REDING
1/2"-3/4" CLEAN AGGREGATE, HAND TAMPERED OR MECHANICALLY COMPACTED IN MAX. 4" LIFTS

TRENCH BACKFILL:
- UNDER PAVED AREAS OR WITHIN 4' HORIZONTAL OF PAVED AREAS/BACK-OF-CURB MO DOT TYPE 1 ROCK COMPACTED TO 95% OF STANDARD DENSITY PER ASTM D-698
- OUTSIDE PAVEMENT AND WITHIN R/W ON-SITE OR IMPORTED MATERIAL FREE OF MUCK, FROZEN MATERIAL, EXCESS MOISTURE, ORGANICS, TOPSOIL, RUBBISH, CONSTRUCTION DEBRIS, ROCK OR BRICK, COMPACTED TO 95% OF STANDARD DENSITY PER ASTM D-698
- OUTSIDE R/W ON-SITE OR IMPORTED MATERIAL FREE OF MUCK, FROZEN MATERIAL, EXCESS MOISTURE, ORGANICS, TOPSOIL, RUBBISH, CONSTRUCTION DEBRIS, ROCK OR BRICK, COMPACTED TO 90% OF STANDARD DENSITY PER ASTM D-698

<table>
<thead>
<tr>
<th>PIPE DIA.</th>
<th>IN SOIL</th>
<th>IN ROCK</th>
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</thead>
<tbody>
<tr>
<td>24&quot; AND LESS</td>
<td>6&quot;</td>
<td>6&quot;</td>
</tr>
</tbody>
</table>

12 GA SOLID COPPER WITH THERMOPLASTIC (FOR NON-DIP PIPE) INSULATION INSTALLED DIRECT BURIAL ON TOP OF PIPE. TRACER WIRE SHALL BE LAID FLAT AND AFFIXED TO THE PIPE AT 10 FOOT INTERVALS. REFER SECTION 5005 OF CITY OF LIBERTY SPECIFICATIONS

INSTALL DETECTION MARKING TAPE (FOR NON-DIP PIPE) DIRECTLY ABOVE PIPE 18 TO 24 INCHES BELOW FINISH GRADE. REFER SECTION 5005 OF CITY OF LIBERTY SPECIFICATIONS

REV 2012

CITY OF LIBERTY, MO
DEPARTMENT OF PUBLIC WORKS
EMBEDMENT AND BACKFILL FOR WATERMAINS D50-1
NOTE:
SET STEEL POST 3'-0" ABOVE GRADE
NEXT TO VALVE BOX LOCATION.
POST TO REMAIN UNTIL FINAL GRADING
AND SEEDING OR SOD IS IN PLACE.
NOTE:
SET STEEL POST 3'-0" ABOVE GRADE
NEXT TO VALVE BOX LOCATION.
POST TO REMAIN UNTIL FINAL GRADING
AND SEEDING OR SOD IS IN PLACE.
NOTES:

1. USE M.J. ANCHOR PIPE AND FITTINGS BEYOND THE STRADDLE BLOCK.

2. ALIGNMENT OF DIP WATER LINE AROUND CUL-DE-SAC VARIES TO MAINTAIN CLEARANCE FROM SANITARY SEWER.

3. MAIN TO BE EXTENDED TO INSURE DIP WATER LINE IS LOCATED ON PROPERTY LINE FOR FUTURE TAPPING PURPOSES.

4. ALL JOINTS TO BE RETAINED BY MEGALUG.
Paint: Sherwin Williams
Industrial Yellow No. B54-Y37

**HYDRANT BURY LINE**

**CONCRETE COLLAR (3000 PSI MIN. 28 DAY COMPRESSIVE STRENGTH)**

**ROOFING FELT OR FILTER FABRIC**

**SET HYDRANT ON 1'-0" SQ. X 6" CONCRETE BASE**

**ACCESS FOR T-WIRE**

**6" X 90 GATE MJ ANCHORING BEND OR 6" ANCHORING PIPE AS REQ'D**

**RETAINED TEE WITH MEG-A-LUG FITTINGS**

**6" X 12" GRADELOK W/M.J. SPLIT GLANDS (ROTATE TO FINAL GRADE)**

**6" MJ GATE VALVE**

**M.J. FIRE HYDRT**

**BACK OF CURB**

**#4 BARS**

*SEE DETAIL 50-2*

*VARIES 6" TO 24" WITH OFFSET 18" STANDARD.*

**ROTATE OFFSET TO ACCOMODATE ELEVATION.**

**NON-DUCTILE MAIN TRACER WIRE PIPE DETECTION SYSTEM SHALL BE INSTALLED PER DETAIL D50-2A AND SECTION 9100.**

**CONCRETE FILL AROUND BASE OF HYDRANT**

**PROVIDE MIN. 1/2 CU. YD. OF 3/4" GRANULAR FILL AROUND BASE OF HYDRANT**

**REV 2015**

**CITY OF LIBERTY, MO DEPARTMENT OF PUBLIC WORKS**

**TYPICAL FIRE HYDRANT INSTALLATION DETAIL D50-5a**
NOTES:
1. WHERE MAIN IS LOCATED BEHIND CURB IN STREET R/W OR EASEMENT, FLUSHING ASSEMBLY TO BE CONSTRUCTED OVER END OF LINE.
2. ASSEMBLY TO BE USED ON NEW MAIN EXTENSION WHERE MAIN IS WITHIN PAVED SURFACE, SHOULDER OR IN DITCH LINE. LOCATE VALVE BOX IN ESTABLISHED GRADE AREA.
3. VALVE BOX LID SHALL SAY "WATER".
4. SET 5'-0" STEEL POST NEAR BLOW OFF ASSEMBLY.
5. 2" PIPING AND 90° BEND SHALL BE GALVANIZED OR BRASS.
6. 2" CAP SHALL BE PVC PLASTIC.

NOTE:
SET STEEL POST 3'-0" ABOVE GRADE NEXT TO VALVE BOX LOCATION.
POST TO REMAIN UNTIL FINAL GRADING AND SEEDING OR SOD IS IN PLACE.
SIDE VIEW

NOTE: RETAINERS WILL BE USED ON ALL VERTICAL BENDS.

ALL JOINTS WITHIN 120' OF A VERTICAL BEND SHALL BE RESTRAINED TYPE

TOP VIEW
LEGEND
1. PIPE SPOOL (FLANGE DUCTILE IRON PIPE).
2. APPROVED DOUBLE CHECK VALVE ASSEMBLY.
3. RESILIENT SEATED WHEEL GATE VALVE.
4. TEST COOKS (4 REQ'D WITH BRASS PLUGS).
5. STEEL FLANGED COUPLING ADAPTER.
6. PLAIN END DUCTILE IRON (ALLOW 1” GAP FOR ASSEMBLY REMOVAL).
7. 24” CLAY & BAILEY RING AND COVER #2213.
8. 12” OF 1/2”-3/4” CRUSHED ROCK.

*** = 8’-0” (3”, 4”, & 6” WATERLINE)
*** = 10’-0” (8” & 10” WATELINE)

NOTES:
1. ALL BACKFLOW PREVENTION ASSEMBLIES SHALL BE APPROVED BY THE CITY OF LIBERTY, BUILDING DEPARTMENT.
2. ALL BACKFLOW PREVENTATION ASSEMBLIES SHALL BE INSTALLED HORIZONTALLY.
3. ALL FERROUS--BODIED BACKFLOW ASSEMBLIES SHALL BE FITTED WITH REPLACEABLE VALVE SEATS.

REV 2009
NOTES:

1. Inspection by the City of Liberty Building Inspection Department is required.
2. No street cuts are to be done without prior notification and issuance of permits.
3. Alternate locations must have prior approval by the City Engineer.
4. Meter wells shall not be located in driveways, walkways or cast-in concrete without prior approval. Traffic model rings and lids shall be installed when required for these instances.
5. All meter wells shall be set plumb, backfilled and compacted with earth.
6. Each meter well shall be centered directly over the meter which it serves.
7. The top of the meter well cover shall be flush with the finished grade.
8. In cases where the sidewalk is located (or is to be located) adjacent to the curb, the centerline of the meter well shall be a minimum of 2’ 0” from the back edge of the sidewalk.
9. The City of Liberty Utilities Maintenance Department (439-4763) requires 24 hours notice for scheduling of water tap.
10. First 3’ of service line on customer side of meter coming out of meter pit must be Type “K” copper.

NOT TO SCALE
* 18", 21" & 24" METER PIT FOR USE AS METER ENCLOSURES
* ADS METER PITS SHALL BE WHITE IN COLOR. METER PITS SHOULD HAVE A SMOOTH INTERIOR AND ANNULAR EXTERIOR CORRUGATIONS.
* BASED ON ASTM D2412 AT 5% DEFLECTION THE PIPE STIFFNESS FOR 18", 21" & 24" METER PITS SHALL BE 40 pii, 34 pii & 34 pii RESPECTIVELY.
* THE PITS SHALL BE AVAILABLE IN A MINIMUM LENGTH OF 36"
* METER PITS SHALL BE NOTCHED AT 0 AND 180 DEGREES AT THE BASE TO ACCOMMODATE INLET AND OUTLET PIPES.
* MATERIAL – METER PITS SHALL BE HIGH DENSITY POLYETHYLENE CONFIRMING WITH THE MINIMUM REQUIREMENTS OF CELL CLASSIFICATION 424420 B AS DEFINED AND DESCRIBED IN THE LATEST VERSION OF ASTM D3350.
* INSTALLATION – SHALL BE IN ACCORDANCE WITH ADS INSTALLATION INSTRUCTIONS OR THOSE ISSUED BY REGIONAL, STATE OR LOCAL AGENCIES.

**NOMINAL DIMENSIONS**
- INNER DIAMETER (mm) 18", 21" & 24"
- OUTER DIAMETER (mm) 21.5", 25" & 28.4"

* P2350 LID 21" (18" TILE) & 24" (21" TILE) P2355
* LOCKING LIDS
* P2350 LID 21" (18" TILE) & 24" (21" TILE) P2355
* LOCKING LIDS

2424 – 18" to 24" ADAPTOR for 24" Tile.....Wt. 25 lbs  17 1/2"  5/6"  25 7/8"  25 lbs
2436 – 18" to 36” ADAPTOR for 36” Tile.....Wt. 110 lbs  18 1/4"  3/4"  37 5/8"  110 lbs
ENCASE SPLICE IN WATERPROOF SPLICING KIT. (SCOTCHCAST BY 3M – NO. 3832 BURIED SERVICE WIRE SPLICE ENCAPSULATION KIT)

STRIP ENDS OF WIRE AND SPLICE W/ BRASS SPLIT BOLT – 8F BY RELIABLE OR EQUAL.

ATTACH PLASTIC TIE STRAP JUST OUTSIDE OF WIRE SPLICING KIT. (NOT REQUIRED ON IN-LINE SPLICES)

*SPLICES PERMITTED ONLY WITH APPROVAL OF ENGINEER

TRACER WIRE SPLICE DETAIL

Not to Scale

NOTE:
SET STEEL POST 3’-0” ABOVE GRADE
NEXT TO HYDRANT VALVE LOCATION.
POST TO REMAIN UNTIL FINAL GRADING
AND SEEDING OR SOD IS IN PLACE.

HYDRANT BARREL

HYDRANT VALVE

HYDRANT TEE

NEW MAIN

HYDRANT WIRE, FASTEN TO MIDPOINT OF EACH PIPE SECTION WITH PLASTIC TAPE

VALVE – DO NOT RUN TRACER WIRE UP VALVE BOX

EXISTING PIPE AND FITTING

INSTALL GROUND ROD AT TRACER SYSTEM TERMINAL POINTS. USE CLAMP TO CONNECT TRACER WIRE TO GROUND ROD.

TRACER WIRE DETAIL

Not to Scale

REV 2015

CITY OF LIBERTY, MO
DEPARTMENT OF PUBLIC WORKS
TRACER WIRE DETAIL
D50-11
GENERAL RULES:

1. METER VAULT WALLS TO BE Poured CONCRETE, CONCRETE BLOCK OR PRECAST CONCRETE.
2. METER VAULT ROOF TO BE REINFORCED CONCRETE.
3. METER VAULT TO BE LOCATED, WHEN POSSIBLE, OUTSIDE TRAFFIC AREA AND WHERE SURFACE WATER WILL NOT DRAIN INTO IT. VAULT MUST BE KEPT FREE OF WATER.
4. DUCTILE IRON CLASS 50.
5. CAST IRON STEPS CLAY & BAILEY 2104 OR APPROVED EQUAL TO BE ON 18" CENTERS.
6. FLANGED VALVES ON EACH SIDE OF METER MUST BE ADEQUATELY SECURED TO WITHSTAND WATER THRUST WITH METER REMOVED.
7. IN TRAFFIC: CLAY & BAILEY 2215, RING, INNER LID (WITH HANDLE) AND OUTER LID OR APPROVED EQUAL.
   NON TRAFFIC: HILCO "X-1" SINGLE LEAF ALUMINUM, CLAY & BAILEY 2213 OR APPROVED EQUAL.
8. CONCRETE FLOOR REQUIRED, SLOPE TO DRAIN.
9. CONTACT THE BUILDING INSPECTION DEPARTMENT (816-459-4541) BEFORE INSTALLING THE VAULT.

<table>
<thead>
<tr>
<th>METER SIZE</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>BY-PASS (*)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4&quot;</td>
<td>23-3/4&quot;</td>
<td>33&quot;</td>
<td>157&quot;</td>
<td>72&quot;</td>
<td>2&quot;</td>
</tr>
<tr>
<td>6&quot;</td>
<td>27-3/4&quot;</td>
<td>41&quot;</td>
<td>191&quot;</td>
<td>72&quot;</td>
<td>3&quot;</td>
</tr>
</tbody>
</table>

(*) IF HIGH CONTINUOUS RATE OF FLOW IS REQUIRED, A LARGER BY-PASS MAY BE PERMITTED, BUT NOT LARGER THAN DOMESTIC SERVICE.