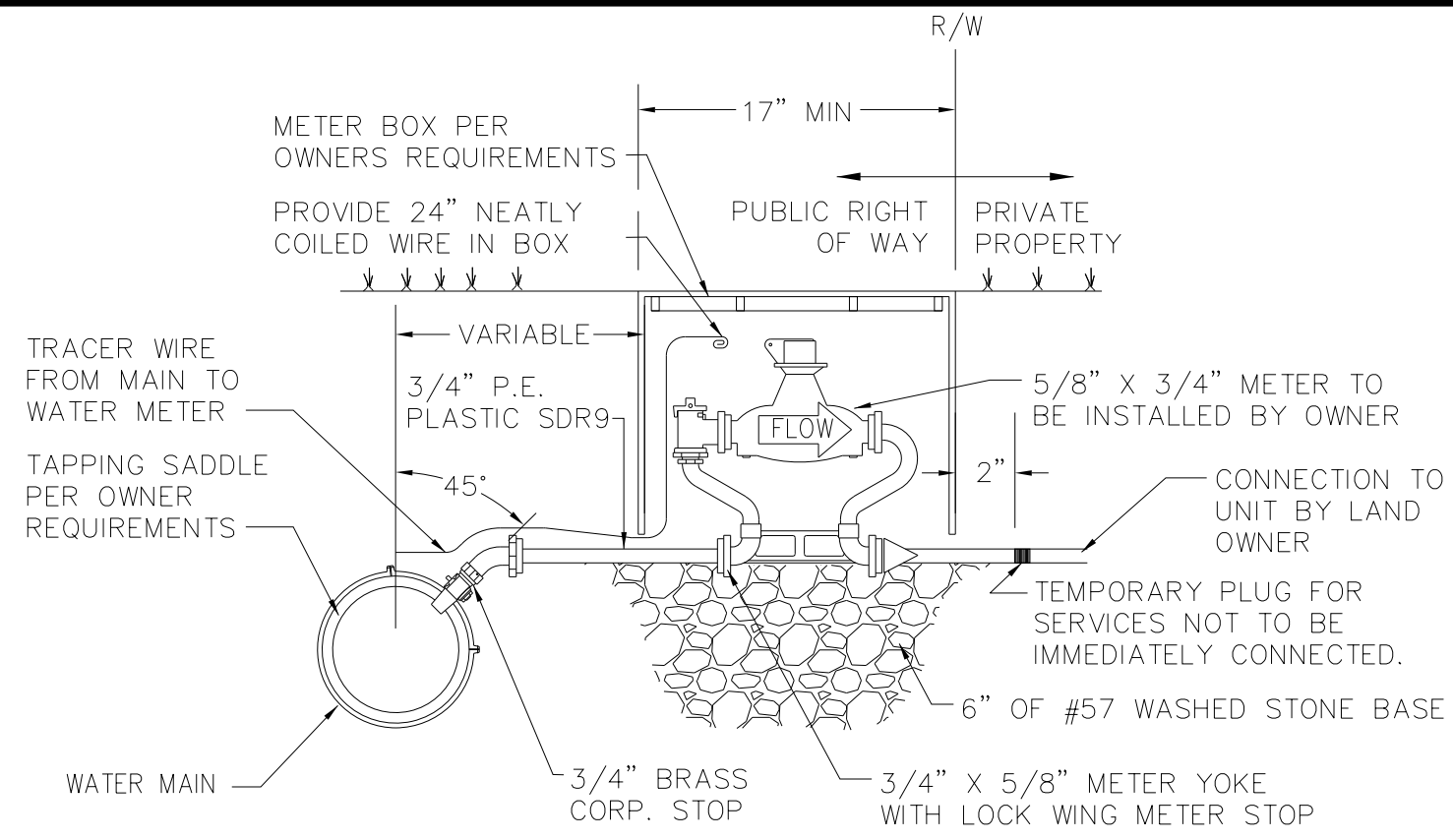


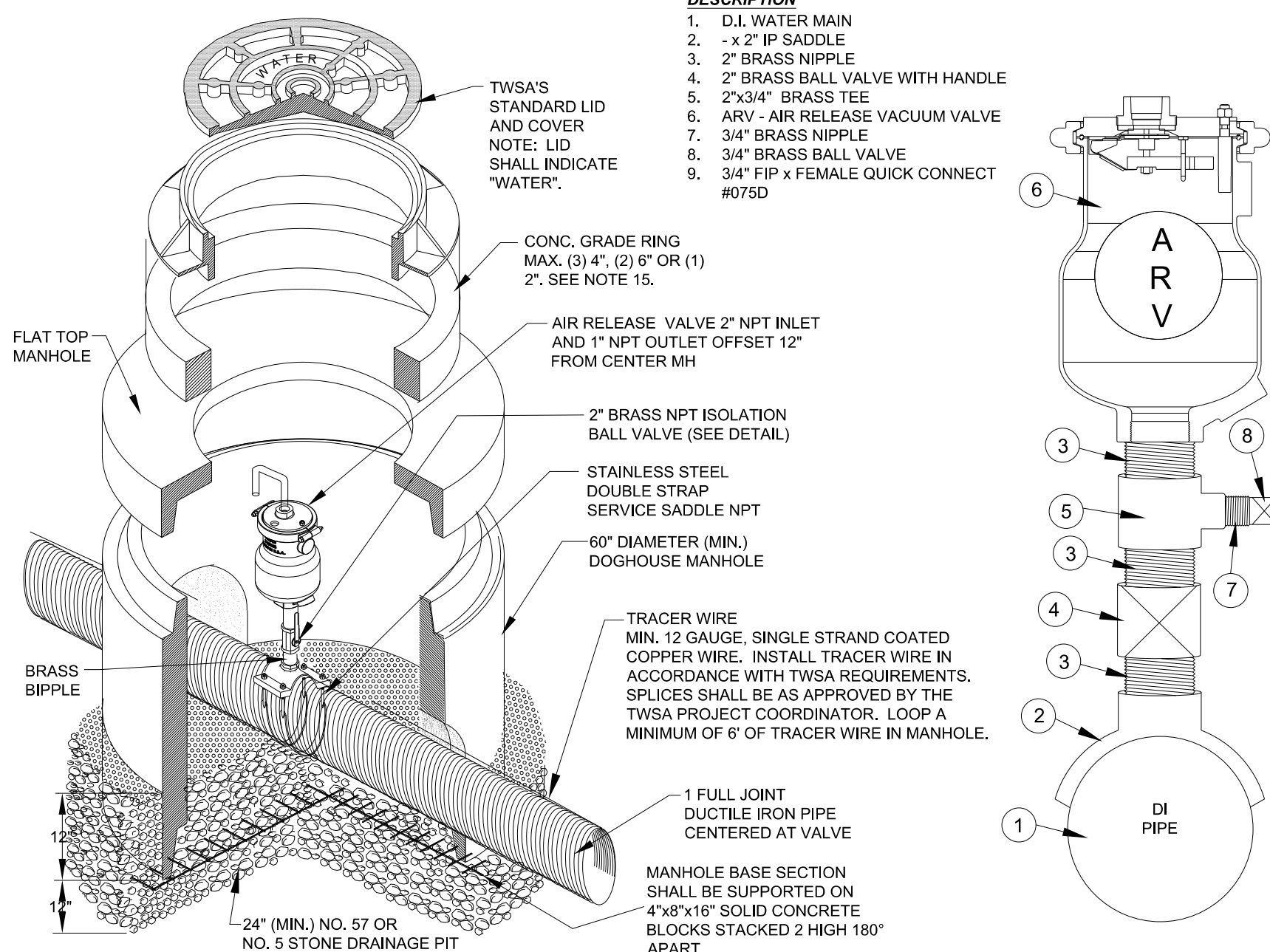
DESIGNED BY: DRD
DRAWN BY: DRF
CHECKED BY: DWH
APPROVED BY: RMS
REVISIONS:
NORTH CAROLINA PROFESSIONAL SEAL
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151
UTILITY CONSTRUCTION PLANS ONLY
DOCUMENT NOT CONSIDERED FINAL UNTIL ALL SIGNATURES ARE COMPLETED

TEST PRESSURE = 150 PSI
TABLE with columns: PIPE SIZE, TYPE FITTING, DIMENSIONS (FT) L, H, T, VOLUME CONCRETE CU. YD.

TEST PRESSURE = 200 PSI
TABLE with columns: PIPE SIZE, TYPE FITTING, DIMENSIONS (FT) L, H, T, VOLUME CONCRETE CU. YD.



3/4" TO 1" SERVICE CONNECTION AND METER NOT TO SCALE

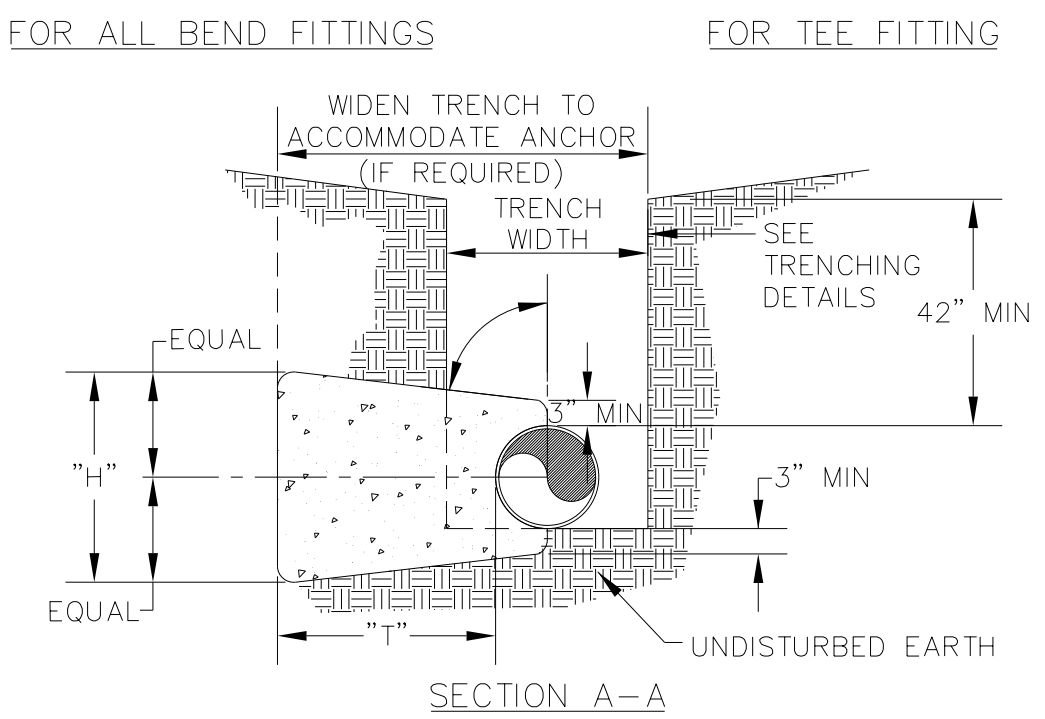
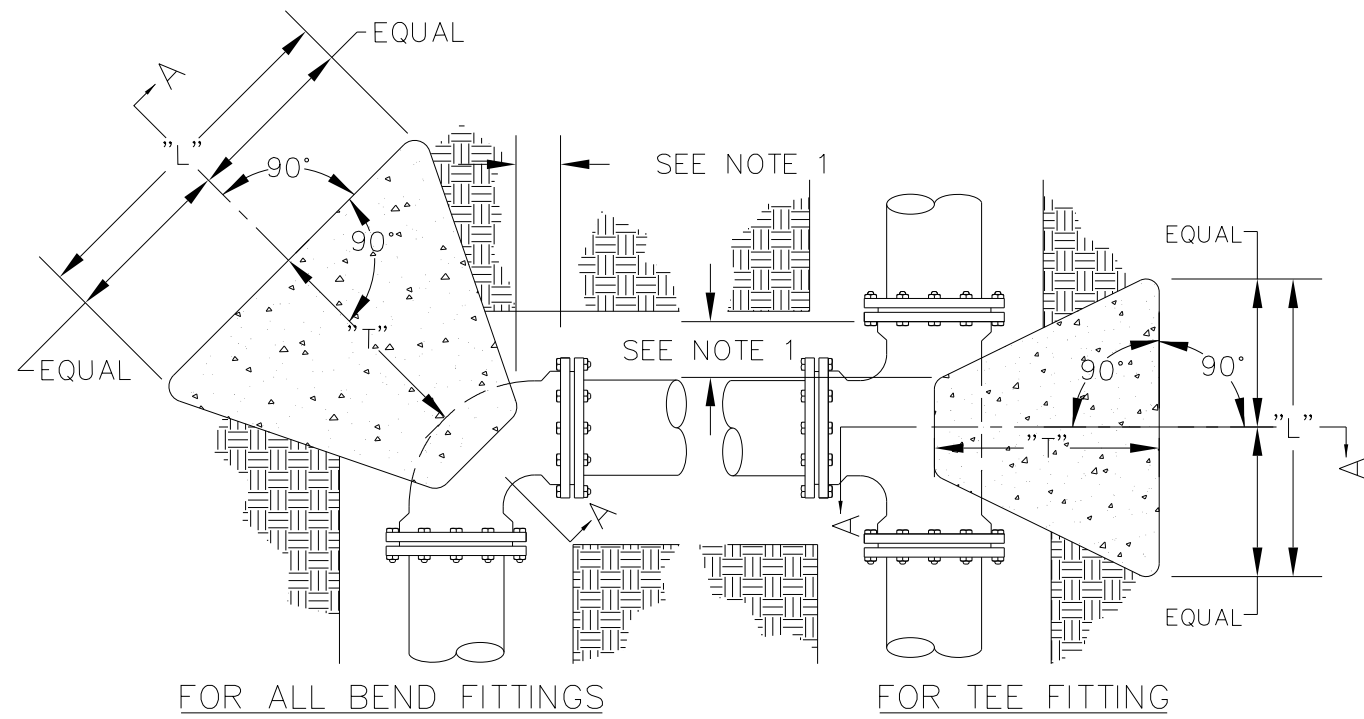


AIR RELEASE VALVE MANHOLE NOT TO SCALE

- NOTES:
1. AIR RELEASE VALVES SHALL BE OF THE SINGLE HOUSING STYLE THAT HAS THE OPERATING FEATURES OF AN AIR RELEASE VALVE.
2. THE AIR RELEASE VALVE SHALL HAVE 2" NPT INLET AND 1" NPT OUTLET CONNECTIONS AND A 3/8 INCH DIAMETER ORIFICE (OR ORIFICE SHALL BE DETERMINED BY THE ENGINEER) FOR A MAXIMUM 200PSI WORKING PRESSURE.
3. ALL MATERIALS SHALL MEET THE STANDARDS AND SPECIFICATIONS OF THE TUCKASEGEE WATER & SEWER AUTHORITY.
4. MAN-HOLE, FRAME, AND COVER SHALL BE IN ACCORDANCE WITH TWSA STANDARD DETAILS.
5. 2" TAPPING SADDLE SHALL BE DUCTILE IRON WITH STAINLESS STEEL STRAPS, BOLTS, NUTS, AND WASHERS.
6. SADDLES FOR PIPE SIZES 8" THRU 24" SHALL BE DOUBLE STRAP.
7. ALL INTERNAL PARTS SHALL BE 316 STAINLESS STEEL.
8. THE AIR RELEASE VALVE SHALL HAVE A SINGLE FLOAT DESIGN.
9. ALL AIR RELEASE VALVES SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.
10. ALL COMBINATION AIR RELEASE VALVES SHALL BE CRISPIN MODEL UX20, ARI D-020, OR APPROVED EQUAL.
11. AIR RELEASE VALVE SHALL BE CENTERED IN MANHOLE. OFFSET THE RING AND COVER TO ALLOW ACCESS.
12. TOP OF FORCE MAIN SHALL BE A MINIMUM 4' DEEP AT AIR RELEASE VALVE. UNLESS OTHERWISE REQUIRED DUE TO FORCE MAIN AND/OR AIR RELEASE VALVE SIZE.
13. AIR RELEASE VALVE BODIES SHALL BE MADE OF STAINLESS STEEL OR REINFORCED NYLON.
14. THE MANHOLE SHALL BE CAST WITH AN ANTI-MICROBIAL ADDITIVE (CON-SHIELD OR APPROVED EQUAL.)
15. CONCRETE GRADE RINGS SHALL NOT BE USED FOR ABOVE GRADE ADJUSTMENTS (IE: OUTFALL AREAS). USE OF GRADE RINGS ARE ALLOWABLE IN YARD AREAS AND PAVEMENT, WHERE THE RING AND COVER ARE AT GROUND LEVEL.

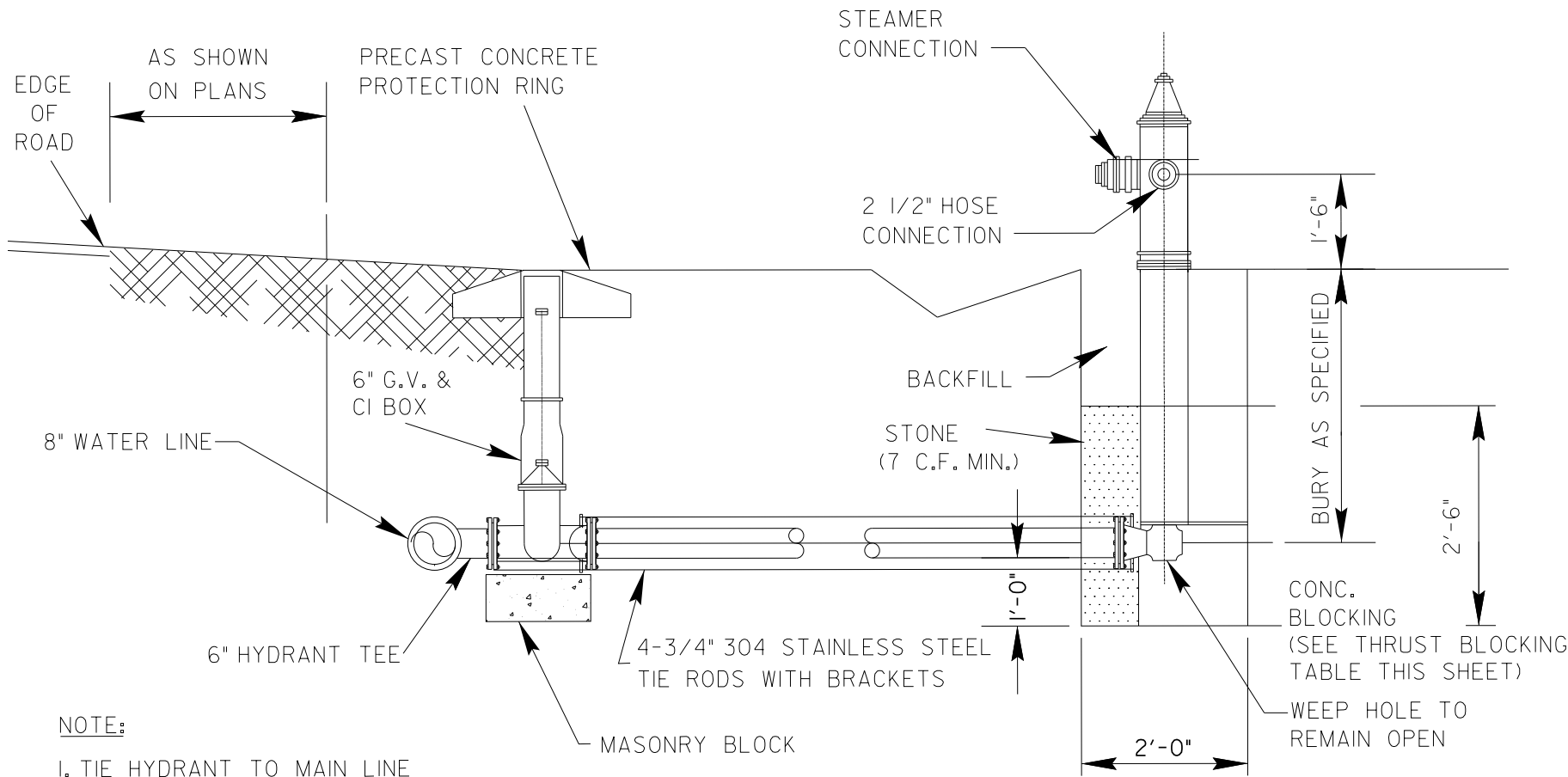
- CHART NOTES:
1. IF BLOCKING EXCAVATION IS IN LIGHTLY COMPACTED FILL AREAS, OR IN AREAS WHERE BOULDERS OR STUMPS HAVE BEEN REMOVED, BLOCKING SIZE MUST BE RE-SIZED FOR THE SPECIFIC LOCATION/CIRCUMSTANCE BY A NC LICENSED PROFESSIONAL ENGINEER.
2. BLOCKING SIZES SHOWN IN THESE TABLES ASSUME THE FOLLOWING:
a. BLOCKING IS CONSTRUCTED IN RESIDUAL SOILS AS SHOWN IN DETAIL
b. SOIL BEARING PRESSURE = 2000 PSF
c. VELOCITY OF FLOW = 15 FPS
3. THIS DETAIL NOT APPLICABLE TO REDUCING BENDS.
4. NEITHER THE WEIGHT OF THE CONCRETE BLOCKING NOR FRICTION BETWEEN CONCRETE BLOCKING AND SOIL WAS ADDED INTO BLOCKING SIZES COMPUTATION. THEREFORE, BLOCKING SIZE IS CONSERVATIVE.

THRUST BLOCKING TABLE NOT TO SCALE



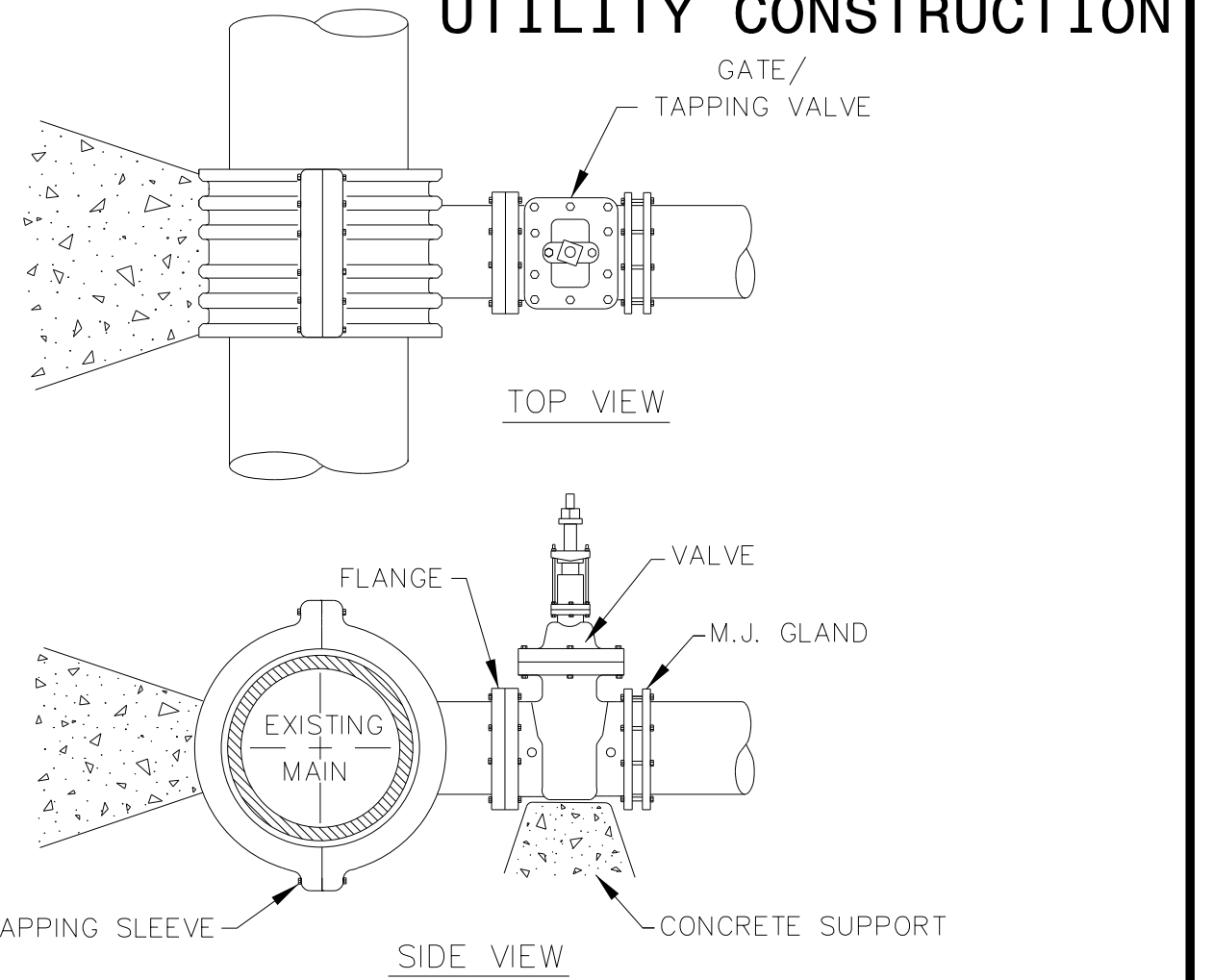
- NOTES:
1. CONCRETE BLOCKING IS TO BE FORMED TO ENSURE ACCESSIBILITY TO FITTINGS AND POURED AGAINST UNDISTURBED EARTH.
2. ALL FITTINGS SHALL BE WRAPPED IN POLYETHYLENE TO PREVENT CONCRETE FROM CONTACTING FITTINGS, BOLTS OR ENDS OF MECHANICAL JOINT BENDS.
3. CONCRETE TO BE MINIMUM 3,000 PSI @ 28 DAYS.
4. WHEN SACKRETE IS TO BE USED, IT SHALL BE PROPERLY MIXED PER MANUFACTURER SPECIFICATIONS.
5. FOR REQUIRED DIMENSIONS, SEE THRUST BLOCKING TABLE.

THRUST BLOCKING NOT TO SCALE



- NOTE:
1. TIE HYDRANT TO MAIN LINE WITH THE RODS AND BLOCKING.
2. MECHANICAL JOINTS WITH MEGALUGS OR APPROVED EQUAL.

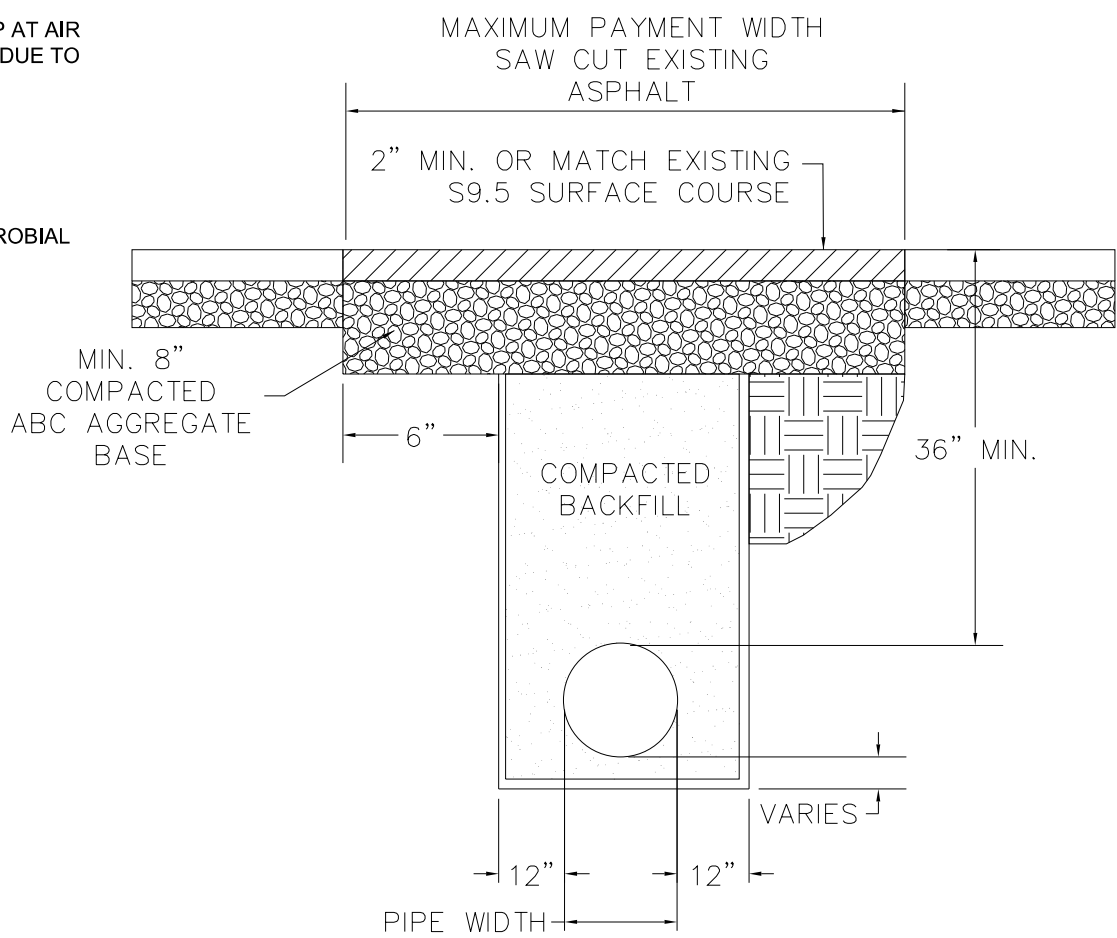
TYPICAL FIRE HYDRANT INSTALLATION DETAIL NOT TO SCALE



UTILITY CONSTRUCTION

- NOTES:
1. CONCRETE SHALL NOT CONTACT GLANDS, BOLTS OR ENDS OF MECHANICAL JOINT FITTINGS. TAPPING SLEEVE AND BOTTOM OF VALVE SHALL BE WRAPPED IN POLYETHYLENE.
2. SEE STANDARD THRUST BLOCK TABLE FOR AREA OF CONCRETE REQUIRED.
3. TAPPING SLEEVE SHALL BE TESTED IN ACCORDANCE WITH OWNER REQUIREMENTS.
4. TAPS ON EXISTING PIPE SHALL REQUIRE LONG SS TAPPING SLEEVES.

4" AND LARGER TAPPING SLEEVE AND VALVE ASSEMBLY NOT TO SCALE



- NOTES:
1. THE PAVEMENT SHALL BE DEFINED BY A STRAIGHT EDGE, PREFERABLY A MACHINED SAW CUT.
2. THE TRENCH SUBGRADE MATERIAL SHALL BE BACKFILLED WITH DRY SOIL OR ASK STONE TO THE BOTTOM OF THE PROPOSED SUBGRADE. THE BACKFILL SHALL BE PLACED AND COMPACTED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
3. WITHIN ROADS MAINTAINED BY NCDOT, THE TRENCH SHALL BE BACKFILLED AND COMPACTED IN ACCORDANCE WITH NCDOT STANDARDS.
4. THE ENTIRE THICKNESS/VERTICAL EDGE OF THE CUT SHALL BE TACKED.
5. THE SAME DEPTH OF PAVEMENT MATERIAL WHICH EXISTS SHALL BE REINSTALLED, BUT IN NO CASE SHALL THE ASPHALT BE LESS THAN 2" THICK.
6. THE ASPHALT PAVEMENT MATERIAL SHALL BE INSTALLED AND COMPACTED THOROUGHLY TO ACHIEVE A SMOOTH LEVEL PATCH.

STANDARD PAVEMENT CUT AND PATCH DETAILS NOT TO SCALE

V&M Vaughn & Melton Consulting Engineers
Asheville, North Carolina
Contact information for various office locations in the Southeastern US.