2019 Material and Construction Specifications
For Water and Wastewater Systems
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AASHTO – American Association of State Highway and Transportation Officials
ADS – Polyethylene Material
APWA – American Public Works Association
ASTM – American Society of Testing and Materials
CC – Center to Center
CI – Cast Iron
CORP – Corporation
CTS – Copper Tube Size
DI – Ductile Iron
DIAM – Diameter
FIP – Female Iron Pipe
FM (Grease) – Food Grade (Grease)
GHID – Granger-Hunter Improvement District
H-20 – Traffic Loading (AASHTO Load Rating)
ID – Inside Diameter
MAX – Maximum
MH – Manhole
MIL – Thickness (1 MIL = 1/1000 of an inch)
MIN – Minimum
MIP – Male Iron Pipe
MJ – Mechanical Joint
NO – Number
OC – On Center
OD – Outside Diameter
OSHA – Occupational Safety and Health Administration
PVC – Polyvinyl Chloride
SDR – Standard Dimension Ratio
SS – Stainless Steel
TYP – Typical
WVC – West Valley City
**Pre-Construction**

**New Construction**

Prior to construction of water and wastewater lines, all plans must undergo a review process to determine if the proposed improvements meet GHID standards. The following is a general outline of the process:

- The Owner shall complete the Availability and Plan Submittal Application, pay the fee.
- The Owner shall finalize any easements and/or rights-of-way documents necessary.
- After plan approval, GHID shall issue a Letter of Availability (and sign the plat if applicable).
- The Owner shall schedule a pre-construction meeting, where they will pay the impact and inspection fees and sign the development agreement (for construction of public infrastructure).

Copies of GHID’s Development Agreement, Availability & Plans Submittal Application, requirements and connection fees are available on our website at https://www.ghid.org/engineering.html. E-mail final plans to plans@ghid.org. Each plan set must be accompanied by a completed plan submittal checklist. West Valley City’s standard plans are available here: https://www.wvc-ut.gov/1592/West-Valley-City-Engineering-Standards.

**Modifications/Improvements to Existing Infrastructure**

A plan review of improvements of existing infrastructure is required whenever the water, sewer, irrigation, or fire protection systems are being modified. Owners are responsible to contact GHID and fill out an Availability & Plans Submittal Application. Fees will be assessed on the type of improvements made. Forms are available on GHID’s website at https://www.ghid.org/engineering.html.

**Contractors**

The following items will be required before work may commence:

- Submittal of Contractor’s License and Permit Bond
- General Liability Insurance Certificate
- Workers Compensation and Employer’s Liability Certificate, or State of Utah approved waiver
- Approved set of drawings
- Arrange for a Pre-Construction meeting with District inspectors by calling 801-968-3551
- 24-hour notification is required for all inspections. Inspections are available Monday-Thursday. 8:00 AM to 5:00 PM, excluding holidays.
Design Specifications

Water System

- The design of the improvements shall be consistent with West Valley City’s Fire Department fire flow requirements.
- All materials that come into contact with drinking water shall be ANSI/NSF 61 Certified.
- All pipe, joints, fittings, valves, and fire hydrants shall conform to AWWA Standards C104-C550 and C900-C950.
- Service laterals shall conform to the Utah Plumbing Code.
- Water mains not connected to hydrants shall be 6-inch minimum diameter. Water mains connected to hydrants shall be 8-inch minimum diameter.
- Water main valves shall be spaced not more than 500 feet in commercial districts and not more than 800 feet or one block in other areas. Water main valves shall be placed at all street and/or water main intersections.
- All dead-end water mains shall be provided with a fire hydrant or blow-off.
- At high points in water mains, air relief valves shall be installed per GHID Specifications.
- Pipe shall be buried at least 4 feet below ground surface.
- The open ends of all pipelines under construction shall be sealed at the end of each day.
- No used materials (valves, fittings, pipe, fire hydrants, etc…) shall be used.
- Hydrant drains shall not be connected to, or located within, 10 feet of sanitary sewers or storm drains.
- No vaults with valves or blow-offs shall discharge directly to the storm drain or sewer system.
- In PRV Vaults, isolation valves shall be installed on both sides of the PRV.
- Service laterals shall not be connected to fire lines.
- Water meters shall be placed at adjoining property lines centered in the park strip or within one foot back from curb in accordance with District specifications.
- Only two meters (plus either a landscape/back-out meter) are allowed. Landscaping back-out meters must be smaller than the main meter.
- Backflow devices must be installed per 2015 International Plumbing Code Section 608 and tested within 10 working days of the initial installation.

Wastewater System

- The maximum spacing for all sewer lines shall not exceed 400 feet.
- End all sewer mains with a manhole or cleanout.
- All building connections must have an exterior lateral cleanout within five feet of the building.
- Maximum spacing for all 4-inch cleanouts shall not exceed 60 feet.
- Maximum spacing for all 6-inch cleanouts shall not exceed 100 feet.
- All establishments that discharge fat, oil, grease or sand shall install a 1,000-gallon minimum interceptor and sampling manhole per District specifications.
- Sampling manholes and grease interceptors shall be placed where they are permanently accessible.
- All wastewater pipelines and laterals must conform to GHID’s Typical Conflict Detail.
- All swimming pool drain lines must be limited to 50 GPM.
- Any business requiring a grease interceptor must have its own meter.
- Parking lots and car washes are required to install a sand/water separator.
# Materials

## Water Materials

<table>
<thead>
<tr>
<th>Water Mainline Pipe</th>
<th>Fire Hydrants</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-900 SDR 18 PVC</td>
<td>6” Waterous or Mueller. See hydrant color code sheet.</td>
</tr>
</tbody>
</table>

## Water Valves

<table>
<thead>
<tr>
<th>Tracer Wire</th>
</tr>
</thead>
<tbody>
<tr>
<td>#14 Insulated Solid Copper Electrical Tracer Wire. Tracer Wire must be continuity tested prior to paving.</td>
</tr>
</tbody>
</table>

## Mechanical Joint Restraints

<table>
<thead>
<tr>
<th>Valve Boxes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cast Iron adjustable with cover labeled “WATER” D&amp;L M-8045-02 Heavy Weight Valve Box Lid or equivalent</td>
</tr>
</tbody>
</table>

## Wrap

<table>
<thead>
<tr>
<th>Grease</th>
</tr>
</thead>
<tbody>
<tr>
<td>FM Food Quality Grease Applied to all nuts and bolts</td>
</tr>
</tbody>
</table>

| Gate valve <= 12-inch. AVK, Clow or Mueller. Brass valve nuts required. |

| Megalug or Romac grip rings or equivalent |
| All accessory packs to be PTFE or SS |

<p>| 10 Mil Polyethylene with corrosion tape |</p>
<table>
<thead>
<tr>
<th>Water Meters</th>
<th>Meter Rings and Lids</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensus iPerl &amp; Omni T2-</td>
<td>Supplied by the District. ¾”-1” installed by District, 1 ½” – 10” installed by Contractor</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Meter Box</th>
<th>Ford Coppersetter</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADS Plastic</td>
<td>See detail for part numbers</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stainless Tapping Sleeve</th>
<th>Service Line</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ford All Stainless Tapping Sleeve</td>
<td>C.T.S. SDR-9 Poly w/ss stiffeners and compression fittings</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Corporation Stops</th>
<th>Check Valve</th>
</tr>
</thead>
<tbody>
<tr>
<td>IP x CTS</td>
<td>Angle Cartridge Dual Check Valve</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Warning Tape</th>
<th>Snake Pit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CD14BLUTP</td>
</tr>
<tr>
<td>Sampling Station</td>
<td>Brass Saddle</td>
</tr>
<tr>
<td>------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>Kupferle #88-SS Eclipse</td>
<td>Ford 202B with brass accessory packs</td>
</tr>
<tr>
<td>Curb Stamps</td>
<td>Bonding Clamp</td>
</tr>
<tr>
<td>W for water lateral, S for sewer lateral</td>
<td>For Copper to Poly connection for tracer wire</td>
</tr>
</tbody>
</table>
# Wastewater Materials

<table>
<thead>
<tr>
<th>Sewer Pipe</th>
<th>Nose-on</th>
</tr>
</thead>
<tbody>
<tr>
<td>PVC SDR 35</td>
<td>Inserta Tee or Equal</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ring and Cover</th>
<th>Manhole</th>
</tr>
</thead>
<tbody>
<tr>
<td>D&amp;L A1180 or Equal Labeled as shown</td>
<td>Concrete</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Grease Interceptor</th>
<th>Seal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete 1,000 gallon minimum</td>
<td>Kent seal (for joints in concrete manholes and grease interceptors)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Shielded Fernco Connectors</th>
<th>Stainless Tapping Sleeve</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ford All Stainless Tapping Sleeve</td>
</tr>
</tbody>
</table>
**Hydrant Color Code**

Hydrant bonnet color shall be painted according to the following chart:

**Barrel Shall Be Safety Red**

**Hydrant Paint Specifications**

- **Colors:** Safety Red, Safety Yellow, Safety Green, and Safety Orange.
- Shoes, lower and upper barrels, bonnets and hose caps to be prime coated inside and outside with **PPG Amercoat 370 epoxy** or equivalent.
- Exposed portions of the hydrant including the exterior of the bonnet, upper barrel and hose caps shall be top coated with **Polane SP polyurethane enamel paint** or equivalent.
- Hydrants that have not been painted by the manufacturer shall be prepared using the following steps:
  - Refer to APWA 09 01 00 specification.
  - Thoroughly clean the hydrant—wash off any dirt or lose debris.
  - Remove surface rust by wire brushing, sandblasting, etc.
  - Roughen shiny surfaces with light sanding.
  - Prime coat bare metal using approved primer.
  - Apply top coat with a minimal thickness of 4 mils using approved paint.
# Standard Details

## General Notes

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>All construction in the pipe zone shall follow GHID specifications and requirements.</td>
</tr>
<tr>
<td>2</td>
<td>The existing water distribution system shall remain in service during construction.</td>
</tr>
<tr>
<td>3</td>
<td>It is the contractor’s sole responsibility to locate and avoid any/all utilities.</td>
</tr>
<tr>
<td>4</td>
<td>All construction above the pipe zone shall follow West Valley City specifications and requirements.</td>
</tr>
<tr>
<td>5</td>
<td>All waterline and sewerline construction including, but not limited to, replacement of curb, sidewalk, etc. to be in accordance with APWA Standard Plans and Specifications (2017 edition). Refer to APWA plan 255 for pavement replacement.</td>
</tr>
<tr>
<td>6</td>
<td>Refer to GHID, WVC, APWA and OSHA requirements for trench details.</td>
</tr>
<tr>
<td>7</td>
<td>Contractor shall sawcut all trenches and provide a smooth clean edge for paving.</td>
</tr>
<tr>
<td>8</td>
<td>Select bedding and backfill is required 6” under, 12” on sides, and 12” over waterline, fireline, hydrant, fittings, services, and sewerline.</td>
</tr>
<tr>
<td>9</td>
<td>Minimum trench width shall be equal to outside pipe diameter plus 1 foot each side of pipe. (i.e. 12” pipe = 3 foot width)</td>
</tr>
<tr>
<td>10</td>
<td>Thrust blocks shall be installed in accordance with GHID specifications.</td>
</tr>
</tbody>
</table>
Typical Water Service with 3/4" - 2" Meter

Support Corp. Stop with Dry Blocking * No Wood Blocking

WATER SERVICE PROFILE

<table>
<thead>
<tr>
<th>METER SIZE</th>
<th>SENSOR TYPE</th>
<th>METER BOX SIZE</th>
<th>LED W/ 1-3/4&quot; HOLES</th>
<th>FORD COPPER SETTERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/4&quot;-2&quot;</td>
<td>CTS 900-9</td>
<td>10 x 16 x 30</td>
<td>EE 1-3/4&quot;</td>
<td>FX-01</td>
</tr>
<tr>
<td>2&quot;</td>
<td>CTS 900-9</td>
<td>10 x 16 x 30</td>
<td>EE 1-3/4&quot;</td>
<td>FX-01</td>
</tr>
</tbody>
</table>

NOTE:
1. SEE PAGE 12 FOR GENERAL NOTES.
2. MINIMUM TRENCH WIDTH SHALL BE EQUAL TO OUTSIDE PIPE DIAMETER PLUS 1" EACH SIDE OF PIPE.
3. IF DAMAGE IS CAUSED TO WATER MAIN, DUE TO METER INSTALLATION AND/OR OTHER REPAIRS, CONTRACTOR WILL BE HELD RESPONSIBLE FOR REPAIRS.
4. WATER METER SHALL BE PLACED IN LINE WITH WATER SERVICE. SERVICE DEFLECTION NOT TO EXCEED 1". WATER METER TO BE PLACED PERPENDICULAR TO WATER SERVICE IF WATER SERVICE IS RELOCATED.
5. METER BOX SHALL BE INSTALLED IN PIPES TRAP, IF APPLICABLE, OR 6" TO 11" BEHIND SIDEWALK AND SET SUCH THAT THE TOP OF LED IS EQUAL TO THE SIDEWALK ELEVATION (TYPICAL).
6. GREASE AND WRAP ALL EXTERNAL FITTINGS AND BOLTS WITH PM GREASE AND 6-MIL PLASTIC WRAPPED TIGHTLY WITH CORROSION TAPE.
7. ALL BLOCKING MUST BE REINFORCED BY SECURE GROUND.
8. 3/4"-2" METER SHALL BE REPLACED AND INSTALLED BY GH. MATCH EXISTING MATERIALS WHEN DOING REPAIRS.
9. METERS SHALL NOT BE PLACED IN DRIVEWAY. IF METER NEEDS TO BE MOVED MORE THAN 2" IN EITHER DIRECTION IT SHALL BE MOVED AT THE MAIN AND OLD LATERAL ABANDONED AT THE MAIN.
10. WATER SERVICE TO BE MARKED WITH W AT CURB.
11. GHANAGNAN-HUNTER IMPROVEMENT DISTRICT DOES NOT ALLOW COPPER SETTERS WITH A BYPASS.
Typical Large Meter Vault

NOTE:
1. SEE PAGE 12 FOR GENERAL NOTES.
2. ALL MANHOLES SHALL HAVE A CONCRETE COLLAR PER A.P.H.A. PLAN 574.
3. VAULT AND PIPE EMBEDDED SHALL BE COMPACTED TO 95% MINIMUM ASTM D-1557.
4. IF DAMAGE IS CAUSED TO WATER MAIN, DUE TO VAULT INSTALLATION AND/OR OTHER MEANS, CONTRACTOR WILL BE HELD RESPONSIBLE FOR REPAIRS.
5. NO MORE THAN ONE GRADE RING (1' MAX.) ALLOWED PER LID AND COLLAR.
6. ALL PLACED END SPOOL S TO BE PRE-CAST INTO VAULT WALLS BY VAULT MANUFACTURER.
7. FOR TRAFFIC USE, VAULT WALLS SHALL BE 8" THICK (MIN.) WITH #5 EPOXY COATED REBAR 6" ON CENTER EACH WAY AND 4" ON CENTER AT "BEAMS."
8. FOR NON TRAFFIC USE, VAULT WALLS SHALL BE 6" THICK (MIN.) WITH #5 EPOXY COATED REBAR 9" ON CENTER EACH WAY AND 6" ON CENTER AT "BEAMS."
9. GREASE AND WRAP ALL INTERNAL FITTINGS AND BOLTS WITH F.M. GREASE AND 8-MIL POLYETHYLENE WRAP TIGHTLY WITH CORROSION TAPE.
10. WRAP ALL DUCTILE IRON PIPE WITH 8-MIL POLYETHYLENE TUBE WRAP.
11. VAULT SHALL BE SUITABLE FOR W-20 LOADINGS.
12. BYPASS SHALL BE 2" MINIMUM.
13. GHID OWNS, MAINTAINS, AND REPAIRS CULTURAL WATER SERVICE TO THE BACK OF THE METER VAULT.
14. CULTURAL WATER SERVICE OWNED, MAINTAINED AND REPAIRED BY PROPERTY OWNER.

FLANGED x PLAIN END SPOOL

12" POLY LADDER RUNGS @ 12" C.C.

VAULT PLAN

FLOW

VAULT FLOOR - 2% SLOPE

ADJUSTABLE PIPE SUPPORTS

ADJUSTABLE PIPE SUPPORT ON BYPASS

12" CONCRETE APRON AROUND VALVE BOX.

ISOLATION GATE VALVE (N) WITH 1/2" VALVE BOX AND TRACER WIRE

12" x 12" IRRIGATION BOX W/1/2" HOLES FOR TOUCHHEAD SENSOR, PLACE BOX IN LANDSCAPING OR WATER BOX IN VAULT TO RUN WIRE THROUGH, RUN 1/2" CONDUIT FROM VAULT TO SENSOR BOX.

12" CONCRETE APRON AROUND Valve BOX.

FLOW

VAULT PROFILE

Granger-Hunter Improvement District
2019
Air/Vacuum Release Assembly

VAULT PLAN

- 4' X 6' PRE-CAST CONCRETE BOX (ASTM C-857 HS-20 LOADING)
- CONCRETE FOOTING
- STAINLESS STEEL PIPE
- STAINLESS STEEL PIPE TO PVC ADAPTER
- SCHEDULE 80 PVC PIPE TO AIR VENT STAND PIPE
- STAINLESS STEEL UNION

CORE CONCRETE BOX AS REQUIRED TO PREVENT SECTION FROM BEARING ON PIPE

VAULT PROFILE

- 30" RING AND COVER (D&L A-1366)
- LEAVE COVER BURIED UNDER ASPHALT 4"
- (JOINT CONTRACTOR TO EXTEND TO SURFACE)

- 2" APOC 145C COMBINATION AIR VALVE (OR APPROVED EQUAL)
- 2" STAINLESS STEEL BALL VALVE
- TAPPING SADDLE
- 90° STREET ELBOW (BRASS)
- 4" X 6" FLAT LID
- STAINLESS STEEL UNION

- GROUT ALL JOINTS ON PRECAST CONCRETE SECTION (GROUT, RAMMENK OR KENT SEAL).
- 16" X 12" CONCRETE FOOTING

Granger-Hunter Improvement District

2019
Pressure Reducing Valve

VAULT PLAN

24" ERGO OR COMPOSITE ACCESS ASSEMBLY
30" ERGO ACCESS ASSEMBLY WITH LIFT ASSIST OR COMPOSITE ACCESS ASSEMBLY
FINISHED GRADE

VAULT PROFILE

INSTALL 1" MINUS FREE DRAINING GRAVEL 12" THICK
Typical Fire Hydrant

**Fire Hydrant Plan**

- Concrete approach around valve box per AWWA standard plan 574.
- Grease all bolts, wrap 6/8 mil plastic and duct tape tight.

**Fire Hydrant Profile**

- CI valve box.
- #14 insulated solid copper electrical tracer wire with underground grease filled caps.
- Concrete thrust blocking.
- 6" gate valve.

**Notes:**

1. See page 12 for general notes.
2. Maximum spacing between hydrants must be no greater than 500'.
3. Select bedding and backfill is required 6" under, 12" on sides and 12" over fireline, fire hydrant, fittings and main.
4. Bedding and backfill: dry ground - select sand shall be used, wet ground - 3/4" minus shall be used. Bedding shall be compacted to 95% min. ASTM D-1556.
5. Minimum trench width shall be equal to outside pipe diameter plus 1" each side of pipe.
6. If damage is caused to water main, due to fire hydrant installation and/or other means, contractor will be held responsible for repairs.
7. Fire hydrant shall be set such that the barrel, or standpipe, flange is 3" to 6" above finish grade.
8. Grease and wrap all external fittings and bolts with FM Grease and 8-mil polyethylene and wrap tightly with corrosion tape.
9. Wrap DI pipe with 8-mil polyethylene tube wrap and wrap tightly with corrosion tape.
10. Drainage pit must have 3 cubic feet (minimum) of 3/4" minus gravel.
11. All thrust blocking must be reinforced by a undisturbed ground.
Typical Sampling Station

**Sampling Station Plan**

**Sampling Station Profile**

**NOTE:**
1. SEE PAGE 12 FOR GENERAL NOTES.
2. SEE TYPICAL SECTIONS FOR SEDIMENT AND BACKFILL.
3. IF DAMAGE IS CAUSED TO MAIN LINE, DUE TO SAMPLING STATION INSTALLATION AND/OR OTHER MEANS, CONTRACTOR WILL BE HELD RESPONSIBLE FOR REPAIRS.
4. TYPE OF PIPE SHALL BE CTS POLYETHYLENE WITH COMPRESSION FITTINGS, SS STIFFENERS, AND #14 INSULATED SOLID COPPER ELECTRICAL TRACER WIRE WITH UNDERGROUND GREASE FILLED CAPS.
5. SAMPLING STATION FINISH GRADE SHALL BE SET ACCORDING TO MANUFACTURER SPECIFICATIONS.
6. GREASE AND WRAP ALL EXTERNAL FITTINGS AND BOLTS WITH FM GREASE AND 6-MIL POLYETHYLENE WRAPPED TIGHTLY WITH CORROSION TAPE.
7. 2” PIPE WRAP INSULATING TAPE (DANCO, OR EQUIVALENT) FROM OPERATING VALVE ASSEMBLY TO 4” BELOW SAMPLING BALL VALVE.
8. ALL THRUST BLOCKING SHALL BE REINFORCED BY A UNDISTURBED GROUND.
9. SAMPLING STATION SHALL BE INSTALLED IN PARK STRIP, IF APPLICABLE, OR 6” TO 1’ BEHIND SIDEWALK.
10. CURB STOP REQUIRED ON ALL STREETS THAT WOULD TYPICALLY BE STRIPED.
Typical 2" Blow-Off

30" LID & 30" COLLAR (ODAL SUPPLY B-5343 OR EQUAL) WITH 3/8" DIA. HOLE FOR LIFTING

30" DIA. x 30" DEEP METER BOX

(1) 2" CORR STOP
(1) BRASS STREET ELL

MECHANICAL JOINT CAP WITH MEGA LUGS

3/4" MINUS GRAVEL

2" QUICK COUPLER

2" BRASS NIPPLE

2" DIA. BRASS 90° ELL

CONCRETE THRUST AND SUPPORT BLOCKING

BLOW OFF IN LANDSCAPING

CI VALVE BOX

2" THREADED CAP

(1) 2" CORR STOP
(1) BRASS STREET ELL

MECHANICAL JOINT CAP WITH MEGA LUGS

3/4" MINUS GRAVEL

CONCRETE THRUST AND SUPPORT BLOCKING

BLOW OFF IN ROADWAY

NOTE:
1. SEE PAGE 12 FOR GENERAL NOTES
2. TYPE OFF PIPE SHALL BE 2" SDR 9 POLY OR COPPER WITH ALL BRASS FITTINGS.
3. BLOW-OFF ASSEMBLY SHALL BE INSTALLED AS SHOWN OR OTHERWISE APPROVED BY GHID. GREASE AND WRAP ALL EXTERNAL FITTINGS WITH FM GREASE AND 8-MIL PLASTIC AND WRAPPED TIGHTLY WITH CORROSION TAPE.
4. ALL BLOCKING MUST BE REINFORCED BY UNDISTURBED GROUND.

Granger-Hunter Improvement District 2019
Thrust Blocking Detail

90° BEND  TEE  HORIZONTAL BENDS

CROSS W/PLUGS  CROSS  PLUG

REBAR OR S.S. BAR REQ'D

UNDISTURBED SOIL (TYP.)

VERTICAL BENDS

REBAR OR S.S. BAR REQ'D

UNDISTURBED SOIL (TYP.)

TYPICAL SECTION THROUGH THRUST BLOCKS

12 min.

NOTE:
1. ALL REBAR MUST BE #4 (MINIMUM) AND EPOXY COATED
2. 3/8" (MINIMUM) STAINLESS STEEL BAR IS ACCEPTED IN PLACE OF REBAR.
3. ALL THRUST BLOCK BEARING FACES SHALL BE Poured AGAINST UNDISTURBED SOIL OR AN APPROVED, COMPACTED BACKFILL.
4. CONCRETE USED FOR THRUST BLOCKING SHALL BE CLASS 6.0-9-3000.
5. ALL THRUST BLOCK SIDES SHALL BE FORMED

Granger-Hunter Improvement District 2019
Typical Waterline Loops

**Pre-Fabricated Loop**

- **Steel Waterline Loop**
- **Obstruction**
- **45° Bend (typical of 4)**
- **3′ Min.**
- **3′ Min.**
- **12′ Min.**

**Solid Sleeve**
- (4) with Mega-Lugs

**#14 Insulated Solid Copper Electrical Tracer Wire with Underground Grease Filled Caps, Typical All**

**12′ Minimum Crushed Drain Gravel – 3/4″**

**Note:**
1. See page 12 for general notes.
2. Select bedding and backfill is required 12″ under, on sides, and over waterline loop.
3. Waterline loop bedding and backfill: 3/4″ minus crushed drain gravel. Bedding shall be compacted to 95% min. ASTM D-1557.
4. Waterline bedding and backfill: dry ground – select sand shall be used. Wet ground – 3/4″ minus shall be used.
5. Minimum trench width shall be equal to outside pipe diameter plus 1′ each side of pipe.
6. If damage is caused to water main contractor will be held responsible for repairs.
7. Pre-fab waterline pipe and fittings shall be butt welded A53 grade B sch. 80 steel for pipes less than 12″ diameter and sch. 40 for pipe greater than 12″ diameter, unless otherwise specified by GHID. All pipe shall have #14 insulated solid copper electrical tracer wire with underground grease filled caps.
8. Refer to AWWA C210 for epoxy coating or AWWA C214 for tape coating details.
9. Grease and wrap all external fittings and bolts with F.M. grease and 8-mil polyethylene and wrap tightly with corrosion tape.
10. All thrust blocking shall be reinforced by undisturbed ground.
11. For canal or river crossings, a minimum of 2 feet of vertical separation is required. For crossings greater than 15′, restrained joints shall be used under the waterway and flexible restrained joints used at both edges. Isolating valves shall be provided at both ends of crossing, a sample tap shall be installed outside the flood area to enable testing of the section, and pressure testing shall be completed on the section prior to placing it into service.

**Waterline Loop**

- **Ground Surface**
- **45° Bend with Mega-Lugs or flanged fittings (typical of 4)**
- **3′ Min.**
- **3′ Min.**
- **12′ Min.**

**Solid Sleeve**
- (4) with Mega-Lugs

**Thrust Blocking per APWA Standard Plan 543**

**#4 Or Greater Epoxy Coated Rebar**

**12′ Minimum Crushed Drain Gravel – 3/4″**

*On new construction use bell restraints in place of all thread.

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**Granger-Hunter Improvement District**

**2019**
Typical Conflict Resolution

NOTE:
1. SEE PAGE 12 FOR GENERAL NOTES.
2. MEETS BASIC SEPARATION STANDARDS.
3. MUST APPLY FOR A VARIANCE PER R308-550-7
4. MUST APPLY FOR EXCEPTION PER R308-105-6(2)(b)
5. WATER MAINS AND SEWER LINES SHALL NOT BE INSTALLED IN THE SAME TRENCH.
6. IF SEWER IS FORCE MAIN, SEWER SHALL BE ENCASED IN A CONTINUOUS SLEEVE WITHIN 10' OF WATERLINE
7. IF WATER MAIN IS OVER FORCE MAIN, WATER MAIN WILL BE RATED FOR 200 PSI MINIMUM.

Granger-Hunter Improvement District 2019
Typical Trench Specifications

CULINARY WATER MAIN

1. SEE PAGE 12 FOR GENERAL NOTES.
2. CONTRACTOR TO SAWCUT ALL TRENCHES AND PROVIDE A SMOOTH CLEAN EDGE FOR PAVING.
3. SELECT BEDDING AND BACKFILL IS REQUIRED 8" UNDER, 12" ON SIDES AND 12" OVER WATERLINE, SEWERLINE, FITTINGS, SERVICES, AND Meters.
4. BEDDING AND BACKFILL: WATERLINE CONSTRUCTED IN DRY GROUND — SELECT SAND SHALL BE USED. WATERLINE CONSTRUCTED IN WET GROUND AND SEWERLINE - 3/4" MINUS SHALL BE USED. BEDDING SHALL BE COMPACTED TO 95% MINIMUM ASTM D-1557.
5. MINIMUM TRENCH WIDTH SHALL BE EQUAL TO OUTSIDE PIPE DIAMETER PLUS 1" EACH SIDE OF PIPE.
6. IF DAMAGE IS CAUSED TO WATER AND/OR SEWER MAIN CONTRACTOR WILL BE HELD RESPONSIBLE FOR REPAIRS.
7. GREASE AND WRAP ALL EXTERNAL FITTINGS AND BOLTS WITH F.M. GREASE AND 8-ML PLASTIC WRAPPED TIGHTLY WITH CORROSION TAP.
8. ALL BLOCKING MUST BE REINFORCED BY UNDISTURBED GROUND.
9. SUBMISSION OF QUALITY CONTROL COMPACTION TEST RESULT DATA FOR BEDDING MAY BE REQUESTED, BY GHID, AT ANY TIME. CONTRACTOR IS TO PROVIDE RESULTS OF TESTS IMMEDIATELY UPON REQUEST.
10. FOR ALL NON-METALLIC CULINARY WATERLINES AND PRESSURE SEWERLINES INSTALL #14 INSULATED SOLID COPPER ELECTRICAL TRACER WIRE, TRACER WIRE TO BE CONTINUITY CHECKED PRIOR TO PAVING.
11. ALL PIPE BEDDING & BACKFILL SHALL BE INSTALLED & COMPACTED IN 8-INCH MAXIMUM LIFTS.

Select Sand Gradation

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<tr>
<th>US Sieve Size</th>
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<td>3-15</td>
</tr>
<tr>
<td>#200</td>
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</table>
Typical Sanitary Sewer Manhole

**STANDARD MANHOLE PLAN**

- 30" frame and cover per APWA standard plan no. 402
- Grout rings in place with concrete, seal with Kent seal or approved equal
- Provide pre-cast rings to bring cover to finished grade
- Cone sections to conform to ASTM C-478
- 5" min. wall
- ¾" plywood required during construction, remove prior to final acceptance

**DROP MANHOLE PLAN**

- 12" concrete apron per APWA standard plan no. 413
- No more than two grade rings allowed per ring and collar, grade rings not to exceed 12" total
- Wall sections to conform to ASTM C-478
- Remove upper ½ of pipe after manhole is completed, construct mortar shelf with a slope of 1.5" in 12"
- 3" min. from bottom of invert cover to top of highest pipe

**STANDARD MANHOLE SECTION**

**DROP MANHOLE SECTION**

**NOTE:**
1. See page 12 for general notes
2. Pour manhole base after pipes are in place. If pre-formed base is used as alternative to poured base, foundation of ¾" minus 1.5" deep under base is required and shall be compacted to 95% minimum ASTM D-1557
3. Contractor is to saw cut all trenches and provide a smooth clean edge for paving
4. All manholes shall have a concrete collar per A.P.W.A. standard plan 413
5. Select bedding and backfill is required 6" under, 12" on sides and 12" over sanitary sewer manhole
6. If damage is caused to sewer main due to manhole installation and/or other means, contractor will be held responsible for repairs
7. Granger Hunter manhole covers available at D&L Supply and Neenah Foundry
Typical Mainline Sanitary Sewer Cleanouts

Typical Sanitary Sewer Service 90° Bends

NOTE:
1. SEE PAGE 12 FOR GENERAL NOTES.
2. CONTRACTOR IS TO SAW CUT ALL TRENCHES AND PROVIDE A SMOOTH CLEAN EDGE FOR PAVING.
3. SELECT BEDDING AND BACKFILL IS REQUIRED 6" UNDER, 12" ON SIDES AND 12" OVER SANITARY SEWER PIPES.
4. IF DAMAGE IS CAUSED TO SEWER MAIN, DUE TO MANHOLE INSTALLATION AND/OR OTHER MEANS, CONTRACTOR WILL BE HELD RESPONSIBLE FOR REPAIRS.

Granger-Hunter Improvement District 2019
Typical Sewer Service

**Entire Sewer Lateral is owned and shall be maintained and cleaned by Property Owner.**

**Provide Adequate Support for Cleanout During Backfill.**

**See Typical Trench Detail for Bending.**

**Bend (45° Max.) Use As Needed. Install Tracer Wire on Lateral and Wrap Around Cleanout.**

**Install Test Tee at Connection Point.**

**Concrete Pillow Required for PVC Wye.**

**Max. 60° Between Cleanouts on 4” Service.**

**Max. 100° Between Cleanouts on 6” Service.**

**45° Wye for 45° Cleanout, or 45° Wye with 45° Bend for 90° Cleanout (Optional).**

**Conduit Pipe, or P.V.C. S.D.R.—35.**

**Cap from 6” Above Grade (Max.) to 6” Below Grade (Max.). Traffic Rate Cap Required If Located in Driveway.**

**No Hub Cleanout with Brass Cap.**

**90° Cleanout 1”–5” from Build. Comb Wye Shall Be Used if Conflict Exists with Other Utilities.**

**Distance Between C.O.’s Not to Exceed 60°.**

**Nose-on to Existing Mains with Inserta Tee or Equal Install Wye Fittings for New Mains.**

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**Sewer Service Profile**

**Notes:**

1. **See Page 12 for General Notes.**
2. **Minimum Trench Width Shall Be Equal to Outside Pipe Diameter Plus 1” Each Side of Pipe.**
3. **If Damage is Caused to Water and/or Sewer Main, Due to Waterline/Sewerline Installation and/or Other Means, Contractor Will Be Held Responsible for Repairs.**
4. **Sewer Lateral Pipe Shall Be PVC S.D.R.—35.**
5. **Minimum Grade for 4” Sewer Lateral is 2%, or 1/4” Per Linear Foot.**
6. **Minimum Grade for 6” Sewer Lateral is 1%, or 1/8” Per Linear Foot.**
7. **Between Two Different Materials, Such as Clay to P.V.C., Use Flex Seal Adjustable Repair Coupling (Shielded Fernco), or Equal (No-Hub Bands Are Not Allowed).**
8. **Bends Totaling 90° Shall Be Backed by a Cleanout, See Typical Sanitary Sewer Service 90° Bend Detail.**
9. **All Sewer Lateral Plugs Shall Be Slip in Solid Plastic Plugs (Brandt Plugs Are Not Allowed).**
10. **A Sewer Test Tee Shall Be Installed at Each Connection Point.**
11. **Sewer Main Shall Be Core Drilled (Other Cutting, Chipping and/or Punching Methods Are Not Allowed).**
12. **Sewer Nose-on Shall Be Above The Sewer Main Spring Line.**
13. **See Typical Water Service Detail for Water and Sewer Separation.**
14. **Sewer Service to Be Marked With S at Curb.**
Typical Sewer Repair

**SEWER REPAIR PLAN**

- PVC SDR 35 MATCH EXISTING GRADE
- FLEX-SEAL ADJUSTABLE REPAIR COUPLING ("SHIELDED FENCO") OR EQUAL, TYPICAL ALL

**SEWER REPAIR PROFILE**

- ¾" CRUSHED GRAVEL COMPACTED TO 95% MINIMUM ASTM D-1557, TYPICAL ALL SEWER REPAIRS.

**NOTE:**
1. SEE PAGE 12 FOR GENERAL NOTES.
2. SELECT BEDDING AND BACKFILL IS REQUIRED 6" UNDER 12" ON SIDES AND 12" OVER SEWER, FITTINGS AND MAIN.
3. IF DAMAGE IS CAUSED TO SEWER MAIN, DUE TO NOSE-ON AND/OR OTHER MEANS, CONTRACTOR WILL BE HELD RESPONSIBLE FOR REPAIRS.
4. SEWER SHALL BE VIDEO INSPECTED AND VIDEO PROVIDED TO GHD IN DIGITAL FORMAT.
5. IF EXCAVATION IS WITHIN 2 FEET OF A BELL CONTRACTOR TO REMOVE BELL AND EXTEND REPAIR TO CUT.

Granger-Hunter Improvement District 2019
Typical Grease Interceptor

Notes:
1. See page 12 for general notes.
2. 1,000 gallon minimum outdoor grease interceptor. This interceptor is not a replacement for an appropriately sized and located indoor grease interceptor. Indoor grease interceptors shall comply with all W.V.C. and I.P.C. requirements and specifications and be plumbing and drainage institute certified.
3. Cover shall be flush with finish grade.
4. No more than one grade ring (1’ max.) allowed per ring and cover. If more rise is required, a shell section with center wall shall be installed.
5. Sanitary sewer (S.S.) shall not run through the sampling manhole and/or grease interceptor. S.S. shall be connected to the sewer lateral downstream from the sampling manhole.
6. Select bedding and backfill is required 6” under and on sides of the grease interceptor.
7. 3/4” minus to be used for bedding and backfill.
8. Between two different materials, such as clay to P.V.C., use flex seal adjustable repair couplings ("shielded ferrule") or equal (no-hub bands are not allowed).
9. For inspection, fill grease interceptor with water above inlet and outlet water tight grout joints.
10. Pipe shall be P.V.C. SDR 35.
11. Grease interceptor shall be suitable for H-20 loadings.
12. Grease interceptor shall be vented through building plumbing.
Typical Sampling Manhole

NOTE:
1. SEE PAGE 12 FOR GENERAL NOTES.
2. THE EXISTING SEWER COLLECTION SYSTEM SHALL REMAIN IN SERVICE DURING CONSTRUCTION.
3. ALL MANHOLES SHALL HAVE A CONCRETE COLLAR PER A.P.W.A. PLAN 574.
4. SELECT BEDDING AND BACKFILL IS REQUIRED 6" UNDER, 12" ON SIDES AND 12" OVER SEWER SAMPLING MANHOLE, LATERAL FITTINGS AND MAIN.
5. SELECT BEDDING AND BACKFILL SHALL BE 3/4" MINUS GRAVEL. PIPE BEDDING SHALL BE COMPACTED TO 95% MINIMUM ASTM D-1557.
6. MINIMUM TRENCH WIDTH SHALL BE EQUAL TO OUTSIDE PIPE DIAMETER PLUS 1 FOOT ON EACH SIDE OF PIPE.
7. TYPE OF PIPE SHALL BE P.V.C. SDR-35.
8. MINIMUM GRADE FOR 4" P.V.C. SDR-35 IS 2% OR 1/4" PER UNEAL FOOT.
9. BETWEEN TWO DIFFERENT MATERIALS, SUCH AS CLAY TO P.V.C., USE FERNICO COUPLERS OR EQUAL (NO-HUB BANS ARE NOT ALLOWED).
10. DISTANCE BETWEEN CLEANOUTS NOT TO EXCEED 60'.
11. BENDS TOTALING 90° MUST BE BACKED BY A CLEANOUT.
12. SEWER LATERALS MAY RUN UNDER DRIVE APPROACH, PERMITTING TOP OF CLEANOUT IS NOT UNDER CONCRETE.
13. ALL LATERAL PLUGS SHALL BE SLIP IN SOLID PLASTIC PLUGS (BRANDT PLUGS ARE NOT ALLOWED).
14. IF DAMAGE IS CAUSED TO SEWER MAIN, DUE TO M.H. INSTALLATION AND/OR OTHER MEANS, CONTRACTOR WILL BE HELD RESPONSIBLE FOR REPAIRS.
15. SANITARY SEWER SHALL NOT RUN THROUGH THE SAMPLING MANHOLE AND/OR GREASE TRAP. SANITARY SEWER SHALL BE CONNECTED TO THE SEWER LATERAL DOWNSTREAM FROM THE SAMPLING MANHOLE.
16. SAMPLING MANHOLE SHALL BE SUITABLE FOR H-20 LOADINGS.
Inspections & Testing

Pre-Inspection Requirements

Work may commence when the following items are completed:

- GHID has been provided with the contractor’s License and Permit Bond, General Liability Insurance Certificate, Workers Compensation and Employer’s Liability Certificate or State Of Utah approved waiver.
  - Original $5,000.00 License and Permit Bond required.
  - General Liability Insurance Certificate. Original, PDF, and faxed copies are acceptable.
    - $500,000.00 Minimum coverage for work being performed within private property
    - $1,000,000.00 Minimum coverage for work being performed within a public right of way.
    - Granger Hunter Improvement District (GHID) shall be named as the Certificate Holder and Additional Insured.
  - Workers Compensation or a State of Utah approved waiver. Original, PDF, and faxed copies are acceptable. Alternatively, this coverage may be shown on the General Liability Insurance Certificate. Original, PDF, and faxed copies are acceptable.
- The project has a “GHID Final Review” stamped on the drawing with a date and signature from an approved GHID representative.
- All applicable connection and/or inspection fees are paid in full.
- A preconstruction meeting has taken place with the Developer, the Contractor who will be installing the utilities, and one or more GHID Representatives. (Note: It is the Developer/Contractors responsibility to schedule a preconstruction meeting.)

Inspection Requirements

- Developer/Contractor must give GHID a minimum of 24 hours’ notice prior to all inspections. When scheduling inspections please note that:
  - GHID’s inspection hours are from 8:00 AM to 4:00 PM Monday – Thursday, excluding all holidays.
  - Inspections shall be scheduled by calling GHID’s office at 801-968-3551.
  - No inspections will be scheduled from voice mail messages. If necessary please leave a message to call you back.
  - Additional inspection fees may be assessed if a GHID representative is dispatched, and the job is not inspection ready. Please give as much notice as possible for cancellations.
- All work completed that has not been inspected will be required to be uncovered and inspected prior to any final acceptance given for the project. Please note that:
  - Projects that have not been given a final acceptance letter will not be allowed to connect to GHID’s water and sewer Utilities, and/or,
  - Projects that are connected to GHID’s Utilities will be considered to be in default, and the connection will be terminated until final acceptance is given.
- In the event a stop work order is issued, the Developer/Contractor shall stop work and comply with all requirements set forth by GHID inspectors.
- Within 10 days of installation, the Developer/Contractor shall test each backflow device and submit test certificates.
- Prior to final inspection, the Developer/Contractor shall sign up for service for each property being inspected. The Developer/Contractor shall coordinate meter installation (for meters less than 4-inch) or install the meter (4-inch and greater) and coordinate installation of the MXU.
Water Shutdown Requirements

Water shutdowns may commence when all of the following items are completed:

- Developer/contractor has satisfied all pre-inspection requirements (see pre-inspection requirements for details).
- Developer/contractor has given Granger Hunter Improvement District (GHID) a minimum of 10 business days' notice prior to any scheduled water shutdown.
  - If any problems arise with the scheduled water shutdown, GHID shall notify the contractor within the 10 business day time frame.
  - Proper notice and approval must be given for all water shutdowns (private and public).
  - All water shutdowns shall be scheduled on a Tuesday, Wednesday, or Thursday between the hours of 8:00 Am to 4:00 Pm. Any deviance from these dates and times will constitute an after-hours shutdown and may require additional notification time for approvals.
- GHID has approved the proposed water shutdown:
  - Developer/contractor shall give all affected parties (i.e. residences, businesses, etc.) a minimum of 48 hours written notice prior to the scheduled shutdown.
  - It is the developer/contractors responsibility to meet all reasonable needs required by all affected parties (i.e. residences, businesses, etc.) prior to the scheduled water shutdown.
  - Only approved GHID personnel shall open or close all public water valves

Disinfection & Testing

Disinfection and testing of water mainlines shall conform to AWWA C600, C651 and APWA 33 13 00 Specifications (current version) in addition to the following requirements and exceptions:

- Contractors are not to operate public mainline valves. Private valves may be opened and closed by the Contractor, but shall be coordinated with GHID staff. GHID staff will be responsible for opening and closing all public mainline valves.
- Once the line has been filled and chlorinated, the line must remain static for a minimum of 24 hours to allow the disinfection process to occur.
- Care must be taken when disposing of chlorinated water. Contractor shall be required to neutralize the chlorinated water before discharging.
- After flushing is completed, GHID staff will take a chlorine residual test. If amounts do not correlate with GHID standards, additional flushing will be required.
- Bacteriological samples shall be obtained by GHID staff. Frequency of samples shall be a minimum of 1 sample per 1000 feet of pipeline. If sample(s) are positive, the Contractor shall repeat chlorination and flushing steps and shall be responsible for all retesting costs.
- Pressure testing is required by the Contractor on all water lines. A hydrostatic pressure of 200 psi must be maintained for two hours. All components for the pressure test must be supplied by the Contractor.

Sewer Testing

Sewer mainline testing shall conform to the APWA 33 33 00 Specification (current version) in addition to the following requirements and exceptions:

- Contractors are required to provide a means of protecting GHID's Sewer System prior to and during construction. This can include: Test balls, and false bottoms in addition to any other reasonable means as requested by the inspector.
Prior to performing any testing it is recommended that the sewer line is cleaned and vacuumed.

- **Deflection testing**
  Mandrel testing. Mandrel shall be 95% of the diameter of the pipe that is being tested. If there are any sections of the pipe being tested that fail for any reason it is the responsibility of the contractor to make those repairs. After completion of any such repairs the section of pipe must be retested.

- **Video Inspection**
  CCTV Inspection of all sewer mains is required. This is a way of visually inspecting the quality of workmanship, in addition, to any irregularities. This also allows GHID to record the position in which the sewer laterals connect into the Sewer main.

- **Air Test**
  All contractors shall provide air test on 8'' or larger pipes for 2 hours at 6 lbs or a visual water test on 6'' or smaller for 2 hours.

### Abandonments

**Permanent Water Abandonment**

- Mainline – To be abandoned per District Engineer’s instructions.
- Lateral – To be abandoned at main. Corp stop to be shut off and 1’ minimum physical disconnection.

**Permanent Sewer Abandonment**

- Mainline - To be abandoned per District Engineer’s instructions.
- Lateral – To be abandoned at main. CIPP with pre and post inspection video or physical disconnect and cap at the main with concrete. Brandt plugs not accepted.

**Temporary Water and Sewer Disconnect**

- To be capped at a point that is clear of future construction and marked with a 2x4.

All abandoned lines to be inspected prior to being buried.

NOTE: It is the contractor’s sole responsibility to comply with all State of Utah, Salt Lake County, West Valley City, and GHID requirements and specifications. For GHID requirements and specifications please visit us at our office (2888 South 3600 West), go to our website (www.ghid.org), or contact our engineering department (801-955-2219).