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**CITY OF GEORGE**  
**CONSTRUCTION SPECIFICATIONS**  
**September 2019**

## Chapter 1

### REQUIREMENTS FOR DEVELOPER CONSTRUCTED IMPROVEMENTS

#### **Section A: General Provisions.**

1. The specifications and standard details provided herein shall be used to implement design and construction requirements of City of George development ordinances, codes, or titles. The use of product manufacturer names or trademarks is intended to provide examples of acceptable quality standards. Parts or products specified by name may be interchangeable with like and equal products only upon prior City approval.
2. Definitions for terms described herein shall be those provided pursuant to the George Municipal Code. The definition of any word or phrase which may not be identified in the municipal code shall be defined from either one of the following sources:
  - A. Revised Code of Washington.
  - B. Washington Administrative Code.
  - C. Commonly used dictionary such as Merriam-Webster's.
3. Within this document are numerous references to "the City". All communication with the City shall be first directed to the City of George Public Works Superintendent. The Public Works Superintendent may designate an alternate contact for specific items, however only the Public Works Superintendent shall have the authority to provide approval for variations from this documents.

#### **Section B: General Requirements of the Developer.**

1. The Developer shall retain the services of an engineer registered with the state of Washington to provide necessary construction design services.
2. Complete plans and specifications of any proposed improvement shall be submitted to the City for approval. Upon City review and approval, the Developer shall submit all water and sewer plans and specifications to the Departments of Health and Ecology.
3. Unless otherwise approved by the City, plan and design drawings shall have a minimum scale of 1 inch equal to 50 feet, or, 1 inch equal to 40 feet if water, sewer, and street improvements are drawn on the same sheets.
4. All utilities, whether City-owned or provided by an outside purveyor, shall be placed within the City's required right-of-way.
5. Water and sewer certification shall be on standard State forms. Copies of testing data include, but are not limited to, compaction and pressure testing, shall be provided to the City. Street certification shall consist of a letter, test data, weigh tickets, and other associated or City required information.
6. The Developer shall provide a performance bond or similar security instrument to ensure workmanship and materials over the full time period between project beginning and end.

7. The Developer shall require the Contractor to provide insurance which insures all contracted work and which holds the City and its agents harmless from any and all damage claims which may result due to the performance of any contracted work. The Contractor shall provide the City proof of insurance which shall be approved by the City prior to commencing contracted work.
8. The Developer shall provide the City with a mylar copy of construction record drawings illustrating all revisions made during construction. At a minimum, the record drawings shall show the following:
  - A. The existence of all underground utilities encountered (station and depth).
  - B. Precise distance to fittings, valves, services, etc, length of all spools, etc.
  - C. Type of all fitting ends (MJ, FL, etc.).
  - D. Type of restraint used.
  - E. Location of sewer wyes.
  - F. Elevation of each manhole, pipe invert (in and out) and sewer slope.
9. Where specific manufacturers are required for facilities and materials, installation of those facilities and materials shall be completed to the manufacturer's specifications, unless otherwise approved by the City.
10. No excavation work shall be done between November 15 and February 15 without permission from George Public Works.

## Chapter 2 WATER

### **Section A: General Requirements.**[TD1]

1. All extensions to the City water system shall conform to City design standards and be in compliance with applicable Washington State Department of Health regulations. The Developer's water system shall provide adequate domestic supply and fire flow, be constructed with permanent materials, and be capable of future expansion. The following items shall be required to meet acceptable standards:
  - A. Pipe shall be: PVC-C900.
  - B. All fittings shall be cast iron or ductile iron, MJ or FL ends.
  - C. Standard 5 ¼ inch MVO hydrants shall be required. Hydrants shall be M & H 929 style or City approved equal, with one 4 ½-inch diameter port and two 2 ½-inch diameter ports. The 4 ½-inch port shall be equipped with a 5-inch Storz adapter. Threads on hydrant ports shall be standard thread and all hydrant leads shall be valved.
  - D. All water mains feeding fire hydrants must be a least 8-inch pipe unless it can be demonstrated that required fire flows can be met with similar mains. Mains 6-inches or smaller in diameter shall be prohibited.
  - E. Air and vacuum release valve installations shall be installed at principal high points in the system as directed by City.
  - F. Hydrants shall be spaced every 400 feet and valving at each intersection or every 800 feet, whichever is closer. Additional hydrants may be required to ensure adequate fire protection and/or to ensure adequate isolation of mains. Size of mains will be determined by fire flow requirements.
  - G. Dead-end mains over 200 feet in length shall be allowed only where future looping via public right-of-way can be assured. A fire hydrant shall be provided at the end of the line for flushing. An in-line blow off assembly shall be required for all dead ends under 200 feet.
  - H. Valves 12 inches and smaller shall be of the gate type, epoxy coated and resilient seat AWWA. Valves 16 inches and larger shall be butterfly type valves, AWWA.
  - I. All construction including, but not limited to, trench excavation and backfill, pipe bedding, pipe installation, testing, disinfection, and roadway repair shall conform to the current edition of the "*Standard Specifications for Road, Bridge, and Municipal Construction*" published by the Washington State Department of Transportation and the American Public Works Association.
  - J. All PVC pipe shall be bedded using sand or other approved bedding material.

- K. Pipe bury shall be 48-inch design with a minimum cover of 42 inches (see Standard Detail-Water Main Trench Section).
- L. Valve shall be installed in accordance with Standard Detail-Typical Valve Installation. All valve boxes shall be installed in accordance with the standard detail-water valve box installation.
- M. Fire hydrants shall be installed per Standard Detail Fire Hydrant Assembly and shall be placed one (1) foot behind the sidewalk, within the public right-of-way. All fire hydrant installations shall be inspected by a designated city official prior to backfill.
- N. All irrigation services shall be protected with a double check valve. Large double check installations shall be in accordance with the standard requirements of the Department of Health and the City.
- O. Non-residential services may be required to install backflow prevention devices as determined by the City.
- P. Compaction of backfill above the pipe zone in streets, shoulders, driveways, or as directed by the City shall be performed using mechanical compaction equipment and shall be compacted to a minimum 95 percent of its modified Proctor maximum dry density as measured by ASTM 1557-70, Method C or D.
- Q. Road cuts, when allowed by the City, shall be in accordance with Standard Detail – Asphalt Pavement Repair.
- R. All trench work shall be inspected by a designated City official prior to backfill.

## **Chapter 3**

### **SEWER**

#### **Section A: General Requirements.**

All extensions to the sanitary sewer system must conform to City design standards and those of the Washington State Department of Ecology. The developer's sewer system must provide adequate capacity for the development and for future extensions as required per the current City sewer planning document.

#### **Section B: Sewer Installation Requirements.**

1. All construction including, but not limited to, trench excavation and backfill, pipe bedding, pipe installations, testing, disinfection, and roadway repair shall conform to the current edition of the "*Standard Specifications for Road, Bridge, and Municipal Construction*" published by the Washington State Department of Transportation and the American Public Works Association.
2. Sewer mains shall be constructed only within the street section in new developments, or within existing right-of-way in existing developments. Sewer mains shall not be allowed in easements along rear lot lines.
3. Pipe shall be Polyvinyl Chloride (PVC) pipe, rubber ring joint, ASTM D3034, SDR 35 . All 6" side sewers shall be glued joints from main to structure. All sewer clean outs shall be constructed according to City of George Standard Details.
4. Manholes shall be gasketed and constructed of 48-inch reinforced Precast concrete manhole sections. Manholes shall conform to City of George Standard Details. The base and first barrel section shall be precast monolithically with preformed channels.
5. Joints in precast manhole sections shall be watertight and shall be a rubber ring compression joint complying with ASTM Specifications C443, a flexible plastic gasket, or equal.
6. Manhole coupling adapters may be precast in place in the manhole to accept plastic pipe, provided diameters match. No field grouting of pipe into manholes will be allowed. Pipe connections at manholes must be gasketed and must be flexible. Kor-N-Seal boots or approved equal may be used as an alternate to the AC adapter.
7. Manholes shall be set vertically plumb.
8. Manhole frames and covers shall be cast iron with a combined weight of not less than 400 pounds and have a clear opening of 24 inches. The frames and covers shall be the manufacturer's stock pattern capable of withstanding, with a reasonable margin of safety, a concentrated live load at the center of 20,000 pounds. The contact surfaces of the frames and covers shall be machine finished to common plan or have other adequate provision to prevent rocking. See City of George Standard Details for manhole frame concrete installation.
9. Manhole steps shall be constructed of corrosion resistant material and have a non-slip tread. Spacing shall not vary over two inches (1 inch plus or minus) from that shown.
10. The design of a manhole shall provide a 0.1-foot drop through the manhole.

11. Compaction of backfill above the pipe zone in streets, shoulders, driveways, or as directed by the City shall be performed using mechanical compaction equipment and shall be compacted to at least 95 percent of its modified Proctor maximum dry density as measured by ASTM 1557-70, Method C or D.
12. All sewer pipes shall be bedded and provided with magnetic marking tape per Standard Detail – Sanitary Sewer Trench Section for PVC Pipe.
13. Side sewer tees or wyes shall be manufactured as an integral unit with the main sewer line.
14. A Romac WSS Band B-4.125 SST-LS saddle shall be installed on all existing sewer taps.
15. Pavement repair shall be per City of George Standard Details for Asphalt Pavement Repairs or per recommendations of a licensed geotechnical engineer.
16. All work shall be inspected by a designated City official prior to backfilling.
17. A video inspection of sewer main line shall be required and will be reviewed by a designated City official prior to acceptance.
18. A manhole shall be provided at the upstream end of sewer lines. Cleanouts shall not be allowed.
19. Sewage Lift Stations shall be designed in accordance with the current edition of *Criteria for Sewage Works Design* by the Washington State Department of Ecology. Sewage Lift Station shall consist of a wet well with two submersible pumps (Flygt or approved equal), each capable of meeting the design flow requirements. A phone line shall be provided to the site for an alarm dialer to be furnished by the City. An alternate power supply (generator) shall be provided by the Developer.

**Chapter 4**  
**WATER AND SEWER CONNECTION POLICY**

**Section A: General Requirements.**

1. The requirements of this Article regulate the installation of water piping between the meter and structure, and between the stub sewer and structure.
2. The Developer will install all water and sewer service lines, unless arrangements are made at the City's discretion, for City installation. Contractors performing sewer and/or water connections shall be Washington State licensed contractors and possess a City business license. Prior to beginning work, the Developer shall request a City review of the plans for construction in accordance with the City's Subdivision Ordinance.
3. The City shall inspect all service work and shall inspect and may conduct a leak test of sewer and water pipes after pipes have been laid in trenches but prior to backfilling. Inspections shall be requested by the Developer no less than 24 hours in advance of the desired inspection time.
4. Separate sewer lines shall be required for individual parcels, and individual units / buildings within a single parcel. The City may waive this requirement upon approval of an alternative plan which conforms to the requirements of the Uniform Plumbing Code.
5. Septic tanks shall be bypassed, and abandoned tanks shall be pumped, filled with gravel, destroyed or otherwise decommissioned in a manner approved by Grant County.
6. A cleanout on the side sewer will be 3' to 5' from the building, or at an unobstructed location approved by the City, shall be required.
7. Side sewers shall require no less than 30 inches of cover. The City may waive this requirement to no less than 18 inches under special circumstances.
8. Sewer service piping shall be run in practical alignment and a uniform slope of not less than ¼ inch per foot or 2 percent toward the point of disposal. Where it is impractical due to the depth of the street sewer, structural features, or the arrangement of any building to obtain a slope of ¼ inch per foot or 2 percent, any such pipe or piping 6 inches or more in diameter may have a slope of not less than 1/8 inch per foot or 1 percent upon prior City approval.
9. All new water and sewer service installation shall be in accordance with City of George Standard Details and no more than 1 residence shall be served from each main tap. Separate water shut off valve, accessible to the building occupant, shall be provided at each residence.
10. All water and sewer pipe installation shall have tracer wire installed in conjunction with the pipe.
11. Water service lines shall require a minimum of 30 inches of cover.



## Chapter 5 STREETS

### **Section A: General Requirements.**

1. The Developer shall construct a street and drainage system in accordance with City specifications and the latest edition of the *Standard Specifications for Road, Bridge, and Municipal Construction*, hereafter referred to as Standard Specifications, published jointly by Washington State Department of Transportation and the American Public Works Association.
2. Standard residential road sections shall be constructed per City of George Standard Detail – Typical Residential Road Section.
3. A drainage design shall be created and submitted for City approval. On-site storm conveyance systems shall be designed per Article 6 of these specifications.
4. Hot mix asphalt shall be per Section 5-04, *Standard Specifications*.
5. Monuments consisting of brass markers in cases shall be set in all intersections. Monuments shall conform to WSDOT Standard Plan A-10.30-00 or the current equivalent as determined by the City.
6. Where a development is proposed on an existing public street that is not improved to the required standards, said existing public street shall be improved by the developer to the required standard, as it applies to the half-street from centerline. Said requirement includes a dedication of right-of-way based on the existing street classification. This requirement is inclusive of any boundary streets located adjacent to proposed land divisions.
7. All utilities shall be placed within appropriate pathways, where feasible, to avoid future disruption of the roadway surface.
8. All designated improvements shall be completed prior to issuance of occupancy or use permit.

### **Section B: Earth Embankment.**

1. Compacted earth embankment shall be constructed in accordance with Section 2-03, *Standard Specifications*. Compacted embankment shall be compacted in accordance with Section 2-03(14) C, Method B, *Standard Specifications*.
2. Entire sub grade surfaces, whether in cut or fill area, shall be moistened, bladed, and compacted to a smooth, uniform and unyielding surface. Subgrade compaction shall be per Section 2-03.3(14) C, Method B.
3. Test records of compaction shall be provided to the City during the course of construction.
4. Cutting of any existing asphaltic concrete or Portland cement concrete shall be by sawcut.

### **Section C: Ballast.**

1. Ballast shall be manufactured per Section 9-03.9 (1), *Standard Specifications*. Materials shall be uniform in quality and free of wood, roots, bark, and other extraneous material.
2. Placement of ballast shall be per Section 4.04, *Standard Specifications* with the exception that end dump equipment may be used for hauling and placing.

**Section D: Crushed Surfacing – Top and Base Course.**

1. Crushed stone surfacing shall be manufactured per Section 9-03-9(3), *Standard Specifications*. Materials shall be uniform in quality and free of wood, roots, bark, and other extraneous material.
2. Crushed surfacing top course shall be placed per Section 4.04, *Standard Specifications* with the exception that end dump equipment may be used for hauling and placing.

**Section E: Concrete Curb, Curb and Gutter, and Inverted Gutter.**

1. Cement concrete curbs, integral cement concrete curb and gutter, and concrete inverted gutter shall be constructed per Section 8-04, *Standard Specifications* and as further described herein and as illustrated on plans.
2. Mastic expansion joints shall be placed at all points of tangency. Standard full plates and half plates shall be placed at 10 foot alternating intervals.
3. Pouring concrete against dry forms or dry subgrade is prohibited. After troweling and before jointing or edging, the surface of the curb and gutter shall be lightly brushed in a transverse direction with a soft brush to a broom finish. All work shall be finished to the lines and grades illustrated on approved plans.
4. All curbs will meet current ADA standards.

**Section F: Cement Concrete Sidewalk.**

1. Cement concrete sidewalk shall be 6 inches in depth, shall be constructed per the WSDOT *Standard Specifications* and as further described herein and shown on Standard Details. Subgrade shall be compacted as described pursuant to Section B of this Chapter.
2. Sidewalk Ramps shall be meet all current ADA standards. Guidance for design and construction should follow the current version of the WSDOT Design Manual and Standard Plans.

**Section G: Illumination.**

1. All City Streets shall be illuminated with LED Light fixtures
2. Illumination shall be in accordance with the current version of the Washington State Department of Transportation's Design Manual
3. Wood Light Poles shall not be allowed without written permission from the City.
4. All Illumination poles installed within City limits shall meet the following criteria or City approved equal:
  - a. Light Pole Specs
    - i. Mounting shall be direct bury
    - ii. Material shall be exposed aggregate concrete
    - iii. Light poles shall be octagonal in shape
    - iv. Color shall be natural exposed aggregate pearl grey
    - v. Finish shall be etched

- vi. Anti-graffiti finish is required
5. Street lighting is provided to the City by a local power provider. It shall be the responsibility of the developer to coordinate with the power provider and the City to determine service requirements for lighting and improvements.

**Section H: Sign Standards.**

1. In all subdivisions that include public streets, except as provided below, standard street signs shall be installed by the City of George at the expense of the developer. The developer must reimburse the City for the full cost of the installation. The performance of installation, maintenance, and replacement are the responsibility of the City.
2. In subdivisions with architectural standards, restrictive covenants, and a property owner's association, custom street signs may be installed by the developer with all costs of installation, maintenance, and replacement paid by the developer.
3. Custom street signs must comply with the Manual on Uniform Traffic Control Devices published by the U.S. Department of Transportation and may be installed only after written approval by the City.

**Section I: Street Standards.**

1. GENERAL  
The street layout of every development shall be in conformance with these standards and with the adopted comprehensive plan or circulation element thereof and shall provide for the continuation of major streets which serve property contiguous to the development. Street networks shall provide ready access for fire and other emergency vehicles and the Council, upon recommendation of the planning commission, may require additional access points if such are found to be necessary to protect the public safety. Blocks shall not be less than four hundred feet nor more than one thousand two hundred feet in length.
2. INTERSECTIONS  
Street intersections shall be as nearly at right angles as is practicable and street jogs with offsets of less than one hundred twenty-five feet between centerlines are not allowed. In residential subdivisions where possible, the street system should be designed so as not to intersect with arterial streets at intersections less than three hundred (300) feet apart. Intersection design shall be in conformance with the AASHTO "A policy on Geometric Design of Highways and Streets" and WSDOT's "Design Manual".
3. CONNECTING TO STATE HIGHWAYS  
Where City streets connect to state highways, design standards from the most recent edition of the WSDOT Standards for intersection design shall apply. Review and approval will also be required by WSDOT.
4. PLANS AND PROFILES SUBMITTAL

A plan and profile of the proposed street meeting all drafting standards and showing the following data shall be submitted to the City for approval prior to preliminary development approval and construction:

Plan:

- \* Street alignment in stations of fifty foot intervals;
- \* Bearings on street centerline; (construction drawings only)
- \* Curve data on all horizontal curves, twenty-five foot stations minimum;
- \* Right-of-way lines and width for proposed streets;
- \* All topography within the right-of-way limits, including all utilities;
- \* Spot elevations on adjacent grades and appurtenances to the project, i.e. ground shots, existing asphalt shots and existing features. These elevations are required to determine appropriate transitions from new roadway section to existing adjacent features.
- \* Label all streets and adjoining subdivisions;
- \* Typical roadway section of proposed street;
- \* Existing and proposed drainage structures indicating direction of flows.
- \* Map size shall be twenty four inches by thirty six inches, additional plan sizes may be accepted with the approval of the Public Works Department. All Plat drawings (preliminary or final) are required to be submitted on 18 inch x 24 inch mylar. Final plans shall also be submitted in electronic form on CD media in a format readable by the City's current version of AutoCAD.

Profile:

- \* Original ground line; Control elevation on border of sheet.
- \* Stationing in intervals of one hundred feet;
- \* Grade line showing grade percent and vertical curves.

Cross Sections:

- \* For developments where road work is required on an existing road, development plans will be required to submit cross sections of existing road. The cross sections shall show at a minimum: centerline elevation, existing offset and elevation of edge of pavement, and proposed width and elevations of widened section (curb/gutter and sidewalk). Cross sections will be required on 50- foot station minimum. Scales for cross sections shall be as follows (or as approved by City):
  - Horizontal: 1" = 10'
  - Vertical: 1" = 2' Minimum  
1" = 5' Maximum
- \* Typical Cross Sections for new or proposed roads are required for each roadway Section.

5. WORKMANSHIP AND MATERIALS

Workmanship and materials shall be in accordance with Sections 1-05 and 1-06 of the current edition of the Washington State Department of Transportation Standard Specifications for Roads, Bridges, and Municipal Construction, and as set forth in these City of George Standards.

One asphalt concrete pavement cold joint will be allowed when paving a roadway (cold joint will typically be located at center of roadway). If maximum tolerances of paving machine width do not reach centerline of roadway on a single pass, contractor will be required to employ a second paving machine. Paving machines can then pave side-by-side, eliminating a cold joint. At the discretion of the City, the second paving machine may be waived if contractor uses an approved joint re-heating method, or length of paving is under 500' in length and second pass to centerline will be completed prior to cooling of the first pass. Longitudinal joints between two adjacent HMA mats shall be coincidental with the edges of travel lanes.

6. SIDEWALKS

Sidewalks shall be in accordance with City of George Standard Details located at the end of this section. All new improvements or developments shall include the installation of sidewalk, and curb and gutter per these Standards. Existing thickened edge sidewalk may be replaced with thickened edge sidewalk per the standard details located at the end of this section, unless upgrade to curb, gutter and sidewalk is required by the City.

7. PERMANENT TRAFFIC SIGNS

Traffic control and sign base and post hardware and installation shall be provided and installed by the developer in accordance with the current edition of the MUTCD Manual, City of George Standard Details, and as directed by the City. The cost of the sign and sign mounting will be in accordance with Chapter 5 section H. Stop signs are required at the following intersections:

- Local Access to Collector or Arterial intersections
- Collector to Collector or Arterial intersections
- Other locations shall only be installed if approved by the City

8. GUARD RAILS

Guard rails may be required by the City where deemed appropriate in the interest of public safety, health and welfare. All guard rails shall conform to the criteria in Washington State Department of Transportation Design Manual as may be amended or revised.

9. EXISTING UNIMPROVED STREET REQUIREMENTS

**Residential**

A. The following minimum standards shall apply to the development of single family residential dwelling units on an unimproved right of way (existing plats):

1. Roadway improvements shall include, but are not limited to street, sidewalk, curb and gutter, surface water treatment/flow control and associated conveyance systems, street signs, hot or warm mix asphalt, gravel base course, gravel top course, geotextile fabric, excavation, saw cutting, roadway fill material, striping and street light improvements for entire right of way frontage. Developer or Developer's Contractor shall pave/overlay existing roadway from new curb (lip of gutter) to centerline of road width per street classification requirements, if required by the City, refer to the standard details at the end of this section.
  2. An improved turn-around shall be provided consistent with the current edition of these standards if the lot to be developed is located at the end of any road that is over 500 feet in length.
  3. All utilities which have not already been installed to serve the site shall be constructed to full City standards as set forth herein and installed underground. The list of affected utilities shall include but not be limited to water, sewer, storm drainage, natural gas, electrical and communications.
  4. The Developer shall submit recommendations from a licensed professional engineer for typical roadway sections thicknesses. The recommendations shall be based on a geotechnical evaluation of existing soils within the project area. Existing subgrade soils may require additional compacted depths or installation of geotextile fabric for base stabilization as directed by the City.
  5. Rolled curb and gutter will not be allowed on residential streets. At intersections, rolled curb shall be transitioned to full height curb ten feet prior to the radius point of the intersection.
- B. All new developments will require roadway improvements and shall include, but are not limited to street, sidewalk, curb and gutter, surface water treatment/flow control and associated conveyance systems, street signs, hot or warm mix asphalt, gravel base course, gravel top course, geotextile fabric, excavation, saw cutting, roadway fill material, striping and street light improvements and utilities in full compliance with these development standards, which shall include completion of the conditions in A-3 above. Developer or Developer's Contractor shall pave/overlay existing roadway from new curb (lip of gutter) to centerline of road width per street classification requirements, if required, refer to the standard details at the end of this section.

The street, sidewalk, curb, gutter and lighting improvements for new

development on a singular lot that is non-contiguous to an improved street in an existing plat may be limited to the entire lot frontage on the public right-of-way.

- C. Subject to the limitations set forth in RCW 35.43.182 as it now exists or as may be hereafter amended, when the City determines that improvements should be delayed, property owners shall sign an agreement to support and not oppose future formation of a local improvement district for completion of the road and all utilities to City standards.

**Commercial, Industrial, Multi Family and All Other Uses**

All new commercial development, including multifamily dwelling units, and conditional uses for business other than a home occupation, shall make the following minimum street improvements as a condition of any development permit issuance on any right of way which is not fully improved to current City standards:

Roadway improvements shall include, but are not limited to street, sidewalk, curb and gutter, surface water treatment/flow control and associated conveyance systems, street signs, hot or warm mix asphalt, gravel base course, gravel top course, geotextile fabric, excavation, saw cutting, roadway fill material, striping and street light improvements for the entire right of way frontage. Developer or Developer's Contractor shall pave/overlay existing roadway from new curb (lip of gutter) to centerline of road width per street classification requirements, if required by the City, refer to the standard details at the end of this section.

- A. Subject to the limitations set forth in RCW 35.43.182 as it now exists or as may be hereafter amended, when the City determines that improvements should be delayed, property owners shall sign an agreement to support and not oppose formation of a local improvement district for completion of the road and all utilities to City standards.

Developer proposed use of property shall be arranged such that cars will not be queued across sidewalks or into roads, such as "Drive Thrus".

10. **MONUMENT INSTALLATION**

Install monuments and monument cases at centerline of street intersections, the beginning and ending points of all curves, the center of cul-de-sacs and other points as directed by the City.

11. **MONUMENT PROTECTION PLAN BEST PRACTICE**

This practice has been developed in accordance with guidance provided by the Washington State Board of Registration for Professional Engineers and Land Surveyors. The plan follows the requirements of Revised Code of Washington title 58 and Washington Administrative Code 332-120.

**City Capital and Maintenance Projects:** The Public Works Director or designee shall work to perpetuate monuments on City Capital/Maintenance

projects.

**Capital:** Staff will work with design/construction engineers and land surveyors to locate existing monumentation on projects. When removal of monuments will be required, the monument removal policy will be adhered to.

**Maintenance:** Staff will make best attempt to minimize impacts to survey monuments. When removal of monuments will be required, the monument removal policy will be adhered to.

**Private Projects:** Applicants for City of George permits shall make their best attempt to locate existing monuments and make their location known as part of the permit application. When design/construction surveyors and engineers are involved, it shall be their duty to make best attempt to show existing monuments on the survey/design. When removal of monuments will be required, the monument removal policy will be adhered to.

#### Monument Removal Policy

Removal of monuments shall be in accordance with the Washington State Department of Natural Resources (DNR) requirements. An application to remove or destroy a survey monument shall be filed and approved by the DNR per WAC 332-120.

Replacement shall also be in accordance with WAC 332-120. Contact the Public Land Survey Office at DNR. Information can also be found at: <http://www.dnr.wa.gov/>

## 12. HALF-WIDTH STREETS

Where approved, half width streets shall meet the following requirements:

- Right-of-way width of the half-width street shall meet the standards of the designated street classification.
- If feasible, the half-width street shall be constructed so that the center of the ultimate road section will correspond with the center of the right-of-way;
- The traveled way shall be surfaced the same as one half the width of the designated street classification standard or a minimum of twenty-four (24) feet.
- The edge of the paved street shall be finished with permanent curb and gutter to ensure proper drainage, bank stability and traffic safety.
- When a half-street is eventually completed as a whole street, the completing developer shall reconstruct the original half-street as necessary to produce a proper full width street of designated section.
- Improvements on an existing road will require full depth asphalt, base and top course to sawcut line of existing road. A minimum of 0.15' overlay will be required to centerline of existing road. Additional



treatment may be required in order to achieve structural integrity and to address drainage issues.

13. DRIVEWAYS

Driveways shall be constructed in accordance with City of George Standard Details and must be permitted and inspected by the City of George. All approaches shall be paved with asphalt or concrete from back of concrete sidewalk a minimum of 5 feet. Where driveways cross a sidewalk or planned sidewalk, the driveway shall be constructed such that it meets current ADA standards.

Driveways: Driveways shall be located on the lowest classification of roadway abutting the property. Driveways accessing onto arterial streets are discouraged and to the greatest extent possible in plat design access should be organized along neighborhood streets that may intersect arterials, i.e. cul-de-sacs, loops and neighborhood collectors. Driveway access directly onto collector streets is permitted, subject to the condition that backing out onto collector streets is prohibited. Such driveway access onto collector streets must be designed in a manner that provides adequate driveway turnaround space to allow for front end entry onto the collector streets. Driveways shall not be allowed on streets with speed limits greater than 25 mph. Exceptions to this design standard may be granted in the sole discretion of the City. The variance process shall be as noted in the George Municipal Code. Allowable widths shall be as shown below.

Driveway locations and widths shall be as follows:

Design Requirements:

Except for specific conflicting provisions for service station driveways, the following shall apply:

- (a) General Specifications. No single driveway shall exceed thirty feet in width measured parallel to the curb line;
- (b) Private Driveways. Private driveways shall be those used primarily by the property owner for means of ingress and egress from an improved street. Private driveways shall not exceed the following widths:

<u>Width of Lot</u>	<u>Width of Driveway</u>
Less than 16 feet	8 FT
16 to 30 feet	50% of lot width
30 to 50 feet	20 FT
Over 50 feet	25 FT

Only one driveway may be permitted for a lot seventy-five feet or less in width. Two driveways may be permitted for a lot width greater than seventy-five feet. Lots with two driveways shall have each driveway separated by a minimum of twenty feet and limited to twenty feet in width.

- (c) **Service Driveways.** Service driveways may be those used primarily to serve business or commercial premises to which the public is invited. They shall provide ingress and egress to such property from an improved street. Service driveways may be ramped or may be constructed without ramp.

<u>Width of Lot</u>	<u>Width of Driveway</u>
Less than 16 feet	8 feet
16 to 30 feet	50% of width
30 to 50 feet	25 feet
50 to 75 feet	30 feet
Over 75 feet	35 feet

Only one service driveway may be permitted for a frontage which does not exceed seventy-five feet. Two driveways may be permitted for frontages exceeding seventy-five feet. All service driveways in excess of the number allowed and/or maximum widths must be approved by the City;

- (d) **Property Location.** No driveway shall be constructed within three feet (excluding curb slopes) from the extended property line of separate ownerships or leaseholds measured parallel to the curb. However, where one driveway is to be used by two adjoining ownerships or leaseholds, the driveway and driveway entrances may be continuous, but each ownership or leasehold shall have a minimum of fifteen feet of driveway fronting on each of the ownerships or leaseholds
- (e) **Corner Locations.** Driveways shall be constructed no closer to the corner than thirty feet from the lot line extended into the abutting street upon which the driveway is to be constructed unless approved in writing by the City. In all cases, the City shall have the right to determine the location of each driveway with reference to lot lines,

keeping in mind the use of the street, public safety, necessity for maximum parking space on the street, and the use for which the driveway is intended.

Abandoned Driveways. Abandoned driveways shall be removed along with the depressed section of curb and gutter to the nearest joint in the full section of curb and gutter and shall be replaced with full height sections of curb and gutter.

Abandoned driveways through existing sidewalks may remain if properly cut along the inner line of the existing sidewalk. If the driveway section in the walk is unstable, it shall be removed and replaced with a sidewalk in accordance with the George City Code.

#### 14. PRIVATE ROADS

Private roads shall meet the definition as given in this section and shall be allowed only when part of a planned unit development (PUD). Such private roads shall be permanently established by plat or easement providing legal access to serve two, three, or four single family dwelling units and shall be designed to the Local Access road standard, provided, however, that such private roads may be constructed to an all-weather surface and shall not require curbing. Refer to City of George Standard Details at the end of this section. Such private roads shall be accessible at all times for emergency and public service use. Private roads shall have covenants which provide for the maintenance of the private roads by the owners, homeowners association, or other legal entity, and are recorded with the Grant County Auditor's Office.

#### 15. STREET CLASSIFICATIONS

The classifications of all streets shall be established by the Public Works Department. Street changes in classifications shall be shown to meet the following criteria. Refer to the Standard Details at the end of this section.

**LOCAL/PRIVATE ACCESS STREET:** A short street, cul-de-sac, court or a street with branching places or lanes. A Local Access Street is a minor residential street, and usually there is not through traffic between two streets of a higher classification. The ADT (Average Daily Traffic) can reach up to 1500. Right of way shall be fifty (50) feet with a thirty-eight (38) foot surface area measured from face of curb to face of curb. Private streets do not require curbing and the surface area may be reduced accordingly. Local/Private access streets are only allowed upon approval from the Public Works Department. Face of curb radii's shall be to the lowest street classification of the intersection and shall be a minimum 25' radius on Local Access Streets. Street centerline radii shall be designed to a minimum 30mph design speed or as approved by the City.

**COLLECTOR:** The Collector is secondary street in the urban system and correspondingly has the second highest average daily traffic (ADT). The

Collector generally receives many vehicles from Local Streets and/or is the major route to significant activity centers. Collector streets should not generally be encumbered with stop signs. The ADT (Average Daily Traffic) can exceed 1500+. Right-of-way shall be sixty (60) feet and surface area shall be forty-four (44) feet from face of curb to face of curb. Face of curb radii's shall be to the lowest street classification of the intersection and shall be a minimum 25' radius on Collector Streets. Street centerline radii shall be designed to a minimum 35 mph design speed or as approved.

**ARTERIAL:** Arterial streets contain the greatest proportion of through travel. Such facilities serve the high-volume travel corridors that connect the major generators of traffic. Arterials typically connect with collectors that extend into the urban area. Right-of-way shall be eighty (80) feet and surface area shall be forty-eight (48) feet from face of curb to face of curb. Face of curb radii's shall be to the lowest street classification of the intersection and shall be a minimum 30' radius on Arterial Streets. Street centerline radii shall be designed to a minimum 25 mph design speed or as approved the City.

\* In extreme situations, with consent of the City and with possible parking restrictions as determined by the City, the width of roadway may be reduced. This reduction may only take place in situations where major utilities or streams, etc., are in conflict with improvements. Sidewalks and other roadway features may be required to be located at a location suitable for ultimate build-out.

\*\* Centerline striping will be performed for Arterial and major Collector streets only (See street classification map) and as required by the MUTCD Manual.

## 16. TRAFFIC COUNTS

The Average Daily Traffic (ADT) shall be estimated using the following trip generation rates or by the trip generations found in the latest edition of Trip Generation Manual by ITE (Institute of Traffic Engineers):

- Residential (expressed in vehicle trips/Dwelling Unit)
  - \* Single Family 9.57
- All other trip generation rates shall be determined from the Trip Generation Manual, as stated above.

Developments shall provide an additional access way to an Arterial or Collector for each 1000 ADT produced. Individual developments producing ADT exceeding 400, or the accumulation of existing and proposed developments exceeding 1000 ADT, may be required at the discretion of the City to perform a traffic study completed and stamped by a registered traffic engineer. The study shall provide recommendations for access based on collected data. Development access shall also meet the current requirements of the current fire code.

## 17. CUL-DE-SACS

Cul-de-Sacs shall be limited to serve a maximum of 40 lots and shall not exceed 500 feet in length. Any Cul-de-Sacs, or developments greater than 150 ft. in length will require a turnaround. Refer to City of George Standard Drawings at the end of this section for turnaround requirements.

## Chapter 6 STORM SEWER

### **Section A: Construction Requirements.**

1. All extensions to the City storm sewer system shall conform to the design standards of the City and of the Standard Specifications of the Washington State Department of Transportation. The Developer's storm sewer system shall provide adequate capacity for the development and for future extensions.
2. All construction including, but not limited to, trench excavation and backfill, pipe bedding and installation, cleaning and testing, and roadway repair shall conform to the *Standard Specifications* and as directed herein by the City. Specific sewer construction and material specifications shall be per Sections 7-04 and 7-05, *Standard Specifications*.
3. The City of George adopts the Washington State Department of Ecology's publication "*Stormwater Management Manual for Eastern Washington*" Publication #04-10-076, as it exists now or as may be amended.
4. Drain pipe and structures shall be per Section 9-05, *Standard Specifications*. Soils tests shall be provided to demonstrate the suitability of corrugated aluminum pipe, if used.
5. Manholes shall be as required pursuant to Chapter 3 herein.
6. Drainage structures shall be WSDOT Type I or Type II Catch Basins.
7. Compaction of backfill above the pipe zone in streets, shoulders and driveways, or as directed by the City shall be done using mechanical compaction equipment and be compacted to no less than 95 percent of its modified Proctor maximum dry density as measured by ASTM 1557, Method C or D.
8. All sewer pipes shall be bedded per *Standard Specifications* and placed per City of George Standard Detail – Storm Drain Trench Section.
9. Pavement repair shall be per City of George Standard Detail – Asphalt Pavement Repair.
10. Under no circumstances shall storm drains, roof drains or any other drainage facilities be allowed to connect to the City's sanitary sewer system.
11. All storm drains shall be installed and deemed in proper working condition by a designated City official prior to issuance of occupancy or use permit.

### **Section B: Design Requirements.**

1. Design of storm sewers shall be based on engineering analysis of total drainage areas, runoff rates, pipe capacity and other significant factors associated with design. Design standards shall be per *Standard Specifications* for sewer pipe design. Adequate detention storage shall be provided to ensure that the peak 10-year flow leaving the site after development does not exceed the 10-year pre-development peak flow. The design shall also protect from 100-year peak flow damage. Open surface retention ponds shall only be used where no other alternative exists, as determined by the City. Detention ponds shall be covered to the city's specifications, and shall be maintained by the homeowners wherever feasible.

2. All dry wells and other storm water facilities shall have oil and silt separation and be designed in accordance with the latest edition of the *Stormwater Management Manual for Eastern Washington*.
3. Design of inlet spacing shall be per Chapter 5, WSDOT Hydraulics Manual. Generally, inlet spacing shall not exceed 200 ± feet. A manhole or Type II catch basin shall be installed at the intersection of two collector sewers. Collector sewer shall be those sewers servicing more than one catch basin.
4. Design of conveyance structures shall be based on a 10-year storm. Small developments consisting of less than 20,000 square feet of impervious area may be designed to accommodate ¾ inches of precipitation. Impervious surfaces must be clearly noted and/or illustrated on the site drainage plan and drainage calculations. Surface retention shall be permitted for 50 percent of the required volume; 50 percent shall be subsurface. Surface retention shall be designed to be less than 6 inches in depth.
5. A site drainage plan shall be submitted to the City simultaneously with building plans prior to any construction. Drainage design calculations shall accompany the site drainage plans. Calculations and design may incorporate any accepted drainage method including “Rational Method”, etc.

**Chapter 7  
PERMITTING**

**Section A: Public Works Permits.**

1. Public works permits structure and fees are established as follows:

**No Cost Permits:** Temporary use of Right of Way for Dumpster, or other non-construction related activities may be allowed upon approval from the City.

**Public Works Application Fee:** Required for Work within City Right of Way.

**\$25 FEE**

**Processing Fee for Street and Alley Vacations:** Required at time of submitting Street or Alley Vacations.

**\$50 FEE**

**Processing Fee for Street Use Permit:** Required at time of submitting Street Use Permit Application

**\$50 FEE**

**Irrigation/Backflow Permit:** Required for installation of irrigation systems when connecting to City water. City shall inspect installation of backflow device.

**\$115 FEE**

**Inspection Fee:** Fee charged for inspection by a designated city official

**\$65/hr FEE (Min. 1hr)**

**Section B: Water Permits.**

1. **Water Meter Connect Fee:** The Water Meter Connect Fee, as follows, is for the size of meter being installed. Charges for labor and materials for all meters will be computed by the Public Works Department to reflect the actual costs of installation. Installation will be performed by city staff. Owner or authorized agent is responsible for service line from meter to structure.
2. **Service Line Inspection Fee:** Required for inspection of a new service line or the repair of an existing service line.

**\$65 FEE**



3. **Public Works Application Fee:** Required for Work within City Right of Way.

**\$25 FEE**

4. **Hydrant Use:** Fee, as follows, for the use of water from a City fire hydrant. The City of George Public Works will install a meter, and bill for the actual water consumption on a monthly basis. Hydrant use will be available during the hours of 7:15 am and 3:00 pm Monday thru Friday, excluding holidays. The city reserves the right to approve designated times outside of these hours on a case by case basis when request is presented in writing to the Public Works Department. All permitted users will be required to provide city approved backflow protection.

**\$100 refundable deposit first month/per permit**  
**\$35 per month permit fee**

**ALL CONSUMPTION WILL BE BILLED MONTHLY ACCORDING TO THE SCHEDULE SET FORTH IN 13.04.020 FOR BULK WATER**

**Section C: Sewer Permits.**

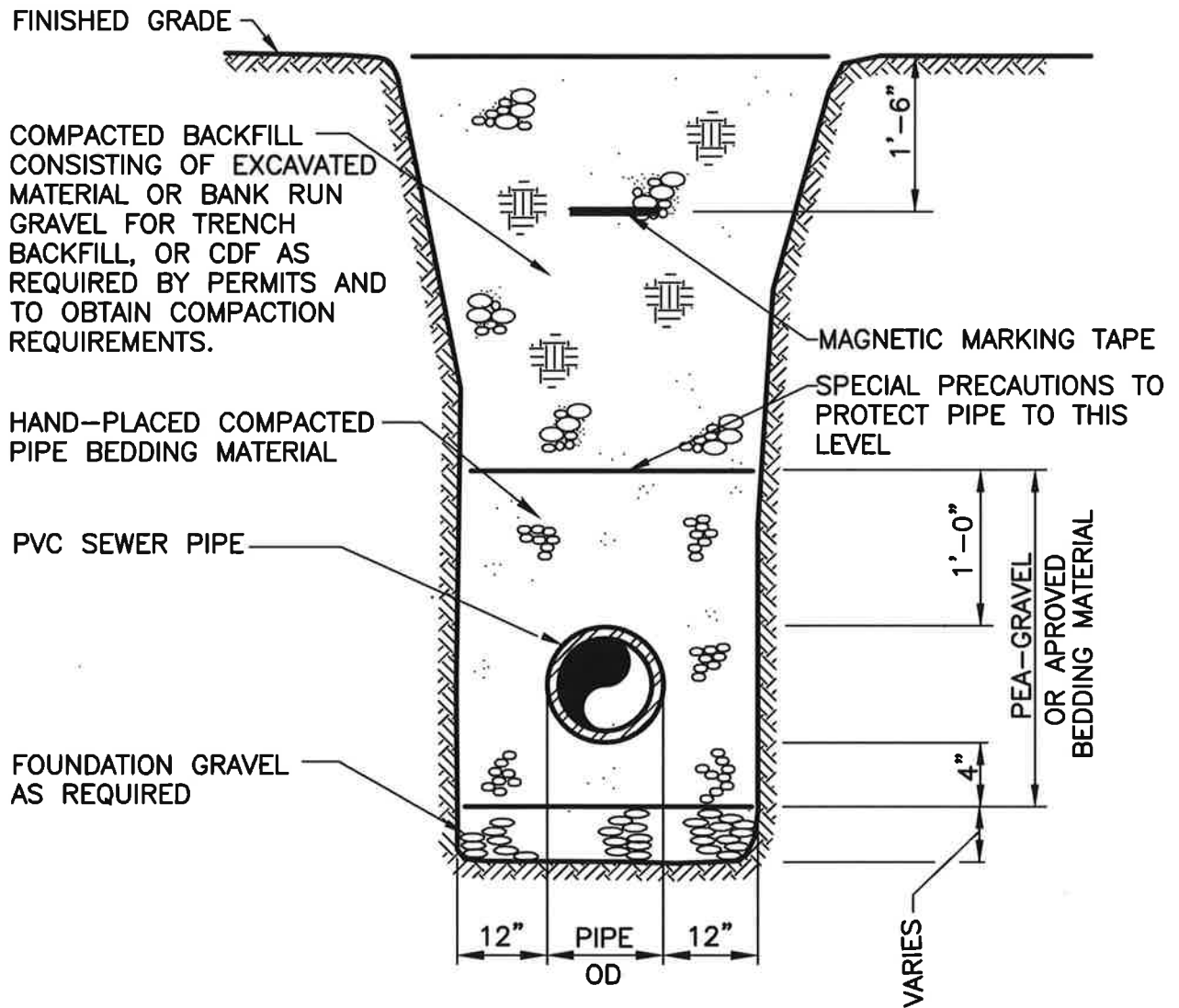
1. **Side sewer Inspection Fee:** Required for inspection of a new side sewer or the repair of an existing side sewer.

**\$65.00 per inspection plus**  
**\$25.00 per each additional lateral**

2. **Side Sewer Tap:** Fee, for each tap onto an existing sewer main, performed by City Crews. Charges for labor and materials for each tap will be computed by the Public Works Department to reflect the actual cost of installation.

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**City of George**  
**Standard Details**




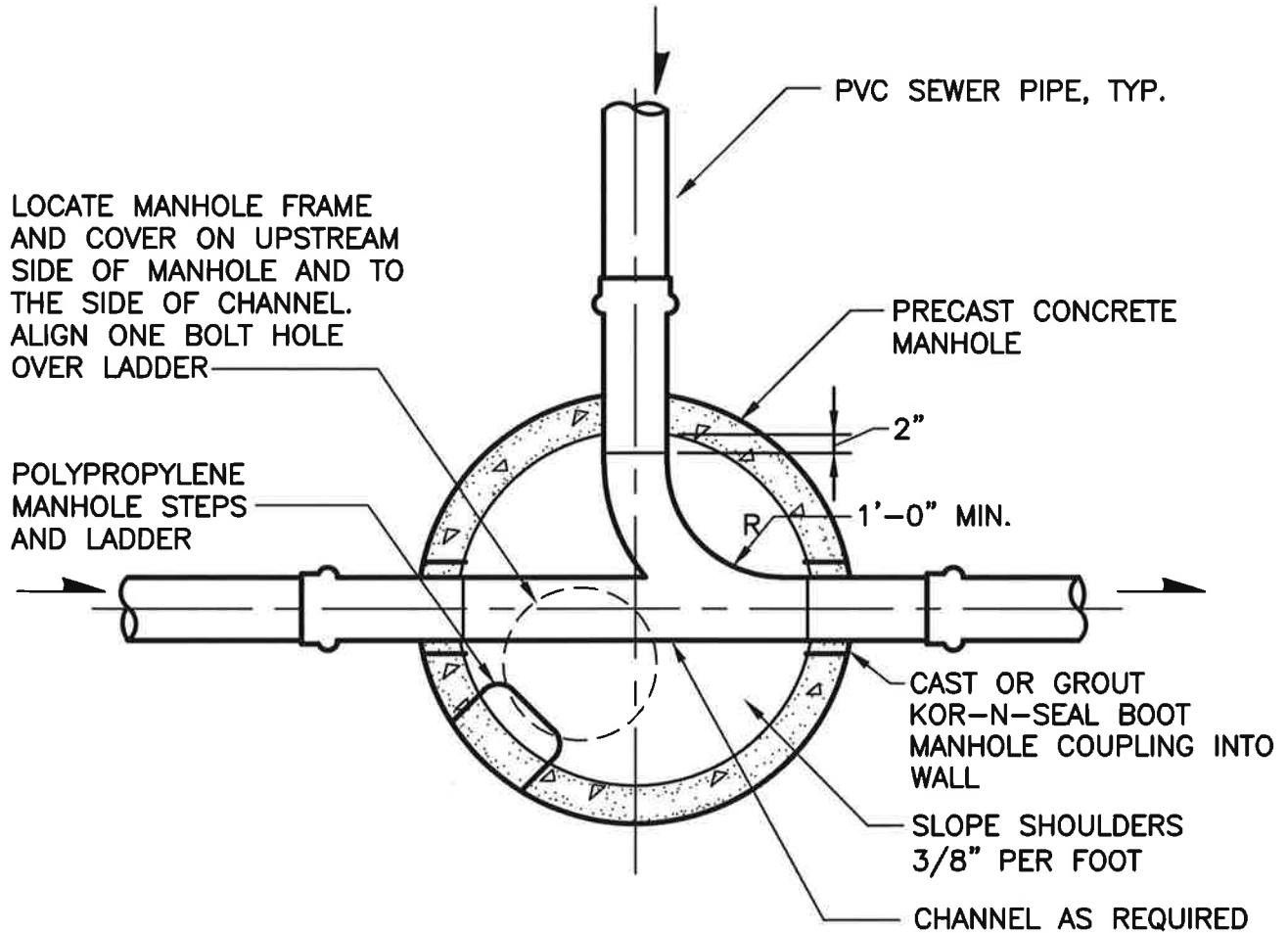
**NOTES:**

1. BACKFILL MATERIAL AND COMPACTION SHALL BE IN CONFORMANCE WITH ASTM 1557-70, METHOD C OR D.
2. ACTUAL SLOPE OF TRENCH SIDES TO BE DETERMINED BY THE CONTRACTOR TO FIT THE METHOD OF CONSTRUCTION AND ALL SAFETY REQUIREMENTS.

CITY OF GEORGE

FIGURE S 1  
SANITARY SEWER TRENCH SECTION FOR P.V.C. PIPE

  
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 CONSULTING ENGINEERS



NOTES:

1. ALL TRANSITIONS FROM THE MANHOLE BENCH TO THE CHANNEL SHALL BE ROUNDED WITH NO SHARP EDGES.
2. ALL PIPE PENETRATIONS SHALL HAVE CHANNELS AND THE CHANNEL SHALL PROVIDE A SMOOTH SURFACE THAT SHALL NOT RETAIN WATER.

CITY OF GEORGE

FIGURE S 2  
SANITARY SEWER MANHOLE PLAN

  
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CONSULTING ENGINEERS



MANHOLE FRAME AND COVER  
(SEE TYPICAL PRECAST  
MANHOLE DETAIL)

POLYPROPYLENE MANHOLE  
STEPS NO. P-13938

RUBBER GASKET  
TO SEAL

48" INSIDE DIAMETER  
PRECAST MANHOLE

CAST OR GROUT  
KOR-N-SEAL BOOT  
MANHOLE COUPLING  
INTO WALL

FINISHED GRADE

4" X 24" PRECAST CONCRETE  
ADJUSTMENT RINGS  
2 RINGS REQUIRED  
4 RINGS MAXIMUM  
PLASTER INSIDE AND  
OUTSIDE WITH 1/2"  
THICK GROUT

CAST OR GROUT  
KOR-N-SEAL BOOT  
MANHOLE COUPLING  
INTO WALL

SLOPE 3/8"/FT.

3/4" PIPE DIA.

GROUT FILL

10" MIN.

4'-0" MINIMUM

FOUNDATION GRAVEL

UNDISTURBED EARTH

**NOTES:**

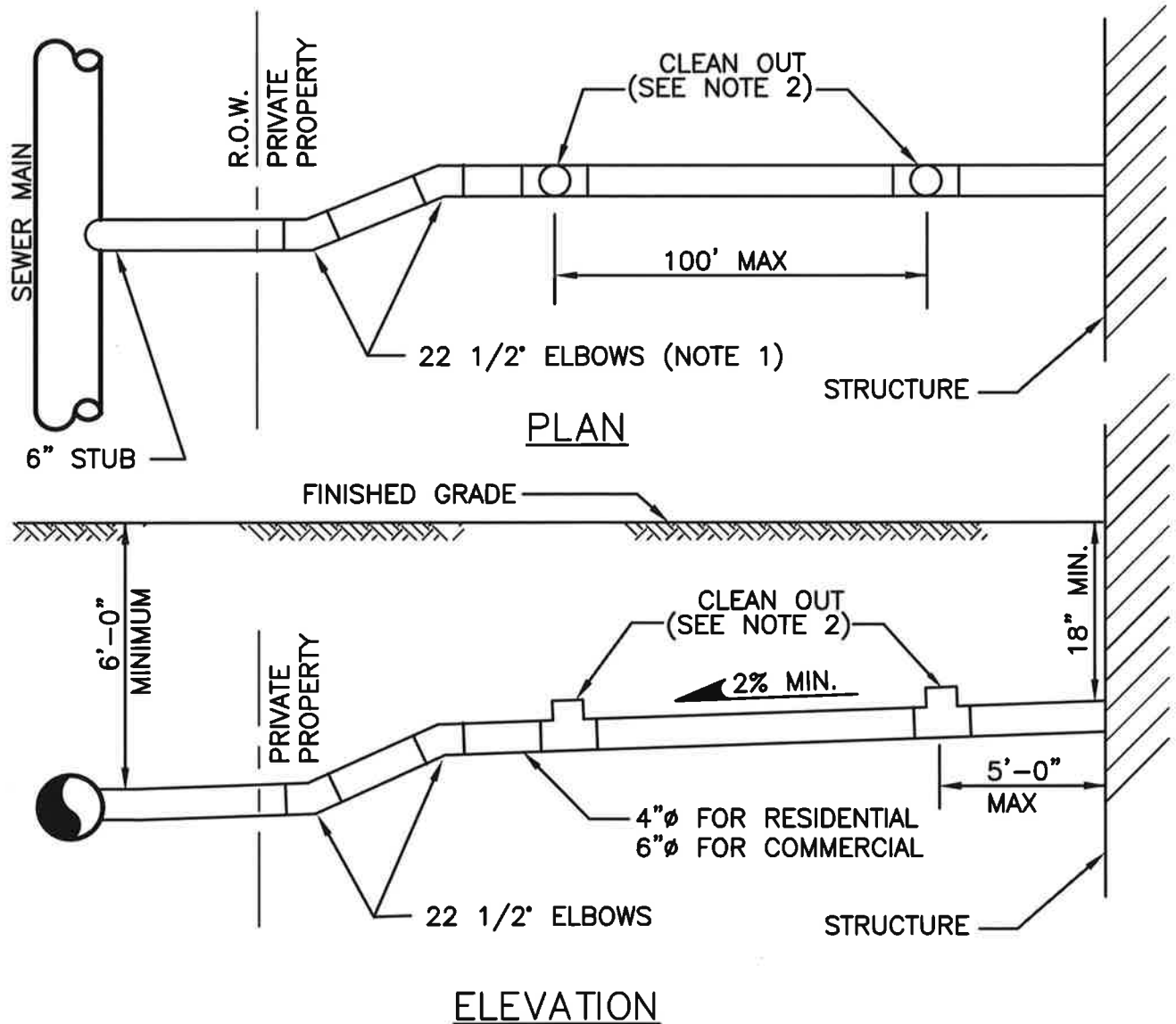
1. PIPE CONNECTIONS TO MANHOLES SHALL BE AS FOLLOWS: PVC PIPE: CAST OR GROUT A MANHOLE COUPLING INTO WALL. D.I. PIPE: BELL AND SPIGOT JOINT OR FLEXIBLE COUPLING EITHER SHALL BE 12" MAXIMUM DISTANCE FROM MANHOLE WALL. PVC AND D.I. PIPE, OPTIONAL: CORE THE MANHOLE AND CONNECT SEWER PIPE WITH A WATER TIGHT FLEXIBLE RUBBER BOOT IN MANHOLE WALL, KOR-N-SEAL BOOT OR EQUAL.
2. MANHOLES SHALL BE SET PLUMB.
3. FURNISH AND INSTALL ROMAC STYLE 501 COUPLING WHEN CONNECTING NEW MANHOLE TO EXISTING SEWER MAIN.
4. DROP OF GRADE THROUGH MANHOLE SHALL BE 0.10' UNLESS OTHERWISE NOTED.

CITY OF GEORGE

FIGURE S 4  
SANITARY SEWER SHALLOW MANHOLE



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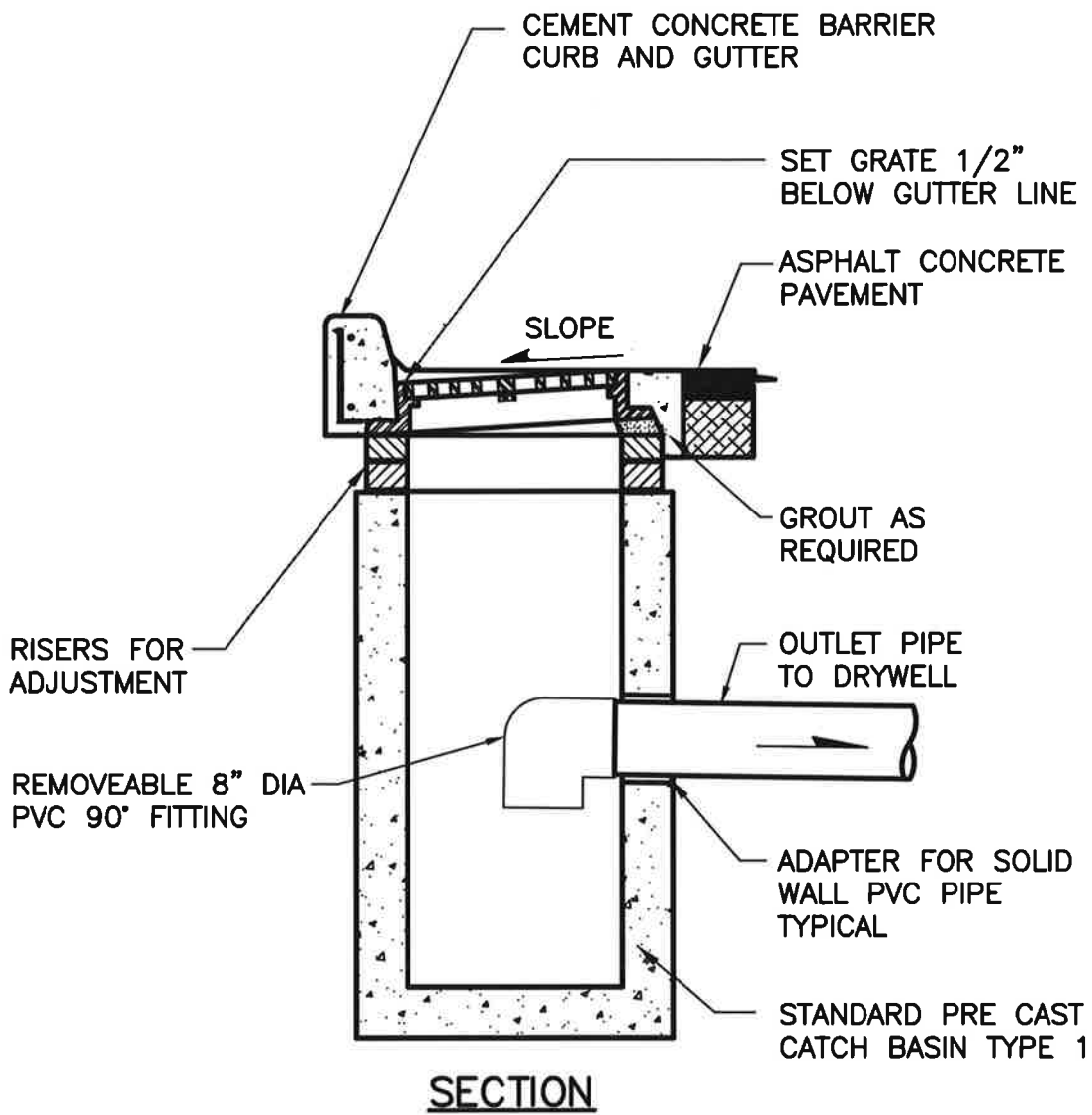
**NOTES:**


1. ELBOWS SHALL NOT BE GREATER THAN 45°.
2. CLEAN OUT IS REQUIRED FOR EACH PIPE. LENGTH GREATER THAN 100' AND FOR EACH 90° ACCUMULATED ELBOW/100'. CLEAN OUTS TO BE INSTALLED PER PROVISIONS OF INTERNATIONAL BUILDING CODE.
3. RIGHT-OF-WAY RESTORATION SHALL MATCH OR EXCEED THE ORIGINAL CONDITION.
4. BACKFILL FOR PAVED AREA SHALL BE 5/8" MINUS CRUSHED SURFACING TOP COURSE, COMPACTED IN 12" LIFTS. HMA SHALL BE CL 1/2" PG 64-28.
5. ALL PLUMBING OUTLETS SHALL BE CONNECTED TO THE SEWER. NO DOWNSPOUTS OR STORM DRAINAGE MAY BE CONNECTED TO THE SEWER SYSTEM.
6. 18" MINIMUM COVERAGE OF PIPE.
7. 6' MINIMUM COVERAGE AT PROPERTY LINE.
8. LAY PIPE IN STRAIGHT LINE BETWEEN BENDS. MAKE ALL CHANGES IN GRADE OR LINE WITH AN ELBOW OR WYE. 90° CHANGE WITH AN ELBOW AND WYE.
9. 2% MINIMUM GRADE, 45° MAXIMUM.
10. CONSTRUCTION IN RIGHT-OF-WAY SHALL BE PERFORMED BY A REGISTERED LICENSED CONTRACTOR.
11. ALL CONSTRUCTION REQUIRES A PERMIT AND PAYMENT OF FEE. COMPLETE LEGAL DESCRIPTION OF PROPERTY AND DIMENSIONS.
12. AS-BUILT DRAWING SHOWING LOCATION OF SIDE SEWER IN RELATION TO THE HOUSE IS REQUIRED AFTER INSTALLATION.
13. PROVIDE MAGNETIC MARKING TAPE IN TRENCH 18 INCHES BELOW GRADE.

CITY OF GEORGE

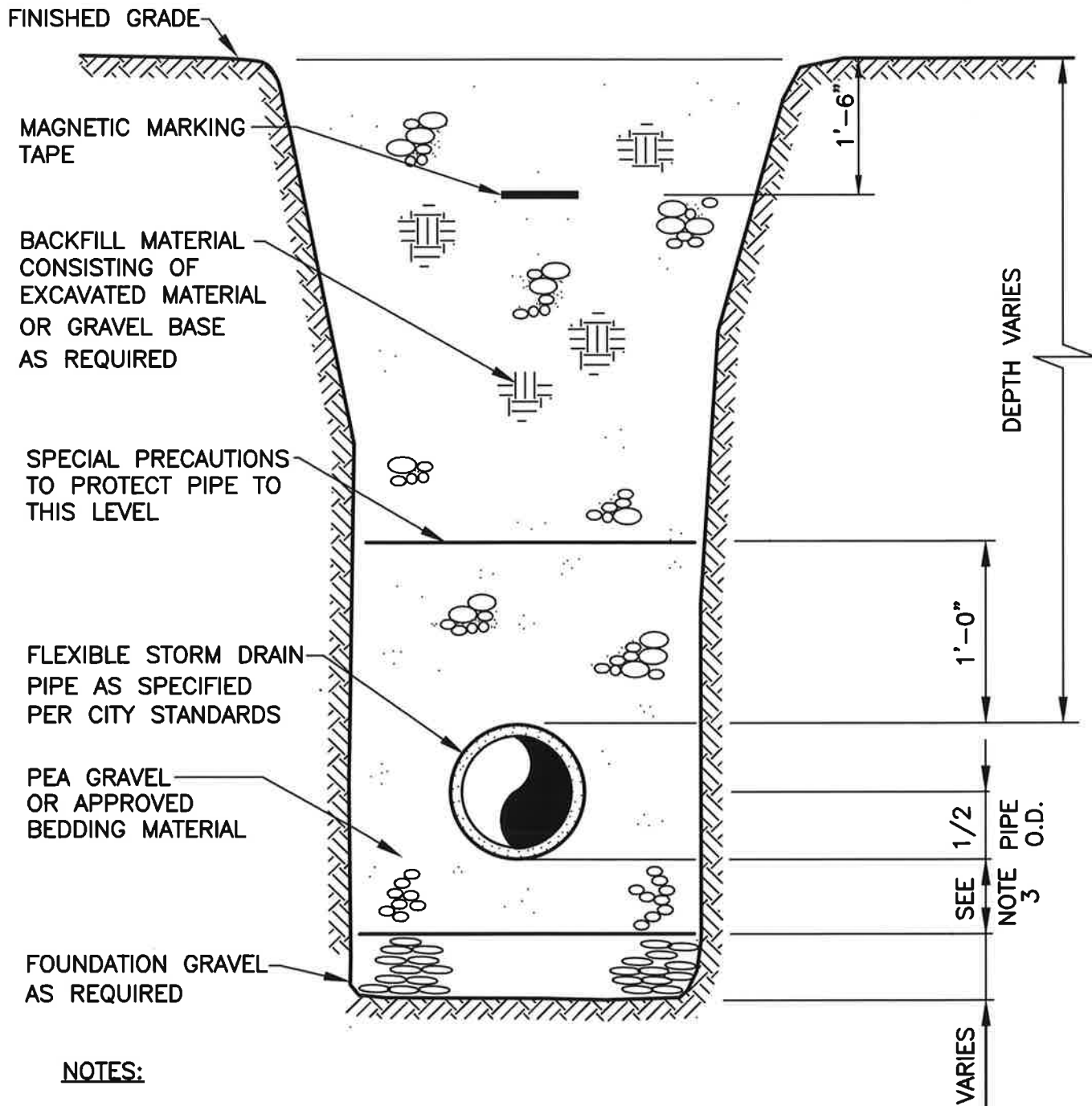
FIGURE S 5  
PRIVATE SIDE SEWER INSTALLATION

  
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CITY OF GEORGE  
 FIGURE SD 1  
 CATCH BASIN TYPE 1  
  
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**NOTES:**

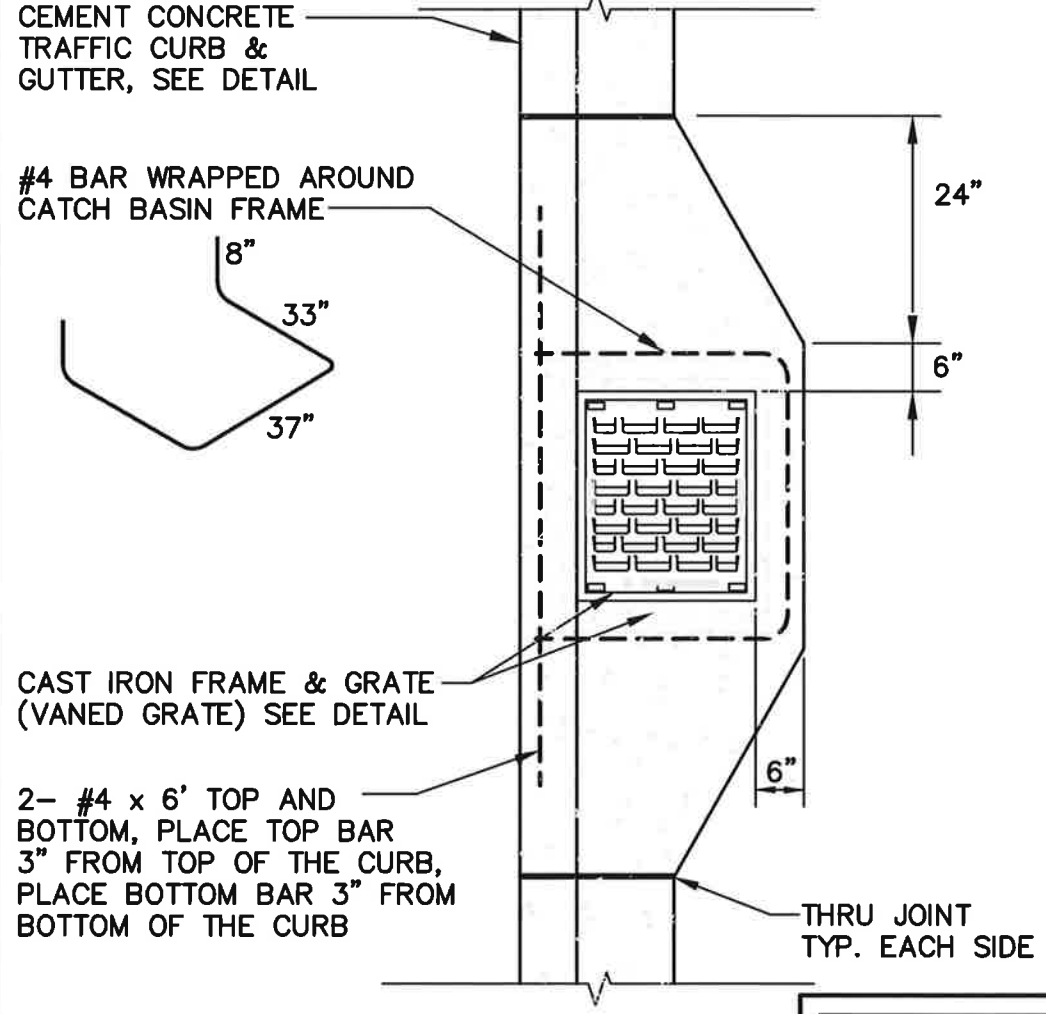
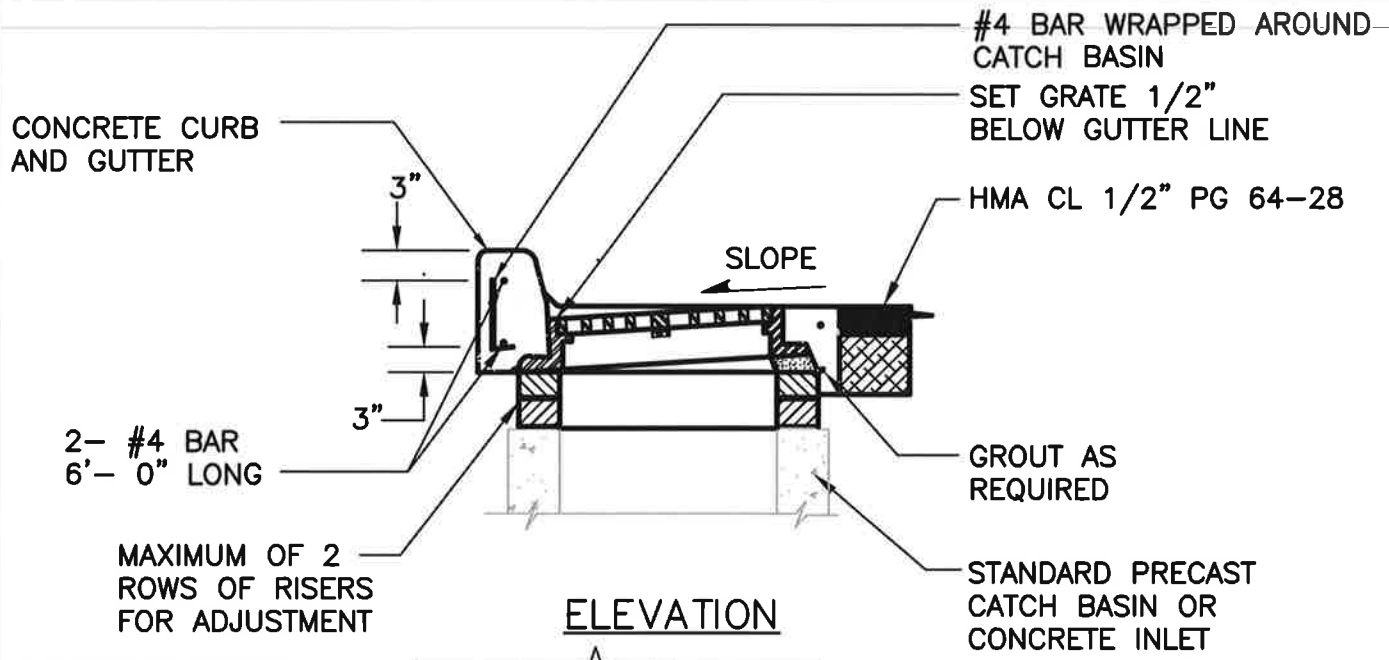
1. BACKFILL MATERIAL AND COMPACTION SHALL BE IN CONFORMANCE WITH ASTM 1557-70, METHOD C OR D.
2. ACTUAL SLOPE OF TRENCH SIDES TO BE DETERMINED BY THE CONTRACTOR TO FIT THE METHOD OF CONSTRUCTION AND ALL SAFETY REQUIREMENTS.
3. 4-INCHES FOR PIPE 18-INCH DIA. AND LESS 6-INCHES FOR PIPE GREATER THAN 18-INCH DIA.

CITY OF GEORGE

FIGURE SD 2  
STORM DRAIN TRENCH SECTION



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**NOTE:**  
FOR NOTES SEE SD-3b

CITY OF GEORGE

FIGURE SD 3a  
CATCH BASIN/CONCRETE INLET DETAIL

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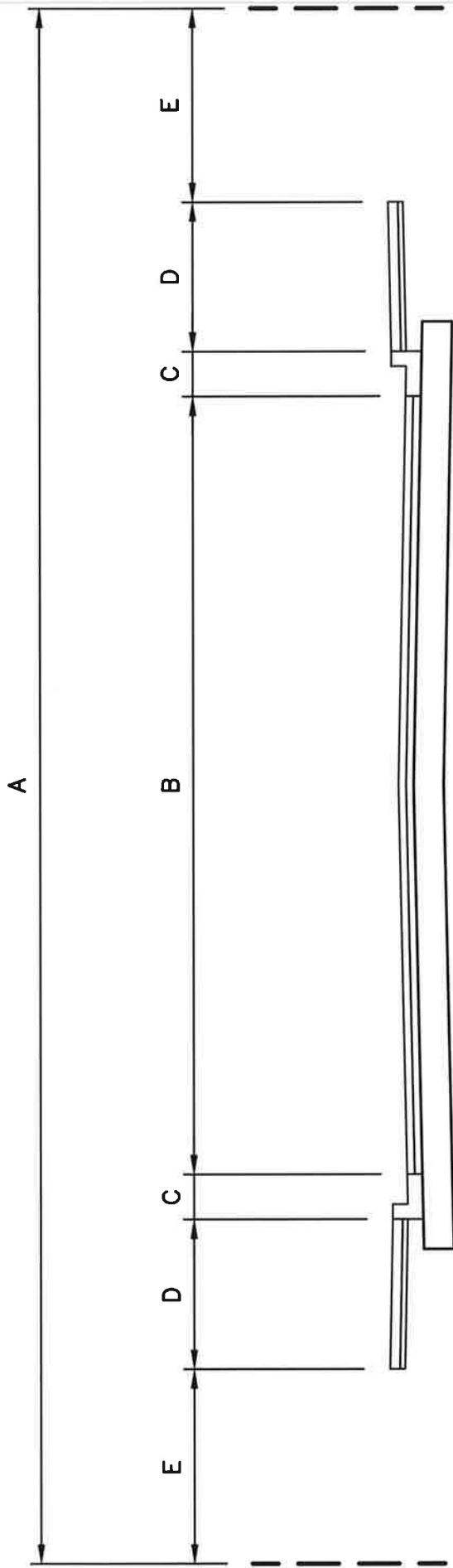
NOTES:

1. CATCH BASINS AND CONCRETE INLETS TO BE CONSTRUCTED TO ASTM C 478 (AASHTO M 199) AND ASTM C 890 UNLESS OTHERWISE SHOWN ON PLANS OR NOTED IN THE STANDARD SPECIFICATIONS.
2. AS AN ACCEPTABLE ALTERNATE TO REBAR, WELDED WIRE FABRIC HAVING A MINIMUM AREA OF 0.12 SQUARE INCHES PER FOOT MAY BE USED. WELDED WIRE FABRIC SHALL COMPLY TO ASTM A 497 (AASHTO M 221). WIRE FABRIC SHALL NOT BE PLACED IN THE KNOCKOUTS.
3. THE BOTTOM OF THE PRECAST BASE SECTION MAY BE ROUNDED
4. PRECAST BASES SHALL BE FURNISHED WITH CUTOUTS OR KNOCKOUTS. KNOCKOUTS SHALL HAVE A WALL THICKNESS OF 2" MINIMUM.
5. KNOCKOUTS MAY BE ON ALL 4 SIDES WITH MAXIMUM DIAMETER OF 20". KNOCKOUTS MAY BE EITHER ROUND OR "D" SHAPE. PIPE TO BE INSTALLED IN FACTORY SUPPLIED KNOCKOUTS.
6. KNOCKOUT OR CUTOUT HOLE SIZE IS EQUAL TO PIPE OUTER DIAMETER PLUS CATCH BASIN WALL THICKNESS.
7. THE MAXIMUM DEPTH FROM THE FINISHED GRADE TO THE PIPE INVERT IS 5'-0.
8. THE TAPER ON THE SIDES OF THE PRECAST BASE SECTION AND RISER SECTION SHALL NOT EXCEED 1/2" PER FOOT.
9. CATCH BASIN/CONCRETE INLET FRAME AND GRATE SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS AND MEET THE STRENGTH REQUIREMENTS OF FEDERAL SPECIFICATION RR-F-621D. MATING SURFACES SHALL BE FINISHED TO ASSURE NON-ROCKING FIT.
10. FRAME AND GRATE MAY BE INSTALLED WITH FLANGE DOWN OR CAST INTO RISER.

CITY OF GEORGE

FIGURE SD 3b  
CATCH BASIN/CONCRETE INLET DETAIL NOTES





TYPICAL STREET SECTION TABLE

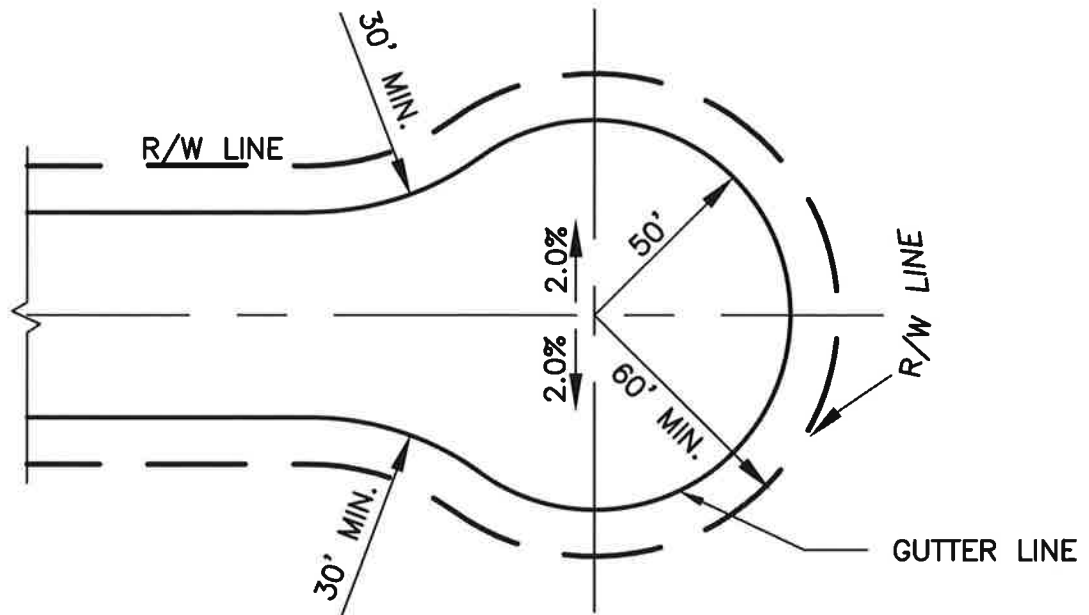
STREET CLASSIFICATION & ZONING (IF APPLICABLE)	A RIGHT-OF-WAY WIDTH	B PAVEMENT WIDTH (GUTTER LIP TO GUTTER LIP)	C CURB AND GUTTER TYPE (& WIDTH)	D SIDEWALK WIDTH	E EXTRA AREA
ARTERIAL STREET: COMMERCIAL AND/OR INDUSTRIAL ZONING DISTRICTS	80'	48'	VERTICAL (1.5') BOTH SIDES	10' BOTH SIDES	4.5' BOTH SIDES
ARTERIAL STREET: RESIDENTIAL ZONING DISTRICTS	70'	44'	VERTICAL (1.5') BOTH SIDES	6' BOTH SIDES	5.5' BOTH SIDES
COLLECTOR STREET	60'	36' (NO PARKING EITHER SIDE)	VERTICAL (1.5') BOTH SIDES	8' BOTH SIDES	2.5' BOTH SIDES
LOCAL ACCESS STREET: COMMERCIAL AND/OR INDUSTRIAL ZONING DISTRICTS	60'	36' (NO PARKING EITHER SIDE)	VERTICAL (1.5') BOTH SIDES	8' BOTH SIDES	2.5' BOTH SIDES
LOCAL ACCESS STREET: RESIDENTIAL ZONING DISTRICTS	60'	40'	VERTICAL (1.5') BOTH SIDES	5' BOTH SIDES	3.5' BOTH SIDES

NOTE: ROADWAY SECTION DEPTHS MUST BE DETERMINED FROM A GEOTECHNICAL INVESTIGATION PERFORMED BY A LICENSED GEOTECHNICAL ENGINEER.

CITY OF GEORGE

FIGURE ST 1  
ROADWAY WIDTHS

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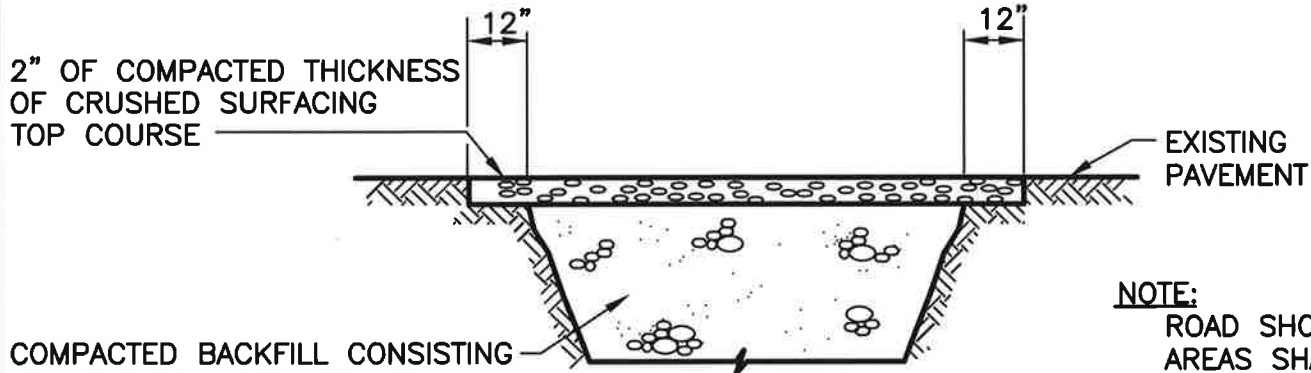
PLAN

**NOTE:**  
 ALTERNATIVE DEAD-END STREET DESIGNS SHALL BE IN ACCORDANCE WITH THE INTERNATIONAL FIRE CODE, AS OUTLINED IN APPENDIX D, FIRE APPARATUS ACCESS ROADS, AND SHALL BE SUBJECT TO APPROVAL BY THE CITY.

CITY OF GEORGE

FIGURE ST 2  
 CUL-DE-SAC

  
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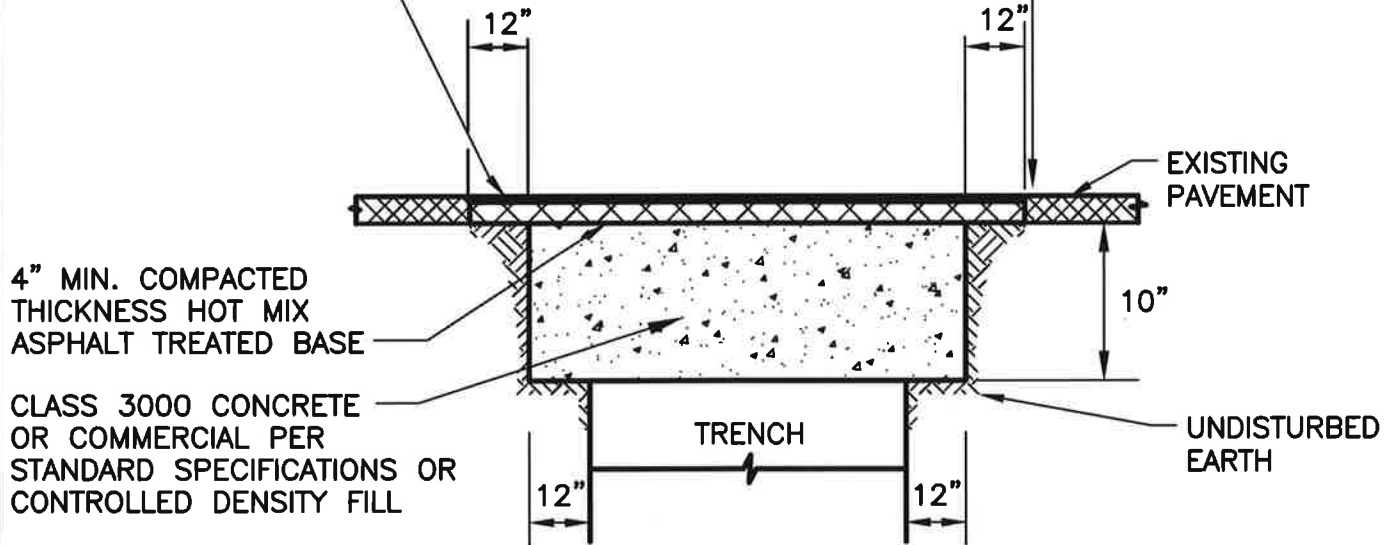


COMPACTED BACKFILL CONSISTING OF EXCAVATED MATERIAL OR BANK RUN GRAVEL FOR TRENCH BACKFILL

**NOTE:**  
ROAD SHOULDER AREAS SHALL BE COMPACTED

2" MIN. COMPACTED THICKNESS, ASPHALT CLASS "B"

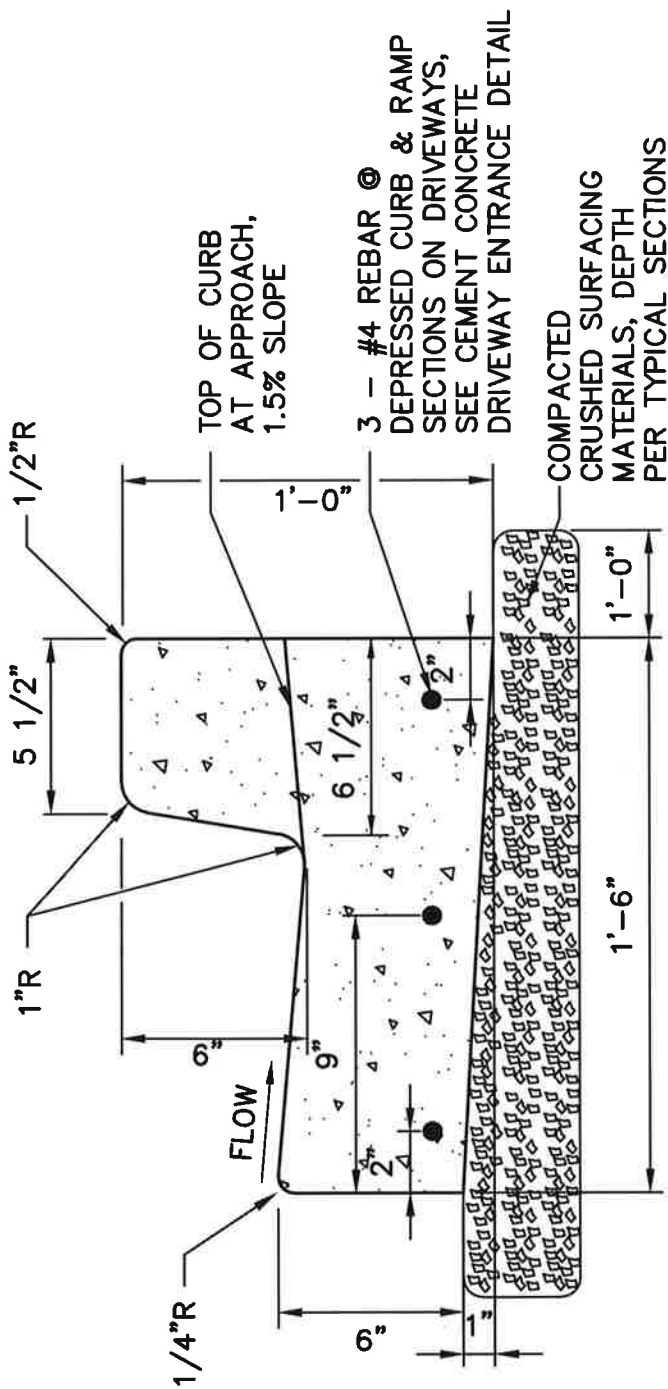
SAWCUT, CLEAN AND TACK ALL ASPHALT EDGES PRIOR TO PAVING. SEAL ALL JOINTS AFTER PAVING WITH CSS-1 EMULSIFIED ASPHALT



CITY OF GEORGE

FIGURE ST 3  
ASPHALT PAVEMENT & CRUSHED ROCK REPAIR

  
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**NOTES:**

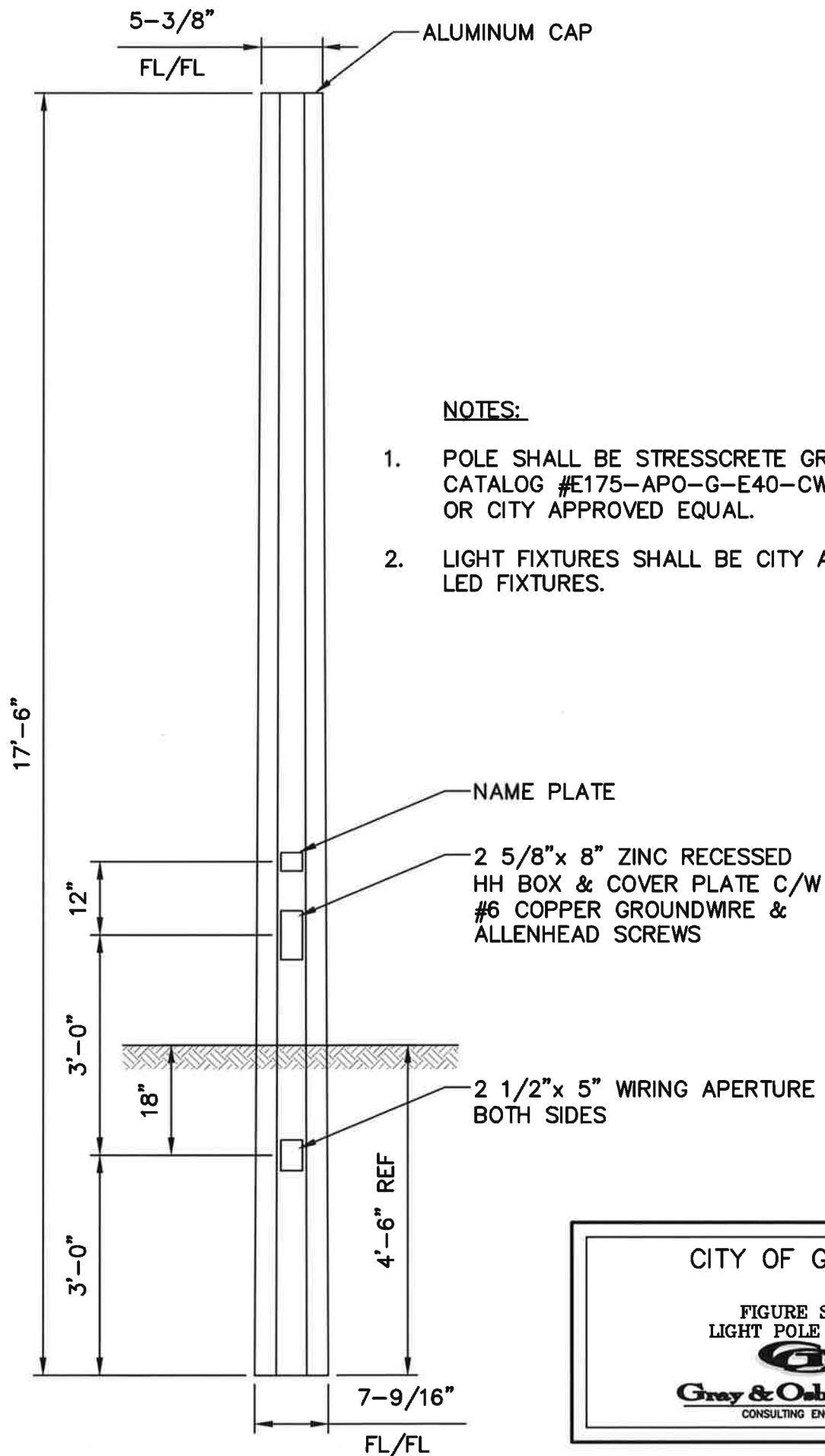
1. WHERE THE WATER AND/OR SEWER UTILITIES CROSS BELOW THE CURB, THE CONTRACTOR SHALL STAMP A 2-INCH HIGH LETTER IN THE CONCRETE, ON THE UPPER SLOPE. THE CONTRACTOR SHALL USE THE LETTER "S" TO DESIGNATE THE SEWER UTILITY, AND THE LETTER "W" TO DESIGNATE THE WATER UTILITY.
2. EXPANSION JOINT MATERIAL SHALL BE 3/8" THICK PREMOLED JOINT FILLER FULL THICKNESS OF CONCRETE SPACING.

CITY OF GEORGE

FIGURE ST 4  
CURB SECTION



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**NOTES:**

1. POLE SHALL BE STRESSCRETE GROUP CATALOG #E175-APO-G-E40-CW 140-30/30-A6 OR CITY APPROVED EQUAL.
2. LIGHT FIXTURES SHALL BE CITY APPROVED LED FIXTURES.

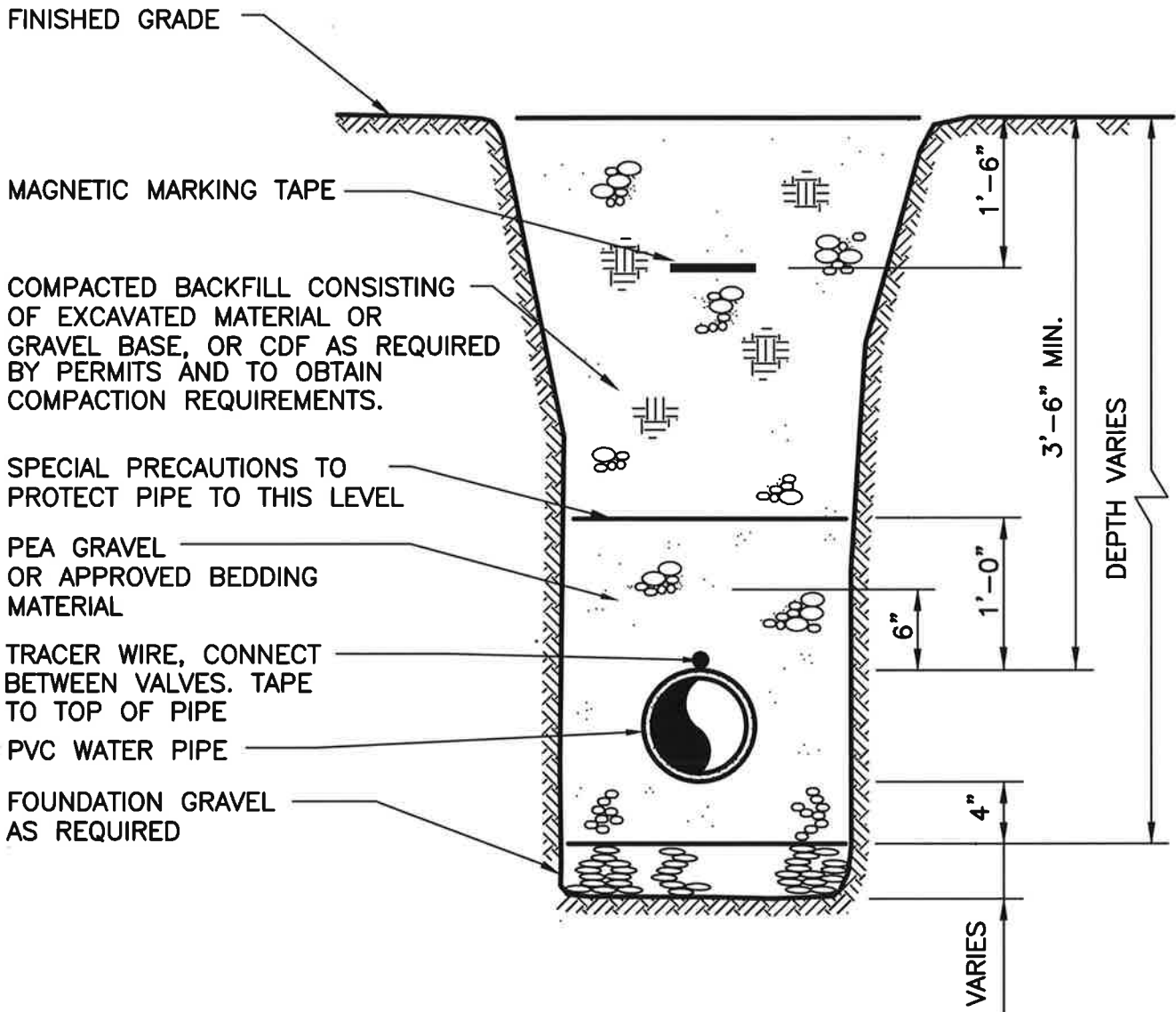
CITY OF GEORGE

FIGURE ST 5  
LIGHT POLE DETAIL



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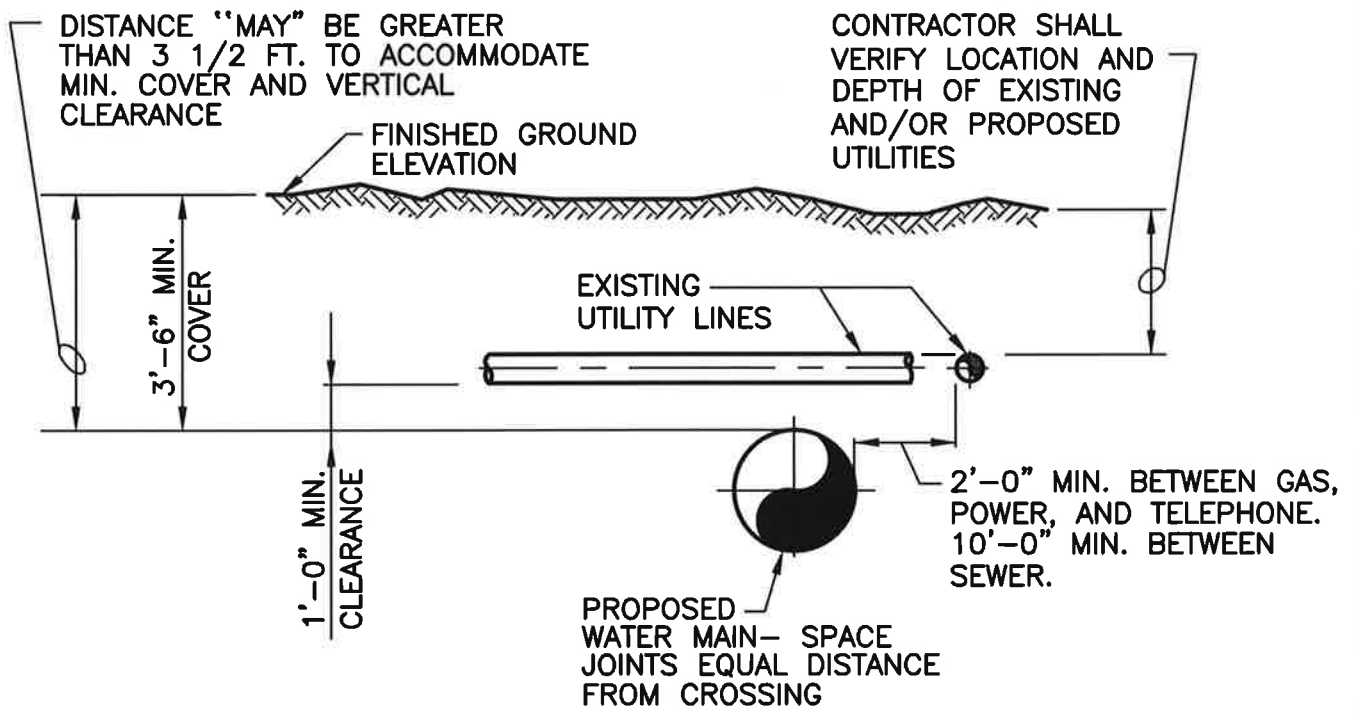
**NOTES:**

1. BACKFILL MATERIAL AND COMPACTION SHALL BE IN CONFORMANCE WITH ASTM 1557-70, METHOD C OR D.
2. ACTUAL SLOPE OF TRENCH SIDES TO BE DETERMINED BY THE CONTRACTOR TO FIT THE METHOD OF CONSTRUCTION AND ALL SAFETY REQUIREMENTS.

CITY OF GEORGE


FIGURE W 1  
WATER MAIN TRENCH SECTION

  
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 CONSULTING ENGINEERS

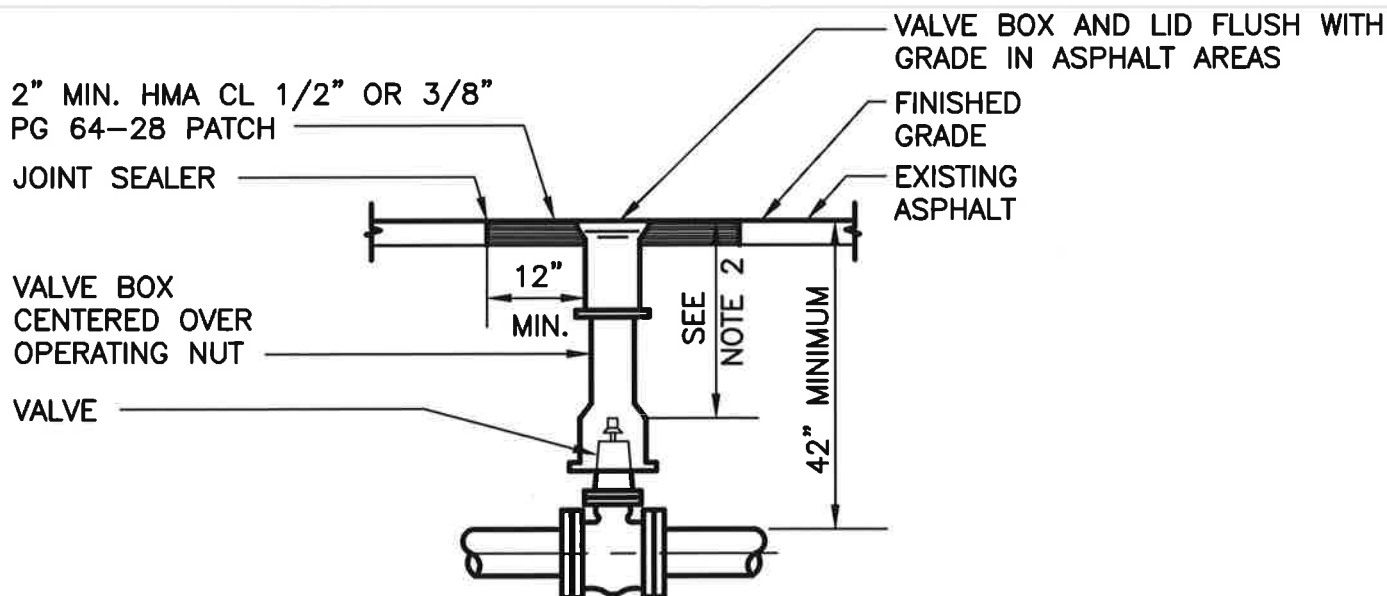


CITY OF GEORGE

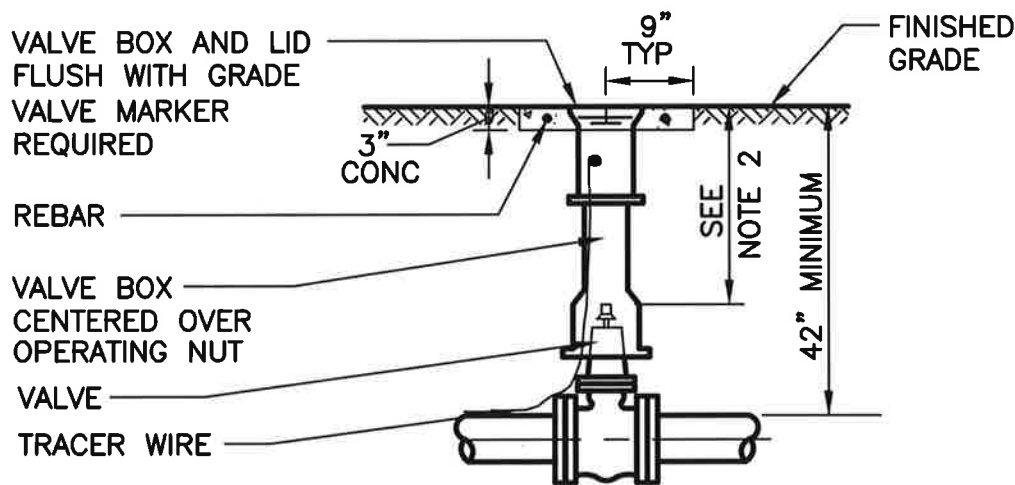
FIGURE W 2  
TYPICAL UTILITY CROSSING



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CONSULTING ENGINEERS



VALVE BOX IN ASPHALT AREA




VALVE BOX IN UNIMPROVED AREA (VALVE MARKER REQUIRED)

**NOTES:**

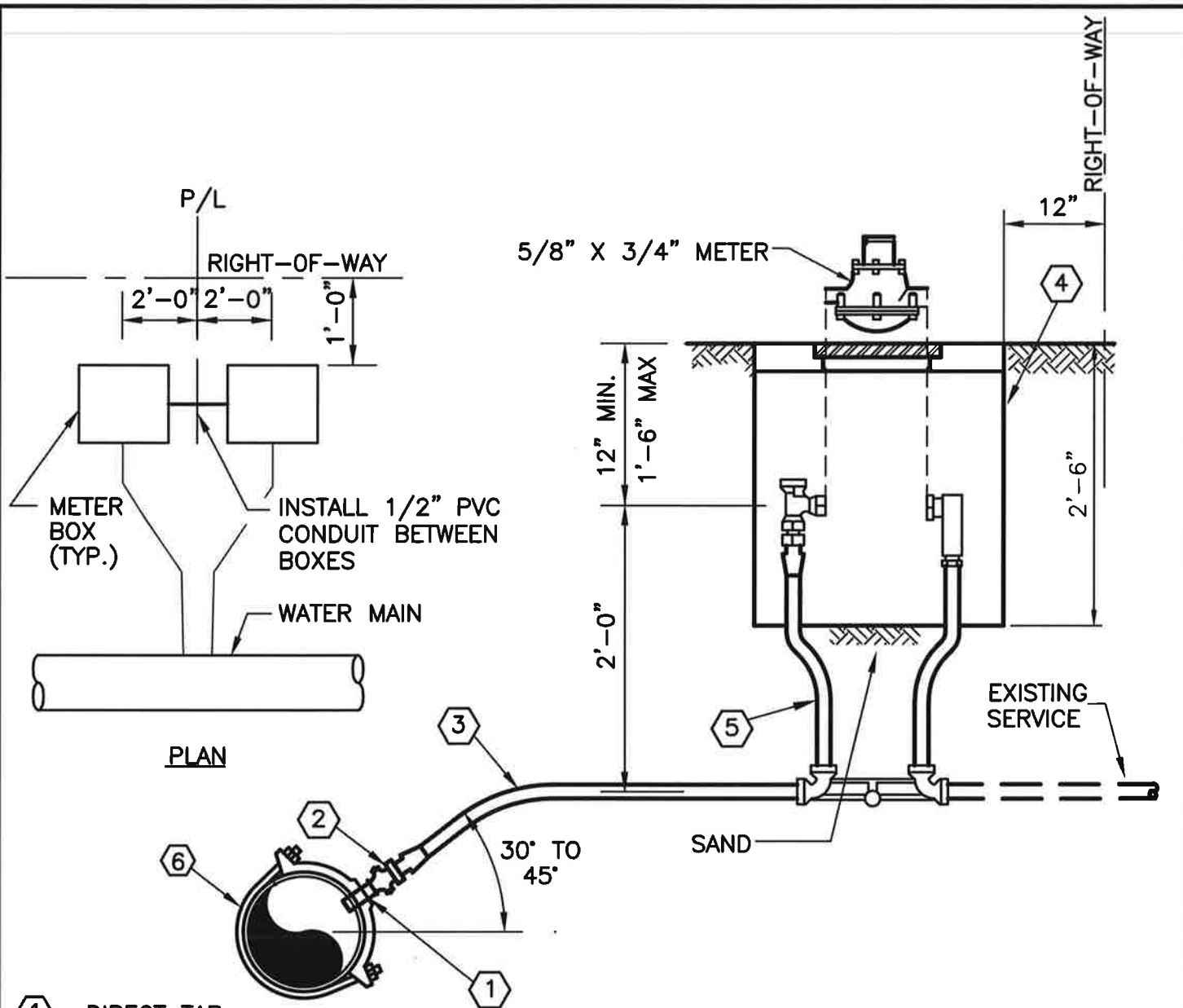
1. EACH VALVE SHALL BE PROVIDED WITH AN ADJUSTABLE CAST IRON VALVE BOX OF 5 INCHES (5") INSIDE DIAMETER. VALVE BOXES SHALL HAVE A TOP SECTION WITH AN EIGHTEEN INCH (18") MIN. LENGTH. THE VALVE BOX SHALL BE RICH No. 940 OR SATHER MANUFACTURE. VALVE BOX EARS SHALL BE PLACED IN LINE WITH PIPE IT SERVES.
2. 18" MINIMUM, 24" MAXIMUM FOR OPERATOR NUT IF EXTENSION IS REQUIRED.

CITY OF GEORGE

FIGURE W 3  
TYPICAL VALVE INSTALLATION



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- ① DIRECT TAP
- ② CORPORATION STOP MUELLER H-15008.
- ③ 1" HDPE SERVICE PIPE - LENGTH AS REQUIRED
- ④ METER BOX BY MID-STATES PLASTICS, HIGHWAY RATED, W/ STEEL READER LID
- ⑤ FORD 70 SERIES COPPERSETTER, OR APPROVED EQUAL
- ⑥ SERVICE SADDLE

**NOTES:**

1. SERVICE FROM METER BOX TO HOUSE BY PROPERTY OWNER.
2. INDIVIDUAL SERVICES REQUIRED FOR EACH LOT.
3. METER BOXES TO BE LOCATED 2'-0" FROM PROPERTY CORNER.
4. METER TO BE INSTALLED BY THE CITY AT OWNER'S EXPENSE.
5. COMPARABLE "FORD" FITTINGS MAY BE USED IN LIEU OF "MUELLER".

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FIGURE W 4  
3/4" WATER SERVICE



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COMPRESSION  
STYLE  
FIRE HYDRANT

2 1/2" HOSE NOZZLE WITH  
NATIONAL STANDARD THREADS

4 1/2" PUMPER PORT WITH NATIONAL  
STANDARD THREADS W/ 5" STORZ  
ADAPTER (SHORT PROFILE STYLE)

EXTENSION  
SECTIONS  
AS REQUIRED

4" MIN.  
COVER

1'-7" MIN.  
2'-1" MAX.

FINISHED  
GRADE

STANDARD 2-PIECE  
CAST IRON  
VALVE BOX

6" RESILIENT  
SEAT GATE VALVE,  
(FL X MJ)

CONCRETE THRUST  
BLOCK

3'-6" MIN. COVER  
ON WATER MAIN

GRIP RINGS  
OR 3/4" SHACKLE RODS

PLACE  
GEOTEXTILE BLANKET  
OVER DRAIN GRAVEL

1/2 CU.YD.  
OF 1/2" WASHED  
DRAIN GRAVEL

6" P.V.C. PIPE  
(C900)

CONCRETE BEARING BLOCK

6" TEE  
(MJ X MJ X FL)

4'-6" MIN

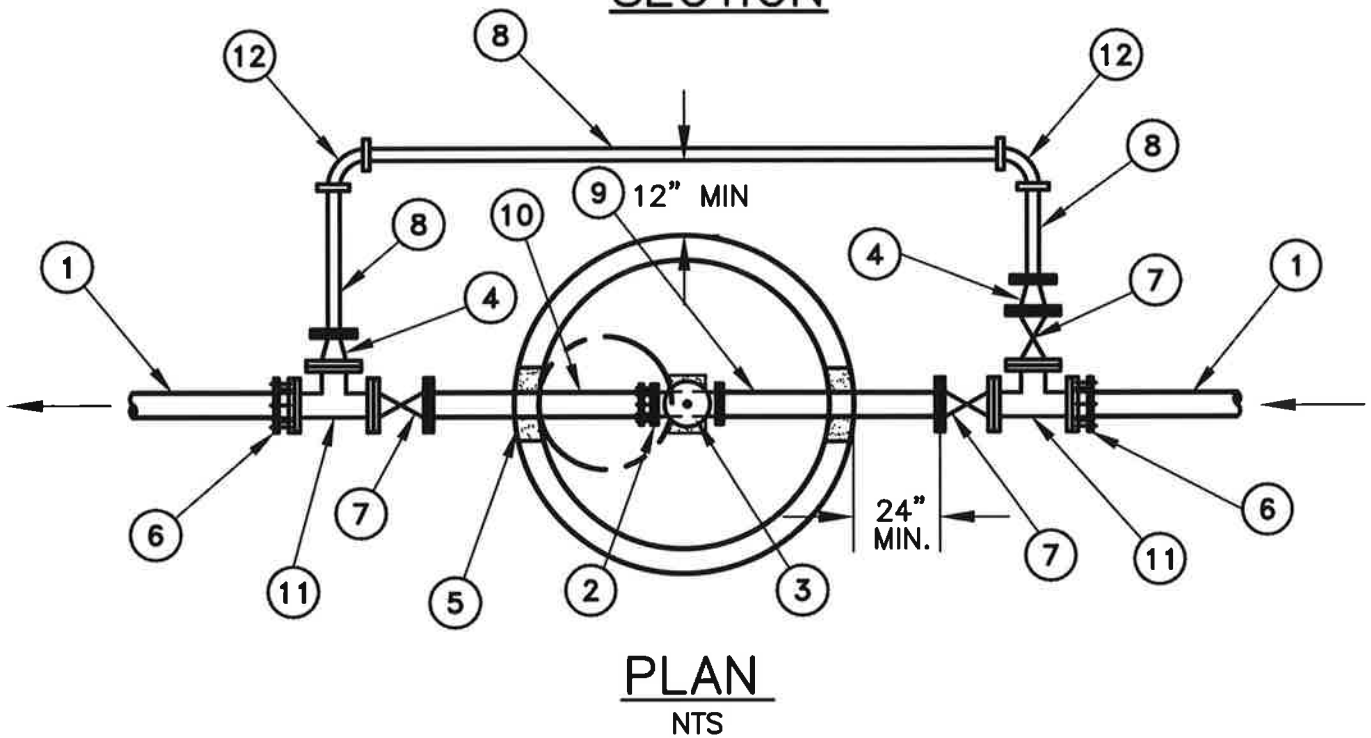
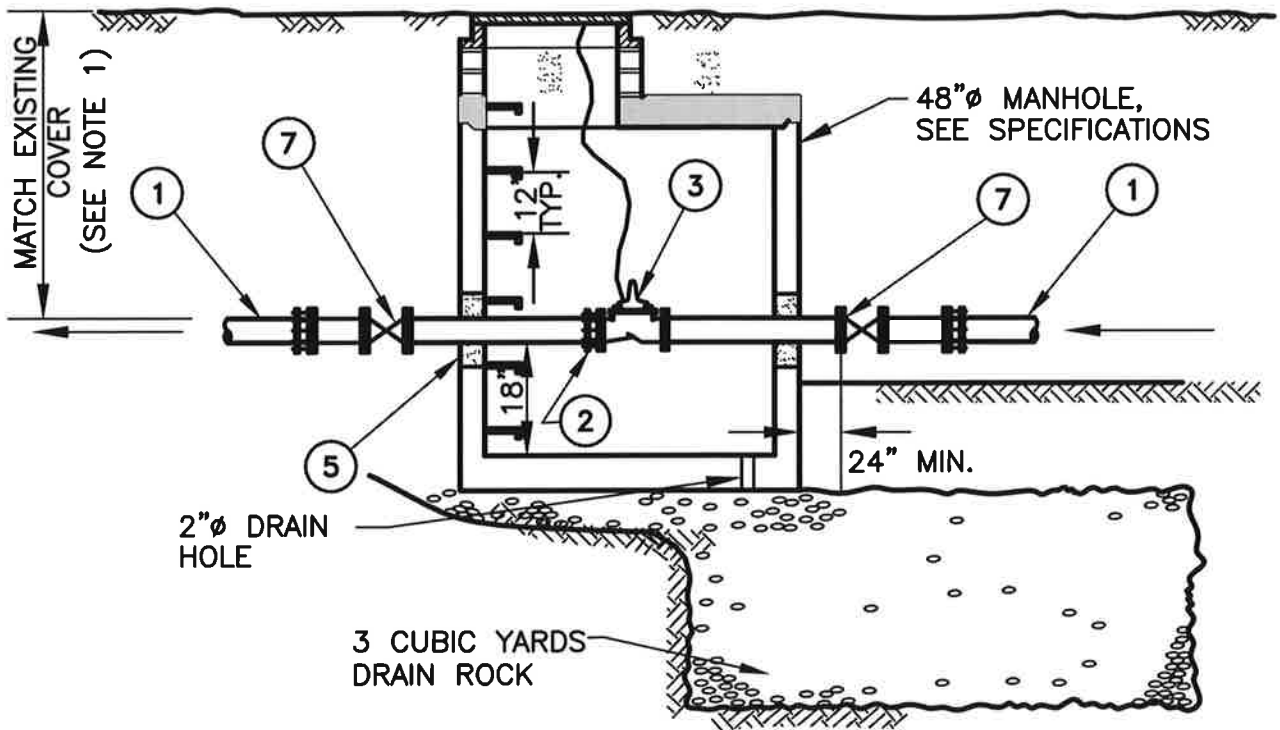
**NOTES:**

1. PROVIDE MIN. 3'-0" CLEARANCE AND LEVEL AREA AROUND HYDRANT
2. PAINT FIRE HYDRANT WITH TWO COATS OF RED RUST-RESISTANT PAINT TO MATCH CITY'S EXISTING HYDRANTS

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FIGURE W 5  
FIRE HYDRANT ASSEMBLY

  
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**NOTE:**  
FOR NOTES SEE W-6b

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FIGURE W 6a  
3" METER ASSEMBLY

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ITEM DESCRIPTION

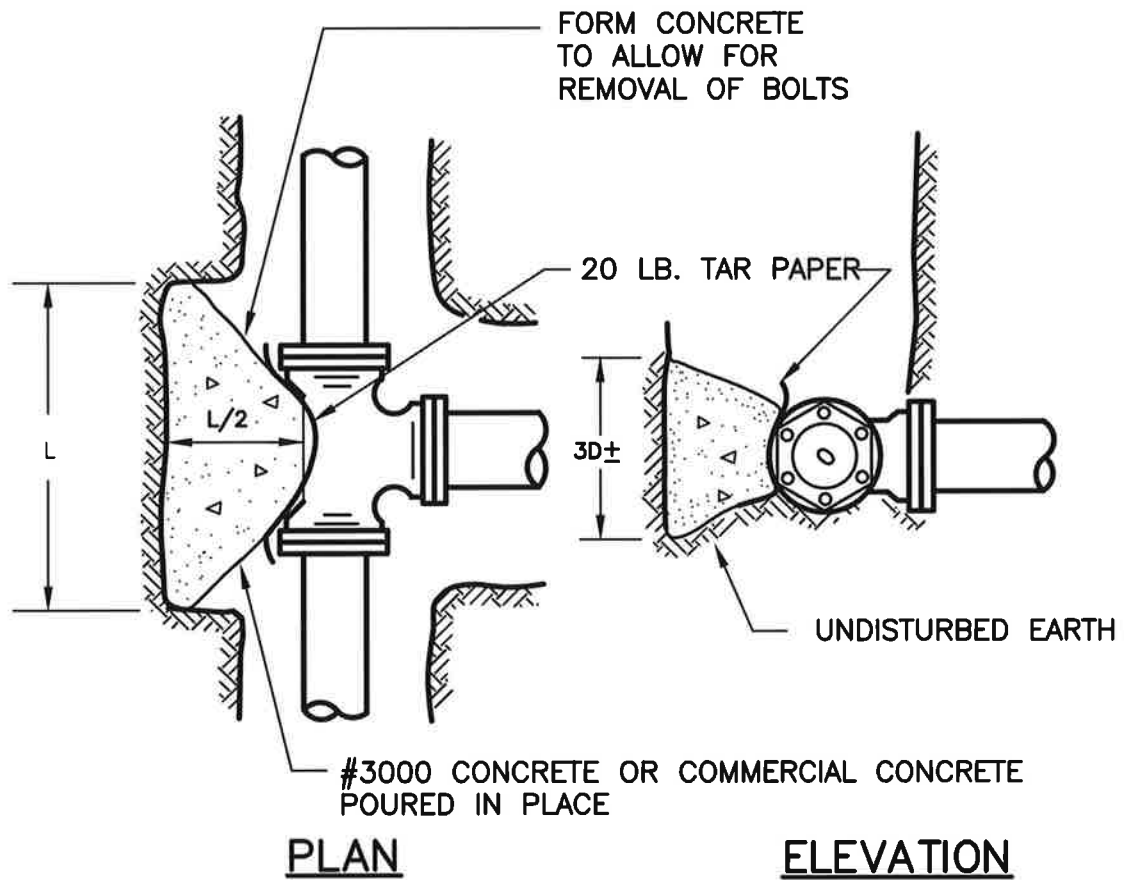
- ① EXISTING SERVICE LINE
- ② 3" FLANGED COUPLING ADAPTER
- ③ 3" METER, FLxFL, TO BE CENTERED IN MANHOLE
- ④ 3"x2" D.I. REDUCER, FLxMJ
- ⑤ NON-SHRINK GROUT, TYP.
- ⑥ 3" INSULATED FLxMJ ADAPTER
- ⑦ 3" D.I. GATE VALVE, FLxMJ, SEE TYPICAL BURIED VALVE DETAIL
- ⑧ 2" GALVANIZED IRON BYPASS LINE
- ⑨ 3" DUCTILE IRON MAINLINE SPOOL, FLxFL, CONTRACTOR TO FIELD VERIFY LENGTH
- ⑩ 3" DUCTILE IRON MAINLINE SPOOL, FLxPE, CONTRACTOR TO FIELD VERIFY LENGTH
- ⑪ 3"x3"x3" D.I. TEE, FLxFLxFL
- ⑫ 2" GALVANIZED ELBOW

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FIGURE W 6b  
3" METER ASSEMBLY

  
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MINIMUM BEARING AREA TABLE					
FITTING D	TEE	90 °	45°	22 1/2°	11 1/4°
6"	4 SQ.FT.	6 SQ.FT.	3 SQ.FT.	2 SQ.FT.	2 SQ.FT.
8"	7 SQ.FT.	10 SQ.FT.	6 SQ.FT.	3 SQ.FT.	2 SQ.FT.
10"	10 SQ.FT.	15 SQ.FT.	9 SQ.FT.	5 SQ.FT.	3 SQ.FT.
12"	14 SQ.FT.	22 SQ.FT.	12 SQ.FT.	6 SQ.FT.	4 SQ.FT.
16"	25 SQ.FT.	38 SQ.FT.	21 SQ.FT.	11 SQ.FT.	7 SQ.FT.
18"	32 SQ.FT.	48 SQ.FT.	27 SQ.FT.	14 SQ.FT.	8 SQ.FT.



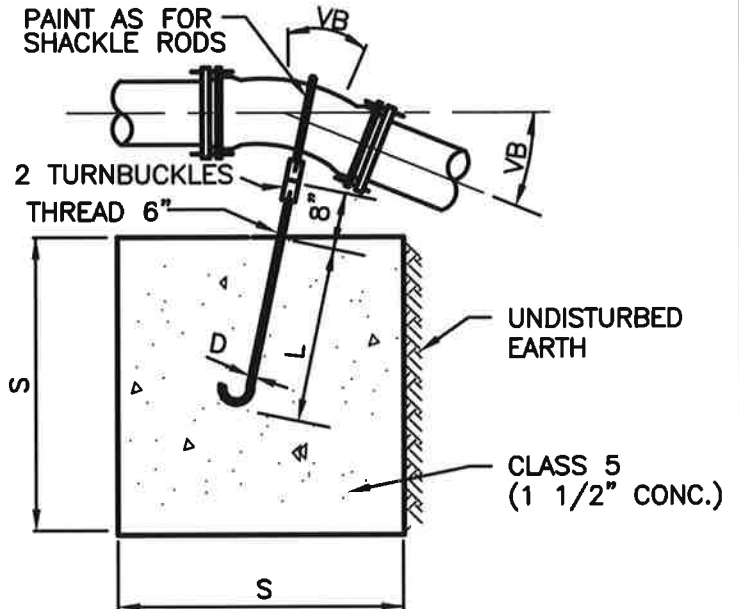
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FIGURE W 7  
THRUST BLOCKS (FOR WATER MAINS)

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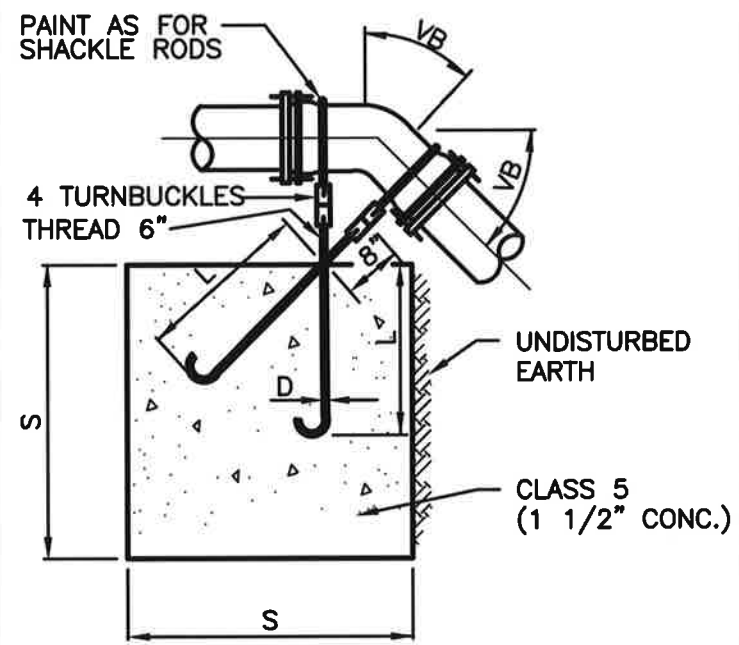


TYPE "A" BLOCKING						
FOR 11 1/4°-22 1/2°-30° VERTICAL BENDS						
PIPE SIZE NOMINAL DIAMETER - INCHES	TEST PRESSURE PSI	VB	S	D	L	
		VERTICAL BEND DEGREES	No. OF CU. FT. OF CONC. BLOCKING	SIDE OF CUBE LIN. FT.	DIAM. OF SHACKLE RODS (2) INCHES	DEPTH OF RODS IN CONCRETE LIN. FT.
4"	300	11 1/4	8	2	5/8"	1.5
		22 1/2	11	2.2		2.0
		30	17	2.6		
6"	300	11 1/4	11	2.2	5/8"	2.0
		22 1/2	25	2.9		
		30	41	3.5		
8"	300	11 1/4	16	2.5	5/8"	2.0
		22 1/2	47	3.6		
		30	70	4.1	3/4"	2.5
12"	250	11 1/4	32	3.2	5/8"	2.0
		22 1/2	88	4.5	7/8"	3.0
		30	132	5.1		
16"	225	11 1/4	70	4.1	7/8"	3.0
		22 1/2	184	5.7	1 1/8"	4.0
		30	275	6.5	1 1/4"	
20"	200	11 1/4	91	4.5	7/8"	3.0
		22 1/2	225	6.1	1 1/4"	4.0
		30	330	6.9	1 3/8"	4.5
24"	200	11 1/4	128	5.0	1"	3.5
		22 1/2	320	6.8	1 3/8"	4.5
		30	480	7.9	1 7/8"	5.5



TYPE "A" BLOCKING


TYPE "B" BLOCKING						
FOR - 45° VERTICAL BENDS						
		VB	S	D	L	
4"	300	45	30	3.1	5/8"	2.0
6"			68	4.1		
8"			123	5.0		
12"	250		232	6.1	3/4"	2.5
16"	225		478	7.8	1 1/8"	4.0
20"	200		560	8.2	1 1/4"	
24"			820	9.4	1 3/8"	4.5

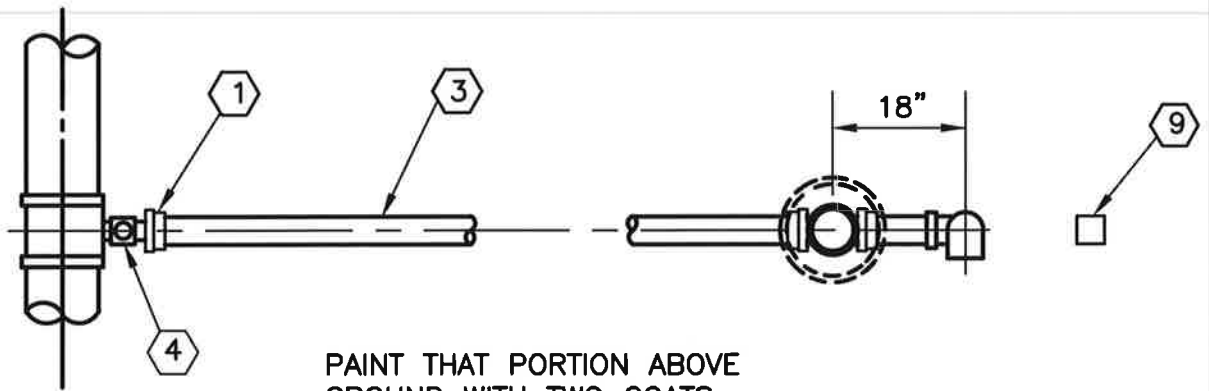


TYPE "B" BLOCKING

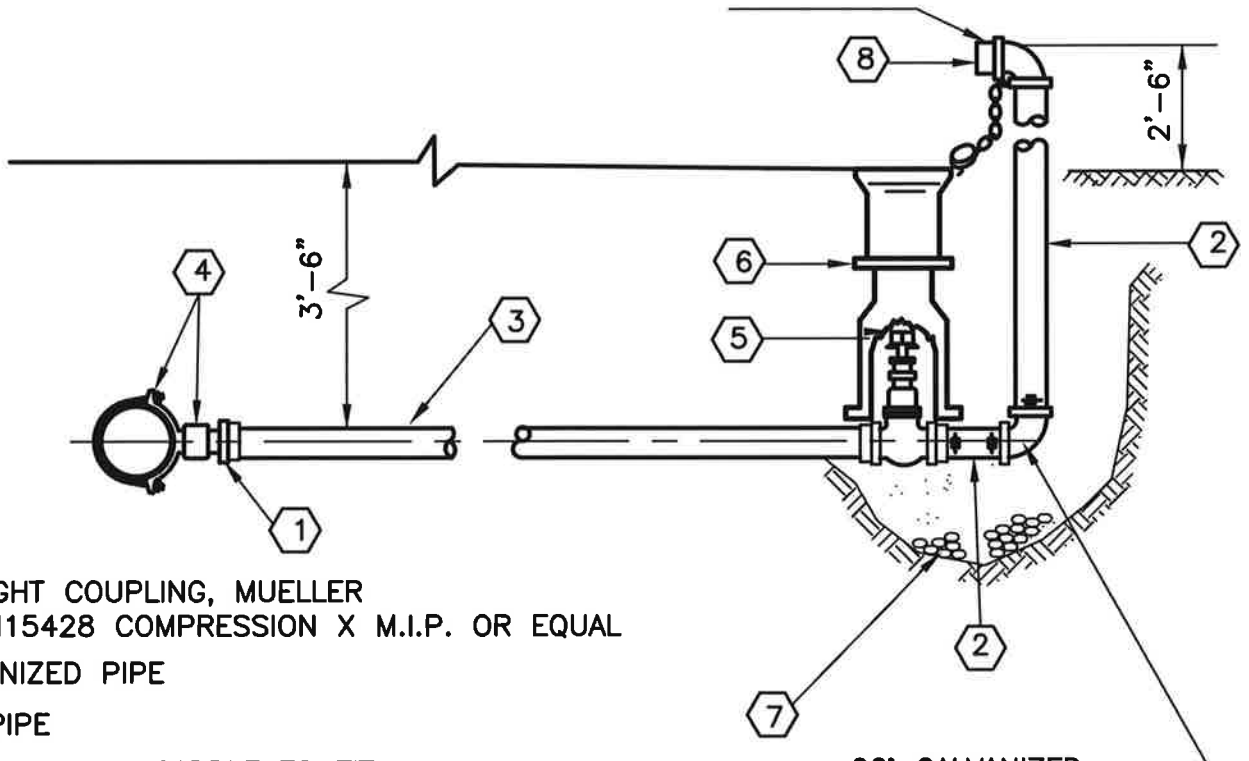
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FIGURE W 8  
VERTICAL ANCHOR BLOCK

  
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PAINT THAT PORTION ABOVE  
GROUND WITH TWO COATS  
RED RUST RESISTANT PAINT



90° GALVANIZED  
IRON BEND, WITH  
1/8"Ø WEEP HOLE

- ① STRAIGHT COUPLING, MUELLER  
No. H15428 COMPRESSION X M.I.P. OR EQUAL
- ② GALVANIZED PIPE
- ③ PVC PIPE
- ④ DOUBLE STRAP SADDLE TO FIT
- ⑤ AWWA RESILIENT SEAT GATE VALVE THD X THD,  
WITH OPERATING NUT.
- ⑥ CAST IRON VALVE BOX
- ⑦ 1/4 CUBIC YARD WASHED GRAVEL POCKET.
- ⑧ 2-1/2" HOSE THREADS BRASS INSERT WITH CAP AND CHAIN
- ⑨ VALVE MARKER POST

**NOTES:**

1. TURN NOZZLE TOWARDS ROADSIDE DITCH WHEN POSSIBLE
2. INSTALL DIELECTRIC COUPLINGS AT  
DISSIMILAR METALS.
3. BLOWOFFS SHALL BE SIZED TO PROVIDE  
2.5fps VELOCITY IN MAIN LINE (2" MIN.).

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FIGURE W 9  
IN LINE BLOW OFF ASSEMBLY

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