

GENERAL WATER SPECIFICATIONS

- CONTRACTOR SHALL CONTACT ALL UTILITIES BEFORE EXCAVATION TO VERIFY THE LOCATION OF ANY UNDERGROUND LINES. THE CONTRACTOR SHALL NOTIFY "DIGSAFE" AT 1-888-DIG-SAFE PRIOR TO ANY EXCAVATION. UTILITIES INFORMATION SHOWN ON SHEET 1 WERE OBTAINED FROM THE BEST AVAILABLE SOURCE AND MAY OR MAY NOT BE EITHER ACCURATE OR COMPLETE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO ANY UTILITY, PUBLIC OR PRIVATE, SHOWN OR NOT SHOWN HEREON.
- THE HORIZONTAL AND VERTICAL SEPARATION FOR SEWER AND WATER LINES SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE "TEN STATE STANDARDS - RECOMMENDED STANDARDS FOR WATER WORKS".
- THE WATER MAINS SHALL BE CONSTRUCTED, TESTED, AND DISINFECTED IN ACCORDANCE WITH AWWA STANDARDS C-600 AND C-651 WITH THE EXCEPTION OF THE TABLET METHOD OF DISINFECTION.

THE CONTRACTOR SHALL FURNISH ALL GAUGES, TESTING PLUGS, CAPS, AND ALL OTHER NECESSARY EQUIPMENT AND LABOR TO PERFORM LEAKAGE, PRESSURE AND DISINFECTION TESTS IN SECTIONS OF AN APPROVED LENGTH. EACH VALVED SECTION OR A MAXIMUM OF ONE THOUSAND FEET (1,000') OF THE PIPE SHALL BE TESTED. ALL WATER REQUIRED FOR TESTING SHALL BE POTABLE. ALL TESTING SHALL BE CONDUCTED IN THE PRESENCE OF THE ENGINEER.

FOR THE PRESSURE TEST, THE CONTRACTOR SHALL DEVELOP AND MAINTAIN 200 POUNDS PER SQUARE INCH FOR TWO HOURS. FAILURE TO HOLD THE DESIGNATED PRESSURE FOR THE TWO-HOUR PERIOD CONSTITUTES A FAILURE OF THE SECTION TESTED. THE LEAKAGE TEST SHALL BE PERFORMED CONCURRENTLY WITH THE PRESSURE TEST. DURING THE TEST, THE CONTRACTOR SHALL MEASURE THE QUANTITY OF WATER REQUIRED TO MAINTAIN THE TEST PRESSURE. LEAKAGE SHALL NOT EXCEED THE QUANTITY GIVEN BY:

$$L = SD \sqrt{P} / 133,200$$

L = LEAKAGE IN GALLONS/HOUR
S = LENGTH OF PIPELINE TESTED
D = DIAMETER OF PIPE IN INCHES
P = AVERAGE TEST PRESSURE IN PSI

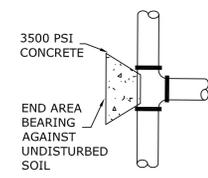
ALL TESTING SHALL BE CONDUCTED IN ACCORDANCE WITH AWWA C600 LATEST REVISION. SHOULD ANY SECTION OF THE PIPE FAIL EITHER THE PRESSURE OR LEAKAGE TESTS, THE CONTRACTOR SHALL DO EVERYTHING NECESSARY TO LOCATE AND REPAIR OR REPLACE THE DEFECTIVE PIPE, FITTINGS, OR JOINTS AT NO EXPENSE TO THE OWNER. IF, FOR ANY REASON, THE ENGINEER SHOULD ALTER THE FOREGOING PROCEDURES, THE CONTRACTOR SHALL REMAIN RESPONSIBLE FOR THE TIGHTNESS OF THE LINE WITH THE ABOVE REQUIREMENTS. THE METHOD OF DISINFECTION SHALL BE BY THE CONTINUOUS FEED METHOD UNLESS OTHERWISE APPROVED BY THE ENGINEER. AFTER FILLING, FLUSHING, AND THE INITIAL ADDITION OF CHLORINE SOLUTION, THE FREE CHLORINE CONCENTRATION WITHIN THE PIPE SHALL BE AT LEAST 20 MG/L. THE CHLORINATED WATER SHALL REMAIN IN THE MAIN FOR A PERIOD OF AT LEAST 24 HOURS. AT THE END OF THIS PERIOD, THE TREATED WATER IN ALL PORTIONS OF THE MAIN SHALL HAVE A RESIDUAL OF NOT LESS THAN 10 MG/L FREE CHLORINE. ALL DISINFECTION SHALL BE PERFORMED UNDER THE SUPERVISION OF THE ENGINEER. THE DISINFECTION PROCESS SHALL BE DEEMED ACCEPTABLE ONLY AFTER SAMPLES OF WATER FROM THE FLUSHED, DISINFECTED MAIN TAKEN BY THE ENGINEER AND TESTED AT AN APPROVED LABORATORY SHOW NO EVIDENCE OF BACTERIOLOGICAL CONTAMINATION. DISINFECTION SHALL CONFORM TO THE LATEST AWWA C651 REVISION.

THE PIPELINE AND APPURTENANCES SHALL BE MAINTAINED IN AN UNCONTAMINATED CONDITION UNTIL FINAL ACCEPTANCE. DISINFECTION SHALL BE REPEATED WHEN AND WHERE REQUIRED AT NO EXPENSE TO THE OWNER UNTIL FINAL ACCEPTANCE BY THE OWNER.

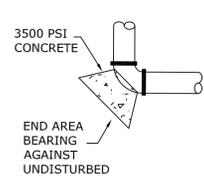
- ALL NEW WATER MAIN PIPE SHALL BE OF THE SIZE AND TYPE SHOWN ON THE PLANS. CL52, CEMENT LINED DUCTILE IRON, SHALL BE IN ACCORDANCE WITH AWWA C-151, C-104, AND C-111. PVC PIPE SHALL BE IN ACCORDANCE WITH AWWA C-300. ALL FITTINGS SHALL BE CEMENT-LINED DUCTILE IRON, 350 POUNDS WORKING PRESSURE, AND CONFORM TO AWWA C-104, C-111, AND C-110 OR C-153 FOR COMPACT FITTINGS. MECHANICAL JOINT NUTS AND BOLTS SHALL BE HIGH STRENGTH, LOW ALLOY STEEL PER ANSI A-21.11.
- ALL HYDRANTS SHALL BE KENNEDY MODEL K81A, MULLER SUPER CENTURION 200, OR EQUAL AND CONFORM TO AWWA C-502 WITH A 5 1/4" VALVE OPENING, A MECHANICAL JOINT INLET, A 6" MECHANICAL JOINT SHOE, AND BE LEFT OPENING WITH NATIONAL STANDARD THREADS. THE CONTRACTOR SHALL PROVIDE AND INSTALL AN AUXILIARY VALVE OF THE TYPE INDICATED ON THE CONTRACT DRAWINGS AND A LENGTH OF 6" DUCTILE IRON PIPE SUFFICIENT TO CONNECT THE HYDRANT TO THE MAIN.
- ALL GATE VALVES SHALL BE STONE BEDDED IN A MINIMUM OF 6" OF 3/4" - 1" STONE. ALL VALVES SHALL BE MECHANICAL JOINT, CAST IRON BODY, PARALLEL BRASS SEATS, NON-RISING STEM, INSIDE SCREW, RESILIENT SEAT CONSTRUCTION WITH O-RING STEM SEALS.
- ALL WATER MAIN THRUST BLOCKS SHALL BE CONSTRUCTED OF 3,500 PSI CONCRETE.
- THE WATER MAINS SHALL HAVE A MINIMUM DEPTH OF COVER OF 6' 6".
- ANY SURFACES, LINES, OR STRUCTURES WHICH HAVE BEEN DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED TO A CONDITION AT LEAST EQUAL TO THAT IN WHICH THEY WERE FOUND IMMEDIATELY PRIOR TO THE BEGINNING OF CONSTRUCTION.
- THE CONTRACTOR SHALL COORDINATE THE LOCATION AND INSTALLATION OF THE INDIVIDUAL LOT WATER LINE SERVICES WITH THE OWNER AT THE TIME OF CONSTRUCTION.
- MECHANICAL JOINT RESTRAINTS WITH TWIST OFF NUTS SHALL BE EBAA OR SIGMA, OR APPROVED EQUAL.
- ALL MAIN LINE GATE VALVES SHALL BE BEDDED IN A MINIMUM OF 6" OF 3/4" - 1" STONE. CONCRETE SHALL NOT BE USED.
- "ALL WATERLINE AND RELATED WORK TO BE PERFORMED IN ACCORDANCE WITH THE SPECIFICATIONS AND DETAILS FOR THE INSTALLATION OF WATERLINES AND APPURTENANCES, HENCEFORTH THE CWD SPECIFICATIONS."

SOIL TYPE - CLAY/SILT				
SIZE FITTING	6"	8"	12"	
1 1/4" & 2 1/2"	3	4	9	
45°	4	8	17	
90°	9	16	35	
TEES OR END CAPS	6	11	25	
	3	3	3	

SQ FT BEARING AREA
BASED ON 100 PSI WORKING PRESSURE PLUS 100 PSI SURGE ALLOWANCE AND BEARING CAPACITY OF 1000 LBS/SQ FT



TYPICAL TEES-DEADENDS-CAPS



TYPICAL BENDS

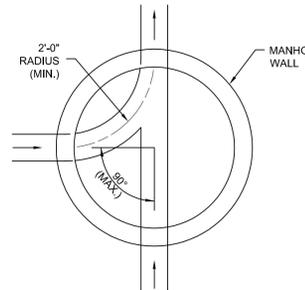
NOTE: PLACE 4 mil POLYETHYLENE BETWEEN FITTING AND THRUST BLOCK

THRUST BLOCK END AREA

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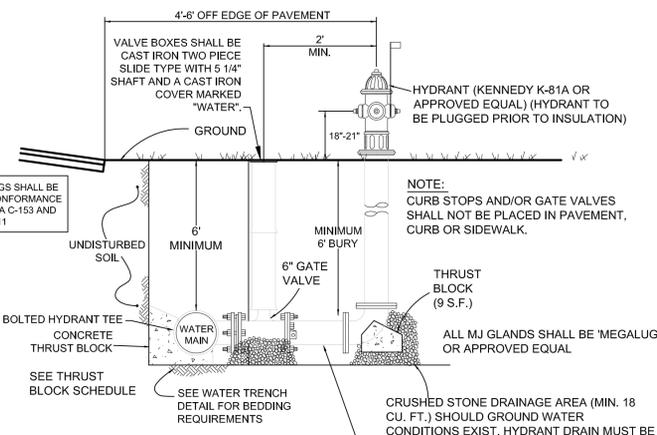
GENERAL SANITARY SEWER SPECIFICATIONS

- SEE OTHER SHEETS FOR ADDITIONAL INFORMATION.
- CONTRACTOR SHALL CONTACT ALL UTILITIES BEFORE EXCAVATION TO VERIFY THE LOCATION OF ANY UNDERGROUND LINES. UTILITIES INFORMATION SHOWN HEREON WERE OBTAINED FROM THE BEST AVAILABLE SOURCE AND MAY OR MAY NOT BE EITHER ACCURATE OR COMPLETE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO ANY UTILITY, PUBLIC OR PRIVATE, SHOWN OR NOT SHOWN HEREON.
- THE HORIZONTAL AND VERTICAL SEPARATION FOR SEWER AND WATER LINES SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE "TEN STATE STANDARDS - RECOMMENDED STANDARDS FOR WATER".
- PRIOR TO CONSTRUCTION, ALL MATERIALS SHALL BE APPROVED BY THE ENGINEER.
- STORM SEWER PIPE TO BE CORRUGATED HIGH DENSITY POLYETHYLENE PIPE (HDPE) CONFORMING TO ASTM D3221, ASTM D698 OR AASHTO T99.
- ALL SANITARY SEWER PIPE SHALL BE PVC SDR 35 CONFORMING TO ASTM D-3034, ASTM D-3212, AND ASTM F-477.
- ALL TRENCH FILL SHALL BE PLACED IN 6" LIFTS AND THOROUGHLY COMPACTED TO 95% OF MAXIMUM DENSITY OF OPTIMUM MOISTURE AS DETERMINED BY ASTM D968 STANDARD PROCTOR.
- ALL NEW GRAVITY SANITARY SEWER MAINS SHALL BE LEAK TESTED BY A LOW PRESSURE AIR TEST AND DEFLECTION TESTED. THE LOW PRESSURE AIR TEST WILL BE USED TO SIMULATE INFILTRATION OR EXFILTRATION INTO OR OUT OF ALL GRAVITY SANITARY SEWERS. ALL TESTING WILL BE CONDUCTED UNDER THE SUPERVISION OF THE ENGINEER. AIR TESTING SHALL BE PERFORMED IN ACCORDANCE WITH ASTM C828-80. THE MINIMUM ALLOWED TIME FOR A PRESSURE DROP FROM 3.5 PSI TO 2.5 PSI SHALL BE 1.2 MINUTES PER 100 FEET OF 8" SEWER. AFTER THE FINAL BACKFILL HAS BEEN IN PLACE AT LEAST 30 DAYS, THE DEFLECTION TEST MAY BE PERFORMED. NO PIPE SHALL EXCEED A DEFLECTION OF FIVE PERCENT (5%). IF THE DEFLECTION TEST IS RUN USING A RIGID BALL OR MANDREL, IT SHALL HAVE A DIAMETER EQUAL TO 95% OF THE INSIDE DIAMETER OF THE PIPE. THE TEST SHALL BE PERFORMED WITHOUT MECHANICAL PULLING DEVICES.
- ALL SANITARY SEWER MANHOLES SHALL BE TESTED PRIOR TO CONSTRUCTION OF THE INVERT BY THE VACUUM TEST METHOD DESCRIBED IN THE TECHNICAL SPECIFICATIONS. THE MINIMUM ALLOWED TIME FOR A VACUUM DROP FROM 10" OF MERCURY TO 9" OF MERCURY SHALL BE 2 MINUTES.
- ANY SURFACES, LINES, OR STRUCTURES WHICH HAVE BEEN DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED TO A CONDITION AT LEAST EQUAL TO THAT IN WHICH THEY WERE FOUND IMMEDIATELY PRIOR TO THE BEGINNING OF CONSTRUCTION.
- THE CONTRACTOR SHALL COORDINATE THE LOCATION AND INSTALLATION OF THE INDIVIDUAL LOT SEWER LINE SERVICES WITH THE OWNER AT THE TIME OF CONSTRUCTION.



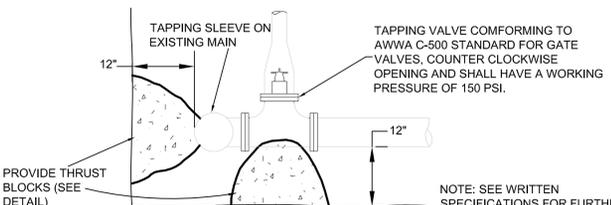
MANHOLE CHANNEL

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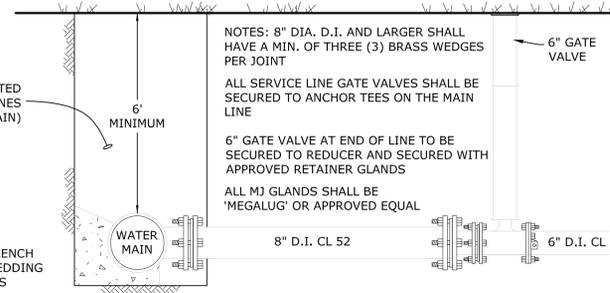
HYDRANT DETAIL

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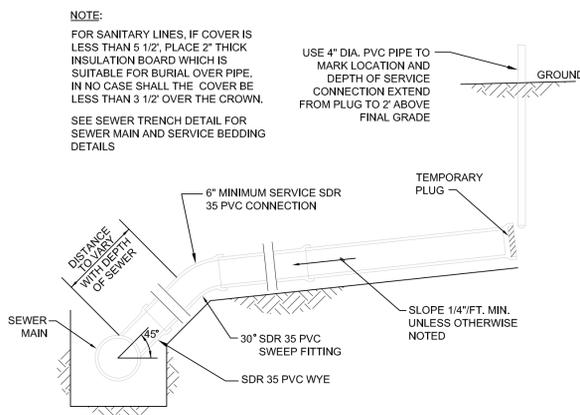
TAPPING VALVE AND SLEEVE DETAIL

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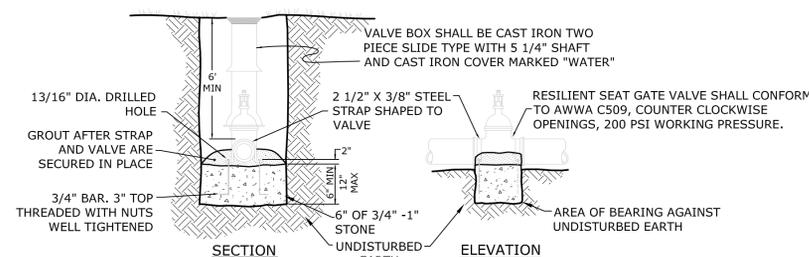
WATER CONNECTION DETAIL

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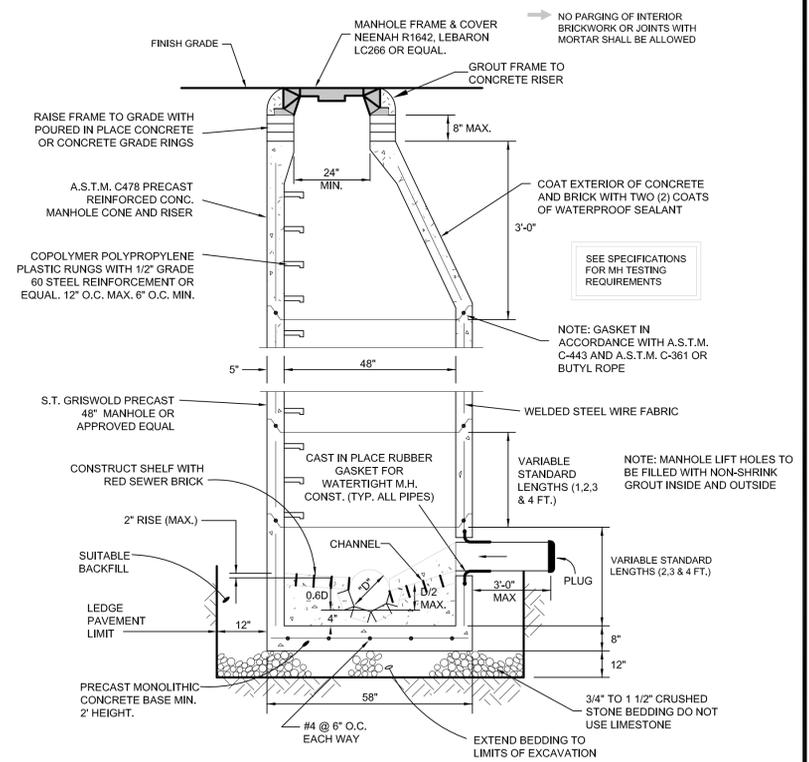
SANITARY SEWER SERVICE CONNECTION

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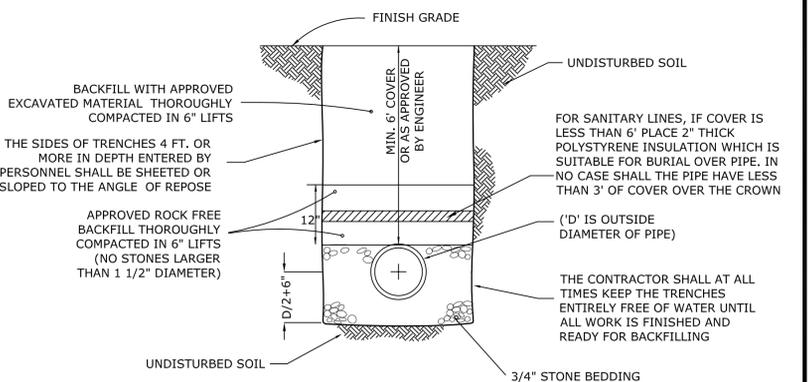
GATE VALVE DETAIL

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TYPICAL PRECAST SANITARY MANHOLE

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TYPICAL SANITARY TRENCH

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DATE	REVISION	PLAN CHANGES PER HINESBURG COMMENTS
7-20-11	RECORD DRAWING	PRELIMINARY
	FINAL	SKETCH/CONCEPT

DATE 7-20-11
SURVEY OBSCA
DESIGN P.J.O.
DRAWN RHP
CHECKED P.J.O.
SCALE
SHOWN

Hannaford Supermarket & Pharmacy
Commercer Street Hinesburg, VT
Water & Sewer Details

BY PJO
DATE 11-09-10
JOB# 9066
FILE CURRENT
PLAN SHEET # C9