

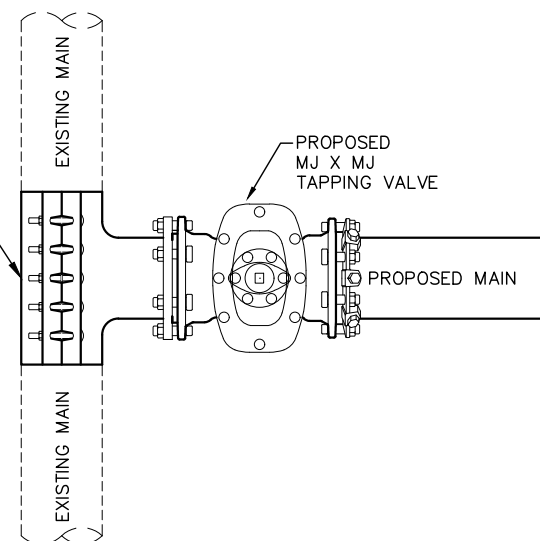
TRACER WIRE ANODE DETAIL
NOT TO SCALE

TRACER WIRE ANODE NOTES

ANODE RODS SHALL BE PLACED AT ALL STREET INTERSECTIONS OR AS DIRECTED BY THE CITY OF GREENVILLE. THE ANODE SHALL BE PLACED BELOW THE BOTTOM OF THE PROPOSED WATER LINE. EXACT PLACEMENT AND CONNECTION TO THE TRACER WIRE SYSTEM SHALL BE AS REQUIRED BY THE GREENVILLE WATER DEPARTMENT.

THE COST OF ALL LABOR, EQUIPMENT AND MATERIALS NECESSARY TO INSTALL THE ANODES SHALL BE INCLUDED IN THE CONTRACTOR'S UNIT PRICE BID FOR THE PROPOSED WATER MAIN.

PROPOSED STAINLESS STEEL MECHANICAL JOINT TAPPING SLEEVE, TOTAL PIPING SOLUTIONS TRIPLE TAP TAPPING SLEEVE, ROMAC SST TAPPING SLEEVE, OR EQUAL

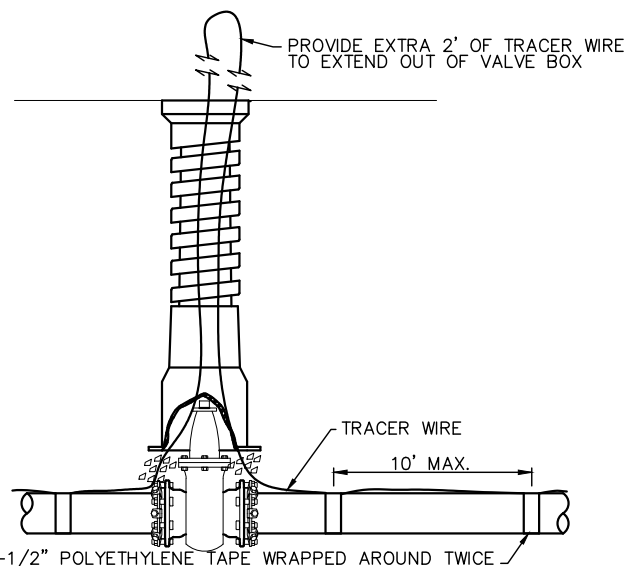


TAPPING SLEEVE FOR WATER MAINS

NOTES

A. PRIOR TO TAPPING EXISTING MAIN, TEST SLEEVE TO 150 PSI, OR 1.5 TIMES THE ANTICIPATED STATIC PRESSURE, WHICHEVER IS GREATER. THE TEST PRESSURE SHALL BE HELD FOR A MINIMUM OF 15 MINUTES.

B. TAPPING SLEEVE AND VALVE SHALL BE PROVIDED BY CONTRACTOR WHEN TYING INTO THE EXISTING WATER MAIN.



TRACER WIRE DETAIL

TRACER WIRE NOTES

A. FOR OPEN CUT CONSTRUCTION TRACER WIRE SHALL BE STEEL CORE COPPER CLAD REINFORCED WIRE #12 AWG OR STAINLESS STEEL #12 AWG WITH 30 MIL HIGH DENSITY POLYETHYLENE COATING. TRACER WIRE SHALL BE BLUE FOR WATER. TRACER WIRE SHALL HAVE A MINIMUM 380 LBS. TENSILE BREAK LOAD.

FOR DIRECTIONAL DRILL CONSTRUCTION TRACER WIRE SHALL BE COPPERHEAD SOLOSHOT REINFORCED TRACER WIRE MANUFACTURED BY COPPERHEAD INDUSTRIES, LLC. BLUE FOR WATER.

B. TRACER WIRE MUST BE RUN ON TOP OF THE PIPE CONTINUOUSLY FOR THE FULL LENGTH OF THE PIPE.

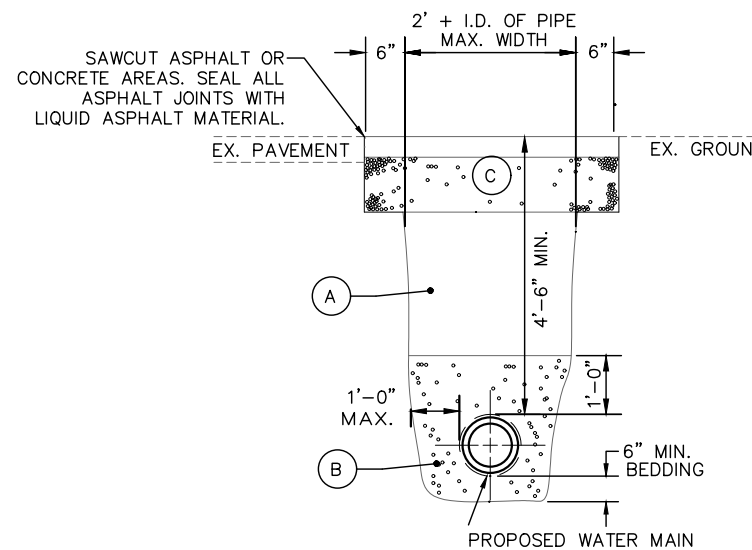
C. TRACER WIRE WILL BE INSTALLED ON ALL NEW INSTALLATION AND WILL COME TO THE SURFACE AT EVERY VALVE CHAMBER, VALVE BOX CURB BOX AND FIRE HYDRANT.

D. WHEN TRACER WIRE MUST BE SPLICED, USE ONLY AN APPROVED SPLICE KIT FILLED WITH MOISTURE DISPLACEMENT SILICONE FOR CORROSION RESISTANT PROTECTION. 3-WAY WIRE CONNECTIONS FROM MAIN TO HYDRANT, VALVE BOX OR VAULT WILL BE MADE ONLY WITH APPROVED DIRECT BURY CONNECTOR WITH MOISTURE DISPLACEMENT SILICONE FILLED CAP FOR CORROSION RESISTANT PROTECTION.

E. TO TERMINATE TRACER WIRE, USE A A MAGNETIZED TERMINATION BOX FEATURING A CORROSION-RESISTANT BRASS WIRE LUG AND A WAX PAD TO COVER WIRE CONNECTIONS AFTER INSTALLATION AND LOCK OUT MOISTURE. THE TERMINATION BOX SHALL BE CAPABLE OF ALLOWING CONNECTION TO UNDERGROUND WIRES WITHOUT REMOVING THE CAP. LOOP 18-24 INCHES OF WIRE INSIDE TERMINATION BOX. THE TERMINATION BOX MUST BE RATED FOR ITS APPLICATION, I.E. FOR USE IN CONCRETE, ASPHALT OR NEW INSTALLATION IN THE GROUND.

F. ALL MATERIAL, LABOR, EQUIPMENT NEEDED FOR THE INSTALLATION OF THE TRACER WIRE SHALL BE INCIDENTAL TO WATER MAIN INSTALLATION.

G. THE CONTRACTOR SHALL SCHEDULE A CONDUCTIVITY/LOCATE TEST UPON COMPLETION. THE TEST WILL BE CONDUCTED BY THE CITY.



WATER MAIN TRENCH DETAIL

TRENCH DETAIL NOTES

A. ALL TRENCH EDGES NOT UNDER OR WITHIN 5' OF PROPOSED OR EXISTING PAVEMENT, CURB, DRIVEWAYS, ALLEYS, STONE AREA OR WALKS CAN BE COMPACTED EXISTING NATIVE MATERIAL IN 12" MAXIMUM LIFTS OR AS APPROVED BY THE CITY. NO MATERIAL SHALL BE USED FOR BACKFILLING THAT CONTAINS STONE, ROCKS, ETC., GREATER THAN 4" DIAMETER.

ALL TRENCH EDGES UNDER OR WITHIN 5' OF PROPOSED OR EXISTING PAVEMENT, CURB, DRIVEWAYS, ALLEYS, STONE AREA OR WALKS SHALL EITHER BE GRANULAR BACKFILL MATERIAL ODOT 703 TYPE 3 (ANGULAR #57 STONE). GRANULAR BACKFILL OF 95% OF ASTM D698 STANDARD PROCTOR CURVE MAY BE REQUIRED TO BE PERFORMED BY A COMMERCIAL TESTING LAB SATISFACTORY TO THE CITY.

B. STRUCTURAL BEDDING SHALL BE CRUSHED STONE OR GRAVEL, ODOT 703 TYPE 3 (ANGULAR #57 STONE)

C. OFF-PAVEMENT AREAS SHALL BE PROVIDED WITH A MINIMUM OF 6" OF TOPSOIL OVER THE COMPACTED MATERIAL AND THEN SEEDED AND MULCHED PER ODOT ITEM 659.

D. THE OPEN ENDS OF ALL PIPES SHALL BE PLUGGED TO THE APPROVAL OF THE CITY BEFORE LEAVING THE WORK FOR THE NIGHT.

E. METAL FITTINGS, TEES, ETC. TO BE WRAPPED WITH POLYWRAP.

REVISIONS:

FILE NAME

GNE

DRAWN BY

LTH

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PROJECT No.

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DATE

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SHEET NUMBER

DISINFECTION

A. DISINFECTION OR STERILIZATION OF NEW MAINS AND SERVICES, AS REQUIRED BY THE OEPA, SHALL BE COORDINATED THROUGH THE CITY ENGINEER OR CITY ENGINEER'S REPRESENTATIVE. THE CITY ENGINEER OR CITY ENGINEER'S REPRESENTATIVE RESERVES THE RIGHT TO REQUIRE STRICTER CHLORINE RESIDUAL REQUIREMENTS ON A CASE-BY-CASE BASIS.

B. MAINTAIN PIPES FREE OF DIRT AND FOREIGN MATTER DURING CONSTRUCTION BY DEWATERING TRENCH AND SEALING OPEN PIPE BARRELS. SWAB EACH LENGTH OF PIPE AS IT IS INSTALLED.

C. DISINFECTION TESTING SHALL BE PERFORMED PRIOR TO HYDROSTATIC TESTING. DISINFECTION SHALL BE COMPLETED IN ACCORDANCE WITH AWWA C-651. SAMPLE WATER AT EACH HYDRANT OR IF NO HYDRANT IS AVAILABLE, A SAMPLE TAP SHALL BE INSTALLED BY CONTRACTOR EVERY 1200 FT. ANALYZE SAMPLE USING ORTHOTOLIDINE REAGENT TO VERIFY FREE CHLORINE CONCENTRATION. MAINTAIN CONCENTRATION IN MAIN FOR 24 HOURS. SAMPLE HYDRANTS AT COMPLETION OF STERILIZATION VERIFYING MINIMUM CHLORINE RESIDUAL OF 20 MG PER LITER.

D. CONTRACTOR SHALL ACCOMMODATE FLUSHING AND SAMPLE LOCATIONS.

THE CONTRACTOR SHALL DISINFECT ALL WATER MAIN AND WATER SERVICE LINES IN ACCORDANCE WITH AWWA C-651, LATEST REVISION. THE DISINFECTION MAY BE PERFORMED BY USING EITHER THE CONTINUOUS FEED METHOD OR THE TABLET METHOD.

A. THE REQUIRED PROCEDURES FOR THE TWO APPROVED DISINFECTION METHODS ARE AS FOLLOWS. ANY REVISIONS TO THESE SEQUENCES OR DISINFECTION METHOD MUST BE IN ACCORDANCE WITH AWWA C-651 AND APPROVED BY THE CITY OF GREENVILLE.

CONTINUOUS FEED METHOD:

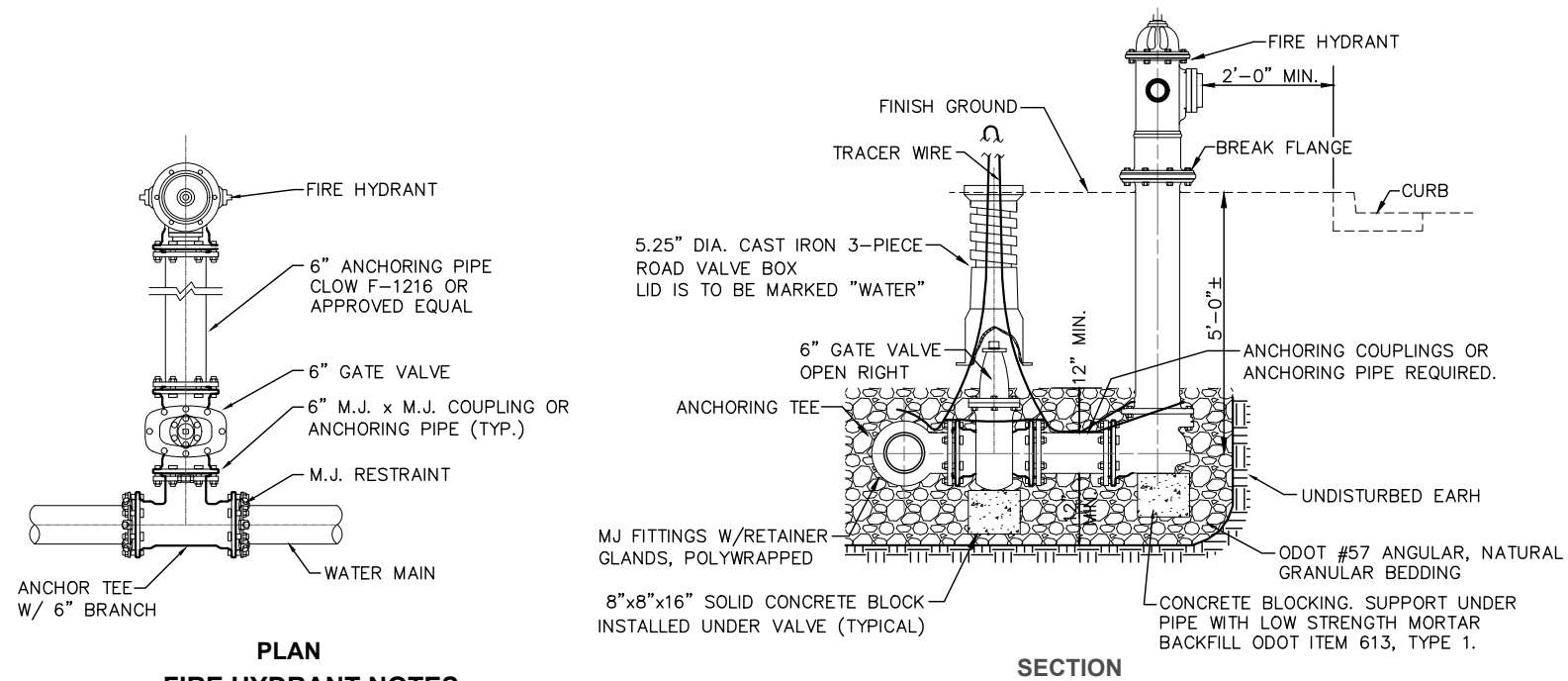
- 1) INSTALL WATER MAIN AND PERFORM ALL SERVICE CONNECTIONS.
- 2) FLUSH MAIN AT MINIMUM VELOCITY OF 3 FT/SEC. (BY CITY)
- 3) PERFORM HYDROSTATIC TEST ON WATER MAIN AND SERVICE LINES. (SEE HYDROSTATIC TESTING NOTES)
- 4) PERFORM DISINFECTION. WATER SHALL BE SUPPLIED, FROM EXISTING DISTRIBUTION SYSTEM OR OTHER APPROVED SOURCE, AT A CONSTANT, MEASURED RATE (NOT TO EXCEED 1 FT/SEC) TO THE NEW MAIN.

AT A POINT NOT MORE THAN TEN (10) FEET DOWNSTREAM FROM THE BEGINNING OF THE NEW MAIN, WATER ENTERING THE MAIN SHALL RECEIVE A DOSE OF CHLORINE FED AT A CONSTANT RATE SUCH THAT THE WATER WILL HAVE NOT LESS THAN 25 MG/L FREE CHLORINE, AS MEASURED IN REGULAR INTERVALS. CONTINUE CHLORINE APPLICATION UNTIL THE ENTIRE NEW MAIN IS FILLED WITH HEAVILY CHLORINATED WATER.

- 5) FLUSH MAIN AT MINIMUM VELOCITY OF 3 FT/SEC, TO LOWER CHLORINE LEVEL TO THE SYSTEM LEVEL. (BY CITY)
- 6) PERFORM BACTERIOLOGICAL TEST ON ALL MAIN AND WATER SERVICE LINES, IN ACCORDANCE WITH AWWA C-651. (BY CITY)
- 7) PERFORM FINAL WATER MAIN TIE-INS.
- 8) PERFORM FINAL FLUSH, AT MINIMUM VELOCITY OF 3 FT/SEC, TO REMOVE ANY EXCESS DEBRIS AND AIR FROM THE LINE. (BY CITY)
- 9) FOR REPLACEMENT PROJECTS, CONNECT ALL NEW WATER SERVICE BRANCHES TO EXISTING SERVICES. PRIOR TO CONNECTION, WATER SERVICES SHALL BE FLUSHED FOR 2-5 MINUTES TO REDUCE CHLORINE RESIDUAL TO SYSTEM LEVEL AND TO REMOVE EXCESS DEBRIS AND AIR.

TABLET METHOD:

- 1) INSTALL WATER MAIN. DURING CONSTRUCTION, PLACE CALCIUM HYPOCHLORITE GRANULES AT UPSTREAM END OF FIRST SECTION OF PIPE, AT UPSTREAM END OF EACH BRANCH MAIN, AND AT 500 FT. INTERVALS. AMOUNT OF GRANULES TO BE PLACED SHALL BE IN ACCORDANCE WITH AWWA C-651. PLACE (1) 5-G CALCIUM HYPOCHLORITE TABLETS IN EACH SECTION OF PIPE, IN EACH HYDRANT AND EACH HYDRANT BRANCH.
- 2) PERFORM ALL SERVICE CONNECTIONS.
- 3) FILL AND FLUSH WATER MAIN AT VELOCITY OF NO MORE THAN 1 FT/SEC. (BY CITY)
- 4) FLUSH FOR A MINIMUM OF 24 HOURS. IF THE WATER TEMPERATURE IS BELOW 41°F, THE WATER SHALL REMAIN IN THE MAIN FOR A MINIMUM OF 48 HOURS. CHLORINE RESIDUAL LEVELS ARE TO BE MEASURED BY THE CITY AFTER THIS PERIOD PASSES. FLUSHING SHALL CONTINUE UNTIL AN ACCEPTABLE CHLORINE LEVEL IS OBTAINED.
- 5) PERFORM HYDROSTATIC TEST ON WATER MAIN AND SERVICE LINES. (SEE HYDROSTATIC TESTING NOTES)
- 6) FLUSH MAIN AT MINIMUM VELOCITY OF 3 FT/SEC, TO LOWER CHLORINE LEVEL TO THE SYSTEM LEVEL. (BY CITY)
- 7) PERFORM BACTERIOLOGICAL TEST ON ALL MAIN AND WATER SERVICE LINES, IN ACCORDANCE WITH AWWA C-651. (BY CITY)
- 8) PERFORM FINAL WATER MAIN TIE-INS.
- 9) PERFORM FINAL FLUSH, AT MINIMUM VELOCITY OF 3 FT/SEC, TO REMOVE ANY EXCESS DEBRIS AND AIR FROM THE LINE. (BY CITY)
- 10) FOR REPLACEMENT PROJECTS, CONNECT ALL NEW WATER SERVICE BRANCHES TO EXISTING SERVICES. PRIOR TO CONNECTION, WATER SERVICES SHALL BE FLUSHED FOR 2-5 MINUTES TO REDUCE CHLORINE RESIDUAL TO SYSTEM LEVEL AND TO REMOVE EXCESS DEBRIS AND AIR.



PLAN FIRE HYDRANT NOTES:

- A. FIRE HYDRANTS SHALL BE AMERICAN-DARLING MODEL B-84-B-5, 5' MINIMUM BURY DEPTH.
- B. HYDRANTS SHALL BE PAINTED SAFETY YELLOW AND OPEN RIGHT.
- C. 5" INTEGRAL STORZ CONNECTION SHALL FACE THE STREET. A THREADED ADAPTOR FOR THE STORZ CONNECTION WILL NOT BE PERMITTED.
- D. HOSE THREADS: 2.5": 3.25" x 6"
- E. FIRE HYDRANT SHALL HAVE DRAIN PLUG INSTALLED AND WILL NOT BE SELF DRAINING.
- F. FIRE HYDRANTS MUST BE INSTALLED AT THE PROPER GRADE. NO EXTENSIONS ARE PERMITTED TO OBTAIN PROPER GRADE. IF NEEDED FOR HEIGHT ADJUSTMENT, A GRADELOK ADAPTOR MAY BE INSTALLED

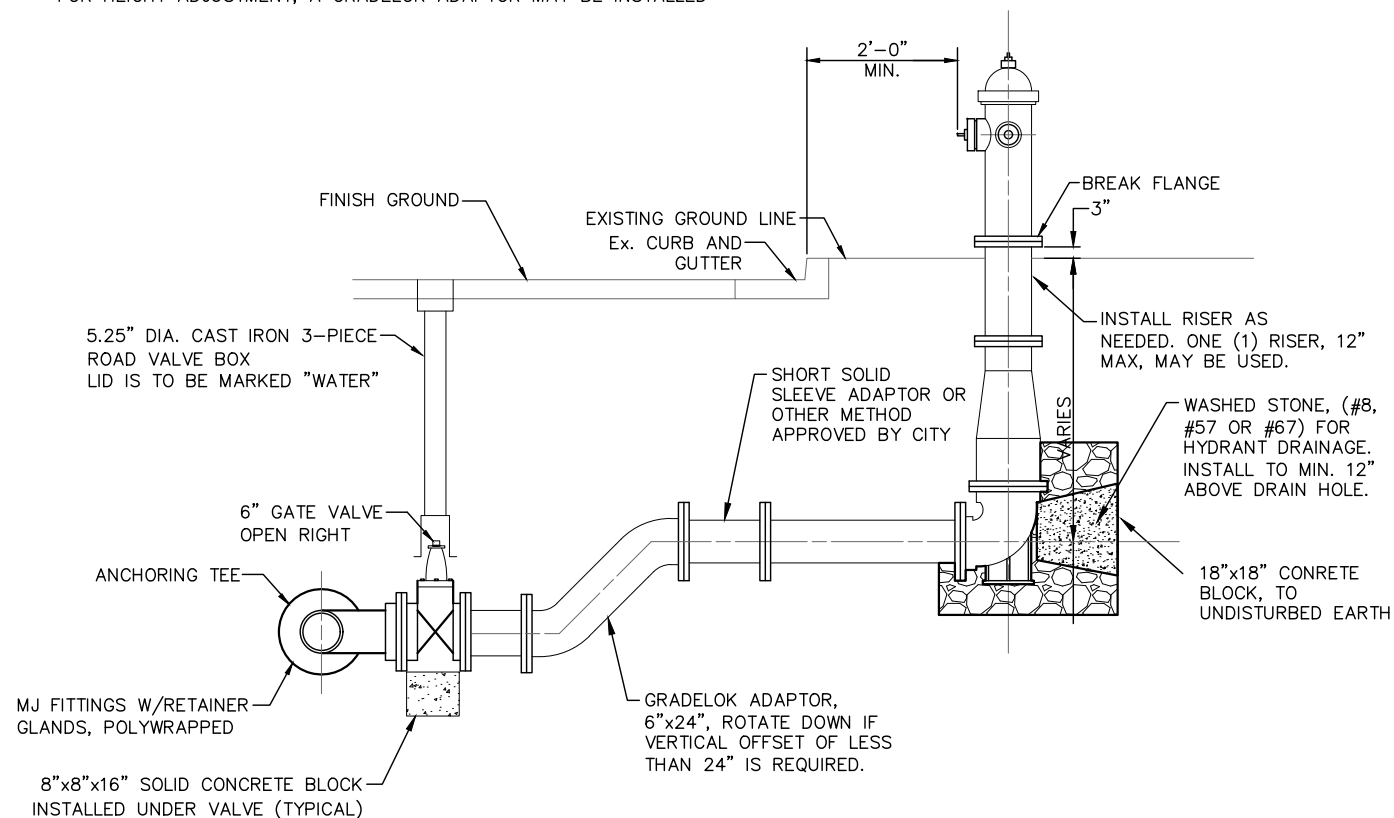
AS THE LAST ITEM BEFORE THE HYDRANT RISER. THE ADAPTOR SHALL HAVE ANCHOR CONNECTIONS AT BOTH ENDS.

G. ALL COSTS ASSOCIATED WITH FURNISHING AND INSTALLING THE BRANCH PIPE FROM THE MAIN TO THE FIRE HYDRANT SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE FIRE HYDRANT. THE TEE AND VALVE FOR THE BRANCH LINE SHALL BE ITEMIZED AND BID AS SEPARATE ITEMS.

H. ALL WATER LINE FITTINGS SHALL HAVE MEGA LUGS.

I. FIRE HYDRANT AND ACCESSORIES SHALL CONFORM TO LOCAL FIRE DEPARTMENT STANDARDS.

J. THE NEAREST JOINT IN THE WATER MAIN SHALL BE A MINIMUM OF 5' FROM THE HYDRANT TEE.



ADJUSTING HYDRANT BRANCH

REVISIONS:

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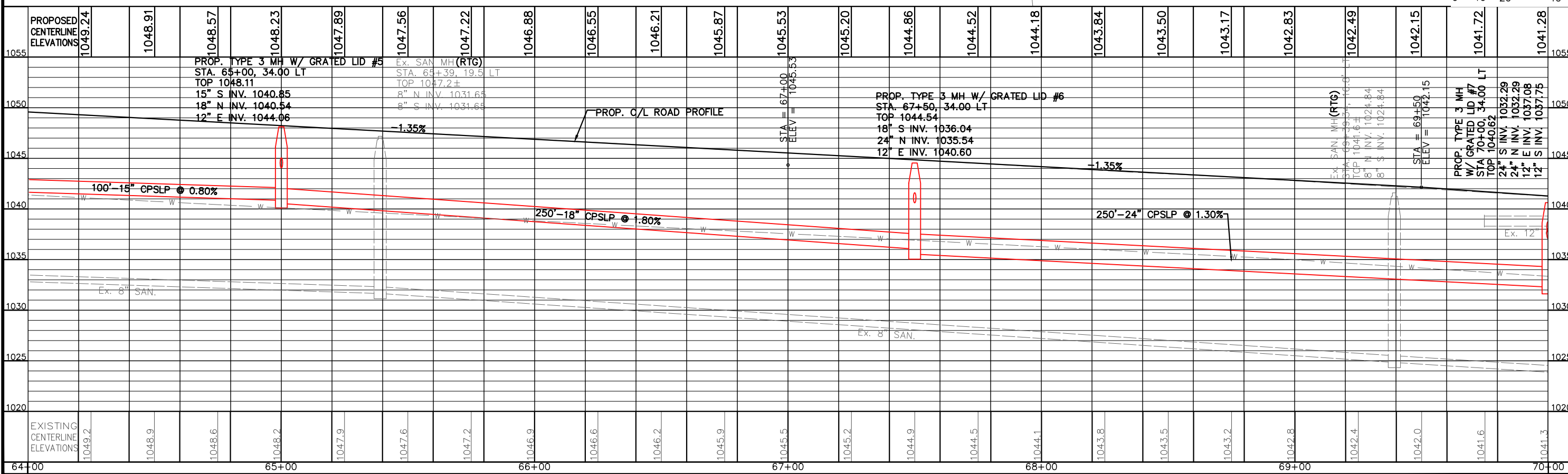
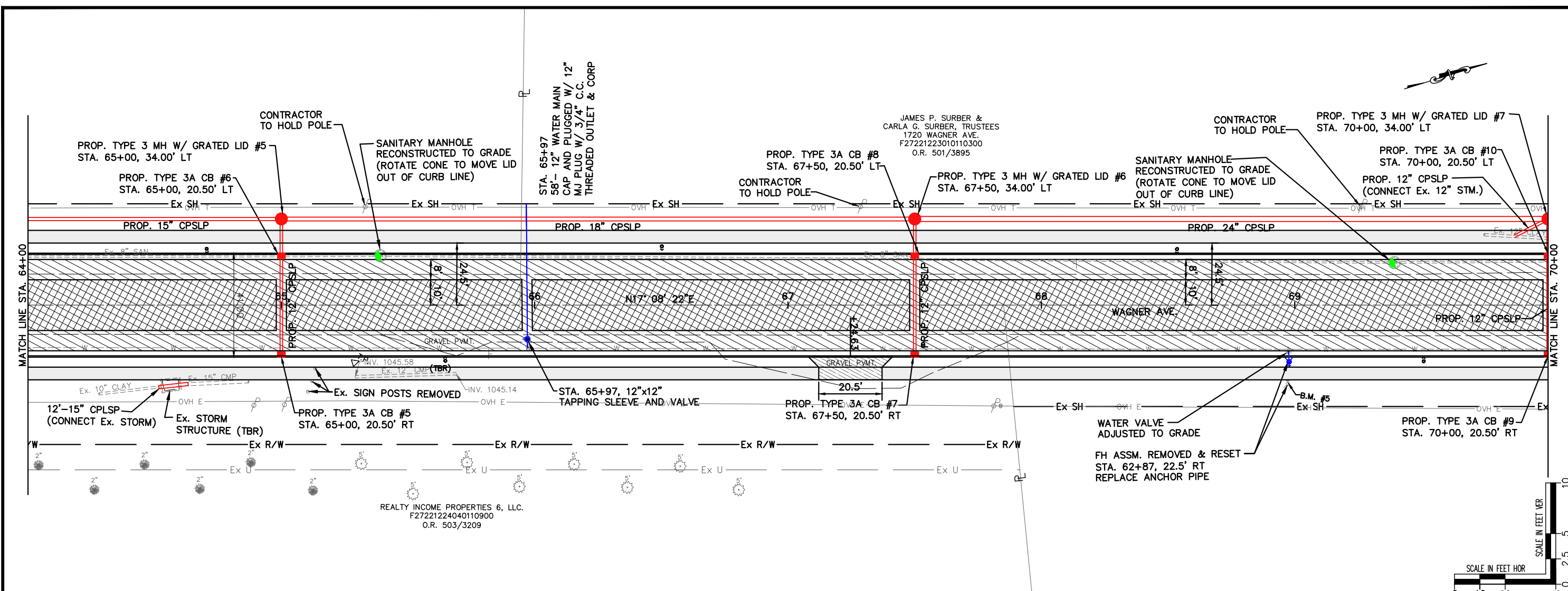
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