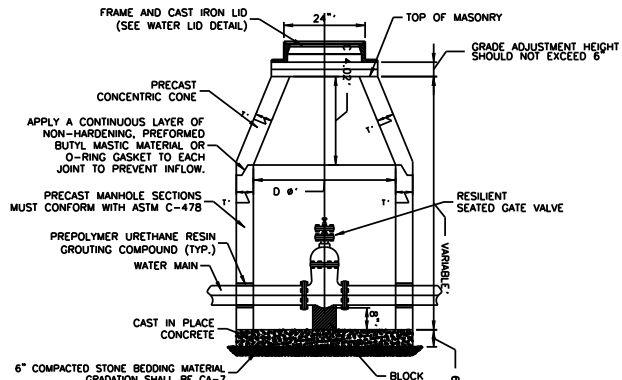


SERVICE PIPE	CORP STOP	CURB STOP	SERVICE BOX
1"	1"	1"	2 1/2"
1 1/4"	1 1/4"	1 1/4"	3"
1 1/2"	1 1/4" x 1 1/2"	1 1/2"	3"
2"	1 1/2" x 2"	2"	3"

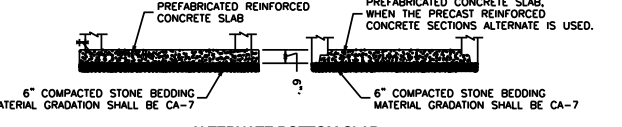
NOTE:
1. BUFFALO BOX ON WATER SERVICE LINES SHALL BE INSTALLED IN THE CENTER OF THE LOT, 7'-8" FROM PROPERTY LINE, AND NEVER IN SIDEWALK OR DRIVEWAY. VALVE SHALL BE MINNEAPOLIS STYLE.

TYPICAL WATER SERVICE INSTALLATION



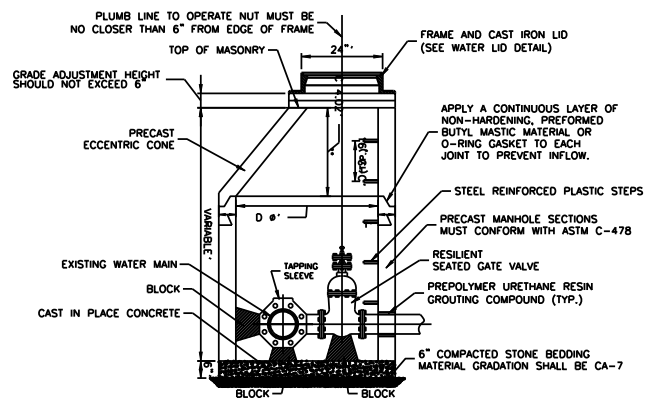
ALTERNATE MATERIALS FOR WALLS	D	C	T
PRECAST REINFORCED CONCRETE SECTION	4'-0"	2'-6"	4"
CAST-IN-PLACE CONCRETE	4'-0"	2'-6"	4"
	5'-0"	3'-9"	5"
	5'-0"	3'-9"	6"

* DIMENSION "C" FOR PRECAST REINFORCED CONCRETE SECTION MAY VARY FROM THE DIMENSION GIVEN ± 6 "



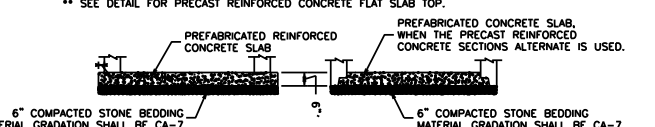
- NOTES:**
1. CONCENTRIC CONE REQUIRED (VALVE TO ALIGN W/ CENTER OF FRAME OPENING).
 2. USE 4'-0" FOR WATER MAIN SIZES 10" AND UNDER. 5'-0" FOR SIZES 12" AND ABOVE.
 3. VALVE VAULT TO CONFORM TO ASTM C-478.
 4. ALL VALVES SHALL HAVE STAINLESS STEEL BOLTS AND NUTS.
 5. ALL VALVES SHALL OPEN COUNTER CLOCKWISE AND CLOSE CLOCKWISE WITH NON-RISING STEM.
 6. PROVIDE CA-7 AGGREGATE BACKFILL MATERIAL AROUND VAULT TO SUB-GRADE ELEVATION; IN PAVED AREAS.

VALVE IN VAULT DETAIL



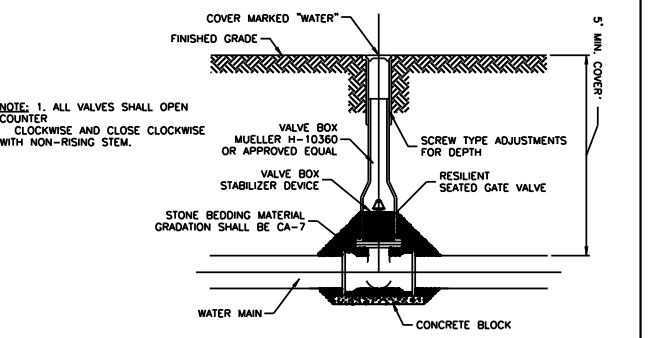
ALTERNATE MATERIALS FOR WALLS	D	C	T
PRECAST REINFORCED CONCRETE SECTION	5'-0"	3'-9"	5"
CAST-IN-PLACE CONCRETE	5'-0"	3'-9"	5"
	6'-0"	3'-9"	6"
	6'-0"	3'-9"	6"

* DIMENSION "C" FOR PRECAST REINFORCED CONCRETE SECTION MAY VARY FROM THE DIMENSION GIVEN ± 6 "

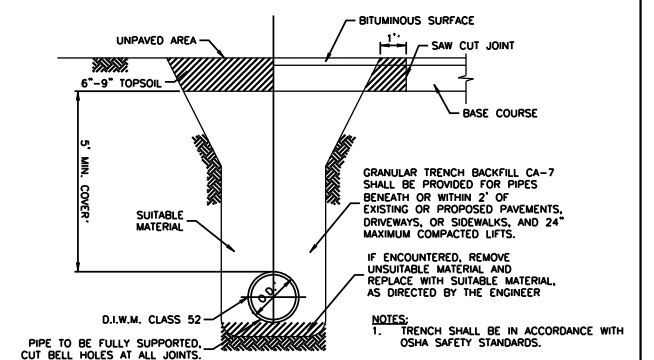


- NOTES:**
1. VALVE TO ALIGN W/ CENTER OF FRAME OPENING.
 2. USE 4'-0" FOR WATER MAIN SIZES 10" AND UNDER. 5'-0" FOR SIZES 12" AND ABOVE.
 3. VALVE VAULT TO CONFORM TO ASTM C-478.
 4. ALL VALVES SHALL HAVE STAINLESS STEEL BOLTS AND NUTS.
 5. ALL VALVES SHALL OPEN COUNTER CLOCKWISE AND CLOSE CLOCKWISE WITH NON-RISING STEM.
 6. PROVIDE CA-7 AGGREGATE BACKFILL MATERIAL AROUND VAULT TO SUB-GRADE ELEVATION; IN PAVED AREAS.

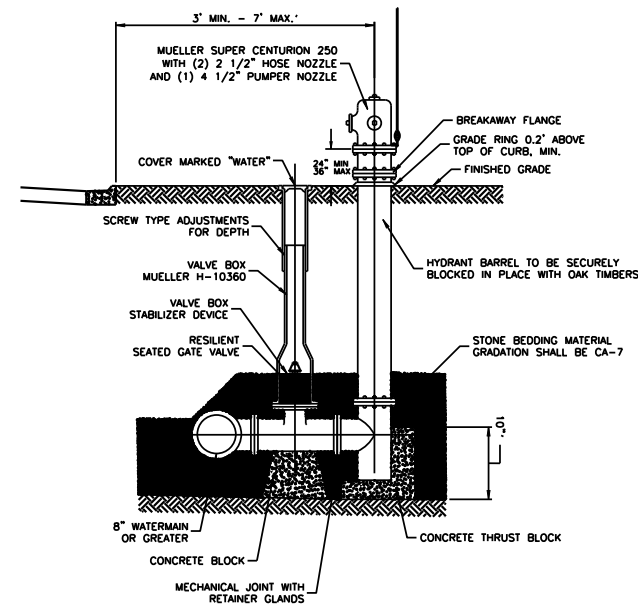
VALVE IN VAULT DETAIL FOR PRESSURE CONNECTION



TYPICAL VALVE IN BOX INSTALLATION

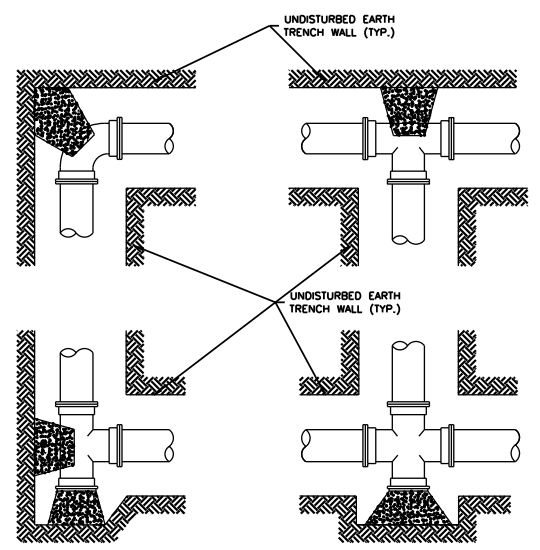


TRENCH BACKFILL DETAIL FOR WATERMAIN



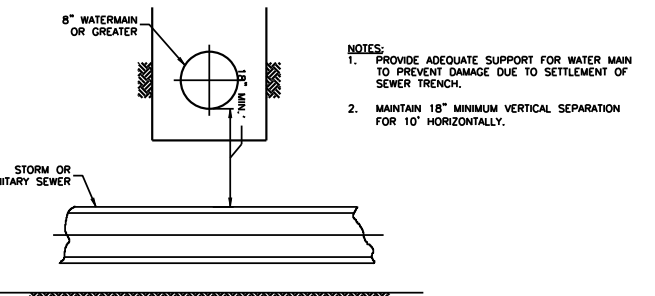
- NOTES:**
1. HYDRANTS SHALL BE INSTALLED FACING TOWARD THE CURB. NO HYDRANT SHALL BE INSTALLED WITHIN 48" OF ANY OBSTRUCTION NOR SHALL ANY OBSTRUCTION BE PLACED WITHIN 48" OF A HYDRANT. ALL HYDRANTS SHALL BE PAINTED SAFETY RED BY THE MANUFACTURER.
 2. ALL VALVES SHALL OPEN COUNTER CLOCKWISE AND CLOSE CLOCKWISE WITH NON-RISING STEM.
 3. HYDRANT DRAIN HOLE SHALL BE FREE OF CONCRETE.

FIRE HYDRANT INSTALLATION

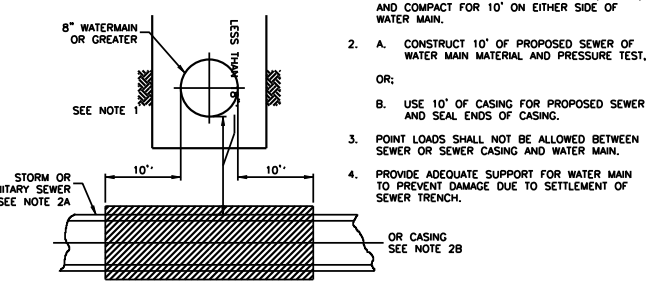


- NOTES:**
1. PROVIDE PRECAST CONCRETE THRUST BLOCKS OF ADEQUATE SIZE AND THRUST BEARING SURFACE TO PREVENT MOVEMENT OF PIPELINE UNDER PRESSURE.
 2. PLACE THE BASE AND THE THRUST BEARING SIDES OF THRUST BLOCK DIRECTLY AGAINST UNDISTURBED EARTH.
 3. PLACE THRUST BLOCKING SO THE FITTING JOINTS WILL BE ACCESSIBLE FOR REPAIR.

TYPICAL THRUST BLOCK INSTALLATIONS

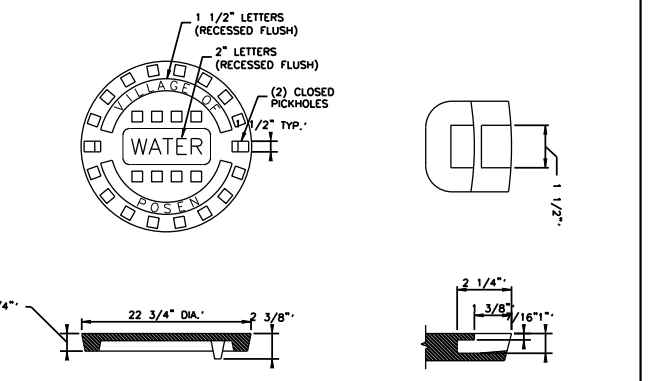


PROPOSED SEWER LINE BELOW EXISTING WATER MAIN WITH 18" MINIMUM SEPARATION



PROPOSED SEWER LINE BELOW EXISTING WATER MAIN WITH LESS THAN 18" MINIMUM SEPARATION

WATER AND SEWER SEPARATION REQUIREMENTS



SPECIAL LETTERED WATER VALVE VAULT LID

ROBINSON ENGINEERING, LTD. CONSULTING REGISTERED PROFESSIONAL ENGINEERS AND PROFESSIONAL LAND SURVEYORS 1700 SOUTH PARK AVENUE SOUTH HOLLAND, ILLINOIS 60478 (708) 381-9700			REVISIONS No. Date Remarks		
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147TH STREET PROJECT PROPOSED WATERMAIN IMPROVEMENTS					
POSEN, ILLINOIS					
Drawn by: MED Checked by: JR Sheet 9 of 11	Date: 10/10/11 Scale: NONE Project No. 10-432				