

CHAPTER 1 ADMINISTRATION

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GENERAL CONSIDERATIONS

1.00 Introduction

A. These Design Guidelines have been developed to serve as a baseline for improvements within the City of Winlock and the Urban Growth Area by other entities. The language in this document is to be used as a guideline during the design and construction process, and does not relieve the user of responsibility for public health and safety. These guidelines may use the words “standards” and “specifications” where referencing other documents.

1.01 Applicability

A. The guidelines addressed in this document will apply to construction and improvement activities that take place within the right-of-way, or that impact the water, sanitary sewer, storm sewer, sidewalk, street or transportation system, or other such activities within the City of Winlock (City) and the Urban Growth Area (UGA) (see definitions). These guidelines will be considered reasonable minimum regulations unless, a variance request is granted by the City.

B. At this time, the City and Lewis County have adopted an Interlocal Cooperation Agreement authorizing the City joint management of certain permitting inspections and regulatory authority over the activities within the UGA including those that pertain to water and sewer service. The guidelines addressed in this document are applicable to development projects affecting public utilities and infrastructure within the UGA. In addition, the guidelines may be enforced at the time of annexation by the City for all new construction and improvement projects undertaken when these guidelines were in effect. An exception may be made if the non-conforming utility or infrastructure remains under private ownership rather than being accepted by the City.

C. These guidelines will prevail in the event a conflict is found or identified with any other City practice or policy. However, the criteria contained herein shall not supersede any other legally constituted standards that are more stringent than these guidelines.

1.02 Definitions

Applicant - The applicant for any development and/or improvement permit, their successors, and/or assigns.

APWA – The American Public Works Association.

AWWA – The American Water Works Association.

Bond/Surety – Any document, instrument, or individual bound with and for the acceptable performance, execution, and completion of the work, and for the satisfaction of all obligations incurred.

City – The City of Winlock.

City Engineer – The City Engineer or duly authorized representative/consultant for the City.

Community Development Coordinator – The Community Development Coordinator or duly authorized representative for the City.

Community Services Director – The Community Services Director or duly authorized representative for the City.

Contractor – References to the “Contractor” in these guidelines shall generally mean a person or company hired by the property owner and/or development applicant that is licensed and bonded to perform the required work.

County - Lewis County.

Dedication – The deliberate appropriating of land by an owner(s) for any general and public uses, reserving to themselves no other rights than such as are compatible with the full exercise and enjoyment of the public uses to which the property is to be devoted. The intent to dedicate will be evidenced by the owner by the presentment for a filing of a final plat, short plat, or binding site plan that shows the dedication thereon. Acceptance by the public will be evidenced by written approval issued by the City of such document for filing with the County Auditor.

Deferral – A temporary delay from the installation of any or all requirements of these guidelines, issued by the City, based on the site-specific conditions of a project.

Department of Ecology (DOE) - The Washington State Department of Ecology.

Department of Health (DOH) - The Washington State Department of Health.

Department of Transportation, (DOT or WSDOT) - The Washington State Department of Transportation.

Design Guidelines – The City of Winlock Public Design Guidelines will be cited routinely in the text as the "Design Guidelines".

Developer – An individual, firm, corporation, association, syndicate, trust, other legal entity, their successors, and/or assign that initiates proceedings and or files application(s) for the development of land including but not limited to a subdivision, short plat, site development plan, improvement permit and/or utility extensions. The

Developer need not be the owner of record of the land.

Easement – The right granted by a property owner to another to make lawful and beneficial use of a defined area of their property for a specific purpose, created through an expressed or implied agreement.

Engineer or PE – Any professional engineer, licensed in the State of Washington.

Equivalent Residential Unit (ERU) – ERUs are used to calculate water and sewer capacity and related charges. The specific ERU value that is utilized for water and sewer is identified in the latest Water System Plan Update or Amendment as applicable. For purposes of these design guidelines, ERU's will be allocated as follows:

- Single family residence, including mobile homes: One ERU per living unit.
- Duplex (two-family residence), Triplex (three-family residence), Fourplex (four-family residence): one ERU per dwelling unit.
- Residential buildings containing more than four living units, commercial, industrial or other non-residential customers: ERU values shall be determined by dividing the estimated water use or sewer discharge by the specific ERU value applicable at the time of application for service. Capacity estimates shall be based on applicable published guidance by DOH or Ecology and/or an engineering analysis utilizing data from an analogous use(s).

Fire Department – Lewis County Fire District No. 15.

Frontage – The area between any lot lines that intersect the boundary of a street right-of-way, or the portion of a lot that directly abuts a street right-of-way

Frontage Improvements – All of the street pavement, curb, gutter, sidewalk, storm drainage, water and sewer utilities, power and communications cable undergrounding, street trees and street lighting, as specified by these design guidelines, located within any public right-of-way abutting the property boundary of a development.

Grading Permit – A permit issued by the City prior to the commencement of any filling, grading, clearing or other land disturbing activities.

Hearing Examiner – One who hears, decides, and adjudicates appeals arising from decisions made by the City.

Impervious Surface – Any surface that cannot be effectively and easily penetrated by water.

Improvements – Any act that improves the value of public, real and personal property, or that is necessary as a condition of development, including but not limited to: streets and roads complying with the development regulations, design guidelines and specifications adopted by the City; public utility and pedestrian facilities; streetlights; landscape features; sewer and waterlines; bridge structures; storm drainage facilities;

and traffic control devices as required to be installed as part of a subdivision, short subdivision, large lot subdivision, binding site plan or commercial/industrial development.

Local Improvement District (LID) – A public improvement provided to a specific area that benefits that area and that is usually paid for by a special assessment of a defined set of property owners benefiting from the improvement.

Manual on Uniform Traffic Control Devices (MUTCD) – The Manual on Uniform Traffic Control Devices, as published and amended by the U.S. Department of Transportation, Federal Highway Administration, as modified by the Washington State Department of Transportation.

New Development – "New development" is defined as any site action involving SEPA. This may include previous development on a site with consideration to cumulative impacts for the purpose of making a SEPA threshold decision.

Not to Scale (N.T.S.) – The drawing or detail may not be to a specific scale or drawn entirely at a uniform scale.

Planned Unit Development (PUD) – Provides for development using different "site specific" standards that permit greater flexibility and achieve a more appropriate design.

Plans – The plans, profiles, cross-sections, elevations, details, and supplementary specifications, signed by a professional engineer licensed in the State of Washington and approved by the City, showing the location, character, dimensions, and details of the work to be performed.

Private Street – A privately owned and maintained vehicular access tract serving private property.

Project – General term encompassing all phases of the work to be performed and is synonymous with the term "improvement" and/or "work".

Proposed Project – The term "proposed project" may be used to refer to an entire development or portion thereof.

Public Street – A publicly owned and maintained street.

Public Works Department or Department of Public Works – The City of Winlock Public Works Department.

Public Works Superintendent or Superintendent of Public Works – The Superintendent of Public Works, or duly authorized representative for the City.

Redevelopment – Any project designed to renew, restore, or revitalize an existing building, property or street. Re-development also includes expanded or increased development that required SEPA, or use or occupancy of a building or site that has been dormant for a period of more than five (5) years.

Right-of-Way (ROW) – A general term denoting public land, property, or interest therein acquired for or devoted to a public street, public access or public use.

Right-of-Way Permit – A permit issued by the City, authorizing disturbance, construction, occupancy or use of a City street or right-of-way.

Site Plan – A development plan for one or more lots showing the existing and proposed conditions of the lot(s), including topography; vegetation; drainage; flood plains; walkways; means of ingress and egress; circulation; utility services; structures and buildings; signs and lighting; berms, buffers, and screening devices; surrounding development; and any additional information that may be required.

Standard Specifications – The most recent edition of the Standard Specifications for Road, Bridge, and Municipal Construction, as published by the Washington State Department of Transportation (WSDOT) and the Washington State Chapter of the APWA, including Standard Plans for Road, Bridge and Municipal Construction; along with any amendments made thereto.

Surveyor – Any professional land surveyor licensed by the State of Washington.

Utility – A company providing public service including, but not limited to, gas, oil, electric power, street lighting, telephone, telegraph, water, sewer, or cable television, whether or not such company is privately owned or owned by a government entity.

Urban Growth Area (UGA) – The area outside the City limits that has been designated in the Winlock Comprehensive Plan for future expansion of the City.

Variance – A modification of the terms of this title that may be granted because of the unusual shape, exceptional topographic conditions or other extraordinary situation or condition in connection with a specific piece of property, where the literal enforcement of this title would involve practical difficulties and cause undue hardship unnecessary to carry out the spirit and intent of this title.

Winlock Municipal Code (WMC) – The latest version of the Winlock Municipal Code. This document includes the laws and ordinances that govern the City as adopted by the City Council.

1.03 General Guidelines, Specifications and Other Criteria

A. These Design Guidelines are supplemented by the following criteria. The following

list is not all inclusive and other specifications, standards and criteria not listed shall apply when required by the City. In the event of any conflict in the provisions or interpretations of specifications and/or standards, as they may relate to any issue, the strictest provision or interpretation, as determined by the City, will prevail.

1. Design detail, workmanship and materials will be in conformance with the most recent edition of the Standard Specifications, except where these City guidelines provide otherwise. Materials proposed for use in construction of publicly owned or maintained utilities must be in conformance with approved material standards in place at the time of submittal.
2. Conditions and standards as set forth in the most recent edition of the City of Winlock Water System Plan.
3. Conditions and standards as set forth in the most recent edition of the City of Winlock General Sewer Plan.
4. Conditions and standards as set forth in the most recent edition of the City of Winlock Stormwater Management Plan.
5. Conditions and standards as set forth in the Winlock Comprehensive Plan.
6. Conditions and Standards as set forth in the most recent edition of the Winlock Development Regulations.
7. Rules and regulations as adopted in the Winlock Municipal Code.
8. Criteria set forth in the Local Agency Guidelines, as amended and approved by the Washington State Department of Transportation.
9. The most recent edition of the City and County Design Standards for the Construction of Urban and Rural Arterial and Collector Roads promulgated by the City Engineers Association of Washington.
10. U.S. Department of Transportation Manual on Uniform Traffic Control Devices (MUTCD), as amended and approved by the Washington State Department of Transportation.
11. DOT Construction Manual, as amended and approved by Washington State Department of Transportation.
12. Rules and regulations of the State Board of Health regarding public water supplies, as published by the State Department of Health.
13. Conditions and standards as set forth in the most recent issue of the State of Washington Department of Ecology "*Criteria for Sewage Works Design*".

14. Conditions and standards as set forth by the State of Washington, Department of Labor and Industries.
15. Design criteria of federal agencies including Department of Housing and Urban Development and the Federal Housing Administration.
16. The most recent edition of “*A Policy on Geometric Design of Highways and Streets*”, by the American Association of State Highway and Transportation Officials (AASHTO)
17. The most recent edition of “*Pedestrian Facilities Guidebook*” by Otak.

1.04 Severability

- A. If any part of these Design Guidelines is found invalid, all other provisions will remain in effect.

1.05 Appeals

- A. Appeals proposing deviations from technical standards must demonstrate the following: (1) no negative impact to public health and safety; (2) no negative impact to the environment; (3) no negative impact on the City’s ability to safely and cost-effectively operate and maintain public utilities and infrastructure; (4) conformance to applicable rules and regulations; and (5) methods and materials of equal or higher quality to the standard from which deviation is desired.

1.06 Frontage Improvements

A. General

1. Any permit authorizing a development or redevelopment within industrial, residential, and commercial zones will require that the Developer or property owner be responsible for construction or installation of frontage improvements. Frontage improvements shall include sidewalk, curb and gutter, streetlights, water, sewer and storm drains in accordance with the requirements of these Design Guidelines.
2. Frontage improvements will be installed in such a manner as to provide continuity for future frontage improvements along adjacent properties.
3. All costs associated with frontage improvements shall be born by the applicant and work must be performed by a licensed and bonded Contractor.

B. Exceptions

1. If, in the opinion of the City, the existing frontage features are properly installed, in good condition, operational, and not hazardous to public health, safety, or welfare, the development will be exempt from frontage improvement standards.
2. When frontage improvements are a continuation of existing improvements that no longer meet current design guidelines, the proposed improvements may be allowed to maintain continuity if approved by the City.
3. The following types of development will be exempt from the frontage improvement requirements:
 - a. Any addition to and/or remodeling of an existing single-family residence or duplex.
 - b. Development of one existing lot for one single-family home or one duplex housing unit where the lot does not have existing frontage improvements abutting the property. Legacy lots are not given exemption under this section.
 - c. Any conversion or change in use of a building where the area being converted is less than 1,000 square feet and the change in use is not likely to result in 25% more vehicle trips during the peak traffic hours. Trip generation rates will be determined on the basis of the methodology set forth elsewhere in these guidelines.
 - d. Remodeling of an existing building if no change in use or additional gross floor area results.

C. Deferrals

1. For all projects that are granted a deferral of any frontage improvement, the property owner of record will be required to enter into an agreement with the City to install the deferred improvements at a future date, not to exceed three (3) years from the date of the deferral. The deferral agreement will be recorded with the property to ensure the City's ability to enforce the deferral regardless of changes in property ownership and will be enforceable as allowed by law. The property owner will execute and record a covenant document, as supplied by the City, ensuring participation of the subject property owner(s) in the construction of frontage improvements. The City may require bonding as a condition for a deferral.
2. Any redevelopment project, regardless of location, that is necessitated by fire, flood, other natural disaster, or act of the public enemy will be granted a deferral from the installation of frontage improvements under the following conditions:
 - a. The redevelopment project is of the same size, type, and usage as existed on the property prior to the damage.
 - b. There are no negative impacts to the health, safety, or welfare of the public or environment that will be created or perpetuated by the delay of the frontage improvements.

- c. If the property is located on a street requiring mandatory frontage improvements, the deferral will be for a period of three (3) years from the time of completion of the redevelopment project. At that time, the property owner will install the deferred improvements to Design Guidelines.

1.07. Variances

- A. Purpose. Any applicant may seek modification of the provisions of these Design Guidelines where it appears that extraordinary conditions of topography, access, location, shape, size, drainage or other physical features of the site or adjacent development exists.
- B. Application Procedure. Any development plan that includes a request for a variance to one or more of the requirements of these Design Guidelines must be accompanied by a statement detailing any such variance(s) and the reasons therefore. Variance requests must include the technical aspects of a specific project that necessitates the need for a variance. A variance from the Design Guidelines will not be granted based solely on financial or convenience issues. Upon receiving a variance request, the City will review the information presented and make a determination as to the merits of the request. Upon completion of the review, the petitioner will be notified in writing of the decision.
- C. Conditions. No variance will be authorized that would have the effect of granting a special privilege not shared by other properties in the same vicinity. To grant a variance(s), the City will determine whether the following conditions have been met:
 - 1. There are exceptional or extraordinary circumstances or conditions that apply only to the property referred to in the application and not to other properties in the vicinity. These include, but are not limited to, size, shape, topography, location, or surroundings. The granting of the application is necessary for the preservation and enjoyment of substantial property rights of the petitioner.
 - 2. The granting of the application will not, under the circumstances of the particular case, adversely affect the health or safety of persons residing or working in the neighborhood of the property referred to in the application and will not be detrimental to the public welfare or injurious to property or improvements in the neighborhood or adversely affect the Comprehensive Plan.

1.08 Latecomers Agreements

- A. Any person who constructs a water or sewer main extension or other public improvement in excess of that which is required to meet minimum City of Winlock Design Criteria and the needs of the development, may, with the approval of the City Council, enter into a contract with the City which will allow the Developer to be reimbursed for the portion of the construction cost that benefits other adjoining properties and/or is in excess of the minimum standards. This contract is commonly termed a "Latecomers Agreement."

1.09 Plan Review

- A. Four copies of plans must be submitted to the City for review along with a completed Plan Checklist. All necessary easements, dedications, contracts, agreements or bonds will be submitted for review along with the plans. The City will check the plans for completeness. If plans meet the minimum checklist requirements for completeness, the plans will be routed to appropriate City staff and the plan review process will begin. Two plan reviews will be conducted at no additional charge as part of the plan review process.
- B. If plans require a third submittal, additional fees may be levied as established by the City. "Third Submittal" will mean the third and any subsequent submittals of construction drawings, specifications, drainage calculations or other information requiring additional plan checking pertaining to public facilities or any applicable construction or development in the right-of-way. New review comments provided by the City, that are not related to changes/corrections from the engineer will not trigger "Third Submittal" requirements.
- C. Upon approval of the plans, the applicant will be requested to submit the original drawings for signature by the City, or their duly appointed representative. Approved plans will be returned only to the applicant and only after all applicable fees have been paid. The plan approval will typically be valid for one (1) year. During that time, the project proponent will not be responsible to update the plans in accordance with any new Design Guidelines that may be developed, other than as necessary to preserve the health and welfare of the public. If a project has not been initiated and substantially completed upon plan expiration, any new requirements that have been adopted by the City will be applicable.

1.10 Enforcement

- A. **Inspection.** All construction or work within the scope of this code and all construction or work for which a permit is required will be subject to inspection by the City or duly appointed designee, in accordance with and in the manner provided by this code.

It is the responsibility of the Contractor to notify the City two (2) business days in advance of the commencement of any authorized work. Failure to provide sufficient advance notice as noted in these guidelines may lead to a delay in the start of construction. In such cases, the City accepts no liability for construction delays.

All specific tests and inspections required by these Criteria or necessitated by the unique nature of a project will be performed at the Contractor's expense. In addition, one re-inspection will be granted at no cost. Non-compliant or unsatisfactory work may result in additional inspection(s) and additional fees as established by

resolution.

- B. **Construction Control.** Work performed for the construction or improvement of City streets and utilities whether by or for a private Developer, by City forces, or by a Contractor hired by the City, will be done in accordance with approved plans. No work is to begin until such plans have been approved. The City and the City Engineer/Consultant must approve any revision to such plans prior to implementation. Failure to receive prior approval of plans and/or revisions may result in removal or modification of construction at the expense of the Contractor or Developer.
- C. **Violations.** It is unlawful for any person, firm, or corporation to erect, construct, enlarge, alter, repair, move, improve, convert, equip, use or maintain any frontage improvements/public utilities or cause or permit the same to be done in violation of this code.
- D. **Abatement.** All frontage improvements and infrastructure that are determined after inspection by the City, to not comply or meet minimum standards as defined in these Design Guidelines, will be abated by repair, rehabilitation or removal. A Correction Notice may be issued by the City to define the work that must be adjusted.
- E. **Appeals.** In order to provide for reasonable interpretation of the provisions of this code and to hear appeals provided for hereunder, appeals must initially be addressed to the City.

1.11 Permits

A. General

1. Much of the work covered under these Design Guidelines will require multiple permit authority review and approvals. Several types of permits and approvals require prior approval from the authority before a building or other permit can be issued. Any questions regarding information about permits, approvals and agreements should be directed to the City
2. The issuance or granting of a permit or approval of plans, specifications, and computations will not be construed to be a permit for, or an approval of, any violation of any of the provisions of this code or of any other ordinance of the jurisdiction. Permits appearing to give authority to violate or cancel the provisions of these Design Guidelines or other ordinances of the jurisdiction will not be valid.
3. The issuance of a permit based upon plans, specifications, and other data will not prevent the City from thereafter requiring the correction of errors in said plans, specifications, and other data, or from preventing operations being carried on when in violation of these Design Guidelines or of any other ordinances of this

jurisdiction.

4. The City may, in writing, suspend or revoke a permit issued under the provisions of this code whenever the permit is issued in error or on the basis of incorrect information supplied, or in violation of any ordinance or regulation or any of the provisions of these Design Guidelines.

B. **Right of Way Permit.** A Right-of-Way Permit will be obtained from the City before any person, firm or corporation will:

1. Commence any work to alter, construct, or repair any facilities within a public right-of-way or easement, including but not limited to: pavement, sidewalk, utilities, conduits, vaults, or any other structure, utility or improvement located over, under or upon a public right-of-way or easement in the City, or;
2. Place any structure, building, barricade, or materials tending to cause a dangerous situation or obstruct, damage, or disturb the free use of the right-of-way or any improvement situated therein.
3. A separate permit will be obtained for each separate project. The timeline for a Right-of-Way Permit will depend upon the needs of the project. However, the City will also factor the health, safety, and welfare of the community when determining the allowable time for a permit to remain valid. In no case will Right-of-Way Permits be issued for longer than one (1) year. Upon expiration of a permit, a new permit request may be submitted for consideration, by the City.

C. **Building Permit.** Building permits for new construction of single-family subdivisions will not be issued without final approval of the City. For commercial projects, building permits may be issued upon completion and acceptance of the required fire protection facilities. A construction bond will be required for the remaining improvements. A *Certificate of Occupancy* will not be issued until final City approval is given for all improvements.

1.12 Construction Documents

A. Detailed construction documents prepared by a licensed engineer must be submitted to the City for review and approval prior to the commencement of any construction. Applicant's engineer will be a Professional Engineer registered as such in the State of Washington. All plans must be signed and stamped by the applicant's engineer prior to submittal for plan review. The City will review all submittals for general compliance with these Design Guidelines. An acceptance by the City does not relieve the applicant or the applicant's engineer from the responsibility of ensuring that all facilities are safe and that calculations, plans, specifications, construction, and as-built drawings comply with normal Engineering Standards, these Design Guidelines, and all applicable Federal, State, and local laws and codes.

- B. Plan and profile drawings are required for all proposed transportation-related improvements; street illumination; traffic signalization; storm drainage facilities; or sewer and water improvements. For specific minimum requirements, see the Plan Checklist at the end of this chapter. On occasion, the scope of a project (i.e., installation of a driveway, replacement of sidewalk, or replacement of sanitary side-sewer) may not require engineered plans and can be handled via a Right-of-Way Permit, as determined by the City.
- C. Final plans must be signed and approved by the City prior to the start of construction. The applicant will provide the City with two full sized copies, 22" x 24", and two 11" x 17" copies with no disclaimers. An electronic or digital copy in an AutoCAD-readable format will be submitted with the mylar plan set. It is the Contractor's responsibility to ensure that a signed and approved set of plans and all necessary permits are on the job site whenever work is being performed.
- D. The City must also approve any subsequent revisions to the plans deemed significant. Failure to secure City approval for plan modifications may lead to corrective actions undertaken at the expense of the Developer. The City may seek reimbursement for staff and material costs associated with any re-work necessitated by unapproved modifications.
- E. Materials proposed for use in construction of publicly owned or maintained utilities must be in conformance with approved material standards in place at the time of submittal. Alternate materials will not be evaluated or considered during the plan review period.
- F. Specifications will be required and submitted with the plans if General Notes do not adequately cover the project requirements.

1.13 Drafting Standards

- A. Design drawings will be submitted on clean, legible blue or black line format free of photographs or stick-ons. Half-size drawings may be submitted for design review if prior authorization is granted by the City. Half-size drawings will be 11" x 17" and will be in a format that can be scaled using a standard engineer's scale. Minimum nominal text size will be 1/8".
- B. The General Notes provided in the Standard Details and applicable Standard Details must be included on all plans. City will provide an electronic version of Standard Details for a nominal fee.
- C. Street drawings will be either 1" = 5', 1" = 10', 1" = 20', or 1" = 30' horizontal with vertical not to exceed 1" = 10'. Utility drawings may be accepted at 1" = 50' or 1" = 40' if they are legible and able to be microfilmed. No engineering plans will be accepted with architect's scale.

- D. Plans will show all existing and proposed monuments. All monuments will be described using current City coordinates. Coordinate Datum is NAD 83-91 (Washington State South Zone). Centerline of roadways, easements (with type and dimensions), and other pertinent data will be referenced to existing monuments.
- E. All existing features (pipes, curbs, power poles, etc.) are to be produced with a small pen or half tones. Proposed features will be distinguished by a larger or bolder line weight.
- F. Different line types and symbols will be used to distinguish different features.
- G. It will be noted that the preceding guidelines should not be construed to be the only requirements for completed drawings, rather an outline of minimum requirements for submitting complete drawings for the City's review. Particular care should be exercised in the preparation of the plans to ensure their completeness and clarity that will facilitate a timely City's review.

1.14 Fees

- A. Fees, charges or bonding requirements will be as established by an ordinance passed by the City Council except where specifically set forth in the WMC. The City Council will further set the dollar penalty for failure to pay said fee or charge in a timely manner by passage of such ordinance.
- B. All plan check fees are due prior to the release of approved plans and all inspection fees are due at the time of the pre-construction meeting. In addition, there are various miscellaneous service and connection fees and charges. Applicants may request an estimate of these fees and charges from the City.
- C. Prior to physical connection to and use of City water and sewer systems, all Public Works improvements must be completed and approved and all applicable fees paid.

1.15 Bonding

- A. Bonds or other allowable securities may be required by the City to guarantee the performance or maintenance of required work. The type and amount of security will be consistent with the required work and approved by the City Attorney. . Types of securities include, but are not limited to, a bond with a surety qualified to do a bonding business in this State, a cash deposit, an assigned savings account, or a set aside letter.
- B. No development permits will be issued until all required improvements are reflected in the approved civil engineering plans. Upon completion of building construction and with the approval of the City, appropriate surety for improvements may be accepted and a performance bond posted with the City. The performance bond must be in an amount equal to 150 percent of the estimated cost of the improvements.

1.16 Utility Locations

- A. Existing utilities within a right-of-way or easement on new roads or in roadways where existing utilities are not in conflict will be located in accordance with these Design Guidelines as approved by the City. Where existing utilities are in place, new utilities will conform to these Design Guidelines as nearly as practical and yet be compatible with the existing installations. All deviations of location must be approved by the City. Existing utilities will be shown using the best information available. This verification may require exploration/excavation (potholing) if utilities are in conflict with proposed design. The Contractor/Developer will be responsible for utility locates in conjunction with their project.
- B. All new utilities other than those located on private property will be installed underground by the utility owning said facility and as set forth in these Design Guidelines and/or in the applicable Franchise Agreement.
- C. A Right-of-Way Permit is required of any utility, except City owned facilities and utilities, with a Franchise Agreement with the City for all work done within the right-of-way. The utility will comply with all provisions as set forth in these Design Guidelines.

1.17 Easements

- A. Where public utilities and/or their conveyance systems cross private lands, an easement must be granted to the City. The Developer must process, record and file all easements. If the property is platted, the easement may be conveyed when the short plat or final plat is filed. All easements not shown on a plat, must be prepared by a land surveyor or engineering firm, licensed by the State of Washington, and able to perform such work. Easements shall provide for unrestricted access.
- B. Easement widths will typically be twenty (20) feet for each utility. Construction easements will be a minimum of thirty (30) feet wide, including the permanent easement. Under special circumstances, the City may require alternate easement widths. Utilities shall be installed no closer than seven (7) feet from the edge of the easement.
- C. Easements are required to be submitted in draft form, unsigned, for review and approval prior to plan approval. Signed copies are required prior to final acceptance of the project and issuance of Certificate of Occupancy. Any change in design that places an amenity, i.e., water, sewer, sidewalk, etc., outside of the easement may necessitate stopping of construction until plans and easements can be resubmitted and approved. Easements will be filed by the City upon satisfactory completion of the work.

1.18 Annexation Agreement Requirement

- A. Owners of properties lying outside City boundaries must sign an Annexation Agreement that legally commits their property to eventual annexation prior to being served by City utilities. This Annexation Agreement requirement will be applied to all extensions of City utilities to areas outside the City limits.

1.19 Traffic Control

- A. The Contractor/Developer will be responsible for traffic control during construction on or along traveled roadways. Traffic control will follow the guidelines of the Standard Specifications. All barricades, signs, coning and flagging will conform to the requirements of the MUTCD. A traffic control plan will be submitted for review by the City prior to the start of construction. All necessary and/or required traffic control devices will be in place prior to the beginning of project construction, or on a daily basis during project construction. Signs must be legible and visible and will be removed at the end of each work day if not applicable after construction hours.
- B. City utilities constructed within the Lewis County right-of-way will follow all traffic control requirements set forth by the Lewis County Department of Public Works and MUTCD.
- C. When road closures and detours cannot be avoided, the Contractor/Developer will notify the City a minimum of two (2) business days in advance. The City may require that a detour plan be prepared and submitted for approval prior to closing any portion of a City roadway or street. The owner/Developer/Contractor will notify the Fire Department of potential road closures.

1.20 Call Before You Dig

- A. All Contractors/Developers are responsible for timely notification of all utilities in advance of any construction in the right-of-way or utility easements. The Underground Utilities Location Center telephone number is 1-800-424-5555. A minimum of two (2) business days advance notice is required. The Contractor/Developer must provide separate notification to any utility not participating in or using the Underground Location Center.

1.21 Record Drawings

- A. After the improvements are completed and approved, a set of "record drawings" shall be submitted to the City as a permanent record. Record drawings shall be submitted on static-free 4-mil mylar with permanent image, and three (3) sets of copies. Sheet sizes will be 22" x 34". No sepia will be accepted. Final acceptance of development will not be granted until record drawings are accepted by the City. The City may withhold plat approval or utility service for failure to comply with record drawing requirements.

1.22 Plan Checklist

A. The Plan Checklist on the following pages provides a list of the information that is to be included on the plans submitted to the City for review. The list is not all-inclusive and is intended as a general guide for reference purposes. Not all items listed will apply in all situations. The checklist should be completed by the applicant and included with all plan submissions.

PLAN CHECKLIST

STANDARD ITEMS: WATER, SANITARY SEWER, STORM, SEWER, STREET, LIGHTING & SIGNALS

CHECK BOXES AS APPLICABLE

- Vicinity Map
- Legend (Line Types and Symbols)
- North Arrow
- Scale Bar
- Datum – Bench Mark Elevation and Location
- Title Block:
 - Title:
 - Date:
 - Design By:
 - Checked By:
 - Drawing Number (if applicable)
 - Signature Approval Block (see above example)
 - Sheet Number of Total Sheets
 - Revisions & Revising Dates
- Section, Township and Range
- Engineer/Land Surveyor Stamp (signed & dated)
- Plan Submitted on 22" x 34" sheet (mylar)
- Detail Sheet(s) (describing applicable work)
- "Call Before You Dig" note
- General Notes and Construction Notes
- Traffic Control Plan (per MUTCD)
- Coordinates

APPROVED FOR CONSTRUCTION	
BY _____	DATE _____
CITY OF WINLOCK	
APPROVAL EXPIRES: _____	

PLAN PORTION STANDARD ITEMS

- Adjacent Property Lines, Ownership and Addresses
- Edge of Pavement, Width and Pavement Type
- Right-of-Way Dimensions and Right-of-Way Lines Labeled
- Sidewalk and Width
- Match Lines with Station and Match Reference
- Existing Utilities (above ground and below ground)
- Easements, Existing, Proposed, Type, and Dimensions (if applicable)
- Define Survey Baseline vs construction baseline (if applicable)
- Street Names and names of other significant topographic features

PROFILE PORTION STANDARD ITEMS

- Existing Ground Profile
- Scale (horizontal and vertical)
- Stationing
- Vertical Elevation Increments
- Profile Grades
- Existing and Proposed Utilities
- Existing and Proposed Structures

SANITARY SEWER

Plan View

- Station and Offset Shown at Each Proposed Manhole
- Manholes Numbered With Type Designation and Invert and Rim Elevations
- Flow Direction (with arrow on pipe)
- Depth at Property Line (if applicable)
- Distance from Water Lines (if applicable)
- Type, Size and Length of Pipe from Center of Manhole to Center of Manhole
- Station for Sewer laterals at Property Line
- Force Main and Appurtenances with Station and Offset
- Standard Detail References

Profile View

- Manholes Numbered, with Type Designation and Invert Elevations Showing Direction In and Out
- Rim Elevation
- Pipe Slope (decimal form FT./FT.)
- Type of Pipe
- Size of Pipe
- Length of Pipe (in L.F.) From Center of Manhole to Center of Manhole
- Existing Utilities Crossings
- Force Main and Appurtenances With Stations and Offsets

WATER

Plan View

- Fire Hydrants
- Vacuum and Air Release Valves When Required
- Tees, Crosses, Elbows, Adapters and Valves, Meter Station and Offset
- Distance from Sanitary or Storm Sewer (if applicable)
- Type, Size, and Length of Pipe Between Fixtures
- Blocking end and/or rodding detail
- Standard Detail References

Profile View

- Existing and Proposed Utility Crossings
- Fittings With Stations and Elevations
- Show Valves With Stations and Elevations
- Type, Size and length of Pipe Between Fittings

STORM SEWER

Plan View

- Station and Offset at each Manhole/Catchbasin
- Numbered Manhole/Catchbasins w/ Type and Size
- Manhole/Catchbasin Rim Elevations
- Flow Direction with Arrow on Pipe or Channel
- Type, Size and Length of Pipe
- Stormwater Detention Facility (pond dimensions with elevations)
- Control Structure with Orifice Size and Elevation
- Emergency Overflow Location and Elevation
- Design High Water Elevation
- Standard Detail References

Profile View

- Station and Offset at Each Manhole/Catchbasin
- Invert Elevations on Manholes/Catchbasins Showing Direction of Flow
- Manhole/Catchbasin Type and Size

- Rim Elevation
- Type, Size and Length of Pipe (in linear feet)
- Pipe Slope (decimal form FT./FT.)
- Existing and Proposed Utility Crossings
- Stormwater Detention Facilities
- Control Structures

EROSION CONTROL DRAWING

- Construction Entrance Detail
- Silt Fences and Traps
- Mulching and Vegetation Areas
- Clearing and Grubbing Limits
- Existing and Finished Grade
- Details and Locations of all BMPs Recommended
- Location and Details of Temporary Sediment Ponds

STREET

Plan View

- Centerline and Stations
- Proposed Survey Monument Locations
- Roadway and Restoration Sections (if applicable)
- Flow Direction Arrows at Curb Returns Showing Grade
- Spot Elevations on Curb Returns
- PC, PT, PI Stationing of Horizontal Curves
- Curve Information Delta, Radius, Length and Tangent
- BCR and ECR (Begin Curb Radius, End Curb Radius)
- Identify all Field Design Situations by Notes
- Match Existing Features Noted by Station with Elevation
- Typical Roadway Sections and Pavement Types
- Pavement Markings Noted by Station and Offset
- Sidewalks
- Driveway Entrances
- Station at Center of Street
- Width, Type (AC, PCC), Note Applicable City Standard Detail
- Curb and Access Ramps
- Standard Detail References

Profile View

- Vertical Information PVC, PVI, PVT, AP, Low Point, High Point
- Show Grades in Decimal Form (FT./FT.) with (+ and -) Slope
- Super Elevated Roadway Segments

ILLUMINATION

- Station and Offset of Fixtures
- Pole Type, Including Manufacturer and Model Number
- Mounting Height, Arm Length, Anchor Bolt Size and Pattern
- Power Source
- Wire Size, Type, Conduit
- Luminaire Type, Lamp Wattage
- Location of Service Disconnects
- Line Loss Calculations
- J-Box Location

SIGNALS

- Station and Offset of Signal Base, Cabinets, Ped. Lead, Loops, Etc.

- Wiring Schedule**
- Signal Heads and Mounting Assembly**
- Detection Loops**
- Opticom**
- Control Cabinet, Size and Layout**
- Power Source**
- Conduit**
- Wire Size and Type**
- Construction Notes**
- J-Box Schedule**
- Pedestrian Signal Type with Push Button**
- Controller Type, Configuration, and Wiring Schematic**

Project Category: _____

Reviewed By: _____ **Date:** _____

Checked By: _____ **Date:** _____

General Notes (All Projects)

1. The Contractor shall provide all labor, equipment and materials to complete the work in accordance with the City of Winlock Public Works Standards (referred to as "City Standards"), City of Winlock Standard Details (referred to as "Standard Details"), the most recent copy of the Washington State Department of Transportation (WSDOT) Standard Specifications for Road, Bridge and Municipal Construction (referred to as the "Standard Specifications") and WSDOT Standard Plans (referred to as "Standard Plans").
2. A pre-construction meeting shall be held with the City of Winlock at least three business days prior to the start of construction.
3. The Contractor shall be responsible for all traffic control in accordance with MUTCD. Prior to disruption of any traffic, traffic control plans must be prepared and submitted to the city for approval. No work shall commence until all approved traffic control plans are in place.
4. All vertical and/or horizontal alignment, shall be staked by an engineering or surveying firm capable of performing such work and directed by a surveyor licensed to perform such work in the State of Washington. City of Winlock datum shall be used for all vertical control.
5. Call the Utilities Underground Location Center at 1-800-424-5555 a minimum of two (2) business days prior to any excavations.
6. The Contractor shall comply with all other permits and requirements of the City of Winlock and/or other governing authorities or agencies. If construction is to take place in the County right-of-way, the Contractor shall notify the County and obtain all the required approvals and permits.
7. It shall be the responsibility of the Contractor to maintain a copy of the approved construction plans on-site at all times bearing the signature of the City Public Works Superintendent.
8. Any changes to the design shall first be reviewed and approved by the developer's project engineer, the City of Winlock and the Public Works Superintendent prior to implementation.
9. The Contractor shall notify the City five (5) business days prior to a utility shutdown. A City representative must be present for any utility shutdown. The City, at its discretion, may re-schedule shutdown. When shut downs require "field verification" of underground conditions, connection points will be exposed by the Contractor and work requirements shall be verified by the Contractor and the City two (2) business days prior to the shutdown. Customers involved with or affected by shutdowns will be notified by the Contractor at least forty-eight (48) hours in advance. Shutdowns will not be permitted on Fridays, weekends, or holidays without written authorization from the City.
10. Prior to backfill, all buried pipe and appurtenances shall be inspected and approved by a representative of the City. It is the contractor's responsibility to notify the City in advance of all required inspections. Any pipe or appurtenance backfilled prior to inspection shall be re-excavated by the Contractor for inspection at no cost to the city. The Contractor shall retain responsibility to repair all deficiencies and failures revealed during all required testing for acceptance and throughout the duration of the warranty.
11. Temporary erosion/water pollution measures shall be in accordance with the City of Winlock Stormwater Management Plan and Section 1-07.15 of the Standard Specifications.
12. Any project disturbing one acre or more shall have an approved Dept. of Ecology Storm Water Permit.



General Notes (Street Construction)

1. Compaction of subgrade, rock and asphalt shall be in accordance with the Standard Specifications.
2. Testing and sampling frequencies are described in the City Standards.
3. The City will oversee the installation of street name and regulatory signs at the Property Owner's expense. All street name and regulatory signs will be submitted to the City for approval prior to the start of construction.
4. Sidewalk forms and subgrade inspection by the City is required before pouring concrete. Twenty-four hours (one work day) advance notice is required for form inspection.



General Notes (Street Light Construction)

1. Washington State electrical permits and inspections are required for all street lighting installations within the City. The Contractor is responsible for obtaining said permits prior to any type of actual construction.
2. A clearly marked service disconnect will be provided for every lighting circuit. The location and installation of the disconnect will conform to *National Electrical Code (NEC)* and these *Standards*. The photo controls window will face north unless otherwise directed by the City. The service disconnect will not be mounted on the luminaire pole. The service disconnect will be of a type equal to a Milbank CP3B-11115 AALSP2 service, 120/240 VAC, 1 3W, Caltrans Type 3B with contactors, photo controls and test switch. All service disconnects will be used to fullest capacity, i.e., maximum number of luminaires per circuit.
3. All lighting wire will be copper with a minimum size of #8. All wire will be suitable for wet locations. All wire will be installed in schedule 80 PVC conduit with a minimum diameter of 1 ¼ inches. A bushing or bell-end will be used at the end of a conduit that terminates at a junction box or luminaire pole. Conductor identification will be an integral part of the insulation of the conductors throughout the system i.e., color-coded wire. Equipment grounding conductor will be #8 copper. All splices or taps will be made by approved methods utilizing epoxy kits rated at 600 volts, minimum (i.e., 3-M 82-A2). All splices will be made with pressure type connectors (wire nuts will not be allowed). Direct burial wire will not be allowed. All other installation will conform to *NEC*, *WSDOT/APWA*, and *MUTCD* standards.
4. Each luminaire pole will have an in-line, fused, water tight electrical disconnect located at the base of the pole. Access to these fused disconnects will be through the hand-hole on the pole. The hand-hole will be facing away from on-coming traffic. Additional conductor length will be left inside the pole and pull or junction box equal to a loop having a diameter of one foot. Load side of in-line fuse to luminaire head will be cable and pole bracket wire, 2 conductor, 19-strand copper #10 and will be supported at the end of the luminaire arm by an approved means. Fuse size, disconnect installation and grounding in pole will conform to *NEC* standards.
5. Approved pull boxes or junction boxes will be installed when conduit runs are more than 200 feet. In addition, a pull box or junction box will be located within 10 feet of each luminaire pole and at every road crossing. Boxes will be clearly and indelibly marked as lighting boxes by the legend, "L.T." or "LIGHTING". See *WSDOT Standard Plan J-11a*.
6. Cement concrete bases will follow *WSDOT Standard Plan J-1b, Sheet 1, Foundation Detail*. Conduit will extend between three (3) and six (6) inches above the concrete base.
7. All streetlights will include a recessed 120V weatherproof GFI receptacle that meets all applicable guidelines and standards. The receptacle will be located thirteen (13) feet above the base of the pole. All receptacles will be on a dedicated circuit separate from the lighting circuit.



General Notes (Storm Drain Construction)

1. Storm drain pipe shall meet the following requirements:
 - a. Plain concrete pipe conforming to the requirements of AASHTO M 86, Class 2.
 - b. Reinforced concrete pipe conforming to the requirements of AASHTO M 170.
 - c. PVC pipe conforming to ASTM D 3034 SDR 35 or ASTM F794 or ASTM F679 Type 1 with joints and gaskets conforming to ASTM D 3212 and ASTM F 477.
 - d. Ductile iron pipe conforming to the requirements of AWWA C 151, thickness class as shown on the plans.
 - e. High-density polyethylene smooth interior pipe conforming to AASHTO M252 types or AASHTO M294 type S, with a gasketed bell and spigot joints.
 - f. Aluminized steel helical or spiral rib pipe in diameters of thirty (30) inches or greater, with a Manning's value of 0.020 or less.
2. Special structures, oil/water separators and outlet controls shall be installed per plans and manufacturers recommendations.
3. All storm lines and catch basins shall be high-velocity cleaned and pressure tested prior to paving. Hydrant flushing of the lines is not an acceptable cleaning method. Testing of the storm main shall include television inspection at the Contractor's expense. Testing will take place after all underground utilities are installed and compaction of the roadway subgrade is completed.
4. Fill material will not be allowed in any open channel used for storm conveyance without written approval from the City Engineer.
5. Contractors and/or property owners are required to channel water with a berm or a pipe when installing or repairing a driveway. Stormwater must be diverted to city storm mains when possible.



General Notes (Erosion Control)

1. Erosion control measures shall be installed and approved by the City prior to the beginning of construction.
2. Erosion control measures are not limited to items as shown on Plans or on Standard Details. The Contractor is responsible for the installation and maintenance of all erosion control measures. Contractor shall implement measures to prevent migration of silt and/or polluted runoff to off-site properties.
3. The Contractor will make regular surveillance of all erosion control measures. The Contractor will make all necessary repairs, modifications, and additions, as necessary to ensure the proper operation of the erosion control measures. The Contractor shall employ more frequent inspections of erosion control measures should site or weather conditions dictate.
4. All disturbed areas will be seeded or sodded upon completion of work. During the wet season, November through March, all disturbed soils will be stabilized within forty-eight (48) hours after land disturbance activities have ceased. Erosion control stabilization measures will include, but are not limited to, installation of straw matting, jute matting, straw mulch and/or wood chips, and covering the affected area and spoil piles with plastic sheeting. The Contractor will be responsible to ensure that complete coverage of the disturbed areas is provided and that growth of vegetation is established. Seed and sod applications will be conducted in accordance with the timelines noted in the most recent edition of the *WSDOT Standard Specifications*.
5. The Contractor will check all seeded or sodded areas regularly to ensure that the vegetative cover is being adequately established. Areas will be repaired, reseeded, and fertilized as required.
6. Tracking of soil off-site will not be allowed. If any soil is tracked beyond the limits of the site, it will be removed before the end of that working day. To prevent additional tracking, vehicle tires must be swept or washed prior to leaving the project site.
7. No more than 500 linear feet (LF) of trench on a down-slope of more than five (5) percent will be opened at one time.
8. Excavated material will be placed on the uphill side of trenches.
9. Excavated material will not be placed in established drainage ditches, under any circumstances.
10. Contractor shall establish a sediment trap for all trench dewatering operations.



General Notes (Water Main Construction)

1. All workmanship and materials shall be in accordance with the applicable provisions of the City Standards, American Water Works Association (AWWA) Standards and ANSI/NSF Standard 60 or 61.
2. All water mains shall be PVC AWWA C900, pressure class 150 or ductile iron cement mortar lined thickness Class 50 or Class 52.
3. Gate valves shall be resilient wedge, non-rising stem with O-rings seals. Valve ends shall be mechanical joint or ANSI flanges. Valves shall conform to AWWA C509 or C515. Valves shall be Mueller, M & H, Kennedy, Clow R/W or American Flow Control Series 2500. valves and all valves installed directly to and connected to a portion of the active water system are to be operated by city employees only.
4. All pipes and services shall be installed with continuous tracer tape placed twelve to eighteen inches under the proposed finished subgrade. The tracer tape shall be of plastic non-biodegradable, metal core, or backing marked "water". In addition to tracer tape, toning wire shall be installed over all pipe and services. Toning wire shall be UL listed, type UF, 12 gauge solid coated (blue) copper wire, taped to the top of the pipe and laid loose enough to prevent stretching and damage before being brought up and tied off at the valve operating nut or valve box. The wire shall be configured so that the wire is easily accessible from the ground surface. Two feet of slack shall be provided to allow for connection to the locator. Toning wire shall be tested prior to acceptance of the pipe system.
5. All water mains shall be chlorinated and tested in conformance with the Standard Specifications. New lines shall not be connected to the system until all required tests have been passed. Fire hydrants shall be bagged and the connecting gate valves left closed until the project has received final acceptance



General Notes (Sanitary Sewer Main Construction)

1. Gravity sewer mains shall be PVC pipe conforming to ASTM P 3034 SDR 35, ASTM F 794, or ASTM F 679 Type 1 with joints and gaskets conforming to ASTM 3212 and ASTM F 477.
2. Side sewer services shall be PVC, ASTM D 3034 SDR 35 with flexible gasket joints. Side sewer connections shall be made by a saddle tap to an main or a sanitary tee from a new main connected above the springline of the pipe.
3. All pipe and services shall be installed with continuous tracer tape placed 18 to 24 inches under the proposed finished subgrade. The marker shall be of plastic non-biodegradable, metal core or backing marked "SEWER". If visibility cannot be maintained between structures along the straight alignment of a sewer, toning wire shall be installed above the sewer line at a depth no greater than 48 inches. Force mains and laterals and services shall be installed with toning wire taped to the top of the pipe. Toning wire shall be UL listed, type UF, twelve (12) gauge coated (green) copper. The wire shall be laid loosely enough to prevent stretching and damage.
4. All lines shall be high velocity cleaned, televised, and subjected to a low pressure air test per the Standard Specifications after all underground utilities are installed and compaction of the roadway subgrade is completed, but prior to paving. Hydrant flushing of lines is not an acceptable cleaning method. Testing shall be at the expense of the Contractor and conducted in the presence of a city representative. A copy of the video shall be submitted to the City of Winlock. Acceptance of the line shall be made after the tape has been reviewed and approved by the City of Winlock. A test of all manholes in accordance with these Standards is also required.



General Notes (Grinder Pump System Construction)

1. All Grinder Pump mains may be Class 200, ASTM D2241, SDR 21 with rubber gasket joints or HDPE type III category 5, class C grade P34 ASTM D1 248-81, SDR11 pipe with butt fused joint. Gaskets will comply with ASTM D 1869. Grinder pump mains will have a minimum thirty-six (36) inches of cover to top of pipe.
2. Service pipe shall be minimum 1-1/4 inch diameter, Schedule 40 PVC water pipe or HDPE SDR11 pipe with butt fusion, electrofusion or compression fittings, solvent welded connection located at 90 degrees to the mainline, when possible. Solvent cements and primer for joining PVC pipe and fittings will comply with ASTM D 2564 and shall be used as recommended by the pipe and fitting manufacturers. Services will have a minimum twenty-four (24) inches of cover over the top of the pipe.
3. Grinder Pump mains and services shall be installed with continuous tracer tape. Marker tape shall be placed 18 to 24 inches under the proposed finished subgrade. The marker tape shall be of plastic non-biodegradable, metal core or backing marked "SEWER".
4. All Grinder Pump pressure mains shall be hydrostatically tested according to the methods for hydrostatic testing in accordance with the "Inspection, Tests and Safety Considerations" document by the Plastic Pipes Institute (PPI).
5. All buried power for Grinder Pump systems shall be installed according to all current and applicable electrical codes and shall be installed with continuous tracer tape installed twelve (12) inches above the buried power. The marker shall be plastic non-biodegradable metal core backing marked "POWER."



CHAPTER 2 TRANSPORTATION

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TRANSPORTATION

2A GENERAL

2A.01 General

- A. This chapter provides minimum Design Guidelines to encourage uniform development of an integrated, fully accessible public transportation system that will facilitate present and future travel demands with minimal environmental impact to the community as a whole.

2A.02 Definitions

- A. **Average Daily Traffic (ADT)** - The average number of vehicles passing a specified point during a 24-hour period.
- B. **Cul-De-Sac** – A street with a single common ingress and egress and with a circular turnaround at the end.
- C. **Half-Street** – A street constructed along an edge of development utilizing half the regular width of the right-of-way serving as an interim facility pending construction of the other half of the street by the adjacent owner.
- D. **Private Street** – A privately owned and maintained vehicular access tract serving private property.
- E. **Street or Road** – A public right-of-way, usually containing improved facilities for transportation and utilities. Definitions of Street Classifications are as follows:
1. **Boulevard** – A multi-lane thoroughfare separated by one or more medians. Boulevards provide distinct separation between slower traffic/parking activity and through traffic. Boulevards can serve a variety of land uses.
 2. **Commercial Collector** – A street that provides a connection between an arterial street and concentrated industrial and/or commercial land uses. The amount of through traffic is less than that of an arterial, and there is more accessibility to abutting land uses.
 3. **Local Access** – A street that provides access to abutting land uses and serves to carry local traffic to a collector.
 4. **Major Arterial** – A street that provides an efficient direct route for long distance travel within the region and different parts of the City. A street connecting freeway interchanges to commercial concentrations is classified as a major arterial. Traffic on major arterials is given preference at intersections, and some

access control may be considered in order to maintain capacity to carry high volumes of traffic.

5. **Minor Arterial** – A street that provides an efficient direct route for trips of moderate length at a somewhat lower level of travel mobility than major arterials. A street that augments and interconnects with major arterials is classified as a minor arterial. More emphasis is placed on land access for minor arterials as opposed to major arterials.

6. **Neighborhood Collector** – A street that distributes and collects traffic within a neighborhood and provides a connection to an arterial or other collector. Neighborhood collectors serve local traffic, provide access to abutting land uses, and do not carry through traffic. Their design is compatible with residential neighborhood centers.

F. **Traffic Impact Analysis (TIA)** – A report analyzing anticipated roadway conditions with and without proposed development, including an analysis of mitigation measures and a calculation of fair share financial contributions.

2B STREETS

2B.01 General

A. City streets are classified as arterials, collectors and local access streets in accordance with regional transportation needs and the functional use each serves. Function is the controlling element for classification and shall govern right-of-way, street width, and street geometries. The City will determine the classification of new & existing streets.

B. The layout of streets shall provide for the continuation of existing principal streets in adjoining subdivisions or of their proper projection when adjoining property is not subdivided. Minor streets, which serve primarily to provide access to abutting property, shall be designed to discourage through traffic. A traffic impact analysis may indicate that other design configurations would be preferable for a given project. Such alternatives may be required by the City if it is determined that strict compliance with the Design Guidelines are impractical or unreasonable in the circumstance.

2B.02 Design Criteria

A. Street design must provide for the maximum loading conditions anticipated. The width and grade of the pavement must conform to specific standards set forth herein for safety and uniformity. See Table 2-1, Minimum Street Design Criteria.

- B. The layout of streets will provide for the continuation of existing principal streets in adjoining subdivisions or of their proper projection when adjoining property is not subdivided. Minor streets, which serve primarily to provide access to abutting property, will be designed to discourage through traffic. See Table 2-1, Minimum Street Design Criteria.

**Table 2-1
City of Winlock
Minimum Street Design Criteria**

DESIGN STANDARD	BOULEVARD	MAJOR OR MINOR ARTERIAL	COMMERCIAL COLLECTOR	NEIGHBORHOOD COLLECTOR	LOCAL ACCESS	PRIVATE
DESIGN LIMITATIONS	Access and intersections should be limited. No on-street parking.			N/A	N/A	N/A
MINIMAL STRUCTURAL DESIGN	See Standard Detail Number 2-13					
STANDARD RIGHT-OF-WAY	100' ₁	100' _{1,6}	60' ₁	60' ₂	50' ₂	N/A
STANDARD PAVEMENT WIDTH	66' (may have a 14' median)	50' - 64'	40'	32' - 40'	28'-32'	20'
PARKING LANE	None Allowed	None Allowed	8' Both Sides ³	8' ₃	8'	N/A
MINIMUM/MAXIMUM GRADE	0.5% - 10.0%	05% - 10.0%	0.5% - 12.0%	0.5% - 15.0%	0.5% - 15.0%	0.5% - 15.0%
CURB & GUTTER	Both Sides					N/A
SIDEWALKS	Both Sides 6' (min)			Both Sides 5'	Both Sides 5'	One Side 5' ₅
CUL-DE-SAC RADIUS (PAVEMENT WIDTH)	N/A	N/A	50'	50'	50'	Fire Department Standards
INTERSECTION CURB RADIUS	35'	35'	35'	25'	25'	25'
DESIGN SPEED (MPH)	40	40	35	30	25	N/A
MINIMUM CENTERLINE RADIUS	600'	600'	150'	150'	100'	N/A
STANDARD DETAIL	2-14.a	2-14.b 2-14.c	2-14.d	2-14.e 2-14.f	2-14.g 2-14.h	2-14.i

1. 10-foot utility easement abutting Right-of-Way on both sides.
2. 7-foot utility easement abutting Right-of-Way on both sides.
3. Parking one or both sides may be allowed.
4. Variation from minimum standards requires written approval from the City for proposed mitigation.
5. Curb w/ gutter and sidewalk for private roads encouraged.
6. Right-of-Way for SR-505 is 100'.

- C. Alignment. Alignment of major arterials, minor arterials and collectors shall conform as nearly as possible with that shown in the Comprehensive Plan.
- D. Grade. Street grade should conform closely to the natural contour of the land. In some cases the City may require a different grade. The minimum allowable grade shall be 0.5 percent. The maximum allowable grade shall be 8 – 15 percent depending on the street classification.
- E. Width. The pavement and right-of-way width shall depend on the street classification. Table 2-I, Minimum Street Design Criteria, shows the minimum widths allowed.

2B.03 Naming

- A. Street Names. Street names shall be designated according to approval from the City. The Developer must check with the Community Development Coordinator regarding the naming of streets. This should be done at the time the preliminary plat is submitted and again upon approval of the final plat. This will ensure that the name assigned to a new street is consistent with City policy.
- B. Addresses. An address number will be assigned to all new buildings at the time a building permit is issued. It is then the development permit holder's responsibility to make sure that the numbers are placed clearly and visibly at the main entrance to the property or at the principal place of ingress.

2B.04 Signing and Striping

- A. Street signs are defined as any regulatory, warning, or guide signs. The Developer is responsible for the cost of all street signs. Street signs shall comply with the latest edition of the U.S. Department of Transportation Manual on Uniform Traffic Control Devices (MUTCD).
- B. Pavement markings and street signs, including poles and hardware, shall be paid for, furnished and installed by the Developer under the City's direction, to establish and maintain uniformity. Should the work be performed by the City, the Developer must first submit a written request to the City and, the Developer will then be billed upon completion of the work.
- C. Standards for Sign Post Material:
 - 1. Post - 2"x length x 14 gauge perforated square tube
 - 2. Anchor - 2 ¼" x 36" x 12 gauge
 - 3. Sleeve - 2 ½" x 12" x 12 gauge

4. Corner Bolt with 2 bends and nut
5. Aluminum Drive Rivets – 3/8” for mounting signs

D. Criteria for Pavement Markings

1. Legends, arrows, symbols and crosswalks must be heat fused preformed thermoplastic Hot Tape or Premark.

E. Striping Material:

1. Arterial Streets – Dura-Stripe
2. Collector Streets – paint

2B.05 Right-of-Way

- A. Right-of-way width is determined by the functional classification of a street. Refer to Table 2-1, Minimum Street Design Criteria.
- B. Right-of-way requirements may be increased if a traffic impact analysis indicates that additional lanes, pockets, transit lanes, bus loading zones, operational speed, bike lanes, utilities, or other such improvements are required.
- C. Right-of-way shall be conveyed to the City on a recorded plat or by a right-of-way dedication deed.

2B.06 Private Streets

- A. Private streets may be allowed under the following conditions:
 1. Permanently established by tract or lot providing legal access to serve not more than four dwelling units or businesses on separate parcels, or unlimited dwelling units or businesses situated on a single parcel and sufficient to accommodate required improvements, to include provisions for future use by adjacent property owners when applicable;
 2. Have a minimum 20-foot paved surface, and a sidewalk five (5) feet in width of such a design that prevents parking on the sidewalk;
 3. Accessible at all times for emergency and public service vehicle use;
 4. Will not result in the land-locking of present or future parcels nor obstruct public street circulation; and

5. Covenants have been approved, recorded, and verified with the City that provide for maintenance of the private streets and associated parking areas by the owner or homeowners association or other legal entity.

- B. Private Street Conversion. Conversion of a private street to a public street will be considered only if provision is made for the street(s) to meet all applicable public street standards, including right-of-way widths.

2B.07 Street Frontage Improvements

- A. All commercial and residential (including multi-family) development, plats, and short plats require street frontage improvements. Such improvements may include curb and gutter; sidewalk; street storm drainage; street lighting system; traffic signal modification, relocation or installation; utility relocation; landscaping and irrigation; and street widening per these guidelines. Plans shall be prepared and signed by a licensed civil engineer registered in the State of Washington.
- B. All frontage improvements shall be made across full frontage of property and on all sides that may border a City right-of-way.
- C. Exceptions. See Chapter 1 “Exceptions”.

2B.08 Cul-de-sac

- A. Streets designed to have one end permanently closed shall be no longer than 650 feet. At the closed end, there shall be a widened “bulb” having a minimum paved traveled radius as shown in Table 2-1, Minimum Street Design Criteria.

2B.09 Half-Street

- A. A half-street is an otherwise acceptable roadway section modified to conform to limited right-of-way on the boundary of property subject to development. A half-street, may be approved by the City when all of the following conditions are met:
 1. There is reasonable assurance of obtaining the prescribed additional right-of-way from the adjoining property suitable for completion of a full-section roadway; and
 2. Such alignment is consistent with or will establish a reasonable circulation pattern; and
 3. The right-of-way width of the half-street will equal at least 30 feet or 50 percent of the required right-of-way (whichever is greater); and
 4. The traveled way shall be surfaced the same as the designated street classification to a width not less than 24 feet; and

5. The half-street shall be graded consistent with the centerline of the ultimate roadway section along the property line; and
6. Property line edge of street shall be finished with permanent curb and gutter to insure proper drainage, bank stability and traffic safety; and
7. Required Frontage Improvements shall be installed in conjunction with the half-street.

2B.10 Medians

- A. A median shall be in addition to, not part of, the specified roadway width except on a road classified as a Boulevard. Medians shall be designed so as not to limit turning radius or sight distance at intersections.

2B.11 Intersections

- A. Traffic control shall be as specified in the most recent edition of the MUTCD or as modified by the City as a result of appropriate traffic engineering studies.
- B. Street intersections shall be laid out to intersect as nearly as possible at right angles. The angle of the intersection shall be between 75 degrees and 105 degrees. The preferred angle is 90 degrees. For safe design, the following types of intersection features should be avoided:
 1. Intersections with more than four intersecting streets;
 2. "Y" type intersections where streets meet at acute angles;
 3. Intersections adjacent to bridges and other sight obstructions;
 4. Offset intersections that are not conducive to side traffic flow.
- C. Spacing between adjacent intersecting streets should be as follows:

When highest classification involved is:	Minimum centerline offset should be:
Major Arterial	350 feet
Minor Arterial	300 feet
Commercial Collector	250 feet
Neighborhood Collector	250 feet
Local Access	200 feet

When different classes of streets intersect, the higher standard shall apply on curb radii.

2B.12 Driveways

- A. All driveways shall be constructed of Portland Cement Concrete (PCC) or hot-mix asphalt (HMA) from the right-of-way line to the edge of the street. Residential PCC driveways shall have a nominal concrete thickness of six (6) inches. All other PCC approaches shall be eight (8) inches thick.
- B. Joint-use driveways serving two adjacent parcels may be built on their common boundary with a formal written agreement between both property owners and with the approval of the City. The agreement shall be a recorded easement for both parcels of land specifying joint usage and maintenance responsibility.
- C. No commercial driveway shall be approved where backing onto the sidewalk or street would occur.
- D. No driveway shall be built within twenty (20) feet of the end of any curb return or within five (5) feet of any property line.
- E. The maximum driveway width for a single driveway onto an arterial or collector shall be:

<u>Frontage Width</u>	<u>Residential</u>	<u>Commercial</u>	<u>Industrial</u>
Up to 50-feet	24-feet	24-feet	30-feet
50- to 75-feet	24-feet	30-feet	40-feet
More than 75-feet	24-feet	30-feet	40-feet

- F. The maximum driveway width for each of two driveways onto an arterial or collector shall be:

<u>Frontage Width</u>	<u>Residential</u>	<u>Commercial</u>	<u>Industrial</u>
Up to 50-feet	Not permitted	Not permitted	Not permitted
50- to 75-feet	Not permitted	15-feet	20-feet
More than 75-feet	20-feet	24-feet	40-feet

- G. The maximum driveway width for a single driveway onto a local access street shall be:

<u>Frontage Width</u>	<u>Residential</u>	<u>Commercial</u>	<u>Industrial</u>
Up to 50-feet	24-feet	24-feet	Not permitted
50- to 75-feet	24-feet	26-feet	Not Permitted
More than 75-feet	24-feet	26-feet	Not Permitted

H. The maximum driveway width for each of two driveways onto a local access street shall be:

<u>Frontage Width</u>	<u>Residential</u>	<u>Commercial</u>	<u>Industrial</u>
Up to 50-feet	Not permitted	Not permitted	Not permitted
50- to 75-feet	20-feet	20-feet	Not permitted
More than 75-feet	20-feet	24-feet	Not permitted

I. The maximum driveway width for one-way driveways shall be:

<u>Frontage Width</u>	<u>Residential</u>	<u>Commercial</u>	<u>Industrial</u>
Up to 50-feet	14-feet	22-feet	30-feet
50- to 75-feet	14-feet	22-feet	30-feet
More than 75-feet	14-feet	22-feet	30-feet

J. A road approach or wider driveway may be approved by the City when a substantial percentage of oversized vehicle traffic exists, when divisional islands are desired, or when multiple exit or entrance lanes are needed.

K. Arterial Street Access. Driveways on arterial streets shall conform to the following:

1. No driveway may access an arterial street within seventy-five (75) feet (measured along the arterial) of any other such access to the street: on either side of the travel way but may be allowed at locations directly opposite another point of access.
2. No driveway access will be allowed to an arterial street within 150 feet of the nearest right-of-way line of an intersecting street.
3. Within the limitations set forth above, access to arterial streets within the City shall be limited to one driveway for each tract of property separately owned. Properties contiguous to each other and owned by the same person are considered to be one tract.
4. Driveways giving direct access onto arterials may be denied if alternate access is available. The City may permit deviations from this requirement if sufficient justification is provided.
5. Road approaches and/or ingress and egress tapers may be required in industrial and commercially zoned areas as directed by the City. Tapers shall be designed, per the most recent editions of the Washington State Department of Transportation (WSDOT) Highway Design Manual and/or "A Policy on Geometric Design of Highways and Streets" published by the American Association of State Highways and Transportation Officials (AASHTO).

2B.13 Sight Obstruction

- A. Sight clearance requirements take into account the proportional relationship between speed and stopping distance. The sight distance area is a clear-view triangle formed on all intersections by extending two lines of specified length, from the center of the intersecting streets along the centerlines of both streets and connecting those endpoints to form the hypotenuse of the triangle. Refer to Standard Details. The area within the triangle shall be subject to said restrictions to maintain a clear view on the intersection approaches.
1. Stop or Yield Controlled Intersection. Providing adequate sight distance from a street or driveway is one of the most important considerations to ensure safe-street and driveway operation. The Intersection Sight Distance criteria given in "*A Policy on Geometric Design of Highways and Streets*" published by AASHTO..
 2. Other factors such as vertical and horizontal curves and roadway grades also need to be taken into account. Such factors can require necessary modification to the intersection sight distance given in the above table.
 3. Sight distance is measured from a point on the minor road or driveway fifteen (15) feet from the edge (extended) of the major road pavement (or nearest traffic lane if parking is permitted) and from a height of 3.50 feet on the minor road to a height of object of 4.25 feet on the major road.
- B. Uncontrolled Intersection. Refer to AASHTO for criteria on Uncontrolled Intersection Design.
- C. Vertical Clearance. The area within the sight distance triangle shall be free from obstructions to a motor vehicle operator's view between a height of two and one-half (2.5) feet and ten (10) feet above the existing surface of the street.
- D. Exclusions. Sight obstructions that may be excluded from these requirements include; fences in conformance with this chapter, utility poles, regulatory signs, trees trimmed from the base to a height of ten (10) feet above the street, places where the contour of the ground is such that there can be no cross visibility at the intersection, saplings or plant species of open growth habits and not in the form of a hedge that are so planted and trimmed as to leave a clear and unobstructed cross view during all seasons, buildings constructed in conformance with the provisions of appropriate zoning regulations and pre-existing buildings.

2B.14 Surfacing Requirements

- A. Asphalt Pavements. The pavement sections shown in the Standard Drawings are minimum street sections. A geotechnical report may be required as directed by the City. One soil sample per each 500 LF of centerline, with a minimum of three (3) per project, representative of the roadway subgrade, shall be provided to determine a

statistical representation of the existing soil conditions performed by a professional engineer or geologist licensed by the State of Washington.

B. Sidewalks

1. Surfacing: four (4) inches Commercial Grade Concrete (3,000 psi);
2. Base: three (3) inches Crushed Surfacing Top Course.
3. Asphalt sidewalks will not be permitted unless otherwise approved by the City.

C. Concrete Driveway

1. Surfacing: six (6) inches Commercial Grade Concrete (3,000 psi) for residential, eight (8) inches Commercial Grade Concrete (3,000 psi) for all others;
2. Base: three (3) inches Crushed Surfacing Top Course.

D. Asphalt Driveway

1. Surfacing: three (3) inches Class B Hot Mix Asphalt (HMA) for residential, six (6) inches Class B Hot Mix Asphalt (HMA) for all others;
2. Base: four (4) inches crushed surfacing top coarse.

2B.15 Temporary Street Patching

- A. Temporary restoration of trenches shall be accomplished by using two (2) inches Class B HMA (when available) or two (2) inches medium-curing (MC-250) Liquid Asphalt (cold mix), two (2) inches Asphalt Treated Base (ATB), or steel plates.
- B. ATB used for temporary restoration may be placed directly into the trench, bladed and rolled. After rolling, the trench must be filled flush with HMA pavement to provide a smooth riding surface. Prior to beginning street trenching work, the Contractor shall ensure that all necessary material for temporary patching is stockpiled at the project site, both for completing and maintaining the patch.
- C. The Contractor shall maintain all temporary patches until such time as the permanent pavement patch is in place. Patches not properly maintained by the Contractor shall be repaired by the City at the Developer's, Contractor's and/or private utility's expense.

2B.16 Pavement Restoration

- A. Trench cuts in roadways greatly degrade the condition of the pavement, as well as reduce its design life. The most significant damage can be seen in newer pavements. Pavement restoration should result in the pavement being as good as, or better than, the pre-trench cut condition. This can be achieved by the prevention of trench cuts, thorough utility coordination, and high-quality pavement restoration.
1. Trench Cuts in New Pavements. Trench cuts are not permitted in pavements that have been constructed or rehabilitated within five (5) years. "Rehabilitation" includes all surface treatments such as chip seal, slurry seal, and asphalt

overlay. If there is no other option but to cut into new pavement, prior approval must be obtained from the City. Pavement must then be restored in accordance with the following criteria.

2. **Transverse Utility Crossings.** Transverse utility crossings must be bored or completed by another trenchless method. Bore pits must be restored in accordance with the following criteria.
3. **Pavement Restoration Requirements.** Trench cuts, bore holes, and miscellaneous pavement repairs shall be made in accordance with the Standard Details. Pavement shall be restored across the entire lane. In addition, the patch shall be made perpendicular to the closest affected road edge with a single, straight, continuous cut along the entire width of the required restoration. Minimum restoration width is five (5) feet.
4. **Lane Width Restoration Requirements.** For longitudinal utility trench cuts in pavements over five years old, a minimum two-inch overlay or full-depth pavement reconstruction is required for the following widths:
 - a. **One-lane overlay or reconstruction** – When trench cut or patch is within one travel lane.
 - b. **Two-lane overlay or reconstruction** – When trench cut or patch is within two travel lanes.
 - c. **Additional overlay or reconstruction** – When the remaining pavement area to the edge of existing pavement on either side is less than one travel lane. No longitudinal joints shall be allowed in the wheel path.
5. All trench and pavement cuts shall be made uniformly by wheel or saw cutting. The cuts shall be a minimum of one-foot outside the trench width. If the edge of the trench line degrades, ravel or is non-uniform, additional saw cutting shall be required prior to final patch or paving.
6. If the existing material is determined by the City to be suitable for backfill, the Contractor may use the native material except that the top eight (8) inches of trench shall be 2-1/2 inch minus ballast. If the existing material is determined by the City to be unsuitable for backfill, the Contractor shall use imported backfill material conforming to the Standard Specifications. All trench backfill materials shall be compacted to 95 percent density. Backfill placement and compaction shall be performed in six (6) inch lifts.
7. When the trench width is eighteen (18) inches or less and is within the travel-way, the trench shall be backfilled with control density fill (CDF), in accordance with the Standard Specifications. CDF may be required in wider trenches within the travel-way if site conditions dictate.

8. Replacement of the HMA or Portland Cement Concrete shall conform to the most current edition of the WSDOT/APWA Standard Specifications.
9. Tack Coat. Tack shall be applied to the existing pavement along the edge of cut and shall be emulsified asphalt grade CSS-1 as specified in the Standard Specifications.
10. Hot Mix Asphalt (HMA) Pavement Class B. HMA Pavement shall be placed on the prepared surface by an approved paving machine and shall be in accordance with Standard Specifications, except that longitudinal joints between successive layers of pavement shall be displaced laterally a minimum of twelve (12) inches, unless otherwise approved by the City. Fine and coarse aggregate shall be in accordance with Standard Specifications. HMA over two (2) inches thick shall be placed in equal lifts not to exceed two (2) inches each.
 - a. The preferred means of connection to existing asphalt/HMA pavement at the centerline, lane edges, and overlay ends is through grinding. Grinds can be a few inches off centerline to avoid existing stripping. Feathering may be an option when grinding is not feasible, with the approval of the City. The affected surfaces within the trenching area may be feathered and shimmed to an extent that provides a smooth-riding connection and expeditious drainage flow for the newly paved surface.
 - b. Surface smoothness shall be in accordance with Standard Specifications. The paving shall be corrected by removal and repaving of the trench only.
 - c. HMA pavement for wearing course shall not be placed on any travel-way between October 15 and April 1 without written approval of the City.
 - d. Asphalt for prime coat shall not be applied when the temperature is lower than 50 degrees Fahrenheit without written approval of the City.
11. Final Patch. The final patch shall be completed as soon as possible but no later than 30 calendar days after the trench is first opened. Time extensions due to inclement weather or other adverse conditions shall be evaluated on a case-by-case basis. However, any delays must have prior approval of the City.
12. Staking. All surveying and staking shall be performed by an engineering or surveying firm licensed by the State of Washington and capable of performing such work.
13. Testing. Testing shall be required at the Developer's or Contractor's expense. The Developer or Contractor is responsible to order all required testing. The testing lab shall be approved by the City prior to the commencement of any testing. Testing shall be done on all materials and construction as specified in the Standard Specifications and with the frequency as specified herein.

14. CITY OF WINLOCK TESTING AND SAMPLING FREQUENCY GUIDE

<u>ITEM</u>	<u>TYPE OF TESTS</u>	<u>MINIMUM NO.</u>	<u>FREQUENCY</u>
GRAVEL BORROW	GRADING & SE	1 EACH	1 – 4,000 TON
SAND DRAINAGE BLANKET	GRADING	1 EACH	1 – 4,000 TON
CSTC	GRADING, SE & FRACTURE	1 EACH	1 – 2,000 TON
CSBC	GRADING, SE & FRACTURE	1 EACH	1 – 2,000 TON
BALLAST	GRADING, SE & DUST RATIO	1 EACH	1 – 2,000 TON
BACKFILL/SAND DRAINS	GRADING	1 EACH	1 – 2,000 TON
GRAVEL BACKFILL FOR:			
FOUNDATIONS	GRADING, SE & DUST RATIO	1 EACH	1 – 1,000 TON
WALLS	GRADING, SE & DUST RATIO	1 EACH	1 – 1,000 TON
PIPE BEDDING	GRADING, SE & DUST RATIO	1 EACH	1 – 1,000 TON
DRAINS	GRADING	1 EACH	1 – 100 TON
PCC STRUCTURES: (Sidewalk, curb and gutter, foundations)			
COURSE AGGREGATE	GRADING	1 EACH	1 – 1,000 TON
FINE AGGREGATE	GRADING	1 EACH	1 – 500 TON
CONSISTENCY	SLUMP	1 EACH	1 – 100 CY
AIR CONTENT	AIR	1 EACH	1 – 100 CY
CYLINDERS (28 DAY)	COMPRESSIVE STRENGTH	2 EACH	1 – 100 CY
CEMENT:	CHEMICAL & PHYSICAL CERTIFICATION	1	1 – JOB
HOT MIX ASPHALT PAVEMENT:			
BLEND SAND	SE	1 EACH	1 – 1,000 TON
MINERAL FILLER	S.G. & PI, CERTIFICATION	1	1 – JOB
COMPLETED MIX	FRACTURE, SE, GRADING	1 EACH	1 – 1,000 TON
	ASPHALT CONTENT COMPACTION	2 EACH	5 – 400 TON
ASPHALT TREATED BASE:			
COMPLETED MIX	SE, GRADING	1 EACH	1 – 1,000 TON
	ASPHALT CONTENT COMPACTION	1 EACH	5 – Control Lot*
ASPHALT MATERIALS	CERTIFICATION	1	1 – JOB
RUBBERIZED ASPHALT	CERTIFICATION	1	1 – JOB
COMPACTION TESTING:			
EMBANKMENT	COMPACTION	1 EACH	1 – 500 LF
CUT SECTION	COMPACTION	1 EACH	1 – 500 LF
CSTC	COMPACTION	1 EACH	1 – 500 LF
CSBC	COMPACTION	1 EACH	1 – 500 LF
BALLAST	COMPACTION	1 EACH	1 – 500 LF
TRENCH BACKFILL	COMPACTION	1 EACH	1 – 500 LF

SE = Sand Equivalency

* A control lot shall be a normal day's production. For minor quantities 200 tons or less per day, a minimum of two (2) gauge readings shall be taken.

2C SIDEWALKS, CURBS AND GUTTERS

2C.01 General

- A. Sidewalk, curb and gutters are to be constructed along all streets that abut the development property. When properties are located at the end of a block, the Developer may be required to install sidewalk, curb and gutter around the corner of the side street to a logical point of discontinuation, as determined by the City. Curbs and gutters shall also be included with such sidewalk construction, unless otherwise authorized by the City. Sidewalks shall be designed to accommodate any necessary traffic control signs while still providing a minimum five (5) foot unobstructed walking area. Plans for construction of sidewalks, curbs and gutters are to be submitted as part of the street plans when applicable.
- B. Typical sidewalk, curb, and gutter location shall be at the edge of proposed or existing pavement. The sidewalk shall be aligned in a relatively straight configuration and make smooth transitions around curves and corners. Alternate locations may be proposed, including the incorporation of parking and planting strips. The City may approve such alternative after he determines that strict compliance with the criteria is impractical or unreasonable in the circumstance.
- C. The owner of the property that abuts a sidewalk is responsible for all repair, maintenance, and upkeep of said sidewalk. The City is not liable for any damage or injuries caused by a sidewalk in need of repair.

2C.02 General Design Criteria

- A. General. The minimum width of sidewalk shall be five (5) feet. When the sidewalk, curb and gutter are contiguous, the width of the sidewalk shall be measured from the back of the curb and gutter to the back of the sidewalk. In commercial areas, sidewalks may be required to extend from the curb to the property line.
- B. Arterial Streets. Sidewalks, curbs and gutters shall be required on both sides of arterial streets interior to the development. Sidewalks, curbs and gutters shall also be required on the development side of arterial streets abutting the exterior of said development.
- C. Local Access Streets. Sidewalks, curbs and gutters shall be required on both sides of local access streets interior to the development. Sidewalks, curbs and gutters shall also be required on the development side of local access streets abutting the exterior of said development including cul-de-sacs.
- D. Design and Construction. The design and construction of all sidewalks, curbs, gutters and walkways shall be in accordance with the Standard Specifications, Standard Details and as supplemented by the following:

1. Sidewalks shall be constructed of Commercial Grade Concrete (3,000 psi) four (4) inches thick except, in a driveway section at which point the concrete thickness must meet driveway standards.
 2. The width of sidewalks shall be as shown in the street design drawings.
 3. Design of all sidewalks shall provide for a gradual rather than an abrupt transition between sidewalks of different widths or alignments.
 4. Form and subgrade inspection by the City is required before the sidewalk is poured.
 5. Monolithic pour of curb, gutter and sidewalk will not be allowed.
 6. Sidewalks must meet all ADA requirements including detectable warnings.
- E. Curbs and Gutters. Cement concrete curbs and gutters shall be used for all street edges unless otherwise approved by the City. All curbs and gutters shall be constructed in accordance with the Standard Drawings.
- F. Access Ramps. Sidewalks shall be constructed to provide for access ramps in accordance with State law. Access ramps shall be constructed of Commercial Grade Concrete. Form and sub-grade inspection by the City is required before the access ramp is poured.

2C.03 Staking

- A. All surveying and staking shall be performed by an engineering or surveying firm licensed by the State of Washington and capable of performing such work.

2C.04 Testing

- A. Testing shall be required at the Developer or Contractor's expense on all materials and construction as specified in the most recent edition of *WSDOT/APWA Standard Specifications*.
- B. At a minimum, one (1) slump test and two (2) test cylinders shall be taken once per day. All other testing frequencies shall be as specified in the Testing and Sampling Frequency Guide, contained herein. In addition, the City shall be notified before each phase of sidewalk, curb and gutter construction commences.

2D ILLUMINATION

2D.01 General

- A. A streetlighting plan is required on a separate plan sheet for all developments. Type of installation shall be as set forth in the most recent edition of *WSDOT/APWA Standard Specifications*, Illumination Standards Table in this chapter, and as directed by the City. All public streetlight designs and plans shall be prepared by an engineer licensed by the State of Washington, and capable of performing such work.

2D.02 Design Criteria

- A. The installation of streetlights is required along the frontage of all development projects. Streetlights shall be located in accordance with the design criteria contained herein, and as approved by the City.
- B. Intersections shall be illuminated to 1.5 times the highest foot-candle requirement of the streets surrounding the intersection. Except in residential and intermediate classes, local and collector streets intersecting other local and collector streets shall not be subject to the 1.5 times illumination factor provided a luminaire is placed at the intersection.
- C. Energy efficient fixtures shall be incorporated into the streetlight system whenever practical. Poles shall be opposite across the roadway or on one side of the roadway. Conduit and junction boxes shall be installed along the extent of the frontage
- D. For the purposes of this section, area classes are determined by zoning as follows:

<u>Commercial</u> Multi-family, high density Central business district Freeway commercial General commercial Neighborhood commercial	<u>Industrial</u> Heavy industrial Light industrial
<u>Intermediate</u> Essential public facilities Commercial office/mixed use	<u>Residential</u> Single family, low density Single family, medium density Multi-family, medium density

AVERAGE MAINTAINED HORIZONTAL ILLUMINATION (FOOT CANDLES)				
ROAD CLASS	AREA CLASS			
	Residential	Intermediate	Industrial	Commercial
Local	0.2	0.6	N/A	N/A
Collector	0.5	0.7	0.8	0.9
Arterial	0.7	1.0	1.2	1.4
Boulevard	0.7	1.0	1.2	1.4

Uniformity ratio: 6:1 average: minimum for local
 4:1 average: minimum for collector
 3:1 average: minimum for arterial and boulevard

Dirt Factor: 0.85

Lamp Lumen Depreciation Factor: 0.73

Weak Point Light: 0.2 fc (except local residential street)

- E. Line loss calculations shall show no more than a 5 percent voltage drop, in any circuit from the source to the most distant luminaire. Branch circuits shall serve a minimum of four (4) luminaries.
- F. Pole foundations shall be per Standard Details. Luminaire poles shall conform to the Standard Specifications, except as modified herein. Light standards shall be tapered aluminum with satin ground finish. The diameter at the base of the pole shall not exceed nine (9) inches and the minimum thickness of the pole shall be ¼-inch. Mounting height shall be 26- to 30-feet as directed. Pole arms shall be davit style, single-arm, minimum ten (10) feet in length. Longer davit arms may be allowed or required for site-specific design issues. The shaft shall be heat treated after welding on the based flange to produce T6 temper. The pole and davit arm shall be designated to support streetlight luminaries with a minimum weight of 60 pounds and a minimum effective protected area (EPA) of 1.5 square feet. Poles shall be designed to withstand a 100mph (AASHTO) wind loading with a 1.3 gust factor with luminaire and mast arm attached, without permanent deformation or failure. Minimum wall thickness shall be 0.188 inches. Poles shall be equipped with a removable metal ornamental pole cap secured to the shaft with stainless steel screws. Poles shall have a minimum 3 ½ by 6-inch hand hole, with cover, near the base and shall be equipped with a grounding lug. The pole shall also be equipped with a dedicated 120V, 20 AMP circuit with a recessed weatherproof GFI power receptacle that meets all applicable guidelines and standards. The receptacle shall be located thirteen (13) feet above the base of the pole.
- G. All luminaries shall be flat lens, medium cut off, IES Type II distribution and shall comply with all standards as established by the Public Utility District No. 1 of Lewis County. Unless otherwise required by PUD #1, luminaries shall be: 200 watt,

catalog # GEMDCL2OSA11FMC31. Higher wattage luminaries may be considered if necessary to achieve lighting requirements.

- H. All streetlight electrical installations including wiring conduits and power connections shall be located underground.
- I. New streetlighting shall be designed and installed in such a way as to blend with any utility pole-mounted lighting that may exist along the frontage of adjacent properties, but also to accommodate future integration of conforming streetlights along the roadway. To this end, when streetlight(s) are required along a property, conduit(s) and junction box(es) shall be installed along the entire frontage, as appropriate, to allow for the interconnection of future streetlight installations. This requirement may be waived with approval of the City, based on the site-specific conditions of the property in question.
- J. Alternate streetlight designs may be allowed or required by the City to accommodate the unique characteristics of a particular street or neighborhood. For example, special lighting may be deemed appropriate along a street that is part of a designated Historic District. The use of any alternate street lighting must be approved in writing by the City.

2D.03 Staking

- A. All surveying and staking shall be performed by an engineering or surveying firm licensed by the State of Washington and capable of performing such work. A pre-construction meeting shall be held with the City prior to commencing staking.
- B. The minimum staking of luminaires shall be as follows:
 - 1. Location and elevation to the center of every pole base
 - 2. Location and elevation of each service disconnect.

2D.04 Testing

- A. All luminaires shall be subject to an electrical inspection. Lamp, photo controls, and fixtures shall be warranted for a period of one year.

2E SIGNALS

2E.01 General

- A. Signals shall be installed per the requirements set forth herein. This work shall consist of furnishing and installing a complete and functional traffic control system of controllers, signals and appurtenances as required by the City.

2E.02 Design Criteria

- A. Signal systems shall be designed in accordance with the specifications as set forth in the WSDOT Design Manual and the WSDOT/APWA Standard Specifications unless otherwise authorized by the City.
- B. An engineering firm licensed by the State of Washington and capable of performing such work shall prepare all public signal designs.

2E.03 Induction Loops

- A. Induction loops shall be constructed per *WSDOT/APWA Standard Specification*, *WSDOT Standard Plan*; and the following:
 - 1. Loops shall not be cut into final lift of new asphalt.
 - 2. Loops shall be preformed in crushed surfacing top course (CSTC) before paving or shall be cut in existing asphalt or leveling course to subbase before intersection is overlaid.

2E.04 Controller

- A. Controllers shall be a microprocessor based, solid state, digital timed NEMA, eight-phase traffic actuated signal controller providing up to eight (8) phases of signal control, internal pre-emption, time base coordination, internal time-of-day programming, and data base management by an IBM PC. When required by the City, the integration of traffic counting equipment shall be accommodated, by the controller.
- B. For the purpose of interchangeability of parts and simplification of maintenance, the City has standardized its traffic signal controllers.

2E.05 Staking

- A. All surveying and staking shall be performed by an engineering or surveying firm licensed by the State of Washington and capable of performing such work. A pre-construction meeting shall be held with the City prior to commencing staking. The City shall inspect the staking prior to construction.
- B. The minimum staking of signals shall be as follows:
 - 1. Location, with cut or fill, to center of all pole bases.
 - 2. Location of junction box(es).
 - 3. Location of all corners of controller base(s).

4. Location of service disconnects.
5. Locations of conduit crossings.

2E.06 Testing

- A. Each signal shall be subject to all necessary electrical inspections as well as the requirements set forth in the WSDOT Design Manual and the WSDOT/APWA Standard Specifications.
- B. Controller and cabinet testing may be required by WSDOT District 4 laboratory and/or the City. All specifications and material samples shall be submitted to the City for review and approval prior to installation.
- C. A signal system will not be approved or accepted by the City until the signal has performed correctly to the City's satisfaction for a 30-day "check-out" period as outlined below.

2E.07 Check-Out Procedure

- A. The Contractor shall call for an intersection "check-out" after completing the installation of the controller cabinet and all other signal equipment complete with wiring connections. All parts and workmanship shall be warranted for one year from date of acceptance.
- B. New signals shall operate without any type of failure for a period of 30 days. The Contractor shall have a qualified individual available to respond to system failure within 24 hours during the 30-day "check-out" period. Failure of any control equipment or hardware within the "check-out" period will restart the 30-day "check-out" period.

2F ROADSIDE FEATURES

2F.01 General

- A. Miscellaneous features included herein shall be developed and constructed to encourage the uniform development and use of roadside features wherever possible.

2F.02 Design Criteria

- A. The design and placement of roadside features included herein shall adhere to the specific requirements as listed for each feature, and, when applicable, to the appropriate Criteria as set forth in Section 1.11.

2F.03 Staking

- A. All surveying and staking shall be performed by an engineering or surveying firm licensed by the State of Washington and capable of performing such work. A pre-construction meeting shall be held with the City prior to commencing staking.

2F.04 Testing

- A. Testing shall be required at the Developer or Contractor's expense on all materials and construction as specified in the *WSDOT/APWA Standard Specifications* and with a frequency as specified in the *WSDOT Construction Manual*.

2F.05 Survey Monuments

- A. All existing survey control monuments that are disturbed, lost, or destroyed during surveying or construction shall be replaced at the expense of the responsible builder or Developer with the proper monument as outlined below by a land surveyor registered in the State of Washington.

1. Major Arterial; Minor Arterial; Bus Routes and Truck Routes. A pre-cast concrete monument with cast iron monument case and cover installed per these guidelines is required.
2. Commercial Collector; Neighborhood Collector; and Local Access. A cast-in-place concrete surface monument with sufficient ferrous metal embedded to allow for detection by a magnetic detection device per these guidelines is required. Cap shall be per the Standard Detail.

- B. Required Monument Locations:

1. All intersections;
2. At the PC and PT's of all horizontal curves;
3. At PI of all horizontal curves of streets where the PI lies within the limits of the traveled roadway;
4. At all corners, control points and angle points around the perimeter of subdivisions as determined by the City;
5. At all section corners, quarter corner, and sixteenth corners within the right-of-way; and
6. The monument case shall be installed after the final course of surfacing has been placed.

2F.06 Bus Pullouts and Shelters

- A. Nothing in these guidelines shall preclude the local transit provider from conducting on-street drop-offs and pickups. The intent of these provisions is to provide general guidelines for the installation of new bus facilities and ensure their proper design and integration with the City's transportation network. They must also meet the needs of the transit provider and the community at large.
- B. When bus pullouts and/or shelters are deemed necessary in accordance with the provisions provided herein, the installation of these facilities shall be the responsibility of the Developer. The following criteria shall be applied to bus stop facilities for new developments:
1. Provide paved walkways with a hard all-weather surface linking various sections of subdivisions and developments to peripheral streets with bus stops.
 2. Provide access ramps and other facilities consistent with barrier-free design standards along walkways leading to bus stops.
 3. Separate roads and parking areas from pedestrian pathways by grade separations, landscaping, and other devices. A minimum four (4) to six (6) foot planting strip shall be provided to buffer sidewalks or walkways from streets and parking areas around bus stops and shelters.
 4. Provide pedestrian-friendly features such as lighting, signs, and trash receptacles as warranted by anticipated use.
 5. New development street systems should be designed to minimize pedestrian travel to bus stops.
- C. Frequency & Spacing for Public Transit Stops. The City and local transit provider will consider the following general guidelines to determine frequency and spacing of improved stops on any given public transit route:
1. When determining the physical location of a bus pullout and/or shelter, consideration shall be given to vehicle and pedestrian safety, impacts to adjacent property owners, and operational efficiency of the transit service.
 2. Bus pullouts can be initially located at an average of four (4) to six (6) stops per route-mile along local residential segments of a route.
 3. Additional stops may be added if warranted, but shall not exceed the basic stop spacing guidelines of eight (8) to ten (10) stops per mile and no two stops may be located within 600-feet of one another.
 4. Site designs for businesses, residential subdivisions, and multi-family developments along transit routes shall accommodate transit use. This may

include the location of a building entrance near a transit stop, pedestrian walkways, sheltered or unsheltered transit stops, and/or a bus pullout.

D. Placement and Design of School Bus Stops. The City and the Winlock School District will use the following criteria to jointly determine the placement and design of school bus stops:

1. A school bus stop shall be required for each new residential subdivision or apartment complex where school children are to be boarding or disembarking, unless it is determined that adjacent facilities already exist for the site.
2. Location of school bus stops shall be designed with safety as a paramount concern. Major arterials with high traffic counts should be avoided when possible and only used when bus pullouts are available and significant protection provided for children.
3. School bus stops shall be designed to compliment the residential environment and provide convenient location and access for neighborhood children including sidewalk access.
4. Every effort shall be made to make school bus stops and sidewalk access to school bus stops a safe and friendly pedestrian environment.
5. The local transit provider and the Winlock School District should make every effort to coordinate the location of bus stops. However, separate bus facilities may be necessary for both service providers.

E. Physical Location Requirements. The physical location of all bus pullouts shall be primarily determined by the following considerations: maximizing safety, operational efficiency, and minimizing impacts to adjacent property. Bus pullouts may be required on all arterial and commercial collector roads for safe bus berthing and to minimize impacts of bus stops on traffic flow. Additionally, bus pullouts may be required on local access roads if road geometry requires, such as determined by the City. Maintaining adequate separation between driveways/intersections and bus pullouts can increase the safety and efficiency of both the roadway and the transit service. When locating a bus pullout in reference to existing driveways or a driveway in reference to an existing bus pullout, the following guidelines shall be taken into consideration:

1. On local roads, bus pullouts shall be located a minimum of 55-feet (75-feet preferred), from any driveway as measured from the closest driveway edge to the pullout loading area. On arterial roadways, bus pullouts shall be located in accordance with the site distance requirements noted in Section 2B.13 of this chapter. These location requirements shall serve as a general guide.
2. Alternative distances may be considered if sufficient engineering data is provided demonstrating that adequate site distance is maintained, pedestrian safety is

protected and vehicular traffic is not hindered. The final determination for a bus pullout location must be approved by the City.

3. Bus pullouts should not be located where the transit vehicle can block sight distance from a driveway or intersection.
 4. Driveways should not be located within the taper of the pullout.
- F. Transit and School Bus Stop Signage. All designated public transit and Winlock School District bus stops shall be identified in some fashion. This may include pavement marking and bus stop signs. Contact the local transit provider for details on their sites.
- G. Shelters. Passenger shelters may be required at bus pullouts and transfer centers. Shelters may also be required at bus stops as determined by the local transit provider and the City.
- H. Passenger shelters for public transit sites and school sites shall be transparent for passenger visibility and safety, provide protection from the elements, and be reasonably vandalism resistant for easy maintenance.
- I. The Developer shall provide a concrete pad approximately 12 x 10 feet and 6 inches thick. The pad shall extend in from the curb or edge of the pavement at a specific location designated by the City. The pad shall be constructed in accordance with the design standards for sidewalks as noted in Section 2C of this chapter.
- J. Upon completion of the pad, the local transit provider will construct the shelter. The Developer shall be responsible for all appropriate costs associated with the shelter installation. A final Certificate of Occupancy will not be issued until all shelter costs have been reimbursed to the transit provider.

2F.07 Mailboxes

- A. During construction, existing mailboxes shall be accessible for the delivery of mail or, if necessary, moved to a temporary location. Temporary relocations shall be coordinated with the U.S. Postal Service. The mailboxes shall be reinstalled at the original location or, if construction has made it impossible, to a location as outlined below and approved by the U.S. Postal Service.
1. Bottom or base of box shall be 36- to 42-inches above the road surface.
 2. Front of mailbox shall be 18-inches behind vertical curb face or outside edge of shoulder.
 3. New developments. Clustered mailboxes are required (contact the U.S. Postal Service for details). Refer to Standard Details.

4. Mailboxes shall be set on posts strong enough to give firm support, not to exceed 4 x 4-inch wood or one 1-1/2 inch diameter pipe, or a material and design with comparable breakaway characteristics.

2F.08 Guard Rails

- A. For purposes of design and location, all guardrails along roadways shall conform to the criteria of the Department of Transportation Design Manual, as may be amended or revised.

2F.09 Retaining Walls

A. General.

1. Rock walls may be used for erosion protection of cut or fill embankments up to a maximum height of eight (8) feet in stable soil conditions that will result in no significant foundation settlement or outward thrust upon the walls. For heights over six (6) feet or when soil is unstable, structural wall of acceptable design stamped by a licensed structural engineer shall be used.
2. In the absence of such a rock wall design, walls having heights over six (6) feet or walls constructed in conditions where soil is unstable are required to be a pre-engineered structural wall having a design approved by the City. Structural walls shall be designed by a professional engineer, licensed in the State of Washington and qualified in retaining wall design. Structural walls require issuance of a Building Permit from the City prior to construction.
3. Any rock wall over 30-inches high in a fill section will require the design of a geo-technical engineer. The geo-technical engineer shall continuously inspect the installation of the wall as it progresses and submit inspection reports, including compaction test results and photographs taken during construction, documenting the techniques used and the degree of conformance to the geo-technical engineer's design.
4. Terraced walls shall be reviewed and approved on a site-specific basis. Use of terraced walls in the right-of-way, must be approved by the City.

- B. Material. The rock material shall be as rectangular as possible. No stone shall be used which does not extend through the wall. The rock material shall be hard, sound, durable and free from weathered portions, seams, cracks and other defects. The rock density shall be a minimum of 170 lbs per cubic foot.

- C. Foundation. The rock wall shall be started by excavating a trench with a depth below subgrade of one-half the base course or one (1) foot, whichever is greater.

- D. Rock Placement. Rock selection and placement shall be such that there shall be minimum voids and, in the exposed face, no open voids over six (6) inches across in

any direction. The final course shall have a continuous appearance and shall be placed to minimize erosion of the backfill material. The larger rocks shall be stable and have a stable appearance. The rocks shall be placed in a manner such that the longitudinal axis of the rock shall be at right angles or perpendicular to the rockery face. The rocks shall have all inclining faces sloping to the back of the rockery. Each course of rocks shall be seated as tightly and evenly as possible on the course beneath. After setting each course of rock, all voids between the rocks shall be chinked on the back with quarry rock to eliminate any void sufficient to pass a 2-inch square probe.

- E. Backfill. The wall backfill shall consist of 1-1/2 inch washed rock or as specified by a licensed engineer. This material shall be placed to a 12-inch minimum thickness between the entire wall and the cut or fill material. The backfill material shall be placed in lifts to an elevation approximately 6 inches below the top of each course of rocks as they are placed, until the uppermost course is placed. Any backfill material on the bearing surface of one rock course shall be removed before setting the next course.
- F. Drainage. Perforated drainage pipe and filter fabric shall be installed as per the Standard Drawings. This pipe requirement may be waived by the City if, the Developer is able to demonstrate, to the City's satisfaction, that no subsurface water problems exist.

2F.10 Street Trees

- A. In order for Developers or property owners to plant trees, shrubbery or other vegetation that may attain a height of more than 30-inches within the right-of-way, they must first apply for and obtain a right-of-way permit from the City. The application must include information on the type of tree or plant and the proposed location placement.
- B. Certain varieties of trees are prohibited from being planted within a City right-of-way. Such trees are excluded from the right-of-way to protect utilities and infrastructure or to minimize visual obstructions and interference. Trees not to be planted within a City right-of-way specifically include the following:
 - Alder; Apple (fruiting); Ash, Mountain; Birch, White; Cherry (fruiting); Chestnut; Cottonwood; Elm, American; Hawthorne; London Plane; Maple, Big leaf; Maple, Oregon; Maple, Silver; Oak, Pine; Pagoda; Pear (fruiting); Plum (fruiting); Poplar; Sycamore; Walnut; Willow; and any other species of tree with a propensity to produce large or extensive root systems that may interfere with or damage underground utilities or public infrastructure including streets, curbing, and sidewalks.
- C. Also prohibited from being planted within the right-of-way are any other species of plants or trees that can create an obstruction or potential obstruction to traffic, pedestrian visibility or safe public use of the right-of-way.

2F.11 Parking Lots

- A. A Right-of-way Permit is required prior to surfacing a non-surfaced designated parking area that will access a public right-of-way.
- B. Stormwater retention shall be provided and shall follow the criteria as set forth in the Stormwater Management Plan and as addressed in Chapter 3 of these guidelines.
- C. Parking lot circulation and signing needs shall be met on site. The public right-of-way shall not be utilized as part of a one-way parking lot flow.
- D. All requirements for construction of parking lots shall be determined through the Development Plan Review process, including capacity and configuration. Parking lot ingress and egress shall be evaluated to determine traffic controls necessary to ensure vehicle safety to and from the public right-of-way.
- E. Parking lot surfacing materials must meet the requirements for a permanent all-weather surface. Asphalt concrete pavement and cement concrete pavement satisfy this requirement and are approved materials. Gravel surfaces are not acceptable or an approved surface material type. Combination grass/paving systems are approved surface materials types, however, their use requires submittal of an overall parking lot paving plan showing the limits of the grass/paving systems and a description of how the systems shall be irrigated and maintained.

2G TRAFFIC IMPACT ANALYSIS

2G.01 General.

- A. A Traffic Impact Analysis (TIA) is a specialized study of the impacts that a specific type and size of development will have on the surrounding transportation system. The TIA is an integral part of the development review process. It is specifically concerned with the generation, distribution, and assignment of traffic to and from a new development or a re-development.
- B. These guidelines have been prepared to establish the requirements for a TIA. If a TIA is required for a project, the City will be the contact for matters relating to the TIA. The City will also be responsible for reviewing and accepting TIA's as well as approving measures to mitigate impacts.

2G.02 When Required

- A. The need for a TIA shall be based on: the size of the proposed development, existing street and intersection conditions, traffic volumes, accident history, community concerns, and other pertinent factors associated with the proposed project.

- B. A TIA shall be required if a proposed development meets one or more of the following conditions:
1. The proposed project generates more than ten (10) vehicles in the peak direction of the peak hour on the adjacent streets and intersections. This includes the summation of all turning movements that affect the peak direction of traffic.
 2. The proposed project generates more than 25 percent of the site-generated peak hour traffic through a signalized intersection or "critical" movement at a non-signalized intersection.
 3. The proposed project is within an existing or proposed transportation benefit area. This may include Transportation Benefit Districts (TBD), Local Improvement Districts (LID), or local/state transportation improvement areas programmed for development reimbursements.
 4. The proposed project may potentially affect the implementation of the street system outlined in the transportation element of the Comprehensive Plan, the Six-Year Transportation Improvement Program, or any other documented transportation project.
 5. If the original TIA was prepared more than two (2) years before the proposed project completion date.
 6. The increase in traffic volume as measured by ADT, peak hour, or peak hour of the "critical" movement is more than ten (10) percent.
- C. Even if it is determined that a TIA is not required, the City may require the Developer to have a Trip Generation Study (TGS) conducted. TGS's shall be used to forecast project-generated traffic for an established future horizon.

2G.03 Qualifications For Preparing TIA Documents

- A. The TIA shall be prepared by an engineer licensed in the State of Washington and with special training and demonstrated experience in traffic engineering. The applicant shall provide the City with the credentials of the individual(s) selected to perform the TIA for approval prior to initiating the analysis.

2G.04 References

- A. In conducting TIA's and TGS's, the method for determining capacity shall be as described in the most recent version of the "Transportation Research Board Highway Capacity Manual", and the method for determining project-generated traffic volumes shall be as forecasted using the most recent edition of "Institute of Transportation Engineers Trip Generation Manual".

2G.05 Scope of Work

- A. The level of detail and scope of work of a TIA may vary with the size, complexity, and location of the proposed project. A TIA shall be a thorough review of the immediate and long-range effects of the proposed project on the City's transportation system. The analysis shall include the following elements, as applicable:
 - 1. Provide a reduced copy of the site plan, showing the type of development, street system, right-of-way limits, access points, and other features significant to the City's transportation system. The site plan shall also include pertinent off-site information such as locations of adjacent intersections and driveways, land-use descriptions, and other features of significance.
 - 2. Provide a vicinity map of the project area showing the transportation system to be impacted by the development.
 - 3. Discuss specific development characteristics such as the size and type of development proposed (single-family, multi-family, retail, industrial, etc.), internal street network, parking spaces provided, zoning, and other pertinent factors attributable to the proposed project.
 - 4. Discuss project completion and occupancy schedule for the proposed project. Identify horizon year(s) for traffic analysis purposes.

2G.06 Existing Conditions

- A. Discuss street characteristics including functional classification, bicycle path corridors and traffic control at study intersections, number of traveled lanes, lane width, and shoulder treatment. A figure should be used to illustrate existing transportation facilities.
- B. Identify safety and access problems including discussions on accident history, sight distance restrictions, traffic control, and pedestrian conflicts.
- C. Utilize all available traffic data from the City and surrounding jurisdictions, if applicable. If data is unavailable, the individual or firm preparing the TIA shall collect the necessary data to supplement the discussions and analysis in the TIA.
- D. Conduct manual peak hour turning movement counts at study intersections if traffic volume data is more than two (2) years old. A copy of the reduced data shall be included with the TIA. The peak hour(s) to be counted and analyzed shall be the time period(s) when the combination of proposed project traffic and existing traffic is highest. A study intersection is any arterial/collector intersection impacted by ten (10) or more proposed project trips during the peak hour(s) analyzed by the TIA. The City may require that the study also include additional intersections or areas.

- E. A figure shall be prepared showing existing average daily traffic (ADT) and peak hour traffic volumes on the adjacent streets and intersections in the study area. Complete turning movement volumes shall be diagramed or illustrated and included in the TIA. The figure shall represent the existing traffic volumes for analysis purposes.

2G.07 Development Traffic

- A. This element of the TIA shall identify the limits of the study area. The study area shall include all pertinent intersections and streets impacted by development traffic.
- B. The threshold requirement of development traffic of ten (10) vehicles in the peak direction of the peak hour on the adjacent streets and intersections will apply. The threshold requirement of the development generating 25 percent or more of site-traffic through a signalized intersection or "critical" movements at a non-signalized intersection will also apply. Each arterial/collector intersection and street impacted as described shall be included in the study area for analysis purposes.
- C. A figure illustrating the proposed trip distribution for the proposed project shall be included in the TIA. The TGS shall be displayed in a tabular format on the figure with peak-hour traffic volumes assigned to the study area in accordance with the trip distribution.
 - 1. Trip Generation. Site-generated traffic of proposed projects shall be estimated using the latest edition of the "Institute of Traffic Engineers Trip Generation Manual". Variations of trip-rates will require the approval of the City. Trip-rate equations shall be used for all land-use categories where applicable. Average trip-rates shall be allowed for those land-uses without trip-rate equations. Site traffic shall be generated for daily A.M. and P.M. peak-hour periods. A "pass-by" traffic volume discount for commercial centers shall not exceed 25 percent unless approved by the City.
 - 2. Trip Distribution. Trip distribution methodology shall be clearly defined and discussed in detail in the TIA. For large development projects, the City may require a regional trip distribution map. The TIA shall identify other transportation modes that may be applicable, such as transit use, bicycle and pedestrian facilities.

2G.08 Future Traffic

- A. Future Traffic Conditions Not Including Site Traffic. Future traffic volumes shall be estimated using information from existing transportation forecasts or models, other planned or programmed "on-line" development, and/or transportation projects, or by applying an annual growth rate to the existing traffic volumes as defined in the Winlock Comprehensive Plan. The future traffic volumes shall be representative of

the horizon year(s) for project development. Forecasted non-project traffic shall be added to existing traffic and illustrated in a figure.

- B. Future Traffic Conditions Including Site Traffic. The site-generated traffic shall be assigned to the street network in the study area based on the approved trip distribution. The site traffic shall be combined with forecasted traffic volumes, not including site traffic, to show the total traffic conditions estimated at development completion and at the future horizon year. A figure shall be required showing daily and peak period turning movement volumes for each traffic study intersection. Refer to the Sample TIA Figure, included herein. In addition, a figure shall be prepared showing future traffic conditions, not including site traffic volumes, with site-generated traffic added to the street network.
- C. Unless the City specifically authorizes another future horizon year for a development, the initial target year for determining future traffic shall be five (5) years after the development has been occupied or in full operation for twelve (12) months.

2G.09 Traffic Operations

- A. A Level of Service (LOS) analysis shall be conducted for each "screen line" in the study area. The "screen lines" and level of service information shall be developed in conjunction with the City Comprehensive Plan. The methodology and procedures for conducting the capacity analysis shall follow the guidelines specified in the most recent version of the "Transportation Research Board Highway Capacity Manual". The LOS for each "screen line" shall include the following conditions:
 - 1. Existing peak hour traffic volumes
 - 2. Future traffic volumes not including site traffic
 - 3. Future traffic volumes including site traffic
- B. LOS results for each traffic volume scenario shall be summarized in a single table. The LOS table shall include results for A.M. and P.M. peak periods, if applicable. The table shall show LOS conditions with corresponding vehicle delays for signalized intersections and reserve capacity or delay for the "critical" movements at non-signalized intersections. For signalized intersections, the LOS conditions and average vehicle delay shall be provided for each approach and the intersection as a whole, in an appendix that contains all LOS calculation sheets.
- C. The LOS analyses for existing signalized intersections shall include existing phasing, timing, splits and cycle lengths in the analysis as observed and measured during the peak hour traffic periods.

- D. If the proposed project is scheduled for completion in phases, the TIA shall conduct a LOS analysis for each separate development phase. The incremental increases in site traffic from each phase shall be included in the LOS analysis for each proceeding year of development completion. A figure is required for each horizon year of phased development.
- E. If the proposed project impacts a coordinated traffic signal control system currently in operation, the TIA shall include an operational analysis of the system. Timing plan and proposed modifications to the coordination system is required. For non-signalized intersections, the "Highway Capacity Manual" methodology shall be used.
- F. The computer software package(s) used for capacity analysis applications shall be approved by the City. The City may require that a copy of the computer worksheets, along with an electronic version compatible with the City and the City's consultant engineer, of each capacity analysis, be submitted concurrently with the TIA to the Public Works Department.

2G.10 Mitigation

- A. The TIA shall include a proposed mitigation plan. The mitigation may be either the construction of necessary transportation improvements or contributions to the City for the proposed project's fair share cost of identified future transportation improvements, as identified in the City's Comprehensive Plan or Capital Facilities Plan. Levels of Service "E" and "F" shall be used as the threshold for determining appropriate mitigating measures on roadways and intersections in the study area. Mitigating measures shall be required to the extent that the transportation facilities operate at a LOS "C" (LOS-C) condition or better upon completion of the development.
- B. The following guidelines shall be used to determine appropriate mitigating measures of traffic impacts generated by proposed projects.
 - 1. The cost for the mitigation shall be entirely born by the proposed project. However, in the event that more than one development is being proposed within the study area, a Latecomers Agreement for reimbursement of mitigations costs may be proposed by the project under consideration.
 - 2. City projects involving transportation facilities programmed for improvements, and having an adverse traffic impact, shall be mitigated by, providing a proportionate share of the local costs for the improvements. This share shall be based on the percentage of proposed project traffic generated through the intersection. The percentage shall be based on the total projected peak hour traffic volumes for the horizon year of the transportation facility, or as defined by the ordinance establishing the cost-sharing mechanism for off-site street improvements.

3. Non-signalized intersections that currently operate at less than Level of Service "C" (LOS-C) shall be analyzed for traffic signal and intersection improvements. If three or more traffic signal warrants are satisfied, signal and intersection improvements shall be required as a mitigating measure for the proposed project. If at least three (3) signal warrants are not satisfied by the proposed project's horizon year, the TIA shall determine if traffic signal warrants and intersection improvements would be needed within a five (5) year period after the proposed project's horizon year. If so, the proposed project would then be required to provide a proportionate share cost of future traffic signal and intersection improvements.
4. When an off-site street improvement(s) is not scheduled to be installed in the near future, the City may allow a Developer required to share in the costs of such improvement(s), to post a bond in the amount of the Developer's pro-rata share of such improvements. Any Developer desiring to post a bond with the City in the amount of the pro-rata share of improvement costs must submit a request in writing to the City, along with all applicable justification or information supporting the request. City staff will submit all request(s) to the City Council who will then make a decision at a regularly scheduled council meeting. All decisions made by the Council are considered final.

2G.11 Mitigation Fee Calculation

- A. The formula for calculating a Developer's mitigation fee or proportional share of an off-site street improvement is derived by dividing the Project Generated Traffic by the Future Traffic with the Project. In order to determine the Developer's pro-rata costs of an off-site street improvement, and this value is multiplied by the Project Costs. Mathematically this formula is written as follows:

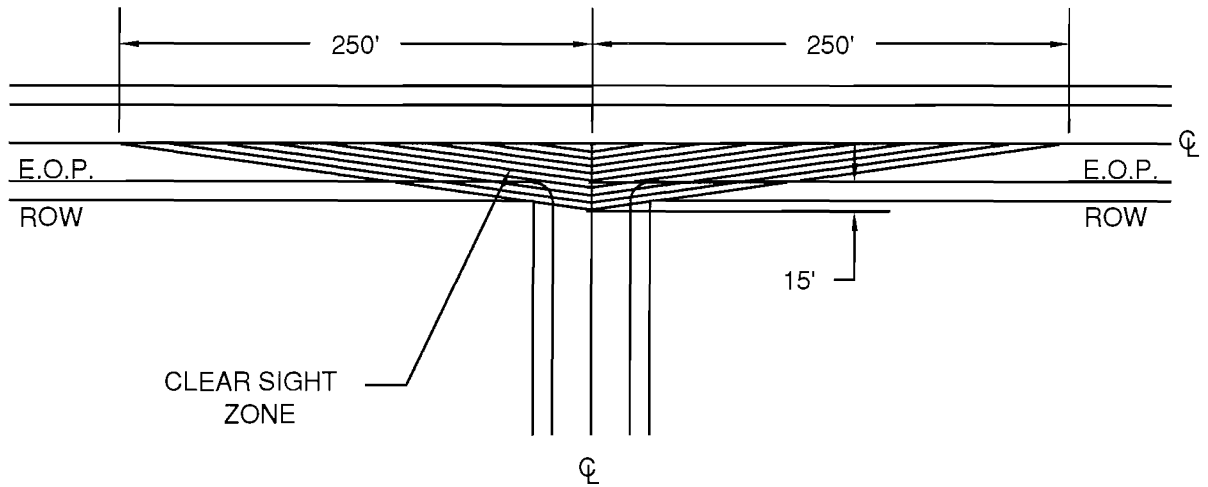
$$\text{PGT/FTP} \times \text{PC} = \text{DMF}$$

PGT = Project Generated Traffic
 FTP = Future Traffic with the Project
 PC = Project Cost
 DMF = Developer's Mitigation Fee

- B. The City has established a participation threshold of ten (10) trips per peak hour. The ten (10) trips per peak hour sets the minimum level at which a Developer shall be required to participate. As part of the TIA and/or TGS, intersections and traffic locations shall be identified when there can be ten (10) or more new peak-hour generated trips.

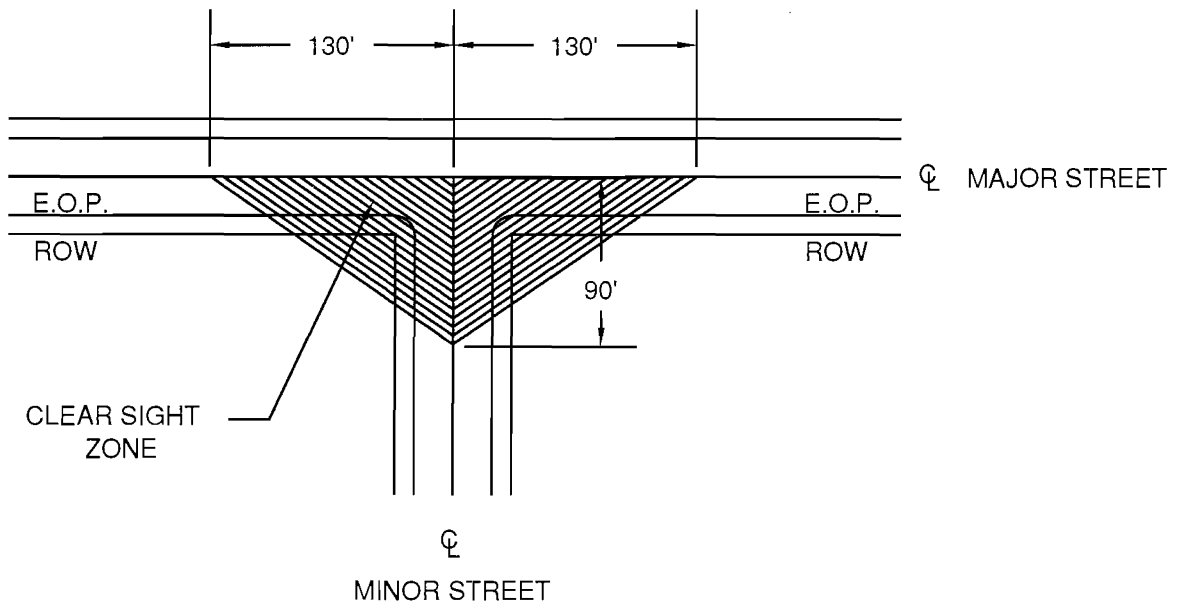
STOP OR YIELD CONTROLLED INTERSECTIONS

EXAMPLE: MAJOR STREET SPEED LIMIT = 35 M.P.H.



UNCONTROLLED INTERSECTIONS

EXAMPLE: MAJOR STREET SPEED LIMIT = 30 M.P.H.
MINOR STREET SPEED LIMIT = 20 M.P.H.



GENERAL NOTES:

1. SEE SECTION 2B OF THE DESIGN GUIDELINES FOR MORE INFORMATION ON THE VERTICAL CLEARANCE WITHIN THE CLEAR SIGHT ZONE.

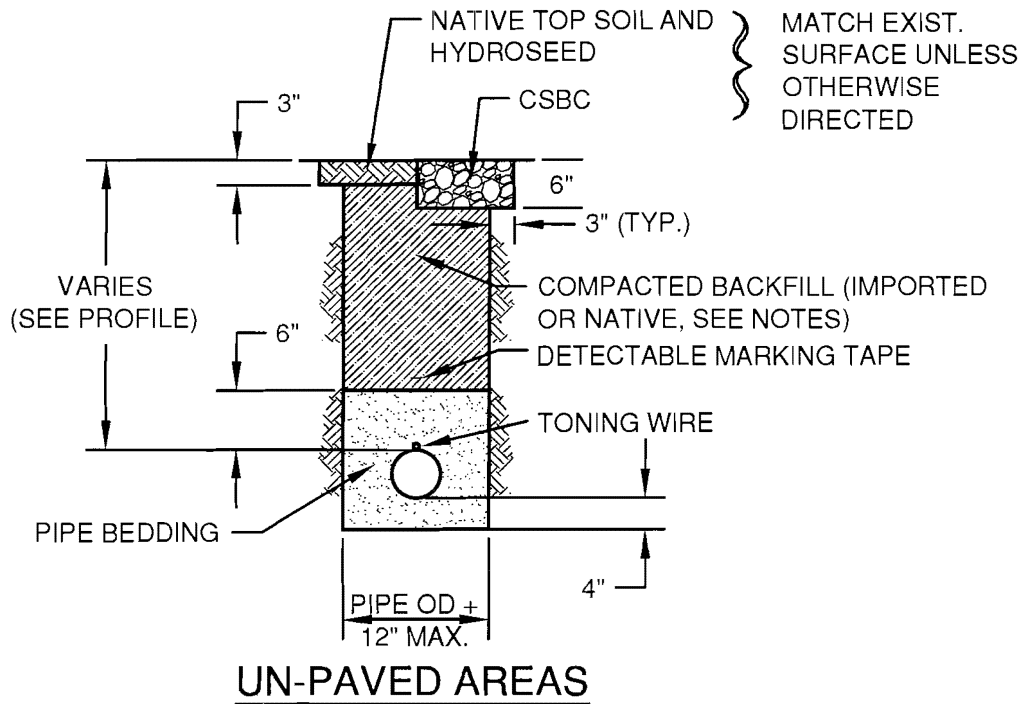
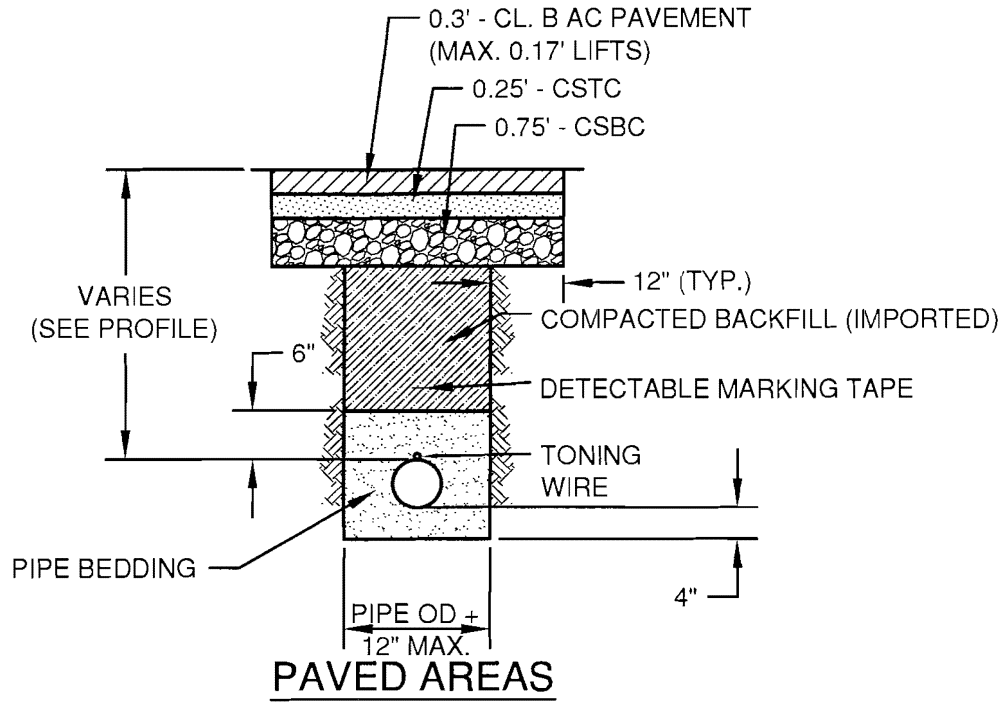


CITY OF WINLOCK
DEPARTMENT OF PUBLIC WORKS

STREET DETAILS
SIGHT OBSTRUCTION

REVISED
08/20/2007

DRAWING
NO.
2-1



NOTES:

1. MATERIALS, INSTALLATION AND COMPACTION SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
2. BEDDING SHALL BE COMPACTED TO 95%. BACKFILL SHALL BE COMPACTED TO 85% IN UN-PAVED AREAS AND 95% IN PAVED AREAS (PER ASTM D1557).
3. THE CITY SHALL DETERMINE IF NATIVE BACKFILL IS SUITABLE FOR UN-PAVED AREAS.
4. SEE STANDARD STREET DETAILS FOR CONC. RESTORATION REQUIREMENTS.



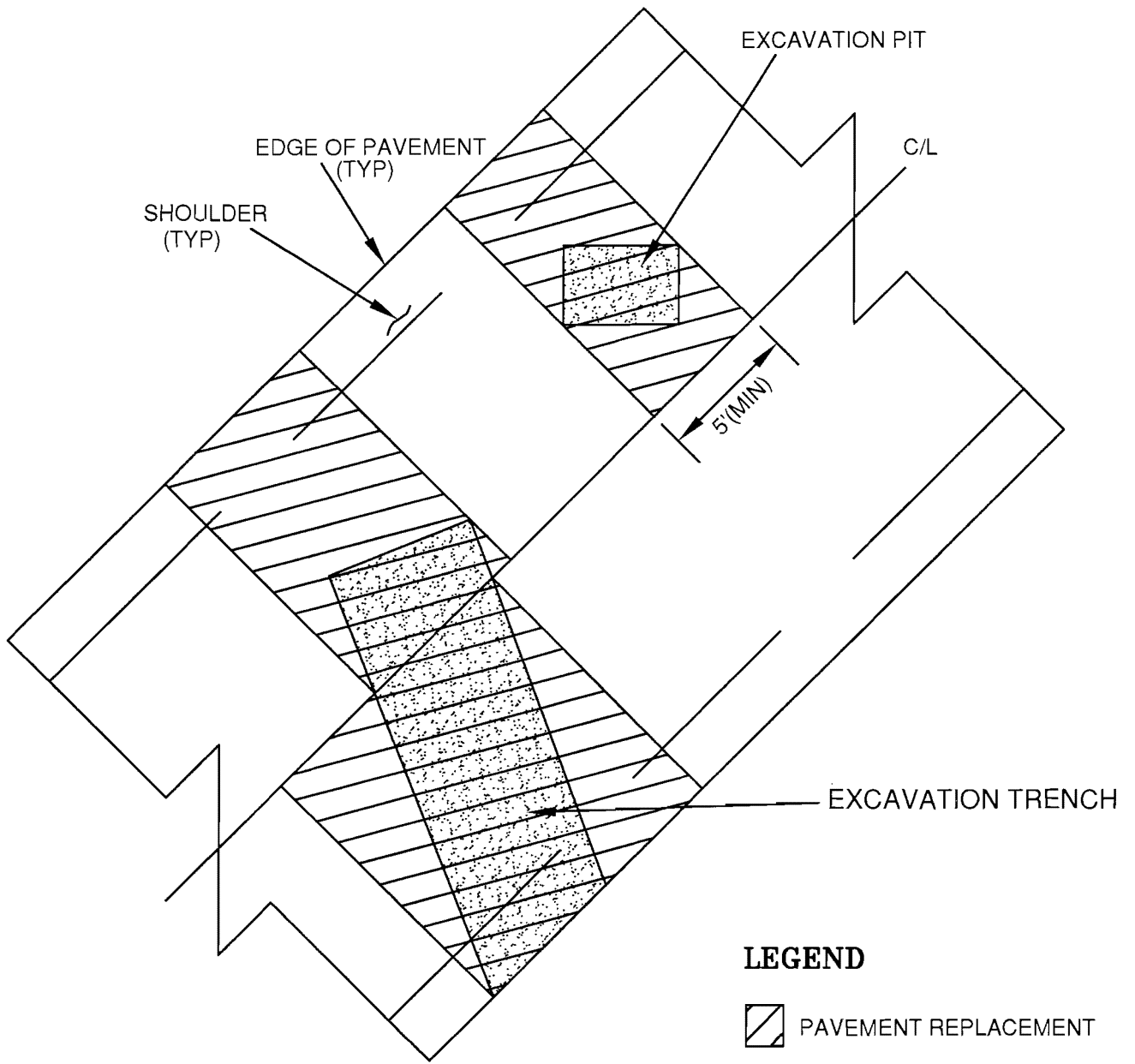
CITY OF WINLOCK
DEPARTMENT OF PUBLIC WORKS

STREET DETAILS
TRENCH PAVEMENT
RESTORATION DETAIL

REVISED
08/20/2007

DRAWING
NO.
2-2

T:\Custom\Details\City of Winlock\Details-Street-1-21.dwg, 2:3-pm:rest, 8/22/2007 9:22:20 AM, D:\Frye, DW\F6 a\Plot.pcs, Gibbs & Olson - Report A Size (8.50 x 11.00 inches), 1:1, Gibbs & Olson, Inc.

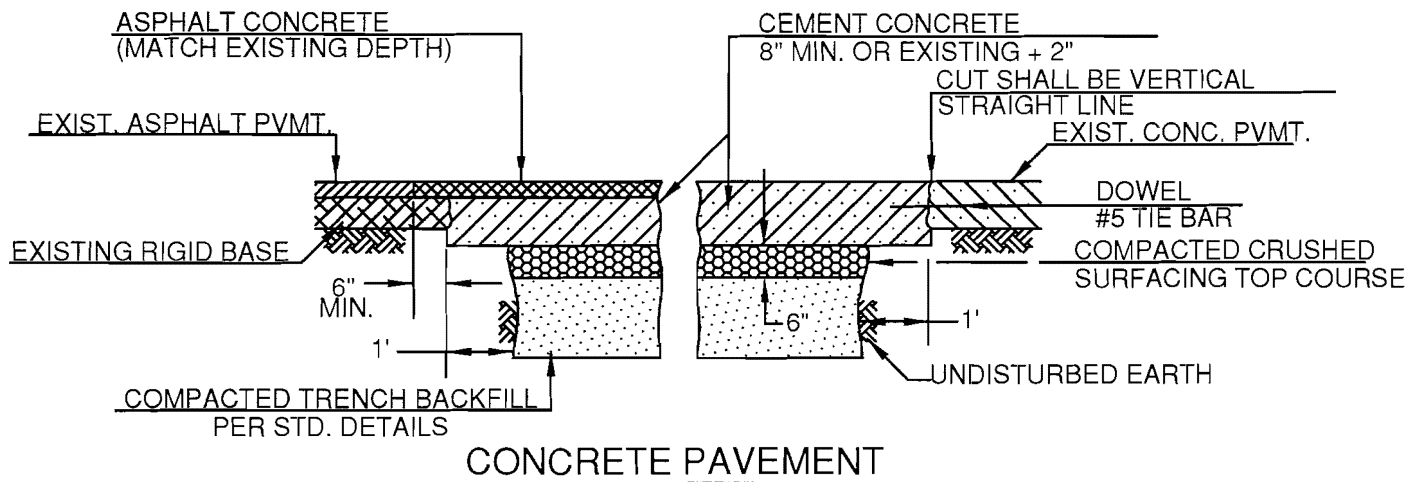


NOTE:

1. MINIMUM RESTORATION WIDTH = 5 FEET



<p>CITY OF WINLOCK DEPARTMENT OF PUBLIC WORKS</p>	<p>STREET DETAILS PAVEMENT RESTORATION</p>	<p>REVISED 08/20/2007</p>	<p>DRAWING NO. 2-3</p>
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CONCRETE PAVEMENT

CEMENT CONCRETE REPLACEMENT WIDTH	DOWEL BAR LENGTH	SPACING
LESS THAN 4'	16"	18" O.C.
4' - 6'	24"	18" O.C.
GREATER THAN 6'	30"	18" O.C.

NOTES:

1. CONCRETE MIX SHALL BE CLASS 3000 CEMENT CONCRETE.
2. WHEN CUT LINE IS LESS THAN 3' FROM ANOTHER CUTLINE, CURB, OR PAVEMENT EDGE, THE EXISTING PAVEMENT SHALL BE REMOVED TO THE CUTLINES, CURB, OR EDGE.
3. DOWELS ARE NOT REQUIRED ON THE SIDE BORDERING CURBS, LONGITUDINAL EXPANSION JOINTS, OR TRAVERSE CONSTRUCTION JOINTS.
4. DOWELS ARE TO BE INSTALLED A MINIMUM OF 6" INTO EXISTING CONCRETE PAVEMENT.
5. ALL EXISTING PAVEMENT & CONCRETE LOOSENEED DURING CONSTRUCTION SHALL BE REMOVED BEFORE PATCH IS INSTALLED.



CITY OF WINLOCK DEPARTMENT OF PUBLIC WORKS	STREET DETAILS CONCRETE PAVEMENT PATCH	REVISED 08/20/2007	DRAWING NO. 2-4



CITY OF WINLOCK
DEPARTMENT OF PUBLIC WORKS

STREET DETAILS
CEMENT CONCRETE
CURB & GUTTER

REVISED
08/20/2007

DRAWING
NO.
2-5

THRU JOINTS SHALL BE 1" GREATER IN DEPTH THAN GUTTER THICKNESS.

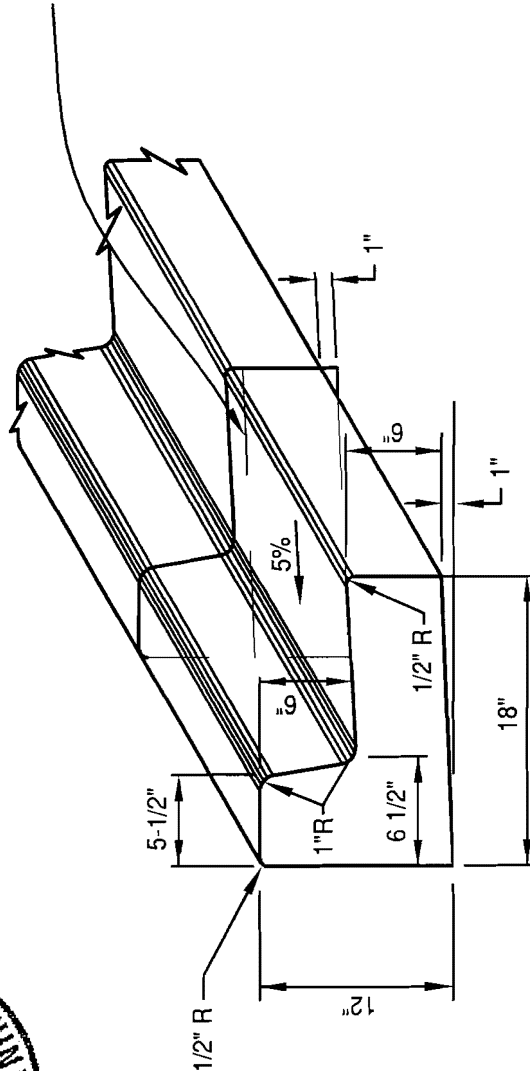
TYPICAL CURB & GUTTER DUMMY OR THRU JOINT AS REQUIRED

FORMS SHALL BE TRUE TO LINE & GRADE & SECURELY STAKED.

THE 1" RADIUS ON THE UPPER & LOWER FACE OF CURB MAY BE FORMED BY EDGER OR BUILT INTO FACE FORM.

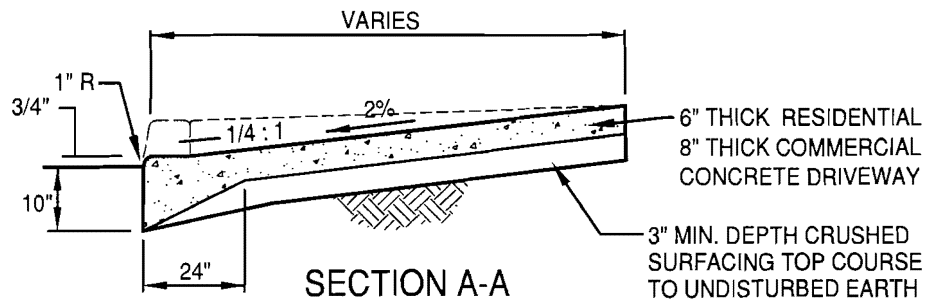
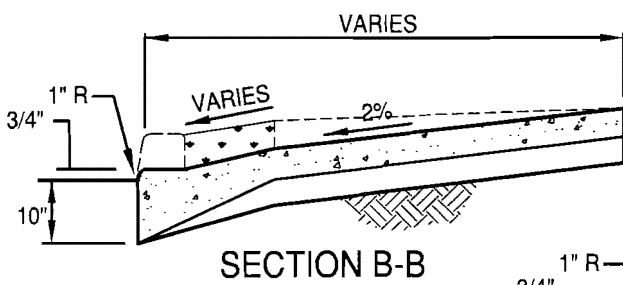
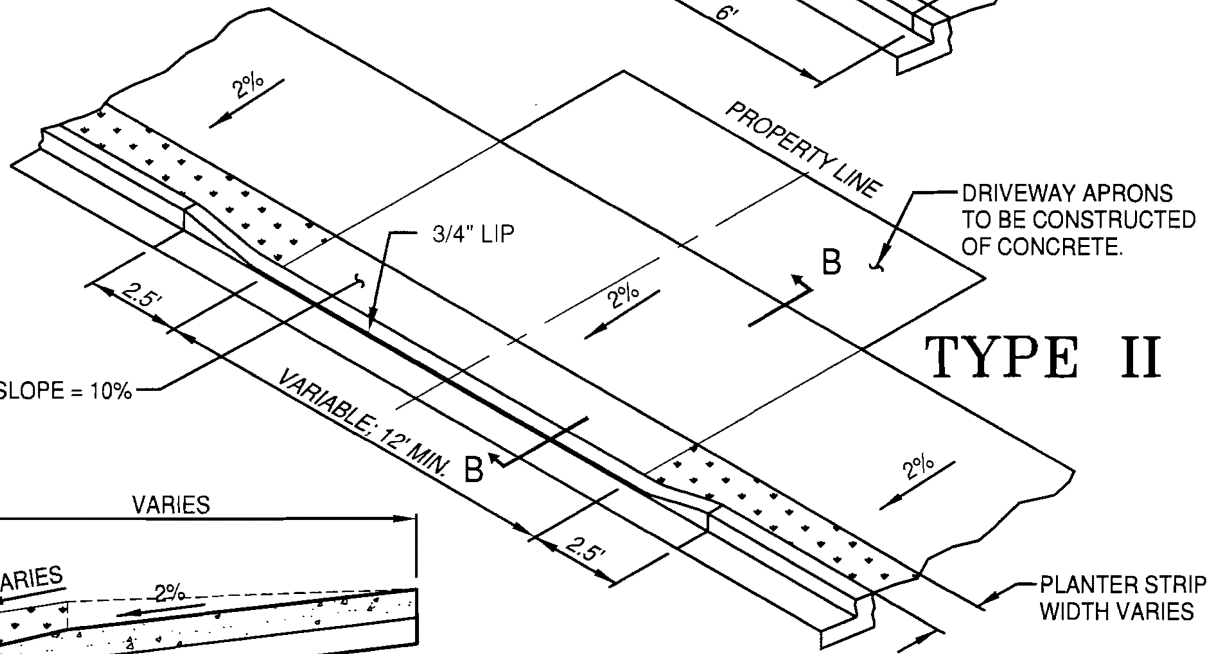
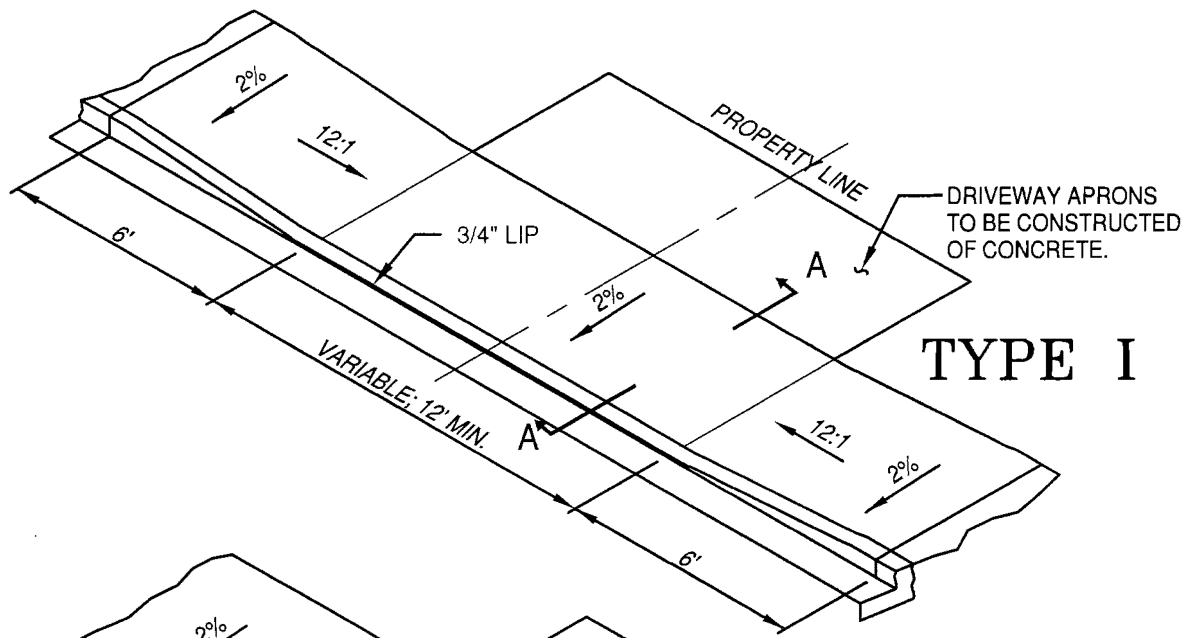
DUMMY JOINTS OF 1/4" THICKNESS SHALL BE OF THE SAME DIMENSION AS THE CURB & GUTTER EXCEPT THAT IT SHALL EXTEND ONLY 2" INTO THE GUTTER SECTION.

DUMMY JOINTS SHALL BE PLACED NOT TO EXCEED 15' C/C NOR LESS THAN 10' C/C. THRU JOINTS SHALL BE PLACED ONLY AT POINTS OF TANGENCY ON STREETS, ALLEY & DRIVEWAY RETURNS. ALL JOINTS SHALL BE CLEAN & IN THE GUTTER SECTION THEY SHALL BE EDGED. ALL COSTS SHALL BE INCIDENTAL TO THE COST OF THE CONTRACT.



CEMENT CONCRETE CURB AND GUTTER

N.T.S.



NOTES:

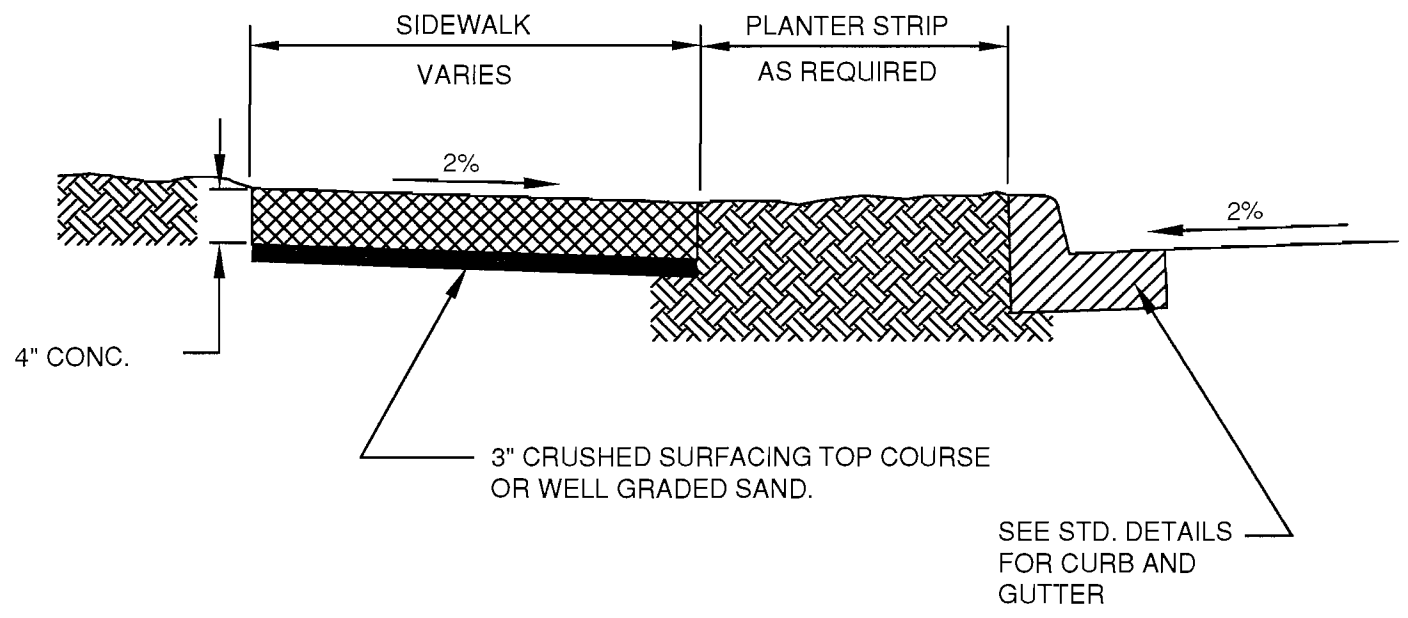
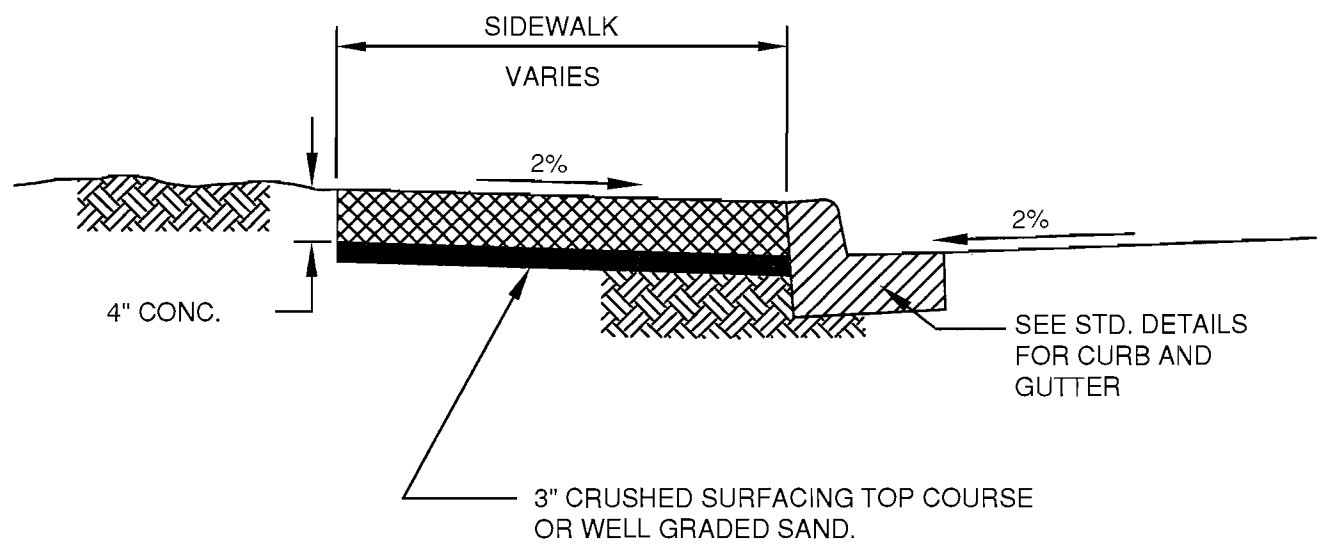
1. WHERE DRIVEWAY EXCEEDS 16' WIDTH, A CONTRACTION JOINT SHALL BE PLACED TRAVERSELY IN WALK, CENTERED ALONG DRIVEWAY.
2. EXPANSION JOINTS ARE REQUIRED TO ENSURE ISOLATION WHEN NEW CONCRETE IS PLACED AGAINST EXISTING CONCRETE OR EXISTING FEATURES.
3. EXPANSION JOINT MATERIAL TO BE 3/8" THICK PREMOULDED JOINT FILLER FULL THICKNESS.
4. FORM AND SUBGRADE INSPECTION ARE REQUIRED BEFORE PLACING CONCRETE.
5. TRANSITION WIDTH WILL VARY DEPENDING ON DRIVEWAY SLOPE. MAINTAIN MAXIMUM 12:1 TRANSITION SLOPE.
6. WHEN CHECKED WITH A 10 FOOT STRAIGHTEDGE, GRADE SHALL NOT DEVIATE MORE THAN 1/8 INCH AND ALIGNMENT SHALL NOT VARY MORE THAN 1/4 INCH.
7. BROOM FINISH LONGITUDINALLY WITH LIGHT BROOM FINISH.



CITY OF WINLOCK DEPARTMENT OF PUBLIC WORKS	STREET DETAILS TYPE I & TYPE II CEMENT CONCRETE DRIVEWAY	REVISED 08/20/2007	DRAWING NO. 2-6

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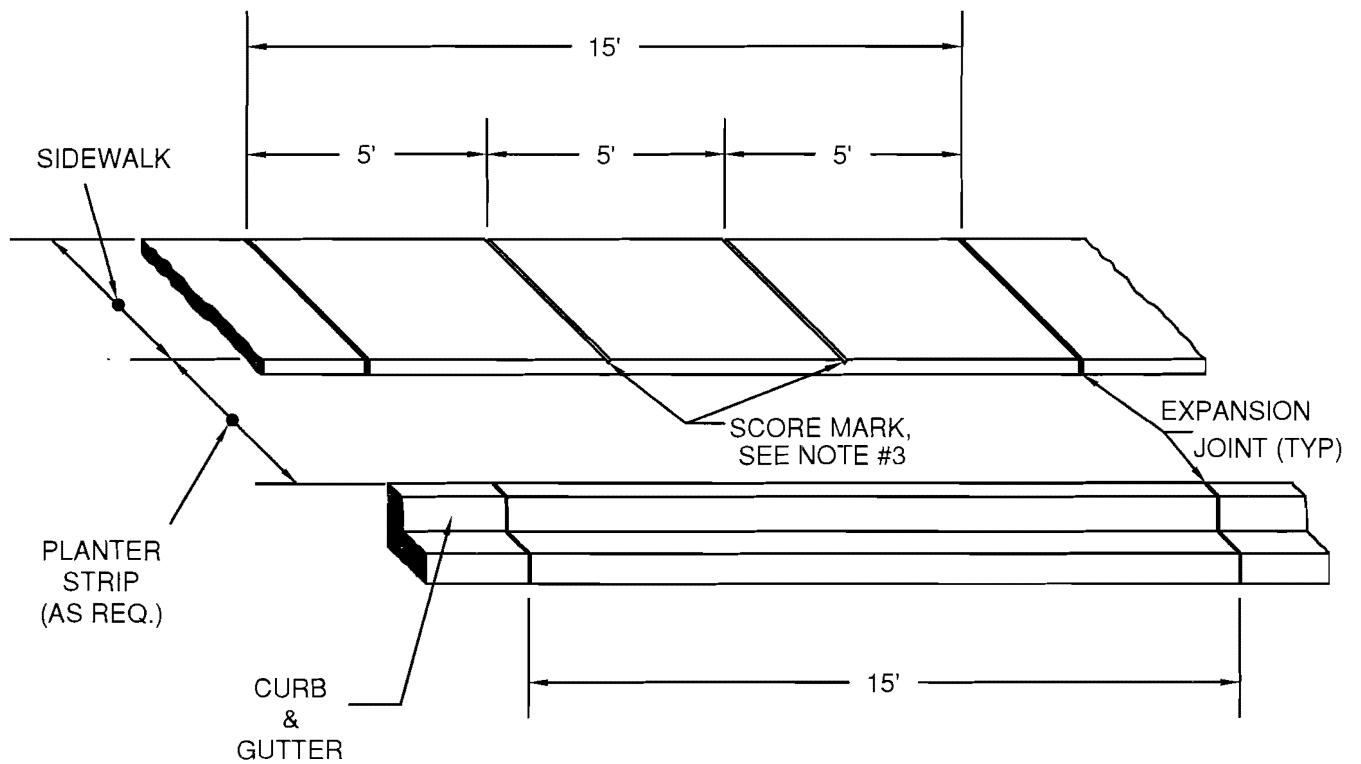


GENERAL NOTES:

1. REFER TO STANDARD DRAWING 2-8 FOR INFORMATION ON JOINTS AND SCORING.
2. SIDEWALK ACROSS CONCRETE DRIVEWAYS REQUIRE A MINIMUM DEPTH OF 6" FOR RESIDENTIAL DRIVES & 8" FOR ALL OTHER DRIVES.
3. WHEN CHECKED WITH A 10' STRAIGHTEDGE, GRADE SHALL NOT DEVIATE MORE THAN 1/8 INCH & ALIGNMENT SHALL NOT VARY MORE THAN 1/4 INCH.



<p>CITY OF WINLOCK DEPARTMENT OF PUBLIC WORKS</p>	<p>STREET DETAILS SIDEWALK</p>	<p>REVISED 08/20/2007</p>	<p>DRAWING NO. 2-7</p>
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GENERAL NOTES:

1. EXPANSION JOINT MATERIAL TO BE 3/8" THICK PREMOLDED JOINT FILLER FULL THICKNESS OF CONCRETE.
2. FORM AND SUBGRADE INSPECTION REQUIRED BEFORE POURING CONCRETE.
3. SCORE MARKS SHALL BE 1/8" WIDE BY 1/4" DEEP. FOR SIDEWALKS OVER 8' IN WIDTH, A LONGITUDINAL SCORE MARK SHALL BE MADE ALONG CENTER OF WALK.
4. EXPANSION JOINTS SHALL BE INSTALLED IN CURB AND GUTTER AND IN SIDEWALK AT PC AND PT AT ALL CURB RETURNS. EXPANSION JOINTS SHALL BE PLACED IN SIDEWALK AT SAME LOCATIONS AS THOSE IN CURB AND GUTTER WHEN SIDEWALK IS ADJACENT TO CURB AND GUTTER, UNLESS OTHERWISE DIRECTED BY ENGINEER.

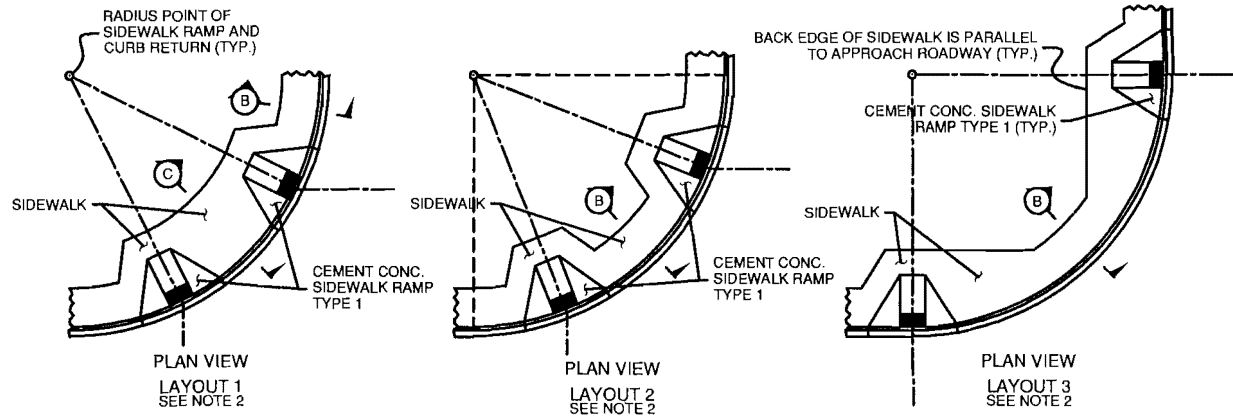


CITY OF WINLOCK
DEPARTMENT OF PUBLIC WORKS

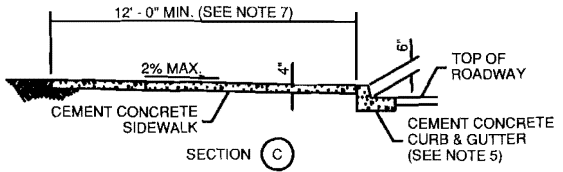
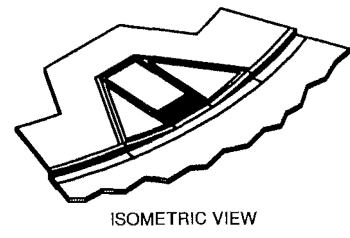
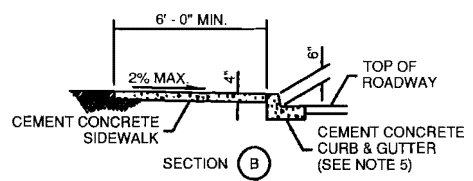
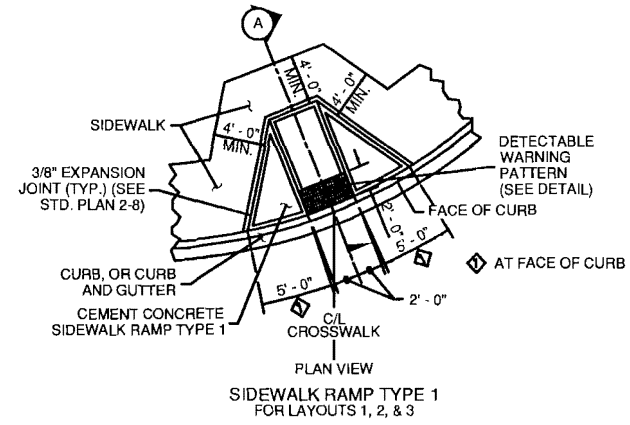
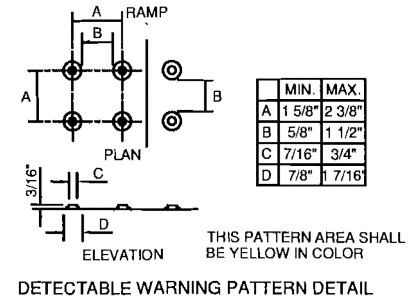
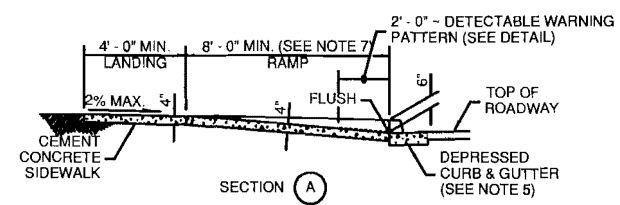
STREET DETAILS
SIDEWALK PANEL
SPACING

REVISED
08/20/2007

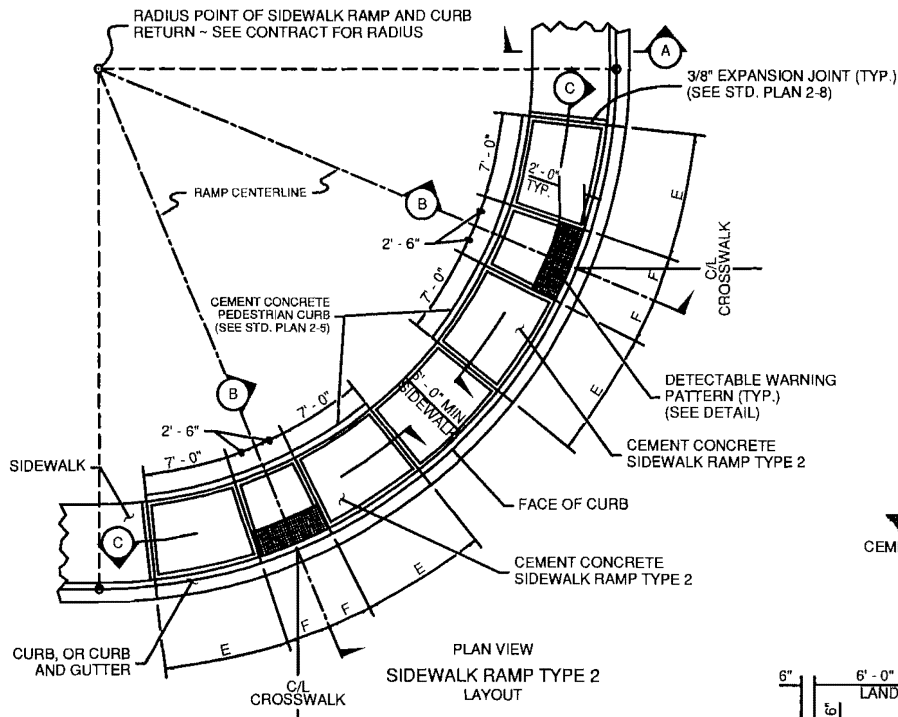
DRAWING
NO.
2-8



- NOTES**
1. THE BOTTOM OF THE RAMP SHALL HAVE A LEVEL AREA (NOT IN EXCESS OF 2% IN ANY DIRECTION), 4' x 4'.
 2. RAMP SLOPES SHALL NOT BE STEEPER THAN 12H:1V.
 3. AVOID PLACING DRAINAGE STRUCTURES, JUNCTION BOXES OR OTHER OBSTRUCTIONS IN FRONT OF RAMP ACCESS AREAS.
 4. SEE STANDARD DETAILS FOR CURB & GUTTER AND SIDEWALK JOINT PLACEMENT.
 5. THIS DETAIL IS BASED ON WSDOT STANDARD PLAN K-40.10-00.



CITY OF WINLOCK DEPARTMENT OF PUBLIC WORKS	STREET DETAILS TYPE I CURB RAMPS	REVISED	DRAWING
		08/20/2007	NO.
			2-9

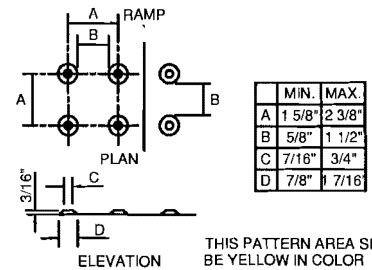
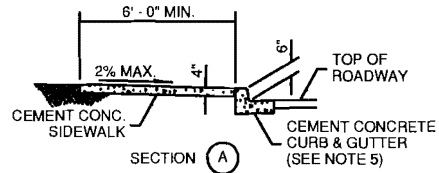


RADIUS AT FACE OF CURB	E	F
20 FEET	10' - 4 3/4"	3' - 8 1/2"
30 FEET	8' - 11 1/2"	3' - 2 1/4"
40 FEET	8' - 4 1/2"	2' - 11 3/4"
50 FEET	8' - 0 3/4"	2' - 10 1/4"
60 FEET	7' - 10 1/4"	2' - 9 3/4"
70 FEET	7' - 8 3/4"	2' - 9"
80 FEET	7' - 7 1/2"	2' - 8 3/4"
90 FEET	7' - 6 1/2"	2' - 8 1/4"
100 FEET	7' - 6"	2' - 8"

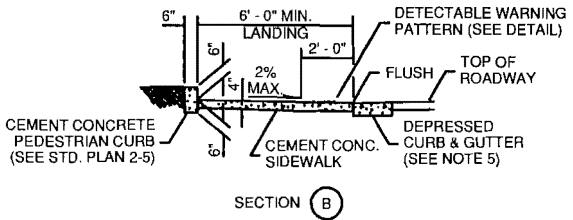
INTERMEDIATE RADII CAN BE INTERPOLATED

NOTES

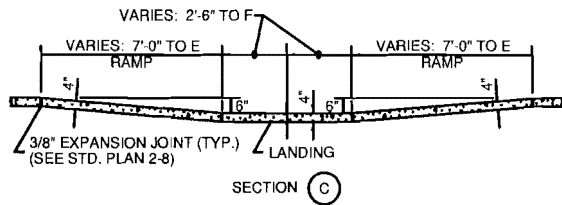
1. THE BOTTOM OF THE RAMP SHALL HAVE A LEVEL AREA (NOT IN EXCESS OF 2% IN ANY DIRECTION), 4' x 4'.
2. RAMP SLOPES SHALL NOT BE STEEPER THAN 12H:1V.
3. AVOID PLACING DRAINAGE STRUCTURES, JUNCTION BOXES OR OTHER OBSTRUCTIONS IN FRONT OF RAMP ACCESS AREAS.
4. SEE STANDARD DETAILS FOR CURB & GUTTER AND SIDEWALK JOINT PLACEMENT.
5. THIS DETAIL IS BASED ON WSDOT STANDARD PLAN F-40.12-00.



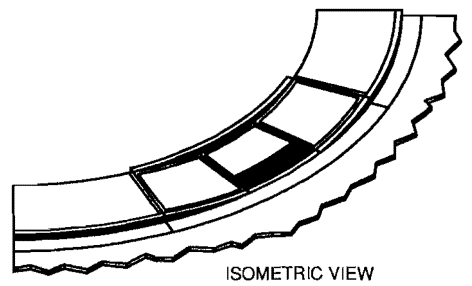
DETECTABLE WARNING PATTERN DETAIL



SECTION B



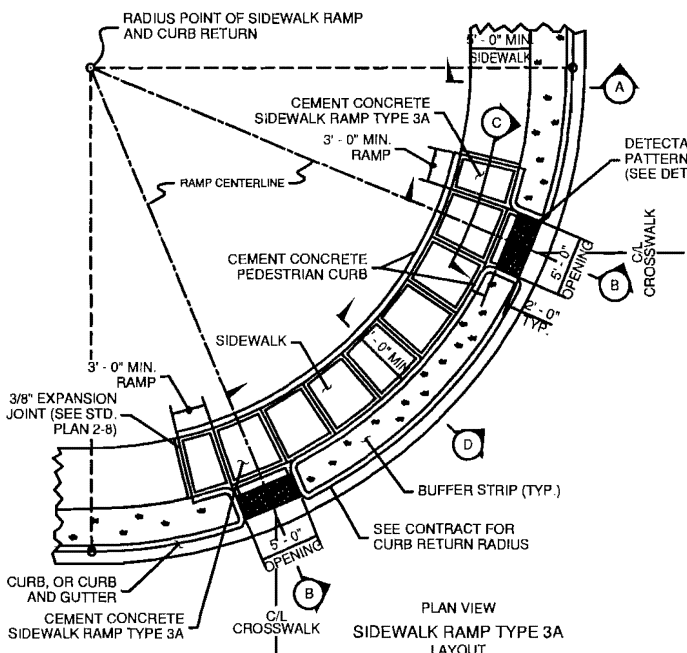
SECTION C



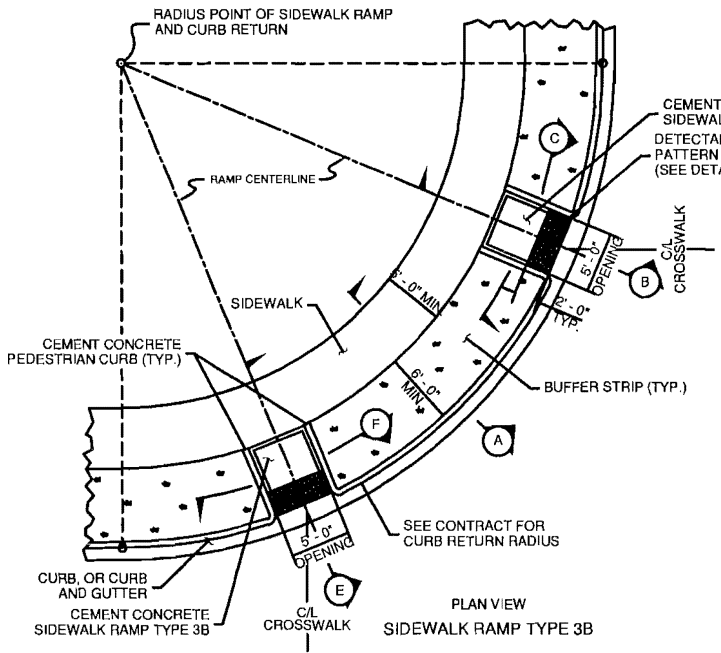
ISOMETRIC VIEW



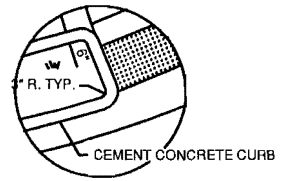
CITY OF WINLOCK DEPARTMENT OF PUBLIC WORKS	STREET DETAILS TYPE II CURB RAMPS	REVISED 08/20/2007	DRAWING NO. 2-10



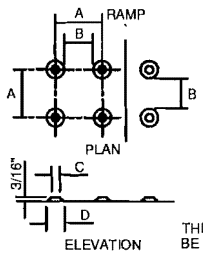
PLAN VIEW
SIDEWALK RAMP TYPE 3A
LAYOUT



PLAN VIEW
SIDEWALK RAMP TYPE 3B
LAYOUT



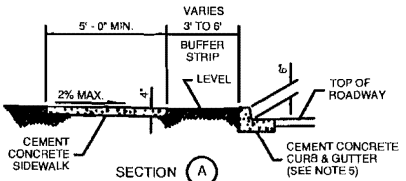
CURB RADIUS DETAIL



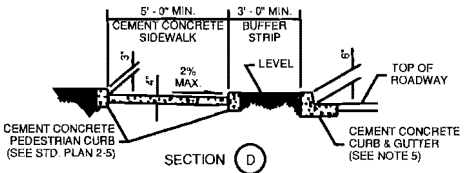
DETECTABLE WARNING PATTERN DETAIL

	MIN.	MAX.
A	1 5/8"	2 3/8"
B	5/8"	1 1/2"
C	7/16"	3/4"
D	7/8"	1 7/16"

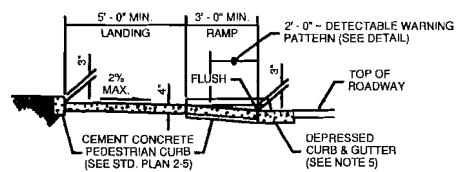
THIS PATTERN AREA SHALL BE YELLOW IN COLOR



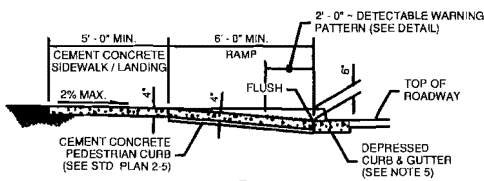
SECTION A



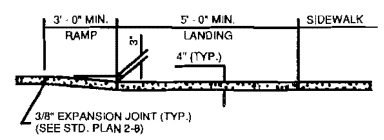
SECTION D



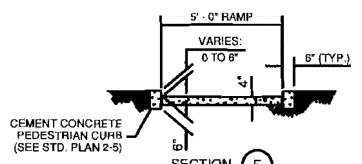
SECTION B



SECTION E



SECTION C



SECTION F

NOTES

1. THE BOTTOM OF THE RAMP SHALL HAVE A LEVEL AREA (NOT IN EXCESS OF 2% IN ANY DIRECTION), 4' x 4'.
2. RAMP SLOPES SHALL NOT BE STEEPER THAN 12H:1V.
3. AVOID PLACING DRAINAGE STRUCTURES, JUNCTION BOXES OR OTHER OBSTRUCTIONS IN FRONT OF RAMP ACCESS AREAS.
4. SEE STANDARD DETAILS FOR CURB & GUTTER AND SIDEWALK JOINT PLACEMENT.
5. THIS DETAIL IS BASED ON WSDOT STANDARD PLAN K-40.10-00.

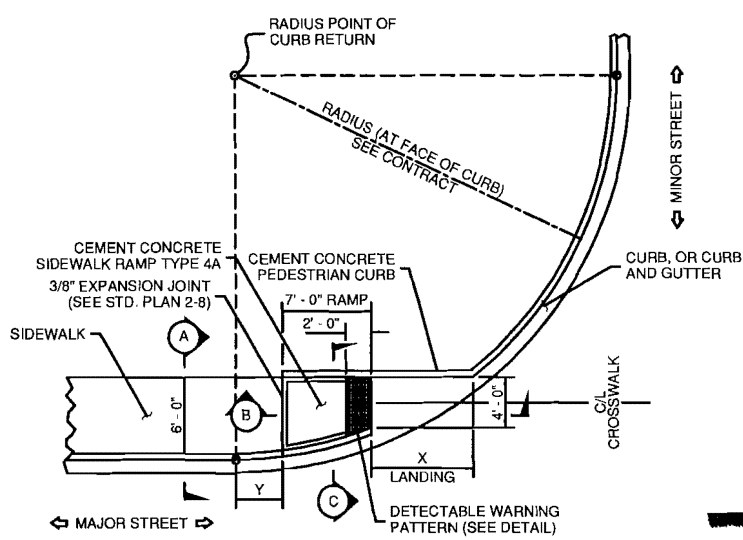


CITY OF WINLOCK
DEPARTMENT OF PUBLIC WORKS

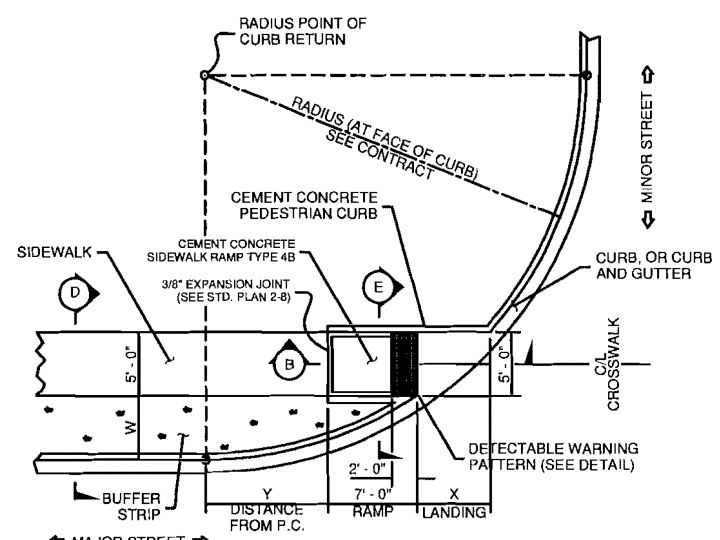
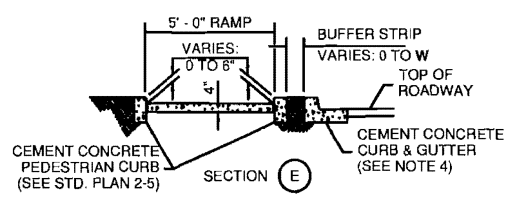
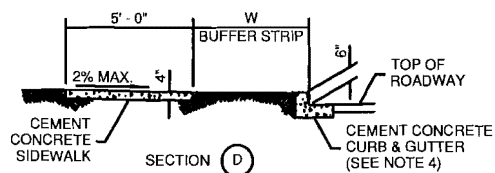
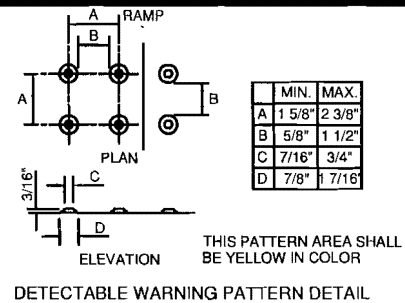
STREET DETAILS
TYPE III CURB RAMPS

REVISED
08/20/2007

DRAWING
NO.
2-11



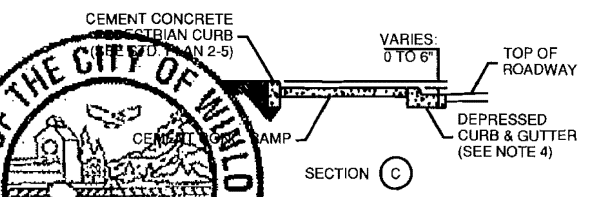
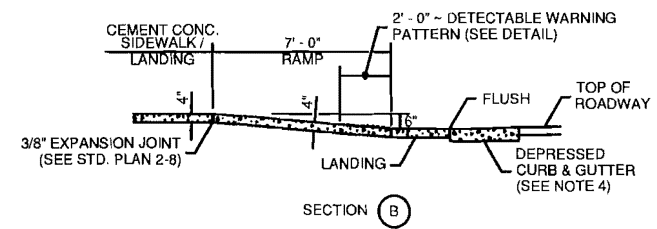
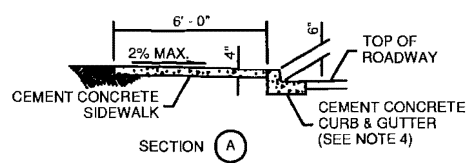
PLAN VIEW
SIDEWALK RAMP TYPE 4A
LAYOUT



PLAN VIEW
SIDEWALK RAMP TYPE 4B
PLAN

NOTES

1. THE BOTTOM OF THE RAMP SHALL HAVE A LEVEL AREA (NOT IN EXCESS OF 2% IN ANY DIRECTION), 4' x 4'.
2. RAMP SLOPES SHALL NOT BE STEEPER THAN 12H:1V.
3. AVOID PLACING DRAINAGE STRUCTURES, JUNCTION BOXES OR OTHER OBSTRUCTIONS IN FRONT OF RAMP ACCESS AREAS.
4. SEE STANDARD DETAILS FOR CURB & GUTTER AND SIDEWALK JOINT PLACEMENT.
5. THIS DETAIL IS BASED ON WSDOT STANDARD PLAN K-40.10-00.



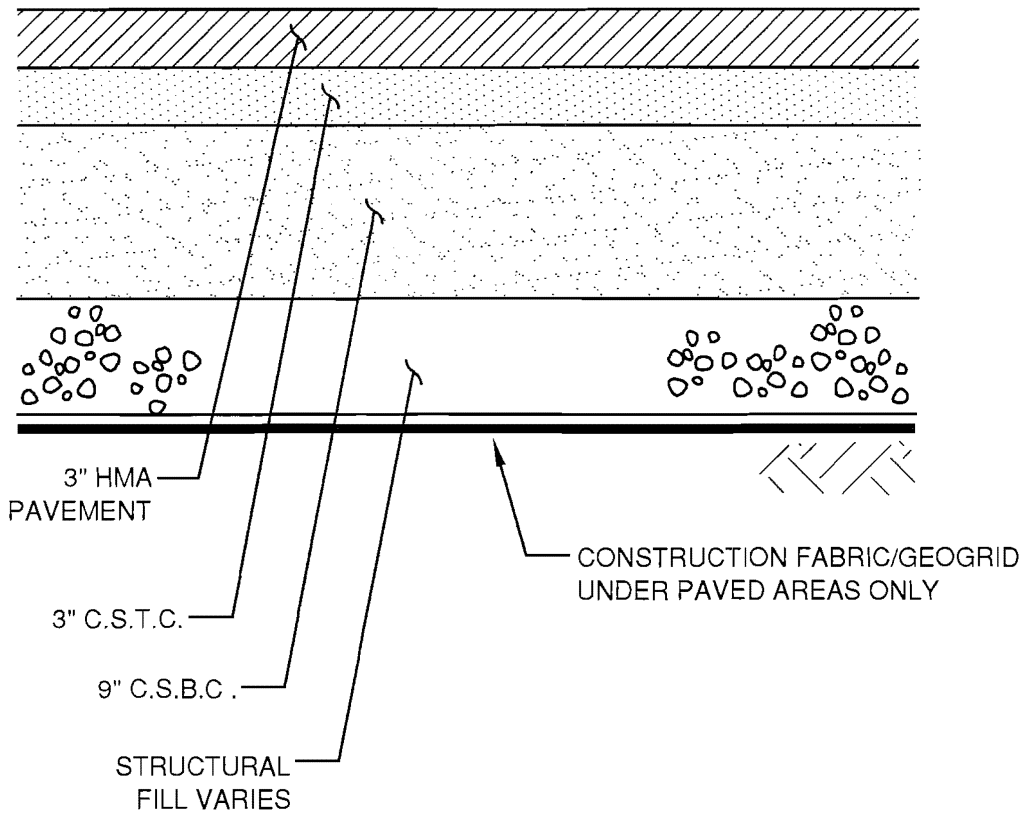
CURB RAMP RADIUS AT FACE OF CURB	TYPE 4A			TYPE 4B									
	X LANDING	Y DISTANCE FROM P.C.	DISTANCE FROM P.C.	W = 3'-0"		W = 4'-0"		W = 5'-0"		W = 6'-0"		W = 7'-0"	
				X	Y	X	Y	X	Y	X	Y	X	Y
20 FEET	8'-2 1/2"	1'-7"		5'-5 1/2"	3'-6 1/2"	4'-6 1/2"	5'-0"	4'-1"	6'-2 3/4"	3'-7"	7'-3 1/2"	3'-1 1/2"	8'-2 1/2"
30 FEET	8'-0 1/4"	3'-8"		7'-3 3/4"	6'-1"	8'-5 1/2"	7'-11 1/2"	5'-9 1/4"	9'-7"	5'-2 1/2"	11'-0"	4'-8 3/4"	12'-3 1/4"
40 FEET	9'-6 1/4"	5'-4 3/4"		8'-9 1/2"	8'-2 1/2"	7'-10"	10'-5 1/4"	7'-1"	12'-4 1/2"	6'-5 3/4"	14'-3/4"	5'-11 1/2"	15'-7 1/4"
50 FEET	10'-9 3/4"	6'-11"		10'-3/4"	10'-3/4"	9'-1/4"	12'-7 1/4"	8'-2 1/2"	14'-9 1/2"	7'-6 1/2"	16'-9"	6'-11 3/4"	18'-6 1/4"
60 FEET	11'-11 1/2"	8'-3 1/2"		11'-2 1/2"	11'-8 3/4"	10'-3/4"	14'-6 1/2"	9'-2 1/4"	16'-11 3/4"	8'-5 3/4"	19'-1 3/4"	7'-10 1/2"	21'-1 1/2"
70 FEET	13'-0"	9'-8 1/2"		12'-2 3/4"	13'-3 1/4"	11'-1/4"	16'-4"	10'-1"	18'-11 3/4"	9'-3 3/4"	21'-4 1/4"	8'-8 1/4"	23'-6 1/4"
80 FEET	13'-11 1/2"	10'-6 1/2"		13'-2"	14'-8 1/2"	11'-10 1/2"	17'-11 3/4"	10'-10 3/4"	20'-10"	10'-1"	23'-4 3/4"	9'-5"	25'-8 3/4"
90 FEET	14'-10 1/2"	11'-9 3/4"		14'-1/2"	16'-1/2"	12'-8 1/4"	19'-6 1/2"	11'-7 3/4"	22'-7"	10'-9 3/4"	25'-3 3/4"	10'-1 1/4"	27'-9 1/2"
100 FEET	15'-8 3/4"	12'-10 1/4"		14'-10 1/2"	17'-3 3/4"	13'-5 1/2"	21'-0"	12'-4 1/4"	24'-2 3/4"	11'-5 3/4"	27'-1 1/2"	10'-9"	29'-9"

INTERMEDIATE RADII CAN BE INTERPOLATED



CITY OF WINLOCK DEPARTMENT OF PUBLIC WORKS	STREET DETAILS TYPE IV CURB RAMPS	REVISED 08/20/2007	DRAWING NO. 2-12
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MINIMUM PAVING SECTION

N.T.S.



CITY OF WINLOCK
DEPARTMENT OF PUBLIC WORKS

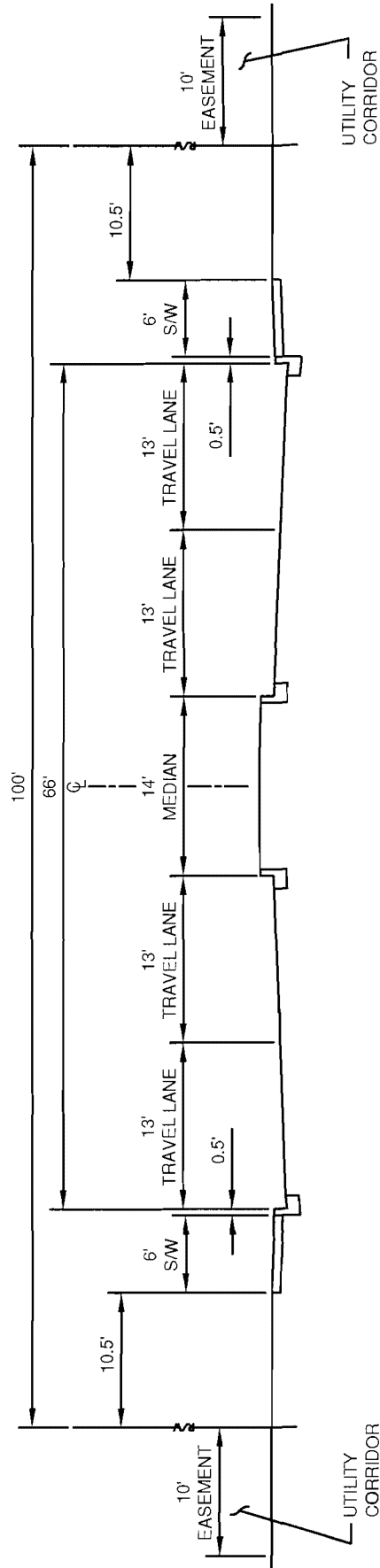
STREET DETAILS
MINIMUM PAVING
SECTION

REVISED
08/20/2007

DRAWING
NO.
2-13



NOTE:
SEE DETAIL 2-13 OF STANDARD STREET DETAILS FOR
MINIMUM REQUIRED ROADWAY STRUCTURAL SECTION.



BOULEVARD
N.T.S.

CITY OF WINLOCK
DEPARTMENT OF PUBLIC WORKS

STREET DETAILS
BOULEVARD
CROSS SECTION

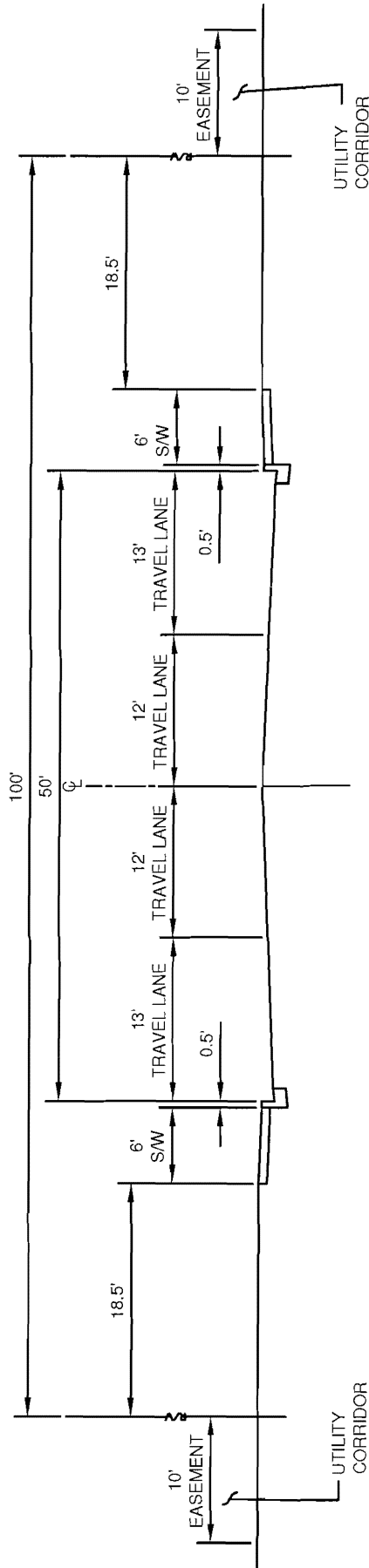
REVISED
08/20/2007

DRAWING
NO.
2-14a

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NOTE:
SEE DETAIL 2-13 OF STANDARD STREET DETAILS FOR
REQUIRED ROADWAY STRUCTURAL SECTION.



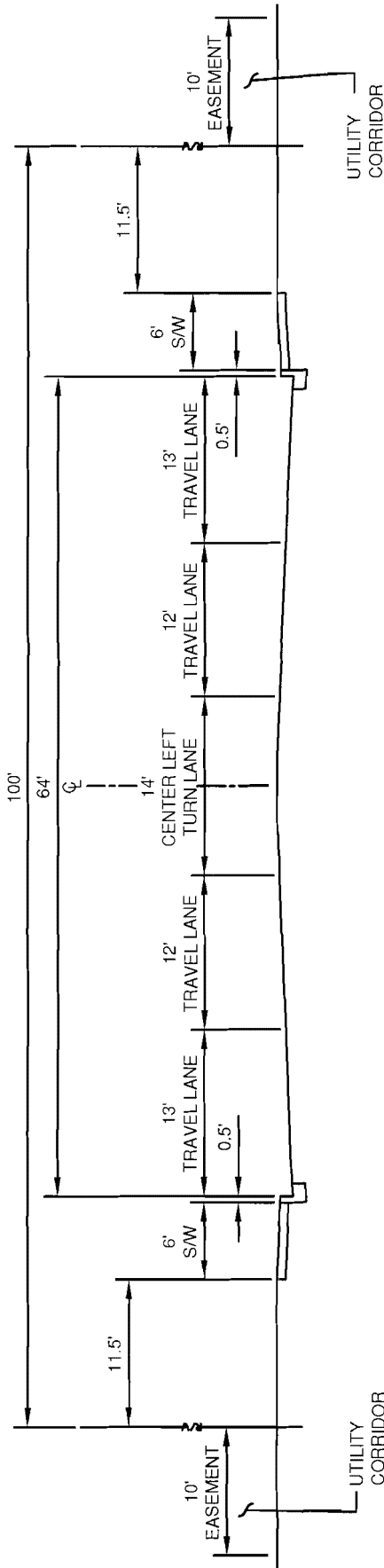
MAJOR OR MINOR ARTERIAL
NO CENTER LEFT TURN LANE
N.T.S.

<p>CITY OF WINLOCK DEPARTMENT OF PUBLIC WORKS</p>	<p>STREET DETAILS MAJOR OR MINOR ARTERIAL NO CENTER LEFT TURN LANE</p>	<p>REVISED 08/20/2007</p>	<p>DRAWING NO. 2-14b</p>
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NOTE:
SEE DETAIL 2-13 OF STANDARD STREET DETAILS FOR
MINIMUM REQUIRED ROADWAY STRUCTURAL SECTION.



**MAJOR OR MINOR ARTERIAL
CENTER LEFT TURN LANE**

N.T.S.

* INDUSTRIAL COLLECTOR TO USE THIS SECTION.

CITY OF WINLOCK
DEPARTMENT OF PUBLIC WORKS

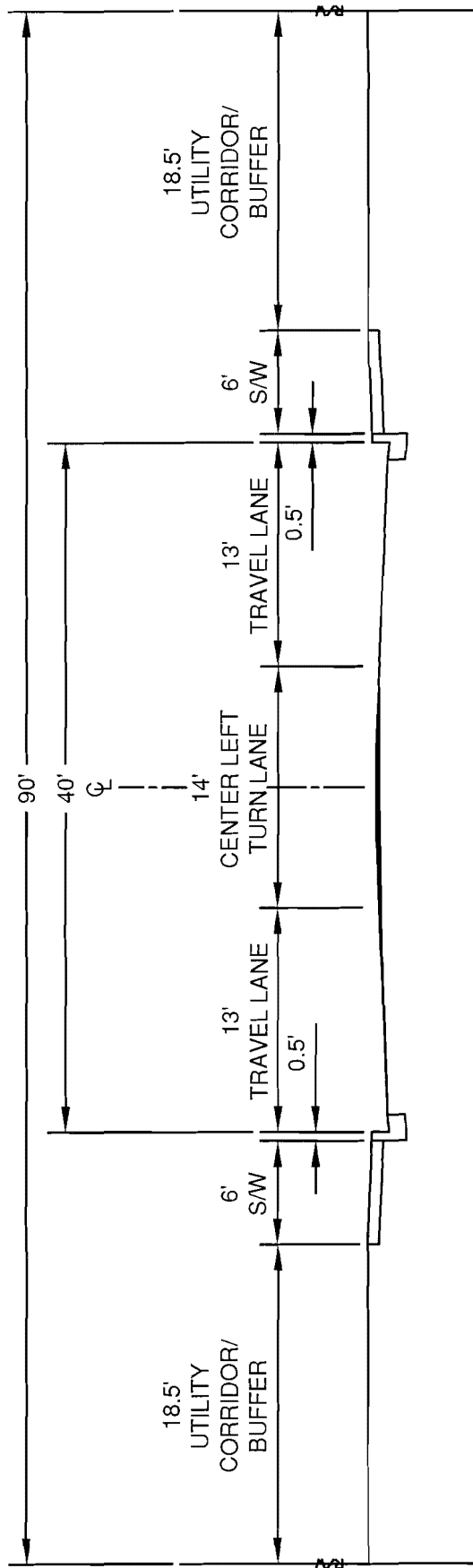
**STREET DETAILS
MAJOR OR MINOR
ARTERIAL CENTER
LEFT TURN LANE**

REVISED
08/20/2007

DRAWING
NO.
2-14c



NOTE:
SEE DETAIL 2-13 OF STANDARD STREET DETAILS FOR
MINIMUM REQUIRED ROADWAY STRUCTURAL SECTION.



MINOR ARTERIAL
THREE LANE SECTION W/ LEFT TURN LANE

N.T.S.

CITY OF WINLOCK
DEPARTMENT OF PUBLIC WORKS

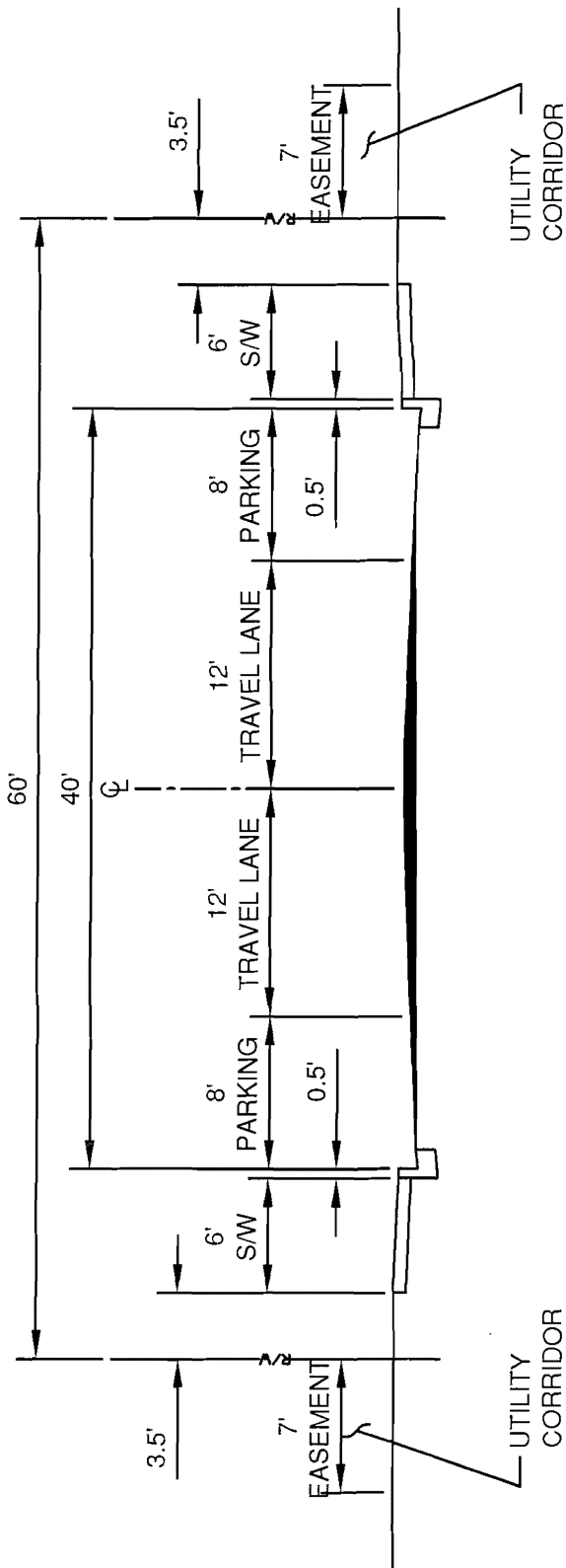
STREET DETAILS
MINOR ARTERIAL
3 LANE SECTION W/
LEFT TURN LANE

REVISED
08/20/2007

DRAWING
NO.
2-14d



NOTE:
SEE DETAIL 2-13 OF STANDARD STREET DETAILS FOR
MINIMUM REQUIRED ROADWAY STRUCTURAL SECTION.



COMMERCIAL COLLECTOR

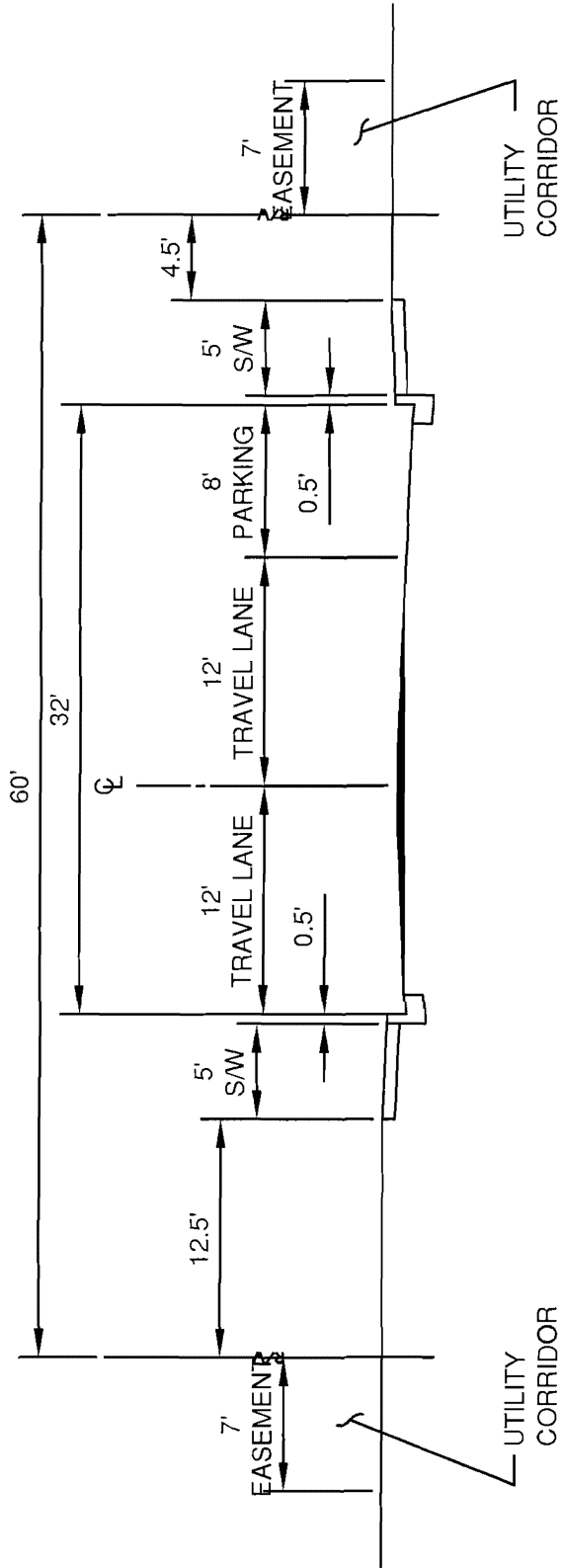
N.T.S.

<p>CITY OF WINLOCK DEPARTMENT OF PUBLIC WORKS</p>	<p>STREET DETAILS COMMERCIAL COLLECTOR CROSS SECTION</p>	<p>REVISED 08/20/2007</p>	<p>DRAWING NO. 2-14e</p>
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NOTE:
SEE DETAIL 2-13 OF STANDARD STREET DETAILS FOR
MINIMUM REQUIRED ROADWAY STRUCTURAL SECTION.



**NEIGHBORHOOD COLLECTOR
PARKING ON ONE SIDE**

N.T.S.

City of Winlock
Standard Street Details
Typical Section Detail
2-14.f

CITY OF WINLOCK
DEPARTMENT OF PUBLIC WORKS

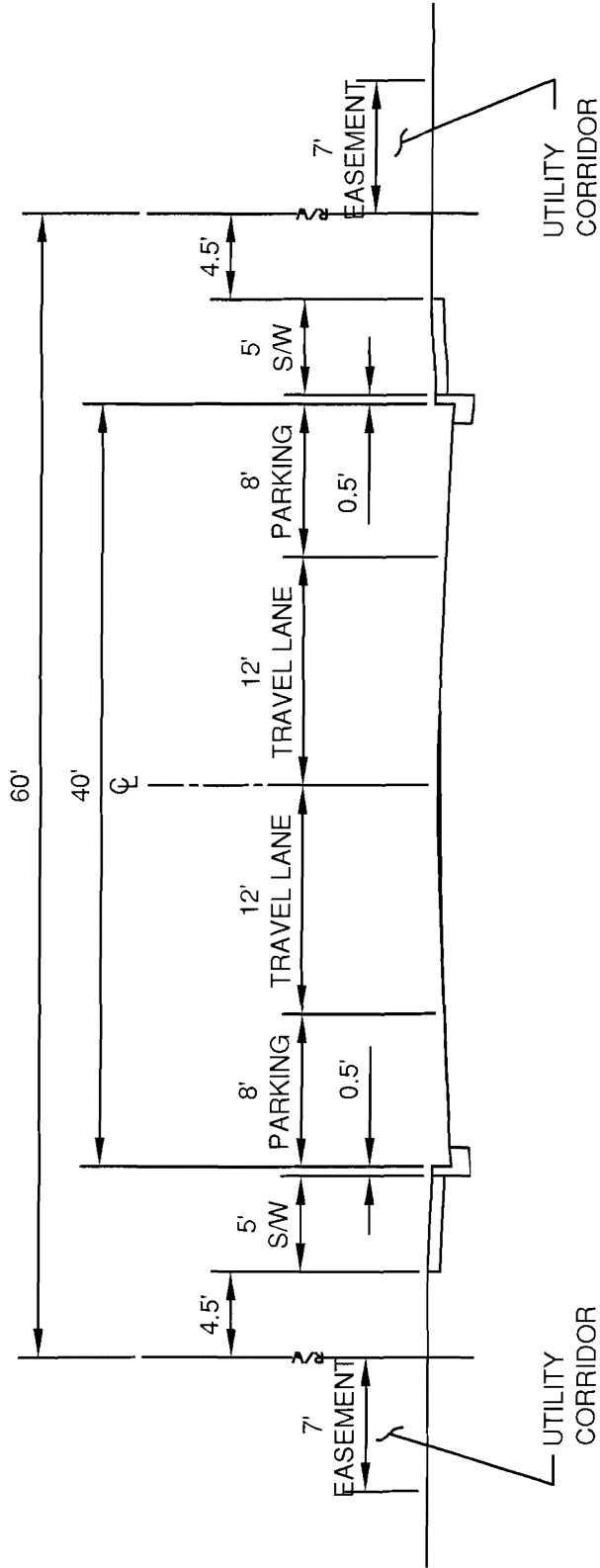
**STREET DETAILS
NEIGHBORHOOD
COLLECTOR PARKING
ON ONE SIDE**

REVISED
08/20/2007

**DRAWING
NO.
2-14f**



NOTE:
SEE DETAIL 2-13 OF STANDARD STREET DETAILS FOR
MINIMUM REQUIRED ROADWAY STRUCTURAL SECTION.



**NEIGHBORHOOD COLLECTOR
PARKING ON BOTH SIDES**

N.T.S.

CITY OF WINLOCK
DEPARTMENT OF PUBLIC WORKS

**STREET DETAILS
NEIGHBORHOOD
COLLECTOR PARKING
ON BOTH SIDES**

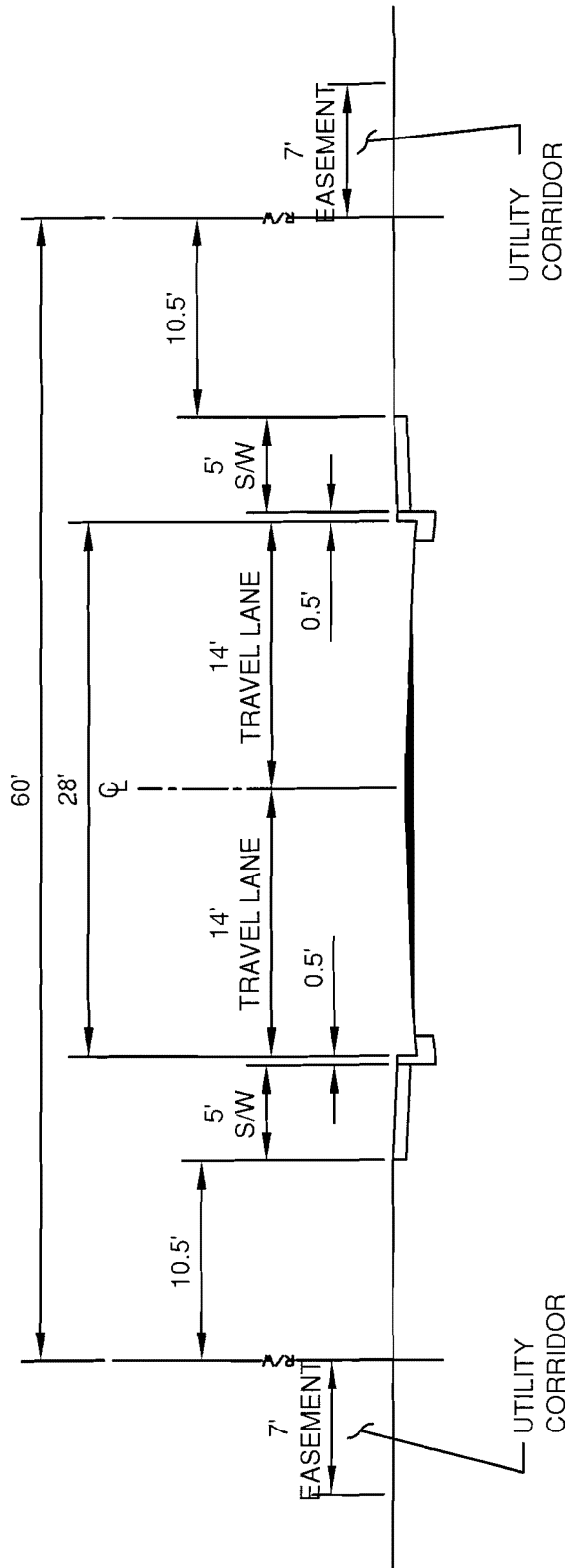
REVISED
08/20/2007

**DRAWING
NO.
2-14g**

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NOTE:
SEE DETAIL 2-13 OF STANDARD STREET DETAILS FOR
MINIMUM REQUIRED ROADWAY STRUCTURAL SECTION.



LOCAL ACCESS
NO PARKING
N.T.S.

CITY OF WINLOCK
DEPARTMENT OF PUBLIC WORKS

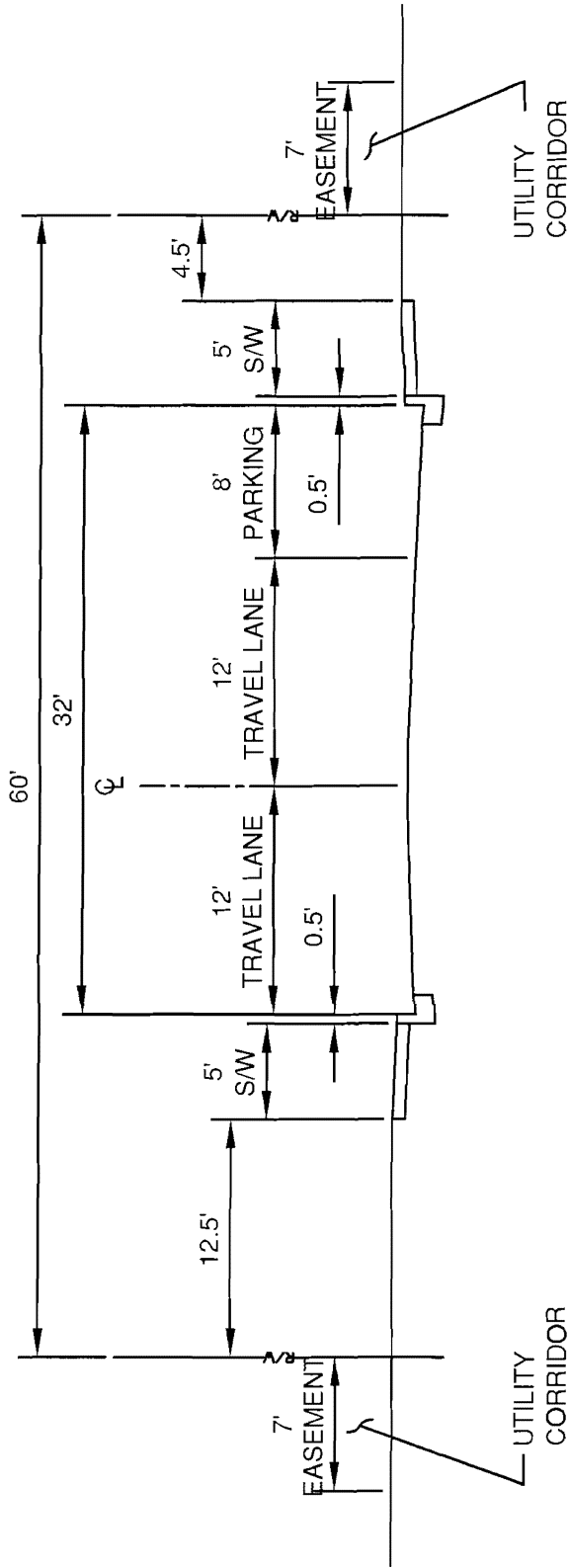
STREET DETAILS
LOCAL ACCESS
NO PARKING
CROSS SECTION

REVISED
08/20/2007

DRAWING
NO.
2-14h



NOTE:
SEE DETAIL 2-13 OF STANDARD STREET DETAILS FOR
MINIMUM REQUIRED ROADWAY STRUCTURAL SECTION.



**LOCAL ACCESS
PARKING ON ONE SIDE**

N.T.S.

CITY OF WINLOCK
DEPARTMENT OF PUBLIC WORKS

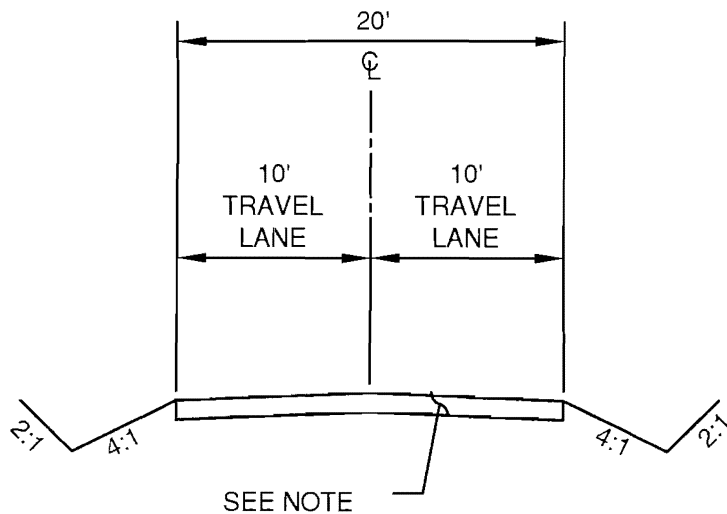
**STREET DETAILS
LOCAL ACCESS
PARKING ON ONE SIDE
CROSS SECTION**

REVISED
08/20/2007

DRAWING
NO.
2-14i

T:\Custom\Details\City of Winlock\Details\Street\13-14.dwg, 2-14j Private, 8/20/2007 3:25:17 PM, D:\Frys, DWF6 ePlot.pc3, Gibbs & Olson - Report A Size (8.50 x 11.00 inches), 1-1, Gibbs & Olson, Inc

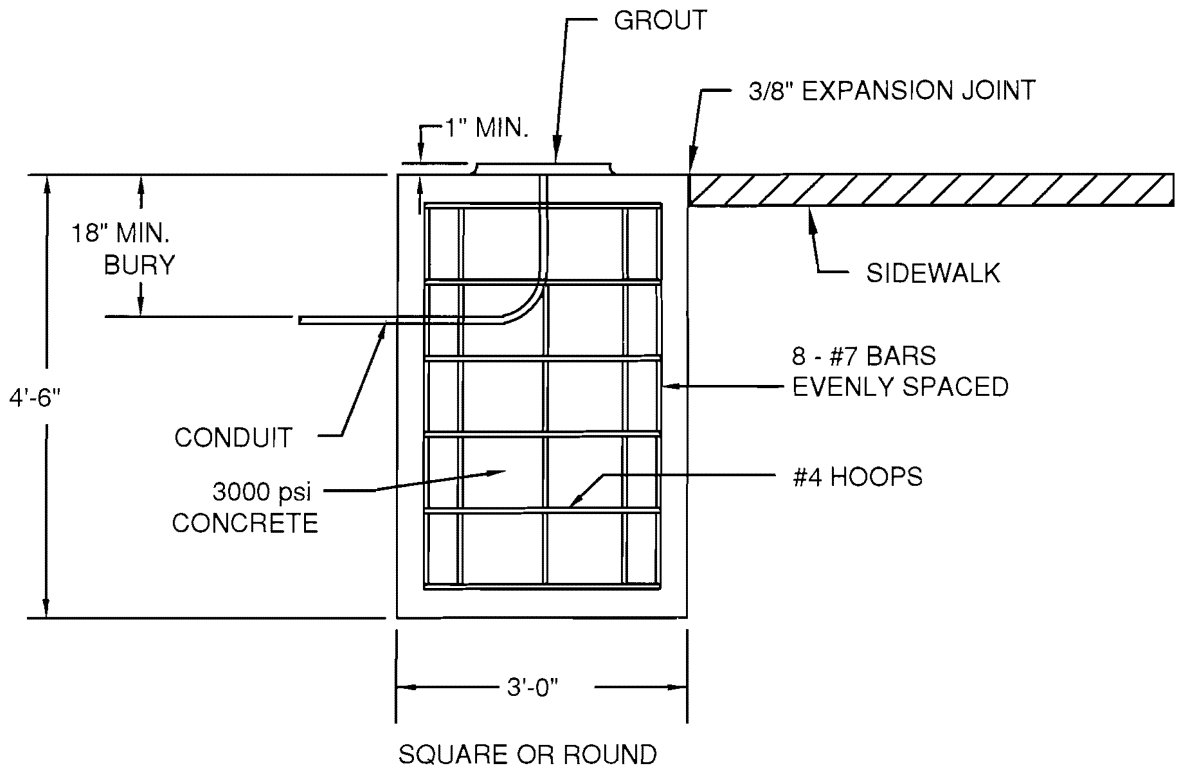
NOTE:
MINIMUM 6" CRUSHED SURFACING
3" HMA RECOMMENDED



PRIVATE ROAD
N.T.S.



CITY OF WINLOCK DEPARTMENT OF PUBLIC WORKS	STREET DETAILS PRIVATE ROAD CROSS SECTION	REVISED 08/20/2007	DRAWING NO. 2-14j
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GENERAL NOTES:

1. SET AT BACK OF WALK UNLESS OTHERWISE DIRECTED.
2. ALL REINFORCING STEEL SHALL HAVE 2-1/2" CLEAR COVER OF CONCRETE.
3. PROVIDE WATER TIGHT GROUT JOING BETWEEN BASE OF POLE AND CONCRETE.
4. PROVIDE 3/8" EXPANSION JOINT WHEN PLACED ADJACENT TO OR IN A SIDEWALK AREA.
5. ANCHOR BOLTS & BOLT CIRCLE TO MEET MANUFACTURER SPECIFICATIONS. SET BOLT HEIGHT TO PERMIT DOUBLE LOCKNUT FOR ADJUSTMENT.

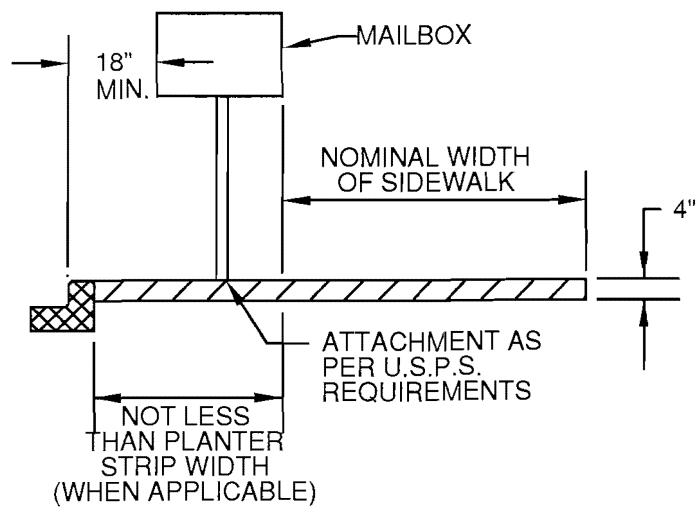


CITY OF WINLOCK
DEPARTMENT OF PUBLIC WORKS

STREET DETAILS
LUMINAIRE
FOUNDATION

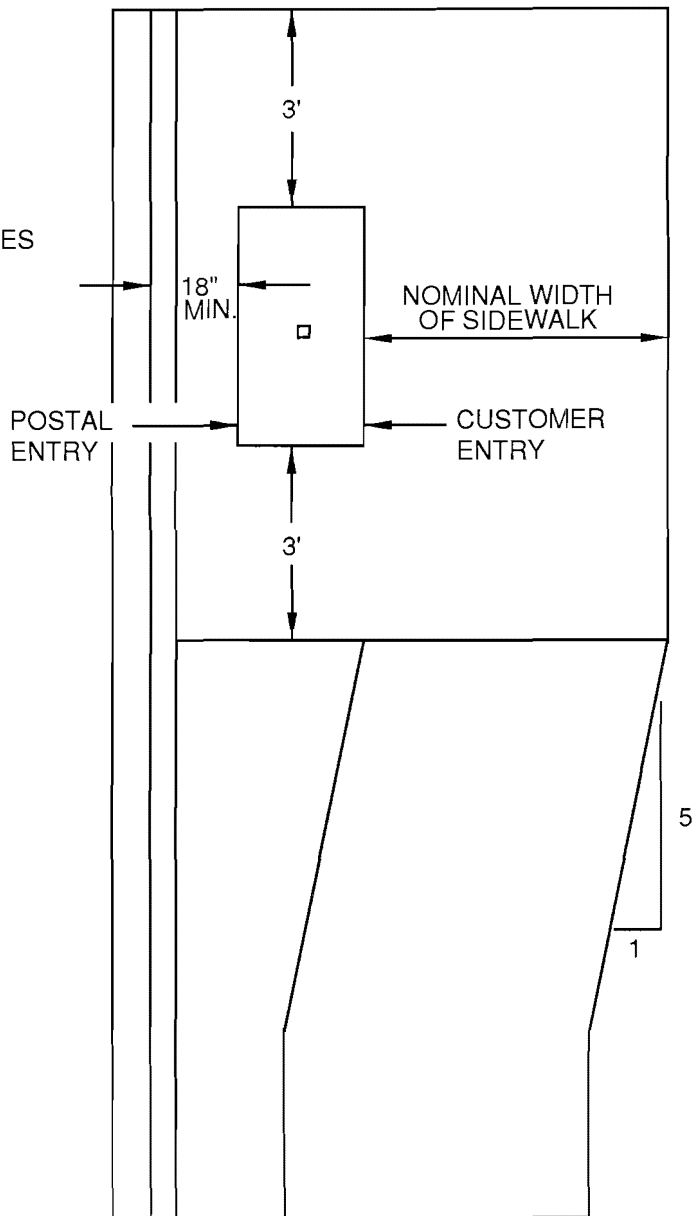
REVISED
08/20/2007

DRAWING
NO.
2-15



GENERAL NOTES:

1. SEE SECTION 2F OF THE DESIGN GUIDELINES FOR ADDITIONAL REQUIREMENTS.
2. LOCATE SO AS NOT TO CREATE AN INTERSECTION SITE DISTANCE OBSTRUCTION.



CITY OF WINLOCK
DEPARTMENT OF PUBLIC WORKS

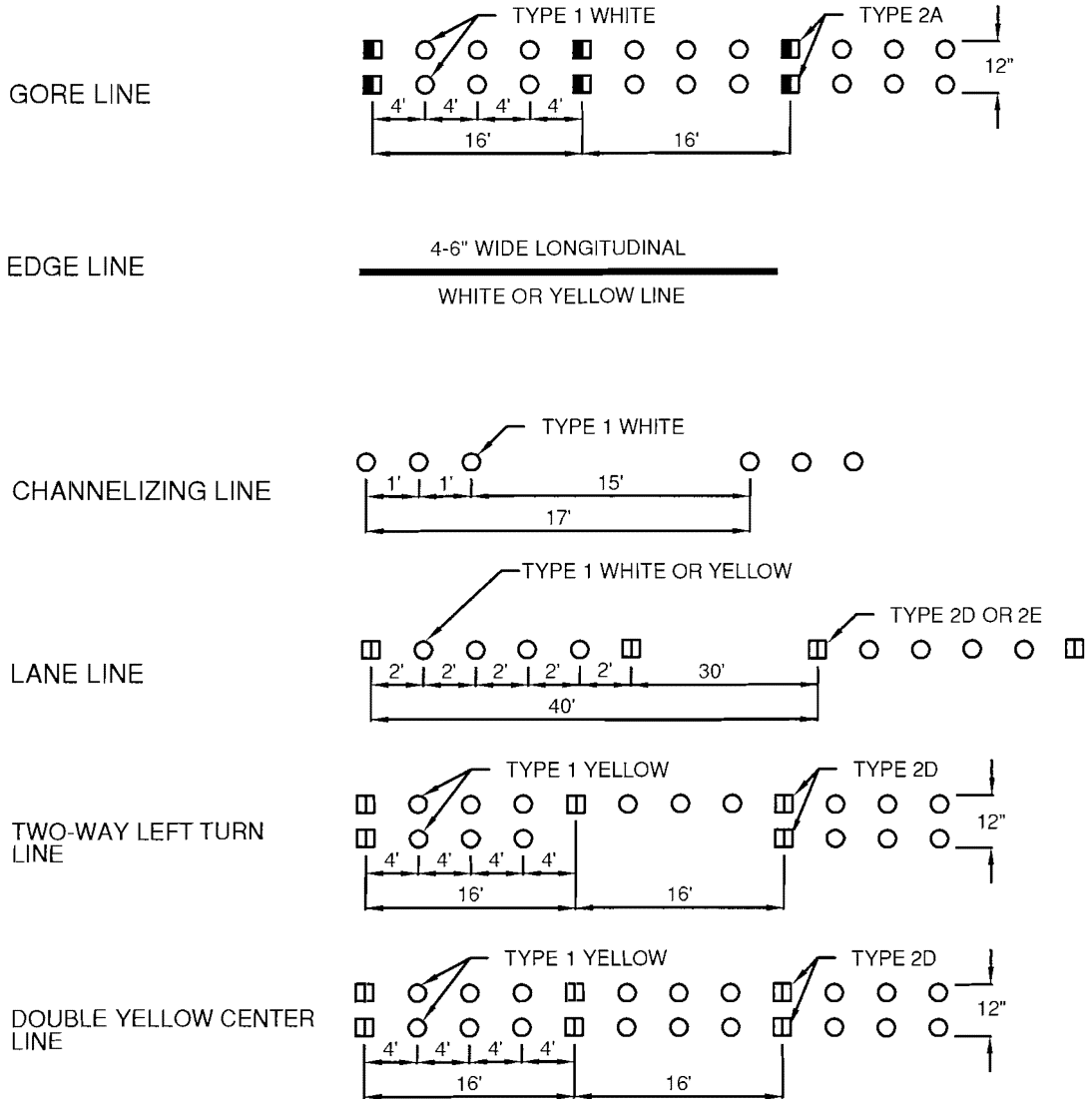
STREET DETAILS
MAIL BOX CLUSTER

REVISED
08/20/2007

DRAWING NO.
2-16

T:\CustomDetails\City of Winlock\Details\Street\1-21.dwg, 2-16.mbg, 8/22/2007 9:22:35 AM, DFrye, DWf6 ePlot.pct3, Gibbs & Olson - Report A Size (6.50 x 11.00 inches), 1.1, Gibbs & Olson, Inc.

PAVEMENT MARKING DETAILS



LANE MARKERS

- TYPE 1 LANE MARKERS, WHITE OR YELLOW
- TYPE 2A REFLECTIVE LANE MARKER, WHITE AND RED
- TYPE 2D REFLECTIVE LANE MARKER, YELLOW AND YELLOW
- ▣ TYPE 2E REFLECTIVE LANE MARKER, WHITE-ONE SIDE ONLY

NOTE: ALL PAVEMENT LINE MARKINGS SHALL BE "DURASTRIPE", OR APPROVED EQUAL.

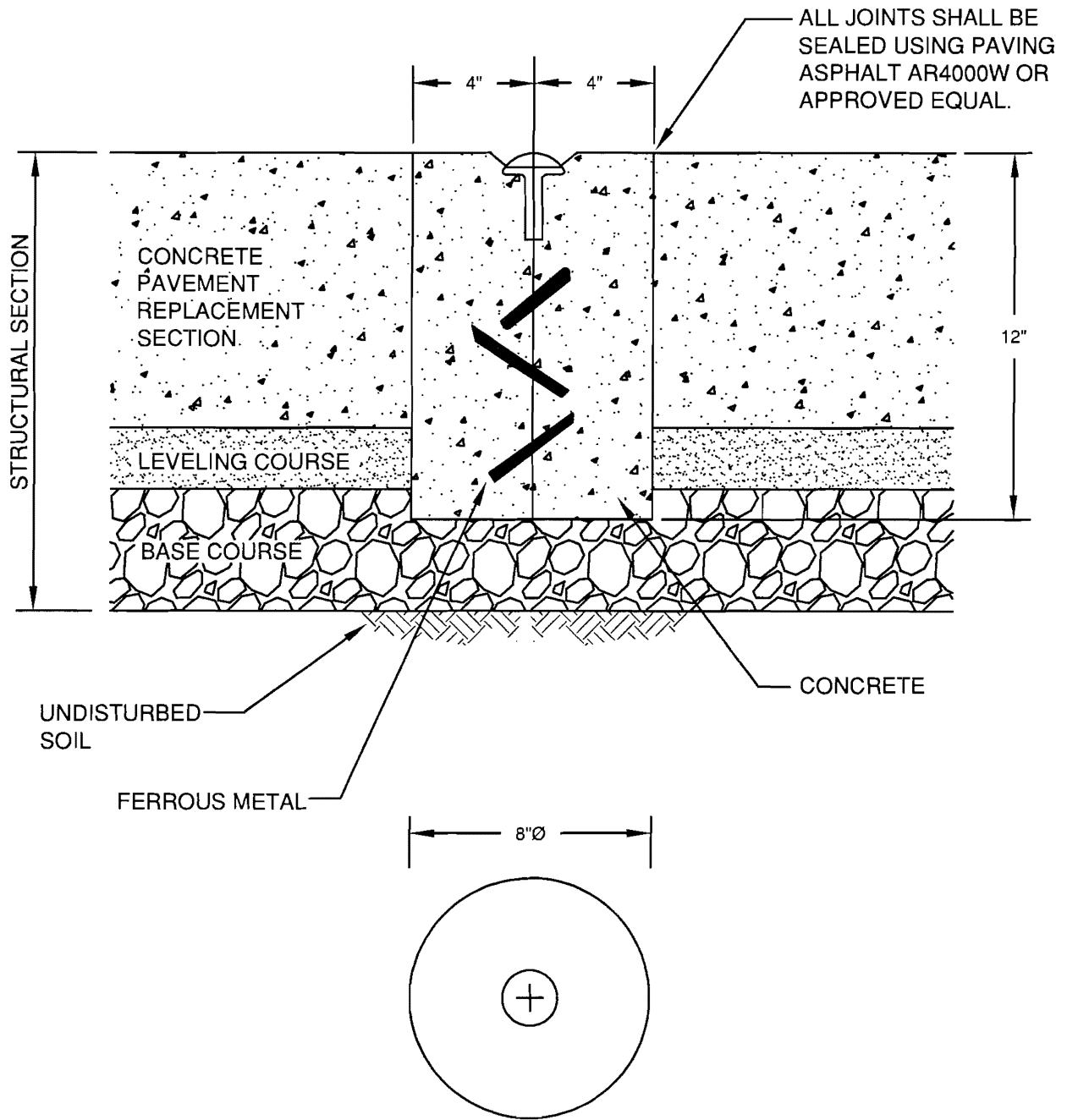


CITY OF WINLOCK
DEPARTMENT OF PUBLIC WORKS

STREET DETAILS
STRIPING DETAIL

REVISED
08/20/2007

DRAWING
NO.
2-17



NOTES:

1. CAP SHALL BE A 2" BRASS PLUG MARKER (FLAT OR DOMED).
2. CONCRETE TO BE PLACED ON A FIRM AND UNYIELDING FOUNDATION.

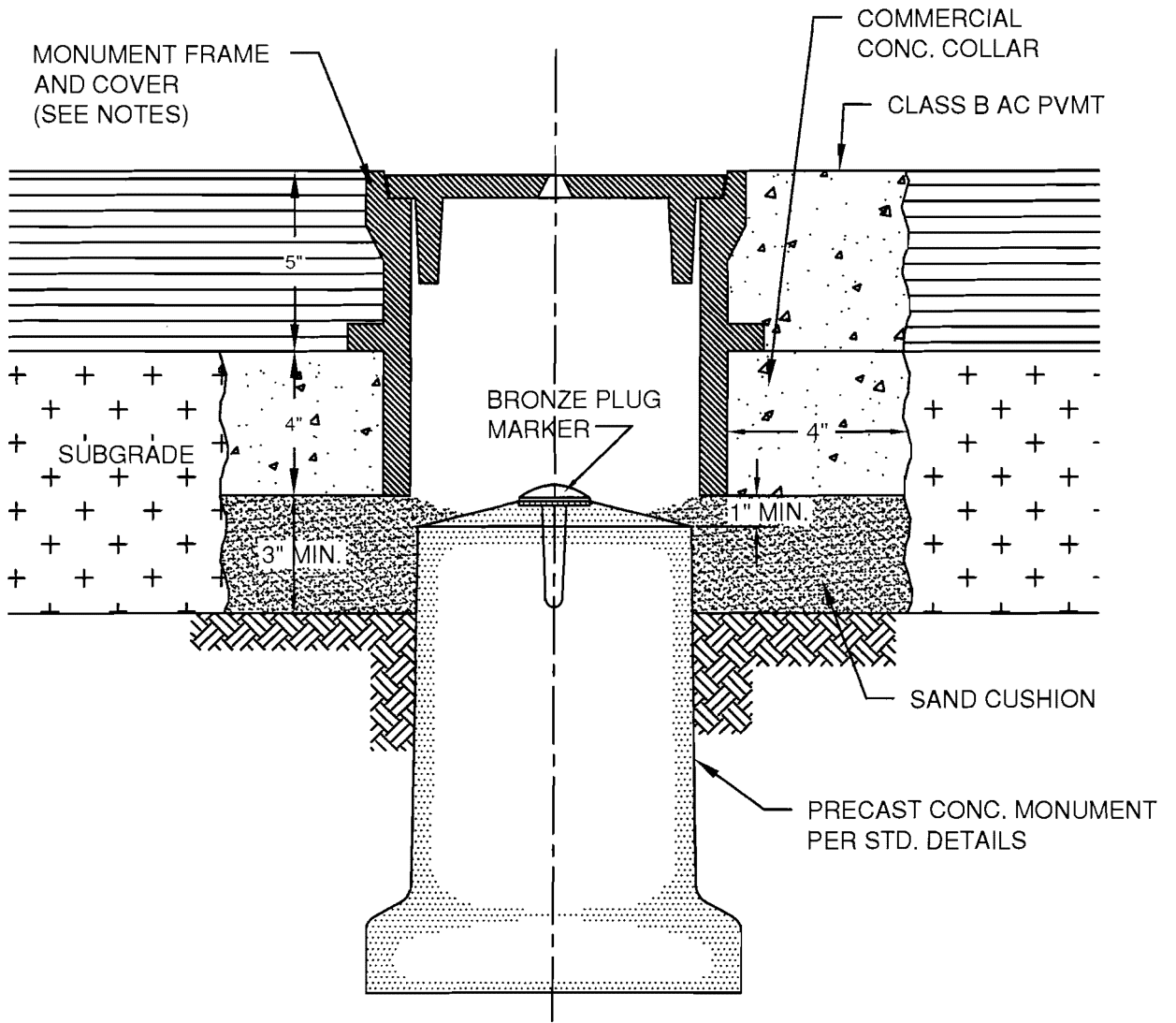


CITY OF WINLOCK
DEPARTMENT OF PUBLIC WORKS

STREET DETAILS
SURFACE MONUMENT /
MONUMENT
REPLACEMENT DETAIL

REVISED
08/20/2007

DRAWING
NO.
2-18



NOTES:

1. OLYMPIC FOUNDARY MODEL 1030 SHOWN.
2. USE OLYMPIC FOUNDARY MODEL 1010 FOR OTHER STREETS UNLESS OTHERWISE DIRECTED.



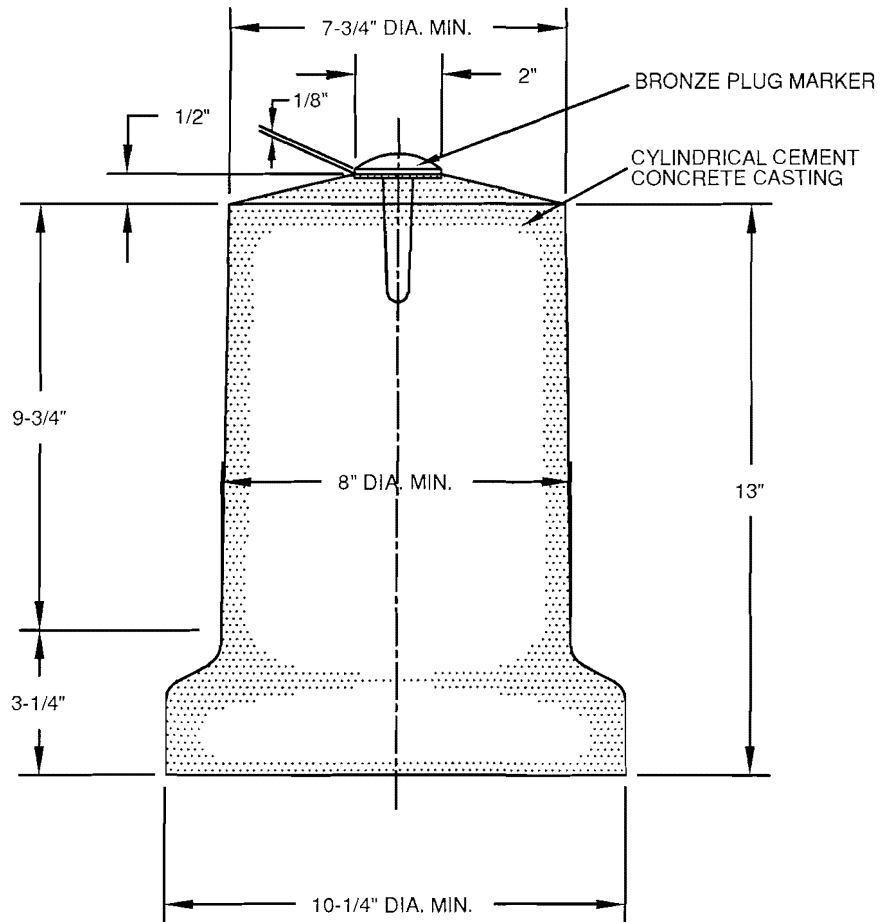
CITY OF WINLOCK
DEPARTMENT OF PUBLIC WORKS

STREET DETAILS
MONUMENT CASE
INSTALLATION

REVISED
08/20/2007

DRAWING
NO.
2-19

T:\Custom\Details\City of Winlock\Details-Street-1-21.dwg, 2-20-premon, 8/22/2007 9:22:40 AM, D\Frye, DWG's ePlot.pc3, Gibbs & Olson - Report A Size (8.50 x 11.00 Inches), 1:1, Gibbs & Olson, Inc



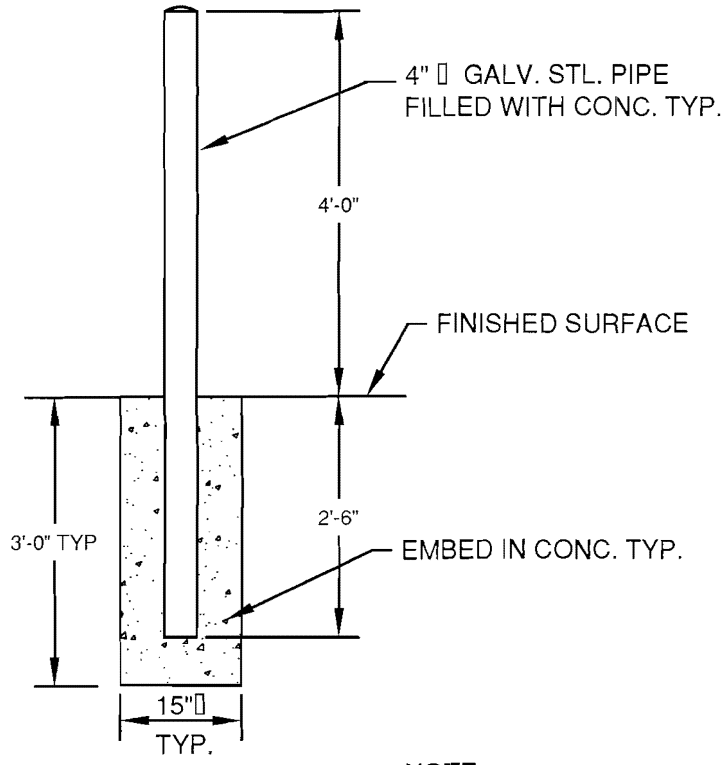
GENERAL NOTES:

- 1. MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF CONCRETE CASTING AT 28 DAYS - 3000#.
- 2. MAXIMUM AGGREGATE SIZE TO BE 1".



CITY OF WINLOCK DEPARTMENT OF PUBLIC WORKS	STREET DETAILS PRECAST CONCRETE MONUMENT	REVISED 08/20/2007	DRAWING NO. 2-20
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T:\CustomDetails\City of Winlock\Details-Street-1-21.dwg, 2-21-Bollard, 8/22/2007 9:22:42 AM, DFrye, DWFi's ePlot.pc3, Gibbs & Olson - Report, A Size (8.50 x 11.00 inches), 1:1, Gibbs & Olson, inc.



NOTE:
APPLY SAFETY YELLOW COATING
PER SPECIFICATIONS



CITY OF WINLOCK DEPARTMENT OF PUBLIC WORKS	STREET DETAILS BOLLARD DETAIL	REVISED 08/20/2007	DRAWING NO. 2-21
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**CHAPTER 3
STORM DRAINAGE AND EROSION CONTROL**

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3A.02 Definitions..... 3

3A.03 General Design Criteria..... 3

3A.04 Conveyance 4

3A.05 Catchbasins 5

3A.06 Staking 5

3A.07 Construction 6

3B EROSION CONTROL..... 6

3B.01 General Design Criteria..... 6

3B.02 Best Management Practices..... 6

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- 3-1 Catchbasin with Silt Trap Tee**
- 3-2 Stabilized Construction Entrance**
- 3-3 Driveway Culvert**
- 3-4 Temporary Silt Fence**
- 3-5 Filter Fabric Catchbasin Protection**
- 3-6 Temporary Strawbale Check Dam**
- 3-7 Temporary “V” Ditch**
- 3-8 Gravel Cone with Riser**

STORM DRAINAGE AND EROSION CONTROL

3A STORMWATER MANAGEMENT

3A.01 General

- A. The criteria established by this chapter are intended to represent the minimum criteria for the design and construction of storm drainage facilities.

3A.02 Definitions

- A. **Impervious Surface** – Any surface that cannot be effectively and easily penetrated by water.

3A.03 General Design Criteria

- A. The "City of Winlock Stormwater Management Plan" and the most recent version of the "Stormwater Management Manual for the Puget Sound Basin" documents are considered a part of this chapter, except as supplemented herein. The Stormwater Management Plan sets forth the minimum drainage and erosion control requirements as supplemented herein.
- B. The specific design details of storm drainage and/or retention/detention systems will depend on their type and local site conditions. Properties shall not be developed in such a way as to discharge stormwater onto adjacent lots.
- C. Stormwater conveyance and detention systems shall be designed in accordance with the following design criteria:

Hydrologic Model

Conveyance Design

<50 acres
>50 <200 acres
>200 acres

Rational Method
SCS-based Hydrograph Method
Continuous Simulation Method

Detention Design

<50 acres
>50 acres

SCS Unit Hydrograph Method
with Level Pool Routing
Continuous Simulation Method

Design Storm Frequency

Conveyance	Capacity to handle: Pipes - 25-year storm event Ditches – 50-year storm event
Detention	Prevent peak flow increase: 2-year storm event 25-year storm event 100-year storm event
Water Quality	Capture and treat: 50% of 2-year storm event

Design Storm Duration/Distribution

Hydrograph Method	24-hour duration
SCS Unit Hydrograph Method	24-hour durations SCS Type 1A distribution
Rational Method	Time of concentration Constant rainfall intensity

3A.04 Conveyance

- A. Pipe. Storm drainpipe within a public right-of-way or easement shall be sized to carry the maximum anticipated runoff from the contributing area. The calculations of anticipated runoff and pipe sizing shall be developed by a professional engineer licensed in the State of Washington. The Developer shall provide the calculations and all associated information to the City of Winlock.
- B. The minimum pipe size shall be twelve (12) inch diameter, The City may require the installation of a larger main if it is determined that a larger size is needed to serve adjacent areas or for future service. The installation of a larger main may allow the Developer to seek partial reimbursement through a Latecomers Agreement. (see Chapter 1 for details)
- C. All pipe used for storm mains shall comply with one of the following types:
 1. High-density polyethylene smooth interior pipe conforming to AASHTO M252 types or AASHTO M294 type S, with a gasketed bell and spigot joints.

2. Where required or as directed by the City to meet specific site constraints, ductile iron pipe conforming to the requirements of AWWA C 151, thickness class 50 or greater or reinforced concrete pipe conforming to the requirements of AASHTO M 170.

3. Aluminized steel helical or spiral rib pipe in diameters of thirty (30) inches or greater, with a Manning's value of 0.020 or less.

D. Channels: Open vegetated channels may be utilized for stormwater conveyance when deemed appropriate by the City. Open channels located in a public right-of-way shall be sized to carry the maximum anticipated runoff from the contributing area without exceeding the confines of the channel. In addition, when the end of the "new" conveyance system is within twenty (20) feet of another piped drainage system, the "new" system shall be extended through the open portion to complete the closed system. Extensions to complete closed drainage systems will only be required along the property where the "new" system originates, unless deemed necessary by the City.

E. When the flow of an open channel is interrupted by the construction of a driveway, the entire channel across the property shall be enclosed with a piped system, unless deemed impractical by the City. However, the culvert under the driveway must be installed to accommodate closure of the ditch in the future. The channel enclosure may necessitate the inclusion of manholes and/or catchbasins. (For Manholes please refer to Chapter 5 Standard Details).

3A.05 Catchbasins

A. Maximum catchbasin spacing shall be 300-feet on all street classifications. No surface water shall cross any roadway to private property. Additional manholes and/or catchbasins may be required by the City to accommodate the maintenance needs of the storm system.

3A.06 Staking

A. All surveying and staking shall be performed by an engineer or surveyor licensed by the State of Washington and capable of performing such work. Staking shall be maintained throughout the construction operation.

B. A pre-construction meeting shall be held with the City prior to commencing staking.

C. The minimum staking of storm sewer systems shall be as follows:

1. Stake centerline alignment every twenty-five (25) feet with cuts and/or fills to bottom of trench.

2. Stake location of all catchbasins/manholes and other fixtures for grade and alignment.
3. Stake location, size and depth of retention/detention facility.
4. Stake finished grade of catchbasin/manhole rim elevation and invert elevations of all pipes in catchbasins, manholes, and those that daylight.

3A.07 Construction

- A. Storm drain construction shall be in accordance with the Standard Specifications. See Chapter 2 of these guidelines for requirements regarding street patching and trench restoration.

3B EROSION CONTROL

3B.01 General Design Criteria

- A. Design of erosion control and erosion control plans are required under the following conditions:
 1. Proposed land disturbance activities that could cause sediment runoff beyond the project limits.
 2. A *Clearing, Filling or Grading Permit* is required.
 3. The proposed project could possibly impact a nearby stream, wetland, or body of water.
 4. When deemed necessary by another permitting authority.
- B. Site work shall not commence until all erosion control measures have been set in place in accordance with the approved erosion control plans.
- C. The Contractor/applicant must ensure that all erosion control measures are properly maintained in accordance with standard industry procedures.

3B.02 Best Management Practices

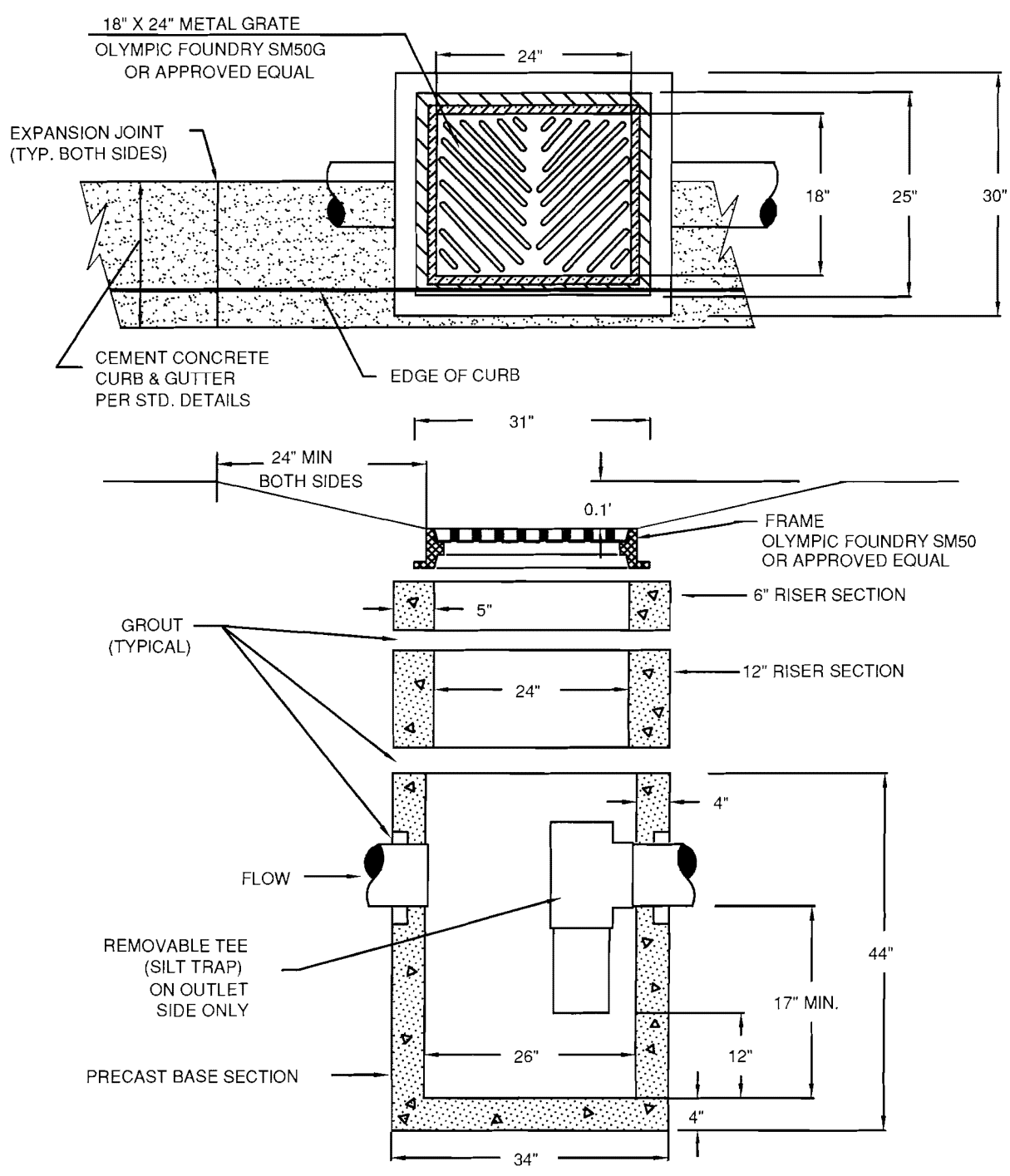
- A. Erosion control shall include the following as applicable to address specific project conditions:
 1. **Sedimentation Ponds.** Sedimentation ponds are utilized to collect runoff generated on a construction site, thereby allowing sediment to be captured before the runoff leaves the site.

- a. Sedimentation pond design shall include the following considerations:
 - i. computation of the sediment storage volume
 - ii. computation of the settling volume
 - iii. computation of the pond surface area -
(surface area, in sf = 1,250 x 1-yr, 24 hour storm rate, in cfs)
 - b. Minimum pond dimensions are as follows:
 - i. 2-foot depth for settling
 - ii. 3-foot depth for sediment storage
 - iii. 3:1 side slope
 - c. The Contractor shall inspect sedimentation ponds immediately after each rain event to ensure the integrity of the facility. The Contractor shall also remove the majority of the sediment collected in the ponds whenever the storage volume is exceeded or the settling volume is infringed upon. In addition, prior to the final completion of the project, ponds shall be cleaned out in their entirety.
 - d. The length/width ratio of the pond shall be as large as possible. A 5:1 ratio is the preferred minimum, but exceptions may be granted when deemed appropriate by the City. The pond shall be divided into a series of at least two (2) separate chambers. Perforated pipe risers shall be used to convey water between the chambers and at the outlet.
2. Interceptor Channels. Interceptor channels are used to capture runoff generated on a construction site before it can leave the project limits. The channel is often used in combination with a sedimentation pond. The channel is typically grass lined and runs along the perimeter of the site. The grass must be established prior to the start of construction. Therefore, sod is often used to establish the vegetated surface of the channel. Upon completion of the project, the sod can be removed and re-used if the ditch is filled in and restored with a suitable and stable cover material.
 3. Sediment Barriers. Sediment barriers are filtering devices that are run along the perimeter of a site to capture sediment while allowing runoff water to continue along its natural path. Silt fencing and hay bales are common examples of sediment barriers. Regular removal of sediment is required to ensure that the barriers function properly. In addition, the structural integrity of the barriers must be maintained at all times. Barriers shall be installed, inspected and repaired, in accordance with the details and requirements included in these guidelines.
 4. Stabilized Construction Entrance. A stabilized construction entrance is a rocked access point to a construction site. The entrance reduces material carried from the site onto the public right-of-way. Construction entrances must be cleared of mud and debris regularly to ensure that materials are not being tracked from the

construction site, onto the right-of-way and beyond. The Contractor is responsible for all required maintenance of entrances.

5. Detention/Retention Facilities. No retention/detention facility shall be located in an area that is used to satisfy an open space requirement unless it enhances a recreational amenity. Use of designated open space areas for stormwater detention/retention and infiltration must satisfy all conditions of the City of Winlock for usability, landscape conformity and ease of access. The City will make the final determination whether or not the proposed stormwater facilities are compatible with and satisfy the intent of an open space.
6. The primary purpose of a consolidated open space is to provide usable area for recreation activities, buffer zones, and green belt areas, and must be designed for this intent. Any use of this area for stormwater detention/retention must clearly be subordinate to and not detract from open space uses. The usable open space shall be predominantly flat, and in no case, exceed 4:1 where drainage facilities are present. A minimum of 50 percent of the linear slope length shall not exceed 7:1.
7. The City will review the use of commercial parking lots for stormwater detention on a case-by-case basis. The detention area shall be situated away from areas of pedestrian movement. The maximum depth of water in parking lot storage shall be limited to twelve (12) inches.

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NOTES:

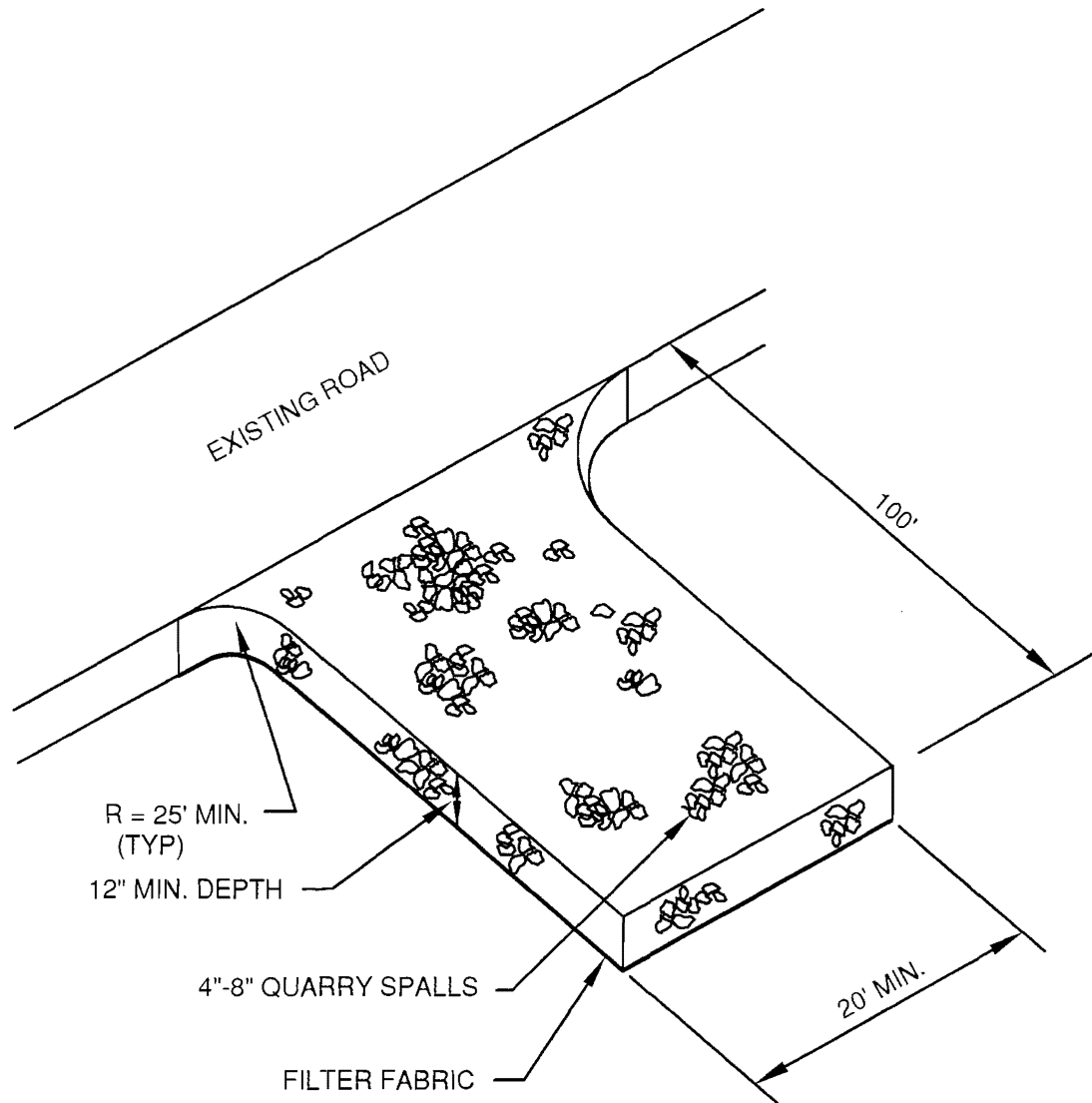
1. CATCH BASIN SHALL BE CONSTRUCTED IN ACCORDANCE WITH SPECIFICATIONS IN WSDOT STANDARD PLAN B-5.20-00.
2. OLYMPIC FOUNDRY GRATES SM50VG OR SM50S (OR APPROVED EQUAL), MAY BE REQUIRED WHEN CONDITIONS WARRANT, AS OTHERWISE DETERMINED BY THE CITY.

DRAWING NOT TO SCALE



CITY OF WINLOCK DEPARTMENT OF PUBLIC WORKS	EROSION CONTROL DETAILS CATCH BASIN WITH SILT TRAP TEE	REVISED 08/20/2007	DRAWING NO. 3-1
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DRAWING NOT TO SCALE

CITY OF WINLOCK
DEPARTMENT OF PUBLIC WORKS

EROSION CONTROL DETAILS
STABILIZED CONSTRUCTION
ENTRANCE

REVISED
08/20/2007

DRAWING
NO.
3-2

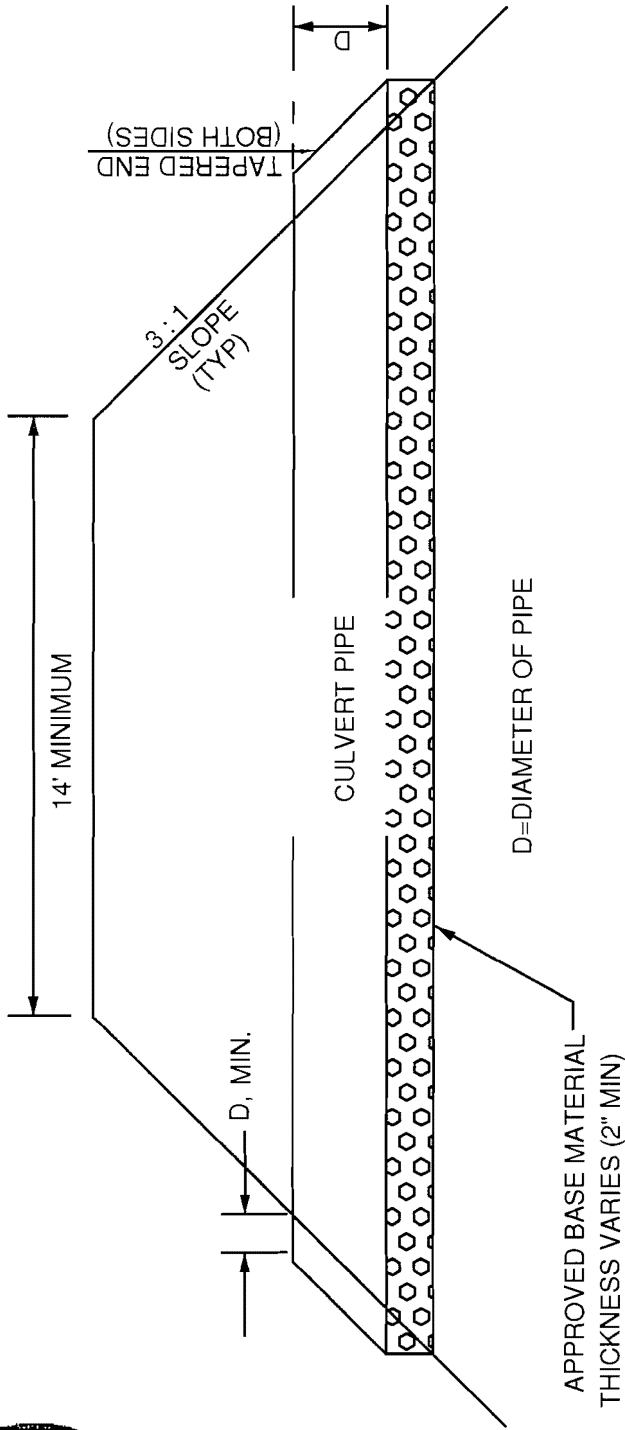


CITY OF WINLOCK
DEPARTMENT OF PUBLIC WORKS

EROSION CONTROL DETAILS
DRIVEWAY CULVERT

REVISED
08/20/2007

DRAWING
NO.
3-3



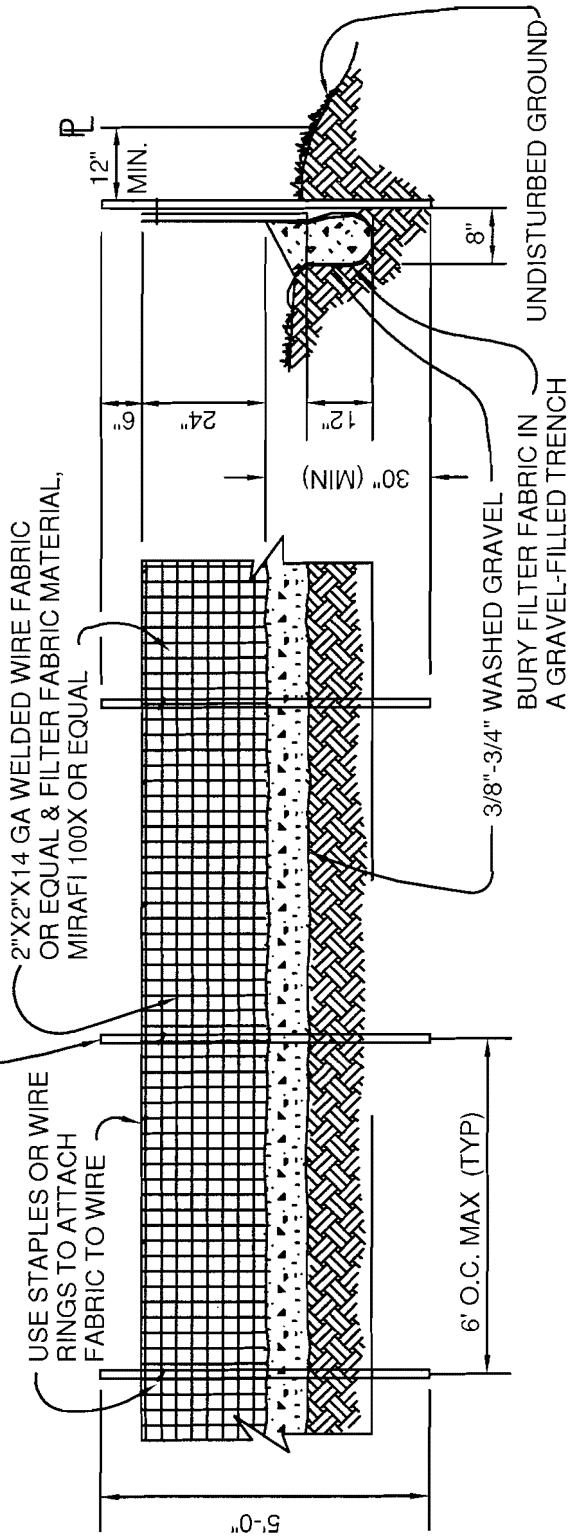
ACCEPTABLE TYPES OF CULVERT PIPES ARE: SMOOTH WALL ADS
PVC
CONCRETE PIPE

NOTES:

1. IF CULVERT IS BEING CONNECTED TO AN EXISTING CLOSED CONVEYANCE SYSTEM, CULVERT MATERIAL & METHOD OF CONNECTION MUST BE APPROVED BY THE PUBLIC WORKS DEPARTMENT.
2. SEE SECTION 3A.03 FOR INFORMATION REGARDING PIPE TYPE AND SIZING.
3. IF CONDITIONS WARRANT, ARMORING OF CULVERT ENDS WITH RIP RAP MAY BE REQUIRED BY CITY TO MAINTAIN SLOPE STABILITY.



2" X 2" WOOD POSTS (UNTREATED),
STEEL FENCE POSTS, OR APPROVED EQUAL.



NOTES:

1. FILTER FABRIC SHALL BE PURCHASED IN A CONTINUOUS ROLL CUT TO THE LENGTH OF THE BARRIER TO AVOID USE OF JOINTS. WHEN JOINTS ARE NECESSARY, FILTER CLOTH SHALL BE SPLICED TOGETHER ONLY AT A SUPPORT POST, WITH MINIMUM 6-INCH OVERLAP, AND SECURELY FASTENED @ BOTH ENDS.
2. A WIRE MESH SUPPORT FENCE SHALL BE FASTENED SECURELY TO THE UPSLOPE SIDE OF THE POSTS USING HEAVY-DUTY WIRE STAPLES AT LEAST 1-INCH LONG, TIE WIRES, OR HOG RINGS. THE WIRE WILL EXTEND INTO THE TRENCH A MINIMUM OF 4 INCHES & SHALL NOT EXTEND MORE THAN 24 INCHES ABOVE THE ORIGINAL GROUND SURFACE.
3. WHEN EXTRA-STRENGTH FILTER FABRIC & 4-FOOT MAXIMUM POST SPACING IS USED, THE WIRE MESH FENCE MAY BE ELIMINATED. IN SUCH CASES, THE FILTER FABRIC WILL BE STAPLED OR WIRED DIRECTLY TO THE POSTS W/ ALL OTHER PROVISIONS STILL APPLYING.
4. SILT FENCE SHALL NOT BE MOVED BEFORE THE UPSLOPE AREA HAS BEEN PERMANENTLY STABILIZED.
5. SILT FENCING SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL & AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY.

DRAWING NOT TO SCALE

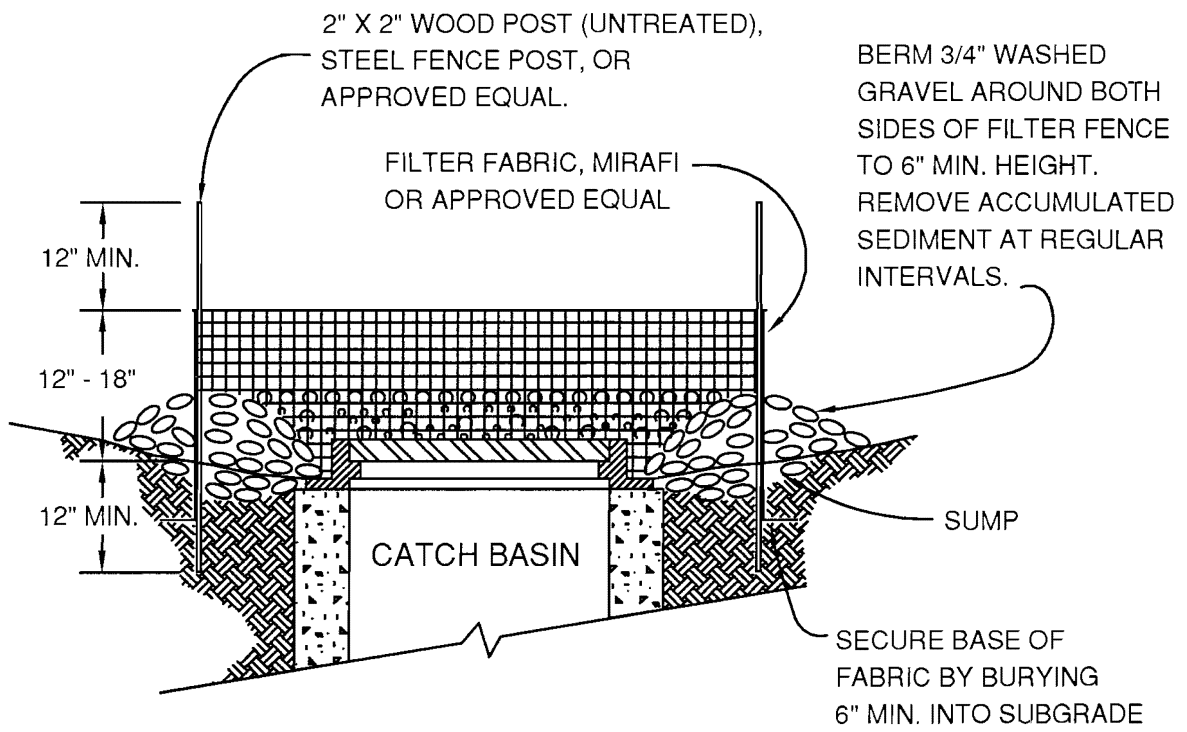
CITY OF WINLOCK
DEPARTMENT OF PUBLIC WORKS

EROSION CONTROL DETAILS
TEMPORARY SILT FENCE

REVISED
08/20/2007

DRAWING
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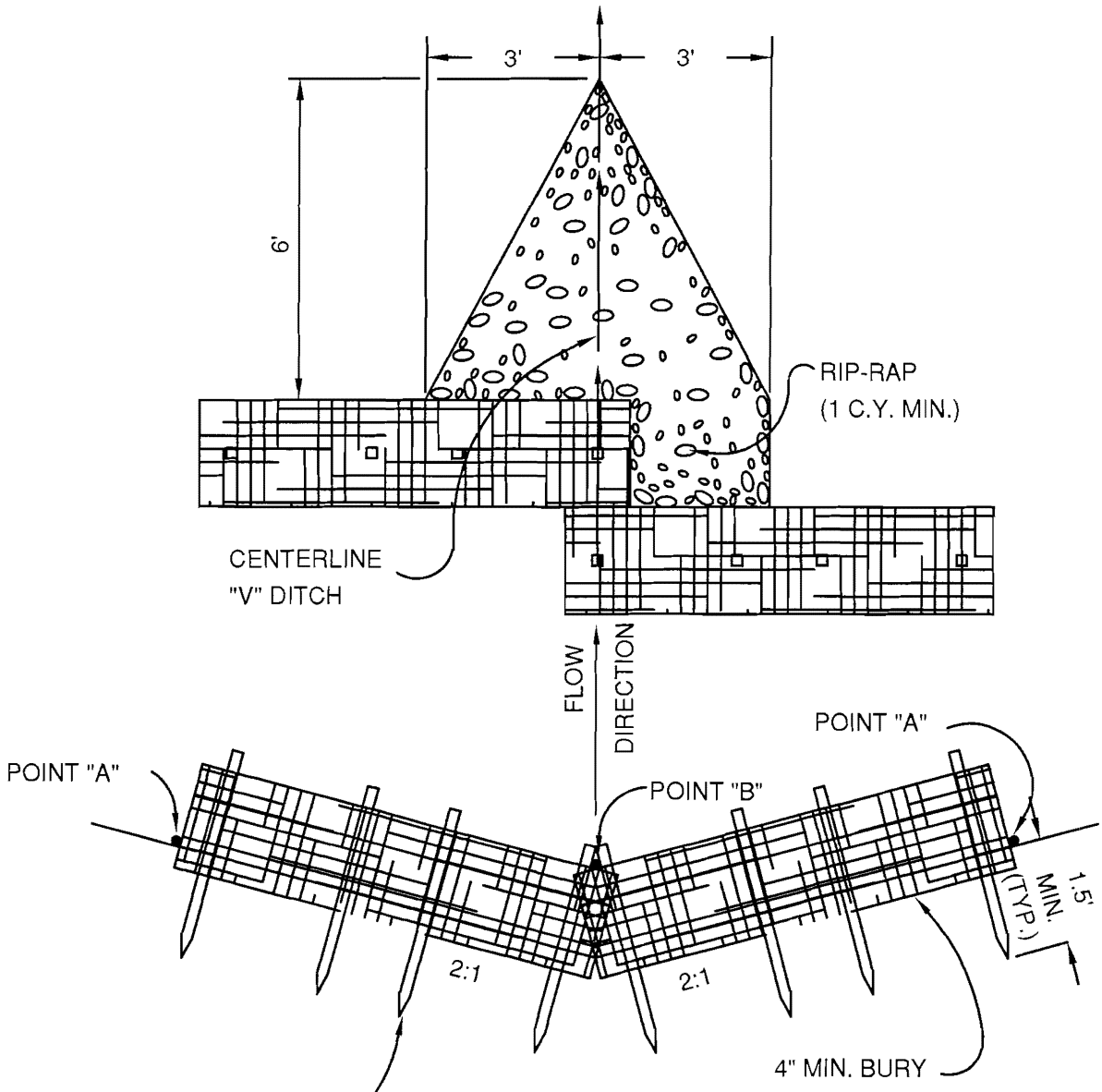
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DRAWING NOT TO SCALE

CITY OF WINLOCK DEPARTMENT OF PUBLIC WORKS	EROSION CONTROL DETAILS FILTER FABRIC CATCH BASIN PROTECTION	REVISED 08/20/2007	DRAWING NO. 3-5

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#4 REBAR OR 2" X 2"
WOOD STAKES

NOTE: POINTS "A"
MUST BE HIGHER
THAN POINT "B"



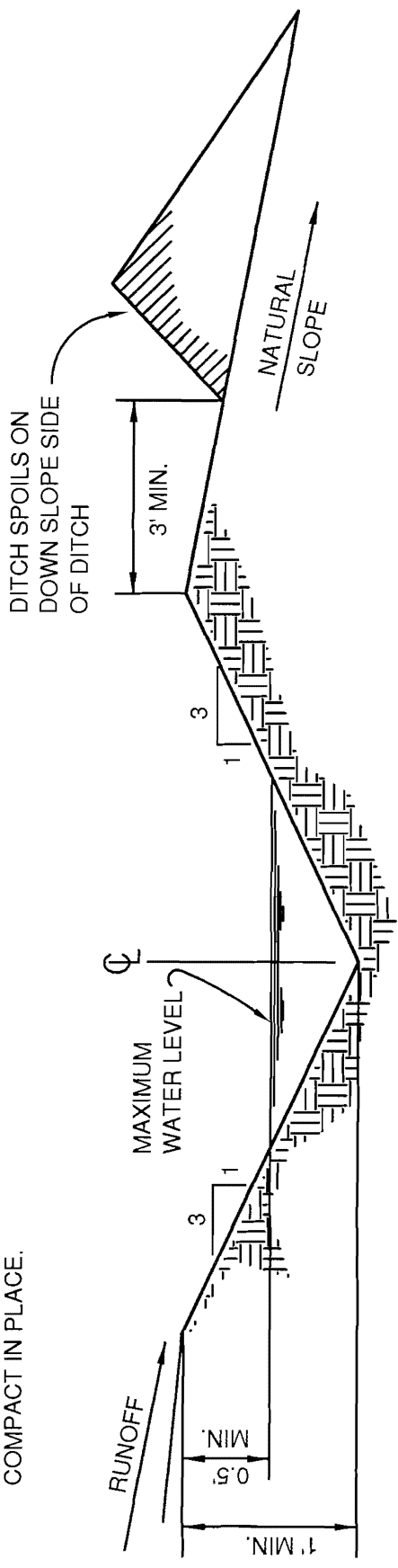
DRAWING NOT TO SCALE

<p>CITY OF WINLOCK DEPARTMENT OF PUBLIC WORKS</p>	<p>EROSION CONTROL DETAILS TEMPORARY STRAWBALE CHECK DAM</p>	<p>REVISED 08/20/2007</p>	<p>DRAWING NO. 3-6</p>
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PLACE V-DITCH EXCAVATION
SPOILS ON DOWNHILL SLOPE,
COMPACT IN PLACE.



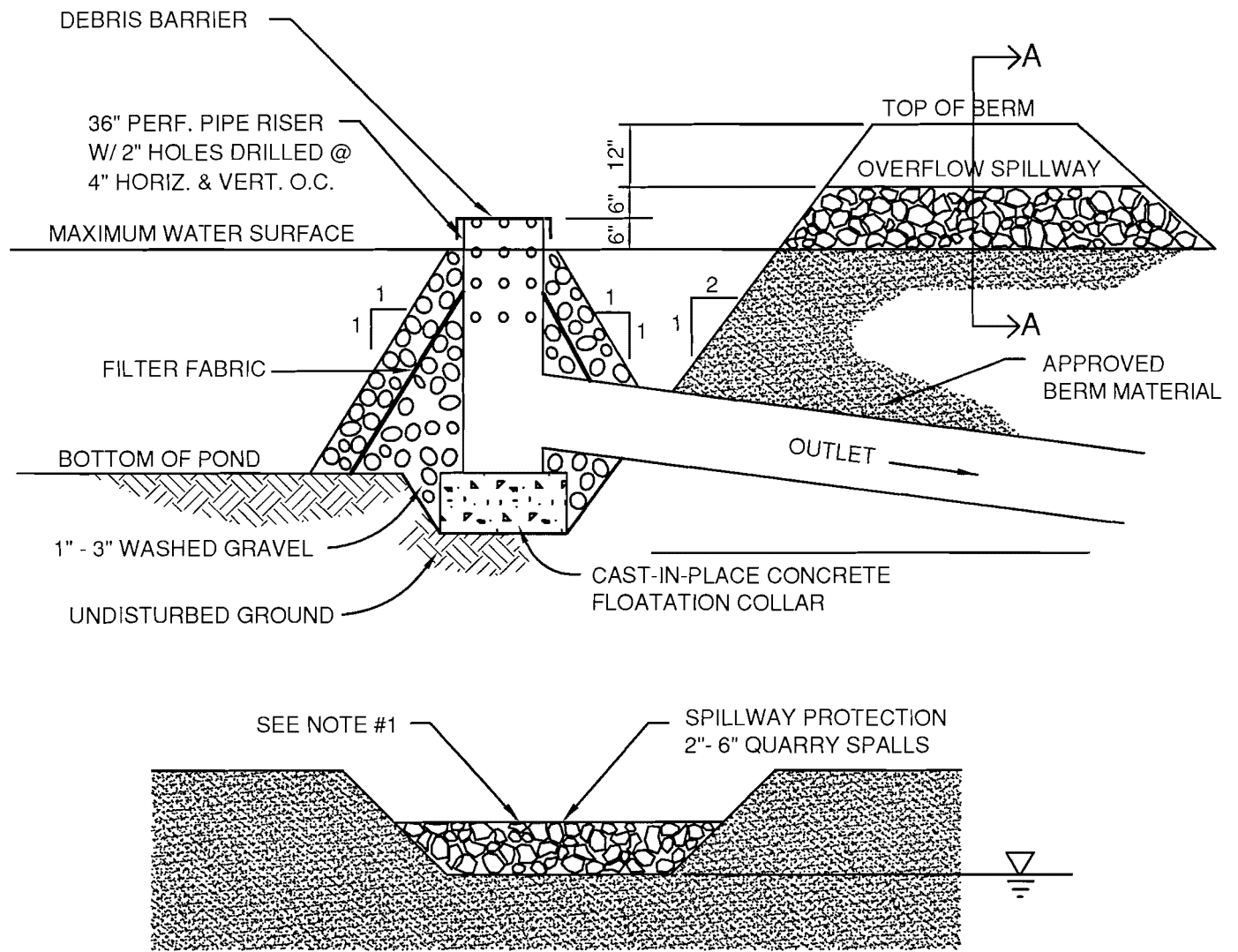
DRAWING NOT TO SCALE

CITY OF WINLOCK
DEPARTMENT OF PUBLIC WORKS

EROSION CONTROL DETAILS
TEMPORARY "V" DITCH

REVISED
08/20/2007

DRAWING
NO.
3-7



SECTION A-A

NOTES:

1. POND, OUTLET, & SPILLWAY DIMENSIONS TO BE DESIGNED BY AN ENGINEER LICENSED IN THE STATE OF WASHINGTON.
2. ALL DIMENSIONS SHOWN ON DETAIL ARE MINIMUMS.
3. OUTLET SIDE OF BERM TO BE ARMORED WITH QUARRY SPALLS FOR WIDTH OF SPILLWAY.



DRAWING NOT TO SCALE

CITY OF WINLOCK DEPARTMENT OF PUBLIC WORKS	EROSION CONTROL DETAILS GRAVEL CONE WITH RISER	REVISED 08/20/2007	DRAWING NO. 3-8

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CHAPTER 4 WATER

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WATER

4.01 General

- A. The Water System Criteria and Specifications are minimum base level performance, design and construction standards used to maintain uniformity of design within the water utility.
- B. Any extension of the water system must be approved by the City and conform to these guidelines, Department of Health regulations and guidelines, the City of Winlock Water System Plan, and Lewis County Fire District No. 15 requirements to the extent not inconsistent with City criteria.
- C. Proposed plans must show how water shall be supplied and the applicant shall demonstrate whether adequate water pressure and volume shall be maintained in case of fire. An analysis of the system may be required, at the Applicant's cost, if it appears that the system might be inadequate.
- D. Anyone desiring to extend or connect to the City water system must contact the City for a Pre-construction Application form. After the completed application is returned to the City, along with any other information that may be required or requested, staff shall determine the conditions of service for connection to the water system.
- E. Extension of or connection to City water lines outside of the Winlock Urban Growth Area (UGA) may be limited under the provisions of the Lewis County Comprehensive Plan. The City shall not allow service outside of the UGA without written permission from the County.

4.02 Design Criteria

- A. The design of any water extension/connection shall conform to these guidelines and all other applicable standards. The layout of extensions shall provide for continuation and/or looping of the existing system. The City has the authority to apply or necessitate items not covered or mentioned in this chapter. .
- B. All pipe, valves, meters, hydrants, fitting and special materials shall be new undamaged and designated for use in potable water systems. All labor, equipment and materials shall be in conformance with the Standard Specifications for Road, Bridge and Municipal Construction, WSDOT and APWA, and the specification of the American Water Works Association, except as modified herein. Materials or additives must be in compliance with NSF Standards 60 and 61 as required in WAC 246-290-220.
- C. Watermains shall be sized to provide adequate Peak Hour Demand (PHD) at a minimum residual pressure of 30 psi and Maximum Day Demand (MDD) plus fire

flows at a minimum residual pressure of at least 20 psi. Specific fire flow requirements shall be determined by the City for each development application. However, the quantity of water required shall in no case be less than 500 gpm at 20psi residual pressure for 30 minutes in residential areas; 750 gpm at 20psi residual pressure for 60 minutes multi-family residential and commercial areas; or 1,000gpm at 20psi residual pressure for 60 minutes in industrial areas.

- D. The minimum watermain size shall be six (6) inches in diameter where looped. Dead-end mains shall be a minimum of eight (8) inches in diameter. All mains that may be extended or looped must end with an approved mechanical joint gate valve and 3-foot pipe extension, cap and thrust blocking.
- E. Larger sized mains may be required in specific areas identified in the Winlock Water System Plan. The City may also require the installation of larger mains if determined necessary to meet fire protection needs, domestic requirements and/or for future service needs.

4.03 Pipe, Valves and Fittings

- A. Pipe. All pipe for watermains shall have flexible gasketed joints and shall be PVC or Ductile Iron in accordance with the following specifications:
 - 1. Ductile Iron Pipe: Ductile Iron Pipe shall conform to AWWA C 151 Class 50 or greater if required in accordance with the criteria specified in AWWA C150. Ductile iron pipe shall be cement mortar lined with a bituminous seal coat outside in accordance with AWWA C 104. All pipes shall be joined using rubber gaskets, push-on type or mechanical joint, conforming to AWWA C 111, and be furnished in 18- to 20-foot lengths unless design conditions dictate otherwise.
 - 2. Polyvinyl Chloride (PVC): Six inch and larger PVC pipe shall be AWWA C900, minimum pressure Class 150. All pipe shall be furnished in 18- to 20-foot lengths unless design conditions dictate otherwise and assembled with a non-toxic lubricant.
- B. Fittings. All fittings shall be ductile iron compact fittings conforming to AWWA C153 or, AWWA C110 or C111. All fittings shall be cement mortar lined conforming to AWWA C104. All fittings shall be connected by flanges or mechanical joints. Restraining glands shall be provided on all mechanical joints unless otherwise directed.
- C. Pipe Installation. Pipe installation shall be in accordance with the Standard Specifications, Standard Details and Standard Plans, except as modified herein.
 - 1. Pipe Cover. A minimum of thirty (36) inches of cover over the pipe and, to the extent practical, a maximum of forty-two (42) inches cover is required from the finished or exiting ground surface, whichever is greater, to the top of the pipe for

all installed transmission, distribution and service piping. The City may allow thirty (30) inches of cover where ductile iron piping is utilized.

2. Tracer Tape and Locate Wire. All pipes and services shall be installed with continuous tracer tape placed twelve to eighteen inches under the proposed finished subgrade. The tracer tape shall be of plastic non-biodegradable, metal core, or backing marked "WATER" that can be detected by a standard metal detector. In addition to tracer tape, toning wire shall be installed over all pipe and services. Toning wire shall be UL listed, type UF, 12-gauge solid coated (blue) copper wire, taped to the top of the pipe and laid loose enough to prevent stretching and damage before being brought up and tied off at the valve operating nut or valve box. If the operating nut is not easily accessible from the ground surface, the copper wire shall be tied off at the valve box in such a way that the wire is easily accessible from the ground surface. Two (2) feet of slack shall be provided to allow for connection to the locator. Toning wire shall be tested prior to acceptance of the pipe system. A written notice from the Contractor to the City must be received two (2) business days prior to when testing is required.

3. Connection to Existing Mains. The City shall be responsible for approving the scope of work for connection to existing watermains. The City shall be consulted regarding fittings or couplings required. It shall be the Contractor's responsibility to verify the location and depth of the existing main and the fittings required to make the connections to the existing main. All excavation, connections, piping, tapping valve fittings, services, anchors, blocking, bedding, backfill, compaction, restoration and other labor and materials required shall be furnished and placed by the Contractor. Tapping or connecting to an existing watermain shall be done in the presence of a City representative. The City shall be given five (5) business days advance notice of a watermain tap or connection to an existing main. Water mains shall not be shut down for taps under most conditions.

4.04 Service Interruption

- A. The Contractor shall notify the City five (5) business days prior to a utility shutdown. The City, at its discretion, may re-schedule shutdown and a City representative must be present at any utility shutdown. When shut downs require "field verification" of underground conditions, connection points will be exposed by the Contractor and work requirements shall be verified by the Contractor and the City two (2) business days prior to the shutdown notice. Customers involved with or affected by shutdowns will be notified by the Contractor at least forty-eight (48) hours in advance. Shutdowns will not be permitted on Fridays, weekends, or holidays without written authorization from the City.

- B. Shutdowns cannot be scheduled until a Water/Sewer/Stormwater Application has been approved and all applicable fees have been paid in full.

4.05 Hydrants

- A. Fire hydrants shall be installed in accordance with the Standard Specifications and the Standard Details.
1. The center of the lowest outlet of the hydrant shall be no less than 18-inches above finished grade. In addition, all hydrants shall be installed with a minimum of a 36-inch unobstructed radius around the hydrant. Hydrants shall be aligned so that pumper ports face toward the road or most probable route of access, if roads are not available, as determined by the appropriate local fire protection authority.
 2. When necessary, the City shall require hydrants to be protected by two or more posts, 4-inch diameter x 5 feet high made of either reinforced concrete or steel.
 3. Public fire hydrants shall be located within publicly owned easements and rights-of-way.
- B. The City, in conjunction with Lewis County Fire District No. 15 shall determine the required hydrant spacing. All hydrants shall be installed and placed in a manner that provides accessibility to Police and Fire Services and their equipment as determined by both departments. Unless otherwise required by the City, the following guidelines shall apply for hydrant number and location:
1. In general, hydrants shall be predicated on the location of street intersections wherever possible, and located to minimize the hazard of damage by traffic.
 2. Hydrants shall have an average nominal spacing of 600-feet. In no case shall hydrants be placed farther than 700-feet apart and no building shall be more than 350-feet from the nearest hydrant.
 3. More stringent spacing may be required if needed to meet specific building or fire code requirements.
 4. The spacing distance for hydrants shall be measured along the frontage street(s) and/or accessible side street(s) only. When determining the sufficiency of existing hydrants related to hydrant placement and spacing, hydrants located behind or on parallel streets or alleys, or hydrants with flows less than the minimum fire flows listed in Section 4.03A shall not be considered.
 5. When any portion of a proposed building is in excess of 150 feet from a water supply on a public street or right-of-way, privately owned on-site hydrants shall be required. Such hydrants shall be located per Winlock Police, Lewis County Fire District No. 15 and the International Fire Code. The hydrants shall be privately maintained and shall include the appropriate metering and backflow

prevention, as noted in these guidelines. A proposed maintenance schedule shall be submitted to the City for review prior to final approval of the engineering plans.

4.06 Valves

- A. Valves shall be installed in the distribution system at sufficient intervals to facilitate system repair and maintenance, but in no case shall there be less than one (1) valve every 400 feet in school, commercial or multi-family areas, or 800 feet in residential areas, where customers are being served. Generally, there shall be three (3) valves on each tee and four (4) valves on each cross. Specific requirements for valve spacing shall be made at the plan review stage. All existing valves are to be operated by City employees only.
- B. Gate Valves. Gate valves shall be used on all 2- to 12-inch lines. Resilient seated gate valves shall be manufactured and tested in accordance with AWWA C509 or C515 specifications. They shall be equipped with mechanical joints or flanged ends of Class 125 in accordance with ANSI B16-1. Gate valves, 3-inch and larger, shall be iron body, bronze-mounted, double disc and "O"-ring stem seal. Gate valves smaller than 3-inches shall be 125 psi, non-stem rising, wedge disc, all brass or bronze valves with screwed, soldered or flanged ends compatible with the connecting pipe. All valves shall open counterclockwise and, unless otherwise specified, shall be non-rising stem type equipped with standard AWWA 2-inch stem operating nuts. Gate valves shall be Mueller, M & H, Kennedy, Clow R/W or Waterous Series 500.
- C. Butterfly Valves. Butterfly valves shall be used on all lines fourteen (14) inches and larger. Butterfly valves shall conform to AWWA C504, Class 150B, with cast iron short body and O-ring stem seals. When installed, they shall have a position indicator which clearly shows position of the disc. All valves shall be equipped with an underground manual operator with AWWA 2-inch square operating nut and shall open with a counterclockwise rotation. Butterfly valves shall be Mueller, Linseal III, Kennedy, or Allis Chalmers.
- D. Valve Boxes. All valve boxes shall be in accordance with Standard Details.

4.07 Casing

- A. Steel casing pipe shall be schedule 20 steel or equal. Pipe spacers shall have 8-inch runners. Casting pipe and spacers shall be sized for pipe being installed with a minimum of three (3) spacers per section of pipe. The casing pipe shall then be sand-packed and sealed with flexible end seal material secured with stainless pipe bands.

4.08 Combination Air Valve

- A. Combination air valves shall be in accordance with the Standard Details. Combination air valves shall be set at high points of water mains. Where possible, pipes are to be graded to prevent the need for a combination air valve.

4.09 Blowoff Assembly

- A. A blowoff assembly shall be installed on all permanent dead-end runs and at the designated points of low elevation within the distribution system if a fire hydrant is not located in the immediate vicinity. On watermains that may be extended in the future, the valve that operates the blowoff assembly shall be the same size as the main and provided with a saddle block along the last length of the pipe preceding the valve, in lieu of a thrust block at the end. The blowoff assembly shall be installed in the utility right-of-way.

4.10 Backflow Prevention

- A. All water system connections serving buildings or properties with fire sprinklers, irrigations systems or other potential cross-connections as determined by the City, shall comply with the minimum backflow prevention requirements established by the Department of Health (DOH) and the City of Winlock Cross-Connection Control Program.
- B. All assemblies must be installed in accordance with the most recent versions of the City of Winlock Cross-Connection Control Program, DOH, UPC, and the PNWS/AWWA Cross-Connection Control Manual. In addition, all assemblies must be inspected and approved by the City's Cross-Connection Specialist (CCS).
- C. In-premise installation of backflow assemblies can be installed only with written permission by the City's CCS or may be mandated along with premises isolation when high health hazards are determined to exist by the CCS. All backflow assemblies (premises or in-premises) must be readily accessible to City personnel during regular working hours of 8:00 a.m. to 4:30 p.m. If there is a change of ownership of an in-premise backflow assembly and/or at any time all requirements are not met, the City has the right to enforce premises isolation and shall follow the procedures established in the City of Winlock Cross-Connection Control Plan. The City must be notified within two (2) business days of the completion of a backflow assembly installation. Upon notification, the City's CCS shall then inspect the installation to determine compliance with all applicable requirements.
- D. All backflow assembly installations are also required to be tested by a Washington State DOH-certified Backflow Assembly Tester (BAT) with an annual certificate of accuracy for their testing equipment on file with the City. The test results must be delivered to the City showing the backflow assembly having successfully passed the certified test. The property owner must schedule a backflow test annually thereafter.

The City shall release or issue a Certificate of Occupancy only after all backflow assemblies have passed a certified test. A list of approved testers may be obtained from the Washington Environmental Training Resource Center (WETRC) located in Auburn, Washington.

- E. All costs associated with purchase, installation, inspections, testing, replacement, maintenance, parts and repairs of a backflow assembly are the responsibility of the property owner/user.
- F. Failure on the part of any customer to correct all cross-connections in accordance with these guidelines is sufficient cause for the immediate discontinuance of public water service to the premises.

4.11 Service Connection

- A. Each customer shall have a separate metered service. Master meters may be allowed for service to a complex under single ownership and where multiple service meters is impractical. Types of facilities where master meters may be allowed shall be in accordance with WAC 246-290-496.
- B. Services shall be installed in accordance with the Standard Details. All service connection sizes used for new development shall be determined by the City and installed by the Developer at the time of mainline construction. After the lines have been constructed, tested and approved, the owner may request a water meter. The City shall install a water meter only after all applicable fees paid and the system inspected and approved. For 1½” or larger meters, the meter and gasket shall be supplied by the Contractor. The City shall lock off the setter after the Contractor has installed the meter.
- C. For new service to an existing parcel or new parcel fronting an existing main, an application must be submitted to the City. Upon approval of the application and payment of all applicable fees, the property owner shall hire a licensed Contractor to tap the main, and install the meter, box, and setter. The City shall supply the water meter and setter.

4.12 Watermain/Sanitary Sewer Crossings

- A. Transmission and distribution water piping shall be separated at least ten (10) feet horizontally from on-site waste disposal piping, drainfields, and/or gravity sewage pipes and force mains. The Contractor shall maintain a minimum of eighteen (18) inches of vertical separation between sanitary sewers and watermain crossings - with the watermains being at the higher elevation.
- B. The longest standard length of water pipe shall be installed so that the joints shall fall equidistant from any sewer crossing. In cases where minimum separation cannot be maintained, it may be necessary to utilize watermain-rated pipe for the

- C. Additional guidelines to be considered for parallel and crossing installations of water and sewer lines are the DOH Water System Design Manual, DOE Sewage Works Criteria and the *"Recommended Standards for Water Works."* – Ten State Standards.

4.13 Irrigation

All irrigation systems shall be installed with a backflow prevention assembly in accordance with the City of Winlock Cross-connection Control Program. Irrigation sprinklers shall be situated so as to not wet any public street or sidewalk.

4.14 Staking

- A. All surveying and staking shall be performed by a surveying firm licensed in the State of Washington and capable of performing such work.
- B. The minimum staking of waterlines shall be as follows:
 - 1. Stake centerline alignment every one hundred (100) feet with cuts and/or fills to bottom of trench maintaining the minimum required depth of cover over pipe. Centerline cuts are not required when road grade is to finished subgrade elevation.
 - 2. Stake location of all fire hydrants, hydrant flange elevations, tees, water meters, setters and other fixtures with cut or fill to finished grade.

4.15 Construction Requirements

- A. Pipe placed in the trench shall be sealed with a watertight plug at the end of each day. More frequent use of a watertight plug may be required at the discretion of the City.
- B. Trenching and shoring operations shall be in conformance with Washington Industrial Safety and Health Administration (WISHA) and Office of Safety and Health Administration (OSHA) Safety Standards. The Contractor shall maintain the presence of a "competent person" as defined by the Washington State Department of Labor and Industries when any trench excavation and backfill work is being done at the project site.
- C. Backfilling shall not commence until the pipe installation has been inspected and approved by the City. Backfilling and surface restoration shall closely follow installation of pipe so that not more than 100 feet is left exposed during construction hours without approval of the City.

- D. Where governmental agencies other than the City have jurisdictions over roadways, the backfill and compaction shall be done to the satisfaction of the agency having jurisdiction, but in no case shall the backfilling or compaction be to a lower standard than that of the City.

4.16 Street Patching and Restoration

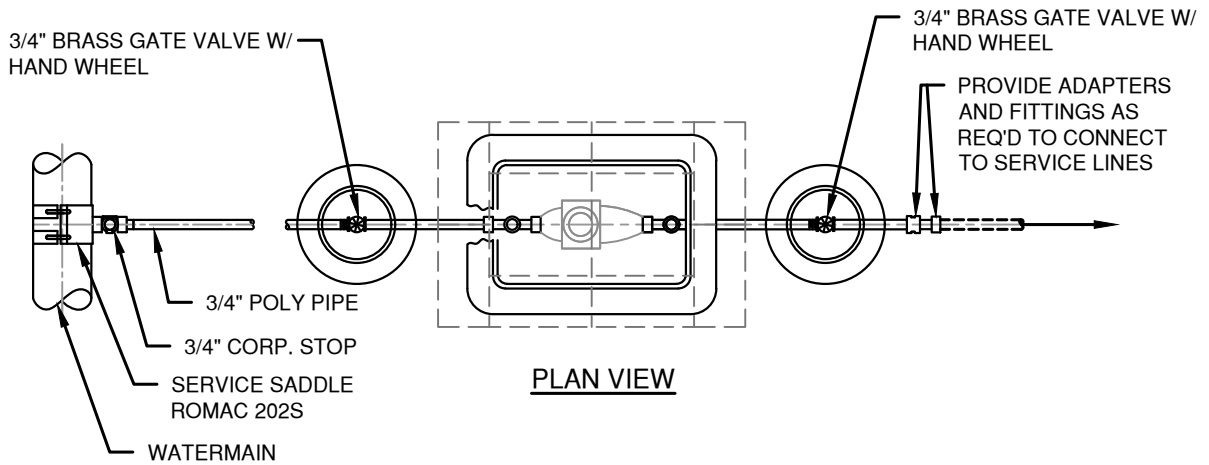
- A. See Chapter 2 of these guidelines for requirements regarding street patching and trench restoration.

4.17 Hydrostatic Tests

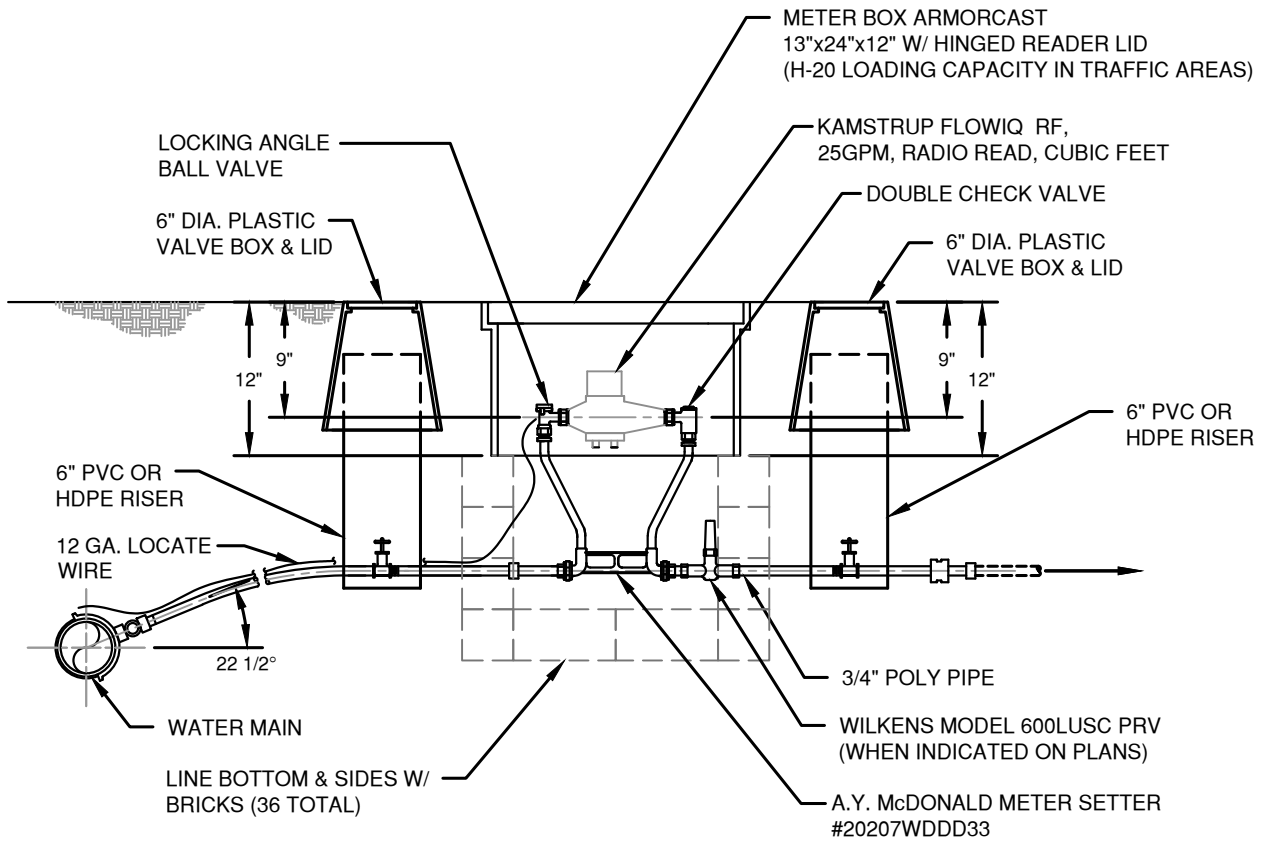
- A. Prior to the acceptance of work, a hydrostatic and pressure leakage test shall be conducted by the Contractor on all newly-constructed water mains, fire lines, fire hydrants leads and stub-outs in accordance with Standard Specifications, and AWWA C600, unless specified otherwise by the City. All pumps, gauges, plugs, saddles, corporation stops, miscellaneous hose and piping, and measuring equipment necessary for performing the test shall be furnished and operated by the Contractor. Prior to calling the City to witness the pressure test, the Contractor shall have all equipment ready for operation and have successfully performed the test to ensure that the pipe is in satisfactory condition.
- B. Defective material or workmanship discovered, during a hydrostatic field test shall be replaced by the Contractor at no expense to the City. Whenever it is necessary to replace defective material or correct workmanship, the hydrostatic test shall be re-run at the Contractor's expense until a satisfactory test is obtained. Test pressure shall be maintained while the installation is inspected by the City.

4.18 Sterilization and Flushing

- A. Sterilization of watermains shall be accomplished by the Contractor in accordance with the Standard Specifications. At no time shall chlorinated water from a new main be flushed into a body of water, including lakes, rivers, streams, drainage ways, and all waters where fish or other natural water life can be expected. Any discharge into a City sewer system must be approved in advance and in writing by the City. Sample collection should be scheduled with the City at least two (2) business days in advance. Samples can only be taken on Mondays, Tuesdays and Wednesdays.



PLAN VIEW

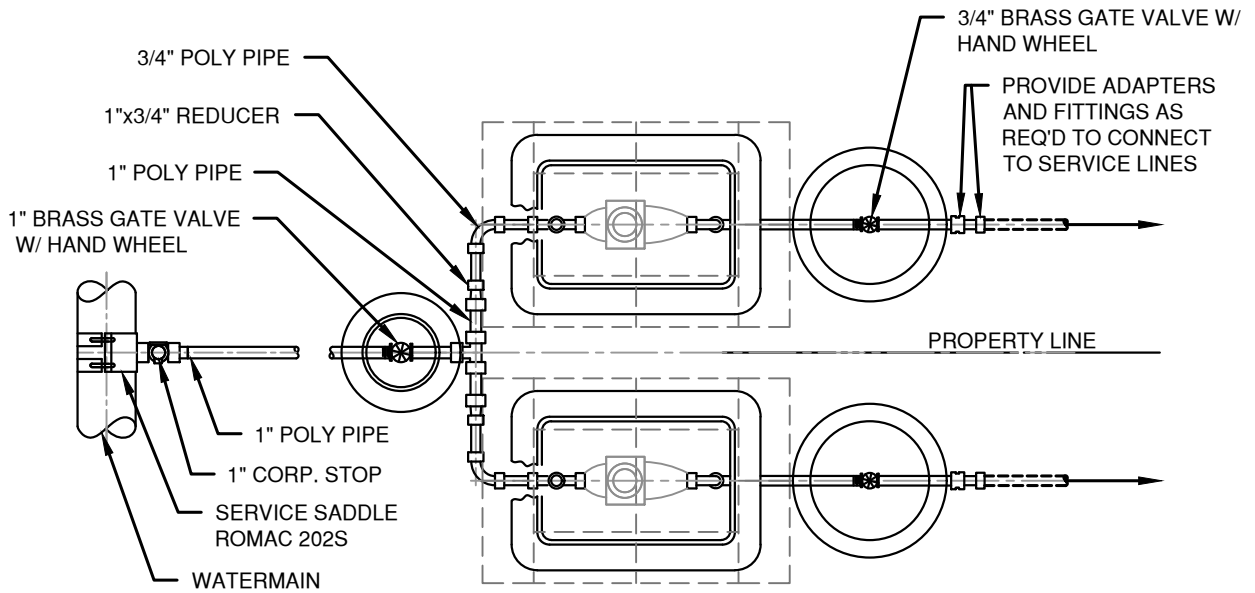


SECTION VIEW

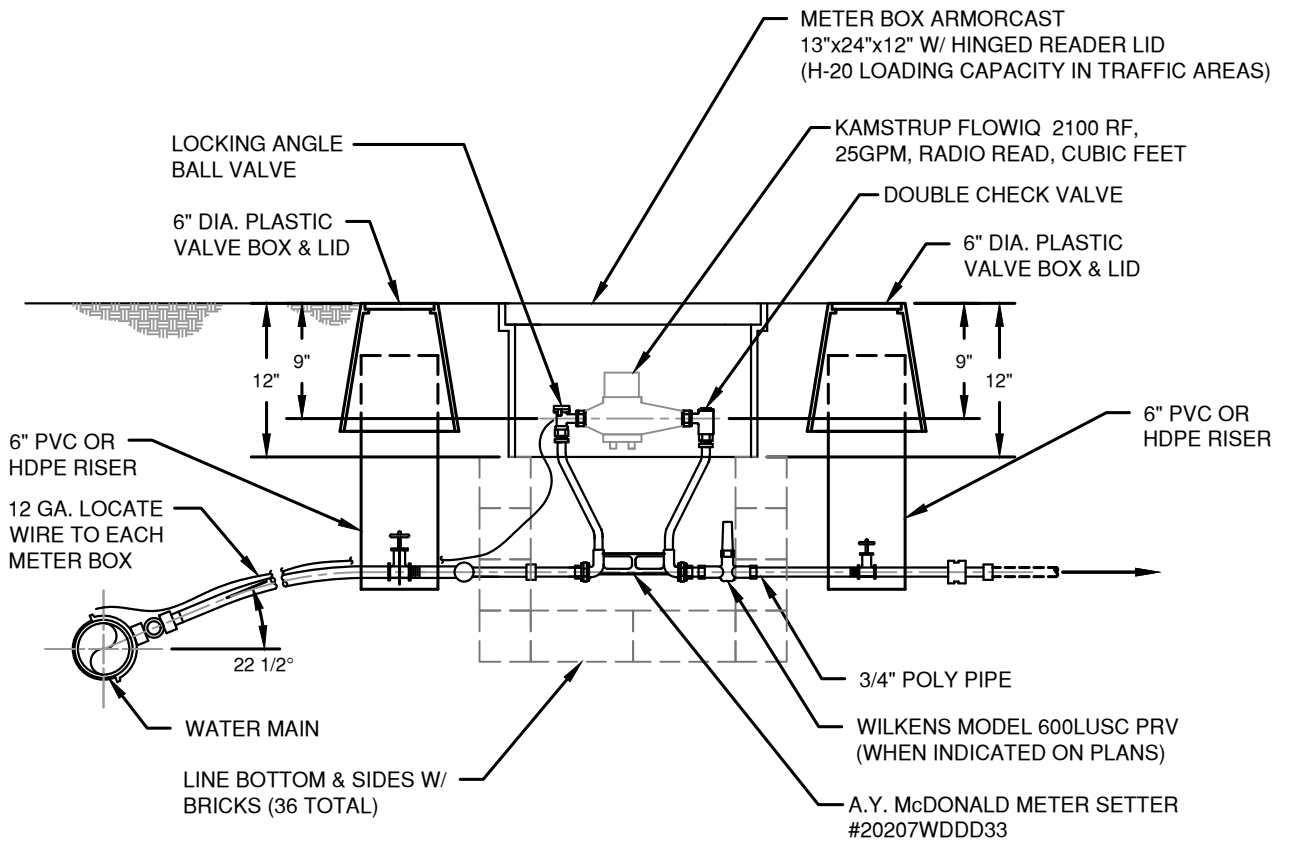
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<p>CITY OF WINLOCK DEPARTMENT OF PUBLIC WORKS</p>	<p>WATER DETAILS TYPE 1 WATER SERVICE</p>	<p>REVISED 9/10/2020</p>	<p>DRAWING NO. 4-1</p>
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PLAN VIEW



SECTION VIEW

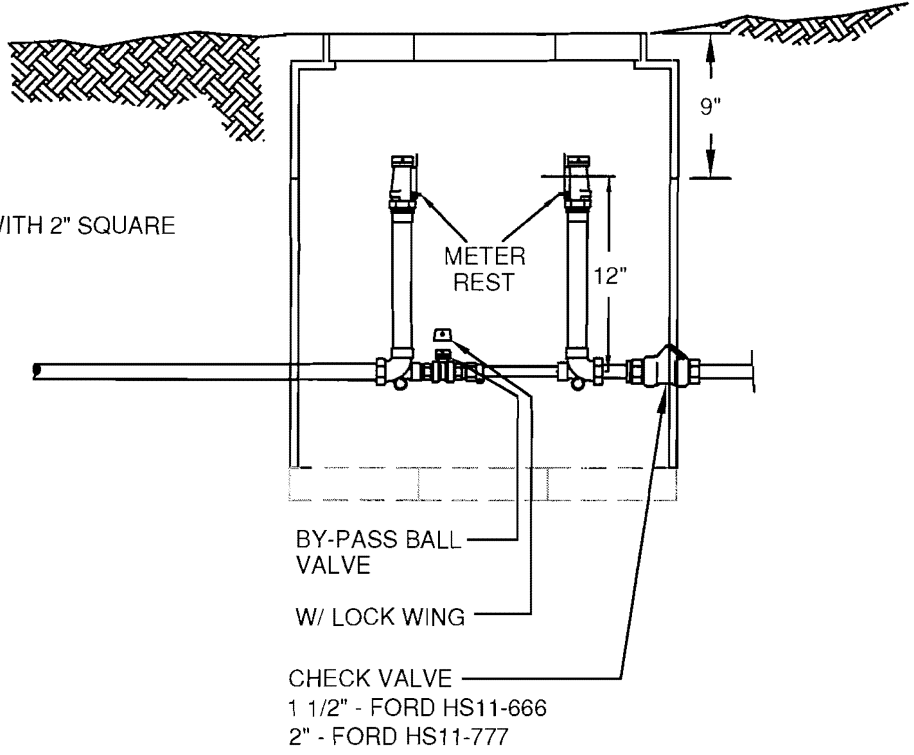
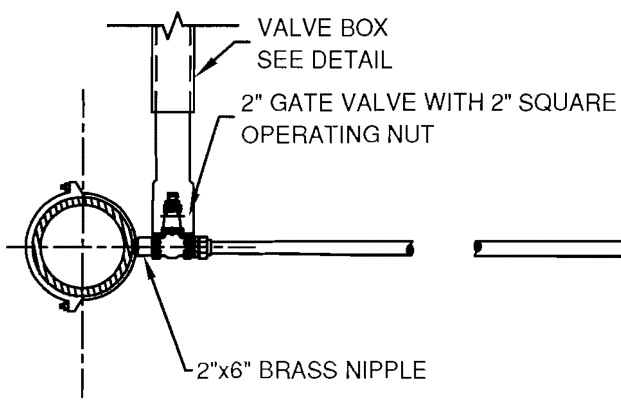
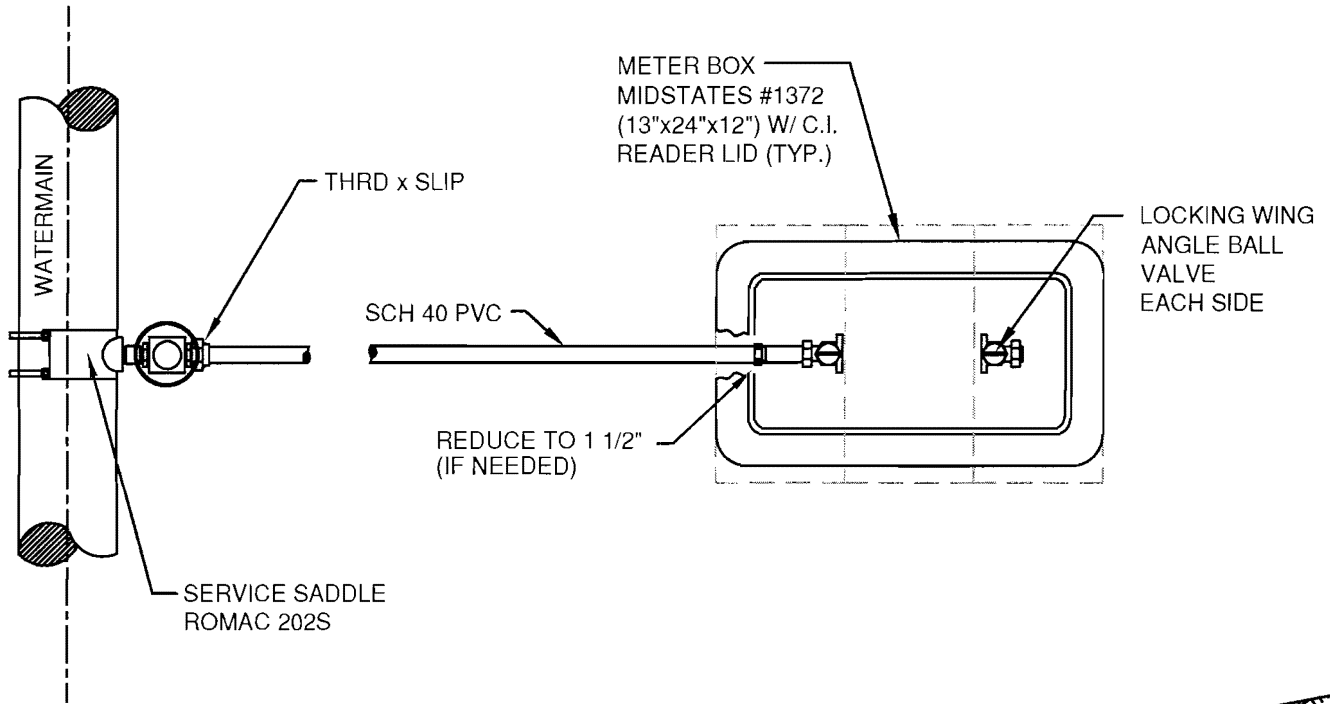


CITY OF WINLOCK
 DEPARTMENT OF PUBLIC WORKS

WATER DETAILS
 TYPE 2 WATER SERVICE

REVISED
 9/11/2020

DRAWING
 NO.
4-2



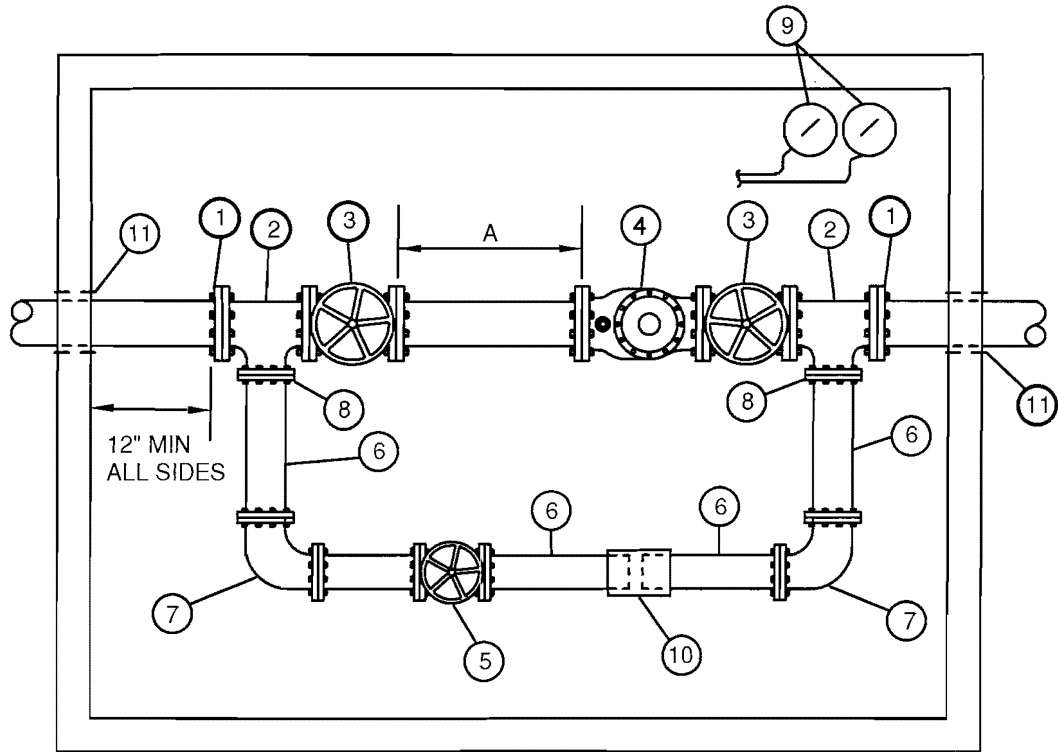
NOTES:

1. COPPER SETTERS SHALL BE:
 1 1/2" - FORD VVF76-12B-13-11-66
 2" - FORD VVF77-12B-17-11-77



CITY OF WINLOCK DEPARTMENT OF PUBLIC WORKS	WATER DETAILS 1 1/2" - 2" WATER SERVICE WITH BYPASS	REVISED 08/20/2007	DRAWING NO. 4-3

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METER	MINIMUM DIMENSION "A"	DOOR SIZE	VAULT DEPTH	TEES
3" COMPOUND	15"	3' X 3'	5'0"	3"X1-1/2"
4" COMPOUND	20"	3' X 3'	5'0"	4"X2"
6" COMPOUND	30"	3' X 3'	5'0"	6"X4"
8" COMPOUND	40"	3' X 6'	5'0"	8"X6"

* VARIES, TO BE DETERMINED BASED ON SPECIFIC PARTS USED.

- ① RESTRAINED FLG ADAPTER (RFA)
- ⑧ RFA OR BLIND FLG W/ THRD TAP
- ② FLG TEE
- ⑨ REMOTE READERS
- ③ FLG GATE VALVE W/ HAND WHEEL
- ⑩ MECHANICAL COUPLING OR UNION
- ④ COMPOUND METER
- ⑪ SEAL ANNULAR SPACE W/ NON-SHRINK GROUT
- ⑤ GATE VALVE W/HAND WHEEL
- ⑥ DUCTILE IRON SPOOL OR BRASS NIPPLES
- ⑦ 90° ELBOWS (MATERIAL TO BE SAME AS PIPE)

NOTES:

1. VAULTS SHALL BE THE STANDARD PRODUCTS AS MANUFACTURED BY UTILITY VAULT "LA" SERIES OR EQUAL. TOP SECTIONS SHALL INCLUDE HINGED LOCKING COVER (NO. 332P OR 2-332P) HINGED READER LID FOR REMOTE READERS.
2. PIPE AND FIXTURES TO BE SET ON VALVE STANDS INSTALLED ACCORDING TO MANUFACTURERS SPECS.
3. DRAINAGE MUST BE PROVIDED FOR THE VAULT.

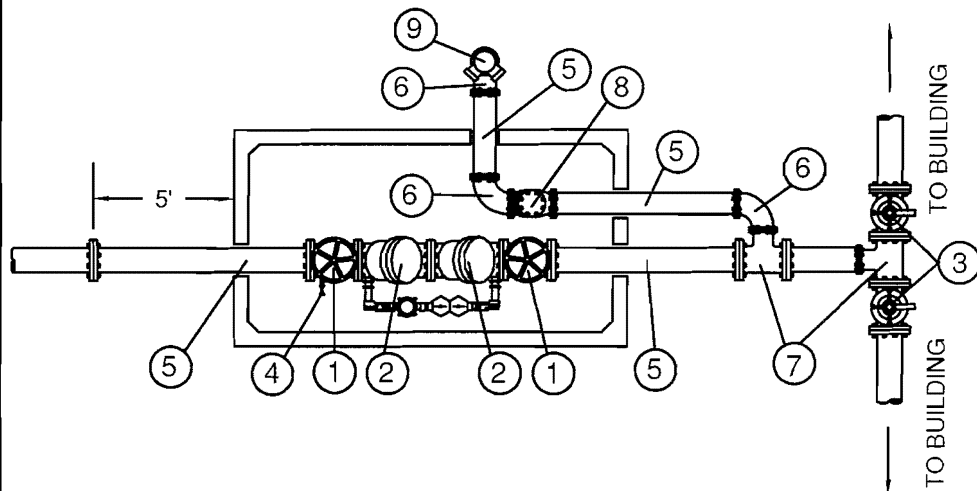


CITY OF WINLOCK
DEPARTMENT OF PUBLIC WORKS

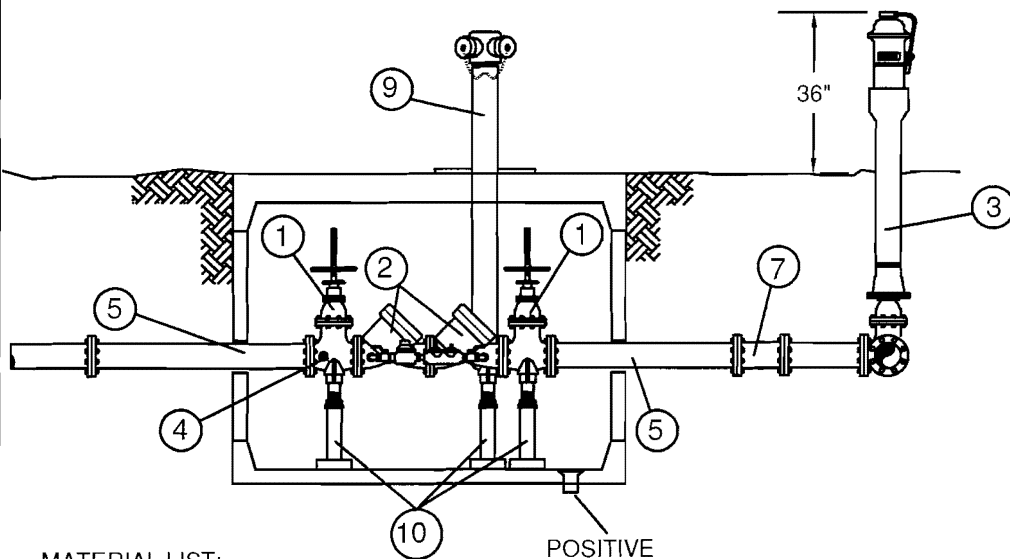
WATER DETAILS
COMPOUND WATER
METER WITH BYPASS FOR
3" - 8" WATER SERVICE

REVISED
08/20/2007

DRAWING
NO.
4-4



PLAN



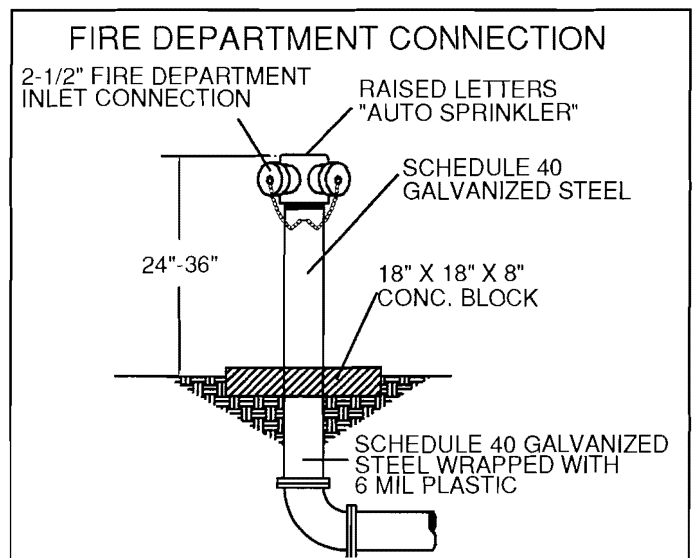
PROFILE

MATERIAL LIST:

1. FLG GATE VALVE W/ HANDWHEEL
2. DOUBLE CHECK DETECTOR ASSEMBLY
FLGxFLG (DOH APPROVED)
3. POST INDICATOR VALVE
4. 3/4" BALL VALVE (TEST COCK)
5. DI PIPE SPOOL
6. DI 90° FLG BEND
7. DI FLG TEE
8. SWING CHECK VALVE W/BALL DRIP ASSEMBLY
9. FIRE DEPARTMENT CONNECTION
10. VALVE STANDS
11. WHERE PIPING PASSES THROUGH CONCRETE
WALL PROVIDE 2" CLEARANCE W/ WATERPROOF
MASTIC OR FLEXIBLE SEALANT

GENERAL NOTES:

- A. PIPE FROM WATER MAIN TO BUILDING
SHALL BE CLASS 50 OR 52 DI.
- B. INSTALL PLUGS ON ALL TEST COCKS.
(FINGER TIGHT)
- C. ALL PIPING SHALL BE SIZED BY A LICENSED
FIRE SYSTEMS DESIGNER. (MINIMUM OF 4").

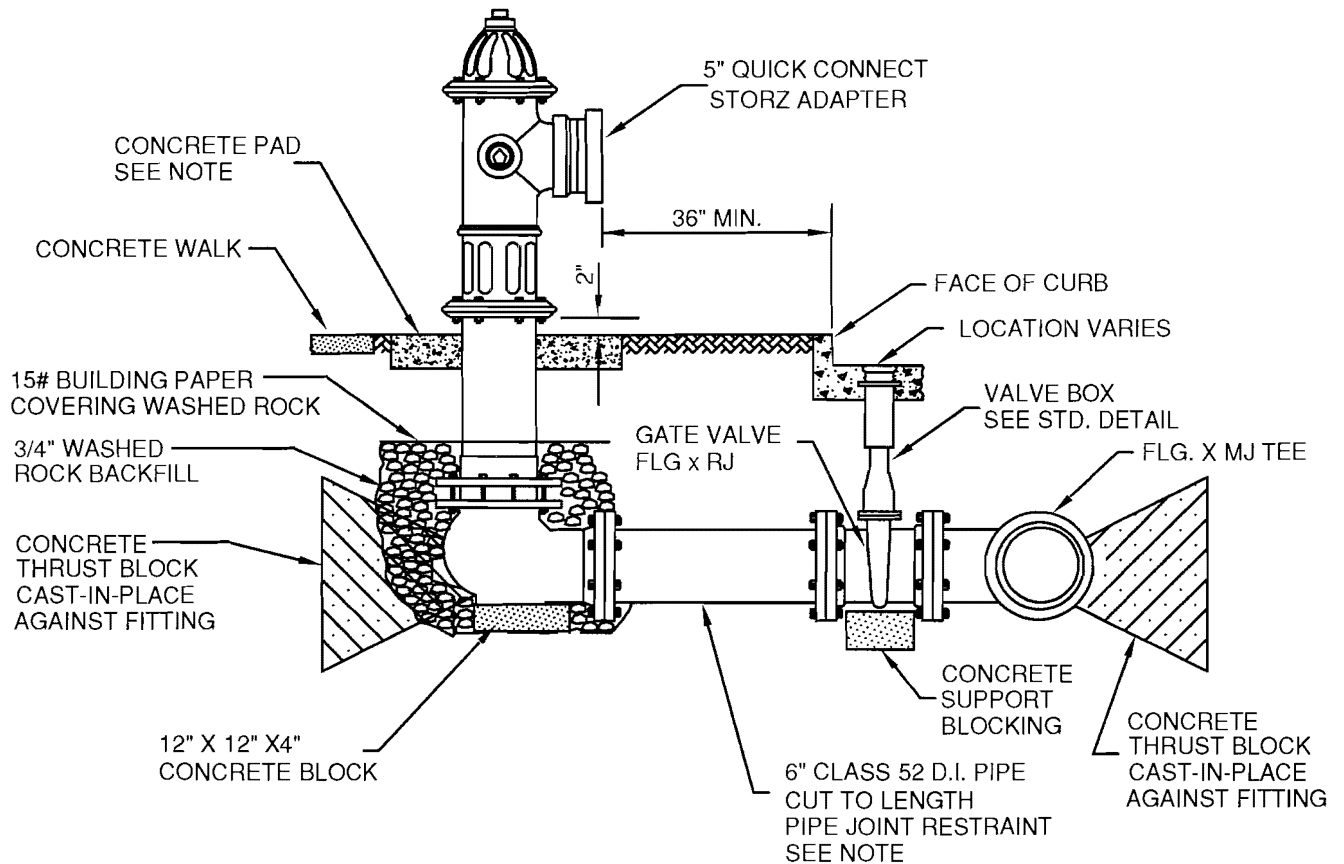


CITY OF WINLOCK
DEPARTMENT OF PUBLIC WORKS

WATER DETAILS
FIRE DEPARTMENT
CONNECTION WITH DCDA

REVISED
08/20/2007

DRAWING
NO.
4-5



NOTES

1. HYDRANTS SHALL BE LOCATED WITHIN THE STREET RIGHT-OF-WAY, WITH A MINIMUM THREE-FOOT RADIUS UNOBSTRUCTED WORKING AREA.
2. HYDRANT SHALL BE CLOW MEDALLION.
3. HYDRANT SHALL BE PAINTED SUNBURST YELLOW HIGH-GRADE ENAMEL AFTER INSTALLATION.
4. MECHANICAL PIPE JOINTS SHALL BE MEGALUG SERIES RESTRAINING GLANDS.
5. A 4' X 4' X 8" DEEP CONCRETE PAD WILL BE POURED AROUND THE HYDRANT. ENTEND PAD TO 2' BEYOND GATE VALVE WHEN VALVE IS OUTSIDE OF PAVEMENT.
6. MINIMUM HYDRANT BURY SHALL BE 30".
7. INSTALL 4 BOLLARDS AROUND HYDRANT (4' RADIUS) IN UN-PROTECTED LOCATIONS.



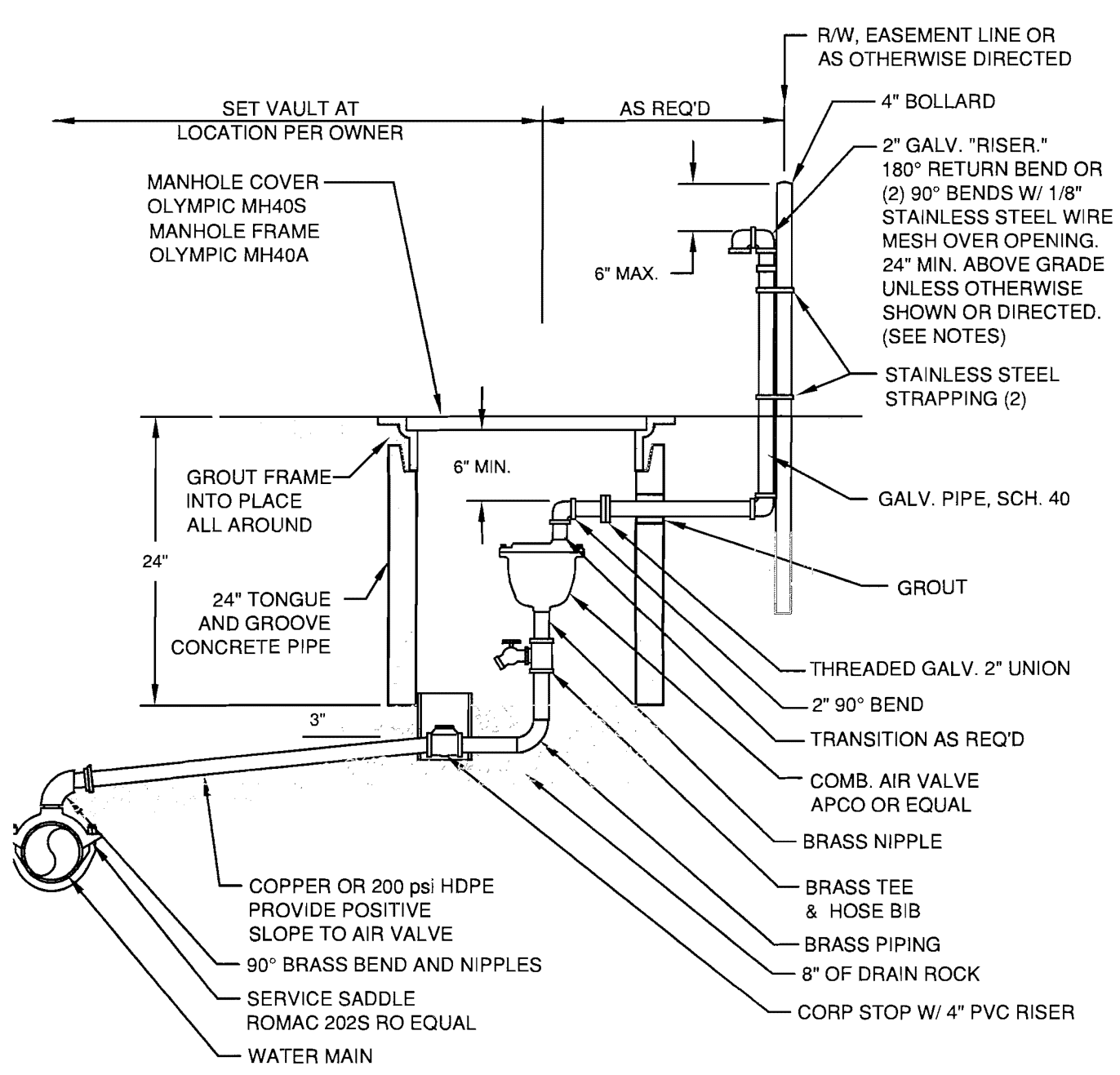
CITY OF WINLOCK
DEPARTMENT OF PUBLIC WORKS

WATER DETAILS
FIRE HYDRANT

REVISED
08/20/2007

DRAWING
NO.
4-6

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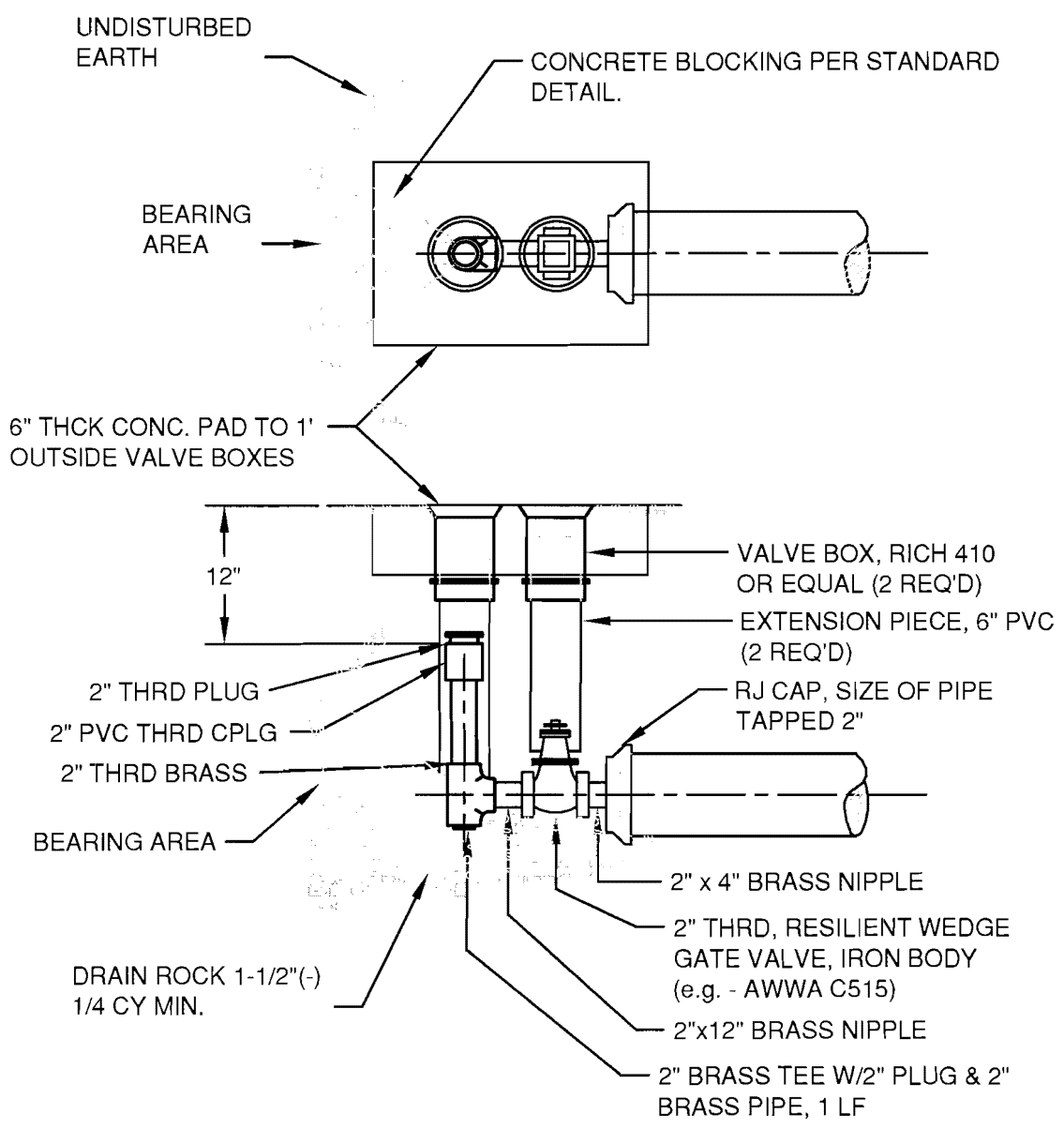


COMBINATION AIR VALVE NOTE:
 1. DRAIN TO DAYLIGHT W/ 2" PVC IF APPLICABLE.
 2. TERMINATE EXHAUST INSIDE VAULT W/ 90° BEND (DOWN) AND WIRE MESH IF VAULT IS DRAINED TO DAYLIGHT.



CITY OF WINLOCK DEPARTMENT OF PUBLIC WORKS	WATER DETAILS COMBINATION AIR VALVE	REVISED 08/20/2007	DRAWING NO. 4-7
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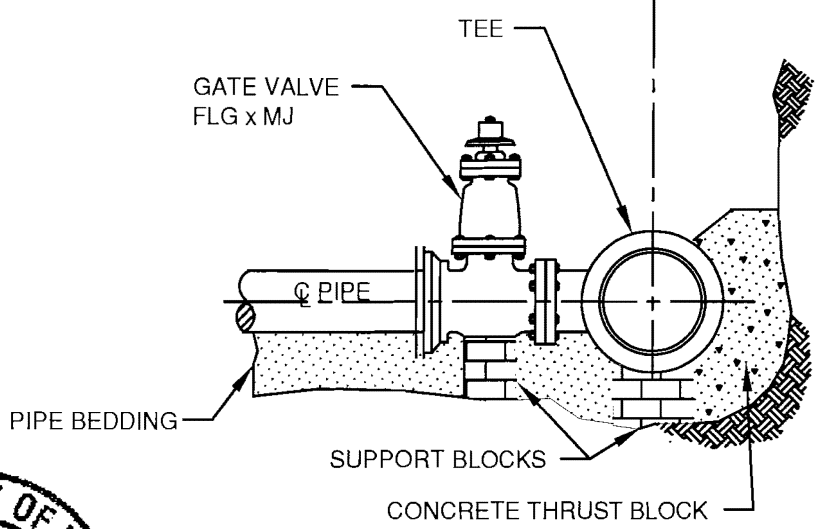
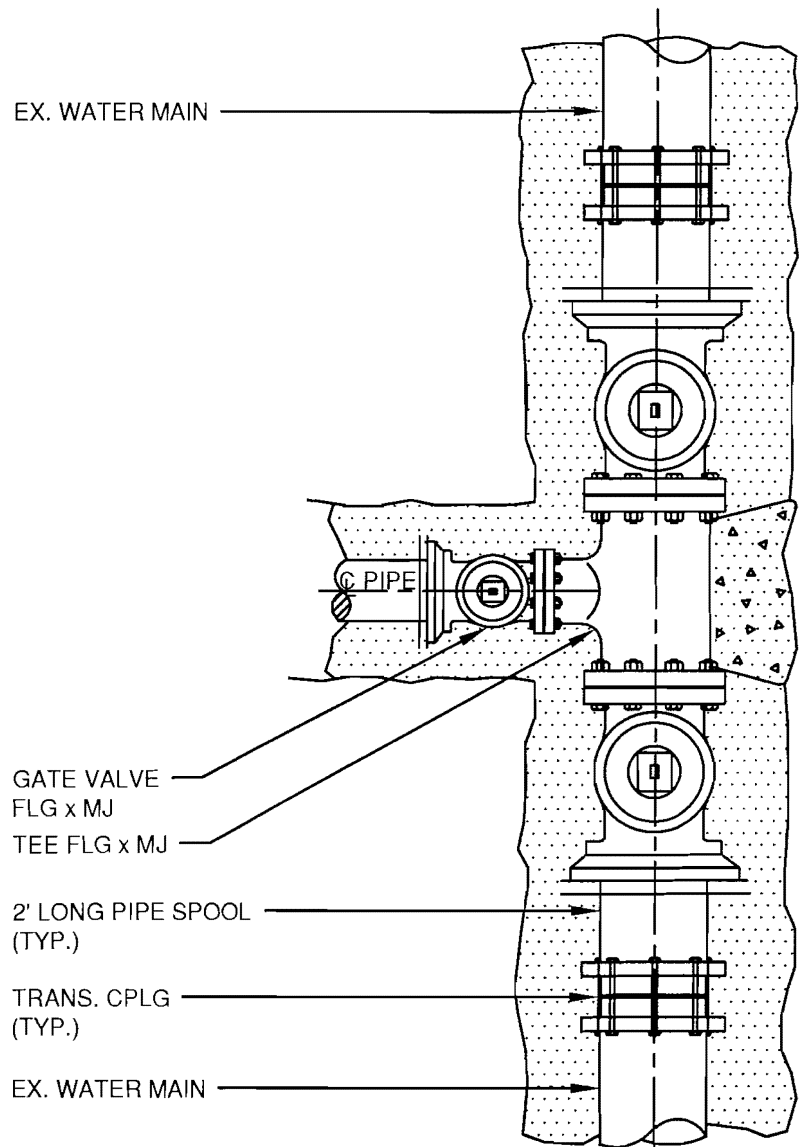
CITY OF WINLOCK
DEPARTMENT OF PUBLIC WORKS

WATER DETAILS
BLOW OFF VALVE

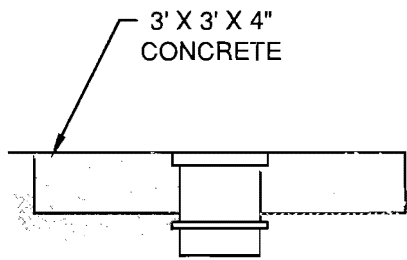
REVISED
08/20/2007

DRAWING
NO.
4-8

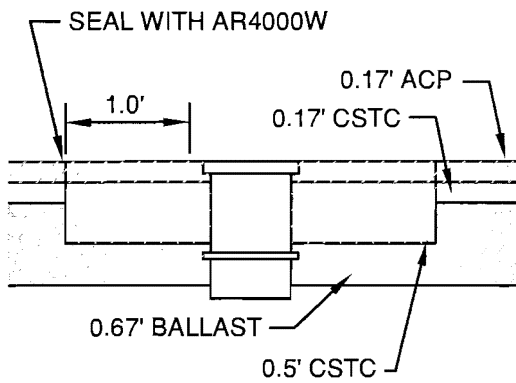
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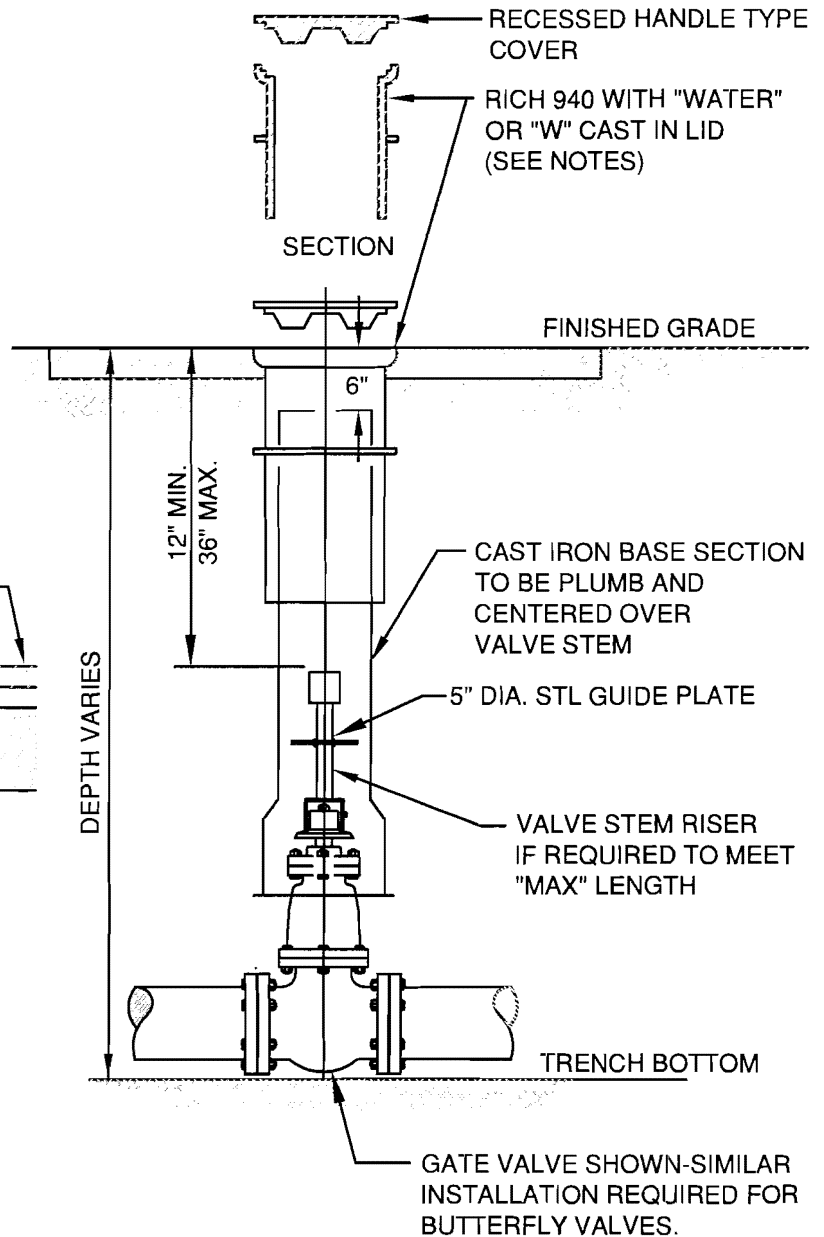
<p>CITY OF WINLOCK DEPARTMENT OF PUBLIC WORKS</p>	<p>WATER DETAILS CUT-IN TEE</p>	<p>REVISED 08/20/2007</p>	<p>DRAWING NO. 4-9</p>
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OUTSIDE PAVED AREA



INSIDE PAVED ROADWAY



NOTES:

1. ALIGN VALVE COVER EARS IN DIRECTION OF FLOW THROUGH VALVE.



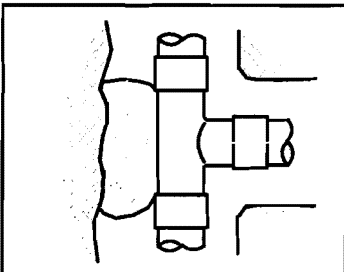
CITY OF WINLOCK
DEPARTMENT OF PUBLIC WORKS

WATER DETAILS
VALVE BOX DETAIL

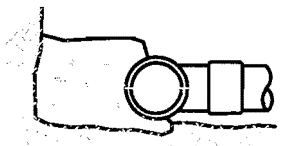
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08/20/2007

DRAWING
NO.
4-10

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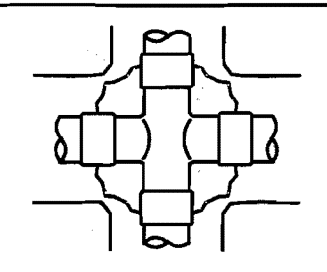


TOP VIEW

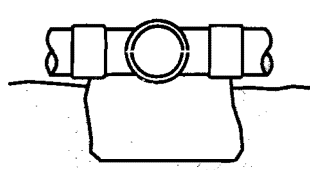


SIDE VIEW

TEE

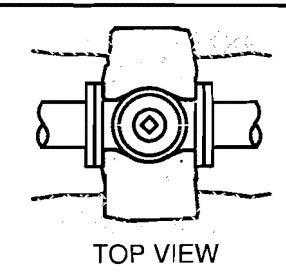


TOP VIEW

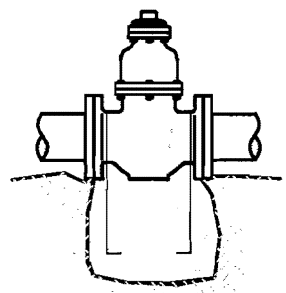


SIDE VIEW

CROSS

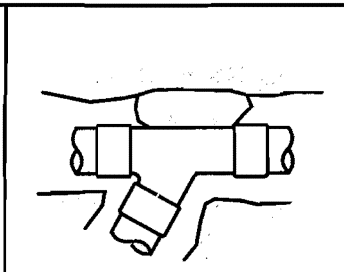


TOP VIEW

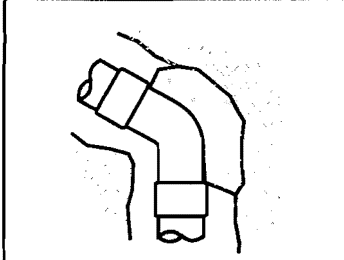


SIDE VIEW

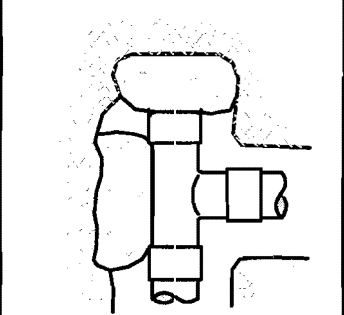
GATE VALVE



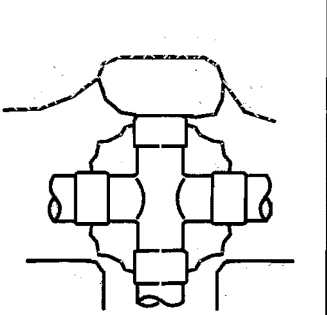
WYE



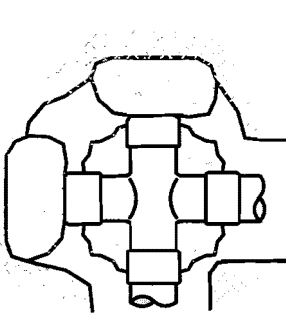
HORIZ. BEND



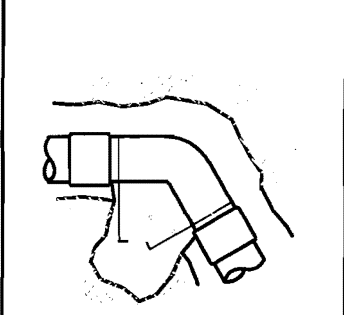
TEE WITH PLUG



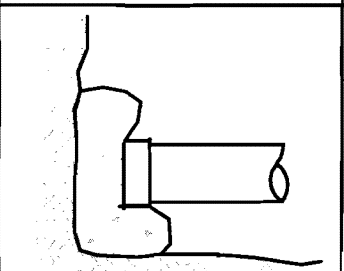
CROSS WITH PLUG



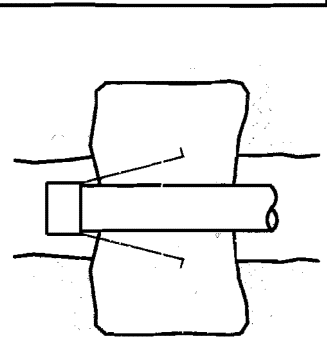
CROSS WITH PLUGS



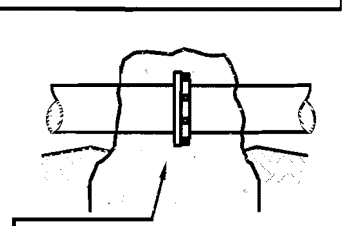
45° - 90° VERTICAL BEND



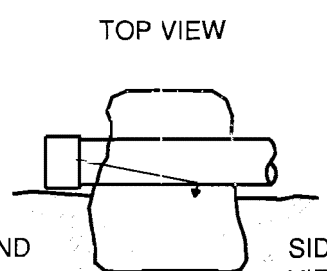
PLUG OR CAP



TOP VIEW



LOCKING RETAINER GLAND
ALTERNATIVE STRADDLE BLOCK



SIDE VIEW

DEAD-MAN THRUST BLOCKING

- NOTES:
1. CONCRETE THRUST BLOCKING TO BE POURED AGAINST UNDISTURBED EARTH.
 2. PLASTIC BARRIER SHALL BE PLACED BETWEEN ALL THRUST BLOCKS AND PIPE AND/OR FITTINGS.
 3. ANCHOR REBAR SHALL BE 5/8" MINIMUM DIAMETER.
 4. CONCRETE DEAD-MAN THRUST BLOCKING MAY BE REQUIRED BY THE CITY, OR ALLOWED AT THE DISCRETION OF THE PUBLIC WORKS DIRECTOR.
 5. ALL STANDARD BLOCKING AND THRUST CRITERIA, AS LISTED ON "STANDARD THRUST LOADS DETAIL", SHALL APPLY.



CITY OF WINLOCK
DEPARTMENT OF PUBLIC WORKS

WATER DETAILS
THRUST BLOCKING
DETAIL

REVISED
08/20/2007

DRAWING NO.
4-11a

THRUST LOADS

THRUST AT FITTINGS IN POUNDS AT 200 POUNDS PER SQUARE INCH OF WATER PRESSURE

PIPE DIAMETER	90° BEND	45° BEND	22-1/2° BEND	11-1/4° BEND	DEAD END OR TEE
4"	3,600	2,000	1,000	500	2,600
6"	8,000	4,400	2,300	1,200	5,700
8"	14,300	7,700	4,000	2,000	10,100
10"	22,300	12,100	6,200	3,100	15,800
12"	32,000	17,400	8,900	4,500	22,700
14"	43,600	23,600	12,100	6,100	30,800
16"	57,000	30,800	15,700	7,900	40,300

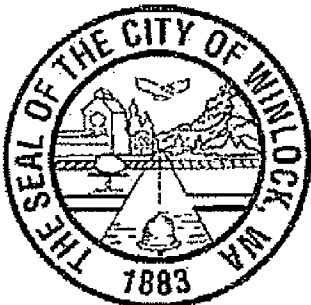
NOTES:

- BLOCKING SHALL BE COMMERCIAL CONCRETE POURED IN PLACE AGAINST UNDISTURBED EARTH. FITTING SHALL BE ISOLATED FROM CONCRETE THRUST BLOCK WITH PLASTIC OR SIMILAR MATERIAL.
- TO DETERMINE THE BEARING AREA OF THE THRUST BLOCK IN SQUARE FEET (S.F.):
EXAMPLE : 12" - 90° BEND IN SAND AND GRAVEL
32,000 LBS 3000 LB/S.F. = 10.7 S.F. OF AREA
- AREAS MUST BE ADJUSTED FOR OTHER PIPE SIZE, PRESSURES AND SOIL CONDITIONS.
- BLOCKING SHALL BE ADEQUATE TO WITHSTAND FULL TEST PRESSURE AS WELL AS TO CONTINUOUSLY WITHSTAND OPERATING PRESSURE UNDER ALL CONDITIONS OF SERVICE.

SAFE SOIL BEARING LOADS

FOR HORIZONTAL THRUSTS WHEN THE DEPTH OF COVER OVER THE PIPE EXCEEDS 2 FEET

SOIL	POUNDS PER SQUARE FOOT
MUCK, PEAT	0
SOFT CLAY	1,000
SAND	2,000
SAND & GRAVEL	3,000
SAND & GRAVEL CEMENTED WITH CLAY	4,000
HARD SHALE	10,000



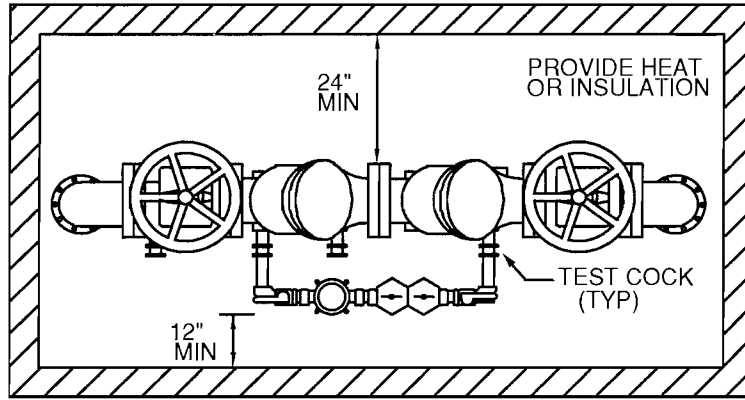
CITY OF WINLOCK
DEPARTMENT OF PUBLIC WORKS

WATER DETAILS
THRUST LOADS DETAIL

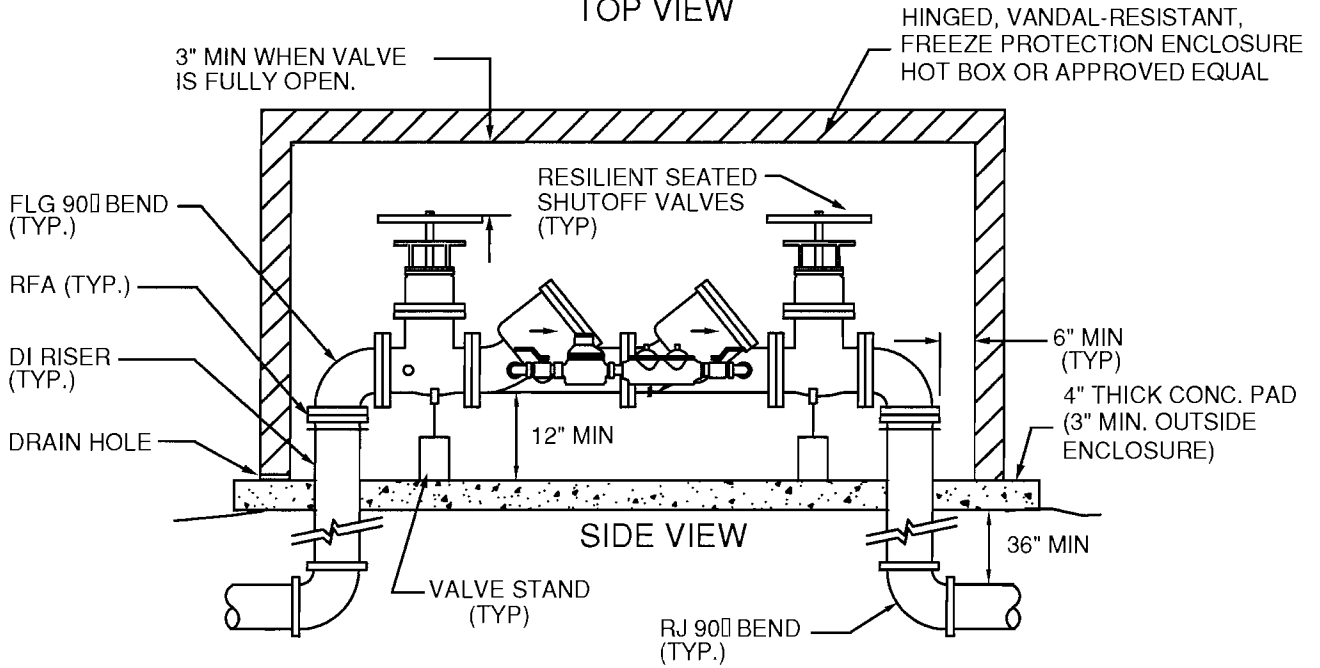
REVISED
08/20/2007

DRAWING
NO.
4-11b

A CITY APPROVED VALVE IS REQ'D BETWEEN THE SUPPLY MAIN AND THE DCDA VALVE



TOP VIEW



ABOVE GROUND INSTALLATION

NOTES:

1. DOUBLE CHECK DETECTOR CHECK VALVE ASSEMBLY (DCDA) SHALL BE ON THE CURRENT WASHINGTON STATE DEPT. OF HEALTH APPROVED LIST AND SHALL BE EQUIPED WITH 4 TEST COCKS AND A RESILIENT SEATED SHUT OFF VALVE MOUNTED AT EACH END.
2. THE BACKFLOW ASSEMBLY SHALL BE TESTED AFTER INSTALLATION BY A CERTIFIED BACKFLOW ASSEMBLY TESTER.
3. ALL PIPE, VALVE, AND FITTING JOINTS FROM THE SUPPLY MAIN, SHALL BE FLANGED OR RESTRAINED.
4. THE WATER LINE SHALL BE DISINFECTED, FLUSHED AND PRESSURE TESTED PRIOR TO INSTALLING THE BACKFLOW ASSEMBLY.
5. THE BACKFLOW ASSEMBLY SHALL BE PROTECTED FROM FREEZING AND FLOODING.
6. ALL ENCLOSURES SHALL BE PRE-APPROVED BY THE CITY, PRIOR TO INSTALLATION.
7. DCDA SHALL BE INSTALLED AT PROPERTY LINE OF OWNERS PROPERTY.
8. DCDA SHALL HAVE A MINIMUM OF 3' CLEARANCE FROM ALL STRUCTURES.
9. VALVE STANDS SHALL BE INSTALLED ACCORDING TO MANUFACTURERS RECOMMENDATIONS.



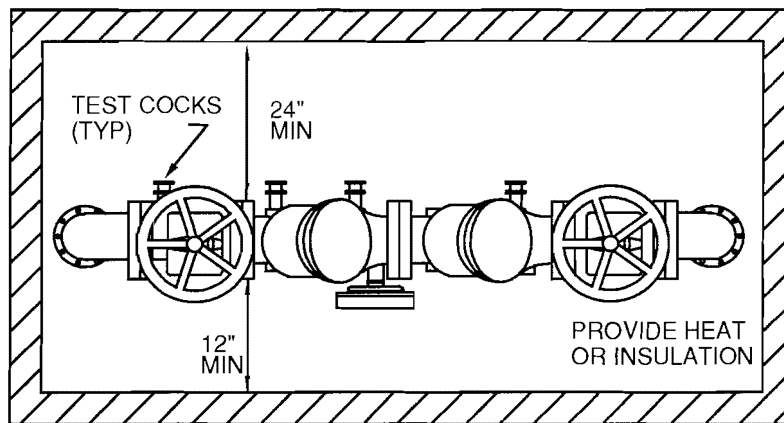
CITY OF WINLOCK
DEPARTMENT OF PUBLIC WORKS

WATER DETAILS
STANDARD DOUBLE
CHECK DETECTOR
ASSEMBLY 3" OR LARGER

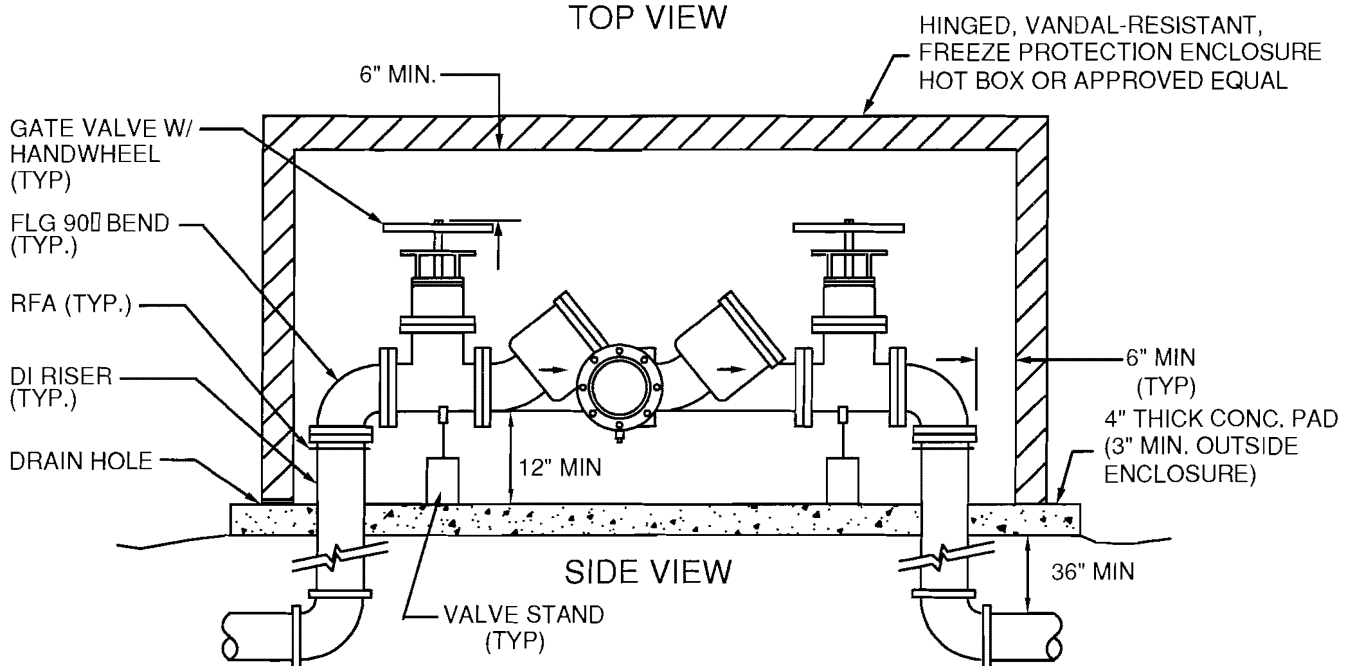
REVISED
08/20/2007

DRAWING
NO.
4-12

A CITY APPROVED VALVE IS REQ'D. BETWEEN THE SUPPLY MAIN AND THE RPBA VALVE



TOP VIEW



NOTES:

1. REDUCED PRESSURE BACKFLOW ASSEMBLY (RPBA) SHALL BE ON THE WASHINGTON STATE DEPT. OF HEALTH APPROVED LIST.
2. RPBA SHALL LAY HORIZONTAL AND BE INSTALLED ABOVE GROUND ONLY.
3. RPBA SHALL BE TESTED AFTER INSTALLATION BY A CERTIFIED BACKFLOW ASSEMBLY TESTER.
4. ALL PIPE, VALVE AND FITTING JOINTS FROM THE SUPPLY MAIN, SHALL BE FLANGED OR RESTRAINED.
5. THE WATER LINE SHALL BE DISINFECTED, FLUSHED AND PRESSURE TESTED PRIOR TO INSTALLING THE BACKFLOW ASSEMBLY.
6. THE BACKFLOW ASSEMBLY SHALL BE PROTECTED FROM FREEZING AND FLOODING.
7. ALL ENCLOSURES SHALL BE PRE-APPROVED BY THE CITY, PRIOR TO INSTALLATION.
8. RPBA SHALL BE INSTALLED AT PROPERTY LINE ON OWNERS SIDE.
9. RPBA SHALL HAVE A MINIMUM OF 3' CLEARANCE FROM ALL STRUCTURES.
10. VALVE STANDS SHALL BE INSTALLED ACCORDING TO MANUFACTURERS RECOMMENDATIONS.
11. TEST COCKS SHALL BE LOCATED SO AS TO FACILITATE ACCESS.

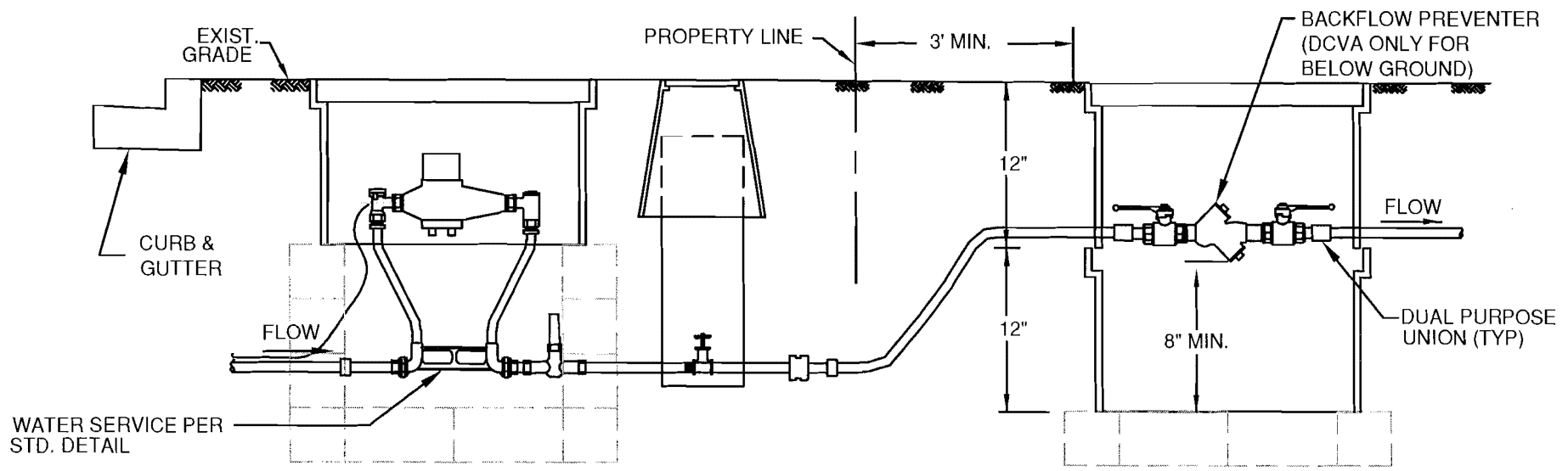


CITY OF WINLOCK
DEPARTMENT OF PUBLIC WORKS

WATER DETAILS
STANDARD REDUCED
PRESSURE BACKFLOW
ASSEMBLY 3" OR LARGER

REVISED
08/20/2007

DRAWING
NO.
4-13

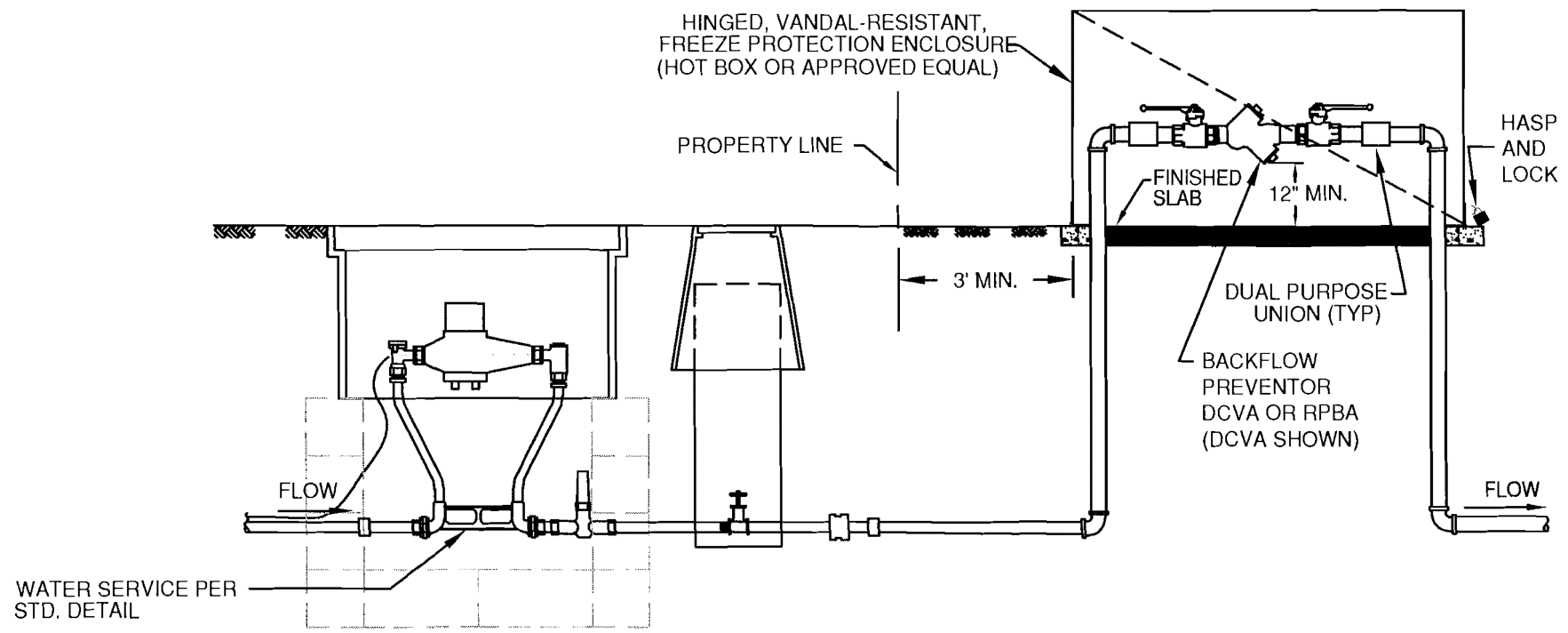


NOTES:

1. BACKFLOW ASSEMBLY SHALL BE A WA. STATE D.O.H. APPROVED MODEL.
2. ALL MATERIALS TO BE BRASS OR COPPER AS APPROVED BY THE CITY.



CITY OF WINLOCK DEPARTMENT OF PUBLIC WORKS	WATER DETAILS 3/4" - 2" BACKFLOW PREVENTER BELOW GROUND	REVISED 08/20/2007	DRAWING NO. 4-14a
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NOTES:

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2. ALL MATERIALS TO BE BRASS OR COPPER AS APPROVED BY THE DIRECTOR OF PUBLIC WORKS.



CITY OF WINLOCK DEPARTMENT OF PUBLIC WORKS	WATER DETAILS $\frac{3}{4}$ " - 2" BACKFLOW PREVENTER ABOVE GROUND	REVISED 08/20/2007	DRAWING NO. 4-14b

CHAPTER 5 SANITARY SEWER

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SANITARY SEWER

5A GENERAL CONSIDERATIONS

5A.01 General

- A. Within the corporate City limits where public sewer is available, it must be used. Connection is not required provided that the property is more than 500-feet from the public sewer, except in the case of land development where the developed property abuts a right-of-way in which a public sewer is located or where a service connection is otherwise provided. In this case, connection of all structures generating sewage shall be required to connect to the public sewer regardless of distance.
- B. Anyone desiring to extend or connect to the City sewer system must contact the City for a Pre-construction Application form. After the completed application is returned to the City, along with any other information that may be required or requested, staff will determine the conditions of service for connection to the sewer system.
- C. All sewers shall be designed as a gravity sewer whenever physically and/or economically feasible or as outlined in the *City of Winlock General Sewer Plan*.
- D. Extension of or connection to sewer lines outside of the Winlock Urban Growth Area (UGA) may be limited under the provisions of the Lewis County Comprehensive Plan. The City will not allow service outside of the UGA without written permission from the County.
- E. Maintenance of the building sewers shall be the responsibility of the property owner while the remaining sewer lateral and main shall be the City's responsibility.

5A.02 Definitions

- A. **Building Sewer** – A building sewer refers to the extension from a building's discharge plumbing (two (2) feet outside of the building) to the edge of pavement or curb line and shall have no other common sewers discharging into it.
- B. **Interceptor** – A sewer pipe receiving flow from a number of main or trunk sewers, force mains, etc.
- C. **Lateral** – see "Sewer Lateral."
- D. **Private Sewer** – Any portion of the sewer conveyance system or lines connected thereto, located on private property where no easements are granted to the City. Maintenance of a private sewer shall be the responsibility of the property owner(s).

- E. **Public Sewer** – That portion of the sewer conveyance system located within the public right-of-way or easements that are owned, operated and maintained by the City.
- F. **Sewer Lateral, Lateral or Side Sewer** – The portion of the service line beginning at the end of the building sewer, typically the curb line or edge of pavement, (see Building Sewer) and extending to the sewer main. The sewer lateral is owned and maintained by the City.
- G. **Sewer Main or Trunk** – A sewer pipe that receives flow from one or more sewer mains and/or building sewers.
- H. **Side Sewer** – see "Sewer Lateral."
- I. **Side Sewer Permit** – A permit issued by the City for the purposes of monitoring and controlling work on sanitary side sewers and delineating specific and general criteria and requirements for side sewer work. (see "Building Sewer").

5A.02 Sanitary Sewer/Watermain Crossings

- A. See *Chapter 4* for requirements regarding sewer and water separation.

5A.03 Staking

- A. All surveying and staking shall be performed by a surveying firm licensed by the State of Washington and possessing the appropriate business license(s) to perform such work.

The minimum staking of sewer lines shall be as follows:

1. Centerline alignment must be staked with cuts and/or fills to flow at twenty-five (25) feet and fifty (50) feet from each manhole or structure and every fifty (50) feet thereafter, unless more frequent staking is required for construction at the discretion of a City representative.
2. Manholes must be staked with hubs to include invert elevations of all pipes and top of rim elevations to finished grade.
3. Location of valves, fixtures and septic tank shall be staked for force mains and grinder pump systems.

5A.04 Construction

- A. All sewer construction shall be in accordance with the Standard Specifications, Standard Plans, and as supplemented herein. See *Chapter 2* of these Guidelines for requirements regarding street patching and trench restoration.

5B GRAVITY SEWERS

5B.01 General Design Criteria

- A. The design of any sewer extension/connection will conform to these Design Criteria, *Department of Ecology's "Criteria of Sewage Works Design,"* (Orange Book) and any applicable criteria as set forth herein. The Orange Book can be referenced on-line at [<http://www.ecy.wa.gov/pubs/9837/start.pdf>]
- B. New gravity sewer systems shall be designed on the basis of an average daily per capita flow of sewage of not less than 100 gallons per day. See the following *Orange Book Table G2-2 Design Basis for New Sewage Works*. This figure is assumed to cover normal infiltration, but an additional allowance shall be made where conditions are unfavorable. Generally, laterals and sub-main sewers should be designed to carry, when running full, not less than 400-gallons daily per capita contributions of sewage. When deviations from the foregoing per capita rates are used, a description of the procedure used for sewer design shall be submitted to the City for review and approval.
- C. The minimum size for mains shall be eight (8) inch inside diameter. Sewer mains shall be sized for the ultimate development of the tributary area. Nothing will preclude the City from requiring the installation of a larger sized main if the City determines a larger size is needed to meet the requirements for future service.
- D. Sewer mains shall be constructed using materials conforming to the following:
1. PVC pipe six (6) to fifteen (15) inches diameter must meet either ASTM D 3034, SDR 35 solid wall pipe, or ASTM F 794 for solid seamless profile pipe; or
 2. PVC pipe 18 to 27 inches diameter shall conform to ASTM F679 Type 1 only.
 3. All joints for the PVC pipe shall conform to ASTM D 3212 with rubber gaskets conforming to ASTM F 477.
- E. Gravity sewer shall have a minimum depth of five (5) feet, unless otherwise approved. Actual depth shall be determined by slope, flow, velocity and elevation of existing system.

5B.02 Slope

- A. All sewers shall be designed and constructed to give mean velocities, when flowing full, of not less than 2.0 feet per second based on *Manning's Formula* using an "n" value of 0.013. Use of other practical "n" values may be permitted by the City, if deemed justifiable on the basis of research or field data submitted. Provide minimum slope as designated in Orange Book, however, slopes greater than these are desirable.

- B. Under special conditions, slopes slightly less than is required for the 2.0 feet per second velocity, may be permitted by the City. Such decreased slopes will only be considered where the depth of flow shall be thirty (30) percent of the diameter or greater for design average flow. Whenever such decreased slopes are proposed, the design engineer shall furnish the City with the plans and computations of the depths of flow at minimum, average, and daily or hourly rates of flow. Larger pipe will not be allowed to achieve lesser slopes.
- C. Gravity sewers shall be designed with a straight alignment and constant slope between manholes.

5B.03 Connections

- A. Connections to existing sewers shall conform to the Standard Details.
- B. At connection to the existing system, all new sewer connections shall be physically plugged until all tests have been completed and the City approves the removal of the plug.
- C. Connection of new sewer mains to existing manholes shall be accomplished by using core-drilled holes. The transition of connecting channels shall be constructed so as not to interrupt existing flow patterns. Manholes that contain knockouts shall not be permitted for use as part of the City sewer collection system. The City will collect all tapping cores from the Contractor, or shall be informed if the cores were washed into the sewer.
- D. Connection of a sewer main at a location without an existing manhole shall be accomplished by pouring a concrete base and setting manhole sections. The existing pipe shall not be cut into until approval is received from the City.
- E. Connections where an existing stub-out is not available or where a new building sewer is the same size as the existing main shall be accomplished by the installation of a new manhole.
- F. Contractor shall provide bypass pumping where directed by the City or otherwise required.

5B.04 Manholes

- A. Pre-cast manholes shall be Type 1, 48-inch diameter minimum and shall be in accordance with the Standard Details and Standard Specifications. The minimum clear opening in the manhole frame shall be twenty-four (24) inches. Eccentric manhole cone shall be offset so as not to be located in the tire track of a traveled lane.

- B. Manhole frames and covers shall be cast iron casting marked "SEWER" conforming to the requirements of 24-inch diameter ASTM A-30, Class 25, and shall be free of porosity, shrink cavities, cold shuts, cracks, or any surface defects which would impair serviceability. Repairs of defects by welding or by the use of smooth-on or similar material will not be permitted. Manhole rings and covers shall be machine-finished or ground-on seating surfaces so as to assure non-rocking fit in any position and interchangeability. Manholes located in areas subject to inflow shall be equipped with an approved watertight manhole insert.
- C. Where lock-type castings are called for, the casting device shall be such that the cover may be readily released from the ring and all movable parts shall be made of non-corrosive materials and otherwise arranged to avoid possible binding. The locking device shall be made of a non-corrosive material or properly coated to protect against corrosion. All casting shall be coated with a bituminous coating prior to delivery to the job site.
- D. Safety steps shall be fabricated of polypropylene conforming to an ASTM D-4101 specification, injection molded around a ½-inch ASTM A-615 grade 60 steel reinforcing bar with anti-slip tread. Steps shall project uniformly from the inside wall of the manhole.
- E. Manholes shall be placed at standard maximum 300-foot intervals, and at changes in direction, grade or pipe size. Slope through the manhole shall be 1/10th of one-foot from invert in to invert out unless otherwise approved by the City.
- F. Where a smaller sewer joint joins a larger one, the invert of the larger sewer should be lowered sufficiently to maintain the same energy gradient. An approximate method for securing these results is to place the 80 percent depth point of both sewers at the same elevation or matching crowns. Pipe material shall be consistent between manholes.
- G. Straight grades between invert out of last manhole and connection to existing are preferred over drops whenever possible. Care must be taken when designing steep grades so as not to create a situation of excessive velocity or excavation. Grade changes associated with "sweeps" will not be allowed. The angle between the line(s) entering a manhole and the line leaving shall be no less than 90 degrees.
- H. An outside drop connection shall be provided for a sewer entering a manhole at an elevation of 24-inches or more above the manhole invert. Where the difference in elevation between the incoming sewer and the manhole invert is less than 24-inches, the invert shall be filleted to prevent solids deposition. Outside drop structures shall be constructed per Standard Details.
- I. All manholes that are to be owned and maintained by the City shall be accessible at all times to operations, maintenance equipment and vehicles. All-weather access

drives may be required to provide a sufficient driving surface for City vehicles, at the discretion of the City.

J. Manhole Sizing shall be determined by the following criteria:

1. 48" Manhole
 - a. Two (2) connecting pipes, 8- to 12-inch diameter
 - b. Three (3) connecting pipes, 8- to 10-inch diameter, perpendicular
 - c. Four (4) connecting pipes, 8-inch diameter, perpendicular
2. 54" Manhole
 - a. Two (2) connecting pipes, 8- to 12-inch diameter with greater than a 45 degree deflection
 - b. Three (3) connecting pipes, 10- to 12-inch diameter, perpendicular
 - c. Four (4) connecting pipes, 10- to 12-inch diameter, perpendicular
3. 72" Manhole
 - a. Two (2) connecting pipes, 15- to 18-inch diameter with less than a 45 degrees deflection
 - b. Three (3) connecting pipes, 15-inch diameter, perpendicular
 - c. Four (4) connecting pipes, 15-inch diameter, perpendicular
4. In the above criteria, "deflection" refers to the angle between any two (2) inlet pipe channels in the manhole. The intent of the noted configurations is to provide adequate shelves and room for maintenance and performing television inspections. For other pipe configurations, the size of the manhole shall be approved by the City.

5B.05 High Velocity Protection

Where velocities greater than fifteen (15) feet per second are expected, special provisions such as thrust blocking and special piping materials shall be utilized to protect against displacement and hydrogen sulfide gas.

5B.06 Cleanouts

- A. Cleanouts may be used in lieu of manholes at the end of 8-inch diameter lines of not more than 150-feet in length if approved by the City and constructed in accordance with the Standard Details.
- B. Cleanouts for building sewers are governed by sewer ordinances as included in the *Winlock Municipal Code* and the *Uniform Plumbing Code* as adopted by the City.

5B.07 Sewer Laterals

- A. All sewer lateral connections to the main shall be made with a sanitary tee connection. A cleanout shall be provided at the edge of the right-of-way as shown in the *Standard Details*.
- B. Building sewers shall be a minimum diameter of four (4) inches for single residential service and six (6) inches for all other services. Maintenance of the building sewer is the responsibility of the property owner.
- C. Sewer laterals shall be a minimum diameter of six (6) inches. Maintenance of the sewer lateral is the responsibility of the City. Each property shall be served by an individual sewer lateral. In addition, each unit of a duplex shall be served by separate sewer laterals.
- D. Prior to connection or installation of building sewers or sewer laterals, a Side Sewer Permit must be obtained from the City. Materials and design criteria for a building sewer are covered by the applicable plumbing code as adopted by the City.
- E. In order to avoid the possibility of backup in the sewer lateral from head pressures in the sewer main, the City may require that a backwater valve be installed at the property owner's expense. Operation and maintenance of the backwater valve shall be the responsibility of the property owner under discretion of the City.

5B.08 Testing

- A. Gravity sewer lines shall be subject to a low pressure air test in accordance with the *Standard Specifications*. The Contractor shall furnish all equipment and personnel for conducting the test under the observation of a City representative. The testing equipment shall be subject to approval of the City.
- B. Prior to calling the City to witness the test, the Contractor shall have all equipment ready and have successfully performed the test. The air test for acceptance shall be made after trench is backfilled and compacted and the roadway section is completed to sub-grade.
- C. All wyes, tees, and end of side sewer stubs shall be plugged with flexible joint caps, or acceptable alternates, securely fastened to withstand the internal test pressures. Such plugs or caps shall be readily removable and their removal shall provide an opening suitable for a lateral connection or extension.
- D. After completion of a successful air test, television inspection shall be completed by the Contractor in the presence of a City representative. Failure to have a City representative present will invalidate the test and the test shall be repeated at the Contractor's expense. Television inspections shall be completed after the manhole

has been channeled and before the roadway is paved. Immediately prior to the television inspection, enough water shall be run down the line to come out the lower manhole. A sediment trap shall be installed in the downstream manhole prior to flushing the line. The sediment trap and all the material it collects shall be removed before the line is placed into service. A copy of the video and a written report shall be submitted to the City. Acceptance of the sewer line shall be made after the tape has been reviewed and approved by the City.

- E. The City may televise the new sewer line during periods of high groundwater within the first year after acceptance of the line. Any conditions resulting in inflow and infiltration (I & I) shall be considered a system failure that shall be repaired by and at the expense of the Contractor.
- F. A mandrel test in accordance with Standard Specifications shall be performed, by and at, the expense of the Contractor on all sewers, except laterals, when televising reveals a possible defect or belly in the pipe.
- G. A vacuum test of all manholes is required prior to acceptance. The structure shall be tested in accordance with ASTM-C 1244-93 in the following manner:
 - 1. All lift holes and pipes entering into the manhole shall be plugged, taking care to securely brace each plug from being drawn into the structure.
 - 2. The test head shall be placed at the top portion of the structure in accordance with the manufacturer's recommendations.
 - 3. A vacuum of ten (10) inches of mercury shall be drawn on the manhole, the valve on the vacuum line of the test head closed, and the vacuum pump shut off. With the valves closed, the time shall be measured for the vacuum to drop by one (1) to nine (9) inches. The manhole shall pass the vacuum test if the time is greater than the time shown in *TABLE-1* below.

Table 1 – Minimum Test Times for Various Manhole Diameters

Depth (in feet)	DIAMETER (in inches)				
	48	54	60	66	72
8	20	23	26	29	33
10	25	29	33	36	41
12	30	35	39	43	49
14	35	41	48	51	57
16	40	46	52	58	67
18	45	52	59	65	73
20	50	53	65	72	81
22	55	64	72	79	89
24	59	64	78	97	97
26	64	75	85	94	105
28	89	81	91	101	113
30	74	87	98	108	121

TABLE 1 gives allowable time in seconds, i.e., test section is acceptable if vacuum does not drop below nine (9) inches until after the times shown below have expired.

4. If the manhole fails the initial test, necessary repairs shall be made by an approved method. The structure will then be re-tested until a satisfactory test is obtained.
5. If the manhole joint is displaced during the vacuum test, the manhole shall be disassembled, the seal replaced, the structure reassembled, and re-tested until compliance is obtained.
6. Testing can be done either *before* or *after* backfill operations around the structure; however, if during backfill operations it is found that the structure has been disturbed and it is suspected that the integrity of the joint has been compromised, re-testing shall be required.

H. Any time that testing reveals problems that lead to repairs by the Contractor, the City may require a complete re-testing of the entire system.

5C LIFT STATIONS

5C.01 General Design Criteria

- A. All lift stations shall be designed to serve the appropriate basin as identified in the most recent version of the *City of Winlock General Sewer Plan*.

- B. The design of lift stations shall conform to the Orange Book. The following requirements are minimum standards intended to supplement or clarify Orange Book requirements and are not all inclusive:
1. The proponent of the lift station is required to provide the City with a site located outside of the right-of-way. The land shall be deeded to the City and shall have sufficient area dimensions that allow for easy and safe access to the lift station.
 2. Each lift station shall be evaluated for buoyancy resistance using site-specific soil and groundwater information. Engineering calculations shall be provided on the determination of wetwell stability regarding flotation in the event the siting area could be subject to flooding.
 3. A concrete slab, six (6) inches in depth, shall surround the lift station well(s), with a minimum of two (2) feet of side exposure for all openings. The slab shall be installed at ground level.
 4. An access road, with easement, that shall support 20,000 lb axle loads throughout the year, shall be provided from the nearest public road to the station, to allow for maintenance of the station.
 5. Station entry access shall be keyed to match all other City lift stations. Entry lid to the station wet well shall be located as close as practical to the access drive. The lift stations shall be accessible at all times to operations and maintenance equipment and vehicles.
 6. Spare parts shall be provided as recommended by the manufacturer, with a minimum of one (1) impeller, one (1) complete set of seals, filters and one (1) set of volute gaskets. Four (4) complete sets of O&M manuals, and a list of the nearest dealers for spare parts and repair shall be provided. All replacement parts shall be readily available from a distributor in the U.S.A.
 7. The lift station shall include at least two (2) pumps, each one sized to handle all of the flow that the station will accept. Provide for a minimum of 45 seconds pump run time per pump cycle and a maximum of ten (10) pump starts per hour.
 8. The pumps, motor, and wet well shall be in compliance with current engineering practice. They shall be fully compatible as an assembly, and shall be engineered for the specific service area.
 9. All hardware and other basic mechanical parts (not including piping and valves) internal to the wet well shall be stainless steel, including float hangers, anchor bolts, cable systems, etc.
 10. The station shall be designed to include an isolation valve located in the discharge line between the station and a pumping bypass port.

11. City water shall be provided to the station for hose down. An approved backflow prevention device shall be provided on the water supply line outside the dry well to protect the public water system. The backflow device shall be in accordance with Chapter 4 of these guidelines.
12. A 100-amp minimum 480/277-volt 3-phase 4-wire main service shall be provided as per plans. The service shall be sized to accommodate the requirements of the lift station.
13. All electrical equipment shall be enclosed in a freestanding, vandal proof, all-weather enclosure NEMA 3R or better.
14. An emergency power hookup shall be provided as necessary to serve the lift station. The transfer switch shall be sized to accommodate the full lift station load (100-amp minimum).
15. Wiring shall be THHN stranded copper.
16. Lift station telemetry shall be compatible with the system in use by the City at the time of proposed construction. The system shall be installed entirely by the Contractor at the Applicant's cost. The City will have final approval authority over the telemetry system that shall be used.
17. Conduit shall be galvanized, or of a non-corrosive material as approved by the City, except conduit that penetrates a wet well or corrosive environment shall be coated rigid PVC.
18. Pump motors shall be 3-phase, 480 or 277 volt, and provided with elapsed time meters.
19. Pump control system shall be of the solid-state programmable logic controller (PLC) type, Allen-Bradley or approved equal. The system will possess a solid-state liquid level-sensing device of a 4-20ma analog design. The controller shall be readily accessible for ease of maintenance. The City will have final approval authority over the control system that will be used.
20. Lift stations shall be designed to accommodate a confined space entry davit, as utilized by the City. An appropriate bracket unit shall be included with the station at the wet well entry lid to accommodate the City's confined space entry equipment.
21. The lift station will include the following alarm and station status points, as applicable:

- a. Low Wet Well
 - b. High Wet Well
 - c. Pump Failure
 - d. Power Failure
 - e. Intrusion
- f. A water test for all wet wells in accordance with the manhole vacuum test for "Gravity Sewers" shall be required

5D PRESSURE SEWER (FORCE MAIN)

5D.01 General Design Criteria

- A. Force mains up to twelve (12) inches shall be ductile iron AWWA C151 Class 50 or PVC C900 with ductile iron fittings and gasket joints. For fourteen (14) to twenty-four (24) inch mains, pipe shall be ductile iron C151 Class 50 or PVC C905 with ductile iron fittings and gasket joints. A more rigid pipe may be required where unlimited trench widths occur. All ductile iron pipe and fittings shall be epoxy coated or PE lined and designed for use with corrosive materials.
- B. Force mains will have a minimum thirty-six (36) inches of cover to top of pipe. See *Chapter 4 Section 4.13 for Sanitary Sewer/Watermain Crossing* requirements.
- C. The minimum velocity allowed is two (2) feet per second (fps) at average dry weather flow. Two (2) fps is required to maintain solids in suspension although three (3) fps is desired to scour settled solids. Maximum velocity allowed shall be eight (8) fps.
- D. Force mains will include toning wire, cathodic protection and tracer tape installed in accordance with the Standard Specifications.
- E. Hydrogen sulfide (H₂S) odors and the buildup of sulfuric acid (H₂SO₄) occur in some force main applications. To mitigate these conditions, some type of odor control method(s) may be required. This may include chemical addition at the pump station and/or the re-aeration of the wastewater at or near the terminus. The specific requirements shall be determined by the City

5D.02 Air/Vacuum Valves

- A. Air release valves and air/vacuum valves shall be located at the high points of the line within a manhole or approved vault that provides eighteen (18) inches of clearance on all sides between the assembly of the wall(s). Air release valves shall be fitted with an activated carbon canister to prevent the release of disagreeable odors to the surrounding area. Grades shall be designed to minimize the need for air/vacuum valves when practical. Vehicular access to the valve is required for maintenance.

5D.03 Drains

- A. Provisions to drain a force main to facilitate repairs or to temporarily remove a force main from service shall be provided. This may be accomplished through the use of a valved tee connected to a drain line at its low point with isolation valves on both sides of the tee along the main. A manhole shall be set over the force main at the valved tee to provide a sump for the wastewater to be drained into.

5D.04 Pigging Ports

- A. Pigging ports shall be located outside of paved areas but within the right-of-way as shown in the Standard Details. Subject to review and approval by the City, pigging ports may be required at a change in pipeline size and/or; at the end of a dead-end line. The distance between pigging ports shall not exceed 3,000 feet without approval.

5D.05 Testing

- A. Prior to roadway paving and final acceptance of the project, force mains and service lines shall be subjected to a hydrostatic pressure test in accordance with the test requirements for water mains described in the Standard Specifications.
- B. The Contractor will provide all necessary equipment and will perform all work connected with the tests. Tests shall be made after all connections have been made. This is to include any and all connections as shown on the plan. The Contractor will perform all tests to assure that the equipment to be used for the test is adequate and in good operating condition and the air in the line has been released before requesting the City to witness the test.

5E GRINDER PUMP SYSTEMS

5E.01 General Design Criteria

- A. Grinder pump systems, when allowed by the City, shall be in accordance with the general requirements described in the Orange Book, the Standard Details and these Criteria.
- B. Each development with grinder pump service will include an easement on the face of the plat for access to all lots. Individual lots with grinder pump service must provide separate easements prior to approval of service.
- C. Operation and maintenance of the public portion of the grinder pump system shall be the responsibility of the City only after the system has been inspected and approved and an easement is granted to the City and the warranty period of one year has expired. The public portion of the grinder pump system is defined as the grinder

- D. Power shall be provided and paid for by the grinder pump customer. The customer shall be responsible for contacting the City in a timely manner whenever an alarm is activated or maintenance and repairs become necessary. The customer shall be responsible to curtail water usage during times of grinder pump system malfunction until such problems are corrected. The City will not accept responsibility for damages resulting from plumbing backups or other problems associated with grinder pump system facilities or plumbing that the customer is responsible for.
- E. Systems installed on a site where an existing septic tank exists may not use the existing tank. The existing tank must be removed or abandoned per Department of Health and/or Lewis County requirements.
- F. Pump and pipeline sizing shall conform to City requirements based on the criteria as set forth in industry guidelines.

5E.02 Collection System

- A. The minimum pipe size used is 2-inch inside diameter. Pipe shall be Class 200, ASTM D2241, SDR 21 with rubber gasket joints. Gaskets will comply with ASTM D 1869. Grinder pump mains will have a minimum thirty-six (36) inches of cover to top of pipe.
- B. Service pipe shall be minimum 1-1/4 inch diameter, Schedule 40 PVC water pipe, solvent welded connection located at 90 degrees to the mainline, when possible. Solvent cements and primer for joining PVC pipe and fittings will comply with ASTM D 2564 and shall be used as recommended by the pipe and fitting manufacturers. Services will have a minimum twenty-four (24) inches of cover over the top of the pipe.
- C. All pipe shall be installed with continuous tracer tape set twelve (12) to eighteen (18) inches under the proposed finished grade. The marker tape shall be marked "SEWER" and shall be plastic, non-biodegradable, metal core, or backing that can be detected by a standard metal detector. In addition to tracer tape, twelve (12) gauge coated (green) copper wire shall be wrapped around the pipe, and then brought up and tied off at the valve boxes.
- D. All 1-1/4 inch valves shall be PVC ball valves with pre-loaded EPDM stem seals, micro-finished PVC ball and self-adjusting polyethylene ball seat to compensate for wear and prevent over-tightening. Valves shall be designed for use with corrosive fluids, for low torque manual operation, and for a working pressure of 150 psi.

- E. All 2-inch and larger valves shall be resilient wedge gate M&H style 820 or Waterous Series 500 plug valves with an epoxy coating to resist corrosion. Valves shall be located at every intersection and at a maximum of every 500 feet unless otherwise approved by the City. Valves may be installed in conjunction with required pigging ports.
- F. Air release and air/vacuum valves shall be located at the high points of the line. Profiles for each pipe run shall be submitted with the hydraulic gradeline for both static and dynamic flow conditions to show where the critical points are for air release valves. Vehicular access to air/vacuum valves is required for maintenance. Air Release Valves shall be A.R.I. D-025 Combination Air Valve for Sewage. Each vent shall be equipped with an odor control system such as activated carbon filters impregnated with sodium hydroxide.
- G. Pigging ports shall conform to the requirements for force mains.

5E.03 Controls and Alarms

- A. All grinder pump systems shall be wired to a dedicated 20-amp breaker that supplies power to the grinder pump system control box only. This is required to avoid damage or overload to the system and appliances. The customer is responsible for the operation and maintenance of the breaker feeder wires that serve the grinder pump system. All buried power shall be installed with continuous tracer tape set twelve (12) inches above the buried power. The marker tape shall be plastic non-biodegradable, metal core backing marked "Power".
- B. Grinder pump systems shall be supplied by a single source, complete, with pump, pump chamber, piping, valves, fittings, riser, lid, controls and control panel as shown on the Standard Details. Panel shall include an hour meter, audible alarm (minimum of 80db) and oil-tight visual alarm, red lens, with push-to-silence feature. Alarm circuit shall be wired separately from the pump so that if the internal pump overload switch is tripped, the alarm will still function.
- C. Panel shall include a 20-amp power disconnect assembly toggle switch to de-energize entire control panel, to permit servicing panel without access to the customer's breaker switches. The pump control panel shall be mounted on the side of the house nearest the tank and pump, preferably on a portion of the structure not intended for occupancy. The control panel shall be located within sight of the tank in all cases and of the street where practical. The panel shall be between four (4) and five (5) feet above finished grade.

5F GREASE TRAP/GREASE INTERCEPTOR

5F.01 General

- A. Grease traps or grease interceptors shall be required for all restaurants, commercial kitchens, industrial processing facilities or other facilities where fats, oils or grease (FOG) could be otherwise discharged to the sanitary sewer system. Such equipment shall be operated and/or maintained by the owner or operator of such facilities so as to eliminate the discharge of these substances to the sanitary sewer system. Grease traps and interceptors shall be designed in accordance with the applicable plumbing codes.
- B. The retained FOG shall be regularly cleaned and/or pumped out by the property owner. The maintenance frequency varies with each facility and shall be established by the property owner unless otherwise directed by the City in response to maintenance problems.
- C. The maximum liquid temperature through a grease trap shall be 90-degrees Fahrenheit. A dump valve may be required to ensure the liquid temperature standard is maintained, at the discretion of the City.
- D. A maintenance log shall be kept on-site for recording all maintenance activity. At a minimum, the log will contain date of maintenance and/or inspection, work performed, and name of individual who performed service.
- E. Interceptors shall be water tight and constructed of materials not subject to excessive corrosion. Appropriate tank materials include concrete, coated metal, and fiberglass. Plans for grease interceptors will include dimensions, structural reinforcing, structural calculations, and other pertinent data as determined by the City. Interceptors shall be designed by a professional engineer licensed in the State of Washington.
- F. Grease traps and interceptors shall be located in such a manner as to be easily accessible for cleaning, pumping, and sampling. In addition, they shall be as close as practical to the fixtures discharging into them. In general, an appropriate location is under a kitchen sink (for traps) or immediately outside the facility served (for interceptors).
- G. Flow control fittings shall be installed on the inlet side of smaller traps to protect against overloading and surges from the fixtures.
- H. Venting of outdoor interceptors is not required where siphoning, of the contents is prevented by providing appropriately sized outlets.

5F.02 Capacity

A. The size of a grease interceptor shall be determined by using the following formula:

$$\mathbf{MPH \times WR \times RT \times SF = Vol}$$

MPH = number of meals served per peak hour, or seating capacity (whichever is applicable)

WR = cumulative waste flow rate, based on the fixtures

-with dishwasher = 6 gallons

-without dishwasher = 5 gallons

-single service kitchen (i.e. no reusable dishes or flatware) = 2 gallons

-garbage disposal = 1 gallon

RT = retention times

-commercial kitchen = 2.5 hours

-single service kitchen = 1.5 hours

SF = storage factor

-8 hour operation = 1

-single service kitchen = 1.5

-16 hour operation = 2

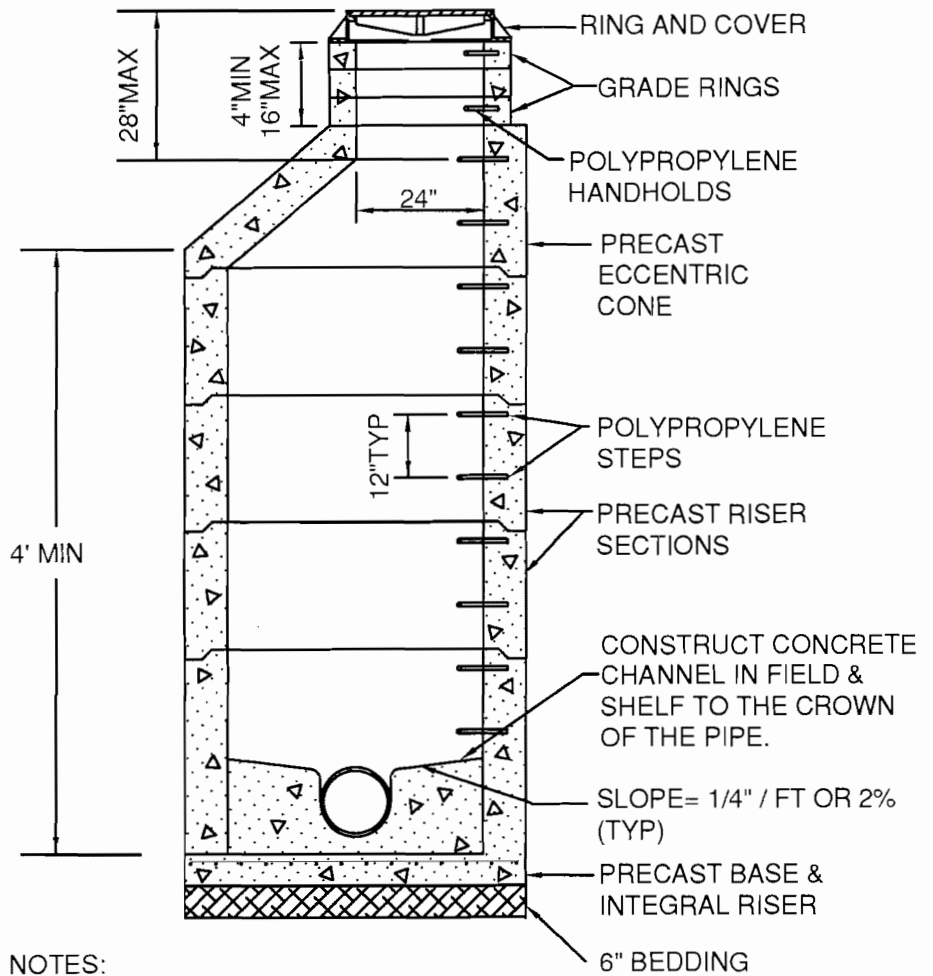
-24 hour operation = 3

Vol = minimum interceptor liquid volume in gallons

B. The capacity of a grease trap shall be determined by using the following table:

Number of Fixtures	Required Flow Rate (gpm)	Grease Retention (lbs)
1	20	40
2	25	50
3	35	70
4	50	100

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NOTES:

1. PRECAST MANHOLES SHALL MEET THE REQUIREMENTS OF ASTM C478. JOINTS SHALL BE RUBBER GASKETED CONFORMING TO ASTM C443 AND SHALL BE GROUTED FROM THE INSIDE. LIFT HOLES AND GRADE RINGS SHALL BE GROUTED FROM THE OUTSIDE & INSIDE OF THE MANHOLE.
2. STEPS IN MANHOLE SHALL HAVE 6" MINIMUM CLEARANCE. HANDHOLES IN ADJUSTMENT SECTION SHALL HAVE 3" MINIMUM CLEARANCE. THE FIRST STEP OR HANDHOLD SHALL BE A MAXIMUM OF 12" FROM THE TOP OF THE COVER.
3. CONNECTION TO MANHOLE SHALL BE MADE BY KOR-N-SEAL BOOT, UNLESS AN ALTERNATIVE CONNECTION METHOD IS SPECIFICALLY APPROVED BY THE CITY.
4. NON-REINFORCED CONCRETE IN CHANNEL AND SHELF SHALL BE ψ COMMERCIAL GRADE 3000.
5. SEE DETAIL 5-3 FOR MANHOLE COLLAR INSTALLATION.
6. A SEWER GUARD SHALL BE INSTALLED IN ANY MANHOLE SUBJECT TO FLOODING.

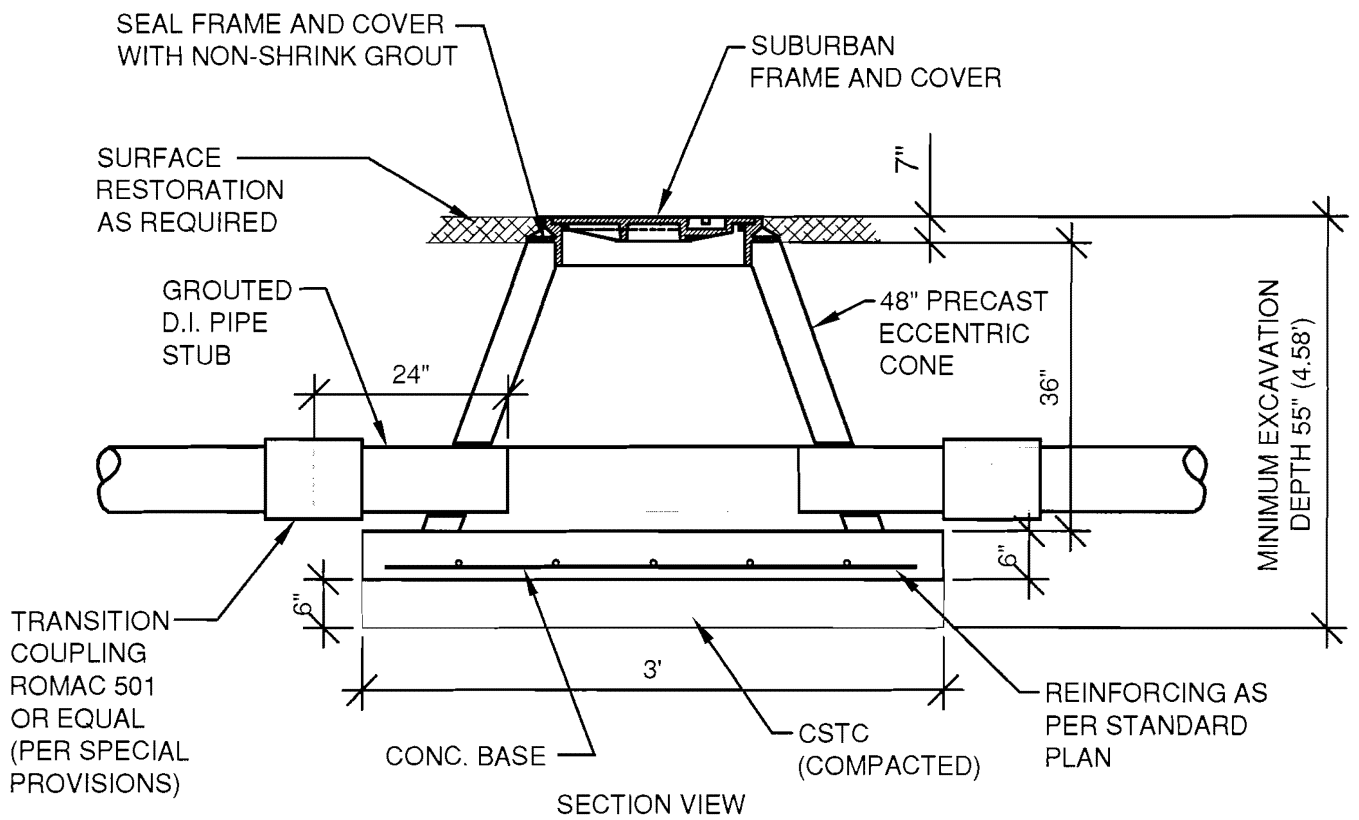
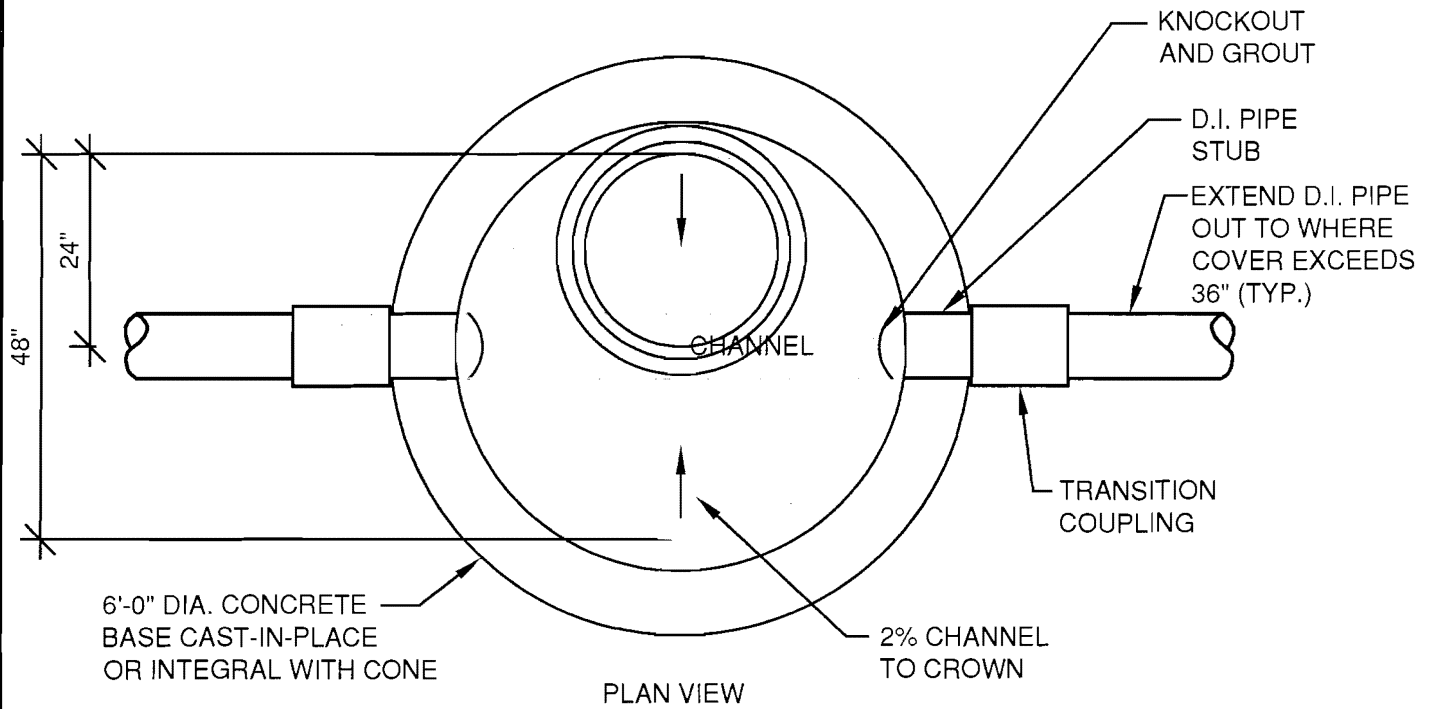


CITY OF WINLOCK
DEPARTMENT OF PUBLIC WORKS

SEWER DETAILS
TYPICAL MANHOLE

REVISED
08/20/2007

DRAWING
NO.
5-1



NOTE:
 SHALL MANHOLE INSTALLATIONS ARE FOR SPECIAL CIRCUMSTANCES AND MUST BE APPROVED PRIOR TO DESIGN AND INSTALLATION.



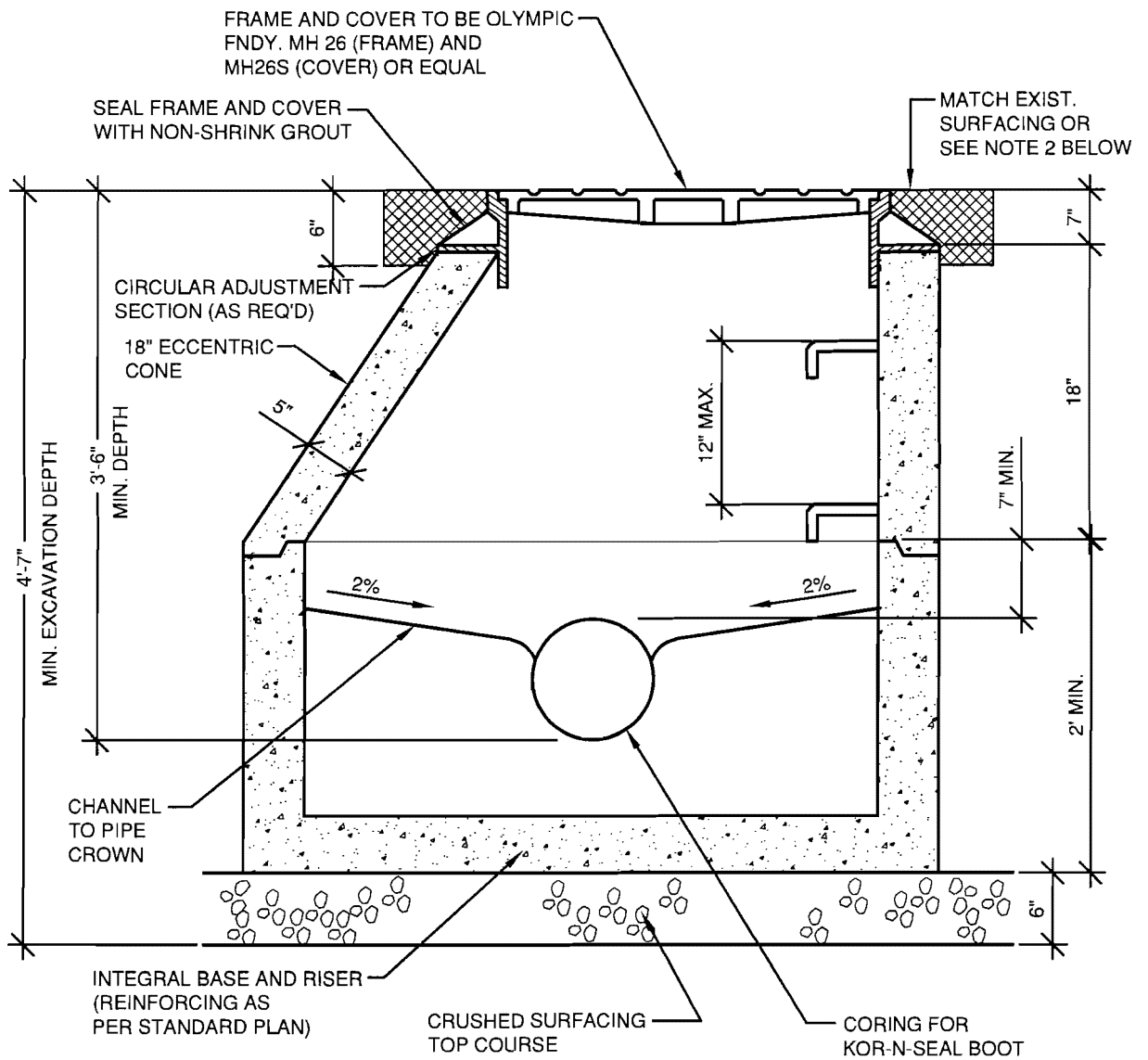
CITY OF WINLOCK
 DEPARTMENT OF PUBLIC WORKS

SEWER DETAILS
SHALLOW MANHOLE
LESS THAN 3.5'

REVISED
 08/20/2007

DRAWING
NO.
5-2a

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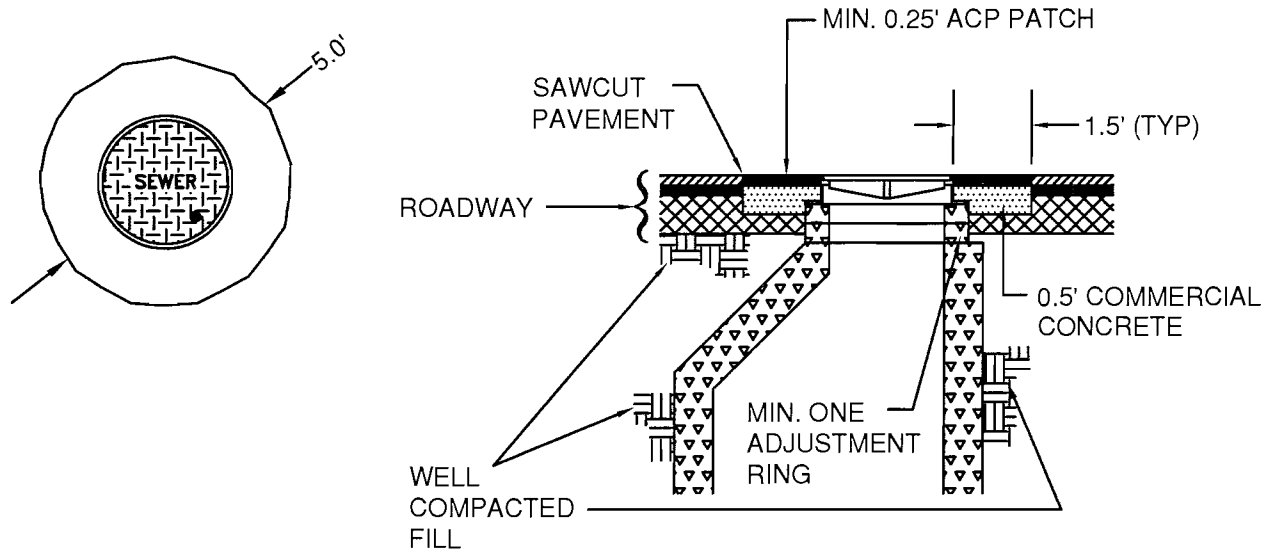


- NOTES:**
1. SEWER MAIN PIPE SHALL BE C900 PVC OR CL50 D.I. WHERE COVER IS LESS THAN 36" TO TOP OF PIPE.
 2. KNOCKOUTS SHALL HAVE A WALL THICKNESS OF 2" MINIMUM TO 2 1/2" MAXIMUM.

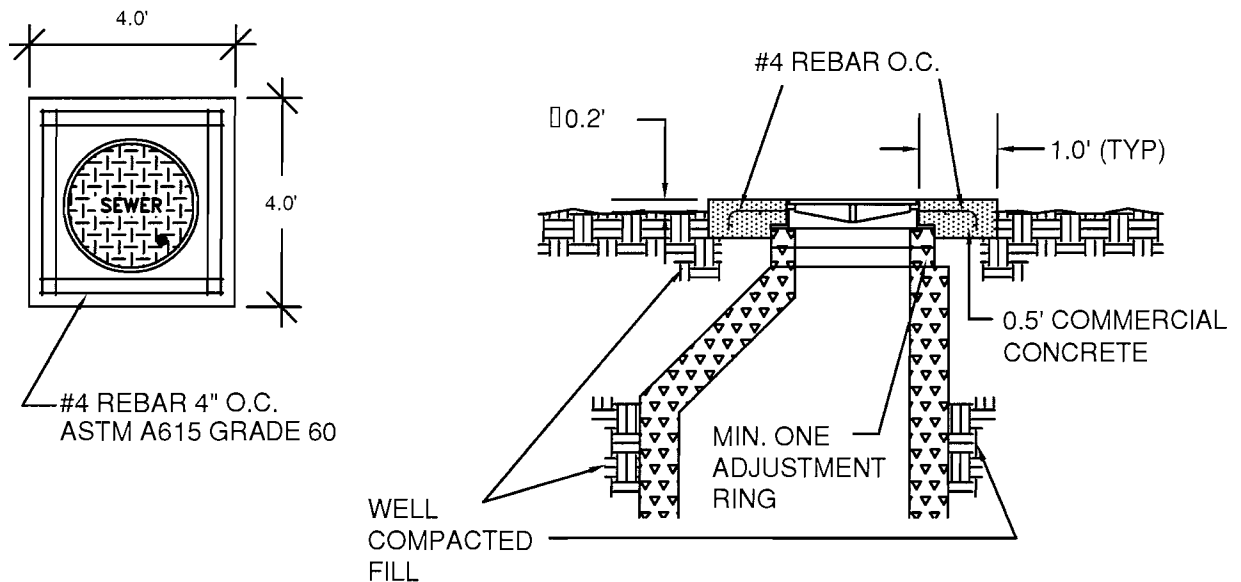


<p>CITY OF WINLOCK DEPARTMENT OF PUBLIC WORKS</p>	<p>SEWER DETAILS SHALLOW MANHOLE 3.5' - 5.5'</p>	<p>REVISED 08/20/2007</p>	<p>DRAWING NO. 5-2b</p>
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MANHOLE IN ASPHALT



MANHOLE OUTSIDE ASPHALT



NOTES:

1. FRAME AND COVER SHALL BE OLYMPIC FOUNDARY MH26 AND MH26S OR APPROVED EQUAL.
2. SINGLE OPENING IN LID FOR USE OF MANHOLE HOOK IS REQUIRED.
3. JOINTS BETWEEN EACH ADJUSTMENT RING INCLUDING WHERE FRAME & MANHOLE CONE MEET RINGS, SHALL INCLUDE ACTIVATED OAKUM OR APPROVED EQUAL.

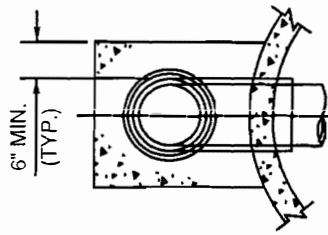


CITY OF WINLOCK
DEPARTMENT OF PUBLIC WORKS

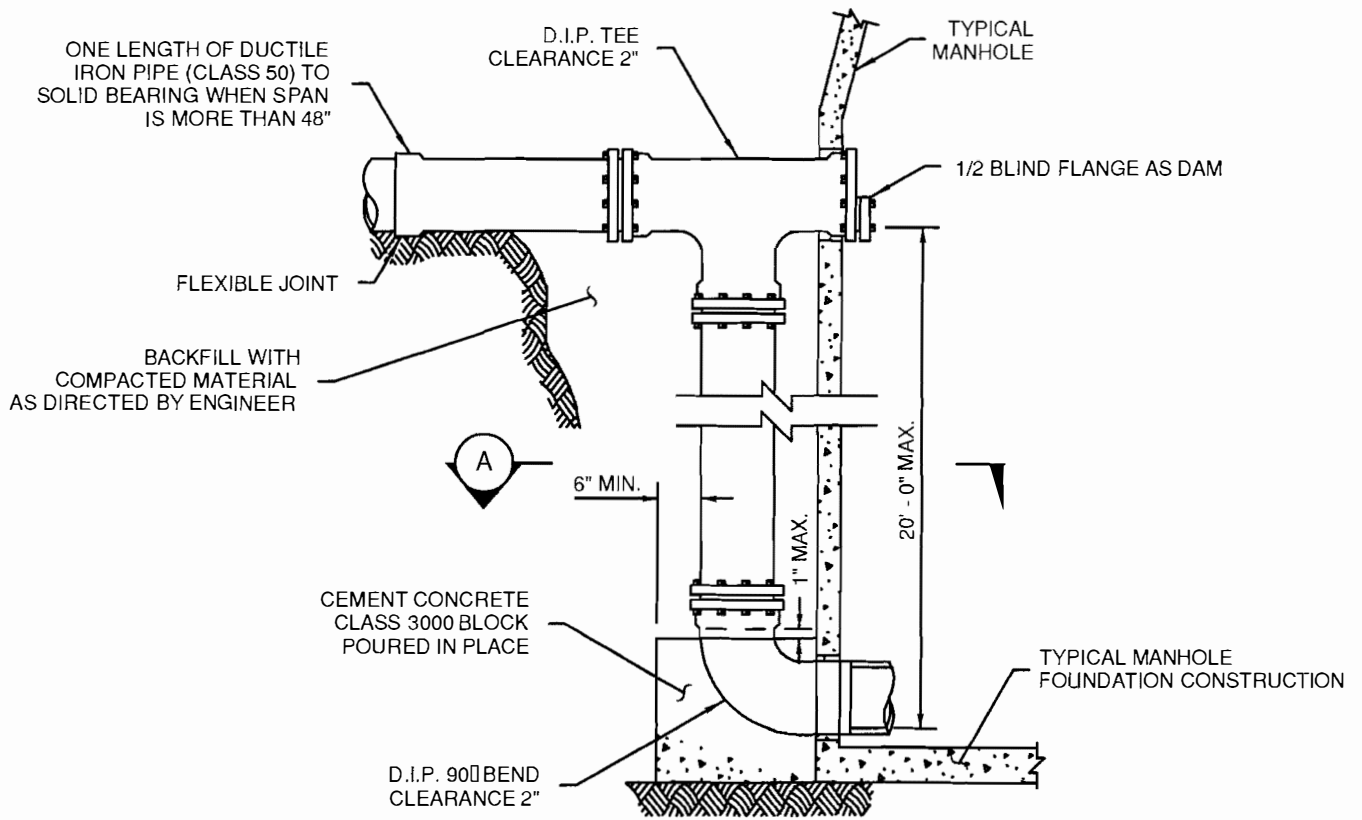
SEWER DETAILS
MANHOLE COLLAR

REVISED
08/20/2007

DRAWING
NO.
5-3



SECTION A



ELEVATION

DUCTILE IRON
DROP CONNECTION



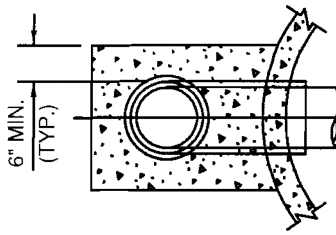
CITY OF WINLOCK
DEPARTMENT OF PUBLIC WORKS

SEWER DETAILS
DROP CONNECTION A -
DUCTILE IRON ENCASED

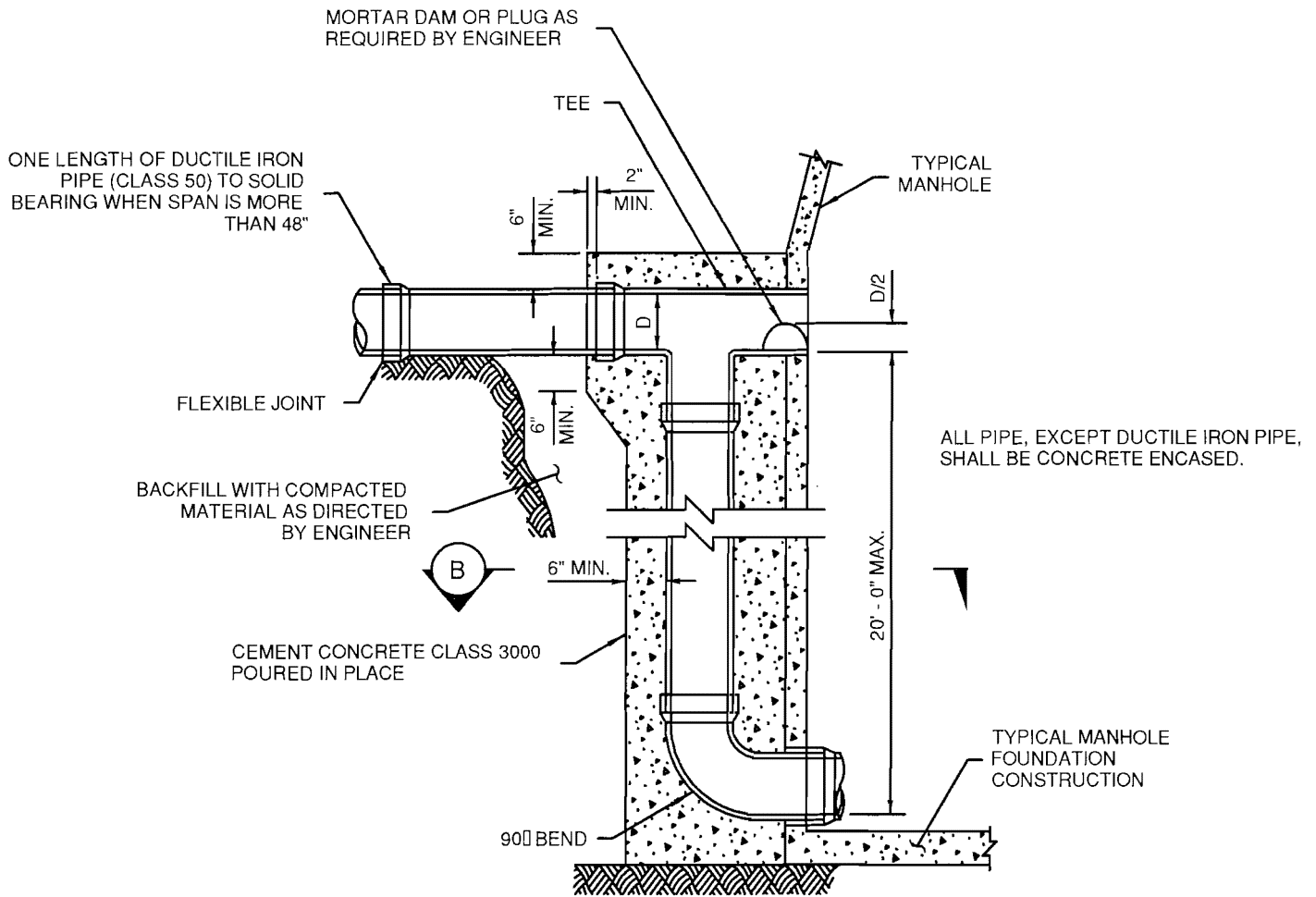
REVISED
08/20/2007

DRAWING
NO.
5-4a

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SECTION B



ELEVATION

CONCRETE ENCASED
DROP CONNECTION

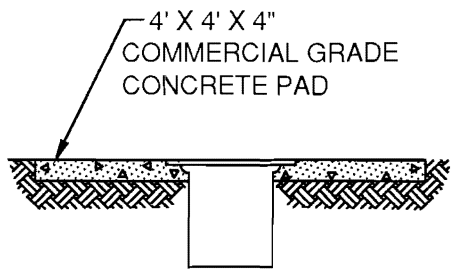


CITY OF WINLOCK
DEPARTMENT OF PUBLIC WORKS

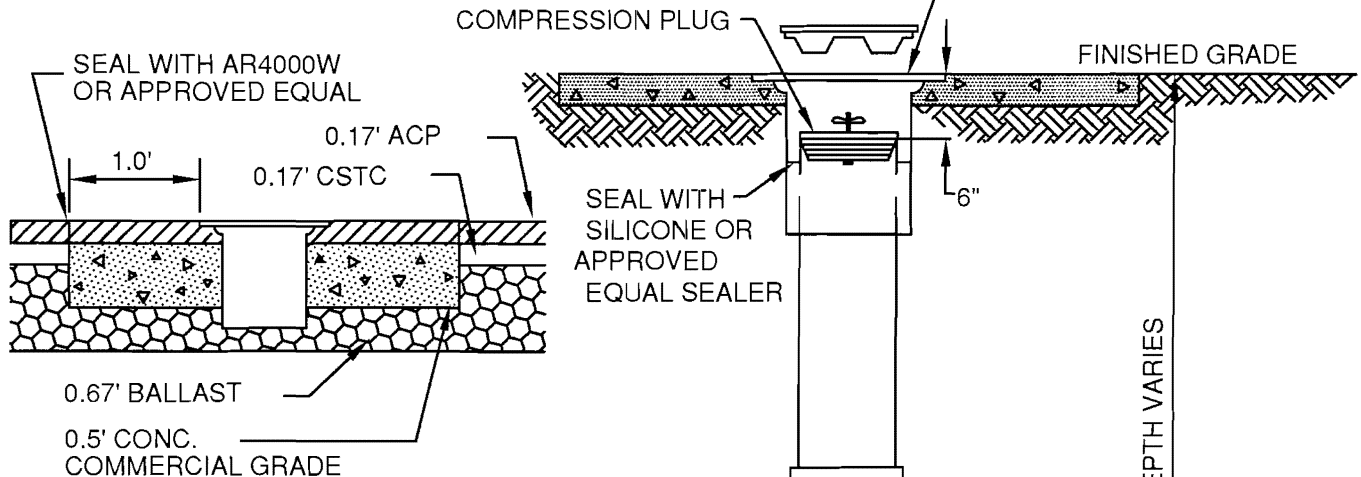
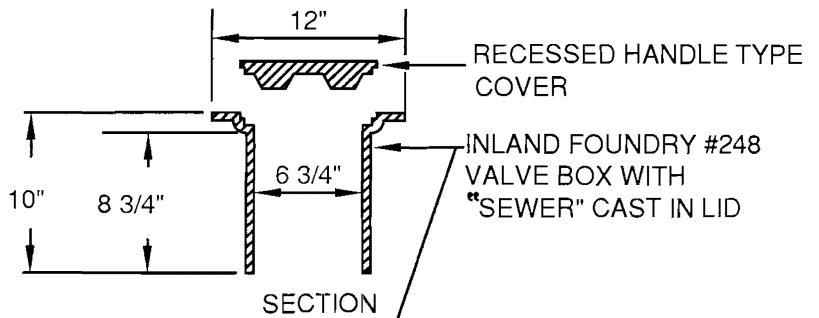
SEWER DETAILS
DROP CONNECTION B -
CONCRETE ENCASED

REVISED
08/20/2007

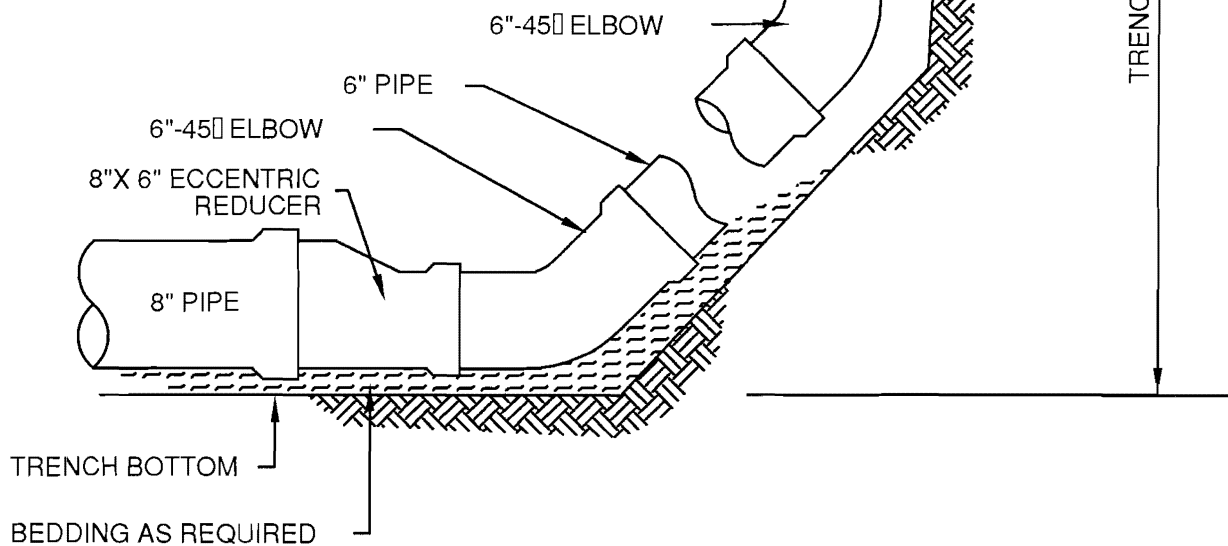
DRAWING
NO.
5-4b



OUTSIDE PAVED AREA



INSIDE PAVED ROADWAY



NOTES:

1. ALL SEWER PIPE SHALL BE ASTM 3034 SDR 35.
2. SILICONE SEALANT SHALL NOT INTERFERE WITH REMOVAL OF THE PLUG.

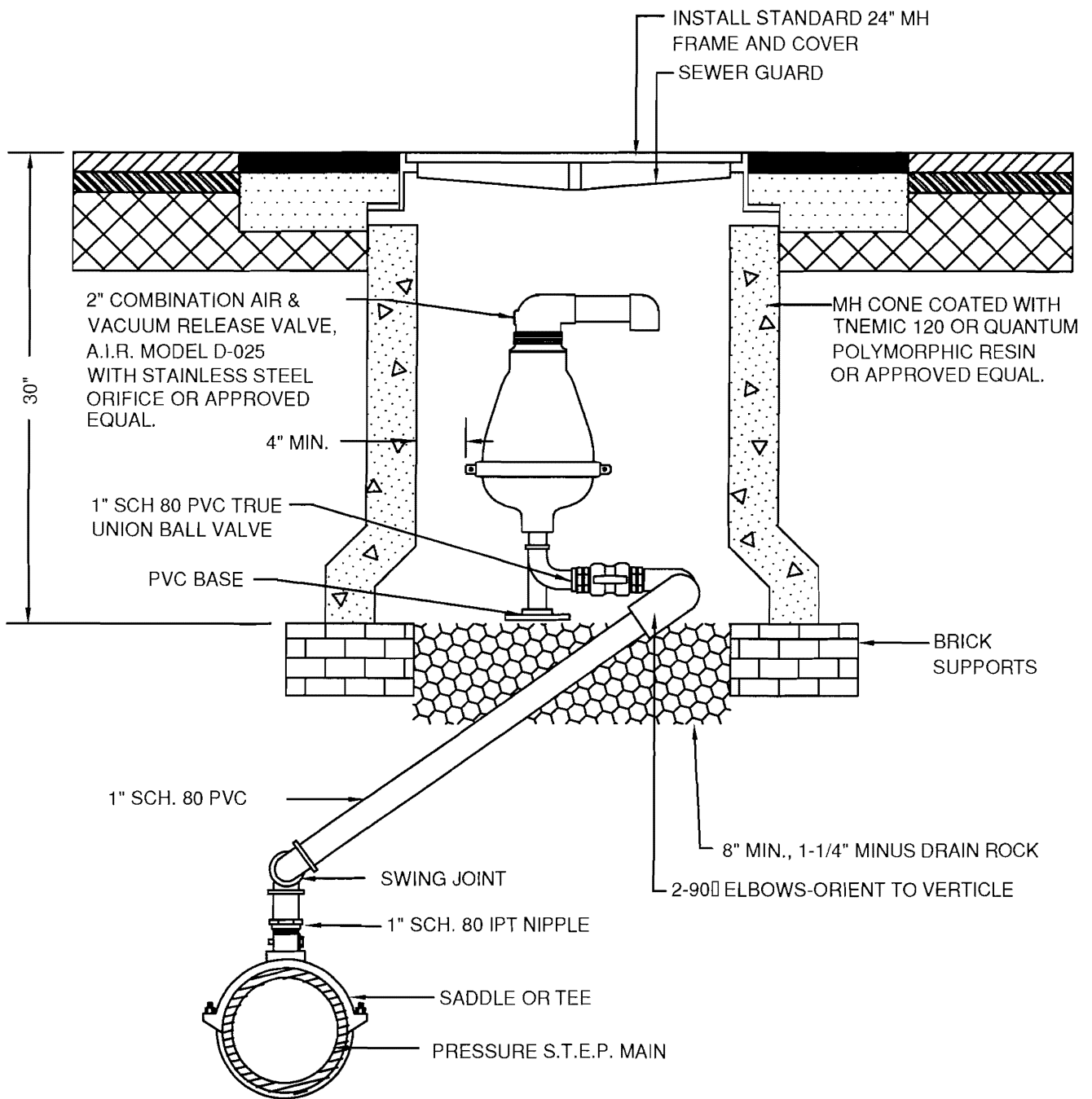


CITY OF WINLOCK
DEPARTMENT OF PUBLIC WORKS

SEWER DETAILS
CLEANOUT

REVISED
08/20/2007

DRAWING
NO.
5-5



NOTES:

1. LOCATE AIR RELEASE ASSEMBLY IN SIDEWALK WHEN POSSIBLE.
2. ALL FASTENERS SHALL BE STAINLESS STEEL.



CITY OF WINLOCK
DEPARTMENT OF PUBLIC WORKS

SEWER DETAILS
S.T.E.P. SYSTEM AIR
RELEASE ASSEMBLY

REVISED
08/20/2007

DRAWING
NO.
5-6

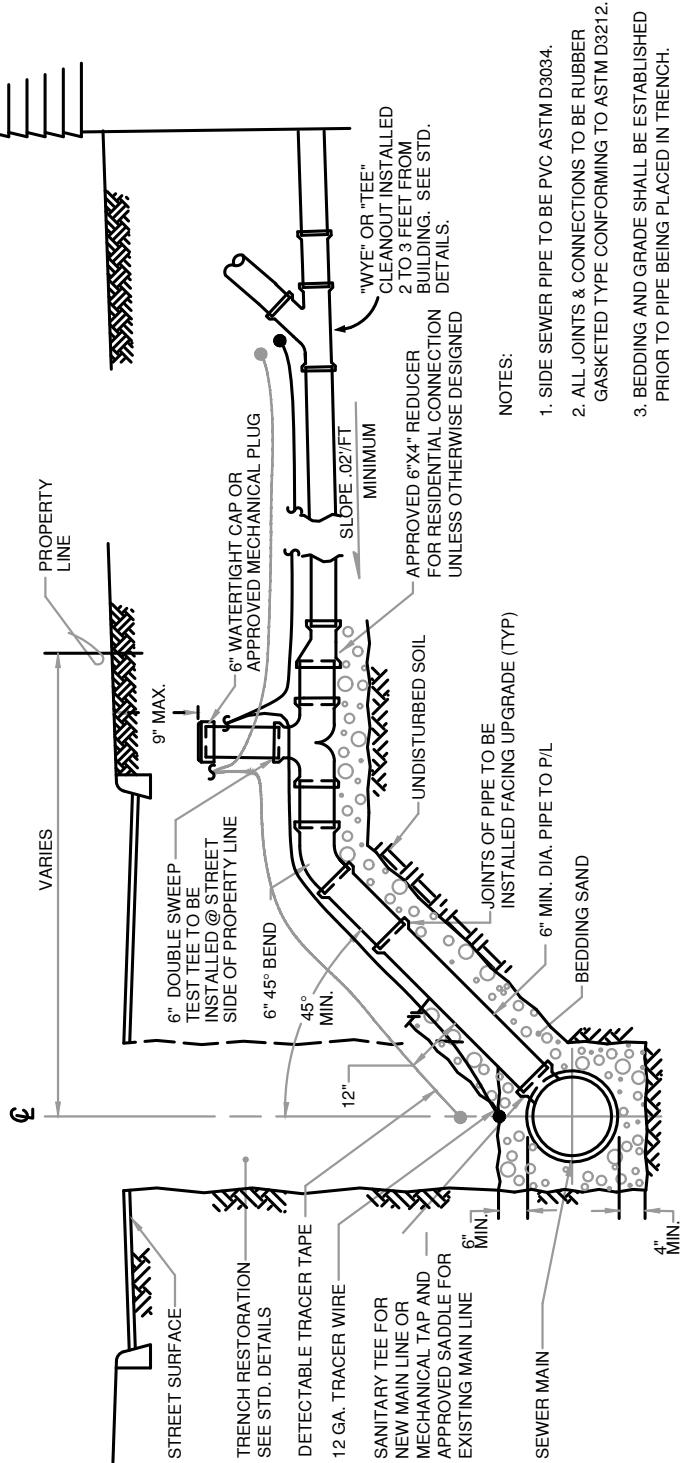


CITY OF WINLOCK
DEPARTMENT OF PUBLIC WORKS

OPTION 1
SEWER DETAILS
LATERAL SERVICE
CONNECTION

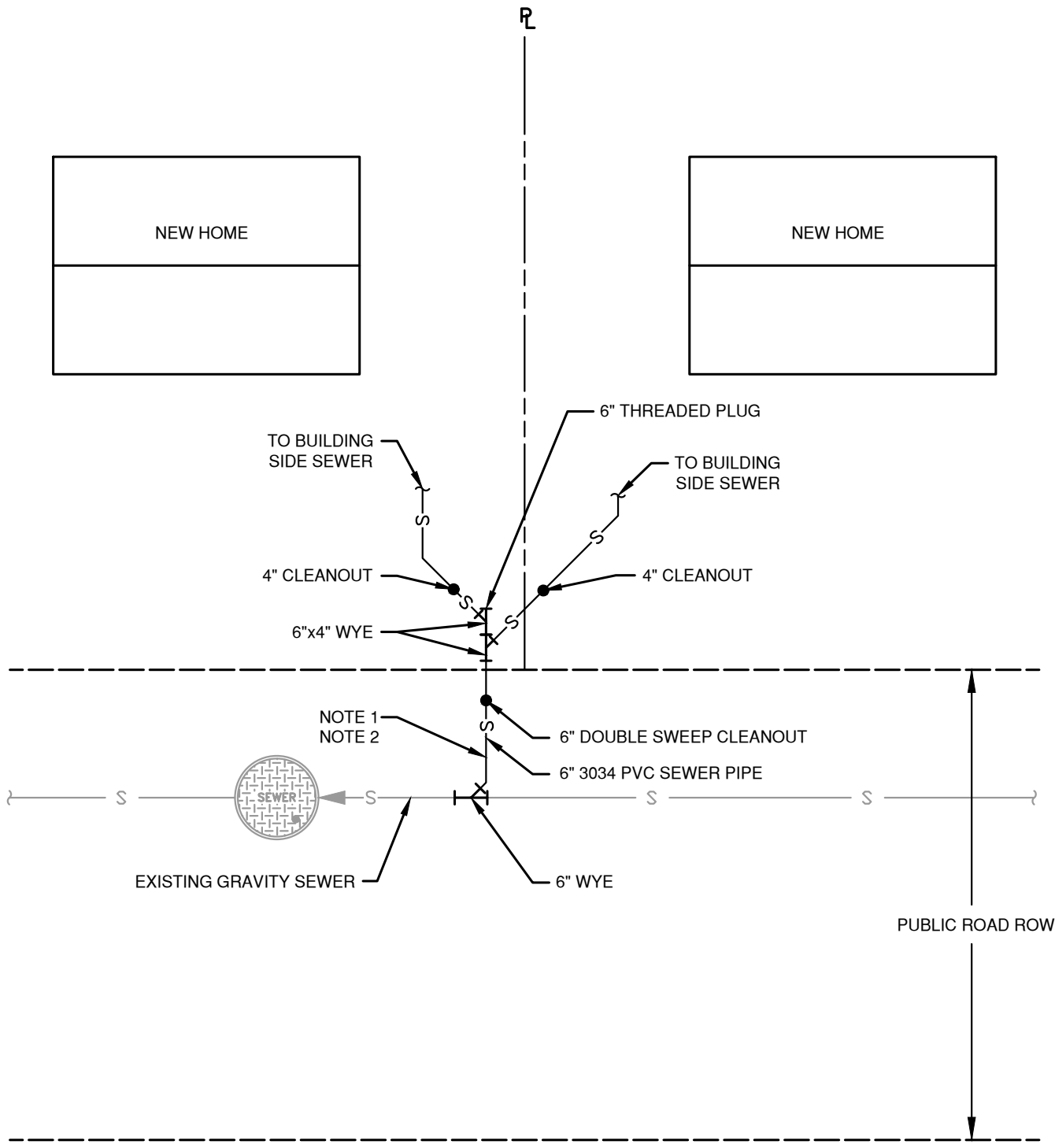
REVISED
9/10/2020

DRAWING
NO.
5-7



NOTES:

1. SIDE SEWER PIPE TO BE PVC ASTM D3034.
2. ALL JOINTS & CONNECTIONS TO BE RUBBER GASKETED TYPE CONFORMING TO ASTM D3212.
3. BEDDING AND GRADE SHALL BE ESTABLISHED PRIOR TO PIPE BEING PLACED IN TRENCH.



NOTE 1
NOTE 2



EXISTING GRAVITY SEWER

PUBLIC ROAD ROW

- NOTE 1 - INSTALL 12 GA. DETECTABLE TRACER WIRE ABOVE SEWER SERVICE LINE FROM THE SEWER MAIN TO THE 4" CLEANOUT.
- NOTE 2 - INSTALL DETECTABLE TRACER WIRE 12" ABOVE THE SEWER SERVICE LINE FROM THE SEWER MAIN TO THE 4" CLEANOUT.

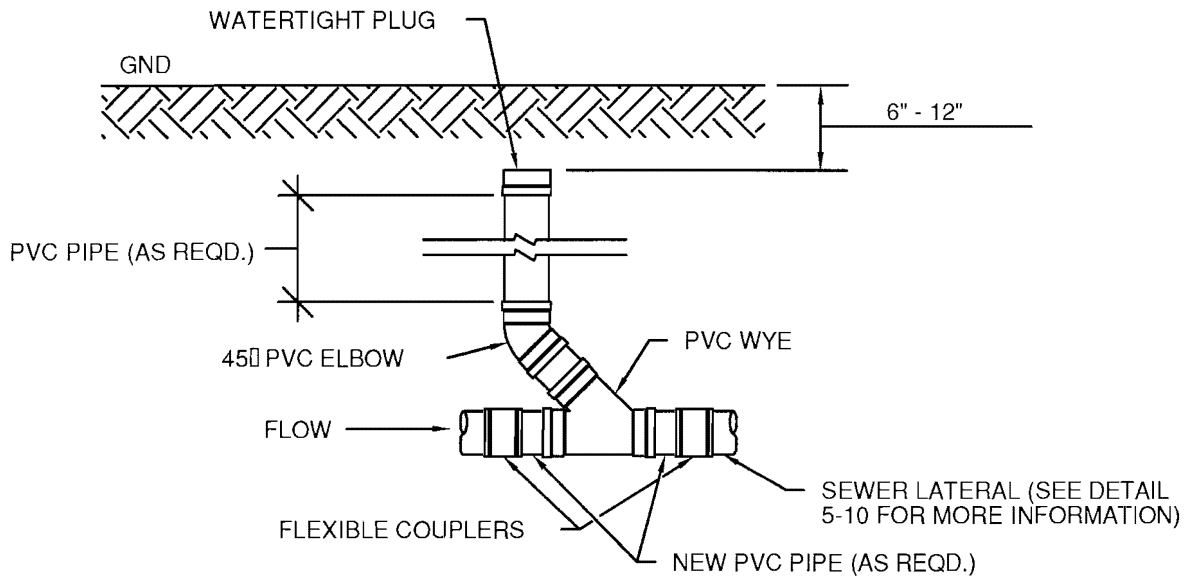


CITY OF WINLOCK
DEPARTMENT OF PUBLIC WORKS

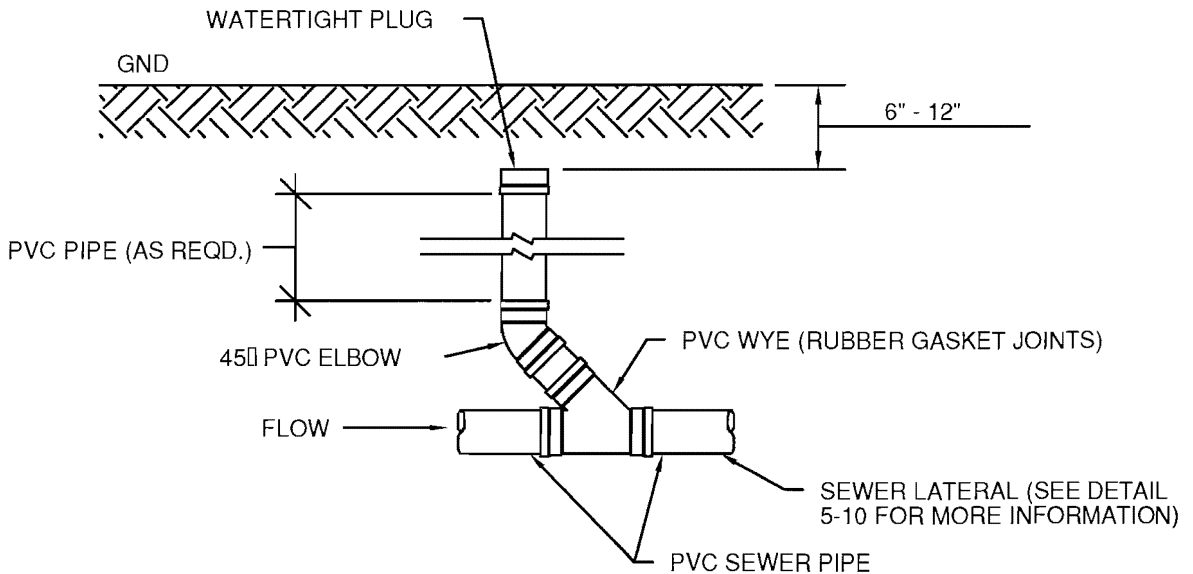
OPTION 2
SEWER DETAILS
LATERAL SERVICE
CONNECTION

REVISED
9/10/2020

DRAWING
NO.
5-7a



CLEANOUT DIAGRAM FOR RETROFITTING EXISTING SERVICES



**CLEANOUT DIAGRAM
FOR NEW SERVICES**

NOTES:

1. ALL JOINT CONNECTIONS SHALL BE RUBBER GASKETED.
2. SANITARY TEES MAY BE USED FOR DEPTHS LESS THAN 3', LIPON APPROVAL OF THE PUBLIC WORKS DIRECTOR.



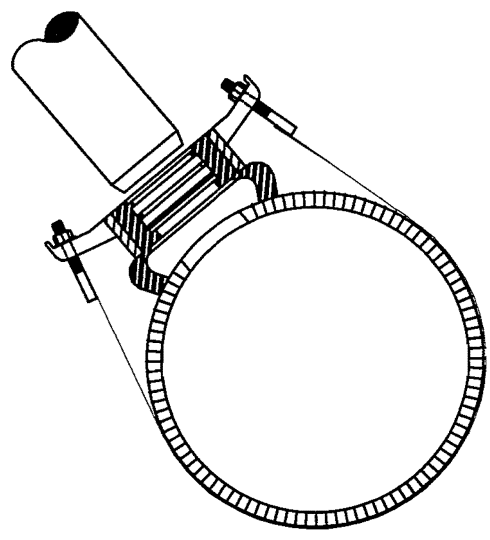
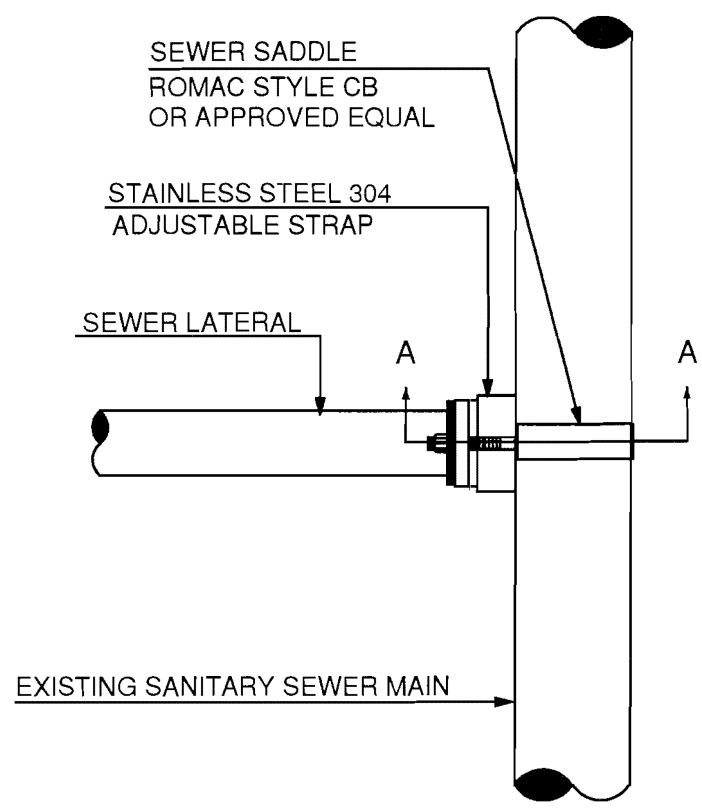
CITY OF WINLOCK
DEPARTMENT OF PUBLIC WORKS

**SEWER DETAILS
SIDE SEWER CLEANOUT**

**REVISED
08/20/2007**

**DRAWING
NO.
5-8**

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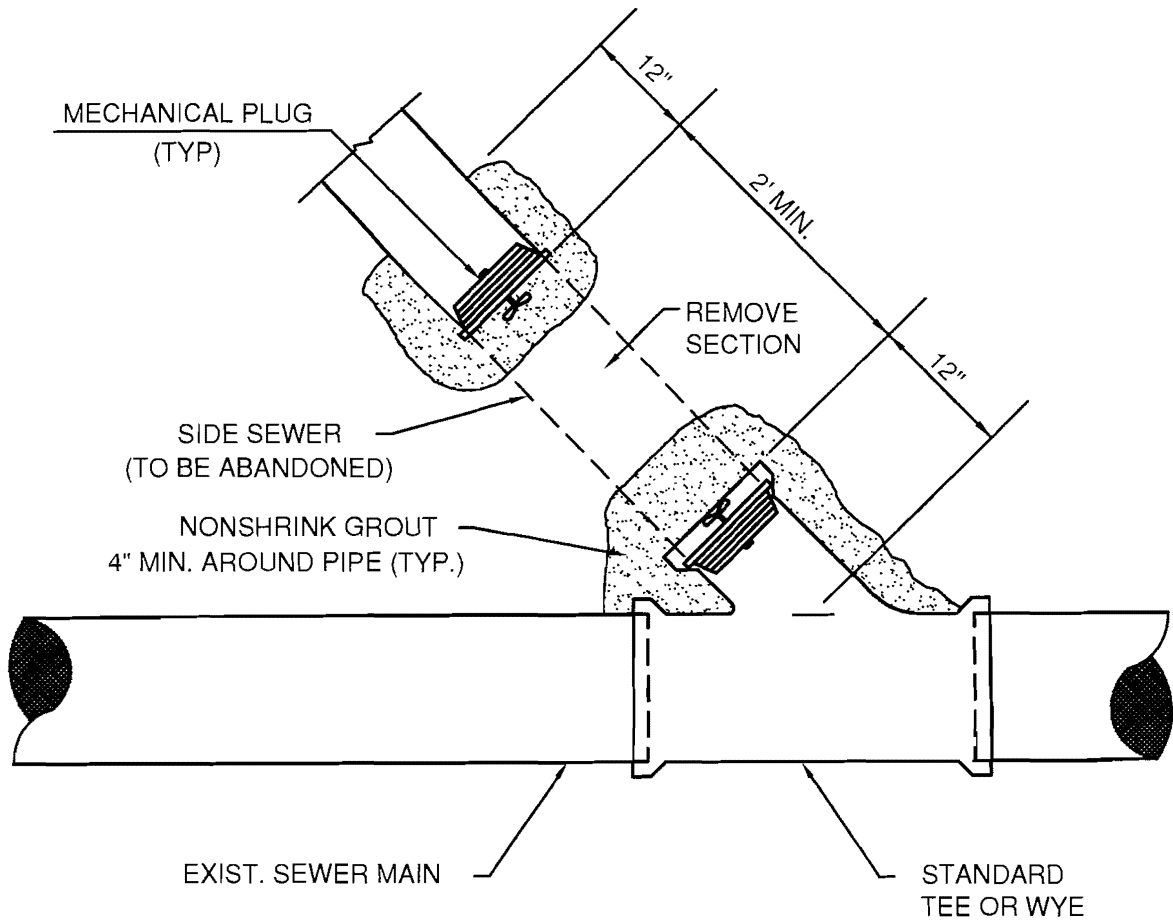
SECTION A-A

NOTES:

1. BOLTS, NUTS, WASHERS, AND 1/2" N.C. ROLL THREAD ARE TO BE TEFLON COATED.
2. THE STAINLESS BAND SHALL BE 3 1/2" MINIMUM WIDTH.
3. ALL FASTENERS SHALL BE STAINLESS STEEL.
4. PIPE MUST BE CORED (DRILLED) WITH A HOLE SAW OF APPROVED DIAMETER. CORE HOLE MUST BE INSPECTED AND APPROVED.



<p>CITY OF WINLOCK DEPARTMENT OF PUBLIC WORKS</p>	<p>SEWER DETAILS SANITARY SEWER SADDLE TAP</p>	<p>REVISED 08/20/2007</p>	<p>DRAWING NO. 5-9</p>
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NOTE:
 THIS DETAIL SHALL APPLY TO SIDE
 SEWERS WHICH ARE TO BE ABANDONED.

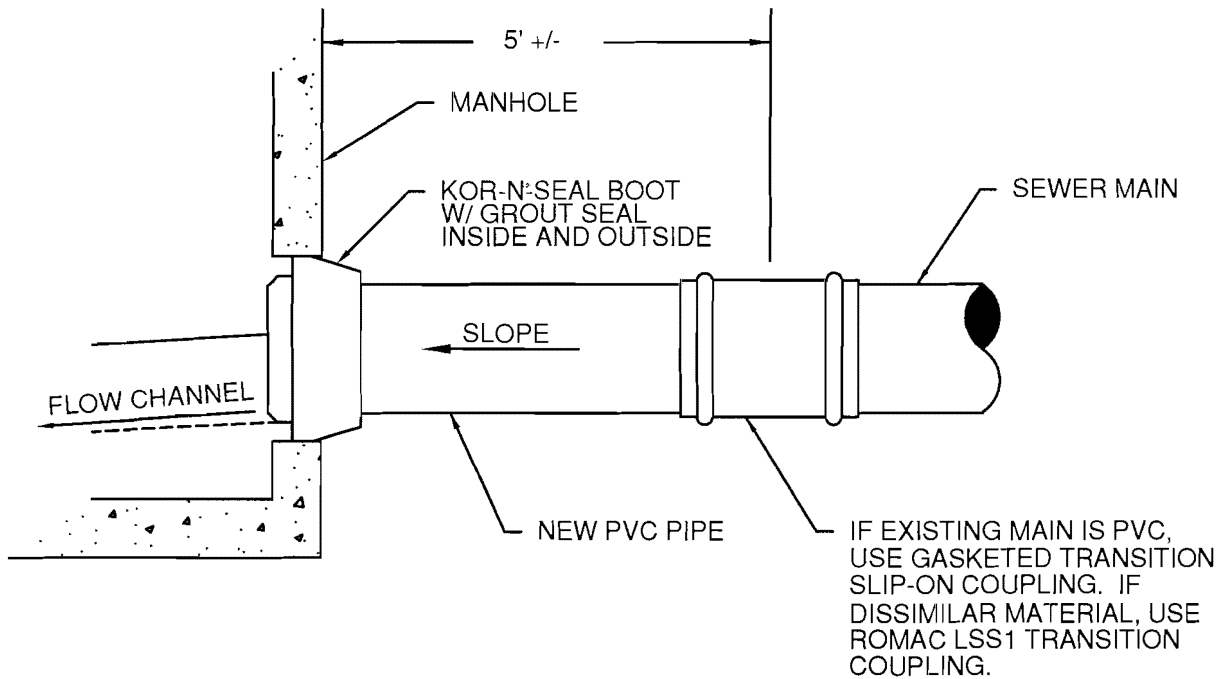


CITY OF WINLOCK
 DEPARTMENT OF PUBLIC WORKS

SEWER DETAILS
 SIDE SEWER PLUG

REVISED
 08/20/2007

DRAWING
 NO.
5-10



NOTES:

1. ALL FASTENERS & CLAMPS ARE TO BE STAINLESS STEEL.
2. NEW SECTION OF PIPE IS TO BE INSTALLED AT APPROXIMATELY THE SAME SLOPE AS THE EXISTING LINE.
3. USE SLIP-ON GASKETED COUPLING FOR PVC AND OTHER COUPLINGS AS DIRECTED BY THE CITY WHEN CONNECTING TO OTHER EXISTING PIPE MATERIALS.



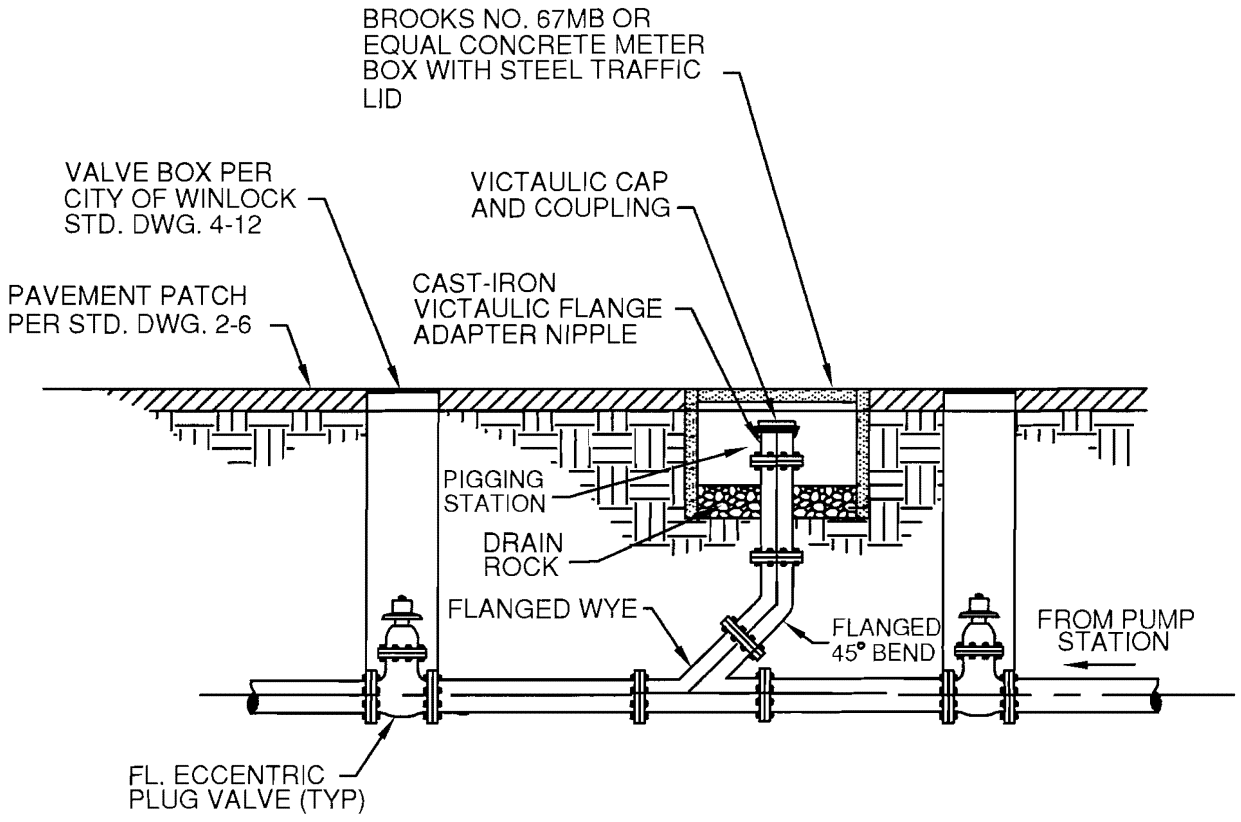
CITY OF WINLOCK
DEPARTMENT OF PUBLIC WORKS

SEWER DETAILS
SANITARY SEWER
CONNECTION

REVISED
08/20/2007

DRAWING
NO.
5-11

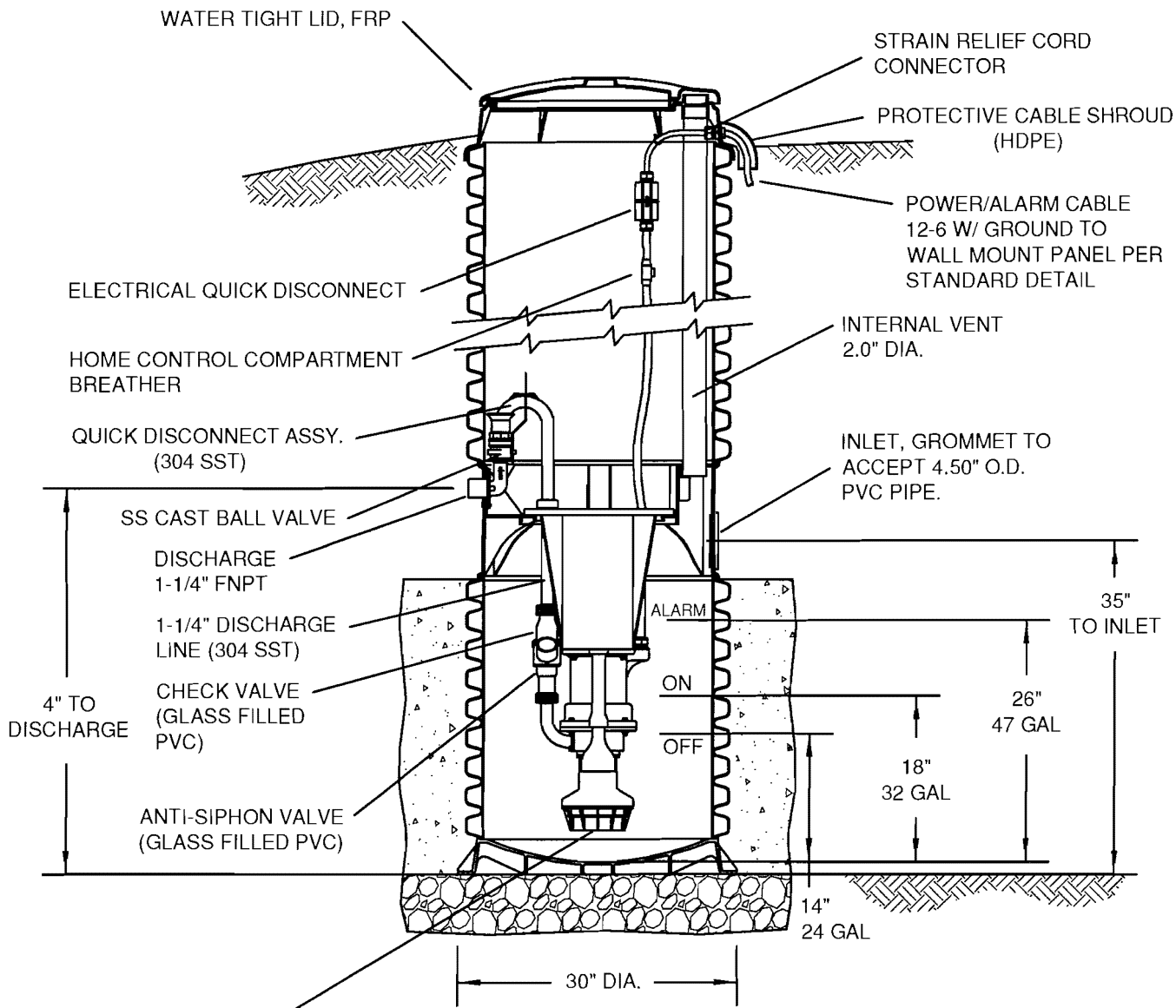
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NOTE:
 SUBSTITUTE MATERIALS CAN BE USED, UPON APPROVAL
 BY THE CITY, IF MAIN LINES ARE HDPE OR PVC.



<p>CITY OF WINLOCK DEPARTMENT OF PUBLIC WORKS</p>	<p>SEWER DETAILS PIG PORT</p>	<p>REVISED 08/20/2007</p>	<p>DRAWING NO. 5-12</p>
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SEMI-POSITIVE DISPLACEMENT TYPE PUMP
 DIRECTLY DRIVEN BY A 1 HP MOTOR
 CAPABLE OF DELIVERING 9 GPM AT 138' TDH

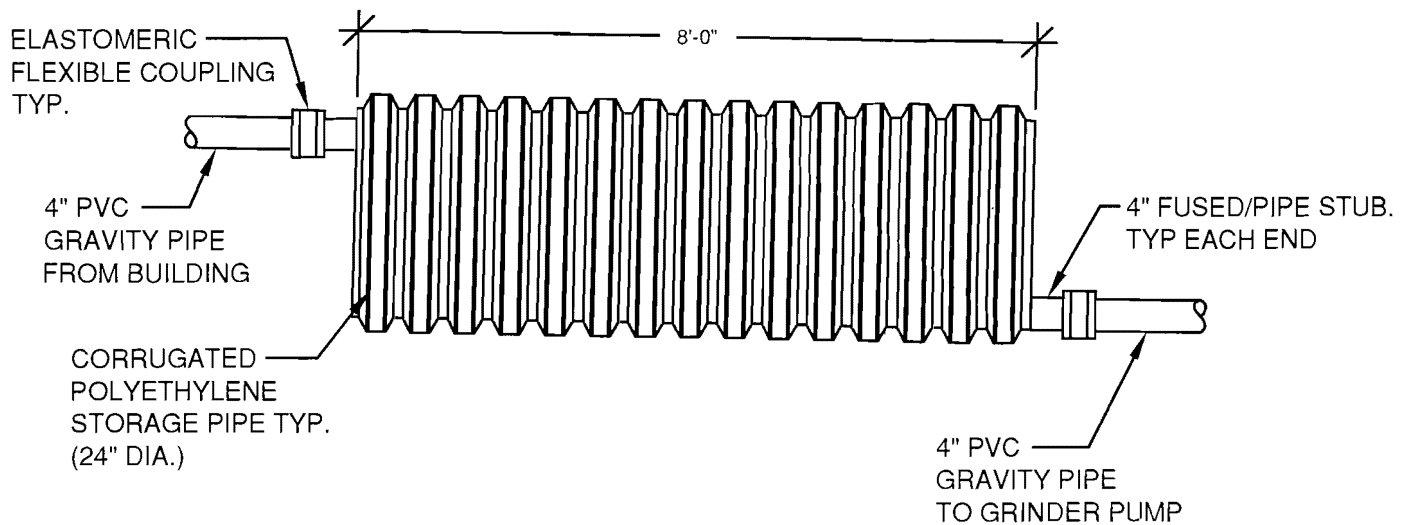
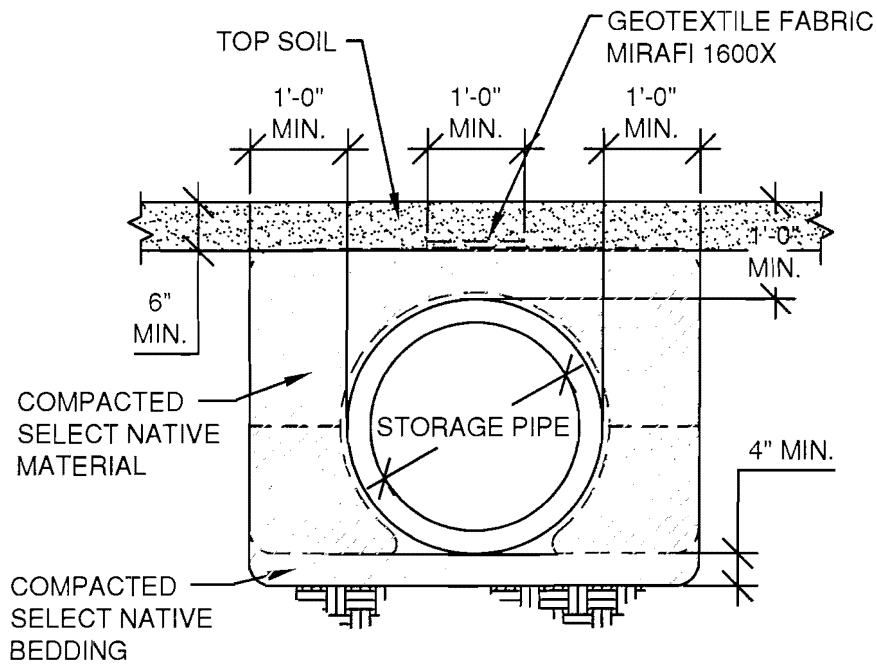


CITY OF WINLOCK
 DEPARTMENT OF PUBLIC WORKS

SEWER DETAILS
GRINDER PUMP DETAIL

REVISED
08/20/2007

DRAWING
NO.
5-13

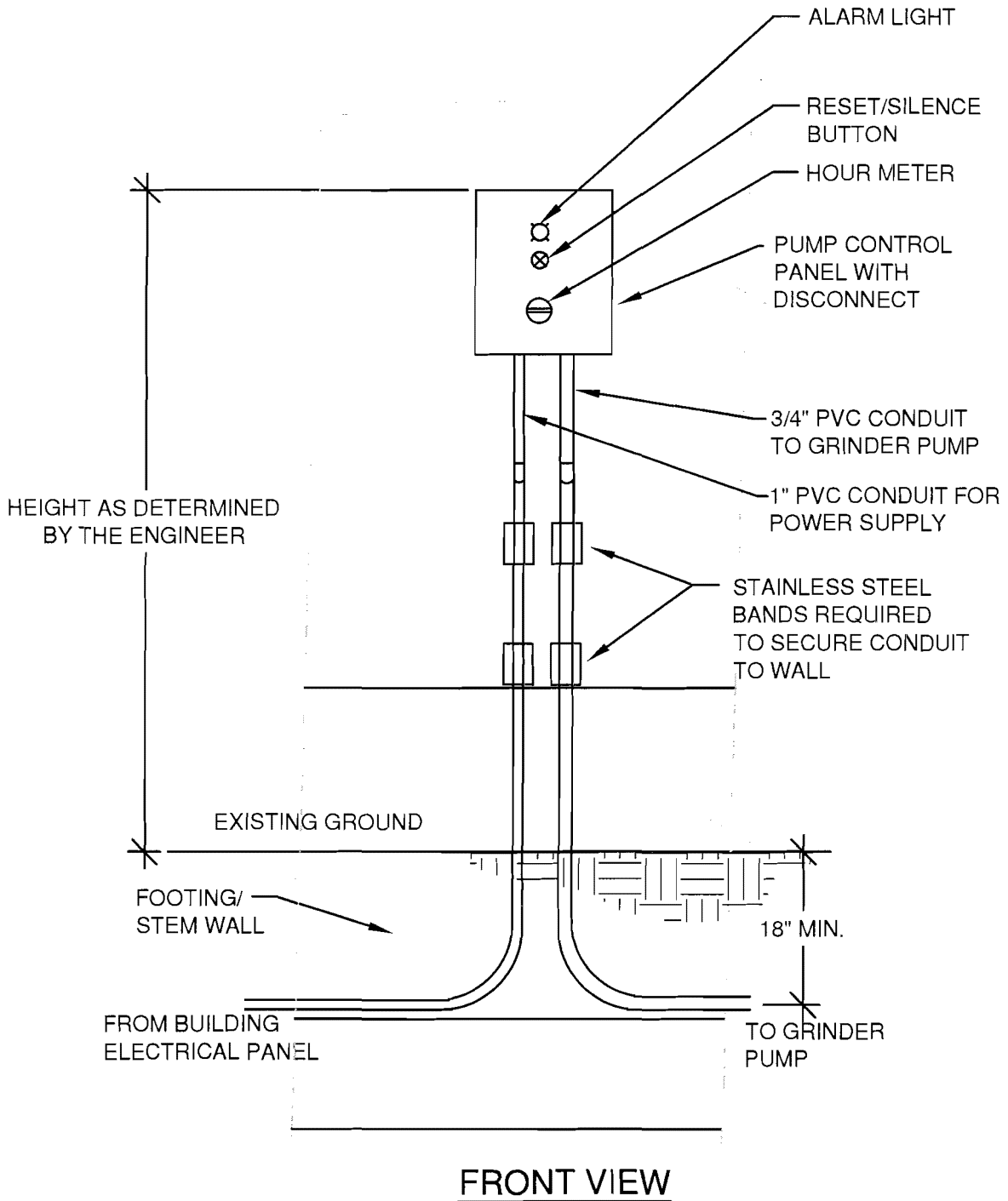


CITY OF WINLOCK
DEPARTMENT OF PUBLIC WORKS

SEWER DETAILS
GRINDER PUMP
STORAGE PIPE

REVISED
08/20/2007

DRAWING
NO.
5-14

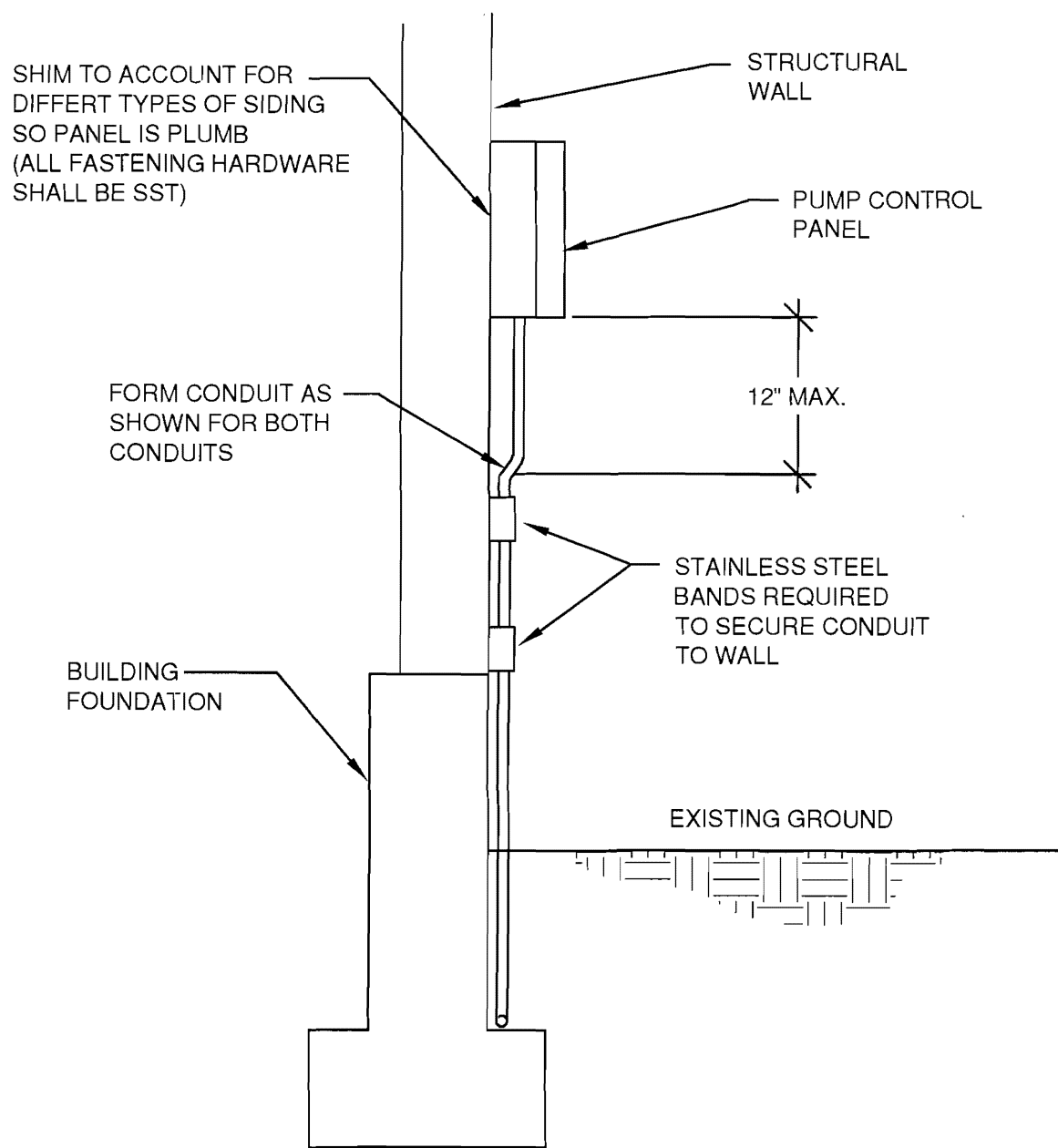


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<p>CITY OF WINLOCK DEPARTMENT OF PUBLIC WORKS</p>	<p>SEWER DETAILS TYPICAL PUMP CONTROL PANEL INSTALLATION</p>	<p>REVISED 08/20/2007</p>	<p>DRAWING NO. 5-15a</p>
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SHIM TO ACCOUNT FOR DIFFERT TYPES OF SIDING SO PANEL IS PLUMB (ALL FASTENING HARDWARE SHALL BE SST)

STRUCTURAL WALL

PUMP CONTROL PANEL

FORM CONDUIT AS SHOWN FOR BOTH CONDUITS

12" MAX.

STAINLESS STEEL BANDS REQUIRED TO SECURE CONDUIT TO WALL

BUILDING FOUNDATION

EXISTING GROUND

SIDE VIEW



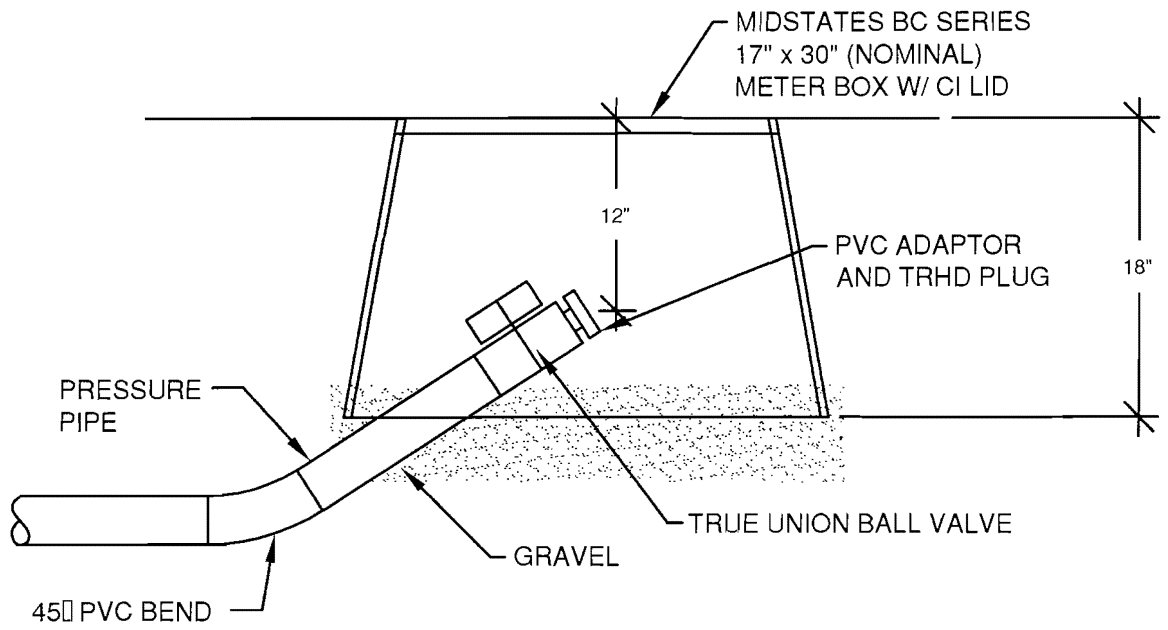
CITY OF WINLOCK
DEPARTMENT OF PUBLIC WORKS

SEWER DETAILS
TYPICAL PUMP CONTROL
PANEL INSTALLATION

REVISED
08/20/2007

DRAWING
NO.
5-15b

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CITY OF WINLOCK
DEPARTMENT OF PUBLIC WORKS

SEWER DETAILS
PVC PRESSURE
CLEANOUT DETAIL

REVISED
08/20/2007

DRAWING
NO.
5-16

APPENDIX A

Sewer and Water Service Connection Procedures

City of Winlock

Sewer Service Connection Procedure 2020

- A. Compliance:** Side sewers are regulated per the Uniform Plumbing Code (UPC) as adopted by the State and the City of Winlock and a permit is required prior to commencing regulated activity repairs, replacement, or installation of new sanitary side sewers. The UPC regulated portion is for the building sewer from the building line to the property line. Contact the community development department at City hall to initiate process. The water and sewer department will be notified and will supervise the work done from the main sewer line to the property line. City design standards apply in the right-of-way and at the tap to the main sewer line and back to the property line where the side sewer will connect to the system. Once the City has collected the connection fees the contractor/homeowner shall hire a licensed contractor to tap into the sewer main and install the sewer connection as described in drawing 5.7 option 1 or option 2 of the guidelines. This must be coordinated with the water and sewer department prior to any work being started. **This work must be performed, and costs covered, by the contractor under the direct supervision of the city. There must be five (5) days minimum notice required for any water/sewer service shutdowns/or construction work.**
- B. Application for permit:** A side sewer permit is required to be posted prior to commencing regulated activity. Emergency repairs will be handled on a case-by-case basis. Application to perform repair work and notification of City staff is still required. The City will need a minimum of 24 advanced notice for a service assistance or inspection. For new work or rerouting of existing lines, a detailed, dimensioned sketch of the proposed work must accompany the application. Show location of pipe run with respect to building outlines, property lines, water lines or other buried utilities. Also include bends and cleanouts.
- C. Acceptable materials:** All piping, fittings and accessories shall be approved and bear the IAPMO logo. Pipe sizing shall be according to code and piping shall not be less 4" in diameter for all side sewers and 6" from the main sewer line to the property line (see drawing 5-7) Pipe shall be ABS schedule 40 sewer grade or PVC ASTM-3034. Other approved pipe shall also bear the IAPMO logo such as cast iron soil pipe. When using bell end pipe, lay bell end of pipe facing the building. Do not mix materials. Transitions between existing and new pipe, use proper clamp type fittings or adapters meant for that purpose.
- D. Grade of Sewer:** Pipe should run at a uniform slope of ¼ inch per foot (2%). For slopes down to 1/8 per foot or terrain problems, contact the building inspector for permission. Changes in direction shall utilize proper drainage fittings including wide sweep drainage fittings, wyes, and 45-degree bends or combos.
- E. Embedment:** Minimum depth of cover shall not be less than 12" from finish grade to top of the pipe. Bedding material should be sand. Water and sewer line in the same trench. Water line must be a minimum of 12" above the top of the sewer connection and offset a minimum of 12" from the sewer line. Avoid sharp rocks and backfill with approved material.
- F. Cleanouts:** The cleanout at the property line off the main sewer line connection will be a 6" double tee cleanout (see drawing 5-7). A cleanout shall be provided at the building line and additionally, every 100-feet of run, every change in aggregate horizontal direction exceeding 135 degrees and at the property line. The cleanouts shall be brought to grade and flow in the direction of the sewer.

G. Inspection requirements: All piping is subject to inspection and testing prior to covering. The piping under test needs to be isolated (use air plugs). Place pipe under test, check for leaks, repair if necessary, and retest. Either the 10’ head method or the 5-PSI air test is permissible; test duration, 15 minutes. **Piping shall be under test at time of inspection.** Schedule inspection a minimum of 24 hours in advance by calling City hall at 360-785-3811 or Rodney Cecil, Water and Sewer Superintendent, at 360-520-5589

Contact numbers:

Water and Sewer Superintendent, Rodney Cecil	360-520-5589
Community Development, Robert Webster.....	360-520-5028
City Hall.....	360-785-3811

If you require a copy of the design guidelines in full contact City Hall.

City of Winlock

Water Service Connection Procedure 2020

- A. Compliance:** Building water supply piping is regulated per the Uniform Plumbing Code (UPC), as adopted by the State and City, and a permit is required prior to commencing regulated activity which can include waterline repair, replacement, or installation of a new water service. The UPC regulated portion is for the piping connecting the building to the City water main. **You must contact the Community Development department at City hall to initiate process.** The water and sewer department will be notified and will supervise the work done from the main line to the property line. City design standards apply in the right-of-way and at the tap to the main and back to the meter location including Corporation stop, meter setter, meter, shut off valve and vault. **Once the City has collected the connection fees the contractor/homeowner shall hire a licensed contractor to tap the main and install the meter, meter box, shutoff valve and setter** per drawing 4.1 and/or 4.2. **In the event the service connection is one inch (1”) or larger the cost of the meter, setter, meter box, and shutoff must be covered by the contractor.** This must be coordinated with the water and sewer department prior to any work being started. **There must be five (5) days minimum notice required for any water service shutdowns/ or construction work.** Notice must be given 24 hours in advance of any water service interruption to each resident that the interruption effects. **The City will provide the meter, setter, shutoff valve, and the box.**
- B. Application for permit:** A permit is required to be posted prior to commencing regulated activity. Emergency repairs will be handled on a case-by-case basis. Application to perform repair work and notification of City staff is still required. For new work or rerouting of existing lines, a detailed, dimensioned sketch of the proposed work shall accompany the application. Show location of pipe run with respect to building outlines, property lines, sewer lines or other buried utilities.
- C. Acceptable materials:** All piping, fittings and accessories shall be approved and bear the IAPMO logo. Service and meter sizing shall be according to code and piping shall not be less than ¾ in diameter. Pipe shall be one of those approved for yard service in the UPC including PVC schedule 40 ASTM D 1785-93 and PE ASTM D 2239, 160 psi. HDPE pipe with barbed fittings shall have two clamps at each pipe and staggered. Transitional fitting shall be of an approved type. When connecting from the main line to the service connections the City prefers the use of # 200 Poly pipe up to 2”. IPS SIDR 7
- D. Shutoff Valve:** An approved full way shutoff valve shall be located just prior to the setter on the City side of the meter. This shutoff must be assessable. The property owner shall also have a shutoff located on his building line assessable but protected from freezing. No branching shall occur until inside the building line beyond the shutoff valve. Branches to outside the building line shall be protected against backflow. Approved backflow prevention devices shall be employed to protect the water supply such as vacuum breaker type hose bibs. In the event of underground sprinkler systems, or other high-risk situations, an approved backflow assembly must be installed and tested, and then tested every year thereafter.
- E. Embedment:** Minimum depth of cover shall not be less than 12” from finish grade to top of the pipe. Bedding material should be sand. Water and sewer line in the same trench. Water line must be a minimum of 12” above the top of the sewer connection and offset a minimum of 12” from the sewer line.

F. Inspection requirements: All piping is subject to inspection and testing prior to covering. For lines over 2” a pressure test and bacteria test must be completed before line is connected to the water system.

Contact numbers:

Water and Sewer Superintendent, Rodney Cecil360-520-5589
Community Development, Robert Webster..... 360-520-5028
City Hall.....360-785-3811