



**February
2024**



DESIGN STANDARDS FOR PUBLIC WORKS CONSTRUCTION & DEVELOPMENT



CITY OF PAYETTE



WWW.CITYOFPAYETTE.COM



TABLE OF CONTENTS

<u>Chapter</u>		
I.	General	2
II.	Water	3
III.	Sanitary Sewer	9
IV.	Storm Sewer / Drainage	13
V.	Pressurized Irrigation	16
VI.	Streets	17
VII.	Residential Construction	23
VIII.	Commercial Construction	25
IX.	Project Inspection	26
X.	Landscape and Viewscape	27
	Appendix "A" Drainage Volume & Flow	28
	Standard Drawings	30

Approved	04-20-2009		
Revised	06-16-2014		
Revised	04-17-2017		
Revised	05-15-2021		
Revised	06-07-2021		
Revised	12-21-2021	R 2021-20	
Revised	05-15-2023	R 2023-04	Drainage requirements
Revised	06-19-2023		
Revised	02-20-2024		

CHAPTER I GENERAL:

The purpose of this document is to provide the development community in the City of Payette with information, process and standards for design of City infrastructure for both public and private development within the City limits. Design guidance is provided to maintain standards and best practices in accordance with the City of Payette's ordinances, policies, practices, specifications and standards.

This Document is a summary of the design standards for the City of Payette. It is derived from the Payette Municipal Code (PMC), the City of Payette Transportation Master Plan (TMP), City of Payette Wastewater Master Plan, and the City of Payette Water Master Plan, as a convenience to people wishing to develop within the City. Additional information is available in the PMC and TMP, and in the event of conflict, the parent documents take precedence over this summary.

The City of Payette has adopted the current Edition of the Idaho Standards for Public Works Construction (ISPWC). Prior to any public work development or construction, the contractors or developers shall review the above adopted standards. The City has made construction standards in conjunction with the current edition of the ISPWC. These City standards include acceptable materials, construction practices, and other specified requirements, which may not be covered under the ISPWC standards or contained in the City Code.

These standards have been made in conjunction with the current ISPWC. The intention of these Construction Standards is not to conflict with the above stated standards but rather to supplement and specify construction methods, materials, sizes, and practices. If a question arises between the two because of a conflict, then this matter shall be brought to the attention of the City Engineer or the City Administrator for clarification.

NOTE: All traffic control devices are per current MUTCD standards

Erosion control must meet State and Federal standards. Any site 1 acre or more in size must have an erosion control plan and file a notice of intent with EPA. These are State and Federal requirements, not City requirements.

CHAPTER 2 WATER:

1. General:

All materials, construction, testing, and inspection shall be in accordance with the current ISPWC Divisions 300, 400, and all other applicable divisions therein. All proposed developments shall be submitted to the City for approval according to City Ordinance. Water pipe shall be extended to the furthest property boundaries of the development.

All private water mains shall have IDEQ approval prior to connecting to the public water system. Easements for water mains, where required, shall be at least twenty (20) feet wide.

2. Fire Hydrants:

A. Spacing:

- i. Hydrant spacing shall be at no more than 400-to-500-foot intervals as approved by the Fire Chief (current IFC).
- ii. Hydrant spacing and location shall be reviewed and approved by the Payette Fire Department during the standard review required by City Ordinance.
- iii. All water mains installed on cul-de-sacs or similar dead-end streets shall have a hydrant located at the end of the water line.

B. Fire Flow Requirements:

- i. Single family residential: 1,500 gpm minimum.
- ii. Commercial, industrial, and multi-family developments are dependent on the nature of the development and suppression needs per current IFC.
- iii. Determination of fire flow requirements on an individual basis shall be based, as a minimum, on the requirements of the adopted edition of the International Fire Code and the proposed building site, configuration, size, and type.

C. Materials:

- i. Fire Hydrants shall be Mueller Super Centurion and painted with two coats of approved red Hydrant Enamel.
- ii. Fire Hydrants shall be installed with a 5" Harrington Hydrant Storz Connector.
- iii. Fire Hydrants shall be installed in accordance with the current edition of the ISPWC Section 403 and per SD 404 modified with the added requirement that the 6-inch water line from the main to the hydrant shall be Class 350 Ductile Iron.

3. Water Pipe, Fittings and Valves:

A. Materials: All Water Pipe, Fittings, and Valves shall be in accordance with current edition of the ISPWC Section 400 and 402. In addition, all PVC water mains shall be either a solid blue color or white with blue lettering. All lettering shall appear legibly on pipe and shall run the entire length of the pipe. Water pipe, Fittings and Valves shall be City approved equivalent or the following:

i. Water Pipe:

a) Lower Pressure Zone

- Pressure Class 350 cement-lined ductile iron pipe meeting ANSI/AWWA C151 for diameters of 6" to 64"; or
- AWWA C900 PVC Class 235 DR 18 pipe for diameters up to 12".

b) Intermediate and Upper Pressure Zones

- Pressure Class 350 cement-lined ductile iron pipe meeting ANSI/AWWA C151 for diameters of 6" to 64"; or
- AWWA C900 PVC Class 305 DR 14 pipe for diameters up to 12".

ii. Fittings: Ductile Iron flanged fitting or M.J. ANSI/AWWA C153.

iii. Valves:

- a) Ductile Iron flanged or M.J. valves ANSI/AWWA C509.
- b) Tracer wire at all valves shall be located on the outside of the valve box and pass through a drilled hole within 6" of the top of the box. The wire is not allowed to come into the valve box from the bottom or between the valve box and the slip top. See SD-406.
- c) Water valves manufactured by Mueller or Clow.
- d) Valve box in paved areas shall have an 18-inch diameter concrete collar per SD-406. Concrete shall be Class 3000 and include a minimum of 1.5 pounds of fibermesh per cubic yard.

B. Trench Backfill: See Chapter 6, Section N of these Design Standards.

C. Thrust Blocks: Thrust blocks shall be placed in dry conditions and in accordance to the specifications set forth in the current edition of the ISPWC, SD-403.

- D. Testing: Water Mains shall be tested by the Contractor prior to permitting such water mains to be open to the distribution system. City personnel or designer shall be present during all water main testing. Failure to have City personnel present is sufficient reason for requirement to retest. Developer's engineer shall provide certification of testing and testing results to the City and City Engineer.
- i. Disinfection: Water mains shall be disinfected according to the specifications set forth in the current edition of the ISPWC section 401.3.9 prior to pressure testing.
 - ii. Pressure Testing: Water mains shall be pressure tested according to the specifications set forth in the current edition of the ISPWC section 401.3.6. exceptions are as follows:
 - a) If pressure during testing drops 5 psi or more the test is considered to have failed regardless if leakage is below allowable.
 - b) All valves shall be exposed prior to any testing.
- E. Location: Water mains shall be designed so a minimal number of non-potable water crossings occur in the construction for developments and that they generally follow the corridor described below. All water line locations will be approved by the City Water Works Supervisor or the City Engineer. Valves that are connected to the City main lines become city property and can only be operated by city personnel. Non-potable water crossings shall be in accordance with ISPWC SD-407. Lines shall be extended to furthest property boundary.
- F. Typical corridor: Water mains shall be located as follows unless otherwise approved by the City Water Works Supervisor or the City Engineer.
- i. 5'-10' north and east of centerline
 - ii. Minimum 4' from lip of gutter
 - iii. Minimum 10' separation from non-potable lines for mains and services
- G. Size: Water main sizes shall be the following except when otherwise recommended by the City Engineer for fire flows or other system conditions:
- i. Minimum size is 8" in diameter.
 - ii. Mains may have to be upsized per Water Master Plan (copy at City Hall).
- H. Valve configuration shall be as follows:
- i. All tees as a minimum shall have one valve on the run and one valve on the branch.
 - ii. All crosses shall have valves on all legs.
 - iii. When connecting new water line to an existing water line that is 10" or greater, a valve at all branches (except at a hydrant) is required.

- I. Cover: Water mains shall have a minimum of 48" cover and a maximum cover of 60". Cover greater than 60" may be allowed where obstructions occur but must be approved by the City.
- J. Dead-end Water Mains: Dead end mains shall be avoided whenever possible.
 - i. Dead end water mains shall only be permitted when phased development is approved and water service scheduled to continue along the water main run, or on approved cul-de-sacs.
 - ii. Dead-end water mains shall terminate with a valve followed by at least 10 feet of water line with an end cap and thrust block clearly marked at the surface.
 - iii. Dead end water mains shall have a Fire Hydrant within 10 feet of the termination of the main.
 - iv. A water valve shall be placed at the nearest tee, cross, or other on the leg of the dead-end run.
- K. Water Main Stubs: No water services shall be installed on water main stubs to future developments.
- L. Water Mains shall be extended to the furthest property boundary to enable future development to connect and extend.
- M. Water Valves shall be anchored to tees or crosses when appropriate with all-thread bolts (stainless steel or galvanized) or strapped to thrust blocks with galvanized straps and approved by the City.
- N. At all times, when laying pipe is not in progress, open-end pipe shall be closed by watertight plug.
- O. Contractors working in the city are not to open, close, or tamper with any valve. The contractor shall notify the city when a valve needs to be opened or closed.

4. Water Services:

- A. Static delivery pressure at each service shall be between 50 + 80 psi as measured at the meter
- B. Separate services are required for each building. Separate services are required for each living unit in a building when the potential for individual ownership exists.
- C. Service Lines: Service lines shall be minimum 1" diameter Class K copper pipe on ductile iron mains or 200 psi copper tubing size poly pipe on PVC mains with stainless steel stiffeners with tracer wire from water meter to water main.

- D. Saddle: Saddles for water mains shall be ductile iron with stainless steel band, IP or CC threads, or City approved equivalent. Saddle with stainless steel band required at all main line connections. Saddles 12" or greater shall have a stainless-steel double strap.
- E. Corporation Stop: Corporation stops shall be brass ball corporation stop or City approved equivalent. Corporation stops required at all main line connections.
- F. Curb Stop: Curb stops shall be brass curb stop or City approved equivalent. A curb stop is required at the base of the meter setter on the water main side.
- G. Meter Setter $\frac{3}{4}$ " or 1" service: Meter setters shall be a minimum of 18", with or without leg. There shall be a brass ball angle valve (no keyway), also a brass dual check valve. There shall be a brass ball curb valve before the setter. A five (5) foot section of Class K copper or 200 psi poly pipe with tracer wire shall be extended on the customer side of the meter vault. The meter shall be centered in the meter vault. All grip joint fittings required.
- H. 2" service: Meter setters shall be a minimum of 18". There shall be a brass ball angle valve (no keyway), also a brass dual check valve. There shall be a bypass valve located at the bottom of the setter. PVC stabilizers will be used. There shall be a 2" resilient gate valve before and after the setter. Cast iron valve boxes labeled water will be located on the 2" valves. A five (5) foot section of Class K copper or 200 psi poly pipe with tracer wire shall be extended on the customer side of the meter vault. The meter shall be centered in the meter vault. All grip joint fittings required.
- I. Fencing: 6' nine-gauge chain link with 3 strands of barb wire. Schedule 40 top rail. 4' man gate and 16' cantilever gate.
- J. Meter Vaults: Meter vaults shall be made of 18" smooth interior corrugated HDPE pipe for single meters, ADS N-12. Dual meter pits shall be made of 21" smooth interior corrugated HDPE pipe. Meter vault lids shall be D&L Foundry USA L-2240 for single and 2244 for double. Water Meter Cover with recessed, offset hole. The knockout shall be in place.
- K. Meter vaults shall be located on the opposite side of a building lot from the location of mailboxes.
- L. Meters: All water meters shall be a 5/8 inch by $\frac{3}{4}$ inch Neptune T-10 with Pro-Coder R-900I for up to one inch (1") diameter service and Neptune T-10 for greater than one inch (1") diameter.
- M. Location: Water services shall be located within the City's right of way approximately one foot (1') from the property line unless otherwise approved by the City Water Works Supervisor or the City Engineer. A one inch (1") diameter electrical conduit shall be provided between meter vaults that adjoin a common property lot line.
- N. The developer shall provide and install all materials for water services except the water meter. The City shall provide water meter.

5. Construction:

- A. By licensed plumber and/or a licensed public works contractor.

6. Locators & Markers:

- A. All non-metallic water mains shall be installed with a continuous, magnetically detectable warning tape installed four (4) to six (6) inches below finished grade directly over the pipe and be continuously marked "Caution, Water Main Buried Below" for location purposes. A continuous 12-gauge copper tracer wire shall be installed the full length of all non-metallic water mains. Locate wire shall run on outside of valve box then through a hole located at the top (see SD-406). In addition, all PVC water mains shall be either a solid blue color or white with blue lettering. All lettering shall appear legibly on pipe and shall run the entire length of the pipe.
- B. All Ductile Iron water mains shall be installed with two (2) brass wedges at every joint.
- C. On curbed streets the exact location for each installed service shall be marked by etching or cutting "W" in the concrete curb. Where no curb exists, locations shall be adequately marked by a method approved by the City. A steel post shall be placed at the end of each service similar to ISPWC SD-512.

CHAPTER 3 SANITARY SEWER:

1. General:

- A. All materials, construction, testing, and inspection shall be in accordance to the current edition of the ISPWC Divisions 300, 500, and all other applicable divisions therein. All proposed developments shall be submitted to the City for approval according to City Ordinance.
- B. Public and private sewer mains to be 8-inch minimum diameter. May need to be upsized per master plan. Public sewer mains shall be extended through all new development to allow future development to connect to and extend the main so far as gravity flow can be maintained.
- C. Public sewer mains shall end at a manhole. Cleanouts are not allowed on public sewer mains. No surface water, downspouts, foundation drains, or other drainage to be attached to sewer services or the main sewer line. (PMC 13.08.037).
- D. Easements for sewer mains, where required, shall be at least twenty (20) feet wide.

2. Industrial Users:

Pretreatment is required per PMC 13.10.

3. Testing:

Sanitary Sewer Mains shall be tested by the Contractor prior to permitting such sewer main to be open to the collection system. City personnel or designated representative shall be present during sewer main testing. Failure to have City personnel or designated representative present during all testing is sufficient reason for requirement to retest. Developer's engineer shall provide certification of testing and testing results to the City and City Engineer.

- A. Pressure Testing: Sanitary Sewer mains shall be pressure tested according to the specifications set forth in the current edition of the ISPWC.
- B. Visual Test: A televised video of all sections of sewer mains shall be provided to the City. All visible leaks shall be repaired, even though the leakage may be below allowable limits. All repairs shall be inspected by the City prior to backfilling.
- C. Trench Compaction Testing: Trench compaction testing shall be in accordance with Section 6. N. Testing and retesting shall be in accordance with the specifications set forth in the current edition of the ISPWC.

4. Cover:

- A. Where possible sewer to be at depth to provide basement service (PMC 13.08.036).

- B. 6.5-foot typical to avoid conflict with water mains and services. Sewer pipes which have 6 feet or less of cover shall be constructed of water class pipe to accommodate installation of water services which may cross the street in the future.
- C. 3.5-foot minimum

5. Typical Corridor/Location:

- A. 5'-10' south and west of centerline
- B. Minimum 4' from gutter
- C. Maximum 400' manhole spacing
- D. Minimum 0.10' drop through manholes
- E. Minimum slopes per Ten State Standards (Recommended Standards for Wastewater Facilities, A report of the Wastewater Committee of the Great Lakes – Upper Mississippi River, 2004 edition)

6. Private sewer mains:

In some instances, developer may desire to install a private sewer main as defined by Idaho Department of Environmental Quality (IDEQ). A sewer main collects sewage from more than one building. Plans for all such private mains must be prepared by a professional engineer licensed in Idaho. The City Engineer may review and approve such plans if the design flow is less than 2,500 gallons per day. Sewer mains which have a design flow greater than 2,500 gallons per day must be reviewed and approved by IDEQ prior to construction. The City requires that all sewer mains which connect to the City sewer line be connected via a manhole. Developer must show proof of approved plans to City prior to connecting private sewer main to public sewer main. See ISPWC Standard Drawings SD-511 and SD-511A.

7. Manholes:

- A. Materials: Sewer manholes shall be constructed in accordance with the current edition of the ISPWC. Manholes shall have concentric cones and shall not have steps.
- B. Grout shall be placed around the ends of the sewer pipes where they enter and exit the manhole.
- C. Manholes located in paved areas shall have concrete collars per SD-508. Concrete shall be Class 3000 and shall include 1.5 pounds of fibermesh per cubic yard.
- D. Testing: Sanitary sewer manholes shall be tested prior to permitting such sewer manhole to be open to the collection system. Testing shall be in accordance with current edition of the ISPWC. City personnel or designated representative shall be present during testing. Failure to have

City personnel or designated representative present during all testing is sufficient reason for requirement to retest. Developer's engineer shall provide certification of testing and testing results to the City.

- E. Location: Sewer manholes shall be located within 5'-0" of the centerline of the street unless otherwise approved by the City Public Works Supervisor or the City Engineer.
- F. External sealing system: All manholes shall be watertight. An external sealing system may be required to be installed on the outside of the manhole at the barrel joints in addition to the joint sealing system specified in the current edition of the ISPWC.
- G. Connection into an existing manhole or construction of a drop manhole or special manhole shall not be accepted without full time inspection by approved City staff or the City Engineer.

8. Pressure Sewer Pipes:

- A. Materials: All pressure sewer pipes shall be in accordance with the current edition of the ISPWC. Pressure sewer pipe shall be City approved equivalent or the following:
 - i. Class 52 cement-lined ductile iron pipe with a fused calcium aluminate cement mortar lining (H₂Sewer Safe) as manufactured by Griffin Pipe Products meeting ANSI/AWWA standards.
 - ii. AWWA C900 PVC Class 235 DR 18 pipe or AWWA C909 PVC.
 - iii. ANSI/AWWA C906 PE, Pressure Class 200.
 - iv. Air Relief / Clean-out stations shall be provided every 600 feet.
- B. Testing: Sanitary sewer pressure mains shall be tested prior to permitting such sewer main to be open to the collection system. Testing shall be in accordance to current edition of the ISPWC. City personnel or designated representative shall be present during testing. Failure to have City personnel or designated representative present during all testing is sufficient reason for requirement to retest. Developer's engineer shall provide certification of testing and testing results to the City and City Engineer. Trench backfill and compaction testing shall be completed in accordance with Section 6.N. Testing and retesting shall be in accordance with the specifications set forth in the current edition of the ISPWC.
- C. Locating Wire Boxes: Shall be in accordance current edition of the ISPWC. Locating wire boxes shall be installed on pressure sewer mains at a maximum spacing of 400 feet.
- D. Cover: Pressure sewer mains shall have a minimum of 42" cover and a maximum cover of 60". Cover greater than 60" may be allowed where obstructions occur but must be approved by the City.

9. Sewer Services:

- A. Connection to Mains: Service wyes or tees shall be used on new main installations. Saddles are not acceptable. All sewer services shall be connected to the sewer main. In the event that an exception is made and a service is connected to a main line by means of a manhole, the service flow direction shall

be pointed downstream and at an angle of less than 45 degrees to the direction of flow, and the service shall enter the manhole at the mid-point elevation of the sewer main.

- B. Sewer Service Shut-off (Only for sewer connections which do not also have a City water connection): A tee in the sewer service line shall be located behind the sidewalk to allow for the insertion of a sewer plug on the service line. The tee shall be installed in accordance to ISPWC SD506A.
- C. Service Markers: In addition to requirements set forth in the current edition of the ISPWC, sewer services shall also be marked with a 5-foot metal T post and with a permanent "s" stamped in the curb, (tracer wire may be required).
- D. No services allowed in manholes (PMC 13.10.040.E)
- E. Separate service required for each building. Minimum diameter is 4-inch (PMC 13.08.033)
- F. Locate near midpoint of each lot
- G. 5-foot minimum distance from service to edge of manhole
- H. 5-foot minimum distance between services
- I. Extend service stub past utility easements for new construction

10. Construction:

- A. By licensed plumber and/or public works license.
- B. By authorization of Wastewater Superintendent.

CHAPTER 4 STORM SEWER & DRAINAGE:

1. General:

All proposed storm sewer and drainage improvements shall be submitted to the City for review.

Storm Drainage must be contained on-site and meet the State of Idaho's BMPs (PMC 16.28.050, PMC 17.72.020).

New development shall provide a separate lot or other space outside of the right of way for drainage from the streets and right of way. This shall be maintained by the HOA or other property owner(s) as appropriate. Unless demonstrated otherwise by a site grading plan, the drainage from the front half of the lots adjoining the new street(s) shall be included in the design of the drainage improvements.

Improvements to existing streets where a separate drainage lot is not available and storm drainage must be contained within the right of way shall use a Stormtech (or approved equal) system with a sand and grease trap and an access manhole designed per manufacturer's recommendations except as modified herein. Storm drainage is allowed in open space. Must be landscaped (PMC 17.24.050.F)

All storm water from all new development shall be contained on site. Applies to all new development including but not limited to: Streets, Commercial, Industrial, and Residential Development. No allowance shall be made for pre-development runoff volume. One single family residence, duplex, or outbuilding on a residential infill lot is not required to prepare a formal drainage plan, per PMC 15.04.050D, however, owner or contractor shall grade site such that water is captured on site.

Modification to existing developed sites shall be required to provide drainage plans which capture all drainage from the entire property unless all of the following apply: 1) impervious surface area is increased five percent (5%) or less of existing impervious surface area, 2) there are no known issues caused by the existing drainage from the site, and 3) the direction of existing drainage is not altered. The change in impervious surface area will include any modifications made within the last 5 years of the present application.

The storm water runoff from the proposed development cannot be diverted and released to any other property, storm drain, drainage facility, or any other conveyance system, unless there is written permission that the receiver agrees, as evidenced by valid and binding public document, to receive a certain definite quantity from the development. Said binding public document shall be submitted and approved by the City prior to commencing construction.

2. Collection and Retention:

- A. Materials:
- i. All storm drainage pipes shall be ASTM 3034 SDR 35 PVC pipe.
 - ii. All storm drainage catch basins shall be Inlet Catch Basin Type II (SD-602 or SD-604A) in accordance with current edition of the ISPWC with a 12-inch sump.
 - iii. Trench shall include nonmetallic tape identifying the storm sewer pipe.
 - iv. Minimum size of storm drain shall be 8-inches.
 - v. Manholes shall have concentric cones and no steps.
 - vi. Concrete collars shall be installed around all manholes located within paved areas. Concrete shall be Class 3000 and shall include 1.5 pounds of fibermesh per cubic yard.
 - vii. All pipes entering/exiting any drainage structure shall be grouted with non-shrink grout to provide a seal between the outside of the pipe and the structure.
- B. Construction and Testing: Storm sewer system shall be constructed and tested in accordance with ISPWC. Backfill and compaction testing is required. See Section 6.N. for details.
- C. Manhole spacing shall be no more than 400 feet.
- D. At minimum, the storm drain system shall be designed such that it will convey a storm with an intensity of 1 inch per hour.
- E. At minimum, the retention system shall hold a volume equivalent to 1 inch of rainfall over the entire drainage area without considering infiltration. The volume of required storage for an underground system shall be increased by 15% to account for long-term sedimentation.
- F. The design void space (porosity) for water storage within any drain rock used in the retention system shall be a maximum of 35%.
- G. Retention swales/ponds with 3H:1V or flatter sideslopes shall have the following freeboard:
- | Design Water Depth | Minimum Freeboard |
|--------------------|-------------------|
| 3.0 feet or less | 6 inches |
| More than 3.0 feet | 12 inches |
- H. Retention swales/ponds with sideslopes steeper than 3H:1V shall have a minimum freeboard of 12 inches at design water depth and shall be fenced for safety.
- I. Retention shall infiltrate within 24 hours.
- J. Infiltration rate shall be determined by soil type per chart. Design rates may not exceed the values in table.

TABLE 3 – INFILTRATION RATES	
SCS Group and Type	Infiltration Rate (Inches Per Hour)
A. Sand	8
B. Loamy Sand	2
C. Sandy Loam	1
D. Loam	.5
E. Silt Loam	.25*
F. Sandy Clay Loam	.15
G. Clay Loam & Silty Clay Loam	<.09
H. Clays	<.05
*Minimum rate, soils with lesser rates should not be considered as candidates for infiltration facilities.	

3. Site Conditions Evaluation:

- A. Site suitability is a major factor in choosing Best Management Practices (BMPs). In some cases, a BMP may be eliminated as an option because of site constraints. Since drainage disposal may place limitations on the use or specific location of future improvements, site evaluation should be completed before preparing any development concepts or plans.

4. Plan Submittal Requirement:

- A. A Storm Drainage Plan is required for all new subdivisions, and commercial or industrial facilities. The Plan must be stamped and signed by a licensed professional engineer, architect, or landscape architect. Review of the Plan may be delayed if the submittal is incomplete. Landscaping shall be included in the Plan, if applicable. Operation and Maintenance shall be included in the Plan.
- B. Minimal Allowable Design Volume Form, as seen in Appendix A, must be submitted with Plan.
- C. At a minimum, the O&M Plan shall identify the following:
 - i. The storm water system owner(s),
 - ii. The entity, party, or parties, responsible for long-term operation and maintenance.
 - iii. A copy of final system design drawings along with design calculations (calculations beyond those submitted during plan review).
 - iv. A schedule for inspection and maintenance including the routine and non-routine maintenance tasks to be conducted.

v. A financing plan.

5. Drainage Easements:

- A. All storm water control facilities and natural drainage channels, not part of a new development, shall be located in designated and reserved storm water easements that are a minimum of 20-feet wide. Easements shall be sized for access for construction equipment and activities that may be needed for maintenance and repair work. If maintenance roads are necessary, they must be a minimum of 12-feet wide, have an HS-20 load capacity, and have a minimum inside turning radius of 30-feet.
- B. In new residential or commercial subdivisions, all storm water control facilities and natural drainage channels shall be located in separate lots. All separate storm water associated lots shall be dedicated to the Homeowner's Association or a sole responsible party. The Homeowner's Association or sole responsible party will be responsible for all storm water facility operation and maintenance within the subdivision.

CHAPTER 5 PRESSURIZED IRRIGATION:

1. General:

- A. Irrigation and Drainage Districts (PMC 16.28.050-060)
 - i. All irrigation systems are private (not City owned)
 - ii. No ditch, pipe or structure for irrigation water or wastewater shall be changed unless such change has been first approved by the owner.
 - iii. Improvements to surface drainage courses may be required. Drainage easements may be required.
- B. Pressure Irrigation (PMC 16.28.040.B)
 - i. Pressure irrigation is required for all new residential subdivision or commercial development. Irrigation water is to be provided from either private wells or surface water. Proof of adequate water right or adequate water shares, is required. Water from the City's potable system is not permitted for the irrigation system without prior City written consent.
 - ii. The pressure irrigation system shall deliver a minimum of ¾-inch hose connection at 25 psi per lot.
 - iii. Developer shall demonstrate performance of system prior to receiving certificate of occupancy for any building within the development.

CHAPTER 6 STREETS:

1. General:

All materials, construction, testing, and inspection shall be in accordance to the current edition of the ISPWC Divisions 200, 700, 800 and all other applicable divisions therein.

A. Right-of-way widths (PMC 16.12.040.D)

- i. Local 60 feet
(50 feet with condition based exceptions)
- ii. Collector..... 70-90 feet*
- iii. Arterial..... 100 feet
- iv. Alley..... 20 feet
- v. Cul-de-sacs, radius..... 50 feet

*Streets that border section lines require minimum 80-foot r/w and along quarter-section lines require minimum 70-foot r/w (PMC 12.04.270).

B. Curves (PMC 16.12.040.K)

- i. For 10° or more deflection, a connecting curve is required:
 - a) 150' radius for local streets
 - b) 300' radius for arterial and collector streets
- ii. A vertical curve is required for changes of slope greater than 1%. Vertical curves shall have a minimum K-value of 50 for 35 mph design speed and minimum K-value of 30 for design speed = 25 mph. Design Speeds shall be per 6.1.P.

C. Minimum angle of intersection: 70° (PMC 16.12.040.J)

D. Minimum radii of curbs (PMC 16.12.040)

- i. Cul-de-sacs – 45'
- ii. Local Street/Local Street – 20' PMC 16.12.030
- iii. Local Street/Collector – 20' PMC 16.12.030
- iv. Collector/Arterial – 30' ISPWC
- v. Commercial zones – 30' ISPWC

E. Grades (PMC 16.12.040)

- i. Minimum – 0.003 ft/ft (0.3%)
- ii. Maximum – 0.15 ft/ft (15%)

F. Typical sections (PMC 17.08.590)

- i. Back-to-back curb dimensions
 - a) Local 37 feet
 - b) Collector 41 feet
 - c) Arterial 47 feet

G. Sidewalks – (PMCs 12.04.170, 120.4.250, & 16.28.030.G)

- i. concrete only
- ii. minimum 4-feet in residential areas on local streets
- iii. minimum 5-feet wide in residential areas along arterials & collectors.
- iv. minimum 5-feet in commercial areas

H. Curb and gutter types (PMC 12.04.250)

- i. Standard is 6" vertical curb with gutter
- ii. 6" vertical curb and gutter required on collectors and arterials
- iii. 6" vertical curb and gutter required in commercial/industrial zones
- iv. 3" rolled curb allowed on local streets in new subdivisions or when adjoining existing rolled curb, or when approved by the Superintendent of Streets.

I. Minimum Pavement Thickness (compacted materials) (TMP)

	a) Local	b) Collector
Plant mix	2 .5"	3"
Base Course	3"	6"
Subbase	10"	12"

*Where: Plant mix is Class III or SP-2 asphalt concrete for local streets and Class II or SP-3 for collectors, using PG58-28 oil per ISPWC 810
Base Course is ¾-inch crushed aggregate for base per ISPWC 802
Subbase is 3-inch minus uncrushed aggregate per ISPWC 801*

J. Street Lengths (PMC 16.12.040.I)

- i. Maximum loop street length is 1,000 feet unless the street serves 24 or fewer lots, then the maximum length is 1,200 feet.
- ii. Maximum cul-de-sac length is 400 feet from entrance to center of final turn around.
- iii. Temporary turnarounds will be required for any street stub longer than 150 feet. Temporary turnarounds will have a minimum 45-foot radius.

K. Emergency Access Roads (current International Fire code, as adopted by the State of Idaho)

- i. Typically, a 26' wide emergency access road is required for secondary access. See current IFC for details.
- ii. Easement shall be provided for access road.

L. Streetlights

TYPICAL STREETS:

- i. Located at each intersection and cul-de-sac and at least 250 feet apart, but no further than 450 feet from the nearest street light on the same street.
- ii. CREE – XSP1 LED Street Light, Single Module – Version B (BXSP-B-3ME-B-57K-UL-SV)
 - a. 101 watts
 - b. 25' mounting height
 - c. 6' mast arm
 - d. Metal pole
- iii. Different lights may be used subject to approval and must be maintained by property owner.

DOWNTOWN:

- i. Decorative lighting matching or closely approximating (as determined by the City) existing downtown lights shall be placed no more than 80 feet apart on alternating sides of the street as measured along the centerline of the street.
 - a. Black Metal pole matching or closely approximating (as determined by the City) existing downtown decorative poles.
 - b. LED-8024X345X-G7-FW or City approved equivalent.
 - c. 120V, 60 W
 - d. Mounting height, approximately 20 feet

PATHWAYS (Does not apply to sidewalks within developed right of ways):

- i. Post and luminaire. Historical type of similar style to existing street lights in downtown Payette, except height shall be fourteen (14) feet.
- ii. Spacing. One (1) light pole per 60 to 80 linear feet of pathway.

- iii. Light source. One hundred fifty (150) watt equivalent LED with maximum 3000 kelvin, photocell controlled.
- iv. Optics. Shielded and Illuminating Engineering Society (IES) type III with full cutoff optics required in or adjacent to residential areas.
- v. Pathway lighting shall not take the place of required safety lighting of nearby or adjacent streets.
- i. Other lighting options may be approved by the City Council on a case-by-case basis.

Blocks (PMC 16.12.020)

- i. Length no longer than 660-feet
- ii. Length not less than 250-feet

Blocks (PMC 16.12.020)

- iii. Length no longer than 660-feet
- iv. Length not less than 250-feet

M. Trenching within Right of Way

All trenches shall conform to ISPWC Section 300. See ISPWC standard drawing SD-301 for additional information. The notes below correspond to the respective item numbers included in the legend on SD-301:

Note

- 1. Local cutback = 1 foot
- 3. Match existing finished pavement thickness or use minimum of 2.5 inches on local streets and 3.0 inches on collectors or arterials, whichever is greater. Pavement thicknesses shall not exceed 4 inches on local streets or 6 inches on collectors or arterials. Use 8 inches of ¾-inch crushed aggregate base (Section 801, ISPWC) unless otherwise specified.
- 6. Imported backfill shall be used for all trenches under existing streets, alleys, curbs, and sidewalks or within 5 feet of any of these improvements. Backfill shall conform to ISPWC Section 801- 3" minus Uncrushed Aggregate. If the native material also conforms to the above specification, as verified by sampling and testing by a qualified laboratory, it may be accepted by the City Engineer for use as backfill rather than using imported material.

For trenches within right of way which has not yet been developed, such as, but not limited to, within a new subdivision, native backfill may be used if the material is compactible and not otherwise unsuitable as described in ISPWC Section 306.2.2 – Native Trench Backfill.8. Type I or III bedding typically required.

12. Upper compaction zone: Compact to at least 95% of maximum dry density (MDD) as per ASTM D 698.
 13. Lower compaction zone: Compact to at least 92% of MDD as per ASTM D 698.
- O. Minimum Compaction Testing Requirements: All trench backfill within existing or proposed right-of-way is required to demonstrate compliance with the compaction requirements described above (see Notes 12 and 13). Compaction shall be verified by compaction testing.

Minimum compaction testing frequency shall be as follows:

- a. For trenches which are 100 feet or less in length, the trench may be backfilled with $\frac{3}{4}$ -inch crushed base course (ISPCW 802) which is compacted in lifts no more than 12-inches in loose thickness. For such trenches backfilled in this manner, compaction testing shall be waived.
- b. For each 2 feet vertically of trench backfill, there shall be one test for localized excavations and trenches 100 feet in length or less.
- c. For each 2 feet vertically of trench backfill, there shall be two tests, at different locations, for trenches 101-600 feet in length and at locations where materials or construction procedures change.
- d. For each 2 feet vertically of trench backfill, there shall be one additional test for every 300 feet or portion thereof, for trench lengths over 600 feet and at locations where materials or construction procedures change.

NOTE: Total trench lengths for determining the minimum number of tests shall be considered separately for each of the following types of facilities: (a) water, (b) sewer, (c) storm drain, (d) irrigation, and (e) other utilities. Testing shall be proportionately representative of trench backfill for both main line and service construction.

Minimum Number of Compaction Tests Required							
Depth (ft)*	Trench Length (ft)						
	1-100	101-600	601-900	901-1200	1201-1500	1501-1800	1801-2100
1	1	2	3	4	5	6	7
2	1	2	3	4	5	6	7
3	2	4	6	8	10	12	14
4	2	4	6	8	10	12	14
5	3	6	9	12	15	18	21
6	3	6	9	12	15	18	21
7	4	8	12	16	20	24	28
8	4	8	12	16	20	24	28
9	5	10	15	20	25	30	35

*Depth of backfill between the top of bedding and the subgrade.

If testing is not completed during installation, potholing to the

appropriate depth and compaction testing will be required before trench backfill is accepted. All trench backfill which does not meet compaction shall be reworked until adequate compaction is achieved, or removed and replaced with suitable material which is adequately compacted.

P. New Street Construction: all underground utilities (including storm drain) within the right-of-way shall be installed prior to placing any subbase or base material.

Q. Design Speed (PMC 10.16)

i. Local and Collector streets 25 mph

ii. Arterial streets 35 mph

R. Restricted access points (no driveways) along collectors and arterials (PMC 16.12.010.C)

S. Residential driveways must be separated by at least 21 feet (unless on adjoining driveways) and are limited to (PMC 12.04.250.D):

i. 20 feet wide on 50-foot lots

ii. 35% of lot width up to a maximum of 35 feet on wider lots

iii. Driveways on corner lots shall be placed within 8 feet of the property line, which is away from the intersection, or at least 75 feet from the end of the corner curb radius, whichever is less.

T. Street signs are to be determined by Street Supervisor or designated employee.

2. Miscellaneous:

A. Street Cuts or Blockages: The City's Streets Supervisor shall be notified in writing at least two (2) City business days before any street cuts or street blockages for utility or street work.

B. Vandalized Concrete: Any concrete vandalized during construction shall be repaired to new condition or replaced solely at the contractor's expense.

C. Dust shall be controlled by watering in the morning and evenings and as otherwise needed. Contact the City for options on purchasing water.

D. Stop signs are required at all intersections. Stop sign location to be determined by City Engineer or designated employee.

CHAPTER 7 RESIDENTIAL DEVELOPMENT
(PMC 16.12.030, 17.24.00, 17.28.00)

1. General

- A. Flag lots are not permissible without a variance from the City Council (PMC 16.12.030.C)
- B. Easements: Public Utility, Drainage, and Irrigation (P.U.D.I) (PMC 16.12.060)
 - i. Front yard 10-feet
 - ii. Side yard 5-feet
 - iii. Rear yard 10-feet
- C. Irrigation is required. See Chapter 5.
- D. Model homes are allowed (PMC 16.13.00)
- E. Landscape buffer strips (PMC 16.12.010.F)
 - i. Required where development adjoins collectors and arterials
 - ii. Minimum width is 15-feet measured from back of curb (includes sidewalk)
 - iii. Privacy fence or berm with landscaping required
- F. Storm Drainage must be contained on-site and meet the State of Idaho's BMPs (PMC 16.28.050). See Chapter 4.

2. "A" Residential

- A. Min sq. footage (PMC 17.24.040.G)
 - i. Standard lots – 8,000 SF
 - ii. Corner lots – 10,000 SF
- B. Minimum frontage on right-of-way (PMC 17.24.040.D)
 - i. Standard lots – 75-feet
 - ii. Corner lots – 85-feet
- C. Minimum radius for corner lots-20-feet (PMC 16.12.030.B)
- D. Minimum setbacks (PMC 17.24.040. A-C)
 - i. FRONT- The larger of either, 25-feet from property line or 55-feet from center of road
 - ii. SIDE -8-feet

iii. REAR – 10 feet

3. “B” Residential

A. Min sq. footage (PMC 17.28.040)

i. Standard lots - 6,000 SF

ii. Corner lots – 8,000 SF

B. Minimum frontage on right-of-way (PMC 16.12.030)

i. Standard lots – 60 feet

ii. Corner lots – 75 feet

C. Minimum radius for corner lots - Same as “A”

D. Minimum setbacks-

i. Front – 20 feet from property line or the living area may be setback 15 feet from the property line if the garage is setback at least 20 feet from the property line.

ii. Side – 5 feet

iii. Rear – 10 feet

E. Duplexes are allowed. Multi-family housing and Townhouses may be allowed through a Conditional Use Permit. Minimum lot size is 3,500 SF per living unit (PMC 17.28.404, 17.64.230)

F. Planned Unit Developments (PUD) are allowed (PMC 17.44)

CHAPTER 8 COMMERCIAL DEVELOPMENT
(PMC 17.32-17.36)

Commercial developments are highly variable, and each developer is encouraged to attend a pre-application development review meeting with City representatives. This will often stream-line the development process and often save the developer time and money.

- A. Permissible uses are defined in PMC 17.32.010 and 17.32.020.
- B. The parking requirements are clearly identified in PMC 17.72.020 through 17.72.040. Please note that paved, striped, lighted, and landscaped parking areas are required.
- C. Drainage: All surface water retained on site PMC 17.72.020. See Chapter 4 of these Standards.
- D. Standard 6" vertical curb with gutter and sidewalks shall be constructed in front and along the side streets of said property. Sidewalks shall be five feet (5') minimum width, and wider if necessary, to conform with sidewalks already in existence, or from curb to property line. PMC 12.04.250
- E. Requests for curb cuts must be made, in writing, to the Council. Curb cuts up to twenty feet (20') may be allowed on fifty-foot (50') lots, and up to thirty five percent (35%) on lots above fifty feet (50'). No curb cut may be longer than thirty-five feet (35'), and twenty-one feet (21') of curb must be left between any two (2) curb cuts except where there are adjoining driveways. A request for any deviation in these regulations must be referred to the Planning Commission for approval before the Council will consider such request. Every application for a building permit shall show where the curb cut will be and must have the approval of the Engineer or Building Official. (PMC 12.04.250)
- F. Pressure irrigation for landscape areas as required to support landscaping.
- G. Curb cuts will be a minimum of 75 feet from the corner radius of the nearest intersection. Longer distances may be required to prevent interference with turn lanes and/or other intersection functions.

CHAPTER 9 PROJECT INSPECTION/CONSTRUCTION:

1. General:

- A. Prior to any work within the City right-of-way, an application for an encroachment permit shall be obtained from the City of Payette. Application is available on the City's website or at City Hall.
- B. Prior to commencement of construction a pre-construction meeting shall be held.
- C. Prior to commencement of construction of the associated public portion of improvements the material submittals shall be submitted and approved.

2. On-Site Inspector(s):

- A. Project inspection shall be conducted on a daily basis under the auspices and control of the developer's Idaho-licensed professional Engineer.
- B. Prior to any new construction, or repair of existing utility service, the City shall be notified in writing of the inspector's name, a statement of qualifications, office location, phone number, and emergency telephone numbers.
- C. No water, sewer, street, or drainage construction shall take place without the City approved inspector on-site.
- D. Periodic inspection shall be conducted by the Department Supervisors and/or the City Engineer.

3. Final Inspection:

- A. Final project inspection shall be by the City Engineer or a representative of the City Engineer.
- B. Final inspections shall be requested by the developer's engineer and scheduled with the City Engineer at least two (2) City working days in advance.
- C. Punch List
 - i. The project engineer shall do the first walk through and compile a list of items to be completed. Prior to the City and City Engineer participating in a walk through all items on the list shall be substantially completed.
 - ii. The City Engineer will develop, within five (5) working days of the final inspection, a "punch-list" of items that must be completed. The punch-list will, at a minimum, include record drawings and a letter from the project engineer stating that all improvements have been completed in substantial compliance with the approved plans.
 - iii. At the time the "punch-list" is developed, the City Engineer will assess a value to the punch list items, which the developer may secure an item of surety in accordance with City Code so that the developer may proceed with the development plan. Alternatively, the developer may complete the punch list items before proceeding with the development plan.

- iv. Punch list items shall be completed to the satisfaction of the City Engineer prior to the release of any portion of the security. When all items contained on the City's punch list are completed, the City will issue a certificate of completion at which time the warranty period will start.

CHAPTER 10 LANDSCAPE AND VIEWSCAPES:

1. General:

- A. All residential, commercial, and light industrial developments shall have entrance landscaping for a traffic buffer and viewscape transition. As a minimum, the traffic buffering requirements shall be according to City of Payette Ordinance.
- B. Maintenance of such landscaped and/or viewscape areas including but not limited to the irrigation system shall be the responsibility of the developer, future owner, and/or homeowner association unless other maintenance arrangements have been agreed upon with the City. Maintenance responsibility shall be clearly stated on the landscape plan.
- C. All residential, commercial, and light industrial developments requiring or offering open space shall have as a minimum submitted with the final plan set:
 - i. A landscape plan.
 - ii. A financial plan of implementation, if dedicated to the City.

1. Required Irrigation:

- A. General: Irrigation shall be supplied as a part of the landscape and/or viewscape with the ability to be controlled automatically.
- B. Irrigation: Shall comply to Chapter 5 of these Standards.

APPENDIX A

MINIMUM ALLOWABLE DESIGN VOLUME AND PEAK FLOW

(complete one form per drainage basin)

Project: _____

Engineer: _____

Drainage Basin: _____

1. Drainage Area Calculation:

Equivalent Area

Surface Type	A Area (sq. ft)	C Runoff Coeff.	A x C = A _{eq} Equivalent Area (sq. ft)
Drainage Swale/Pond		1.00	
Roof		0.95	
Asphalt		0.95	
Concrete		0.95	
Gravel		0.50	
Landscape		0.20	
Unimproved		0.15	
Total Equivalent Area (sq. ft), A _{eq}			

2. Minimum Runoff Volume:

Minimum Volume

$$V_{min} = A_{eq} \times 1.0 \times \left(\frac{1 \text{ ft}}{12 \text{ in}} \right)$$

$$V_{min} = (\text{_____}) \times 1.0 \times \left(\frac{1 \text{ ft}}{12 \text{ in}} \right)$$

$$V_{min} = (\text{_____}) \text{ Cubic Feet}$$

This is the MINIMUM allowable storage volume for the drainage facility for this drainage basin.

3. Minimum Peak Flow: (For Facilities with Sand and Grease Traps Only)

Minimum Design Peak Flow

$$Q_{min} = A_{eq} \times 1.0 \times \left(\frac{1 \text{ acre}}{43560 \text{ sf}} \right)$$

$$Q_{min} = (\text{_____}) \times 1.0 \times \left(\frac{1 \text{ acre}}{43560 \text{ sf}} \right)$$

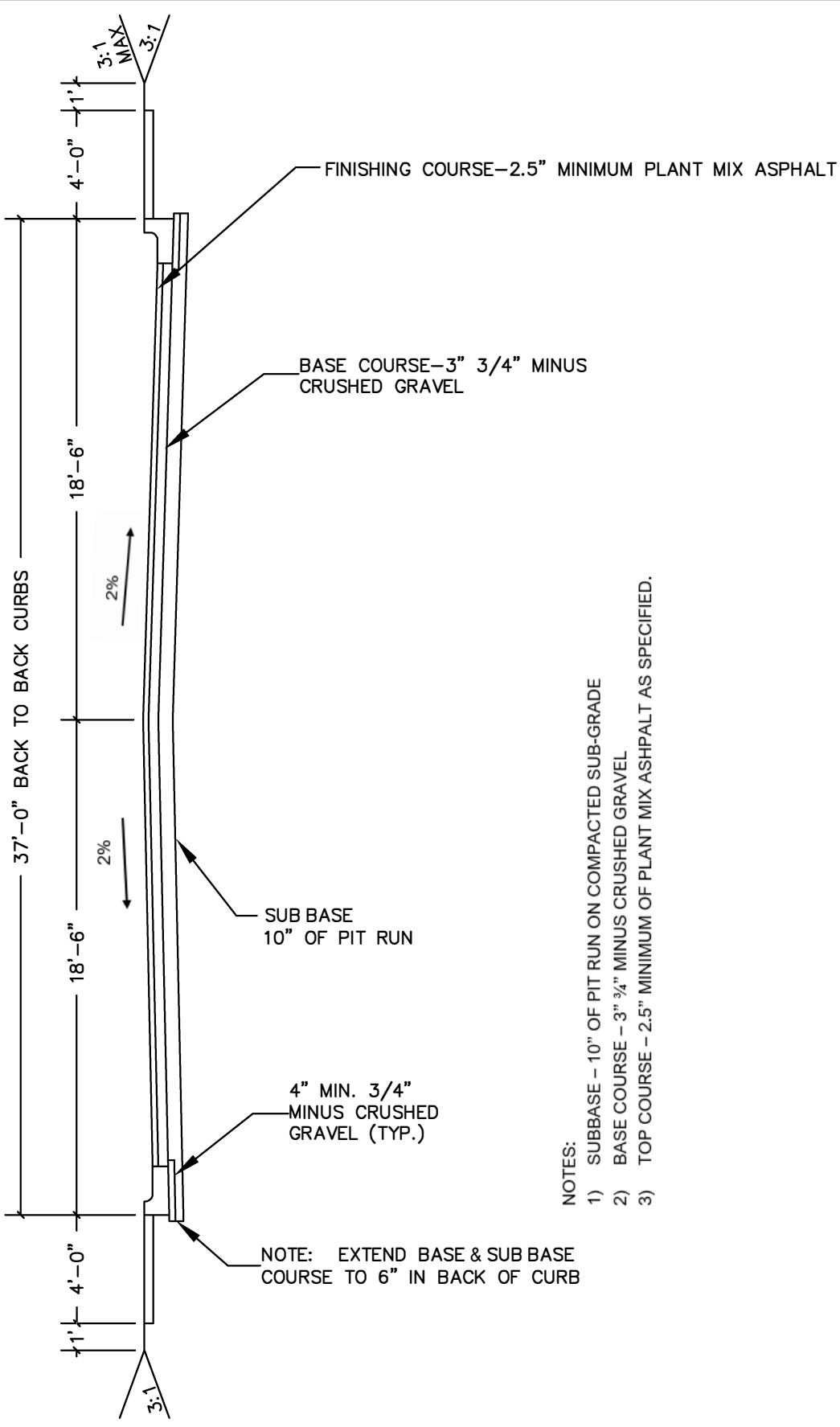
$$Q_{min} = (\text{_____}) \text{ cfs}$$

This is the MINIMUM flow that can be used for designing conveyance systems and/or sizing sand and grease traps.

(Only for facilities with Sand and Grease traps:)

To limit velocity through the sand and grease trap throat to 0.5 feet per second, the peak design flows shall not exceed the following maximum flows for the selected sand and grease trap size:

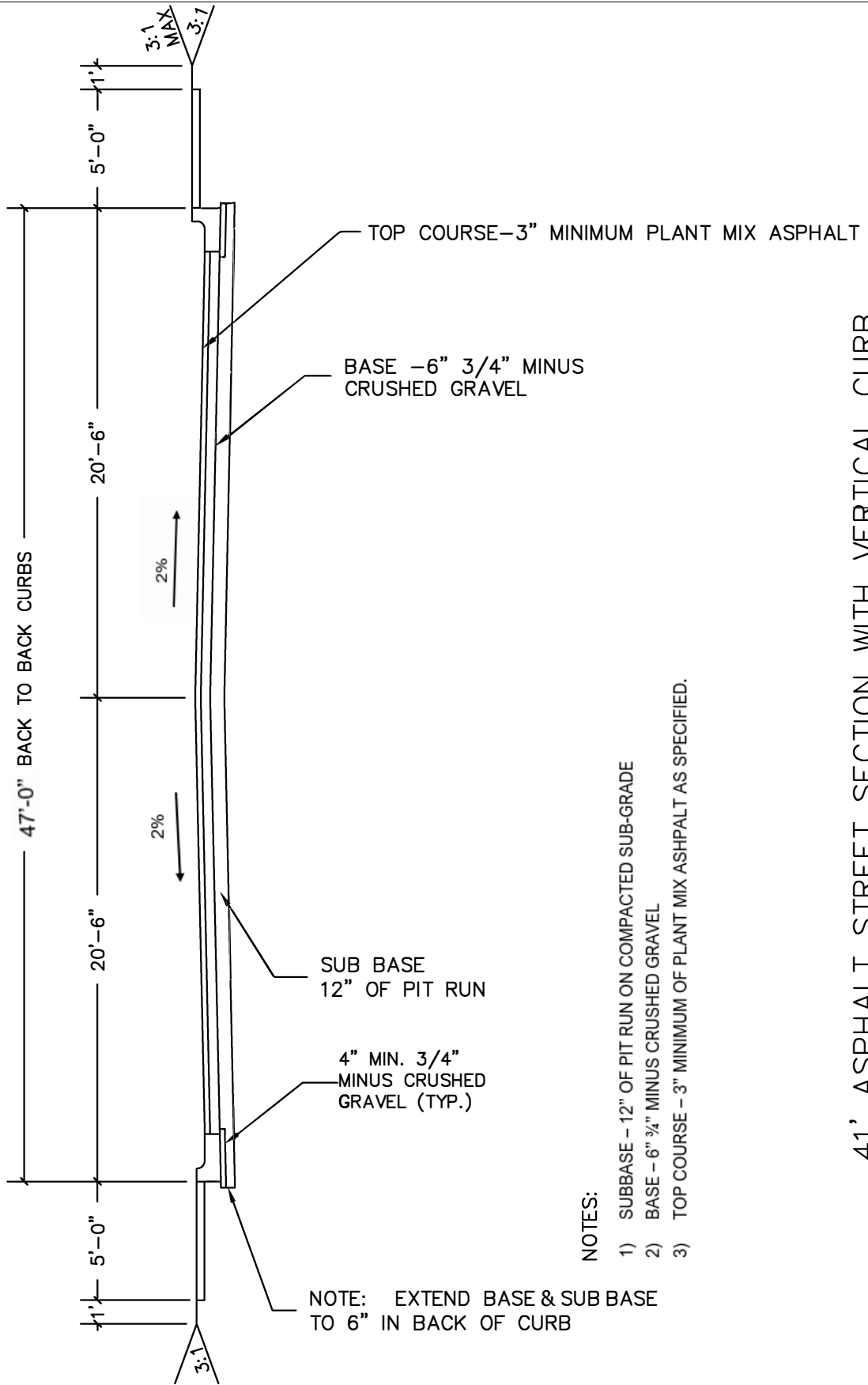
Tank Size	Max Flow
1000-gallon tank, Approximate inside dimension of 4'x8'x6'; 20-inch baffle spacing	3.33 cfs
1500-gallon tank; Approximate inside dimension of 5'x7'x7'; 20-inch baffle spacing	4.17 cfs



- NOTES:
- 1) SUBBASE - 10" OF PIT RUN ON COMPACTED SUB-GRADE
 - 2) BASE COURSE - 3" 3/4" MINUS CRUSHED GRAVEL
 - 3) TOP COURSE - 2.5" MINIMUM OF PLANT MIX ASPHALT AS SPECIFIED.

37' ASPHALT STREET SECTION WITH VERTICAL CURB
 (SEE SECTION VI.1.1 FOR ADDITIONAL INFORMATION)

<p>CITY OF PAYETTE PUBLIC WORKS DEPARTMENT</p> <p>FILE: G:\CLIENTS\STANDARDS\CP\S-1.DWG</p>	<p>37' STREET SECTION</p>	<p>STANDARD DETAIL NO. S-1</p> <p>DATE: FEBRUARY 2022 REVISED: 02/09/2022</p>
---	----------------------------------	--



NOTES:

- 1) SUBBASE - 12" OF PIT RUN ON COMPACTED SUB-GRADE
- 2) BASE - 6" 3/4" MINUS CRUSHED GRAVEL
- 3) TOP COURSE - 3" MINIMUM OF PLANT MIX ASPHALT AS SPECIFIED.

41' ASPHALT STREET SECTION WITH VERTICAL CURB
(SEE SECTION V.1.1 FOR ADDITIONAL INFORMATION)

CITY OF PAYETTE
PUBLIC WORKS DEPARTMENT

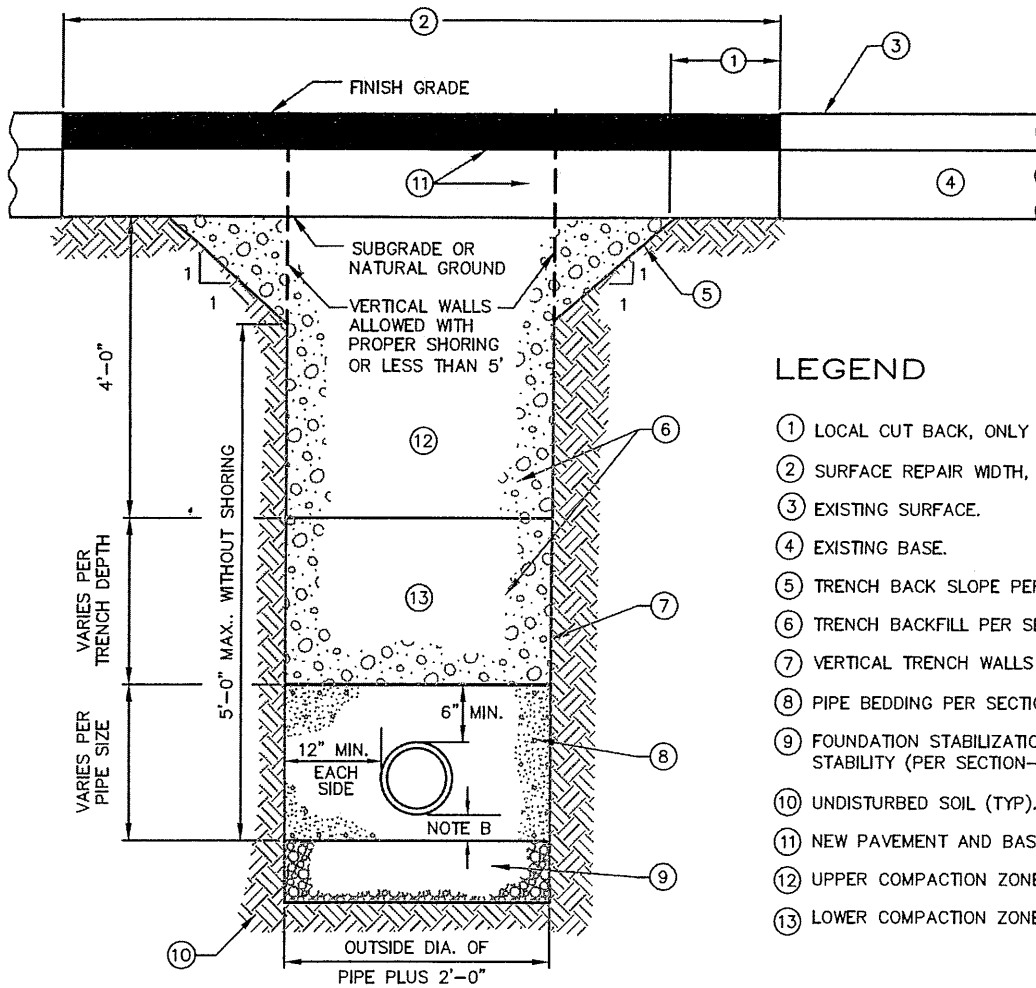
47' STREET SECTION

STANDARD DETAIL
NO. S-2

FILE:
G:\CLIENTS\STANDARDS\CP\S-2.DWG

DATE:
FEBRUARY 2022

REVISED:
02/09/2022



LEGEND

- ① LOCAL CUT BACK, ONLY IF REQUIRED.
- ② SURFACE REPAIR WIDTH, 4' MINIMUM.
- ③ EXISTING SURFACE.
- ④ EXISTING BASE.
- ⑤ TRENCH BACK SLOPE PER O.S.H.A. OR SUITABLE SHORING.
- ⑥ TRENCH BACKFILL PER SECTION-306.
- ⑦ VERTICAL TRENCH WALLS SHORING PER O.S.H.A..
- ⑧ PIPE BEDDING PER SECTION-305 (SEE SD-302).
- ⑨ FOUNDATION STABILIZATION MAY VARY PER SOIL TYPE AND STABILITY (PER SECTION-304).
- ⑩ UNDISTURBED SOIL (TYP).
- ⑪ NEW PAVEMENT AND BASE.
- ⑫ UPPER COMPACTION ZONE.
- ⑬ LOWER COMPACTION ZONE.

NOTES

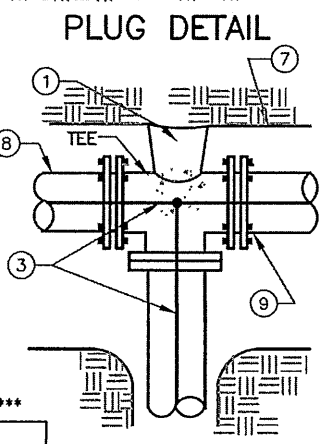
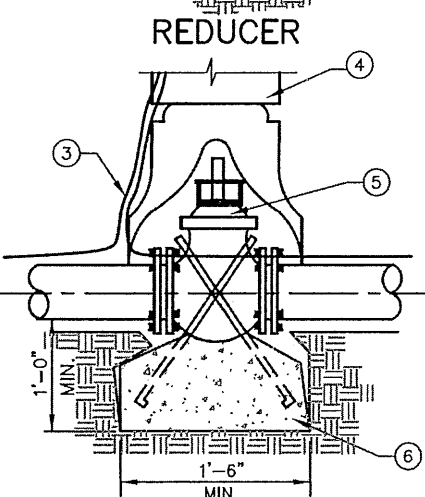
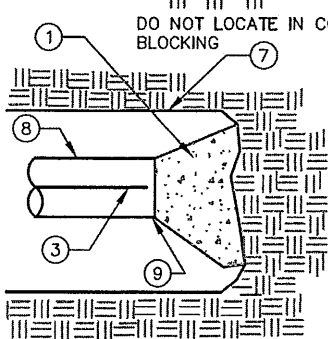
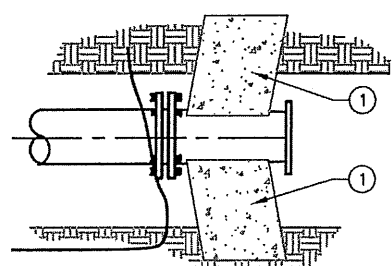
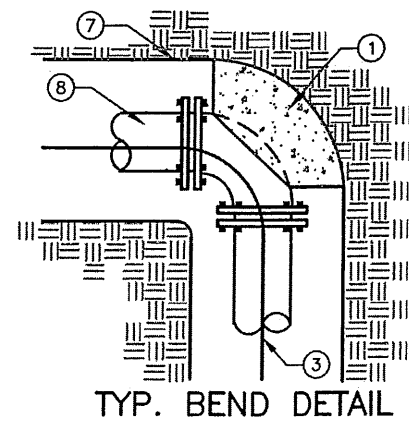
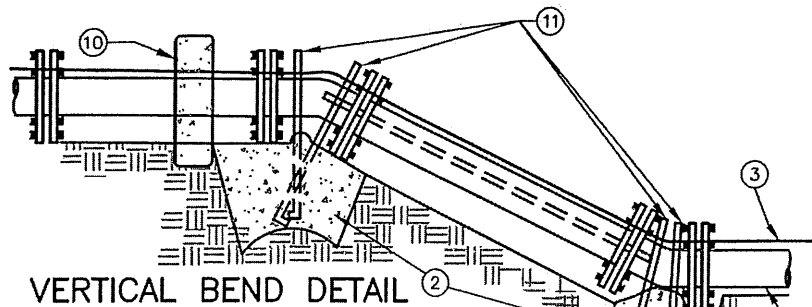
- (A) TRENCH EXCAVATION PER SECTION-301.
- (B) PIPE BEDDING PER SECTION-305.
- (C) BACKFILL AND COMPACTION PER SECTION-306.
- (D) SURFACE REPAIR AND BASE PER SECTION-307. SEE SD-303.

2020

IDAHO STANDARDS
FOR PUBLIC WORKS
CONSTRUCTION

TYPICAL TRENCH

STANDARD DRAWING
NO. SD-301



TYP. BEND DETAIL

LEGEND

- ① FOR HORIZONTAL PIPE BENDS, BEARING THRUST BLOCKS MUST PROVIDE 2500 P.S.I. CONCRETE POURED AGAINST UNDISTURBED EARTH PER TABLE 1.
- ② FOR VERTICAL PIPE BENDS, GRAVITY THRUST THRUST BLOCKS MUST PROVIDE A VOLUME OF CONCRETE POURED AGAINST UNDISTURBED EARTH WHICH IS SIZED FOR EXPECTED FORCES WITH A MINIMUM 1.5 FACTOR OF SAFETY.
- ③ NO. 12 COPPER FINDER WIRE. SEE SD-514 FOR SPLICING.
- ④ C.I. VALVE BOX WITH COVER.
- ⑤ C.I. GATE VALVE (M.J.).
- ⑥ PRECAST BLOCK FOR CUT IN TEE AND VALVE OR CAST IN PLACE WITH 2 1/2" Ø MIN. REBAR.
- ⑦ TRENCH SIDE.
- ⑧ PIPE.
- ⑨ PLUG.
- ⑩ HAMMERHEAD THRUST BLOCKING.
- ⑪ ANCHOR BARS (1/2" Ø MIN.).

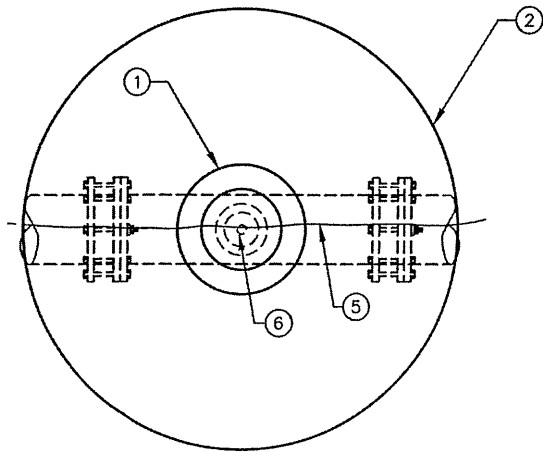
TABLE 1
THRUST AREA FOR HORIZONTAL BENDS ***

SOIL BEARING PRESSURE = 2000 PSF WORKING PRESSURE RATING = 150 PSI SAFETY FACTOR = 1.5				
MINIMUM SQUARE FEET OF THRUST AREA ONTO UNDISTURBED EARTH*				
PIPE SIZE	TEE, PLUG OR VALVE	90° BEND**	45° BEND	22.5°, 11.25° BENDS OR REDUCER
3	0.8	1.1	0.6	0.3
4	1.4	2.0	1.1	0.6
6	3.2	4.5	2.4	1.2
8	5.7	8.0	4.3	2.2
10	8.8	12.5	6.8	3.4
12	12.7	18.0	9.7	5.0
14	17.3	24.5	13.3	6.8
16	22.6	32.0	17.3	8.8
18	28.6	40.5	21.9	11.2

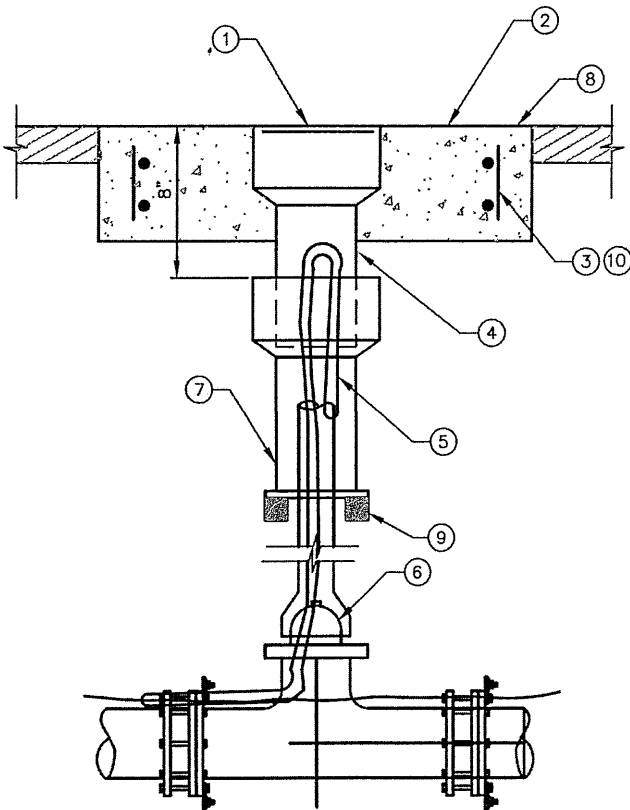
* MUST BE INCREASED BASED ON DIFFERENT CONDITIONS (HIGHER WORKING PRESSURE OR LOWER SOIL BEARING STRENGTH).
 ** OR TEE ACTING AS A 90° BEND.
 *** THRUST BLOCK DEPTH TO BE A MINIMUM OF 12" FOR PIPE SIZES 3"-8" AND 18" FOR PIPE SIZES 10"-18" OR THE SQUARE ROOT OF THE REQUIRED BEARING AREA, WHICHEVER IS GREATER.

NOTES:

- (A) ANCHOR ALL VALVES CONNECTED TO P.V.C. PIPE AS SHOWN.
- (B) COVER BOLTS AND FLANGES WITH PLASTIC TO PROTECT FROM CONCRETE ADHERENCE DURING CONSTRUCTION OF THRUST BLOCKS.
- (C) SEE CHART FOR MIN THRUST BLOCKS BEARING AREAS.
- (D) ALL CONCRETE TO BE 2500 P.S.I. STRENGTH POURED AGAINST UNDISTURBED EARTH.
- (E) PROVIDE 6 MIL POLYPROPYLENE BETWEEN FITTINGS AND CONCRETE.
- (F) NOTIFY ENGINEER FOR ANY CONDITION OR PIPE SIZE NOT INDICATED.
- (D) ALL BLOCKS TO BE CENTERED AROUND PIPE SPRING LINE.



PLAN VIEW



ELEVATION VIEW
VALVE BOX AND LID

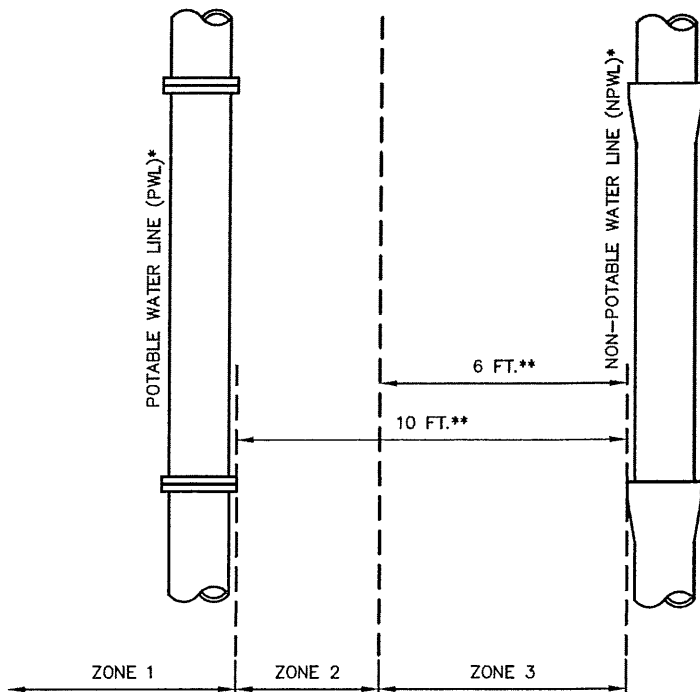
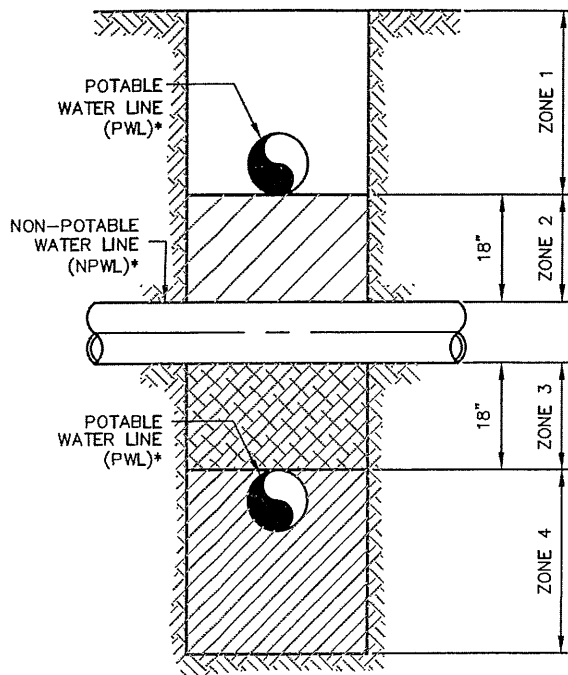
N.T.S.

LEGEND

- ① 5 1/4" LOCKING LID IF REQUIRED (TYLER NO. 6855).
- ② 24"Ø X 6" CONCRETE COLLAR.
- ③ (2) #4 REBAR HOOPS WITH #4 VERTICALS.
- ④ PACK VOID WITH RUBBER SILICONE.
- ⑤ NO. 12 AWG. COPPER WIRE FINDER.
- ⑥ VALVE.
- ⑦ CAST IRON VALVE RISER.
- ⑧ FINISHED GRADE.
- ⑨ REDWOOD BLOCKS.
- ⑩ FIBRILLATED POLYPROPYLENE FIBER (ADDED PER MANUFACTURER'S RECOMMENDATIONS) MAY BE USED IN LIEU OF #4 REBAR IN CONCRETE COLLARS.

NOTE:

- (A) ALL PRODUCTS AS INDICATED OR APPROVED SUBSTITUTION.
- (B) IF AUTHORIZED BY THE ENGINEER, A HEAVY (10 GAGE) STEEL VALVE BOX AND CAP MAY BE USED IN LIEU OF CAST IRON BOX AND LID.



* THE TERM "LINE" APPLIES TO BOTH MAIN LINES AND SERVICE LINES. FOR SPECIAL CIRCUMSTANCES REGARDING EXISTING POTABLE OR NON-POTABLE SERVICE LINES, REFER TO IDAPA 58.01.08.542.07.c AND 58.01.16.430.02.c.iii, RESPECTIVELY.

** DISTANCES ARE HORIZONTAL.

*** JOINT PLACEMENT APPLIES ONLY TO FACILITY BEING CONSTRUCTED: POTABLE WATER, NON-POTABLE WATER, OR BOTH.

VERTICAL SEPARATION REQUIREMENTS

ZONE 1: A) PWL AND NPWL MUST BE SEPARATED BY AT LEAST 18" AND B) ONE FULL, UN-CUT LENGTH OF PWL OR*** NPWL PIPE MUST BE CENTERED ON THE CROSSING SO THAT THE JOINTS ARE AS FAR AS POSSIBLE FROM THE CROSSING.

ZONE 2: A) ONE FULL, UN-CUT LENGTH OF PWL OR*** NPWL PIPE MUST BE CENTERED ON THE CROSSING WITH A SINGLE 20' SEGMENT SO THAT THE JOINTS ARE AS FAR AS POSSIBLE FROM THE CROSSING.

AND EITHER B) NPWL MUST BE CONSTRUCTED TO WATER MAIN STANDARDS WITH A SINGLE 20' SEGMENT FOR A HORIZONTAL DISTANCE OF 10 FEET ON BOTH SIDES OF CROSSING.

OR C) EITHER THE NPWL OR PWL MUST BE ENCASED WITH A POTABLE WATER CLASS SLEEVE FOR A HORIZONTAL DISTANCE OF 10 FEET ON BOTH SIDES OF THE CROSSING.

ZONE 3: SAME REQUIREMENTS AS ZONE 2 EXCEPT THE NPWL MUST ALSO BE SUPPORTED ABOVE THE CROSSING TO PREVENT SETTLING.

ZONE 4: SAME REQUIREMENTS AS ZONE 1 [ITEM A] ONLY EXCEPT THE NPWL MUST ALSO BE SUPPORTED ABOVE THE CROSSING TO PREVENT SETTLING.

HORIZONTAL SEPARATION REQUIREMENTS

ZONE 1: A) IF CONSTRUCTING BOTH PWL AND NPWL, PIPELINES MUST BE IN SEPARATE TRENCHS.

ZONE 2: A) PWL AND NPWL SEPARATED BY AT LEAST 6 FEET AT OUTSIDE WALLS.

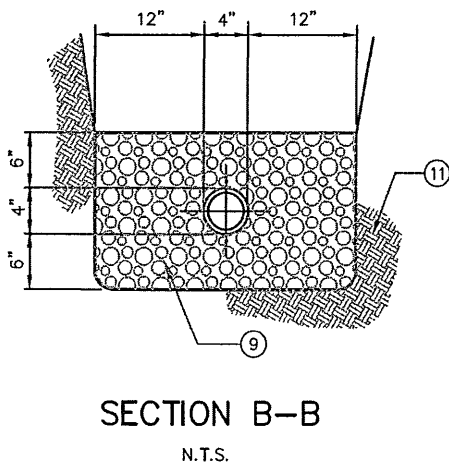
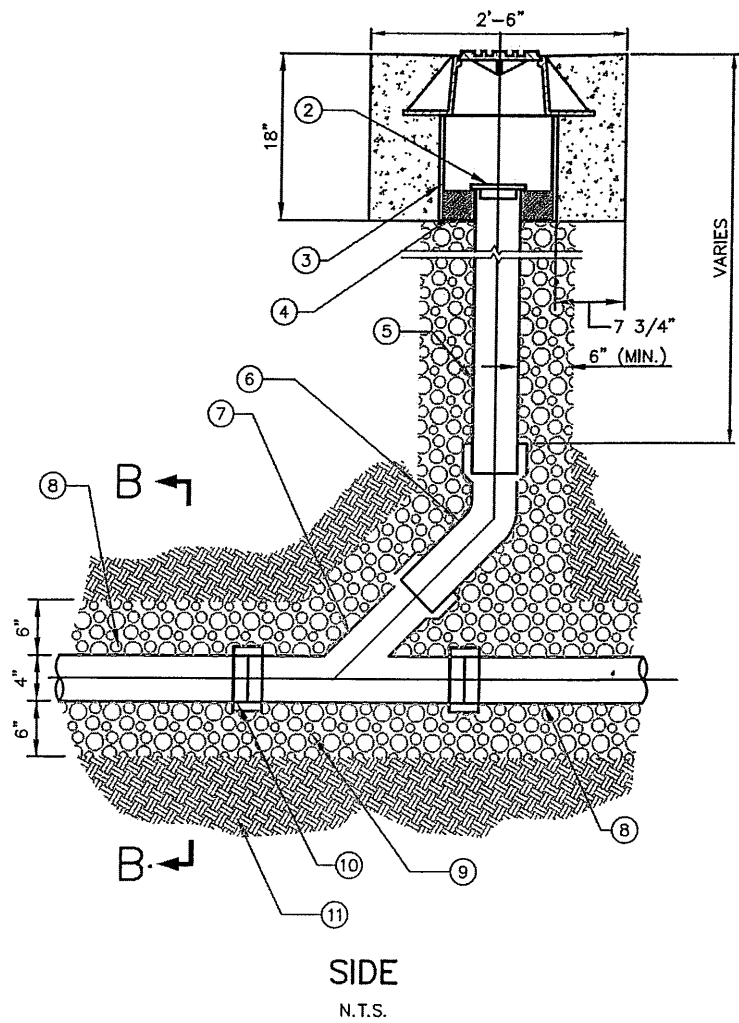
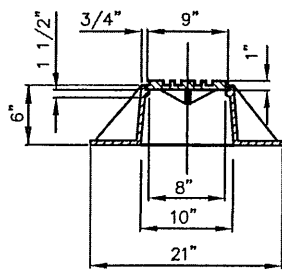
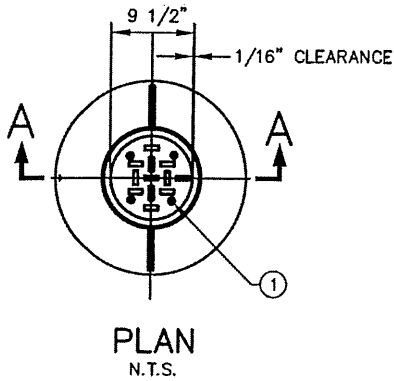
AND B) BOTTOM OF PWL MUST BE ABOVE TOP OF NPWL.

AND EITHER C) NPWL CONSTRUCTED TO WATER MAIN STANDARDS.

OR D) SITE SPECIFIC REQUIREMENTS APPROVED BY DEQ.

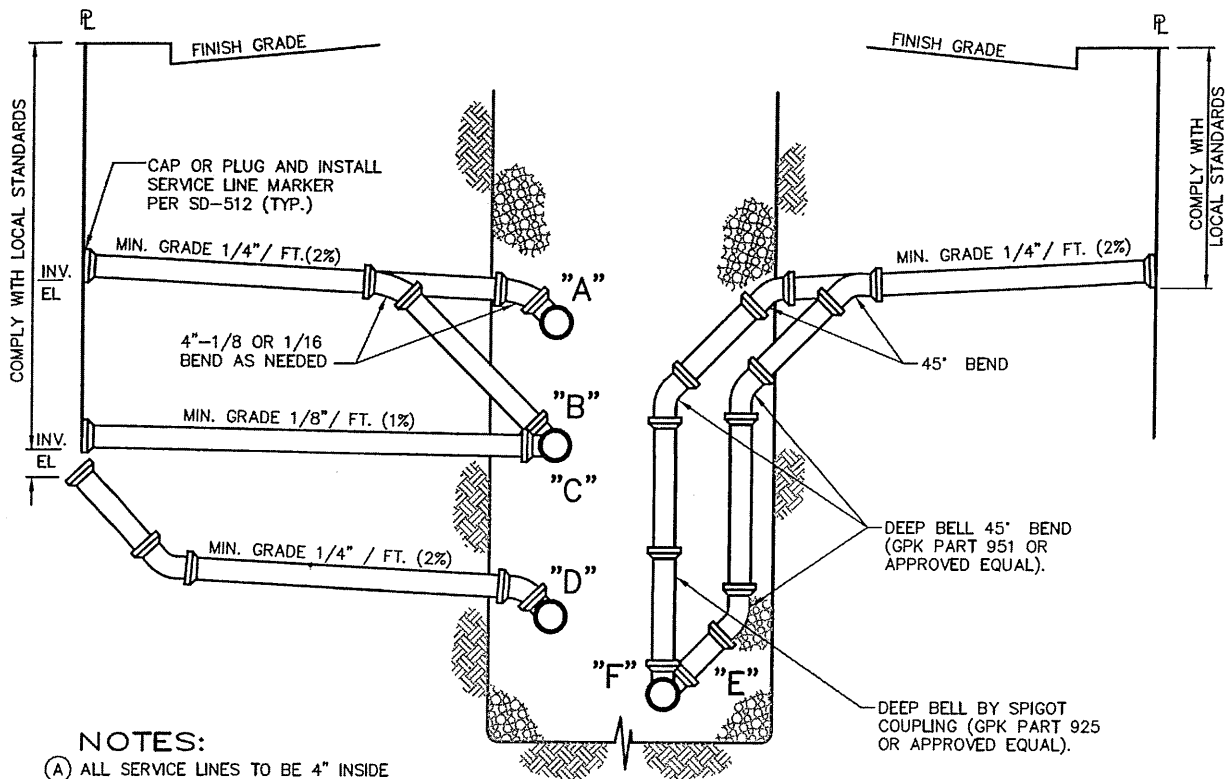
ZONE 3: NOT ALLOWED WITHOUT DEQ WAIVER.

NOTE: SANITARY SEWER FORCE MAINS MUST HAVE MIN. 10' HORIZONTAL SEPARATION AND 18" VERTICAL SEPARATION. ZONE 2 AND ZONE 3 PLACEMENTS ARE NOT ALLOWED WITHOUT A WAIVER GRANTED BY DEQ.



LEGEND

- ① 4- 1" DIA. HOLES ON 3 1/2" RADIUS.
- ② MECHANICAL PLUG.
- ③ 12" DIA. X 1'-0" PVC, DIP OR CP.
- ④ FIBER JOINT MATERIAL.
- ⑤ PVC ASTM D 3034.
- ⑥ 45° BENDS.
- ⑦ "Y" FITTINGS.
- ⑧ EXISTING OR NEW PIPE.
- ⑨ TYPE 1 BEDDING MATERIAL.
- ⑩ MISSION COUPLER OR APPROVED SUBSTITUTION.
- ⑪ UNDISTURBED MATERIAL.

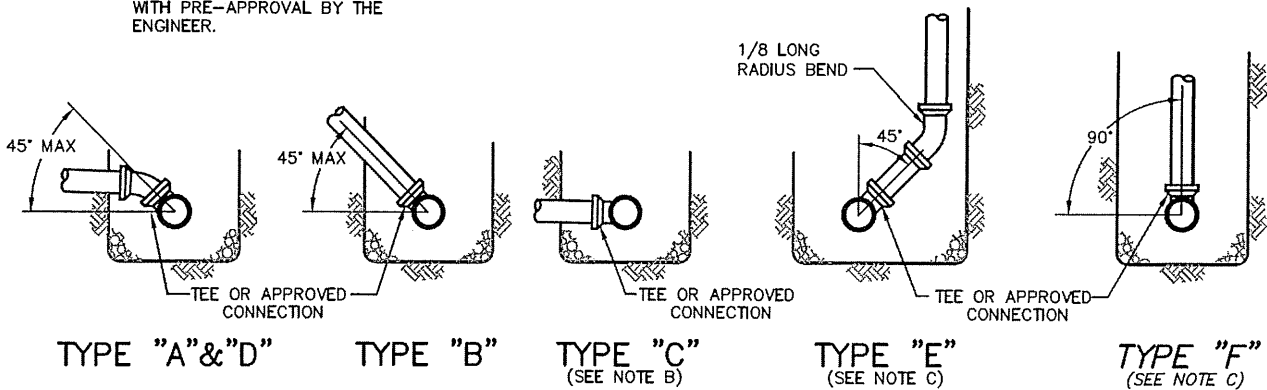


NOTES:

- (A) ALL SERVICE LINES TO BE 4" INSIDE DIAMETER UNLESS OTHERWISE NOTED.
- (B) TYPE "C" CONNECTION WILL ONLY BE ALLOWED IF SHOWN ON THE PLANS OR OTHERWISE APPROVED BY THE ENGINEER.
- (C) TYPE "E" OR "F" ALLOWABLE FOR TRENCHES 15' DEEP OR GREATER WITH PRE-APPROVAL BY THE ENGINEER.

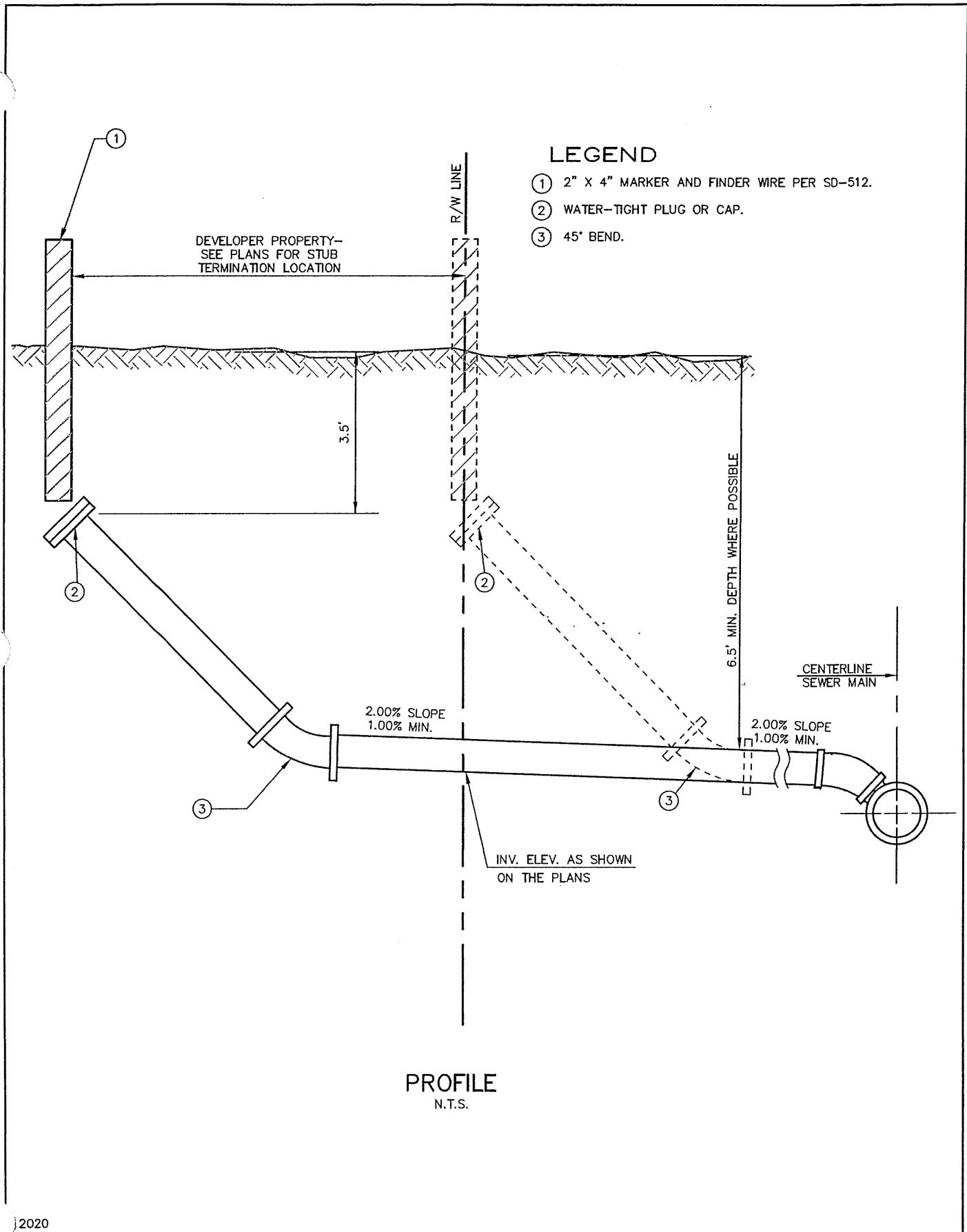
ELEVATIONS

N.T.S.



CONNECTION DETAILS

N.T.S.



LEGEND

- ① 2" X 4" MARKER AND FINDER WIRE PER SD-512.
- ② WATER-TIGHT PLUG OR CAP.
- ③ 45° BEND.

DEVELOPER PROPERTY—
SEE PLANS FOR STUB
TERMINATION LOCATION

R/W LINE

3.5'

6.5' MIN. DEPTH WHERE POSSIBLE

CENTERLINE
SEWER MAIN

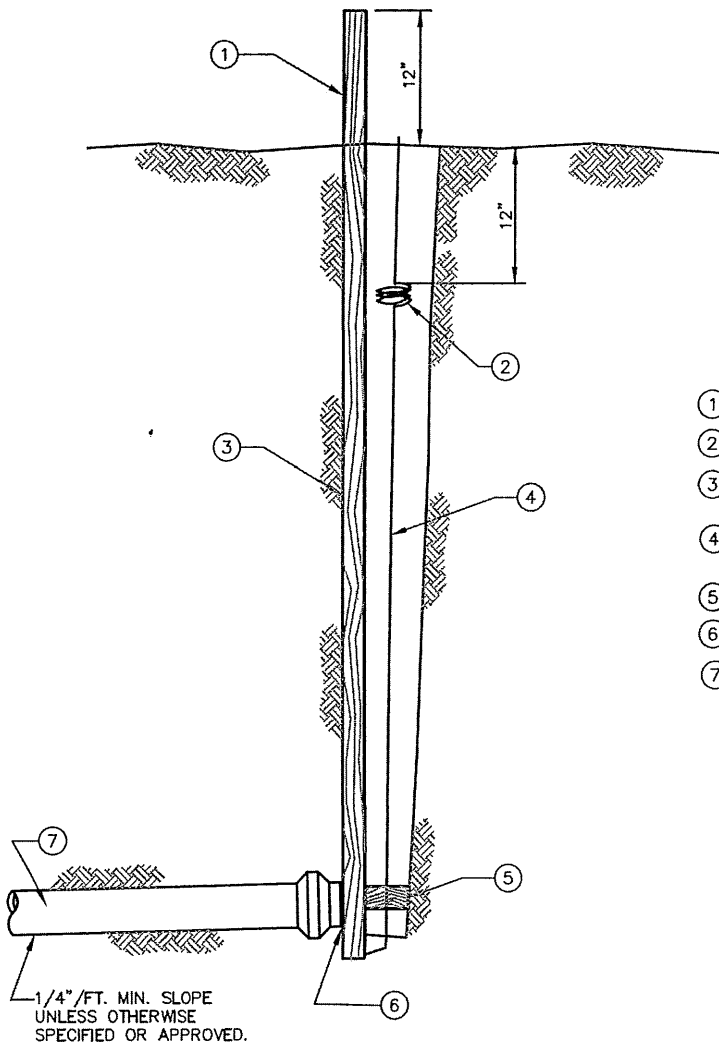
2.00% SLOPE
1.00% MIN.

2.00% SLOPE
1.00% MIN.

INV. ELEV. AS SHOWN
ON THE PLANS

PROFILE
N.T.S.

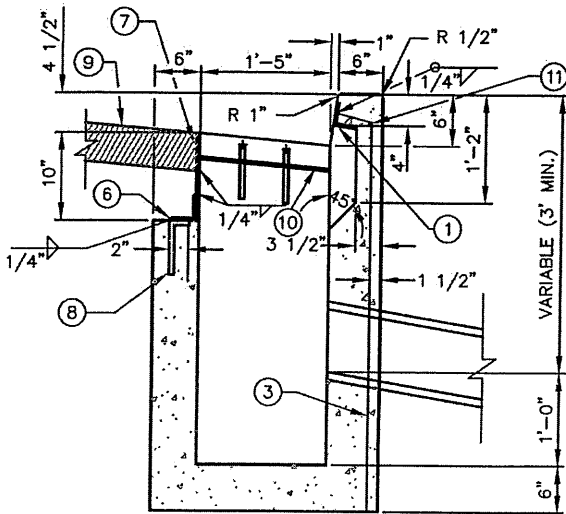
2020



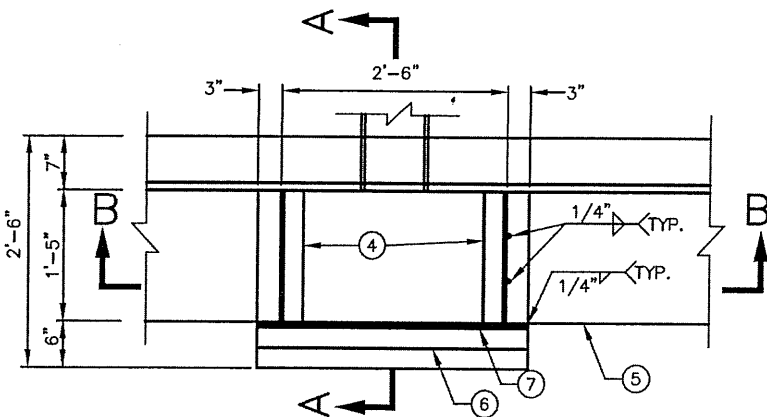
LEGEND

- ① PAINT GREEN.
- ② THREE 6" DIAMETER COILS.
- ③ 2" X 4" MARKER OR 4"-5" DIAMETER PEELER CORE POST.
- ④ NO. 12 AWG. GALVANIZED FINDER WIRE (FASTEN TO BOTTOM OF WOODEN MARKER).
- ⑤ 2" X 4" BLOCKING.
- ⑥ PLUG OR CAP.
- ⑦ 4" OR 6" SEWER SERVICE PIPE.

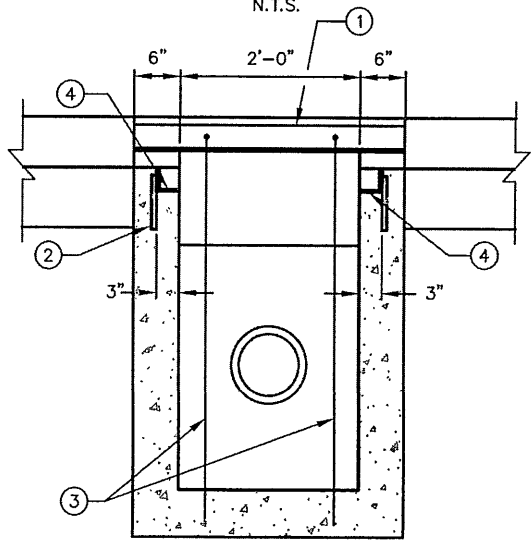
PROFILE
N.T.S.



SECTION A-A
N.T.S.



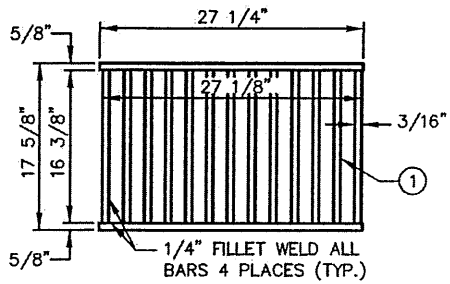
PLAN
N.T.S.



SECTION B-B
N.T.S.

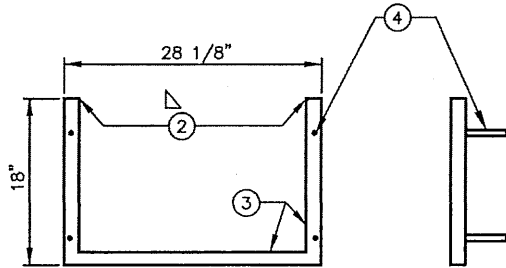
LEGEND

- ① GALV. 3" X 3" X 3/8" X 3'-0" ANGLE IRON.
- ② 2 - 7" NO. 4 BAR EACH SIDE. (GRADE A706)
- ③ 2 - 4'-0" MIN. NO. 4 BARS. (GRADE A706) ADJUST REBAR LENGTH ACCORDINGLY BASED ON DEPTH OF CATCH BASIN.
- ④ 3 1/2" X 3" X 3/8" X 1'-5" ANGLE IRON.
- ⑤ EDGE OF GUTTER.
- ⑥ 3 1/2" X 3" X 3/8" X 3'-0" ANGLE IRON.
- ⑦ 3/8" X 10" X 3'-0" A-36 STEEL PLATE.
- ⑧ 3 - 7" NO. 4 BARS. (GRADE A706)
- ⑨ PAVEMENT SURFACE.
- ⑩ STANDARD GRATE AND GRATE FRAME. SEE SD-609, SD-610 AND SD-610A.
- ⑪ 1 - 2'-8" NO. 4 BAR. (GRADE A706)



GRATE DETAIL

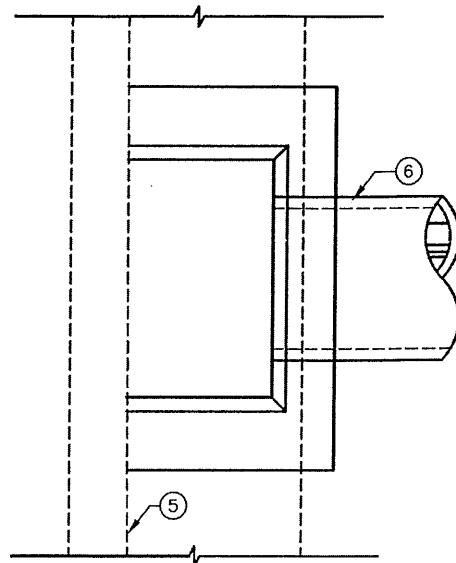
N.T.S.



GRATE FRAME DETAIL END VIEW

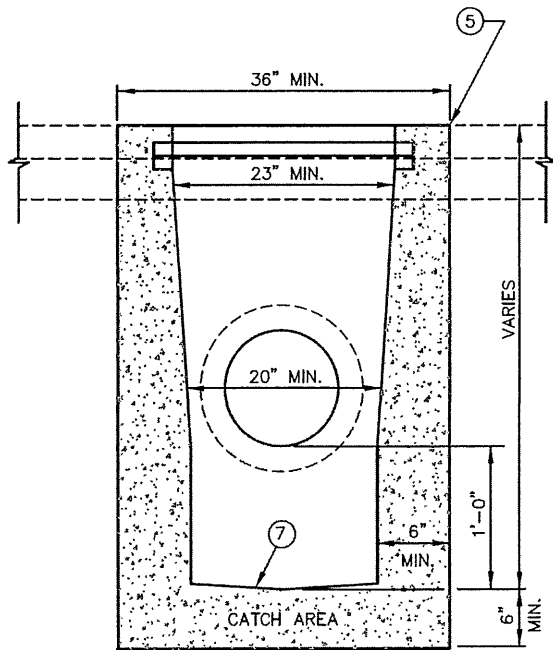
N.T.S.

N.T.S.



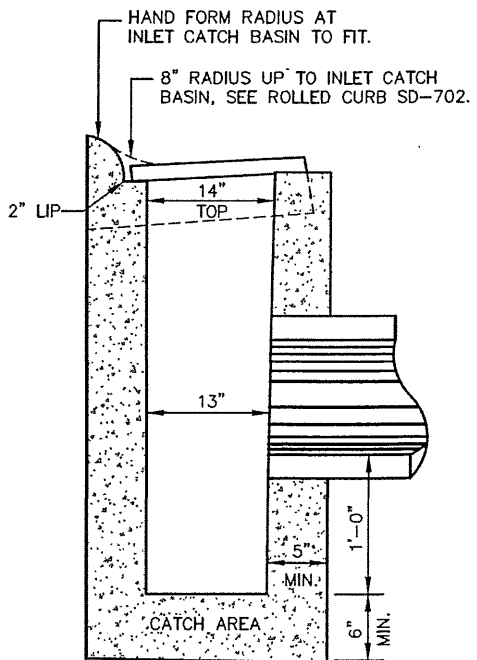
TOP VIEW

N.T.S.



FRONT VIEW

N.T.S.



SIDE VIEW

LEGEND

- ① 1 1/2" X 5/8" STEEL BAR (TYP.). N.T.S.
- ② 1.5" X 1.5" X .25" STEEL TRIANGLE (2 PLACES).
- ③ 1.75" X 1.75" X .25" STEEL ANGLE.
- ④ WELD (4) 1/2" X 3" STUDS.
- ⑤ ADJOINING TOP OF CURB.
- ⑥ OUTLET.
- ⑦ TROWEL SMOOTH.

HARRINGTON HYDRANT STORZ CONNECTIONS

HPHA™ SPECIFICATION The Harrington Permanent Hydrant Adapter is threaded onto the male steamer port and is secured permanently onto the hydrant with (2) setscrews. For security, a Storz spanner wrench is required for cap removal (high-torque cap removal).

The Storz adapter shall have a hard anodized 6061-T6 aluminum metal face sealing surface. Storz ramps and lugs. The aluminum finish shall be hardcoat anodized to MIL-A-8625, Type 3, Class 1, dark gray. The adapter is secured to the nozzle with (2) stainless steel setscrews, inserted 180° apart. The female adapter shall retain a flat gasket which seals the adapter onto the hydrant's male steamer port.

The Storz cap shall have hard anodized aluminum Storz ramps and lugs made of forged 6061-T6 aluminum. The center cap shall be forged 6061-T6 aluminum.

The Storz Cap shall be connected to the Storz adapter with a 0.125" vinyl coated stainless steel aircraft cable and (2) aluminum crimps. As a security consideration, the HPHA™ Storz cap requires a Storz spanner wrench for removal. However, the Storz Hose Coupling will connect quickly and easily by hand.

The HPHA™ is completely Made In USA

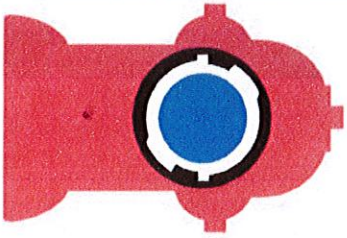
Once installed, the HPHA™ extends only **2.75"** from the hydrant nozzle.

Specify HARRINGTON STORZ

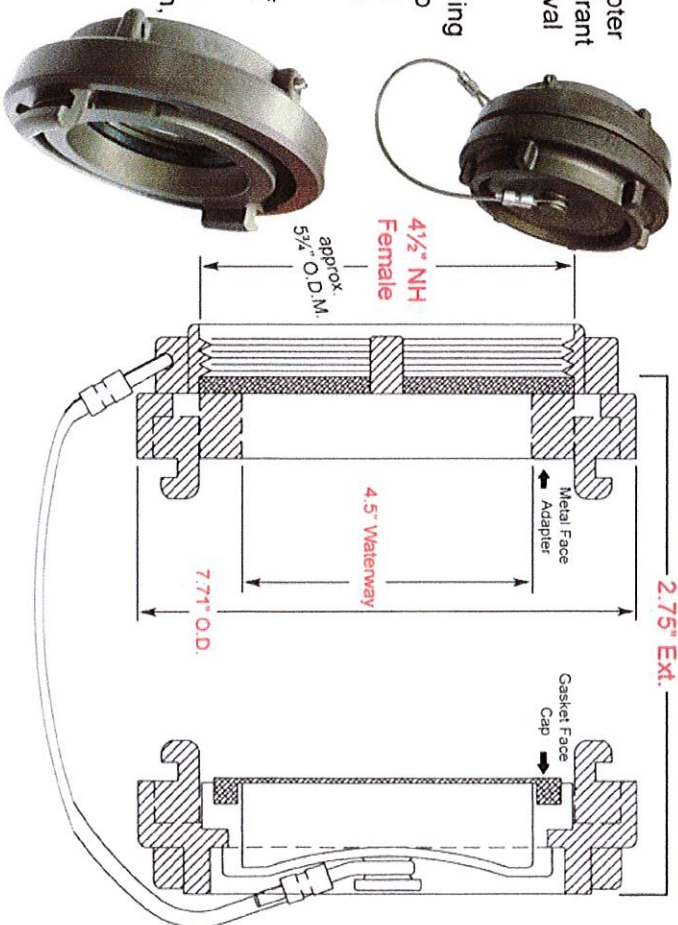
"HPHA50-45NH/Cap"

- 250 psi working pressure

- MADE IN USA



Harrington, Inc.
2630 W. 21st St.
Erie, PA 16506
Ph. 800-553-0078
daveh@harrinc.com



DWG No.:		HPHA50-45NH/Cap	
		4 1/2" NH (NST) = 5.760 x 4tpi	
5" Storz Hydrant Adapter: 5 x 4 1/2" NH Female w/(2) setscrews, Storz Cap and SS Cable			
Date: 07/01/18	DB: DTH	Harrington Hydrant Storz	
Not to scale		Sheet 1 of 1	HPHA