Aqua Pennsylvania, Inc. New Business Package

This package is intended to guide the Engineer and Drafter through the design and illustration process for Aqua Pennsylvania, Inc. ("Aqua") main extension and main relocation projects. Please complete the checklists provided within the package and forward a copy of each, with each submittal of a main extension/relocation plan. The information provided herein, if utilized, ensures proper design and illustration thus allowing for rapid plan approval and project authorization.

Plans will not be finalized, projects will not be authorized and a Builder's Extension Agreement will not be written until the following items are submitted to and accepted by Aqua:

1) A full set of Approved Land Development Plans, which must be included with the first submittal of main extension/relocation plans.
2) A letter from the municipality's Fire Marshall approving the proposed fire hydrant locations and stating the municipality's fire flow requirements in gpm and psi. Aqua will perform a hydraulic analysis to ensure that the municipality's requirements are met.
3) Completed Service Applications and a list of addresses for which service will be provided in conjunction with the main extension/relocation project.
4) A copy of the recorded deed.
5) Upon plan approval by the New Business office, a final signed and sealed (by a professional engineer) set of main extension/relocation plans are to be submitted as a pdf document. The plans are also to be submitted, in AutoCAD 2021, if you are submitting the electronic version of the plans in either an earlier version of AutoCAD or a different drafting program entirely please include, in your cover letter, Auto CAD version date or the name of drafting program. Save all files as .dwg.

All mains crossing foreign utility pipelines are to be reviewed by Aqua for Cathodic Protection and will be subjected to modifications, by the submitting engineer, to ensure proper protection, as required by Aqua Pennsylvania, Inc. and/or its agents. Please note that all crossings require a corresponding profile within the plan set (see Drafting Symbols).

If you have any questions or concerns please feel free to contact Mike Linkiewicz, New Business Representative, at 610-645-4230.

Questions concerning services should be directed to Deanna Ciotti, New Service Representative, at 610-541-4160.

AQUA PENNSYLVANIA
DRAFTING SPECIFICATIONS

All plans being prepared and turned over to Aqua Pa. for the purpose of extending water mains are to be submitted under the following:

1. All the drawings are to be prepared and revised electronically on AutoCAD Release # 2021 or earlier. No electronically created / manually revised plans will be accepted.

2. All drawings are to be drawn using the Aqua Pa drawing format, layer list and title block provided.

3. No custom linetypes are permitted.

4. The use of Model / Paper space is acceptable.

5. *Viewpoint Presets* (command: DDVPOINT) are to be established as:
   Set Viewing Angles: select: *Absolute to WCS*
   From X Axis: 270.0
   From XY Plane: 90.0

6. In Model Space (*Model* tab) the North arrow is to be set at the 12:00 position. The *"DVIEW / TWIST"* option is to be set at: 0. The use of *"DVIEW / TWIST"* in Model Space when the *"LAYOUT"* tab is active is encouraged in order to achieve a desired effect. (See #13 below regarding North Arrow rotation)

7. All *elevations* are to be set at: 0; *Z* value = 0. No 3-D or Isometric drawings.

8. All *line weights* are: "By Layer" value.

9. All *POLYLINES* are to have a width of "0", except for Proposed Water Mains which are to have a width of "1".

10. All *colors* and *linetypes* are to be *"By Layer".*

11. All drawings are to be drawn on a 1:1, or full-scale format in Model Space.

12. All drawing plots are to have a scale of 1" = 30'.

13. In all *Layout* tabs, the North Arrow is to be located in the upper left-hand corner in the drawing fields. The preferred position would be straight up (12:00 o'clock); when this position is not possible then any rotation starting at 9:00 o'clock (rotating clockwise) and ending at the 3:00 o'clock position will only be accepted.

14. A Base Drawing complete with Layers, Title Block w/attributes, all necessary text styles & dimension styles for various scales is provided. Supplied but not loaded in the base drawing is a library of frequently used symbols. Insertion of these symbols requires placement on the correct layer. All text located in the body of the drawing is to be UPPER CASE. Do not underline any text.

15. When submitting ACAD files all *XREF's* must be *"BOUND"* utilizing the *"INSERT"* option.

16. On projects where the scope of work requires multiple layout tabs, a *MATCHLINE* must be used. Matchlines must be perpendicular to the road where required. Matchlines must be in *"MODELSPACE"* being a polyline having a width value of 3, and a length value of 100 or long enough to act as cutting plane through the road including the Right of Way and related utilities. The viewport(s) are to be trimmed utilizing the matchline.

17. All drawings are to be filed using the plan number as the drawing file name (eg. A4199.dwg = plan number A-4149).

18. All drawings illustrating proposed work to be done on a State owned road are to have all of the required details necessary for a State Highway Occupancy Permit Application.

19. All drawings are to illustrate the existing features relevant to the location of the proposed site.

20. A digital ortho photo of the work area is provided as a base plan template. Please do not delete this file from the drawing when submitting. To minimize the "open time" of the drawing please turn off the ortho layer prior to closing the file.

When encountering a situation not covered above and questions regarding the ACAD layer list please contact the following personnel:

James Thornton at 610-525-1400 x 52025

DRAFTING CHECK LIST (NEW BUSINESS)

___**1)** Location map required on first/cover sheet of plan

___**2)** Cover sheet (required on extension/relocation plans containing two or more sheets)

___**3)** Key map required on every sheet of multiple sheet plans

___**4)** One-call block must be filled (above the material record)

___**5)** Proper orientation of north arrow

___**6)** R/W illustrated and dimensioned

___**7)** C/W illustrated and dimensioned

___**8)** All Street names must be illustrated. Show stations when provided for approach main and interior every 50 feet.

___**9)** Curbs, sidewalks and driveways must be illustrated and identified

___**10)** Lot numbers, property lines, addresses and buildings must be illustrated and identified. First floor or Top of Block elevations must be provided for all buildings (proposed and existing)

___**11)** Existing fences, trees, bushes and other physical features must be illustrated and identified where approach mains are required. For existing /proposed trees or plantings close to or within public or private r/w, identify species

___**12)** Utilities located (existing and proposed)
- ___***a.*** Poles with identifying numbers
- ___***b.*** Pipelines called out (size and material)
- ___***c.*** Conduit called out (size and material)
- ___***d.*** Storm inlets, manholes and piping. Indicate inlet numbers (for easy reference to profiles) and top of grade ("T.O.G") elevations
- ___***e.*** Sanitary lines and manholes illustrated and identified. Indicate manhole numbers (for easy reference to profiles) and Rim elevations

___**13)** Existing water main illustrated and identified (double line - continuous)
- ___***a.*** Main size and material
- ___***b.*** Extension number and plan number must be illustrated
- ___***c.*** Valves must be illustrated (double line, located to scale)
- ___***d.*** Hydrants must be illustrated (double line, located to scale)
- ___***e.*** Known depth to be identified
- ___***f.*** Distance from edge of curb or edge of macadam ("E.O.M") must be identified

___**14)** Proposed water main illustrated to scale (**bold, solid line - continuous**)
- ___***a.*** Indicate size and material
- ___***b.*** All fittings, valves and components referenced and illustrated. Vertical bends are illustrated, called out and a profile is provided
- ___***c.*** Hydrants located and identified (within R/W lines).
- ___***d.*** Distance from E.O.M. or Face of Curb to Center Line of main must be illustrated
- ___***e.*** Indicate blocking
- ___***f.*** Installation dimensions (fitting to fitting) must be illustrated
- ___***g.*** Need a north and south distance from the proposed tap valve to the nearest line valve and/or the Center Line of the nearest existing intersection for reference
- ___***h.*** Duck Under and/or Cross Over illustrated with associated dimensions

___**15)** Water main to be abandoned illustrated and identified (striped & continuous)
- ___***a.*** Main size and material
- ___***b.*** Extension number and plan number must be illustrated
- ___***c.*** Linear feet of main to be abandoned noted in prescribed location
- ___***d.*** Valves must be illustrated (located to scale)
- ___***e.*** Hydrants must be illustrated (located to scale)
- ___***f.*** Known depth to be identified
- ___***g.*** Distance from edge of curb or E.O.M. must be identified

___**16)** Proposed service lines illustrated and identified (continuous)
- ___***a.*** Company Service size and material to curb
- ___***b.*** Dimensions must be identified

___**17)** Linear feet of macadam breakage (above area intended for professional engineer's seal) must be filled in

___**18)** All PennDot PATA'S and Pub 213 and Restoration details as required for HOP

___**19)** All Notes (as per examples in New Business Package) General and PennDOT

___**21)** Title block information completed (some information to be provided during first review)

___**22)** Plan is initialed and dated

___**23)** Full Set of Land Development Plans

___**24)** Completed Service Application

___**25)** Fire Marshall's Requirements (Fire Marshal Letter)

CHECK LIST
STATE HIGHWAY PROJECTS

___**1.** Plans are of sufficient quality for microfilming.

___**2.** Show detailed location and pertinent horizontal & vertical dimensions of the opening.

___**3.** Illustrate proposed utility installation (ex: 6" D.I.P. 3" P.V.C. CONDUIT, etc)

___**4.** Illustrate related highway information on plan.

___**5.** Illustrate specific highway location

S.R. 3027

SEG 0010

OFFSET 2660

___**6.** Illustrate centerline. Identify and dimension.

___**7.** Illustrate edge of macadam or curbs; identify them as E.O.M. or CURB.

___**8.** Illustrate outside edges of shoulder and identify.

___**9.** Illustrate guide rail and type.

___**10.** Illustrate storm sewer drains and piping and identify.

___**11.** Illustrate sanitary sewer manholes and piping.

___**12.** Illustrate Right-of-Way lines. Identify (R/W) and Dimension.

___**13.** Scale of drawing must be 1" = 30'.

___**14.** Dimension from edge of paving to proposed pipe.

___**15.** Illustrate proposed of existing utilities that may be affected.

___**16.** Illustrate structures within the right-of-way that may be affected.

___**17.** Show cross sections where highway cross sections change

(Ex: fill to cut, cut to fill, widening, etc).

___**18.** State specifications to be illustrated on first sheet of project:

a. Traffic control plan (Act 203 booklet)

b. Location plan (upper right hand corner of sheet)

c. Overlay detail (Rigid or Flexible paving)

d. Shoulder overlay detail, when needed.

___**19.** State stations number must be illustrated whenever possible.

___**20.** Show Mill & Overlay

___**21.** Submit Documentation as to why facility cannot feasibly be placed outside of pavement or shoulder

Separation of Water Mains, Sanitary Sewers, Storm Sewers and Existing Underground Facilities

Parallel Installation:

A water main shall be laid at least 10 feet horizontally from any existing or proposed sanitary sewer, storm sewer or existing underground facility. The distance shall be measured edge to edge. In cases where it is not practical to maintain a 10 foot separation Aqua Pennsylvania, Inc. may, on a case by case basis, allow for a deviation if supported by data from the design engineer.

Crossings:

Standard depth for the installation of a water main is 48" (four feet) but it is understood that a water main must cross building drains, sanitary sewers, storm sewers or existing underground facilities. If, due to a crossing, a water main must be installed at any depth other than the standard depth the water main shall be laid at such an elevation that the bottom (or top, in the case of storm sewers and existing underground facilities) is 18 inches above the top (or bottom, in the case of storm sewers and existing underground facilities) of the drain, sanitary sewer or existing underground facilities. A profile is required, on the main extension plan, for each crossing that requires a Duck-Under/Cross-Over. All Duck-Under/Cross-Overs shall be reviewed as to ensure acceptable depth for the water main.

Examples of text for calling out fittings on proposed water mains.

Horizontal

__" – $11^{1/4°}$ BEND (M.J.)
BLK'D w/____ S.F. CONC.

__" – $22^{1/2°}$ BEND (M.J.)
BLK'D w/____ S.F. CONC.

__" – 45° BEND (M.J.)
BLK'D w/____ S.F. CONC.

__" – 90° BEND (M.J.)
BLK'D w/____ S.F. CONC.

Vertical (See Strapping Detail Plan E-7561)

__" – $11^{1/4°}$ VERTICAL BEND (M.J.)
BLK'D w/____ S.F. CONC.

__" – $22^{1/2°}$ VERTICAL BEND (M.J.)
BLK'D w/____ S.F. CONC.

__" – 45° VERTICAL BEND (M.J.)
BLK'D w/____ S.F. CONC.

__" – 90° VERTICAL BEND (M.J.)
BLK'D w/____ S.F. CONC.

All Duck-Unders and Cross-Overs requiring Vertical Bends must have associated profiles illustrated with Dimensions.

__" x __" SWIVEL TEE (M.J.)
w/__" R.S. GATE VALVE
BLK'D w/____ S.F. CONC.

__" x __" TAP SLEEVE (M.J.)
w/ ___" R.S. TAP VALVE
BLK'D w/____ S.F. CONC.

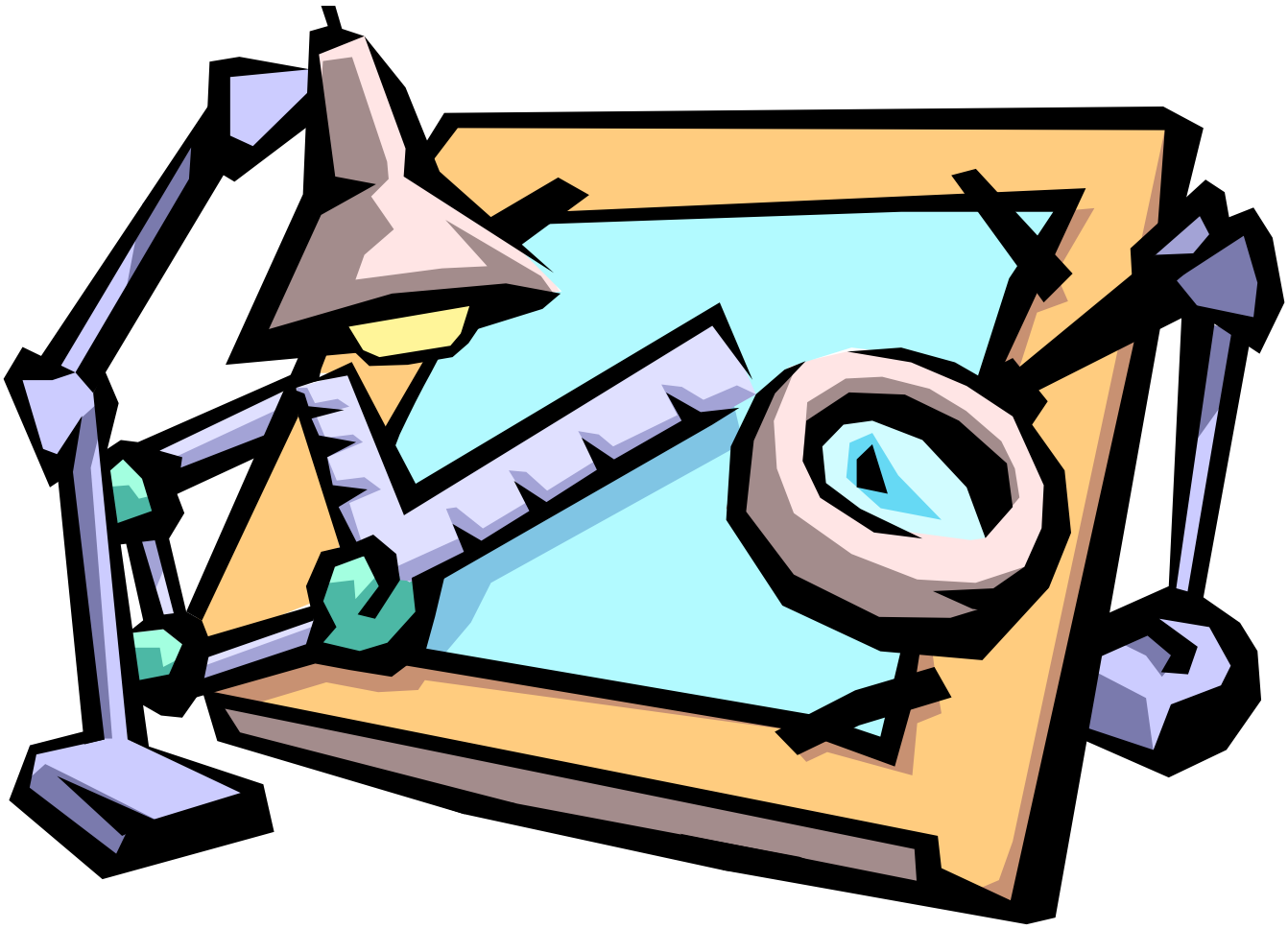
__" x 2" BLOW OFF (T.J.)
BLK'D w/ STEEL RAIL &
____ S.F. CONC.

__" x __" SWIVEL TEE (M.J.)
w/__" R.S. GATE VALVE
BLK'D w/____ S.F. CONC.
CHARGED TO FIRE SERVICE
SERIAL #_____

__" x 6" F.H. TEE (M.J.)
w/6" R.S. GATE VALVE
BLK'D w/____ S.F. CONC.
CHARGED TO F.H. #___-___
PLAN # G-_____

Identify hydrant as:
PROPOSED
6" - 3/W F.H. (M.J.)
BLOCKED W/___S.F. CONC.
(PROVIDE FOR DRAINAGE)

Drafting Symbols for Plans



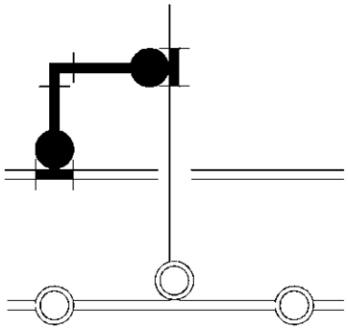
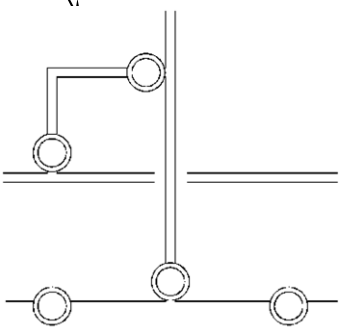
Drafting Symbols for Plans

July 10, 2018

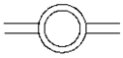
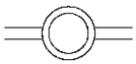
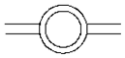
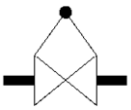
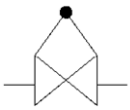
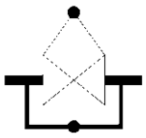
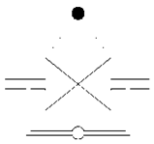
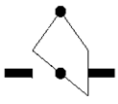
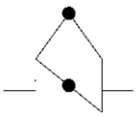
Table of Contents

Drafting Symbols for Plans continued

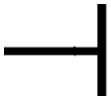
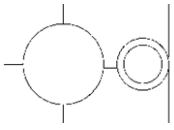
The depiction of all water facilities need to comply with our Standards. The newly installed features shall be shown on the plan as solid features. Any of the existing water mains and valves shall be shown as double continuous lines. As a review of the symbols for the plans, please take note to the following **plan views**:

	Newly Installed on plans:	**Existing Feature on plans:**
Water Main		Size Material  Ext # Plan #
Tap Sleeve & Valves		
Back Side Tap	 Plan View	 Plan View
Round Connection		Round Conn. Ext & Plan #'s 

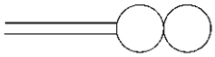
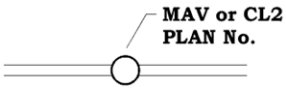
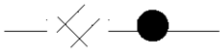
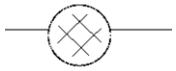
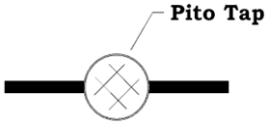
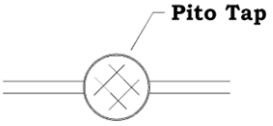
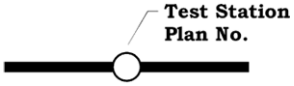
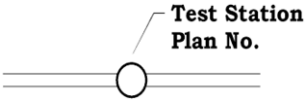
Drafting Symbols for Plans continued

	Newly Installed on plans:	Existing Feature on plans
R.S. Gate Valves (Installed with Main)		
Cut-in Valve (Installed without Main)		
Insert Valve (Installed without Main)		
Horizontal R.S. Gate Valves (Without By-Pass)		
Horizontal R.S. Gate Valves (With By-Pass)		
Butterfly Valve		

Drafting Symbols for Plans continued

	Newly Installed on plans:	Existing Feature on plans:
Regular Tees		
Tees & Valves (Installed with main)		
Tees & Valves (Installed on Existing Mains)		
Cross Over		
Fire Hydrants		

Drafting Symbols for Plans continued

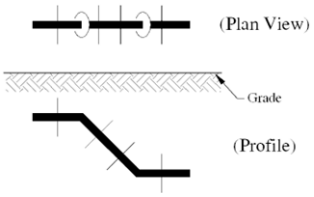
	Newly Installed on plans:	Existing Feature on plans:
Dresser Couplings / Solid Sleeves		N/A
Blow Off (Installed with main)		
Blow Off – Replaced (Installed without Main)		
M.A.V. / CL.2 Assemblies		
Combination Air & Vacuum Vent (10” – 16” Mains)		
Combination Air & Vacuum Vent (20” & Larger Mains)		
Pito Tap		
Cathodic Protection		

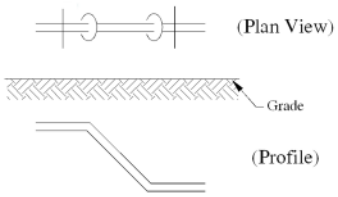
Drafting Symbols for Plans continued

Newly Installed on plans: **Existing Feature on plans**

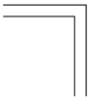
11¼° thru 45° Bends (Horizontal) (45° Bend Shown)

11¼° thru 45° Bends (Vertical) (45° Bend Shown)

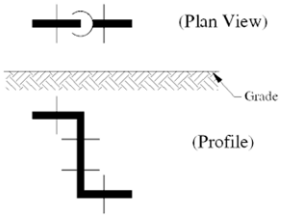


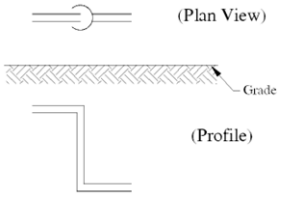


90° Bends (Horizontal)



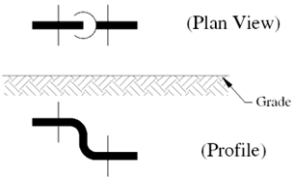
90° Bends (Vertical)

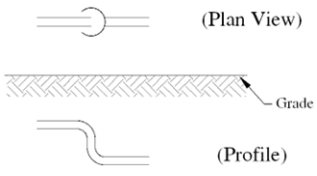




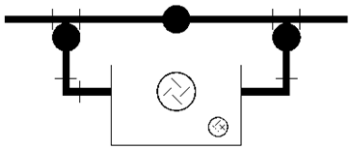
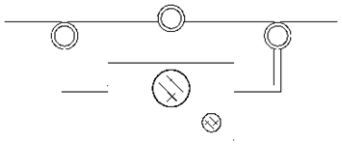
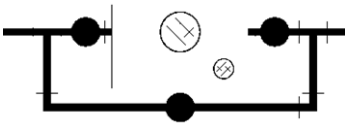
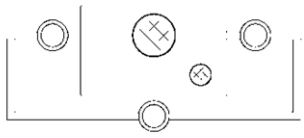
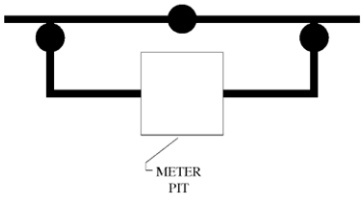
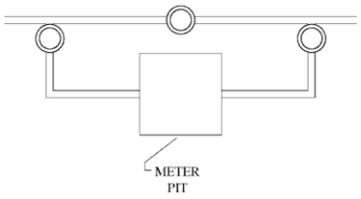
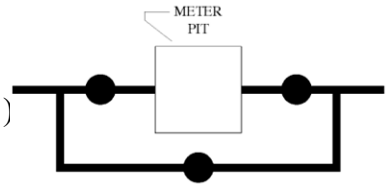
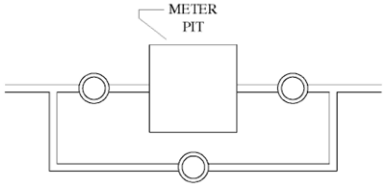
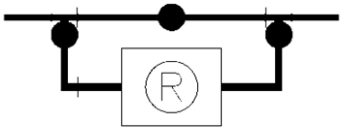
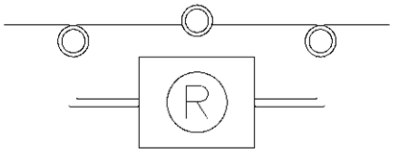
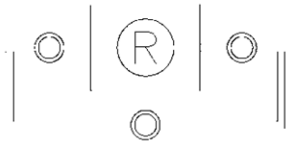
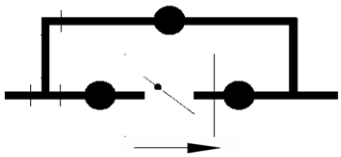
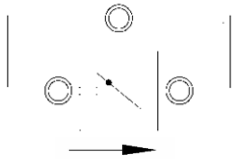
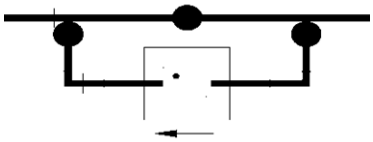
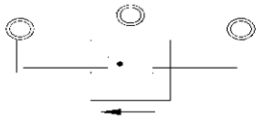
Offsets (Horizontal)
N/A

Offsets (Vertical)

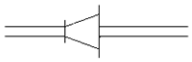




Drafting Symbols for Plans continued

	Newly Installed on plans:	Existing Feature on plans:
Combination Pits (Offset) **(Not Used for New Bus. Projects)**		
Combination Pits (In-Line) **(Not used for New Bus. Projects)**		
Meter Pits (Offset) (Venturi, Mag, etc. **(Not used for New Bus. Projects)**		
Meter Pits (In-Line) (Venturi, Mag, etc…) **(Not used for New Bus. Projects)**		
Regulators (Offset)		
Regulators (In-Line)		
Check Valve (In-Line)		
Check Valve (Offset)		

Drafting Symbols for Plans continued

	Newly Installed on plans:	Existing Feature on plans:
Reducers		
Plugs / Caps		
Man Holes N/A		
Inlets N/A		
Utility Pole N/A		

Drafting Symbols for Plans continued

Extension Plans

Proposed Main

Main to Be Abandoned (or Abandoned)

Road Right of Way

Easements

Property Lines

Center Lines

Rail Roads

Township Lines

Electric

Gas

Telephone

Sanitary

Storm

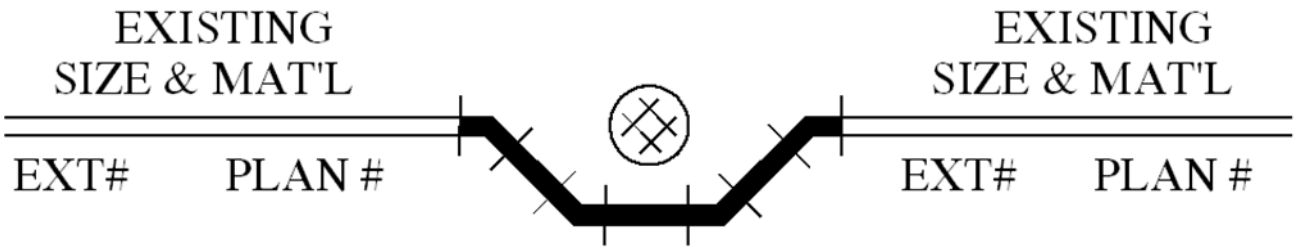
Cable

Duck Unders/ Cross Over and Jug Handles

One area that may cause some confusion is drawing Duck Unders and Jug Handles.

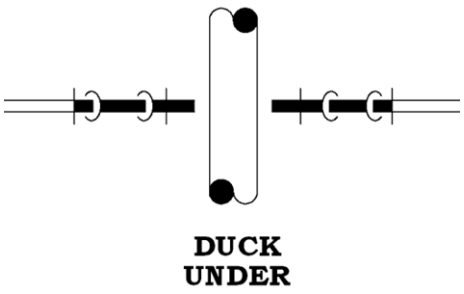
To clarify a **Jug Handle** is a horizontal configuration to go around features e.g. (Manhole). A Duck Under/ Cross Over is a vertical configuration to go under/over a feature e.g. (Storm pipe crossing).

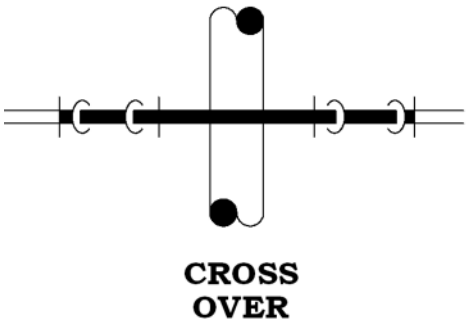
- When drawing a Jug Handle you need to only show a **plan view** of the pipe configuration. As shown: (This Example shows a Jug Handle around a Proposed Sanitary Man Hole using 45 degree bends)



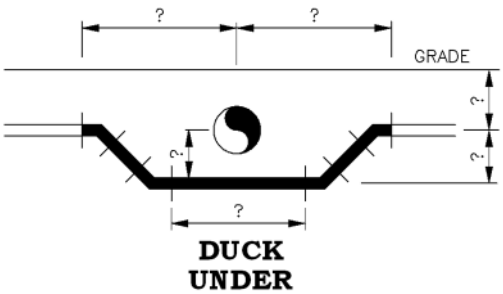
Plan View

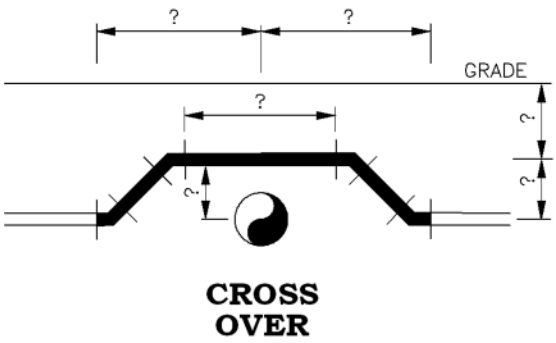
- When drawing a **Duck Under/ Cross Over** you need to draw a **plan view** and a **profile view**. As shown: (Shown using 45 degree bends)





Plan View





Profile View

GENERAL NOTES

1) All valves and fire hydrants are to open LEFT/RIGHT

2) All directional change fittings require retaining glands (Mega-Lug or equal) with the proper square footage of concrete blocking.

3) In Sink Hole Prone Areas all joints shall be restrained (Mega-Lug of equal) for Mechanical Joints and Field-Loc gaskets for Push-On Joints with the proper square footage of concrete blocking.

4) A length equivalent to two complete lengths of pipe upstream and downstream of directional change fittings require FIELD-LOK gaskets in sink hole prone areas.

5) All permanent blow-offs are to be blocked with a steel rail and the proper square footage of concrete blocking. (see detail sheet)

6) 1" M.A.V./CL_2 assemblies (see detail sheet) are required of all water main extensions. The exact quantity and location will be determined at the project site by the assigned Aqua Pennsylvania, Inc. inspector.

7) When the working Pressure of the main exceeds 80 p.s.i, Pressure Reducing Valves ARE required on the affected services. Pressure Reducing Valves are not supplied, owned, or maintained by Aqua Pennsylvania, Inc.

8) All thrust block values are determined according to the intended working pressure of the proposed main. When pressures are in excess of 200 psi, Aqua will provide specific requirements.

9) These plans were prepared from information obtained from plans provided by: _____ Sheets 1-_, Latest Revision Date: _____.

10) Easement rights shall include an additional ten (10) foot wide temporary easement on all sides during construction.

11) An additional ten (10) foot wide easement is granted for each water service that is or will be connected to the water main.

12) Field changes will be made at the discretion of the Aqua Representative or Aqua Construction Supervisor.

13) Aqua reserves the right to install a sampling station(s) on this main extension so it may collect required operational and compliance samples under DEP regulations.

PA DOT
CONSTRUCTION NOTES

1) Township to be notified prior to working near school signals and school signals shall be marked out as required.

2) Shoulder areas prone to washout shall be paved.

3) Any damage to trees or cut slopes causing them to fall shall be responsibility of permittee.

4) Main to be sleeved or encased where passing through guide rail.

5) Permittee and his contractor are responsible for familiarizing themselves with required erosion and sedimentation control measures.
Appropriate controls are to be in place prior to site disturbance and continually maintained during construction until removed. They are to be left in place until site is stable.

6) Township to be notified prior to working near traffic signal loops and shall mark out as required.

Sample Letter to municipality's Fire Marshall

Re:

Dear _____ :

In order for Aqua Pennsylvania, Inc. to complete the review of the above mentioned project, the confirmation of the municipality's specifications regarding fire flows, new hydrants being required and existing hydrant locations are required for hydraulic analysis.

Please Check One of the following two options below:

_____ Municipality will accept the location of the fire hydrants shown on the plan for the above referenced project.

_____ Municipality does not require any new fire hydrants for this project.

Please Check One of the following three options below:

_____ Municipality does not have any fire flow requirements for the above mentioned project.

_____ Municipality requires _____ gpm at _____ psi for the above mentioned project. (This should **not** be filled in if there are not any new hydrants required)

_____ Municipality will accept the available fire flows in the area of the above mentioned project.

Please Check One of the following three options below:

_____ The Township agrees to pay the monthly rental immediately after the fire hydrant(s) is placed in service.

_____ The Township requires the Builder to pay the monthly rental immediately after the fire hydrant(s) is placed in service until such time as the Township accepts dedication of the new road(s) within the Development. The Township agrees to notify Aqua Pennsylvania when dedication has occurred, at which time the Township will become responsible for the monthly rentals.

_____ The Builder and / or Homeowner Association shall be responsible for all future monthly rentals immediately after the fire hydrant(s) is placed in service.

Please return a signed, dated copy of this letter to Aqua's New Business Department.

_____ _____

Signature of Municipal Official Title of Municipal Official