STANDARD PLANS
FOR CULINARY WATER SYSTEMS
MAY 2019

Stephen Jackson, City Engineer
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Alan McKean, Assistant City Engineer – Capital Projects
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<td>FLUSHING HYDRANT</td>
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<td>Minimum Clearance Around Fire Hydrant</td>
<td>FH-CLEARANCE</td>
<td>ST-WL-20</td>
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**3/4" & 1" WATER SERVICE CONNECTION**

**THE METER PIT RING AND COVER SHALL BE DUR-O-LITE L-2240 OR L-2242 OR ACCEPTABLE EQUAL**

**ACCEPTABLE ANGLE VALVES:**
- FORD 3/4"
  - DA 98-323W-G
  - AV 98-323W-G
- FORD 1"
  - DA 98-440W-G
  - AV 98-440W-G
- MUELLER 3/4" or 1"
  - B-2473
  - H-14273
  - OR LAYTON CITY PRE-APPROVED ACCEPTABLE EQUAL

**WATER METER FURNISHED AND INSTALLED BY LAYTON CITY PUBLIC WORKS DEPARTMENT. 1925 NORTH FORT LANE, 801-336-3720.**

**ACCEPTABLE DUAL CHECK VALVES:**
- FORD 3/4"
  - HHCA 91-323-G
  - MUELLER 3/4" OR 1"
  - H-14466A
  - OR LAYTON CITY PRE-APPROVED ACCEPTABLE EQUAL

**MEASURED AND REDUCED TO DRAWING BY LAYTON CITY PUBLIC WORKS DEPARTMENT. 1925 NORTH FORT LANE, 801-336-3720.**

**DUCETE IRON OR C-900 WATER MAIN**

**METER BOX—PLACED 1 FOOT FROM BACK OF CURB.**

**EXPANSION LOOP PLACED IN VERTICAL POSITION**

**FILL METER BOX WITH 2" MINUS GRAVEL TO WITHIN 8" - 10" OF BOTTOM OF YOKE**

**U-SHAPED 1/2" DIA GROUNDING ROD INSTALLED MINIMUM BURY DEPTH 18" DEEP ATTACHED TO YOKE WITH STAINLESS STEEL HOSE CLAMP**

**PROPERTY LINE**

**SERVICE BY OTHERS**

**PLAN**

**NOTES:** ALL RESIDENTIAL METERS SHALL BE PLACED 1.0' BEHIND THE SIDEWALK IF THE SIDEWALK ABUTS THE CURB & GUTTER.

**TRACING WIRE SHALL TERMINATE INSIDE METER BOX AND BE CONNECTED TO GROUND ROD.**

**MEASURED AND REDUCED TO DRAWING BY LAYTON CITY PUBLIC WORKS DEPARTMENT. 1925 NORTH FORT LANE, 801-336-3720.**

**SCHEDULE**

<table>
<thead>
<tr>
<th>METER BOX SIZE</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/4&quot; SERVICE (21&quot; X 36&quot; BOX)</td>
</tr>
<tr>
<td>1&quot; SERVICE (21&quot; X 36&quot; BOX)</td>
</tr>
</tbody>
</table>

**+ ACCEPTABLE METER BOX MATERIAL:**
- PRECAST CONCRETE OR CORRUGATED POLYETHYLENE PIPE CONFORMING TO AASHO M334 TYPE S, WITH A SMOOTH INTERIOR LINER.

**** ACCEPTABLE CORPORATION STOPS:**
- FORD CORPORATION STOPS
  - FB-1000
  - F-1000
- MUELLER CORPORATION STOPS
  - H-1500B
  - H-1500B
  - OR LAYTON CITY PRE-APPROVED ACCEPTABLE EQUAL
JUMPER SPECIFICATIONS FOR 3/4” OR 1” METER

THE METER PIT RING AND COVER SHALL BE D&L SUPPLY L-2240 OR L-2242 OR ACCEPTABLE EQUAL

A – FORD OR MUeller ANGLE VALVE*
B – EXPANDER FOR 3/4” YOKE
C – 3/4” OR 1” GALV. PIPE W/ THREADED ENDS (10.5 INCHES LONG)
D – FORD OR MUeller DUAL CHECK VALVE**

*ACCEPTABLE ANGLE VALVES
FORD 3/4”
BA 96-323W-G
AV 96-323W-G
FORD 1”
BA 96-444W-G
AV 96-444W-G
MUELLER
B-24273
H-14273
OR LAYTON CITY PRE-APPROVED
ACCEPTABLE EQUAL

**ACCEPTABLE DUAL CHECK VALVES
FORD 3/4”
HHCA 91-323-G
FORD 1”
HHCA 91-444-G
MUELLER 3/4” OR 1”
H-14466A
OR LAYTON CITY PRE-APPROVED
ACCEPTABLE EQUAL

FOR QUESTIONS ON METER SET-UP OR INSTALLATION, CONTACT THE LAYTON CITY WATER DEPARTMENT AT 801-336-3720.

FOR Questions ON METER Set-UP OR INSTALLATION, CONTACT THE LAYTON CITY WATER DEPARTMENT AT 801-336-3720.

METER BOX SIZE

| 3/4” SERVICE (21” X 30” BOX) |
| 1” SERVICE (21” X 30” BOX) |

ACCEPTABLE METER BOX MATERIAL:
PRECAST CONCRETE OR CORRUGATED POLYETHYLENE PIPE CONFORMING TO AASHTO M294 TYPE S, WITH A SMOOTH INTERIOR LINER.
HDPE METER BOX FOR 1 1/2" OR 2" WATER SERVICE

ST-WL-04 REQUIRED FOR METERS LOCATED IN TRAFFIC AREA

MANHOLE RING AND COVER WITH DOUBLE COVER D&L SUPPLY A-1427 (WATER) OR PRE-APPROVED ACCEPTABLE EQUAL

FINAL SURFACE ELEVATION

45"  22 1/8"

48" HDPE PIPE SECTION
SMOOTH INTERIOR
CORRUGATED EXTERIOR

15" TO
18"

1 1/2" OR 2" TYPE "K"
COPPER OR HDPE CTS-OD
SDR-9 POLY SERVICE

NOTE: TRACING WIRE SHALL TERMINATE IN METER BOX.

3/4" MIN. ROCK AROUND STRUCTURE

PROVIDE BRASS NIPPLE
BRACING PIPE IN EYELETS.
USE 3/8" BRASS NIPPLE FOR
1-1/2" SERVICE AND 1" BRASS NIPPLE FOR 2" SERVICE
MINIMUM 18" LENGTH.

FORD CUSTOM SETTER
1 1/2" - VFH66-18"x13"
2" - VFH77-18"x17"

METER SHALL BE MASTER METER WITH 3G RADIO READER PROVIDED BY LAYTON CITY PUBLIC WORKS WATER DEPARTMENT. 1925 NORTH FORT LANE, 801-336-3720

STANDARD DRAWING
2" HDPEMETER

ST-WL-03
CONCRETE METER BOX FOR 1 1/2” OR 2” WATER SERVICE
CONCRETE BOX REQUIRED IF METER IS LOCATED IN TRAFFIC AREA

FINAL SURFACE ELEVATION

48” MANHOLE SECTION (36” HEIGHT TYPICAL)

MANHOLE RING AND COVER D&L SUPPLY #A–1181 (WATER)

PRECAST FLAT LID

1 1/2” OR 2” ANGLE STOP WITH FLANGE

METER

1 1/2” OR 2” TYPE “K” COPPER OR HDPE CTS–00 SDR–9 POLY SERVICE

PROVIDE BRASS NIPPLE BRACING PIPE IN EYELETS. USE 1/4” BRASS NIPPLE FOR 1–2” SERVICE AND 1” BRASS NIPPLE FOR 2” SERVICE MINIMUM 18” LENGTH.

NOTE: TRACING WIRE SHALL TERMINATE IN METER BOX

15” TO 18”

8”

3/4” MIN. ROCK AROUND STRUCTURE

FORD CUSTOM SETTER
1 1/2” – VFH66–18”x13”
2” – VFH77–18”x17”

METER SHALL BE MASTER METER WITH 3G RADIO READER PROVIDED BY LAYTON CITY PUBLIC WORKS WATER DEPARTMENT. 1925 NORTH FORT LANE, 801–336–3720

STANDARD DRAWING
2” CONC METER BOX
ST–WL–04

DRAWN BY
DHR

SCALE
NONE

DATE
4/04

REVISIONS
1/15
3” or 4” Octave Meter Installation With 8” Bypass And Reducer

Add Additional Pipe Spools After Valve As Necessary

Provide Plate With Megalug Restraint Or Acceptable Equal As Approved By Public Works Inspector Only For Precast Vault

Provide Gravel Bedding Below Concrete Vault A Minimum Of 4 Inches Thick Or As Required By The Public Works Inspector

AMCOR Precast Utility Vault With Concrete Floor, 5” X 7” X 7” Acceptable.

### Water Meter Size

<table>
<thead>
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<th>PART</th>
<th>3”</th>
<th>4”</th>
<th>QUANTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>8” X 8” X 4” FLG TEE</td>
<td>8” X 8” X 6” FLG TEE</td>
<td>2</td>
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<tr>
<td>B</td>
<td>8” FLG GATE VALVE</td>
<td>8” FLG GATE VALVE</td>
<td>1</td>
</tr>
<tr>
<td>C</td>
<td>4” FLG GATE VALVE</td>
<td>6” FLG GATE VALVE</td>
<td>2</td>
</tr>
<tr>
<td>D</td>
<td>4” FLG 45° BEND</td>
<td>6” FLG 45° BEND</td>
<td>4</td>
</tr>
<tr>
<td>E</td>
<td>4” FLG X PE PIPE</td>
<td>6” FLG X PE PIPE</td>
<td>2</td>
</tr>
<tr>
<td>F</td>
<td>4” X 2’-6” FLG X FLG PIPE WITH SEEP RING</td>
<td>6” X 2’-6” FLG X FLG PIPE WITH SEEP RING</td>
<td>2</td>
</tr>
<tr>
<td>G</td>
<td>4” X 3” REDUCER</td>
<td>6” X 4” REDUCER</td>
<td>2</td>
</tr>
<tr>
<td>H</td>
<td>3” X 1’-5” FL X FL PIPE</td>
<td>4” X 1’-2” FL X FL PIPE</td>
<td>1</td>
</tr>
<tr>
<td><strong>J</strong></td>
<td>3” MASTER OCTAVE METER WITH 3G RADIO HEAD</td>
<td>4” MASTER OCTAVE METER WITH 3G RADIO HEAD</td>
<td>1</td>
</tr>
<tr>
<td>J</td>
<td>3” FL COUPLING ADAPTER</td>
<td>4” FL COUPLING ADAPTER</td>
<td>1</td>
</tr>
<tr>
<td>K</td>
<td>3” X 2” BRASS SADDLE W/ PLUG</td>
<td>4” X 2” BRASS SADDLE W/ PLUG</td>
<td>1</td>
</tr>
<tr>
<td>L</td>
<td>3” X 1’-5” FL X PE PIPE</td>
<td>4” X 1’-2” FL X PE PIPE</td>
<td>1</td>
</tr>
</tbody>
</table>

** Denotes Material Supplied By Layton City Water Department
1925 North Fort Lane, 336–3720

4” Meter Will Service Up To 1000 Gallons Per Minute

3” Meter Will Service Up To 500 Gallons Per Minute
3" or 4" Octave Meter Installation With 3" or 4" Bypass

Water Meter Size

<table>
<thead>
<tr>
<th>PART</th>
<th>3&quot;</th>
<th>4&quot;</th>
<th>QUANTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>4&quot; X 4&quot; X 4&quot; FLG TEE</td>
<td>4&quot; X 4&quot; X 4&quot; FLG TEE</td>
<td>2</td>
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<tr>
<td>B</td>
<td>4&quot; FLG GATE VALVE</td>
<td>4&quot; FLG GATE VALVE</td>
<td>3</td>
</tr>
<tr>
<td>C</td>
<td>4&quot; FLG 45° BEND</td>
<td>4&quot; FLG 45° BEND</td>
<td>4</td>
</tr>
<tr>
<td>D</td>
<td>4&quot; FLG X PE PIPE</td>
<td>4&quot; FLG X PE PIPE</td>
<td>2</td>
</tr>
<tr>
<td>E</td>
<td>4&quot; X 2'–6&quot; FLG X FLG PIPE WITH SEEP RING</td>
<td>4&quot; X 2'–6&quot; FLG X FLG PIPE WITH SEEP RING</td>
<td>2</td>
</tr>
<tr>
<td>F</td>
<td>4&quot; X 3&quot; REDUCER</td>
<td>NOT USED</td>
<td>2</td>
</tr>
<tr>
<td>G</td>
<td>3&quot; X 1'–5&quot; FL X FL PIPE</td>
<td>4&quot; X 1'–2&quot; FL X FL PIPE</td>
<td>1</td>
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<tr>
<td>H</td>
<td>3&quot; MASTER OCTAVE METER WITH 3G RADIO HEAD</td>
<td>4&quot; MASTER OCTAVE METER WITH 3G RADIO HEAD</td>
<td>1</td>
</tr>
<tr>
<td>I</td>
<td>3&quot; FL COUPLING ADAPTER</td>
<td>4&quot; FL COUPLING ADAPTER</td>
<td>1</td>
</tr>
<tr>
<td>J</td>
<td>3&quot; X 2&quot; BRASS SADDLE W/ PLUG</td>
<td>4&quot; X 2&quot; BRASS SADDLE W/ PLUG</td>
<td>1</td>
</tr>
<tr>
<td>K</td>
<td>3&quot; X 1'–5&quot; FL X PE PIPE</td>
<td>4&quot; X 1'–2&quot; FL X PE PIPE</td>
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</tr>
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** DENOTES MATERIAL SUPPLIED BY LAYTON CITY WATER DEPARTMENT

1925 NORTH FORT LANE, 336–3720

4" METER WILL SERVICE UP TO 1000 GALLONS PER MINUTE

3" METER WILL SERVICE UP TO 500 GALLONS PER MINUTE

STANDARD DRAWING

Layton City

ST-WL-08
ECLIPSE #88 SAMPLING STATION
PLACED IN CENTER OF PARKSTRIP TO FACE STREET

NOTES:
1. SAMPLING STATIONS TO BE USED IN LOCATIONS PRE-APPROVED BY CITY ENGINEER.
2. TRACING WIRE SHALL TERMINATE IN CURB SERVICE BOX WITH MINIMUM 3' EXCESS. ATTACH TRACING WIRE TO CURB SERVICE BOX WITH STAINLESS STEEL HOSE CLAMP.

3/4" QUICK COUPLING FORD CB4-33Q

3/4" X 8" BRASS NIPPLE

PROVIDE BRASS 3/4" 90° ELBOW (MNPT x FNPT)

PROVIDE GRAVEL DRAIN

EXPANSION LOOP PLACED IN VERTICAL POSITION

FORD BALL VALVE CURBSTOP B11-333

CURB SERVICE BOX 93-D PLACED IN FRONT OF SAMPLING STATION

*CORPORATION STOP AT 2 OR 10 O'CLOCK POSITION

DUCTILE IRON OR C-900 WATER MAIN

ROADWAY

FOR QUESTIONS ON SAMPLING STATION SET-UP OR INSTALLATION, CONTACT THE LAYTON CITY WATER DEPARTMENT AT 801-336-3720.
WATER METER VAULT

31" DIA. OPENING W/
D&L SUPPLY A-1180
RING AND COVER

END VIEW

31" DIA. OPENING W/
D&L SUPPLY A-1180
RING AND COVER

ELEVATION VIEW

PROVIDE GRAVEL BEDDING MINIMUM
4 INCHES THICK OR AS REQUIRED
BY THE PUBLIC WORKS INSPECTOR

UEL412 UTILITY ANCHOR
4 EA. REQ'D PER PART

PLAN VIEW

UEL412 UTILITY ANCHOR
4 EA. REQ'D PER PART

12" DIA. OPENING
FOR 8" DIA. D.I.P

2'x2' OPENING FOR 2'x2'
AMCOR STANDARD FRAME
& GRATE CAST FLUSH
IN FLOOR

2'x2' OPENING FOR 2'x2'
AMCOR STANDARD FRAME
& GRATE CAST FLUSH
IN FLOOR

M.A. STEPS
@ 12" O.C.

M.A. STEPS
@ 12" O.C.

12" DIA. OPENING
FOR 8" DIA. D.I.P

12" DIA. OPENING
FOR 8" DIA. D.I.P

2'-6" TYP.

2'-6" TYP.

3'-6"

7' MIN.

3'-6"

7' MIN.

2'-6" TYP.

6"

6"
TRACING WIRE INSTALLATION

NOTES:
1. ALL WATERLINES SHALL HAVE A MINIMUM 12 GA. INSULATED TRACING WIRE INSTALLED UNDER THE HAUNCHES OF THE PIPE PRIOR TO BACKFILLING.

2. TRACING WIRES SHALL TERMINATE INSIDE OF ALL VALVE BOXES AND FIRE HYDRANTS. AT SERVICE SADDLES AND TAPPING SLEEVES, THE TRACING WIRE SHALL NOT BE ALLOWED TO BE PLACED BETWEEN THE SADDLE AND THE PIPE. A GROUNDING ROD SHALL BE INSTALLED AT ALL TRACER SYSTEM TERMINAL POINTS.

3. TRACING WIRE SHALL BE COPPER WIRE WITH BLUE INSULATION RATED FOR DIRECT BURIAL. ALL WIRE CONNECTORS SHALL BE 3M DBR DIRECT BURY SPLICE OR PRE-APPROVED ACCEPTABLE EQUIVALENT AND SHALL BE WATERPROOF TO PROVIDE ELECTRICAL CONTINUITY.

4. ALL TRACING WIRE SHALL BE TESTED FOR CONTINUITY IN THE PRESENCE OF THE PUBLIC WORKS INSPECTOR PRIOR TO ASPHALT PLACEMENT. ANY TRACING WIRE FOUND NOT TO BE CONTINUOUS AFTER TESTING SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR PRIOR TO ASPHALT PLACEMENT.
WATER LINE LOOP

NOTE:
1. SEE ST–WL–15 FOR THRUST BLOCK SIZING.
2. SEE APWA PLAN 562 TIE DOWN THRUST RESTRAINTS.

TABLE OF DIMENSIONS

<table>
<thead>
<tr>
<th>NO.</th>
<th>OBSTRUCTION</th>
<th>SEWER MAIN</th>
<th>OTHER</th>
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<tbody>
<tr>
<td>A</td>
<td></td>
<td>18”</td>
<td>12” MIN.</td>
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<tr>
<td>B</td>
<td>FULL PIPE LENGTH</td>
<td></td>
<td>O.D. + 12”</td>
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</table>
DIRECT BEARING THRUST BLOCKS

NOTES:
1. ALL WORK MUST BE INSPECTED PRIOR TO BACKFILL.
2. POUR THRUST BLOCKS AGAINST UNDISTURBED SOIL.
3. ALL PIPE JOINTS MUST BE LEFT ACCESSIBLE.
4. CURE CONCRETE FOR 5 DAYS PRIOR TO PRESSURIZING WATER LINES.
5. CONCRETE MUST HAVE A MINIMUM OF 4000 PSI COMPRESSIVE STRENGTH IN 28 DAYS.
6. POUR THRUST TO THE CONFIGURATION SHOWN.
7. BEARING AREAS FOR HORIZONTAL BEND THRUST BLOCKS ARE BASED ON TEST PRESSURE OF 100 PSI AND AN ALLOWABLE SOIL BEARING STRESS OF 2000 LBS./SQ.FT.
8. BEARING AREAS, VOLUMES, AND SPECIAL BLOCKING DETAILS SHOWN ON PLANS TAKE PRECEDENCE OVER THIS STANDARD.
9. BEARING AREAS FOR PIPE SIZES OR CONFIGURATIONS NOT SHOWN REQUIRE A SPECIAL DESIGN.

<table>
<thead>
<tr>
<th>SIZE OF PIPE</th>
<th>90° BEND</th>
<th>45° BEND</th>
<th>22.5° BEND</th>
<th>11.25° BEND</th>
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<tbody>
<tr>
<td>4&quot;</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>6&quot;</td>
<td>4</td>
<td>5.5</td>
<td>3</td>
<td>1.5</td>
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<tr>
<td>8&quot;</td>
<td>6</td>
<td>9.5</td>
<td>5</td>
<td>2.8</td>
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<td>10&quot;</td>
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<tr>
<td>24&quot;</td>
<td>53</td>
<td>74</td>
<td>41</td>
<td>21</td>
</tr>
</tbody>
</table>

THE AREA OF BEARING PER THRUST BLOCK TO EQUAL 1/2 THE AREA SPECIFIED FOR THE LARGEST PIPE.
AIR–VACUUM RELIEF STATION IN STREET

2" DIA. SLOPPET PIPE
W/ALUM. FLY SCREEN
INSIDE – #14 MESH

2" SCREWED RETURN BEND

24"

6"

2" SCREWED CAP

2" DIA. GALVANIZED STND. STEEL PIPE

VENTED COVER AS
APPROVED BY CITY
ENGINEER.

2" DIA. GALVANIZED STND. STEEL PIPE

2 – 2" 90°
SCREWED ELBOWS
WITH 2" CLOSE
NIPPLE (6" LONG)

2" UNION

GROUND LINE

24" HEAVY DUTY CAST
IRON FRAME AND COVER

PRE–CAST REINFORCED
CONCRETE FLAT–SLAB LIP
WITH 30" DIA. OPENING

5’–0” MANHOLE SECTION

2" HEAVY–DUTY
COMBINATION
AIR–VACUUM RELIEF
VALVE

2" FLANGED
GATE VALVE WITH
HAND WHEEL

ALL AROUND

12"

GRAVEL

PROJECT PIPE WITH
2" SADDLE TRAP

Layton City

STANDARD DRAWING
AIR–VAC

ST–WL–16

DRAWN BY
DHR

SCALE
NONE

DATE
9/01

REVISIONS
FIRE HYDRANT INSTALLATION

NOTE: USE CLOW MEDALLION FIRE HYDRANT OR MUELLER SUPER CENTURION 200 FIRE HYDRANT, OR ACCEPTABLE EQUAL.

SECTION VIEW – HYDRANT IN PARK STRIP

PLAN VIEW

SECTION VIEW – HYDRANT BEHIND ABUTTING SIDEWALK

Layton City

STANDARD DRAWING
FH-DET12
ST-WL-18
FLUSHING HYDRANT

EXPANSION LOOP PLACED IN VERTICAL POSITION

TAP MAIN

PARK STRIP

12" TO 18"

PAINTED GREEN

CONCRETE SIDEWALK

18" MIN.

2" BLOW-OFF HYDRANT MAINGUARD NO. 77 OR PRE-APPROVED ACCEPTABLE EQUAL

UNDISTURBED EARTH OR THRUST BLOCK

DRAINAGE PT. WITH 3 CU. FT. OF GRADED GRAVEL

BRASS NIPPLE, BRASS 90°, AND MALE ADAPTOR

2" TYPE "K" COPPER OR HDPE CTS-OD SDR-9 POLY TUBING

NOTES:
1. FLUSHING HYDRANTS MAY BE USED IN LOCATIONS PRE-APPROVED BY CITY ENGINEER.
2. TRACING WIRE SHALL TERMINATE AT FLUSHING HYDRANT SHUTOFF VALVE.
MINIMUM CLEARANCE
AROUND A FIRE HYDRANT

FOR A PRIVATE LANE SERVING ONE
OR TWO DWELLINGS AS OUTLINED IN
MUNICIPAL CODE 18.50.060

26 FOOT WIDE DRIVABLE SURFACE
FOR 20 FEET ON EACH SIDE OF THE
HYDRANT