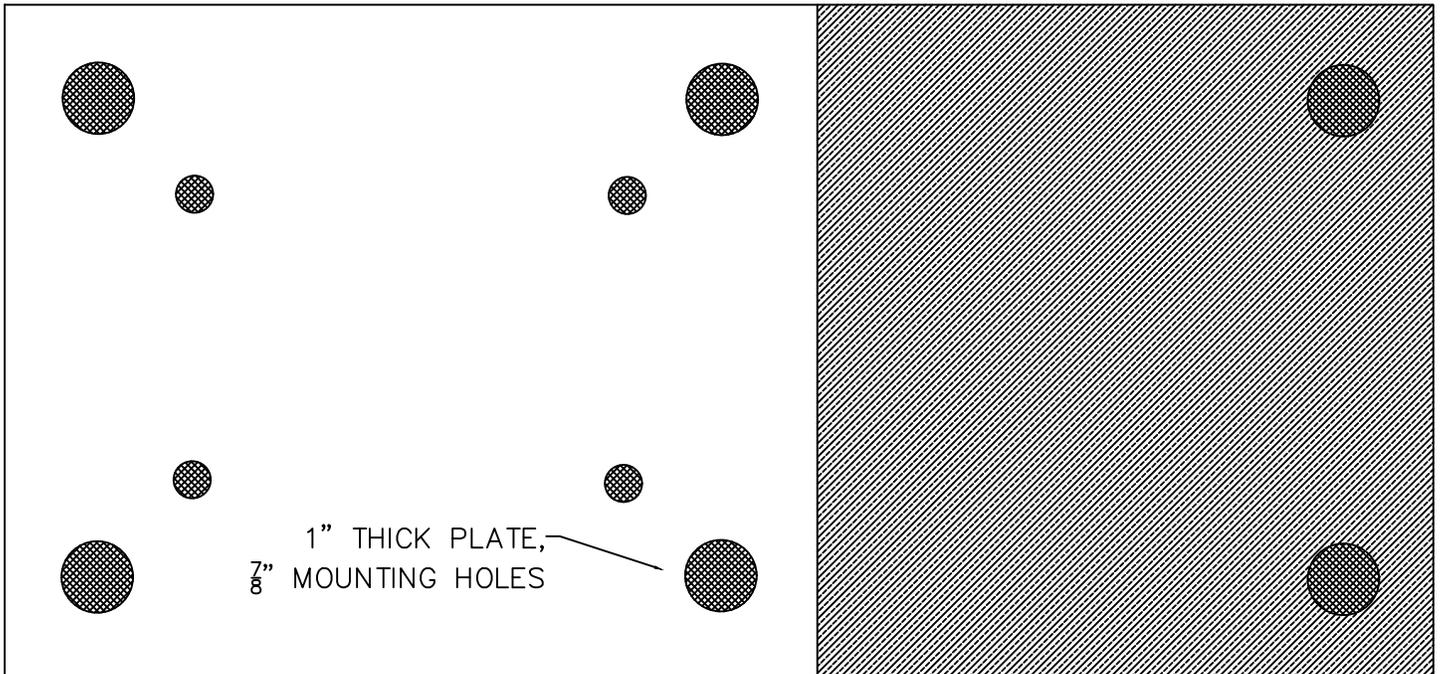




NOTES:

1. THIS DETAIL APPLIES TO BOTH ENTRY AND EXIT PORTS
2. CRUSHED STONE BEDDING 6" MINIMUM BELOW VALVE AND VAULT SHALL BE COVERED WITH FILTER FABRIC
3. NO PLANTINGS, STRUCTURES, OR OTHER UTILITIES INCLUDING BUT NOT LIMITED TO TELECOM PEDESTALS, ELECTRICAL TRANSFORMERS OR POLES, ETC. SHALL BE INSTALLED WITHIN 36" OF ANY SIDE OF THE GATE VALVES OR VAULT

ADDITIONAL PLATE WIDTH
REQUIRED FOR PUMPS 12HP OR
GREATER



NOTES:

1. $\frac{3}{4}$ " SS MOUNTING BOLTS TO BE SET IN LIFT STATION BASE WITH TOHO APPROVED EPOXY, EXPANDABLE ANCHORS NOT PERMITTED
 - 1.1. MINIMUM EMBEDMENT OF ANCHOR SHALL BE PER WETWELL PRECASTER
 - 1.2. EMBEDMENT SHALL BE MEASURED FROM TOP OF PRECAST SLAB, ADDITIONAL DEPTH SHALL BE REQUIRED THROUGH GROUT USED TO SLOPE BASE
2. PUMP BASES SHALL BE MOUNTED WITH STAINLESS STEEL WASHERS AND DOUBLE NUTS
3. THIS DRAWING IS INTENDED AS A MINIMUM DESIGN STANDARD. MEASUREMENTS MAY BE ADJUSTED DEPENDING ON PUMP BASE SIZE & WEIGHT
4. ENGINEER OF RECORD IS RESPONSIBLE FOR SUBMITTING A PROJECT SPECIFIC BASE PLATE THAT CONFORMS TO THIS DETAIL AND ACCOMMODATES THE TOHO APPROVED PUMP FOR THE PROJECT
5. ADDITIONAL REQUIREMENTS NOT OUTLINED IN TOHO DETAILS OR IN TOHO'S STANDARDS AND SPECIFICATIONS SHALL REQUIRE REVIEW AND APPROVAL BY TOHO PRIOR TO INSTALLATION