CITY OF UNION GAP

DEVELOPMENT DESIGN AND CONSTRUCTION STANDARDS

May 2026

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Chapter 1 - Introduction and General Considerations

Introduction

This document serves as a comprehensive guide to the City of Union Gap's design and construction practices. The City of Union Gap has adopted these Development Design and Construction Standards (the "Standards") as a critical component in ensuring the continued excellence of our City's urban landscape. This document describes the standards and protocols for construction and design within the City. The guidelines integrate updates in construction practices, regulatory compliance, and urban planning principles, to align with state standards and local needs. Through these standards, the City of Union Gap aims to uphold its dedication to responsible development, fostering a pleasing environment for its residents and future generations.

1. Enacting Authority

These Development Design and Construction Standards (the "Standards") are enacted by the City of Union Gap in accordance with State law, to protect and preserve the public health, safety, and general welfare.

2. Purpose

The purpose of these Standards is to provide consistent requirements, standards, and specifications for the design and construction of public works infrastructure improvements by the City and by private developers. These standards shall apply to the City Limits as well as City owned utility extensions into the Urban Growth Area (UGA).

3. State Environment Policy Act (SEPA)

These Standards will not affect any considerations involving issues under the State Environmental Policy Act (SEPA). The City's responsible official will continue to make all necessary SEPA decisions when individual proposals are submitted.

4. Conflicting Provisions

The standards, procedures, and requirements of Standards are the minimum necessary to promote the health, safety, and welfare of the residents of the City of Union Gap. The City may adopt more or less rigorous or different standards, procedures, and requirements whenever necessary. If the provisions of these Standards conflict with one another, or if a provision of these Standards conflicts with the provision of the existing City Municipal Code or a previously enacted Ordinance of the City, the most restrictive provision or the provision imposing the highest standard shall prevail.

5. Severance

If any provision of these Standards or its application to any person or circumstance is for any reason held to be invalid, the remainder of these Standards or the application of the provisions is not affected.

6. Process

Design Phase

Any person, firm, or corporation (the “Developer”) whom intends to develop land in accordance with the City of Union Gap Municipal Code and construct a public works improvement shall apply to the City consistent with the Land Use Application processing procedures.

Upon receipt of the public improvements requirements from the City, the Developer shall employ a Consulting Engineer licensed by the State of Washington to prepare plans and specifications for the public works improvements in accordance with these Design and Construction Standards and the City of Union Gap Municipal Code. The Developer or its Consulting Engineer shall submit a complete PDF package for review by the City and City Engineer.

The City shall review the initial submittal and indicate corrections or additions or request additional information and return one comment set to the Developer. The Developer shall make the required corrections and resubmit a complete PDF package for review by the City and City Engineer.

When it has been determined that the plans and reports indicate compliance with City of Union Gap Design and Construction Standards, the Developer shall submit to the City a final PDF package for final approval. The cover sheet of the original plans shall contain an “APPROVED FOR CONSTRUCTION BY THE CITY OF UNION GAP” signature block as specified in Chapter 2 - General Plan Requirements, Section 2. The City’s responsible official will sign the plans. Such approved plans and reports shall not be changed, modified, or altered without written authorization from the City Public Works Director. The Developer shall provide the City with a minimum of two (2) printed full size copies of the approved plan set and reports for use by City inspectors and City Departments as required.

Upon payment of the plan review fee by the Developer to the City, the stamped approved plans and reports will be returned to the Developer, as discussed in Chapter 1 - Introduction and General Considerations, Section 8.

Construction Phase

Before the Developer’s Contractor commences any work, he shall be required to attend a Preconstruction Conference with the City Public Works Department, the City Engineer, and utility companies as determined by the City of Union Gap. The Contractor will submit his insurance and construction schedule at or prior to this meeting.

All construction shall be inspected by the City of Union Gap or its authorized agent. The Contractor shall give ten (10) working days minimum notice to the Public Works Director prior to the start of any construction activities.

After cleanup by the Contractor and final inspection by the City, the City will calculate any unpaid inspection fees and submit them to the Developer. The Developer will pay the inspection fee to the City in accordance with Section 8 of this Chapter.

7. Engineering Design Plan Requirements

All plans, specifications, engineering calculations, diagrams, details, and other relevant data shall be designed and prepared by a Civil Engineer licensed by the State of Washington, in accordance with Chapter 2 - General Plan Requirements.

8. Plan Review and Inspection Fee

Plan review and inspection fees are hereby established to defray the administrative expense of plan review and inspection costs incurred by the City of Union Gap.

The plan review fee and inspection fee shall be the total actual costs incurred by the City of Union Gap, its agents, employees, and elected or appointed officials, for review and approval of the plans and reports and for inspection of construction of the public works improvements. The fees shall include, but not be limited to, initial plan review, subsequent meetings with the Developer, explanations to the Developer's engineering consultant, reviews of revised plans, construction inspection, re-inspections, and a final inspection prior to the expiration of the maintenance/warranty period.

Plan review and inspection fees shall be assessed once per project as a single combined charge, based on the approved engineer's construction cost estimate at the time of the initial plan review application, and shall be calculated as follows:

For proposals involving public works improvements valued at less than five hundred thousand dollars ($500,000), review and inspection fees shall equal the greater of three hundred dollars ($300) or five percent (5%) of the value of the public works improvements.

For proposals involving public works improvements valued between five hundred thousand dollars and one million dollars ($500,000 – $1,000,000), review and inspection fees shall be twenty-five thousand dollars ($25,000).

For proposals involving public works improvements valued at more than one million dollars ($1,000,000), review and inspection fees shall equal two and one-half percent (2.5%) of the cost of the public works improvements.

9. Record Drawings

The Developer's Consulting Engineer shall prepare and maintain a neatly marked, full-sized print or PDF set of record drawings showing the final location and layout of all new construction of the public facilities. Prior to final acceptance by the City of Union Gap, one (1) PDF set of Record Drawings and two (2) copies prepared by the Developer's Consulting Engineer clearly marked "Record Drawings" shall be delivered to the City for review and acceptance.

Record Drawings shall also be submitted in digital format, including AutoCAD (.dwg) files and GIS-compatible format acceptable to the City (such as shapefile or geodatabase), referenced to the City's adopted coordinate system (NAD83 / NAVD88).

10. Transfer of Ownership

The Public Works Director or his designee shall make final inspection of all constructed public improvements at construction completion. Upon final inspection and approval of all work,

including the method of construction, workmanship, materials, and quality control testing of the improvements, the Developer shall complete a Transfer of Ownership Form for pending acceptance by the City. This form may be found in Appendix A.

11. Easements

Public utility easements shall be established for the location of existing, new, and future public utilities that are located outside of public right-of-way. Easements shall also be granted across the front of new lots and existing lots to provide future utility access as required.

All easements required shall be prepared by the Developer on the proper form and format for recording at the Yakima County Auditor's Office. The easement legal description shall be prepared by a land surveyor licensed in the State of Washington. The executed and notarized easement document shall be submitted to the City of Union Gap Planning Division for review, approval, and recording.

Ten (10) foot wide utility easements shall be dedicated along the front of each lot in subdivisions and short subdivisions. Easements for new and/or future utility lines shall be a minimum of twenty (20) feet wide, provided the width of the easements for underground utilities will be at least twice the depth of the planned excavation. Where potable and nonpotable utilities are within the same easement, the minimum width shall be adjusted to accommodate separation standards.

Utility easements shall be continuous and aligned from block to block within a subdivision and with easements in adjoining subdivisions to facilitate the extension and future extension of utilities.

Public utility easements that are not in roadway corridors shall be left in a condition that allows reasonable access for maintenance and operation of the utilities. Surfaces shall be restored to match adjacent conditions or as otherwise approved by the City Engineer. Permanent surfacing such as gravel is not required unless specifically identified in the project plans or by the City Engineer for site-specific needs.

12. Utility Oversizing

In all cases, the Public Works Director shall have final determination of the size of water, sewer, and storm mains connected to the City utility system. Depth of mains shall meet or exceed the minimum cover requirements specified in these Standards, except where greater depth is required to meet the City's comprehensive plan and/or long-range utility objectives.

For example, if a property owner/developer is required to install a water main with a diameter in excess of the size necessary to serve their development, and greater than the 8" minimum pipe size required for all utilities, and if the purpose of such oversizing is to provide for the future needs of the City, the City may, based upon the conditions established within this policy, reimburse the property owner/developer for the difference in pipe material costs incurred solely by reason of the oversizing requirement. No such reimbursement shall be made except upon the following:

- Complete installation of the utility main and approval of the same by the Public Works Director.

- Submittal to the Public Works Director of a bill of sale for the utility main including all applicable pipe diameters.
- Approval of the oversizing costs by the Public Works Director.
- Approval of the reimbursement by the Public Works Director.

As an alternative to cash reimbursement, the City may choose to provide a credit, in the amount of the reimbursement that may otherwise be available, against the corresponding development charges. For example, if a water main is oversized, a credit may be granted against the water connection charge, but not the sewer connection charge. Said reimbursement or credit shall not be more than 100% of any and all connection charges.

An oversizing agreement must be executed by the City and Developer prior to plan approval. A summary of all eligible reimbursable costs and backup itemization must be submitted to the Public Works Director, for review and acceptance, prior to building permit application and approval. Following review of submission, a determination of the total reimbursement amount will be calculated by the Public Works Director and provided to the Developer within 45 days of submission receipt. Upon concurrence of the calculated amount by the Developer, the City will provide reimbursement payment within 30 days.

Chapter 2 - General Plan Requirements

All plans, specifications, engineering calculations, diagrams, and other relevant data shall be designed and prepared by a Civil Engineer licensed by the State of Washington.

General Plan Format

1. Plan sheets and profile sheets or combined plan and profile sheets and detail sheets shall be on a sheet size of 22" x 34" (ANSI D).

2. The Cover sheet shall contain the following:
    a. Project Title.
    b. Name, address, and phone number of the owner/developer.
    c. Name, address, and phone number and stamp of the Civil Engineer preparing the plans (Consultant).
    d. “APPROVED FOR CONSTRUCTION BY THE CITY OF UNION GAP” with signature block for City final approval of the plans.
    e. “APPROVED FOR CONSTRUCTION BY THE CITY OF UNION GAP FIRE CHIEF” with signature block for final approval of the plans.
    f. Signature block for outside utilities listed below with the statement “By signing, the indicated utility is acknowledging receipt of plans and notification of the project, including public improvements.” The Developer is responsible for coordinating with each utility, and their established system requirements and review/approval processes separate from the City plan submission requirements.
        i. Cascade Natural Gas
        ii. Pacific Power
        iii. Lumen Technologies
        iv. Charter Communications
        v. Ziply Fiber
        vi. Inland Networks
        vii. Wholesail Networks
        viii. Naches Cowiche Canal Association

        Please note, the approval or waiver of service from outside utilities must be received prior to final plan acceptance and plan approval consideration by the City.
    g. Vicinity map showing the project site location.
    h. Survey benchmark used for the project.
    i. Sheet Index.
    j. Legend.
    k. Applicable project information.
    l. The utility locate call #811.

3. Each sheet shall contain the following project information:
    a. Project title and City project number, work order number, or LID number, if appropriate.
    b. Quarter section, Section – Township – Range.
    c. Sheet title.
    d. Page (of page) numbering.
    e. Revision block.

f. Subdivision or short plat name.
g. Signed stamp by a Civil Engineer currently licensed in the State of Washington.

4. All plan sheets must have a NORTH arrow preferably pointing to the top of the sheet or to the left, and must indicate the drawing scale. All engineering plans must be drawn to an appropriate engineer's scale. For profiles, the vertical scale shall be 1"=2', 1"=5' or 1"=10'. The horizontal scale shall be the same for both plan and profile and normally be 1"=20'. Plan and profile stationing shall generally read left to right.

5. Match lines are required at breaks between sheets.

6. The Horizontal Datum for all plan submittals must be based on the City of Union Gap datum, NAD 83 Washington State Plane, South Zone, US Survey Foot. The Vertical Datum for all plan submittals must be based on the City of Union Gap datum, NAVD 88. The benchmark used shall be referenced on the plans. An assumed datum will not be accepted.

7. Existing features and topography within the project construction limits must be shown on the plans. This shall include existing road width and surfacing, utility poles, existing underground utilities and surface appurtenances, significant trees, landscaping, and other elements that may affect design/construction.

8. All existing and proposed underground utilities and pipes shall be shown in the profile. The location and depth of existing facilities should be verified if there is a potential conflict with proposed facilities.

9. All street, water, sewer and storm drainage work shall be drawn on standard plan and profile sheets. Street, water, sewer, storm drainage, irrigation, and electrical design information shall all be shown on the same plan and profile sheets.

10. Plan sheets shall indicate all existing and proposed property lines, right-of-way lines, and easements.

11. Plan sheets shall show all horizontal survey control as required to properly locate and tie the improvements in horizontal location.

12. An erosion/sedimentation control plan sheet shall be included in the plan set.

13. A traffic control plan shall be included in the plan set when improvements impact public right-of-way.

Water System Plan Requirements

See Chapter 4 - Water System Improvements for specific design requirements.

1. Show all existing and proposed water system features if known, including but not limited to:
    a. Water mains
    b. Water valves
    c. Water meters
    d. Water service lines

e. Fire hydrants
f. Blowoffs
g. Air and vacuum release valve assemblies
h. Pressure reducing valves
i. Fire sprinkler system lines
j. Double check valves
k. Post indicator valves
l. Thrust blocking/mechanical restraints

2. Indicate all easements required for the water main extensions and future extensions.

3. Show the water system, storm system, irrigation system, and the sanitary sewer system on the same plan and profile view for verification of minimum separation requirements. The design information for each system may be on individual drawings for that system.

4. Show the length, size, and pipe type for all main extensions, fire sprinkler system services, and domestic services where applicable.

5. Identify all joint connections, provide detail of all non-standard joints.

6. Show by station or dimension the location of all fire hydrants, elbows, tees, crosses, and services relative to centerline or property lines.

7. A profile view shall be shown for all City water main extensions, aligned if practical with the plan view. Clearly indicate the horizontal and vertical scales.

8. Show the minimum cover and minimum separation on each sheet.

9. In the profile view, show all utilities crossing the proposed water main.

Sanitary Sewer System Plan Requirements

See Chapter 5 - Sanitary Sewer System Improvements for specific design requirements.

1. Show all existing and proposed sanitary sewer system features including, but not limited to, the following:

   a. Sewer mains, gravity and force mains
   b. Side service, proposed locations
   c. Manholes
   d. Cleanouts
   e. Lift stations

2. Indicate all easements required for the sanitary sewer main extensions and laterals.

3. Provide an overall site plan of development with contours, to show that all lots/parcels will be served by the proposed sewer system at design depth for all new development.

4. Show the sanitary sewer system, storm system, and water system on the same plan and profile for verification of minimum separation requirements. The design information for each may be on individual drawings for that system.

5. Slope, length, size, and pipe type shall be indicated for all mains and side sewers. Pipe length shall be measured from centerline of manholes.

6. Provide a profile for each sanitary sewer main extension. Clearly indicate the vertical and horizontal scale. Show the profile on the same sheet with, and aligned underneath, the plan view as practical.

7. The plan and profile must show the location of all existing and proposed gas, water, storm drain, and other utility lines and crossings.

8. Show all vertical data in the profile view and all horizontal data in the plan view. It is not desirable to repeat the vertical data in the plan view unless it is not shown in a profile.

9. Each manhole shall be uniquely numbered and shall be stationed off of a referenced centerline. Indicate rim and invert elevations in and out at all manholes.

10. Indicate the length of each side sewer stub, the centerline stationing for each side sewer, and the size.

Stormwater System Plan Requirements

See Chapter 6 - Stormwater Improvements for specific design requirements.

1. Show all existing features if known and all proposed storm sewer (drain) system features, including but not limited to:

    a. Storm drain mains and lines
    b. Catch basins
    c. Inlets
    d. Drywells
    e. Infiltration trenches
    f. Retention systems
    g. Biofiltration swales
    h. Culverts
    i. Streams
    j. Ditches
    k. Natural drainage swales
    l. Headwalls
    m. Oil/water separator assembly
    n. Other requirements of the Department of Ecology's Stormwater Management Manual for Easter Washington

2. Indicate all easements required for the storm drainage system.

3. The plans shall clearly indicate the location of the storm drainage items stationed from a referenced centerline.

4. Show all horizontal measurements and control in the plan view.

5. Show slope, length, size, and pipe material for all storm drain mains and lines.

6. All catch basins and inlets shall be uniquely numbered and shall be clearly labeled. Stationing and offsets shall be indicated from referenced centerline. Show all proposed storm drain features within the right of way in a profile.

7. Indicate all grate, rim, and invert elevations in the profile view.

8. Provide stormwater report consistent with the Stormwater Management Manual for Eastern Washington, The report shall include but not be limited to an introduction, analysis of existing conditions including any off-site contributions, construction plans including temporary erosion control, basin map, sizing computations for volume and flow, treatment considerations, geotechnical information. Additionally, the stormwater report shall include a maintenance plan for all drainage facilities, both public and private.

    3.2.6 Step 5: Prepare a Permanent Stormwater Control Plan
    3.2.7 Step 6: Select Construction Stormwater Pollution Prevention BMPs
    3.2.8 Step 7: Complete the Stormwater Site Plan
    3.2.9 Step 8: Check Compliance With All Applicable Core Elements.

Street Plan Requirements

See Chapter 7 - Street Improvements for specific design requirements.

1. Show all existing and proposed roadway improvements, including but not limited to:

    a. Pavement and edge of pavement
    b. Concrete curb and gutter
    c. Sidewalk(s)
    d. Utilities (manholes, utility poles, pedestals, valves, water meters, etc.)
    e. Sidewalk ramps
    f. Signs and barricades
    g. Driveways
    h. Rockery or retaining walls
    i. Mailboxes
    j. Monuments
    k. Streetlights, conduits, junction boxes, and service cabinet
    l. Compliance with ADA requirements

2. Show all right-of-way lines, centerlines, and roadway widths for all rights of way.

3. Clearly differentiate between areas of existing pavement, areas of new pavement, and areas to be overlaid.

4. Provide a cross section or typical section of all rights of way indicating right of way width, centerline, pavement width, super-elevation or crown, sidewalk, street lights, curb and gutter, pavement, and base thickness of proposed section.

5. Provide a plan and profile of all new public roadways or extensions of existing roadways. Provide topography within the right-of-way including utilities. Indicate all horizontal and vertical curve data, percent of grade, bearings, centerline stationing every 50 feet, finish grade elevations, and existing ground line. The profile of the existing centerline ground

should extend a minimum of 100 feet before the beginning and at the end of the proposed improvements to show the gradient blend.

6. Align the profile view with the plan view, if practical. Clearly indicate the horizontal and the vertical scale.

7. Clearly label all profiles with respective street names and plan sheet reference numbers if drawn on separate sheets.

8. Provide survey monuments along the road centerline at all ends of curves, intersection points, angle points, and center of cul-de-sacs.

9. For developments where road work is required on an existing street, development plans are required to include cross sections of the existing street and spot elevations at proposed intersections and appurtenances to the project.

Chapter 3 - General Requirements for All Projects

Forward

The City of Union Gap has adopted the latest edition of the *Standard Specifications for Road, Bridge, and Municipal Construction* (Standard Specifications) prepared by the Washington State Department of Transportation (WSDOT) and the American Public Works Association (APWA) General Special Provisions (GSP's) for Division One General Requirements as the standard specifications governing all design and construction of public works improvements by the City and by private developers.

All references hereinafter made to the "Standard Specifications" shall refer to the latest edition of the Standard Specifications described above. Except as may be amended, modified, or supplemented hereinafter, each section of the Standard Specifications shall be considered as much a part of these requirements as if they were actually set forth herein.

The Standard Specifications, General and Project Special Provisions, and City Standard Details contained in these Development Design and Construction Standards shall apply in their entirety to all City of Union Gap public works projects. These Development Design and Construction Standards have been prepared to form a compiled document intended to assist and inform developers, consultants, and contractors of the construction requirements to be used on proposed public works improvements.

The Standard Specifications, General and Project Special Provisions, and City Standard Details shall periodically be amended, revised, and updated. It shall be the responsibility of each user of this information to verify that he has the latest revisions prior to submitting any work covered by these specifications and details.

Copies of the Standard Specifications are available electronically at:
www.wsdot.wa.gov/publications/manuals/fulltext/M41-10/SS.pdf

Copies of the APWA GSP's are available electronically at:
https://wsdot.wa.gov/engineering-standards/all-manuals-and-standards/general-special-provisions-gsps/local-agency-general-special-provisions-gsps

Also incorporated into the Construction Standards by reference are:

- *Manual on Uniform Traffic Control Devices for Streets and Highways*, currently adopted edition, with Washington State modifications, if any
- *Standard Plans for Road, Bridge and Municipal Construction*, WSDOT/APWA, current edition

Developers and Contractors are encouraged to contact the City of Union Gap Public Works Department regarding these Standards.

City of Union Gap Public Works Department
102 W. Ahtanum Road, Union Gap, WA 98903
Telephone: (509) 248-0430
Fax: (509) 248-6494

General

All work shall be done in accordance with the approved Plans, the latest edition of the *Standard Specifications for Road, Bridge, and Municipal Construction* prepared by the Washington State Department of Transportation, amendments to the Standard Specifications, referenced codes and organizations, and these Special Provisions.

The American Public Works Association (APWA) General Special Provisions (GSP's) to Division One of the WSDOT Standard Specifications shall amend Division One of the *Standard Specifications for Road, Bridge, and Municipal Construction*.

All materials incorporated into a proposed public works improvements project shall meet the requirements of Division 9 of the Standard Specifications or City of Union Gap Development Design and Construction Standards as shown in the Standard Details and Special Provisions.

Any Public Works facility improvements or components that are not specifically addressed in these Development Design and Construction Standards shall be designed by a licensed professional engineer in the State of Washington, and provided to the City for review and approval consideration by the City and City Engineer.

1-01 Definitions and Terms

1-01.3 Definitions

The terms defined in Section 1-01.3 of the Standard Specifications shall be further described by the following:

Consultant:	Means an engineer licensed in the State of Washington, employed by the Developer to design the improvement and prepare plans and specifications, perform construction staking, or similar services.
Construction Documents:	Means the project plans, reports, specifications, and special provisions prepared by the Developer's Consultant for the public works improvements contemplated and approved by the City.
City:	Means the City of Union Gap, a municipal corporation, as represented by its authorized officials, employees or agents. The term “Contract Agency” may be used interchangeably with “City” in these documents.
Contractor:	Means the person or firm employed by the Developer or under Contract with the City to do the construction of the public works improvements. The Developer is responsible for Contractor obligations in these Standards.
Developer:	Means the person or firm constructing the new development and engaging the services of and employing consultants, and/or contractors and paying for the design and construction of the public works improvements to be transferred to the City.

Drawings:	Means the construction plans prepared by the Developer's Consultant for the public works improvements contemplated. The terms “Construction Documents,” “Contract Documents,” “Plans,” “Engineer’s Plans,” “Engineer’s Drawings,” “Working Drawings,” and “Project Manual” are synonymous.
Engineer:	Means the appointed City Engineer for the City of Union Gap or his/her duly authorized agent or representative.
Owner:	Means the City of Union Gap acting through its legally established officials, boards, commissions, etc., as represented by its authorized officers, employees, or agents.
Public Works Director:	Means the appointed official for the City, responsible for managing the Department of Public Works.
Standard Plans and Details:	Means specific drawings adopted by the City of Union Gap and revised from time to time which show frequently recurring components of work which have been standardized for use.
Standard Specifications:	The latest edition of *Standard Specifications for Road, Bridge, and Municipal Construction* prepared by the Washington State Department of Transportation, and amendments, and the APWA GSP's for Division One that are, by this reference, made part of the Contract Documents. Except as may be amended, modified, or supplemented herein after, each section of the Standard Specifications shall be considered as much a part of these Construction Documents as if they were actually set forth herein.
Special Provisions:	The Special Provisions supplement or modify the Standard Specifications and supersede any conflicting provisions of the *Standard Specifications for Road, Bridge, and Municipal Construction* and the appended amendments to the Standard Specifications and are made a part of a Construction Document.

Should any conflicts be encountered, the following inter-relationships shall govern: The Special Provisions shall supersede the APWA GSP's, which shall supersede the WSDOT Amendments, which shall supersede the Standard Specifications.

Supplement this section with the following:

All references in the Standard Specifications, Amendments, or WSDOT General Special Provisions, to the terms “Department of Transportation”, “Washington State Transportation Commission”, “Commission”, “Secretary of Transportation”, “Secretary”, “Headquarters”, and “State Treasurer” shall be revised to read “Contracting Agency”.

All references to the terms “State” or “state” shall be revised to read “Contracting Agency” unless the reference is to an administrative agency of the State of Washington, a State statute or regulation, or the context reasonably indicates otherwise.

All references to “State Materials Laboratory” shall be revised to read “Contracting Agency designated location”.

All references to “final contract voucher certification” shall be interpreted to mean the Contracting Agency form(s) by which final payment is authorized, and final completion and acceptance granted.

1-04 Scope of the Work

1-04.4 Changes

Supplement this section with the following:

No changes in the work covered by the approved Construction Documents shall be made without having prior written approval of the Developer and the City.

1-04.11 Final Cleanup

Delete this section and replace it with the following:

The Contractor shall perform final cleanup as provided in this section to the Developer's and City's satisfaction. The date of completion will not be established until this is done. The material sites and all ground the Contractor occupied to do the work shall be left neat and presentable. The Contractor shall:

1. Remove all rubbish, surplus materials, discarded materials, falsework, temporary structures, equipment, and debris, and

2. Deposit in embankments, or remove from the project, all unneeded, oversized rock left from grading, surfacing, or paving.

Partial cleanup shall be done by the Contractor when he feels it is necessary or when, in the opinion of the City or Developer, partial clean-up should be done prior to either major cleanup or final inspection. When directed by the City, the Contractor shall provide partial cleanup within 48 hours of such order. Should the Contractor fail to comply, the City may utilize its own staff and/or contracted staff at the prevailing wage rate plus equipment rental charges, which the Contractor shall be responsible for all applicable expenses. Subsequent building permits will not be processed until reimbursement is paid in total.

1-04.12 Waste Site (New Section)

The following new section shall be added to the Standard Specifications:

Where there is additional waste excavation in excess of that needed for the project and in excess of that needed for compliance with requests of the Developer or City, the Contractor shall secure and operate his own waste site at his own expense. The Contractor shall also be required to secure and operate his own waste site at his own expense for the disposal of all unsuitable material, asphalt, concrete, debris, waste material, and any other objectionable material which is directed to waste.

The Contractor shall comply with the State of Washington's regulations regarding disposal of waste material as outlined in WAC 173-304-461.

1-05 Control of Work

1-05.1 Authority of the Engineer

Supplement this section with the following:

Unless otherwise expressly provided in the approved Construction Drawings, Specifications and Addenda, the means and methods of construction shall be such as the Contractor may choose; subject, however, to the Consultant and the City's right to reject the means and methods proposed by the Contractor which (1) will constitute or create a hazard to the work, or to persons or property; or (2) will not produce finished work in accordance with the terms of the approved Construction Documents. Approval of the Contractor's means and methods of construction or his failure to exercise his right to reject such means or methods shall not relieve the Contractor of the obligation to accomplish the result intended by the Construction Documents; nor shall the exercise of such right to reject create a cause for action for damages.

At the Contractor's risk, the City Engineer may suspend all or part of the work according to Section 1-08.6.

1-05.3 Working Drawings

Supplement this section with the following:

Submittals for materials and products shall be submitted for review prior to installation. Submittals shall include manufacturer data, catalog cuts, and other information necessary to demonstrate compliance with the Plans, Specifications, and City standards.

Submittals shall be reviewed and approved by the Contractor prior to submission to the City. Catalog cuts shall clearly identify the specific item proposed for use. Submittals for major infrastructure materials shall utilize the City of Union Gap Materials Submittal Checklist available on the City’s website, where applicable.

Where Working Drawings or product submittals are required by the Specifications, no related work shall be commenced until the submittal has been reviewed and approved by the City.

1-05.3(1) Project Record Drawings (New Section)

The following new section shall be added to the Standard Specifications:

The Contractor shall maintain a neatly marked, full-size set of record drawings showing the final location and layout of all new construction. Drawings shall be kept current weekly, and updated daily with all field instruction, change orders, and construction adjustment.

The preparation and upkeep of the Record Drawings is to be the assigned responsibility of a single, experienced, and qualified individual. The quality of the Record Drawings, in

terms of accuracy, clarity, and completeness, is to be adequate to allow the Contracting Agency to modify the computer-aided drafting (CAD) Contract Drawings to produce a complete set of Record Drawings for the Contracting Agency without further investigative effort by the Contracting Agency.

The Record Drawing markups shall document all changes in the Work, both concealed and visible. Items that must be shown on the markups include but are not limited to:

- Actual Dimensions, arrangement, and materials used when different than shown in the Plans.
- Changes made by Change Order or Field Order.
- Changes made by the Contractor.
- Accurate locations of storm sewer, sanitary sewer, water mains and other water appurtenances, structures, conduits, light standards, vaults, width of roadways, sidewalks, landscaping area, building footprints, channelization and pavement markings, etc. Include pipe invert elevations, top of castings (manholes, inlets, etc.).

Drawings shall be subject to the inspection of the Developer and the City at all times. Prior to acceptance of the work, the Contractor shall deliver to the Developer one set of neatly marked as-built drawings showing the information required above. The Developer shall prepare and deliver to the City of Union Gap the Record Drawings and copies in accordance with Section 9 of Chapter 1 - Introduction and General Considerations.

- One (1) PDF set of Record Drawings
- Two (2) full-size hard copies clearly marked “Record Drawings”
- Digital deliverables in AutoCAD (.dwg) format and GIS-compatible format (such as shapefile or geodatabase), referenced to the City’s adopted coordinate system (NAD83 / NAVD88)

Submission and approval of Record Drawings shall be a required hold point prior to Final Acceptance and release of the Performance Bond.

1-05.4(1) Construction Staking (New Section)

The following new section shall be added to the Standard Specifications:

A land surveyor licensed in the State of Washington, retained by the Developer, shall establish the line and grade of proposed construction by offset stakes. Staking may be done by or at the direction of the licensed land surveyor. Said surveyor shall establish the centerline for minor structures and benchmarks at convenient locations for use by the Contractor and City inspectors. GPS systems may be used by the Contractor, but physical reference points shall be available for City inspection.

The Contractor shall establish grades from the surveyor’s stakes at suitable intervals in accordance with industry standards and acceptable to the City. Where new construction adjoins existing construction, the Contractor shall make such adjustments in grade as are necessary and approved by the City.

1-05.6 Inspections of Work and Materials

Supplement this section with the following:

The Public Works Director or his representative may not be on the job site full-time. The Contractor shall follow the approved construction plans and specifications, schedule, and request inspections and testing at the appropriate times as required herein. The Public Works Director will try to provide inspections on short notice, but if unable to, the requirements for proper notice shall apply. The project schedule prepared by the Contractor and approved by the Public Works Director shall also be used as a guide for the Contractor to schedule inspections. The Contractor shall provide a minimum two full business days, 48 hours, notice to request inspections, but in no case shall there be more than 72 hours notice. The request shall state the date and approximate time the inspection is requested. If the Contractor has requested an inspection and is not prepared for said inspection, the Contractor shall pay the costs for any additional improperly scheduled requests.

At the beginning of the project, or each applicable construction activity, the Contractor shall meet with the Public Works Director or his representative and establish a minimum standard for 100 feet of product (basis for acceptance), in the field, which meets the specifications. This work includes: survey staking and control, pavement cuts, utility trenches, trench bedding, pipe installation, backfill, patches, curb and gutter alignment, grade and finish, sidewalk finish, paving finish, and any other activities determined by the Engineer to be important to the project. No major amount of work shall proceed until this minimum standard is established. This does not waive the Contractor's requirements in the specifications for quality control or materials used.

Inspections by the City of Union Gap or its authorized agent are mandatory for acceptance of backfilling any utility trenches; placing base course and top course for streets; paving; placing sidewalks, curbs and gutters; storm, sewer and water line installation. All construction shall be inspected.

1-05.6(1) Testing (New Section)

The following new section shall be added to the Standard Specifications:

The Contractor/Developer shall be responsible for scheduling and paying for all material and compaction testing required by these Development Design and Construction Standards for new public works improvements. All testing services shall be performed by an independent, certified testing firm and/or laboratory meeting the approval of the City and/or City Engineer. The Contractor shall submit information relating to the qualifications of the proposed testing firm to the City for review and approval prior to the preconstruction conference. The Contractor shall provide copies of all test result reports to the City within 24 hours after completion of any test. Test reports shall become the property of the City. Testing frequencies listed below may be modified to assure compliance with the Specifications.

<u>Trench Backfill</u>

Copies of moisture-density curves for each type of material encountered and copies of all test results shall be provided to the City as construction progresses.

Compaction tests shall be taken at a frequency and at depths sufficient to document that the required density has been achieved. At a minimum, one (1) compaction test shall be taken for each 100 linear feet of mainline pipeline trench and one (1) test for each street crossing. At alternating 100-foot locations along the main trench line, tests shall be taken at 1-foot, 2-foot, and 3-foot depths below finish grade.

The City or City Engineer may request additional tests be performed at the Contractor's/Developer's expense, if test results do not meet the required trench backfill densities.

All trenches shall be backfilled and compacted to at least 95 percent of maximum density as determined by ASTM D 698 (Standard Proctor).

Roadway Subgrade (Embankment and Excavation Sections)

Copies of the moisture density curves for each type of material encountered and copies of all test results shall be provided to the City or City Engineer as construction progresses.

Compaction tests shall be taken at a frequency sufficient to document that the required density has been achieved. At a minimum, one (1) compaction test shall be taken for every 5,000 square feet of subgrade.

The City or City Engineer may request additional tests be performed at the Contractor's expense, if test results do not meet the required subgrade densities.

Subgrade compaction shall be as specified for Roadway Embankment in Section 2-03.3(14)C, Method C, compacted to at least 95 percent of maximum density as determined by ASTM D 698 (Standard Proctor).

Ballast and Crushed Surfacing

Copies of the moisture density curves and gradation for each type of material incorporated into the project and copies of all test results shall be provided to the City or City Engineer as construction progresses.

Compaction tests shall be taken at a frequency sufficient to document that the required density has been achieved. At a minimum, one (1) compaction test shall be taken for every 5,000 square feet of surface area for each lift of ballast or crushed surfacing.

The City or City Engineer may request additional tests be performed at the Contractor's/Developer's expense, if test results do not meet the required subgrade densities.

Compaction of ballast and crushed surfacing shall be as specified in Section 4-04.3(5).

Asphalt Pavement

Copies of the reference maximum density test for each class of Hot Mix Asphalt pavement and copies of all test results shall be provided to the City or City Engineer as construction progresses.

Density tests shall be taken at a frequency sufficient to document that the required density has been achieved. At a minimum, one (1) compaction test shall be taken for every 5,000 square feet of surface area for each lift of asphalt concrete pavement.

The City or City Engineer may request additional tests be performed at the Contractor's/Developer's expense, if test results do not meet the required subgrade densities.

Compaction of Hot Mix Asphalt pavement shall be as specified in Section 5-04.3(10)A.

Portland Cement Concrete for Curb, Gutter, and Sidewalk

A copy of the cement concrete design mix or certification from the concrete supplier that the concrete provided has been prepared to the strength requirement as specified elsewhere in these specifications.

Sample the first truck (performing all tests required by the Standard Specifications for fresh concrete and preparation of strength specimens) and each load until two successive loads meet specifications, and then randomly test one load for every 100 cubic yards. If at any time one load fails to meet specifications, continue testing every load until two successive loads meet specifications, and then randomly test one load for every 100 cubic yards. The Contractor shall engage an approved independent testing agency to perform all required sampling and testing, and shall ensure results are submitted directly to the City or City Engineer.

All testing procedures shall be conducted in accordance with applicable Sections of Division 6-02 of the Standard Specifications.

Copies of all test results shall be provided to the City or City Engineer as construction progresses.

1-05.6(2) Required Inspections (New Section)

The following new section shall be added to the Standard Specifications:

Specific stages of construction are designated as required inspection hold points. The Contractor shall notify the City and obtain inspection approval prior to proceeding with the next phase of work. Inspections shall be scheduled in accordance with Section 1-05.6.

Required inspection hold points shall include, but are not limited to, the following:

1. Trench excavation and subgrade preparation (prior to placing bedding material).
2. Bedding placement (prior to pipe installation).
3. Pipe placement and assembly (before backfilling over the pipe).
4. Thrust restraint installation (mega-lugs, restrained joints, thrust blocks if allowed) prior to backfill over those assemblies.
5. Pressure and leakage testing of pipelines (water or sewer) before acceptance.
6. Disinfection and flushing of water mains.
7. Structure placements (e.g. manholes, catch basins) prior to backfilling.

8. Surface restoration (before final paving or patching).
9. Final acceptance inspection (walk-through at project completion).

If work is performed without the required inspection or approval, the City may require that such work be uncovered or removed at the Contractor's expense to allow inspection and verification of compliance with the approved plans and specifications.

City inspection at designated hold points does not relieve the Contractor or Developer of responsibility for proper construction between inspections. Where the City determines that continuous observation is necessary due to project complexity or risk, the City may require additional observation or certification by the Developer's Consultant or an approved third-party inspector.

1-05.7 Nonconforming Work
(October 1, 2005 APWA GSP)

Supplement this section with the following:

If the Contractor fails to remedy defective or unauthorized work within the time specified in a written notice from the Engineer, or fails to perform any part of the work required by the Contract Documents, the Engineer may correct and remedy such work as may be identified in the written notice, with Contracting Agency forces or by such other means as the Contracting Agency may deem necessary.

If the Contractor fails to comply with a written order to remedy what the Engineer determines to be an emergency situation, the Engineer may have the defective and unauthorized work corrected immediately, have the rejected work removed and replaced, or have work the Contractor refuses to perform completed by using Contracting Agency or other forces. An emergency situation is any situation when, in the opinion of the Engineer, a delay in its remedy could be potentially unsafe, or might cause serious risk of loss or damage to the public.

Direct or indirect costs incurred by the Contracting Agency attributable to correcting and remedying defective or unauthorized work, or work the Contractor failed or refused to perform, shall be paid by the Contractor. Payment will be deducted by the Engineer from monies due, or to become due, the Contractor. Such direct and indirect costs shall include in particular, but without limitation, compensation for additional professional services required, and costs for repair and replacement of work of others destroyed or damaged by correction, removal, or replacement of the Contractor's unauthorized work.

No adjustment in contract time or compensation will be allowed because of the delay in the performance of the work attributable to the exercise of the Contracting Agency's rights provided by this Section.

The rights exercised under the provisions of this section shall not diminish the Contracting Agency's right to pursue any other avenue for additional remedy or damages with respect to the Contractor's failure to perform the work as required.

Supplement this section with the following:

For new roadway/street construction and overlays, HMA work rejected shall require the replacement of the entire road or street width from block to block or as approved in writing from the City or City Engineer. For trench patching, HMA work rejected shall require the replacement of the entire patch width from block to block or as approved in writing from the City or City Engineer.

1-05.8 Means and Methods (New Section)

The following new section shall be added to the Standard Specifications:

Unless otherwise expressly provided in the Contract Drawings, Specifications and Addenda, the means and methods of construction shall be such as the Contractor may choose; subject, however, to the Consultant's or City's right to reject means and methods proposed by the Contractor which (1) will constitute or create a hazard to the work, or to persons or property; or (2) will not produce finished work in accordance with the terms of the Contract. The Consultant's or City's approval of the Contractor's means and methods of construction or his failure to exercise his right to reject such means or methods shall not relieve the Contractor of the obligation to accomplish the result intended by the Contract; nor shall the exercise of such right to reject create a cause for action for damages.

1-05.10 Guarantees

Delete this section and replace it with the following:

If, within one (1) year after the date of Final Acceptance of the Work, defective and unauthorized materials or work is discovered, the Developer/Contractor shall promptly, upon written request, return and in accordance with the instructions either correct such work, or if such work has been rejected, remove it from the Project Site and replace it with non-defective and authorized work, all without cost to the City. If the Contractor does not promptly comply with the written request to correct defective and unauthorized work, or if an emergency exists, the City reserves the right to have defective and unauthorized work corrected or rejected, removed, and replaced pursuant to the provisions of Section 1-05.7 of the Standard Specifications.

The Contractor agrees the above one-year limitation shall not exclude nor diminish any rights under any law to obtain damages and recover costs resulting from defective and unauthorized work discovered after one year.

1-05.14 Cooperation with Other Contractors

Supplement this section with the following:

No additional compensation will be given to the Contractor for any coordination or delays caused by other nearby construction projects.

1-05.16 Water and Power (New Section)

The following new section shall be added to the Standard Specifications:

Water Supply: Water for use on private development construction may be purchased from the City of Union Gap. The Contractor shall be required to follow the City's requirements to obtain a hydrant water meter and report use. The Contractor shall convey the water from the nearest convenient hydrant or other source at his own expense. The hydrants shall be used in accordance with the City of Union Gap Water Division regulations. The City of Union Gap reserves the right to deny the use of hydrants where deemed inappropriate by the City. Hydrant water use shall include an approved backflow prevention assembly.

Power Supply: The Developer shall make necessary arrangements and shall bear the costs for power necessary for the performance of the work.

1-05.17 Oral Agreements (New Section)

The following new section shall be added to the Standard Specifications:

No oral agreement or conversation with any officer, agent, or employee of the Contracting Agency, either before or after construction, shall affect or modify any of the terms or obligations contained in any of the City-approved documents. Such oral agreement or conversation shall be considered as unofficial information and in no way binding upon the Contracting Agency, unless subsequently put in writing and signed by the Contracting Agency.

1-06 Control of Material

1-06.2(2) Statistical Evaluations of Materials for Acceptance

Delete Section 1-06.2(2).

1-07 Legal Relations and Responsibilities to the Public

1-07.1 Laws to be Observed
(October 1, 2005 APWA GSP)

Supplement Section 1-07.1 with the following:

In cases of conflict between different safety regulations, the more stringent regulation shall apply.

The Washington State Department of Labor and Industries shall be the sole and paramount administrative agency responsible for the administration of the provisions of the Washington Industrial Safety and Health Act of 1973 (WISHA).

The Contractor shall maintain at the project site office, or other well known place at the project site, all articles necessary for providing first aid to the injured. The Contractor shall establish, publish, and make known to all employees, procedures for ensuring immediate removal to a hospital, or doctor's care, persons, including employees, who may have been injured on the project site. Employees should not be permitted to work on the project site before the Contractor has established and made known procedures for removal of injured persons to a hospital or a doctor's care.

The Contractor shall have sole responsibility for the safety, efficiency, and adequacy of the Contractor's plant, appliances, and methods, and for any damage or injury resulting from their failure, or improper maintenance, use, or operation. The Contractor shall be solely and completely responsible for the conditions of the project site, including safety for all persons and property in the performance of the work. This requirement shall apply continuously, and not be limited to normal working hours. The required or implied duty of the Engineer to conduct construction review of the Contractor's performance does not, and shall not, be intended to include review and adequacy of the Contractor's safety measures in, on, or near the project site.

Amend the second sentence of the first paragraph to read:

The Contractor/Developer shall indemnify and save harmless the City of Union Gap (including any agents, officers, employees, and representatives) against any claims that may arise because the Contractor (or any employee of the Contractor or subcontractor or materialman) violated a legal requirement.

1-07.5(3) State Department of Ecology

Supplement this section with the following:

11. Comply with the requirements and special general conditions of the *Construction Stormwater General Permit* issued by the Washington State Department of Ecology to the Developer/Contractor for this project.

1-07.5(4) Air Quality

Supplement this section with the following:

The Contractor shall comply with the environmental provisions of local air pollution authorities, Yakima County Clean Air Authority.

A method of dust control during construction shall be submitted to, and approved by, the Yakima County Clean Air Authority. A written copy of their approval shall be submitted to the Public Works Director prior to commencement of construction. The Contractor/Developer shall designate a project coordinator for contact during construction regarding alleged air quality violations and other complaints.

1-07.13 Contractor's Responsibility for Work

1-07.13(1) General

Supplement this section with the following:

The Contractor is responsible for constructing and completing all work included in the approved Construction Documents and any other work directed by the Developer in a professional manner with first-class workmanship.

The Contractor shall keep the City of Union Gap, the Developer, and the Consultant informed in writing of the address to which official correspondence is to be directed, the address and phone number of the person in charge of his field personnel, and the

address and telephone number of the Contractor's representative who will be responsible and available outside of normal working hours for emergency repairs and the maintenance of traffic control and safety devices.

The Developer shall be responsible for the satisfactory operation and condition of all public improvements for a period of two (2) years following final inspection and City acceptance in accordance with the Union Gap Municipal Code.

1-07.17 Utilities and Similar Facilities

Supplement this section with the following:

It shall be the Contractor's responsibility to investigate and verify the presence and location of all utilities prior to construction. It is the responsibility of the Contractor to verify pertinent locations and elevations of utility connection points and utility crossings. The Contractor shall field verify depths of utilities by potholing prior to beginning any new construction to allow for adjustment in grade or alignment. Potholing shall be considered incidental to other bid items and no additional compensation will be paid.

The Contractor/Developer shall call for field location, not less than two nor more than ten business days before the scheduled date for commencement of excavation which may affect underground utility facilities, unless otherwise agreed upon by the parties involved. A business day is defined as any day other than Saturday, Sunday, or a legal local, state, or federal holiday. The phone number for the Northwest Utility Notification Center for Union Gap is 1-800-424-5555 (or 811). If no one-number locator service is available, notice shall be provided individually by the Contractor to those owners known to or suspected of having underground facilities within the area of proposed excavation.

The Contractor/Developer is alerted to the existence of Chapter 19.122 RCW, a law relating to underground utilities. Any cost to the Contractor/Developer incurred as a result of this law shall be at the Contractor's/Developer’s expense.

No excavation shall begin until all known facilities, in the vicinity of the excavation area, have been located and marked.

In addition to the requirements of RCW 19.122, the Contractor shall use surface features and other evidence in determining the approximate utility location prior to excavation. The Contractor shall hand dig to expose known utilities.

Where the location of the work is in proximity to overhead wires and power lines, the Contractor shall coordinate all work with the utility and shall provide for such measures as may be necessary for the protection of workmen.

Only City personnel shall operate water system valves.

1-07.17(3) Utility Construction (New Section)

The following new section shall be added to the Standard Specifications:

Conduit for dry utilities (e.g., power, communications, fiber optic, and similar services) installed within existing public streets shall be installed using trenchless methods where

feasible to minimize disturbance to pavement and existing infrastructure. Open-cut trenching shall only be allowed when approved by the City.

1-07.18 Public Liability and Property Damage Insurance

Supplement this section with the following:

The Contractor shall obtain and maintain in full force and effect during the duration of this Contract public liability and property damage insurance in accordance with this section and as modified herein.

Prior to start of construction, the Contractor/Developer shall furnish the City of Union Gap a Certificate of Insurance and the additional insured endorsements as evidence of compliance with these requirements. This certificate shall name the City of Union Gap, its employees, agents, elected and appointed officials, engineering consultant, and all subcontractors as “additional insureds” and shall stipulate that the policies named thereon cannot be canceled unless at least forty-five (45) days written notice has been given to the City of Union Gap. The certificate shall not contain the following or similar wording regarding cancellation notification: “Failure to mail such notice shall impose no obligation or liability of any kind upon the company, its agents, or representatives.”

1-07.29 Notifying Property Owners (New Section)

The following new section shall be added to the Standard Specifications:

When construction activities will affect ingress and egress to a property along the project alignment, the Contractor shall be responsible for notifying the occupant/occupants of the property 72 hours prior to the construction activity beginning. If personal contact with the occupant is not possible, the Contractor shall leave written notification. A copy of all notifications shall be provided to the City.

1-08 Prosecution and Progress

1-08.3 Progress Schedule

Supplement this section with the following:

Prior to the commencement of any work, a preconstruction conference shall be held. The Contractor or Developer shall contact the City of Union Gap and set a date and time for the meeting. It shall be the responsibility of the Contractor/Developer to notify and invite all parties having an interest in the project to the meeting, including the major subcontractors, Fire Department, and private utilities.

At this conference, all points of the approved Plans and Specifications will be open to discussion including scope, order and coordination of work, equipment, lead time required, means and methods of construction, inspection and reporting procedures, etc. The Contractor should satisfy himself that all provisions and intentions of the work are fully understood.

The Contractor shall prepare and submit to the City and Developer at the Preconstruction Conference a Construction Progress and Completion Schedule using a

bar graph format. Items in the Schedule shall be arranged in the order and sequence in which they will be performed. The Schedule shall be drawn to a time scale, shown along the base of the diagram, using an appropriate measurement per day with weekends and holidays indicated. The Schedule shall be continuously updated and, if necessary, redrawn upon the first working day of each month or upon issuance of any Change Order which substantially affects the scheduling. Copies of newly updated Schedules shall be forwarded to the City, as directed, immediately upon preparation.

Any proposed road or sidewalk closures including duration of closure must be approved by the City prior to consideration. If approved, closures shall not extend beyond permitted duration.

At the discretion of the City, a weekly meeting between representatives of the City (inspector and/or engineer) and Contractor (foreman, supervisor, and/or project manager) shall be held at the project site or at City Hall at a predetermined time. The Contractor shall present an update on project status, project schedule, and any problems that have arisen.

1-08.3(2) General Requirements

Seasonal weather conditions shall be considered in the planning and scheduling of work influenced by high or low ambient temperature or precipitation to ensure the completion of the work within the Contract Time. No time extension will be granted forth Contractor's failure to take in to account such weather conditions for the location of the work and for the period of time in which the work is to be accomplished.

2-03 Public Convenience and Safety

Supplement this section with the following:

All signs, barricades, traffic control devices, and labor for traffic control required by construction activities for the control of traffic shall be supplied, placed, and maintained by the Contractor. This shall apply to detours and traffic control both within and outside the limits of the project.

All work shall be done under a plan which shall have the approval of the City of Union Gap and create a minimum of interruption or inconvenience to pedestrian and vehicular traffic. All arrangements to care for such traffic will be the Contractor's responsibility and shall be made at his expense. All work shall be carried out with due regard for public safety. Open trenches shall be provided with proper barricades and at night they shall be distinctly indicated by adequately placed lights. At entrances to business properties and other private roads, driveways, bridges, or other such means as to provide access shall be provided by the Contractor. The Contractor shall maintain vehicular and pedestrian access to businesses at all times that businesses are open for business.

Upon failure of the Contractor to immediately provide and maintain adequate suitable barricades, lights and detour signs, when ordered to do so, the City shall be at liberty, without further notice to the Contractor or the Surety, to provide the same and request payment for providing proper barricades, lights, and signs, and the City assumes no liability connected therewith.

Any traffic restriction must have prior approval of the City of Union Gap. Appropriate traffic control measures and signing are required during such temporary road closures.

It shall be the responsibility of the Contractor to secure the City's approval for any desired road closure and associated traffic control plan including detours. Following approval, the Contractor shall notify the Developer, City of Union Gap, and the Police and Fire Departments at least 24 hours prior to closing any street. When the street is reopened, it shall again be the responsibility of the Contractor to notify the above named departments and persons.

All work shall be performed in accordance with all applicable local, state, and federal health and safety codes, standards, regulations, and/or accepted industry standards. It shall be the responsibility of the Contractor to ensure that his workforce and the public are adequately protected against any hazards.

The City of Union Gap or Developer shall have the authority at all times to issue a stop work order at no penalty if, in their opinion, working conditions present an undue hazard to the public, property, or the work force. Such authority shall not, however, relieve the Contractor of responsibility for the maintenance of safe working conditions or assess any responsibility to the City or Developer for the identification of any or all unsafe conditions.

2-04 Temporary Traffic Control

Supplement this section with the following:

The provisions of the latest edition of the *Manual on Uniform Traffic Control Devices* (MUTCD) *for Streets and Highways* and amendments thereto published by the U.S. Department of Transportation, Federal Highway Administration, and WSDOT by this reference are made a part of these Documents.

2-04.3(2) Traffic Control Plans

Delete the entire section and replace with the following:

The Contractor shall prepare a signing plan showing the necessary Class A and B construction signing, barricades, and traffic control devices required for the project and submit it to the City, no later than the preconstruction conference date, unless a road closure is proposed which requires City Council approval. When the Class B signing for a particular area will be provided as detailed on one or more of the figures included in the MUTCD without modification, the Contractor may reference the applicable MUTCD figure at the appropriate location on the Plan. When this procedure is used, variable distances such as minimum length of taper must be specified by the Contractor. Traffic Control Plan must be submitted to an industry-accepted scale and contain adequate detail, and duration of impacts.

The signing plan prepared by the Contractor shall provide for adequate warning within the limits of the project and on all streets, alleys, and driveways entering the project so that approaching traffic may turn left or right onto existing undisturbed streets before reaching the project. The Plan shall be prepared to create a minimum of inconvenience for pedestrian and vehicle traffic. Accesses and driveways must be accounted for.

All modifications to the accepted signing plans shall be reviewed by the City.

2-04.3(6)A Construction Signs

The first sentence of the first paragraph is revised to read:

All signs, barricades, flashers, cones, traffic safety drums, barricades, and other traffic control devices required by the approved traffic control plan(s), as well as any other appropriate signs prescribed by the City or County, shall be furnished and maintained by the Contractor.

Open trenches shall be provided with proper barricades and at night they shall be distinctly indicated by adequately spaced lights.

7-08 General Pipe Installation Requirements

7-08.1 Description

Delete this section and replace it with the following:

This work includes installing culverts, storm sewers, sanitary sewers, water main, irrigation mains, and conduits. The Contractor shall also follow Section 7-02, 7-04, 7-09, 7-16, 7-17, or 8-20 as it applies to the specific kind of work. In cases of conflict between sections, the more stringent regulation shall apply.

All construction work shall be inspected by the City of Union Gap at required hold points prior to backfilling. At least 48 hours notice shall be given to the City Public Works Department prior to backfilling.

7-08.3 Construction Requirements

7-08.3(1)A Trenches

Supplement this section with the following:

Existing pavement shall be neatly saw-cut on both sides of the trench parallel consistent with the dimensions presented on the Trench Surfacing Repair standard detail, including additional saw-cutting prior to surface repair.

7-08.3(1)C Bedding the Pipe

Delete this section and replace it with the following:

Imported pipe zone material for flexible pipes shall be Crushed Surfacing Top Course meeting the requirements of section 9-03.9(3), and shall be placed and compacted in layers as designated by the City. Pipe zone material for rigid pipes shall be Crushed Surfacing Top Course or Crushed Surfacing Base Course meeting the requirements of Section 9-03.9(3), or as approved by the City.

7-08.3(2)B Pipe Laying – General

Supplement this section with the following:

Potable domestic water mains shall maintain a 10-foot horizontal and 18-inch vertical separation above non-potable pipelines (sewer and storm) consistent with the Department of Health Water System Design Manual.

When parallel to existing utilities, new domestic water mains shall be installed a minimum of 10 feet horizontally (outside pipe wall to outside pipe wall, typical) and 18 inches vertically above other non-potable pipelines. Where this is not possible at the discretion of the Engineer, a water main may be installed a minimum of five feet horizontally and 18 inches vertically above other non-potable pipelines, as long as the water main is placed in a separate trench and on a bench of undisturbed earth.

When crossing existing utilities, new domestic water mains shall be installed a minimum of 18 inches vertically above non-potable pipelines. Where this is not possible, or the water main passes under a non-potable pipeline, the water main shall be installed in a pressure rated pipe casing extending 10 feet each side of the crossing. In addition, where the water main passes under an existing non-potable pipeline, support shall be provided for the non-potable pipeline by backfilling the non-potable pipeline trench with controlled density backfill or other approved methods. A minimum of 6 inches of separation between the crossing pipelines must be maintained in all cases.

When parallel to existing potable water mains, new non-potable pipelines shall be installed a minimum of 10 feet horizontally and 18 inches vertically from existing water mains. Where this is not possible at the discretion of the Engineer, a non-potable pipeline may be installed a minimum of five feet horizontally from an existing water main, as long as the non-potable pipeline is installed a minimum of 18 inches vertically below the water main and the non-potable pipeline is placed in a separate trench. If the vertical separation cannot be met, then the non-potable pipeline shall be constructed of or encased in materials equal to water main standards with a minimum pressure rating of 165psi (C900 PVC DR 25, ductile iron, etc.).

When crossing existing potable water mains, new non-potable pipelines shall be installed a minimum of 18 inches vertically below existing water mains. Due to difficulties in compacting under existing utilities, controlled density backfill or other City-approved materials shall be placed as backfill at the crossing locations, to a depth of the water main spring line. Where the minimum clearance is not possible, or the non-potable pipeline passes above a water main, a full length of non-potable pipeline shall be centered at the crossing. In addition, the non-potable pipeline shall either be installed in a pressure rated pipe casing extending 10 feet each side of the crossing, or be constructed of one standard length of pipe material equal to waterline standards with a minimum pressure rating of 165psi (C900 PVC DR 25, ductile iron, etc.). A minimum of 6 inches of separation between the crossing pipelines must be maintained in all cases.

Magnetic detectable marking tape shall be installed above all pipes including service lines. The tape shall be placed approximately two feet above the top of the pipe and shall extend its full length. The horizontal location of the tape shall vary no more than one foot from the centerline alignment of the pipe. Detectable marking tape shall meet the requirements of Section 9-15.18 of the Standard Specifications. Tape width shall be

a minimum of 3 inches wide, or wider as recommended by the manufacturer for the installation depth. Care must be taken to ensure that the marking tape shall be continuous and unbroken during the backfill process.

Tracer wire shall be installed on all water mains and appurtenances, water services, side sewers, and sanitary sewer force mains.

7-08.3(3) Backfilling

Supplement this section with the following:

Street crossing trenches on existing streets and other locations, where directed, shall be backfilled for the full depth of the trench with Imported Select Backfill conforming to Section 9-03.9(3) Crushed Surfacing Base Course. The Public Works Director may require the use of Controlled Density Fill (CDF) for trench backfill in certain circumstances. The requirements for CDF are set forth in Section 8-30 of these Special Provisions.

Mechanical compaction shall be required for all trenches. The density of the compacted materials shall be at least 95% of the maximum density as determined by ASTM D 698 Test (Standard Proctor). The Contractor shall be responsible for scheduling, conducting, and paying for all testing required.

7-08.3(5) Marker Posts (New Section)

The following new section shall be added to the Standard Specifications:

Stub-outs for future connections at property lines, including utility mains, services, conduit, etc., shall be marked with an 8’ treated 2x4 inside of an 8’ steel stud, painted the color consistent with those tape colors identified in Section 9-15.18 of the Standard Specifications, extending 24”-36” above finished ground surface.

7-08.3(6) Snow Removal (New Section)

The following new section shall be added to the Standard Specifications:

If snow interferes with the Work, the Contractor shall remove and deposit it outside the pipe installation area. Snow removal must be done at least 100 feet ahead of pipe Work. The Contractor shall remove snow at no expense to the Contracting Agency.

8-01 Erosion Control and Water Pollution Control

8-01.3 Construction Requirements

8-01.3(1) General

Supplement this section with the following:

Exposed and unworked soils shall be temporarily or permanently stabilized as soon as practicable, unless otherwise approved by the City of Union Gap. Contractor shall follow the requirements in the most current publication of the Washington Department of

Ecology (Ecology) *Stormwater Management Manual for Eastern Washington* (SWMMEW).

Chapter 4 - Water System Improvements

General Requirements for Water Mains

All extensions and additions to the City's domestic water system shall conform to the Development Design and Construction Standards of the City of Union Gap and the Washington State Department of Health (DOH), American Water Works Association, and designed by a Civil Engineer currently licensed by the State of Washington.

All new lots and developments shall be served by a public domestic water supply line to be owned and maintained by the City of Union Gap and located adjacent to the lot or development site. The water supply line shall be capable of providing sufficient flow and pressure to satisfy the fire flow and domestic service requirements of the proposed lots and development requirements. If determined necessary by the City Engineer, hydraulic analysis including modeling shall be performed by the City of its agents, and all costs shall be borne by the Developer.

Water lines shall be extended by the Developer to the point where the adjoining property owner's responsibility for further extension begins. This typically requires an extension across the entire frontage of the property to the property line of the adjoining owner. In some cases, it will require dedication of an easement and a line extension across the property or extension across two or more sides of the developing property. Extensions will be consistent with and implement the City's adopted Water System Plan including alignments and sizes necessary to serve future areas within the Urban Growth Area (UGA) boundary.

All new public domestic water mains shall be a minimum diameter of 8 inches, or larger diameters as specified in the City's Water System Plan, or larger as required to meet the fire flow demand of the development. Fire hydrant laterals shall be a minimum of 6 inches in diameter. Final sizing shall be determined by the Contractor's Engineer and field verified during installation. Cover over new water mains shall be a minimum depth of 42 inches and a maximum of 72 inches, unless approved by the Public Works Director.

New water mains shall be located in existing or proposed streets within City right-of-way and shall be offset from the street centerline, not located within a vehicle wheel path.

All domestic water mains shall be looped, where possible. Temporary dead-end mains over 500 feet in length will only be allowed where future water main looping via public right of way will be assured. No permanent dead-end water mains over 300 feet in length will be allowed to be part of the City of Union Gap's public water system.

Permanent dead-end water mains may become private water mains owned and maintained by the Developer. All dead-end water mains shall be isolated from the public water main with a double check valve assembly and vault furnished and installed by the Developer to City of Union Gap standards for cross-connection control.

All services must extend from a water main owned and operated by the City.

Maximum valve spacing in public water mains will be 750 linear feet. Valves will be furnished and installed on all legs of new water main intersections. Valve operating nut extensions

approved by the City will be required on valves where the operating nut is deeper than 36 inches below finished grade.

All new water main installations shall be satisfactorily tested per Section 7-09 prior to being placed into service including hydrostatic pressure and bacteriological testing, all at the expense of the Developer.

All new water service lines and meters shall be furnished and installed by the City of Union Gap. The applicant shall pay the applicable service installation fees and infrastructure charges as set forth in UGMC 12.04.030. All service hot taps shall be made under the supervision of the Public Works Director or his designee, and the coupon shall be delivered to the Public Works Director for all taps.

All live taps of water mains shall be performed by a contractor approved by the Public Works Director (or City's representative with Public Works Director's approval) using a full circle stainless steel tapping sleeve with gate valve and paid for by the Developer.

Minimum 2-inch air and vacuum release valves shall be furnished and installed at high points in the water system.

Maximum spacing of hydrants shall be 300 feet. Additional hydrants may be required to protect structures as determined by the Fire Chief and Public Works Director. Additional hydrants required on a site may require a looped, on-site water main. Easements shall be provided for all on-site, public, looped water mains, in accordance with Chapter 1 - Introduction and General Considerations, Section 11. Hydrants shall be located at the ends of curb returns or at property lines between lots, and not be located within driveways, driveway ramps, or curb ramps.

Water mains shall maintain a 10-foot horizontal and 18-inch vertical separation above non-potable pipelines (sanitary sewers, reclaimed water, irrigation pipelines, stormwater pipes, and other uses) in accordance with Section 6.3.4 of the *Water System Design Manual*, *June 2020*, by the Washington State Department of Health. Additionally, water and sewer mains shall be separated in accordance with Section C1-9.1 of the *Criteria for Sewage Works Design, August 2008,* by the Washington State Department of Ecology. Gas, power, telephone, and other dry utilities shall maintain a minimum 3-foot horizontal clearance from water mains.

The design of water mains and appurtenances is subject to review and approval consideration by the Public Works Director and City Engineer. The Public Works Director may, at his discretion, adjust these Design and Construction Standards as necessary to facilitate installation of water lines and appurtenances for the health, safety, and protection of the general public.

All commercial developments, irrigation systems, and multi-family water service connections shall be protected by a double detector check valve assembly. All double detector check valve assemblies shall conform to City of Union Gap standards. Initial and annual testing will be required.

The City Engineer may require cathodic protection (sacrificial zinc anodes and test stations) for ductile iron pipe installed in corrosive soils in steel casings, or at creek crossings. Cathodic protection shall be designed and installed in accordance with AWWA C105 and NACE standards.

Irrigation Systems

Where applicable and as determined by the Public Works Director, subdivisions and developments shall be served by a separate irrigation water distribution system with an individual service for each lot. If an irrigation assessment is in place for the subject parcel, an irrigation system must be installed. The irrigation system shall be designed by a professional engineer and constructed in accordance with applicable irrigation districts and City Construction Standards. All turnout modifications with irrigation districts shall be coordinated and constructed by the Developer. Construction of all irrigation system components shall be the responsibility of the Developer. All irrigation pipe shall be installed with a minimum cover of 30 inches, pipe zone bedding and backfill per Standard Detail SS-1, and with a 3-inch wide detectable magnetic marking tape nine (9) inches above the pipe. In the event irrigation water is not available in the vicinity of the subdivision and an irrigation system is not required, the Developer may elect to install a “dry” irrigation system, tested, sealed, and buried with ends clearly marked to facilitate a future connection when irrigation water is available. Refer to Section 8-03 for material requirements.

Domestic water and non-potable irrigation services should be extended to opposite lot corners in new construction. Where it is impossible to install them in that manner, 10-feet of separation needs to be supplied between the service points (meter boxes).

Special Provisions For Water Systems

The following sections of the WSDOT Standard Specifications have been amended or supplemented as described below and apply to the construction of public works water system improvements within the City of Union Gap.

7-09 Water Mains

7-09.2 Materials

Pipe for main line approved for use shall be as follows:

Pipe for Main Line:

Ductile Iron Pipe

Supplement this section with the following:

Ductile Iron Pipe: Ductile iron pipe shall conform to the requirements of Section 9-30.1(1) of the Standard Specifications. Joints shall be rubber gasket, push-on type (Tyton Joint). Fittings shall be mechanical joint or flanged, as shown on the Plans, and shall conform to Section 9-30.2(1) of the Standard Specifications.

Detectable Marker Tape: Marker tape shall be a detectable type and shall be marked "WATER," and shall conform to Section 9-15.18 of the Standard Specifications.

Tracer Wire: Tracer wire shall be 12-gauge heavy insulated (60 mil) copper wire with UF insulation colored for the utility being installed in accordance with Section 9-15.18.

Fittings for Main Lines:

Connection Couplings: Couplings for Ductile Iron, either transition or straight couplings, shall be compression type flexible couplings conforming to Section 9-30.2(7) of the Standard Specifications.

Hardware: All bolts, nuts, and washers shall be of stainless steel material

Aggregates:

Gravel Backfill for Pipe Zone: Imported pipe zone material for flexible pipes shall be Crushed Surfacing Top Course meeting the requirements of section 9-03.9(3), and shall be placed and compacted in layers as designated by the Engineer. Pipe zone material for rigid pipes shall be Crushed Surfacing Top Course or Crushed Surfacing Base Course meeting the requirements of Section 9-03.9(3), or as approved by the Engineer.

Trench Backfill: All longitudinal trenches shall be backfilled full depth above the pipe zone with native material (free of organic material, wood, rocks, or pavement chunks larger than 6-inches in maximum dimension), unless otherwise directed by the Engineer. Existing street crossing trenches and other locations as directed by the Engineer shall be backfilled full depth with imported select backfill. Imported select backfill, where directed by the Engineer, shall be crushed surfacing base course, placed and compacted in layers.

7-09.3 Construction Requirements

7-09.3(5) Grade and Alignment

Replace the first sentence of the third paragraph with the following:

The depth of trenching for water mains shall be such to provide a minimum cover of 42 inches feet and a maximum cover of 72 inches, unless otherwise approved by the Public Works Director.

7-09.3(7) Trench Excavation

Supplement this section with the following:

The Contractor shall neatly sawcut all areas of existing pavement within the trench excavation area, then remove and haul all waste materials from the project and dispose of at an approved site provided by the Contractor. Should any undermining occur on adjacent pavement, the Contractor shall neatly cut the pavement six (6) inches beyond the undermined area.

All trench excavations shall have adequate safety systems for the trench excavation that meet the requirements of the Washington Industrial Safety and Health Act, Chapter 49.17 RCW. The Contractor shall be fully responsible for providing the necessary back sloping, cribbing, trench boxes, etc., as required to meet the specified safety requirements for the trench.

7-09.3(9) Bedding the Pipe

Delete the first two sentences of this section and replace with the following:

Gravel backfill for pipe zone bedding shall be as specified in Section 7-09.2.

Supplement this section with the following:

All construction work shall be inspected by the City or its representative before backfilling.

7-09.3(11) Compaction of Backfill

Delete the first paragraph and supplement this section with the following:

Mechanical compaction shall be required for all trenches. The Developer/Contractor shall be responsible for scheduling and paying for all testing required.

The density of the compacted material shall be at least 95% of the maximum density as determined by ASTM D 698 Tests (Standard Proctor). Density tests shall be taken at various depths in the trench. All costs associated with testing shall be the responsibility of the Contractor. Placement of courses of aggregate shall not proceed until density requirements have been met.

The first 500 feet of trench backfill operations shall be considered a test section for the Contractor to demonstrate his backfilling and compaction techniques. The Contractor shall notify the City at least 3 working days prior to beginning trench excavation and backfill operations. The Contractor shall arrange for in-place density tests to be taken on the completed test section in accordance with the above requirements. No further trenching will be allowed until the specified density is achieved in the test section. Passing in-place density tests in the test section will not relieve the Contractor from achieving the specified densities throughout the project.

7-09.3(19)A Connections to Existing Mains

Supplement this section with the following:

New water mains shall be tested, flushed, and disinfected per Section 7-09.3(23) and 7-09.3(24) with passing results, prior to making connection to existing main and being placed into operation.

No existing line valves shall be closed without permission by the Public Works Director. In no case shall any existing water main valve be closed for a period of greater than eight (8) hours. Only City personnel or those authorized by the City may operate City valves.

The anticipated schedule for the connections shall be discussed and scheduled at the preconstruction conference, and indicated on the weekly schedule. The City reserves the right to adjust the schedule of the connections, as required, subject to a minimum of 24-hour notice of schedule change to the Contractor.

7-09.3(20) Detectable Marking Tape

Delete this section and replace it with the following:

Detectable marking tape and tracer wire shall be installed over all water pipes, including service lines. A continuous solid copper locating wire shall be placed along the top of all water pipe. This wire shall be secured to the top of the pipe at maximum 10-foot intervals using 6-inch strips of 2-inch wide duct tape. All splices shall be tied, electrically continuous, and made waterproof. Access to terminal ends of the locating wire shall be made at locating wire boxes, per the details shown on the Drawings. The result of this installation shall be a continuous wire circuit electrically isolated from ground. The Contractor shall be responsible for testing continuity and for testing isolation from ground in the wire after all work has been completed on the test section. The Contractor is advised to do intermediate testing on his own after backfilling operations and prior to surface restoration work to be sure continuity is maintained. If there is a break or defect in the wire, it shall be the Contractor's responsibility to locate and repair the defect. The continuity of the location wire shall be tested from one test load point to the next by use of a temporary wire laid between test points in-line with an ohmmeter. Resistance shall be measured with an approved ohmmeter that has been properly calibrated. The continuity of a test section will be accepted if the resistance of the test section does not exceed 5 ohms per 500 feet of location wire being tested. Isolation from ground shall be measured with a megohmmeter and shall be a minimum of 20 megohms for any section of location wire tested. The City shall witness the acceptance test.

7-09.3(21) Concrete Thrust Blocking

Supplement this section with the following:

Thrust blocks shall be formed and placed in conformance with the Standard Details for the appropriate pipe size and fitting type.

Mechanically restrained pipe and fittings are the preferred method of thrust restraint in lieu of concrete thrust blocking. The Engineer shall provide appropriate restraint calculations, indicating the length of pipe and fittings to be restrained for each particular diameter and type of fitting to be installed. Thrust restraint calculators such as those provided by Ductile Iron Pipe Research Association, EBAA Iron, or similar may be used to determine required restraint lengths.

Thrust restraint assemblies shall be inspected by the City prior to backfilling. No thrust block or restraint device shall be covered until it has been observed and approved.

Concrete thrust blocking may only be used when approved by the City.

7-09.3(22) Blowoff Assemblies

Supplement this section with the following:

All permanent dead-end lines must end with a blow-off, unless there is a hydrant connection within the last 30 feet of the water main.

7-09.3(23) Hydrostatic Pressure Test

Replace the first sentence with the following:

Prior to any hydrostatic pressure testing, the Developer/Contractor shall verify requirements with the Public Works Director. All water mains and appurtenances shall be tested under a hydrostatic pressure of 180 psi.

7-09.3(24) Disinfection of Water Mains

Supplement this section with the following:

AWWA Standard C651 shall be used as a guideline for disinfecting water mains.

7-12 Valves For Water Mains

7-12.2 Materials

Supplement this section with the following:

Gate Valves: All valves sizes 2-inch through 10-inch shall be gate valves manufactured in the U.S. and shall conform to the latest revision of AWWA Resilient Standard C509 or C515.

All gate valves shall have non-rising stems, open counterclockwise, and shall be provided with a 2-inch square AWWA operating nut. Gate valves 4-inch and larger shall have mechanical joint connections. Stuffing box shall be O-ring type.

Gate valves smaller than 4-inch shall have screw-type end connections and be non-rising stem, screwed bonnet, solid wedge disc type having a minimum working pressure of 200 psi.

Butterfly Valves: All valves sizes 12 inches and larger shall be butterfly valves manufactured in the U.S. and suitable for direct burial and shall be rubber seated and conform to the latest revision of AWWA Standard C504, Class 250B. Valve operators shall be sealed, gasketed, and lubricated for underground service. All valves shall open counterclockwise and shall be provided with a 2-inch square AWWA operating nut.

Valves shall have mechanical joint connections and shall be of the same size as the line on which they are located. Valve shafts shall be a one-piece unit extending full size through the valve disc and valve bearings, with minimum shaft diameter as specified in AWWA C504 Class 250B.

Tapping Sleeve and Valve Assemblies: Tapping sleeves shall be full circle, Romac Stainless Steel Tapping Sleeve (SST) with stainless steel flanged outlet, or approved equal, conforming to the latest AWWA Standard C223. Tapping gate valves shall meet the requirements for Gate Valves in Section 7-12.2.

Valve Boxes: Valve boxes shall be two-piece adjustable. The top section shall be Olympic Foundry Model 940, or approved equal, 18-inches high. The bottom section shall be Olympic Foundry Model 940, or equal, 36-inches high. Extension sections shall be Olympic Foundry Model 940, or equal, 12-inches high. Valve stem extensions shall be provided per Section 9-30.3(6), where necessary. The valve box cover shall be Olympic Model 940, or approved equal.

Combination Air Release/Air Vacuum Valves: Valves shall meet the requirements of C512 and shall be APCO 140 Series or Val-Matic VM-200 Series.

7-12.3 Construction Requirements

Supplement this section with the following:

Tapping Sleeve and Valve Assemblies: The Contractor or Subcontractor completing the work shall have at least five (5) years' experience with a minimum of ten (10) water main taps of pipes with diameters equal to or larger than specified in this project. Contractor shall notify City at least 72 hours prior to all proposed taps and provide work experience references if requested. Work to complete the tap shall not commence without City's written approval. If the Contractor or Subcontractor does not have sufficient experience in the sole opinion of the City, a qualified Subcontractor as approved by the City, shall be used to complete the tap at no additional cost.

Valves: Upon completion of all work in connection with this Contract, the Developer/Contractor shall contact the City of Union Gap Public Works for opening water valves. Valves shall only be operated by City Public Works staff.

Valve Boxes: Valve boxes should be set to position during backfilling operations so they will be in a vertically centered alignment to the valve operating stem.

Adjustment to Grade: The Contractor shall adjust all water valve boxes to the final grade of the surrounding area including new concrete sidewalk, asphalt paving, gravel surfacing, or topsoil surfacing, in accordance with the details shown on the Drawings. Valve box cover shall be rotated such that lugs are in-line with pipe alignment.

Water valve boxes outside paved areas shall be adjusted to match the finish grade of the area surrounding the structure and shall include a concrete collar extending one foot in all directions beyond the cover. The utility cover shall be cleaned of all concrete prior to acceptance.

The Contractor shall keep the valve boxes free from debris caused by the construction activities. All valve boxes will be inspected during final walk-thru to verify that the valve box is plumb and that the valve wrench can be placed on the operating nut. Misaligned valve boxes shall be excavated, plumbed, and backfilled at the Contractor's expense.

7-14 Hydrants

7-14.2 Materials

Replace the entire Section with the following:

The City of Union Gap accepts hydrants of the following manufacturer, providing the hydrants conform to the City's technical specifications for fire hydrants:

Mueller Super Centurion 250
M&H 129S
Clow Medallion

All hydrants shall have a Main Valve Opening (MVO) of 5-1/4" and one port with a 5" Storz Quick Coupling and two (2) 2-½" diameter ports. Threads on all ports shall be National Standard Thread.

Hydrants shall be painted with two coats of high visibility yellow paint.

7-14.3 Construction Requirements

7-14.3(1) Setting Hydrants

Delete the first and second paragraphs and replace with the following:

The hydrant shoe shall be set to the correct elevation on a concrete block base 12" x 12" x 6" thick, which has been placed on undisturbed earth. Around the base of the hydrant and weep hole, the Contractor shall place 0.5 cubic yards of washed drain rock ranging in size from 3/4" to 1-1/2", to allow free drainage of the hydrant. The drain rock shall be completely surrounded with construction geotextile filter fabric.

The contractor shall set all hydrants plumb and nozzles parallel with, or at right angles to, the curb, with the pumper nozzle facing the curb. Hydrants shall be set so that the flange is 2”-8” above the back of curb, sidewalk, or finished grade to clear nuts and bolts. Hydrants shall be ordered with the bury depth required to meet the flange elevation requirements. The Contractor shall be responsible for verifying the hydrant flange elevations and no extensions will be allowed.

7-14.3(2) Hydrant Connections

Replace this section with the following:

Fire hydrant laterals shall be a minimum of 6 inches in diameter. Final sizing shall be determined by the Contractor’s Engineer based on required fire flow and site conditions. Each hydrant lateral shall include an isolation valve at the water main connection point. The valve size shall equal the hydrant lateral diameter and shall be of the type specified in Section 7-12.2. Where hydrant runs are in excess of 6 inches in diameter, an additional 6-inch auxiliary gate valve shall be installed just prior to the hydrant installation.

7-14.3(2)A Hydrant Restraints

Replace this section with the following:

All hydrants shall be securely connected to the water main as shown on the City’s Standard Detail.

7-14.3(2)C Hydrant Guard Posts

Replace this section with the following:

The Public Works Director may determine that four (4) 6-inch diameter Sch. 40 steel guard posts shall be installed at a hydrant location. Hydrant guard posts shall be painted the same color as the hydrants.

7-15 Service Connections

7-15.1 Description

Replace this section with the following:

This work consists of the relocation of existing water meters and water meter boxes, where necessary, and the installation of new saddles, corporation stops, service pipe, water meter boxes, and meter stops as shown on the Plans. The Developer/Contractor shall furnish and install all water service components (except 3/4-inch or 1-inch water meter) from the water main to the property line including service saddle, corporation stop, service tap, service pipe, meter stop, and meter box, all at the Developer's expense.

7-15.2 Materials

Supplement this section with the following:

All fittings shall be stainless steel.

Service Saddle: New service saddles shall be Romac Style 202NS, or approved equal nylon coated saddle with double stainless steel straps.

Corporation Stop: New corporation stops shall be Ford type 1100, or approved equal, for service line size.

Service Pipe: New service pipe shall be CTS Cross-linked Polyethylene (PEX-a) tubing meeting the requirements of Section 9-30.6(3)C.

Meter (3/4" to 2"): New water meters shall be Badger brand meters compatible with the City's advanced metering infrastructure (AMI) system. Meters will be furnished by the City of Union Gap at the Developer's expense.

Meter (larger than 2"): New water meters shall be Mueller HBMAG electromagnetic meters, or approved equal, unless otherwise approved by the City Engineer. Meters will be furnished by the City of Union Gap at the Developer's expense.

Meter Setter: New 12" height meter setter shall have inlet key valve and outlet single check valve, Ford type VH70 series for 1" service and 2" service.

Meter Check Valve: New meter check valve shall be Ford type HA34 for 1" service, and Ford HFA31 for 2" service.

Meter Boxes: New meter boxes shall be Carson HW Model MSBCF-1730-18 or approved equal, ductile iron cover (for vehicular traffic areas) and heavy duty plastic covers (for non-vehicular areas) with reader doors.

Meter Vault (larger than 2” meters): New precast cement concrete vault shall be Oldcastle Precast or H2 Precast meeting inside dimension tolerances specified on Details and shall have diamond plate spring assisted cover with locking latch inside (332P for 3”, 2-322P for 4” to 6”, and 3-322P for 8” to 12”, or H2 Precast equivalent). Contractor/Developer shall provide to the City any factory tools, keys, or wrenches required to open vault lid.

Pipe Bedding and Backfill: Pipe bedding and select backfill shall be utilized for trench backfill as directed by the City in accordance with Section 7-08.2 of the Special Provisions.

Backflow Preventer (Double Check Valve): New backflow preventer shall be Zurn 950XL, Zurn 975XL, Watts 007 or approved equal, and shall be provided and installed by the Contractor/Developer for all irrigation system connections to domestic water mains.

7-15.3 Construction Requirements

Supplement this section with the following:

The Contractor shall set the water meter box to the finished grade of the area. Water service meters shall be installed at the property line adjacent to the public right-of-way unless otherwise approved by the City Engineer. The Contractor will be required to reset the meter box if it is not at finished grade at the completion of the project. The completed water service shall be tested at system operating pressure by the Contractor and must show no signs of leakage.

No joints are allowed between the corporation stop and the meter stop. Service saddle shall not be placed within one (1) foot of pipe joint, couplings, or other clamps without approval from the Engineer.

Water services shall be laid with a minimum of 42 inches of cover, or as directed by the Public Works Director.

The City will inspect service installation work. The City inspector will inspect the water service pipe after the pipe has been laid in the trench, but prior to backfill. A leak test will be required to be run in the presence of the inspector. Provide 48 hours minimum notice prior to any required inspections.

Chapter 5 - Sanitary Sewer System Improvements

General Requirements for Sanitary Sewer System Improvements

All extensions and additions to the City's sanitary sewer system shall conform to the Design and Construction Standards of the City of Union Gap, the Washington State Department of Ecology, and designed by a Civil Engineer currently licensed in the State of Washington.

All sanitary sewer improvements shall be designed in accordance with the Washington State Department of Ecology's *Criteria for Sewage Works Design (Orange Book)*.

All new lots and developments shall be served by a public sanitary sewer line adjacent to the lot or development site.

Sewer lines shall be extended by the Developer to the point where the adjoining property owner's responsibility for further extension begins. This typically requires an extension across the entire frontage of the property to the property line of the adjoining owner. In some cases, it will require dedication of an easement and a line extension across the property or extension across two or more sides of the developing property. Extensions will be consistent with and implement the City's adopted General Sewer Plan, including alignments, sizes, and depths necessary to serve future areas within the Urban Growth Area (UGA) boundary.

Sewer lines shall be located in streets to serve abutting properties. Lines located in streets will be offset from the street centerline and not located within a vehicle wheel path. When necessary, sewer lines may be located within public easements, see Chapter 1 - Introduction and General Considerations, Section 11. Sewer lines located in easements shall typically be located in the center of the easement, but may, with the approval of the Public Works Director, be offset to accommodate the installation of other utilities or to satisfy special circumstances.

The minimum size for public sewer mains is eight (8) inches in diameter. The Developer's sewer system must provide capacity for the proposed development, but must also provide capacity for future extensions consistent with the General Sewer Plan.

Sewer lines shall be terminated with a manhole. In special circumstances, a flush-end (cleanout) may be installed on the end of a sewer main extension, provided the end is no further than 150 feet from the last manhole and the sewer main line and grade will permit further extension.

Manholes shall generally be installed at intervals of no greater than 400 feet and at all vertical and horizontal angle points in the sewer main. Curved or deflected pipelines will not be permitted.

All new sewer line installations shall be satisfactorily tested and inspected per Section 7-17 prior to being placed into service including low pressure air and deflection testing, and television inspection, all at the expense of the Developer.

Each building containing sanitary sewer facilities shall be served by a separate private side sewer line. Branched side sewers serving multiple buildings and properties shall not be permitted. A single side sewer serving multi-unit buildings is permitted.

Sewer services to residential single-family lots shall be 4-inch diameter, and commercial properties shall be a minimum of 6-inch diameter.

Side sewers shall be installed in accordance with these Standards and as shown on the City Standard Details. Water service and side sewer lines shall not be laid in the same trench, except if approved materials (those listed in Section 7-17.2 of the *Standard Specifications for Road, Bridge, and Municipal Construction*) are used and the following requirements are met:

1. The bottom of the water pipe shall not be less than 12 inches above the top of the sewer or drain line.
2. The water pipe shall be placed on a solid shelf excavated at one side of the common trench with a clear horizontal distance of not less than 12 inches from the sewer or drain line.

Side sewer stubs shall extend to the right-of-way as shown on the standard detail and the pipe end shall be capped and marked for future connection. Services shall be located a minimum of 10-feet from water services and on the low side of the lot.

Sewer lines shall be designed for gravity flow operation and in accordance with the General Sewer Plan.

Sewer force mains may be necessary in specific City locations as determined by the City Engineer. Lift stations and force mains shall be limited to those locations and circumstances where they are consistent with the General Sewer Plan and are the only viable solution to serve the proposed development and other properties in the vicinity. Lift stations and force mains shall be designed by a Professional Civil Engineer licensed in the State of Washington in accordance with the direction and requirements given by the City Engineer, for review and approval by the Public Works Director and City Engineer. Hydraulic analysis including modeling shall be performed by the Developer's Civil Engineer as determined necessary by the City Engineer.

Grinder pump stations for individual properties shall contain a semi-positive displacement grinder pump controlled by sump levels. Grinder pumps and sewer laterals will remain private up to the sewer main or force main, where City ownership begins.

The design of sewer lines and appurtenances is subject to review and approval by the Public Works Director and City Engineer. The Public Works Director may, at his discretion, adjust these Development Design and Construction Standards as necessary to facilitate installation of sewer lines and appurtenances for the health, safety, and protection of the general public.

Sampling Manholes

The City may require installation of a sampling manhole for commercial, industrial, or multi-family developments where wastewater monitoring or pretreatment compliance sampling may be necessary. Sampling manholes shall be located downstream of all waste-producing fixtures and pretreatment devices and upstream of the connection to the public sanitary sewer system. The sampling manhole shall be accessible to City personnel for inspection and sampling.

Sampling manholes shall be constructed in accordance with the City's standard manhole details.

Dewatering Plan

Historically, most pipeline projects within the City of Union Gap have had to deal with groundwater during trenching, pipelaying, and backfill/compaction. It is unknown at what depth and flow rate the groundwater may be encountered during the construction of the Developer's project. Therefore, prior to beginning work, the Developer shall submit to the City a dewatering plan for the control and disposal of groundwater which may be encountered during construction. Said plan may require the Developer to obtain a Hydraulic Project Approval (HPA) permit from the Washington State Department of Fish & Wildlife. Other State or Federal agencies may also require permits to be obtained. It is the Developer's responsibility to determine if any permits are required, and if so, to obtain the permits and provide copies to the City along with the dewatering plan.

A copy of all agreements to use private property for dewatering operations shall be submitted to the City. In addition, the Developer shall obtain and submit to the City signed property releases from said property owners before the project will be accepted.

At a minimum, the plan shall contain a graphical and narrative presentation identifying proposed methods and equipment sizes and contingency plans should dewatering cause settlement of adjacent facilities. The dewatering plan should show specific locations where dewatering is expected as well as a general discussion of methods should water be encountered in other locations.

It shall be the Developer's sole responsibility to control the rate and effect of the dewatering in such a manner as to avoid all objectionable settlement and subsidence.

Before construction operations begin, the Developer shall have on site sufficient pumping equipment and/or other machinery to assure that the operation of the dewatering system can be maintained. Dewatering operations shall be sufficient to maintain the groundwater below the surface of the trench bottom, and shall be accomplished prior to laying and jointing pipe. The dewatering operation shall be carried out so that it does not destroy or weaken the strength of the soil under or alongside the excavation. If well points or wells are used, they shall be adequately spaced to provide the necessary dewatering and shall be sandpacked or provided with some other means to prevent pumping of fine sands or silts from the subsurface. A continual check by the Developer shall be made to ensure that the subsurface soil is not being removed by the dewatering operation. Where critical structures or facilities exist immediate adjacent to areas of proposed dewatering, reference points shall be established and observed at frequent intervals to detect any settlement which may develop.

Should settlement be observed the Developer shall cease dewatering operations and implement contingency plans as outlined in the submitted dewatering plan. The responsibility for conducting the dewatering operation in a manner which will protect adjacent structures and facilities rests solely with the Developer. The cost of repairing any damage to adjacent structures and restoration of facilities shall be the responsibility of the Developer. Permanent piping systems shall not be incorporated into the Developer's dewatering plan.

Special Provisions for Sanitary Sewer System Improvements

The following sections of the WSDOT Standard Specifications have been amended or supplemented as described below and apply to the construction of public works sewer system improvements within the City of Union Gap.

7-05 Manholes, Inlets, Catch Basins, And Drywells

7-05.2 Materials

Supplement this section with the following:

Manholes: Manholes shall be gasketed and constructed of minimum 48-inch diameter reinforced precast concrete manholes sections in conformance with the requirements of this Section. The base and first barrel section shall be precast monolithically with preformed channels.

A-Lok or KOR-N-SEAL boot connectors shall be provided for all inlets and outlets, and the channel diameter shall match the outlet pipe diameter. KOR-N-SEAL boot connectors shall be used for connections to existing manholes.

Joints in the manhole sections shall be watertight and shall be a rubber ring compression joint complying with ASTM C443, a flexible, plastic gasket, or approved equal.

Adjustment Rings: Adjustment rings shall be precast concrete. Approved manufacturer includes Wilbert Precast, Inc. or approved equal.

Frames and Covers: Frames and covers shall be cast iron and have a clear opening of 24 inches. The frames and covers shall be the manufacturer's stock pattern capable of withstanding, with appropriate margin of safety, an H20 loading. Covers shall have a 1-inch hole only, unless otherwise noted, and the top shall be flat with a non-skid pattern. Cast iron covers for sewer manholes shall be stamped “SEWER.” The contact surfaces of the frames and covers shall be machine finished to a common plane or have other adequate provision to prevent rocking.

Cast iron covers that are to be located in a sidewalk or pedestrian path of travel shall have an ADA compliant surface such as WSDOT Standard Plan B-30.70 Type 1 or equal.

7-05.3 Construction Requirements

Supplement this section with the following

The design and construction of all manholes shall provide for a minimum 0.10 foot vertical drop through the manhole.

7-05.3(1) Adjusting Manholes and Catch Basins to Grade

Delete and replace with the following:

Manholes, valve boxes, catch basins, and similar utility appurtenances and structures shall not be adjusted until the pavement is completed, at which time the center of each

structure shall be relocated from references previously established by the Contractor. All existing manhole castings shall be replaced with new castings at time of adjustment.

The asphalt concrete pavement shall be cut and removed to a neat circle, the diameter as specified on the Standard Details. The frame shall be placed on cement concrete blocks or adjustment rings and brought up to the desired grade. The base materials shall be removed and Class 3000 cement concrete shall be placed to the depth specified on the Standard Detail.

On the following day, a tack coat of asphalt shall be applied to the concrete, the edges of the asphalt concrete pavement, and the outer edge of the casting. HMA Cl. 3/8-Inch asphalt concrete shall then be placed and compacted with hand tampers and a patching roller.

The completed patch shall match the existing paved surface for texture, density, and uniformity of grade. The joint between the patch and the existing pavement shall then be sealed with emulsified asphalt and shall be immediately covered with dry paving sand before the tack has broken.

Utility appurtenances outside paved areas shall be adjusted to match the finish grade of the area surrounding the structure. The utility cover shall be cleaned of all concrete prior to acceptance.

7-05.3(2) Abandon Existing Manholes

Replace the entire section with the following:

Where shown on the Plans, existing sanitary sewer manholes shall be abandoned in place after the new sanitary sewer collection system is in place and all side sewers have been transferred to the new sanitary sewer pipeline.

At least the top three (3) feet of each manhole, or the top conical section in precast concrete manholes, shall be removed, including the cast iron ring and cover and concrete pad, if any. Debris resulting from breaking of the upper portion of the manhole may be mixed with backfill subject to the approval of the Public Works Director. Ring and cover shall become the property of the City and all other surplus material shall be disposed of by the Contractor.

The existing pipe openings shall be plugged watertight with Class 3000 concrete and the manhole bottom slabs shall be broken to promote drainage. The remaining manhole structure shall be backfilled with granular material conforming to Section 9-03.9(3) Crushed Surfacing Base Course. Place backfill in uniform layers and compact to 95% maximum dry density, as determined by ASTM D 698 (Standard Proctor).

Excavations resulting from manhole abandonment shall be backfilled with suitable, job-excavated material to top of subgrade. Compact to 95% maximum dry density as determined by ASTM D 698 (Standard Proctor). Restore surface to the condition existing prior to excavation with native material, gravel surfacing, or asphalt concrete pavement, as shown for trench repair on the Plans.

7-05.3(4) Drop Manhole Connection

Replace this entire section with the following:

Drop manhole connections shall be constructed as shown on the City Standard Detail.

7-17 Sanitary Sewers

7-17.1 Description

Supplement this section with the following:

The term “sewer(s)” and “sanitary sewer(s)” shall mean the same.

7-17.2 Materials

Supplement this section with the following:

Pipe approved for use shall be as follows:

PVC Sanitary Sewer Pipe (Gravity): Polyvinyl Chloride Pipe with flexible gasketed joints shall conform to the requirements of Section 9-05.12(1) of the Standard Specifications (ASTM D3034, DR 35 for pipe sizes up to 15 inches in diameter). When restrained pipe is required (inside casing), Certa-Lok or Ford 1300 mechanical pipe restraints shall be used.

PVC fittings for PVC sewer pipe such as tees, wyes, elbows, plugs, caps, etc., shall be flexible gasket joint fittings acceptable for use and connection to PVC sewer pipe. Pipe transition and sewer repair couplings shall be rigid Romac LSSI, strong back Fernco couplings, or approved equal.

Transition Coupling: Couplings shall be longitudinally bolted with gasketed joints. Approved manufacturers include Romac, Dresser, Rockwell, Ford, and Smith-Blair.

Detectable Marker Tape: Marker tape shall be a detectable type and shall be marked "SEWER," and shall conform to Section 9-15.18 of the Standard Specifications.

7-17.3 Construction Requirements

Supplement this section with the following:

Sanitary sewer mains shall be at least 8” in diameter. All dead-end runs longer than 150 feet shall terminate in a sanitary sewer manhole. Dead-end runs less than 150 feet long may terminate with a clean out.

7-17.3(1) Protection of Existing Sewerage Facilities

Supplement this section with the following:

When connecting to an existing sewer, the downstream system shall be protected from construction debris by placing a 90 degree, SRECO, UEMSI or equal “stove pipe” sand trap, the same size as the sewer main line, in the first existing manhole downstream of

the connection. It shall be the Contractor's responsibility to maintain this trap until the new system is placed in service and then to remove it. Any construction debris, excavation or backfill material which enters the existing downstream system shall be removed. When the first manhole is set, the outlet shall be plugged until the entire system is accepted by the Engineer.

7-17.3(2)A General

Delete the first paragraph and replace it with the following:

All sewer pipes and appurtenances shall be cleaned and tested after backfilling. Both infiltration (if applicable) and exfiltration testing of the gravity sewer pipeline will be required. Deflection testing of the pipeline shall be done by pulling a mandrel through the pipe. All testing shall be witnessed by the City.

The allowable tolerance for sags or bellies in a newly installed pipe shall be 0.50 inches or less.

7-17.3(2)G Deflection Test for Thermoplastic Pipe

Delete the first sentence and replace it with the following:

Sanitary sewers constructed of thermoplastic pipe shall be tested for deflection not less than seven days after the trench backfill and compaction has been completed.

7-17.3(2)H Television Inspection

Delete the first paragraph and replace it with the following:

All new sewer lines shall be inspected by the Contractor by use of television (TV) camera before final acceptance.

TV inspection shall begin at the downstream manhole and end at the next upstream manhole. The camera speed shall not exceed one-half (1/2) foot per second. A pivot head camera shall be used with detailed inspection of all laterals showing the entire lateral with a 360-degree pan around the opening. Panning of each lateral shall be a minimum of 15 seconds.

All recordings shall show on the screen the correct time and date of the inspection, the name of the camera operator, the manhole numbers being inspected, an accurate footage count, and all lateral locations using a 12-hour clock position.

The television inspection shall be recorded as a video file on a flash drive, and include logs and a verbal narrative indicating construction deficiencies, side sewer locations and other notable items. Each video file shall be permanently labeled with the Project Title, Contractor/Developer name, date of inspection, location and size of pipe, and video number. A written log shall also be provided for each segment of pipe that correlates to the respective video.

The Contractor shall submit one copy of the television inspection video file, and written logs to the City for review and approval within one week of completing the inspection.

7-18 Side Sewers

7-18.2 Materials

Supplement this section with the following:

Saddles: Side sewer saddles shall be Romac CB with a 3-1/2" stainless steel single strap. Saddles are limited to side sewer connections on existing sewer mains and shall have prior approval by the Public Works Director. CDF encasement shall be installed around tapping saddle and existing sewer main, such that all exposed sections of the sewer main are bedded full depth with CDF to minimize settling.

Tracer Wire: Tracer wire shall be 12-gauge heavy insulated (60 mil) copper wire with UF insulation colored for the utility being installed in accordance with Section 9-15.18.

7-18.3 Construction Requirements

7-18.3(1) General

Supplement this section with the following:

Side sewers shall not be backfilled prior to inspection by the Public Works Director or his designee. Side sewers installed within public right-of-way or within a City utility easement shall be installed and backfilled in accordance with Section 7-08 General Pipe Installation Requirements. All deficiencies shall be corrected as directed by the City prior to the backfilling and acceptance of the side sewer.

Side sewers shall be a minimum of four (4) inches in diameter. Larger sizes, if required, will be approved by the Public Works Director on a case-by-case basis.

Side sewers shall be constructed with a minimum of 30 inches of cover. This provision may be waived by the Public Works Director under special circumstances; however, under no circumstances shall the side sewer be laid with less than 18 inches of cover.

7-25 Sewer Force Mains (New Section)

The following new section shall be added to the Standard Specifications:

7-25.1 Description

This work shall consist of constructing sewer force mains in accordance with the Plans and Standard Specifications.

7-25.2 Materials

Materials shall meet the requirements of section 7-09 Water Mains of the Standard Specifications except as follows:

Pipe for Main Line:

High Density Polyethylene (HDPE) Pipe: HDPE pipe shall by extra high molecular weight, high density ethylene/hexane copolymer, PE 4710 polyethylene resin, ductile iron pipe (DIP) size, or as approved by Engineer. The Standard Dimension Ratio shall be SDR 13.5 for pipe sizes 12-inch diameter and smaller.

Fittings for Main Lines:

Hardware: All bolts, nuts, and washers shall be of stainless steel material.

Aggregates:

Gravel Backfill for Pipe Zone: Imported pipe zone material for flexible pipes shall be Crushed Surfacing Top Course meeting the requirements of section 9-03.9(3), and shall be placed and compacted in layers as designated by the Engineer. Pipe zone material for rigid pipes shall be Crushed Surfacing Top Course or Crushed Surfacing Base Course meeting the requirements of Section 9-03.9(3), or as approved by the Engineer.

Trench Backfill: All longitudinal trenches shall be backfilled full depth above the pipe zone with native material (free of organic material, wood, rocks, or pavement chunks larger than 6-inches in maximum dimension), unless otherwise directed by the Engineer. Existing street crossing trenches and other locations as directed by the Engineer shall be backfilled full depth with imported select backfill. Imported select backfill, where directed by the Engineer, shall be crushed surfacing base course, placed and compacted in layers.

7-25.3 Construction Requirements

7-25.3(2) Pipe Installation

Sewer force main installation shall conform to the requirements of Section 7-08 General Pipe Installation Requirements of the Standard Specifications or as modified by these Special Provisions.

All sewer force mains shall be tested under a hydrostatic pressure of 100 psi. The Developer shall make all provisions for transporting water and filling the force main and shall be responsible for all costs. No leakage will be allowed during the test.

All fused joints shall be watertight and shall have a tensile strength equal to that of the pipe.

Chapter 6 - Stormwater Improvements

General Requirements for Stormwater Improvements

All extensions and improvements to the City of Union Gap's storm sewer (storm drain) system shall conform to the Design and Construction Standards of the City of Union Gap and the Washington State Department of Ecology. Private systems, where required by applicable provisions of the Union Gap Municipal Code, shall also comply with these requirements.

All storm drainage improvements shall be planned, designed, permitted, constructed and maintained in accordance with the requirements of the latest edition of the Washington Department of Ecology (Ecology) *Stormwater Management Manual for Eastern Washington* (SWMMEW).

All storm drainage facilities, public or private, shall be designed by a Civil Engineer currently licensed in the State of Washington. Complete stormwater runoff and drainage facilities sizing calculations shall be submitted to the Public Works Director and City Engineer for review and approval. Storm sewer facilities and pipelines shall be designed to meet a minimum 25-year storm criteria, and both the long-duration and short-duration storms shall be considered in the design.

All storm runoff occurring on all new lots and developments (private property) shall be retained and disposed of on-site. Storm runoff on private property will not be permitted to enter public property or the public storm drainage system. The property owner shall maintain all stormwater Best Management Practices (BMPs) that are installed on private property.

Where existing stormwater from adjacent properties enters the proposed site, the Developer shall be responsible for including the additional stormwater in the proposed system including retention and treatment as applicable.

Storm runoff for new public streets shall be designed and constructed as required to the point where the adjoining property owner's responsibility for further extension begins. This typically requires an extension across the entire frontage of the property to the property line of the adjoining owner.

All storm sewer designs for new public streets shall be based upon an engineering analysis by the Developer's Consultant that considers total drainage areas, runoff rates, pipe and inlet capacities, treatment capacity, and any other factors pertinent to the design.

All subsurface infiltration facilities used for the treatment and disposal of stormwater shall meet the requirements of and be registered with the Ecology Underground Injection Control (UIC) program. Developer/Applicant must register UIC wells with Ecology in the applicant's name. Following construction completion and at the time of public improvements acceptance, the Developer/Applicant shall process an ownership transfer request with Ecology, to transition UIC ownership of public improvements to the City of Union Gap.

Inlet spacing shall be designed in accordance with the WSDOT Hydraulics Manual, Chapter 5. Generally, inlet spacing shall not exceed 300 feet. There shall be a manhole or Type 2 catch basin installed at the intersection of two collector storm sewers. A collector storm sewer is a sewer servicing more than one catch basin.

All public stormwater pipes or culverts shall be a minimum of 12 inches in diameter. Pipes shall have a minimum slope of 0.5% and be designed with a minimum velocity of 2-feet per second. Pipes shall be sized so that they do not surcharge under design storm conditions.

The applicant's project may require coverage under the Washington State General National Pollutant Discharge Elimination System (NPDES) Permit for construction projects. The Developer shall be responsible for compliance with the State stormwater permit conditions and shall provide the City with a copy of the Ecology approved Notice of Intent (NOI), Storm Water Pollution Prevention Plan (SWPPP), or Erosivity Waiver Certification as applicable.

A temporary erosion and sedimentation control (TESC) plan shall be included with all plan submittals and should show how existing storm systems and adjacent properties will be protected from storm runoff.

All critical areas within the site limits shall be identified in the stormwater report and shown on the plans. Improvements impacting critical areas shall be noted and mitigation measures shall be presented for City review and approval consideration.

Design Criteria

The SWMMEW allows different methodologies to apply design storms to stormwater facility design. For purposes of consistency, specific design storm amounts of precipitation are provided below and summarized in Table 6-1. Precipitation amounts are taken from the figures and calculation methods provided in the SWMMEW. Once the rainfall amount is known, hydrographic methods are used to determine the rate and volume of runoff from the selected design storm, and to mathematically route a storm through proposed facilities. Hydrographic methods are discussed below along with their application to different design conditions in Union Gap.

Design Storms

Design storms are used to establish the amount of precipitation to be used in calculating the runoff from a parcel or basin. Based on rainfall records and methods outlined in the SWMMEW, the storm events described below are applicable to Union Gap. Note that all 24-hour storm precipitation amounts have been adjusted by a factor of 1.00 for use in the long-duration storm for Eastern Washington Region 2.

Water Quality 3-Hour Storm – 0.31 inches of precipitation. This short-duration water quality storm event is intended to provide treatment for the "first flush" events and is representative of a summer thundershower. The "first flush" can be thought of as the first amount of water that enters the system during a storm, which typically contains the highest concentration of pollutants such as roadway grit, dust and oils.

Water Quality 24-Hour Storm – 0.66 inches of precipitation. This 24-hour water quality storm event is intended to provide treatment for the "first flush" events.

25-Year, 3-Hour Storm (Regional Short-Duration Storm) – 0.96 inches of precipitation. This short-duration storm has a 25-year return frequency, or a 4 percent chance of occurring in any one year. This unique storm is representative of the summer thunderstorm where a significant

amount of rainfall occurs over a 3-hour period, and should be used for design of flow-based stormwater BMPs.

25-year, 72-Hour Storm (Regional Long-Duration Storm) – 2.02 inches of precipitation (uses 25-year, 24-hour storm intensity). This long-duration storm has a 25-year return frequency, or a 4 percent chance of occurring in any one year. Volume-based BMPs should be designed for this 72-hour, long-duration storm. The intensity of this storm is lower since the rainfall occurs more slowly over an extended time within the 72-hour period. Therefore, the runoff rate is lower, but the volume is greater than the 3-hour storm.

The 25-year design storm warranting the largest storm sewer facility size shall be the controlling storm.

TABLE 6-1 PRECIPITATION EVENT INFORMATION

Storm Event	Precipitation (Inches)
6-Month, 3-Hour Storm Event	0.31
6-Month, 24-Hour Storm Event	0.66
2-Year, 24-Hour Storm Event	1.0
10-Year, 24-hour Storm Event	1.56
25-Year, 3-Hour Storm Event	0.96
25-Year, 24-Hour Storm Event	2.02
50-Year, 24-Hour Storm Event	2.44
100-Year, 24-Hour Storm Event	2.92

Source: *Stormwater Management Manual for Eastern Washington*, Ecology, Aug. 2024
Note: 24-hour precipitation amounts have been adjusted for use in the long-duration regional storm distribution.

Hydrologic Analysis

Hydrologic analysis determines the amount of runoff from a given storm for a given drainage area. Available methods range from simple calculations such as the Rational Method to complex computer models, requiring significant data input and knowledge of hydrologic effects.

The following hydrographic methods are considered acceptable for the watersheds within Union Gap and its urban growth area.

- The Santa Barbara Urban Hydrograph (SBUH) method may be used for all analyses regardless of the size of the drainage area. Input parameters shall be as described by Ecology or WSDOT for the design storms described above. Other computer models may also be used with prior approval by the City.

- For drainage areas less than or equal to 20 acres, the rational formula and modified rational method, as described in older WSDOT and Soil Conservation Service publications, may be used for flow-rate-based applications. Inputs shall be as described in those publications, or other engineering texts. The SCS Unit Hydrograph Method may also be used.

- For drainage areas greater than 20 acres, and when it is necessary to route flows through detention facilities, the SCS Unit Hydrograph Method may be used. Inputs shall be as described in WSDOT and Soil Conservation Service publications, or other engineering texts.

The SBUH method uses a hyetograph to depict the intensity (amount) of rainfall versus time. A hyetograph may also be required for routing design storms through some BMPs. Design storm hyetographs applicable to Union Gap stormwater facilities are as follows:

- Water Quality Volume-Based Treatment BMPs – 24-hour SCS Type 1A storm with a 6-month return frequency.

- Water Quality Flow-Rate-Based Treatment BMPs – 3-hour short-duration storm with a 6-month return frequency.

- Volume-Based BMPs – 72-hour Regional Long-Duration Storm with a 25-year return frequency. Storm intensity is based on the 25-year, 24-hour storm event.

- Flow-Rate-Based BMPs – 3-hour short-duration storm with a 25-year return frequency as described in the SWMMEW.

- Critical facilities required to carry 50- and 100-year storms – 24-hour SCS Type II storm.

Treatment BMP Sizing

The City of Union Gap is located in Ecology's Region 2 of Eastern Washington. Therefore, all calculations shall be based on Region 2 methods recommended in the Ecology's SWMMEW for the sizing of stormwater BMPs. The following are design guidelines for volume-based treatment BMPs and flow-rate-based treatment BMPs.

Volume-based treatment BMPs are sized the same whether they are located upstream or downstream of a detention facility. The volume of runoff predicted for the proposed developed condition of a site will be calculated using the 24-hour SCS Type 1A storm with a 6-month return frequency (the 0.66-inch water quality design storm). The BMP will be sized to treat this amount of water, and will also be sized to pass the 25-year short-duration storm, either through or around the BMP, without damaging the BMP or dislodging pollutants from within it.

Flow-rate-based treatment BMPs are sized differently depending on whether they are located upstream or downstream from a detention facility. If the BMP is located upstream of a detention facility, or if there is no detention facility, the runoff flow rate predicted for the proposed developed condition of a site will be calculated using the 3-hour short-duration storm with a 6-month return frequency (the 0.31-inch water quality design storm). See Chapter 7 of the SWMMEW for design parameters. If the BMP is located downstream of a detention facility, it must be sized for the full 2-year release rate of the detention facility.

Flow Control

The criteria listed below shall apply to control of stormwater runoff flow and the designated design storms shall apply:

- Flow-rate-based stormwater BMPs such as storm sewer facilities and pipelines shall be designed to carry at a minimum the 25-year, 3-hour short-duration design storm described in the SWMMEW (0.96 inches of precipitation). Depending on the size of the basin, time of concentration and infiltration rates, some infiltration facilities shall be designed using the 25-year, 24-hour storm (2.02 inches of precipitation, SCS Type 1A). The 25-year design storm warranting the largest storm sewer facility size shall be the controlling storm. At the City's discretion, if the facilities are critical to public health and safety, or significant property damage could occur, they shall be designed to successfully pass the 50-year or 100-year storm. Storm runoff from any new construction will not be permitted to enter the City's existing storm sewer pipelines.

- Volume-based stormwater BMPs such as retention and detention basins shall be designed based on the 25-year, 72-hour long-duration storm (2.02 inches of precipitation, Regional Long-Duration). A secondary outlet or emergency spillway shall be provided to pass the 100-year storm (2.92 inches of precipitation, SCS Type II) without damage to the facility.

Special Provisions For Storm Sewers And Drainage

The following sections of the WSDOT Standard Specifications have been amended or supplemented as described below and apply to the construction of public works storm sewer or drainage improvements within the City of Union Gap.

7-02 Culvert Pipe

7-02.2 Materials

Add the following:

Culvert pipe approved for use on a City project shall be as follows:

Aluminum Culvert Pipe: Aluminum Culvert Pipe shall meet the requirements of Section 9-05.5 of the Standard Specifications.

Steel Culvert Pipe: Steel Culvert Pipe shall meet the requirements of Section 9-05.4 of the Standard Specifications.

Corrugated Polyethylene Culvert Pipe: Corrugated Polyethylene (CPE) pipe, couplings, and fittings shall meet the requirements of Section 9-05.19 of the Standard Specifications.

7-04 Storm Sewers

7-04.1 Description

Supplement this section with the following:

The term “storm drain(s)” shall mean the same as storm sewer(s).

7-04.2 Materials

Supplement this section with the following:

The storm sewer (drain) pipe approved for use shall be as follows:

36-Inch and Larger Pipe

Corrugated Aluminum Alloy Storm Sewer Pipe: All corrugated aluminum alloy storm sewer pipe shall comply with the requirements specified in Section 9-05.11 of the Standard Specifications and shall be 16 gauge with helical corrugations. A protective coating shall not be required.

15-Inch through 36-Inch Pipe

Aluminum Storm Sewer Pipe: All Aluminum Storm Sewer pipe shall meet the requirements specified in Section 9-05.11 of the Standard Specifications and shall be 16 gauge with helical corrugations. A protective coating shall not be required. All corrugated metal pipe joints shall be flexible using rubber gasket joints. Gaskets shall be made of 3/8-inch thick by 12-inch minimum width closed cell synthetic sponge rubber, per ASTM D 1056, Grade SCE-43, fabricated in the form of a cylinder with a diameter of approximately 10 percent less than the nominal pipe size. The gasket shall be centered under the band and lapped an equal distance on the ends of the adjoining pipe sections. Coupling bands shall be used and shall conform to the provisions of Section 9-05.11(1) of the Standard Specifications. Coupling bands shall be made by the same manufacturer as the pipe and shall be made of the same base material as the pipe which it connects.

Corrugated Polyethylene Storm Sewer Pipe: Corrugated Polyethylene (CPE) pipe, couplings, and fittings shall meet the requirements of Section 9-05.20 of the Standard Specifications.

8/10/12-Inch Storm Drain Pipe

Solid Wall PVC Storm Sewer Pipe
Corrugated Polyethylene Storm Sewer Pipe
High-Density Polyethylene (HDPE) Pipe
Polypropylene Storm Sewer Pipe

Where specified on the Plans, storm drain pipe shall be PVC pressure pipe conforming to the requirements of Section 9-30.1(5)A and Ductile Iron conforming to the requirements of Section 9-30.1(1).

Underdrain Infiltration System Materials

Pipe: Perforated Corrugated Polyethylene Underdrain pipe, couplings, and fittings shall comply with all the requirements of Section 9-05.2(8) of the Standard Specifications.

Drain Rock: Drain rock for use as backfill for the perforated underdrain pipe in the infiltration trench system shall be clean coarse aggregate conforming to the requirements of Gravel Backfill for Drywells, as specified in Section 9-03.12(5) of the Standard Specifications.

Construction Geotextile: Geotextile fabric for underground infiltration systems shall be moderate survivability, non-woven, Class A as specified in Section 9-33.2(1).

7-04.3(1) Cleaning and Testing

7-04.3(1)A General

Supplement this section with the following:

No infiltration or exfiltration test will be required for storm drain pipe.

7-05 Manholes, Inlets, Catch Basins, And Drywells

7-05.2 Materials

Section 7-05.2 of the Standard Specifications shall be revised as follows:

Drain Rock: Backfill for drywells shall be Gravel Backfill for Drywells as specified in Section 9-03.12(5) of the Standard Specifications.

Manhole Metal Castings: All cast iron frames and covers shall be as specified in Section 9-05.15(1) of the Standard Specifications and manufactured in the United States. All cast iron frames and covers to be used on this project shall be of the type, weight, and size approved by the City of Union Gap, and shall be furnished by the Contractor. Covers for storm drain shall be stamped “STORM” or “DRAIN.”

Precast Concrete Catch Basin: Catch basins shall be WSDOT Type 1, 1L, or 2 and constructed as shown on the City Standard Details.

Catch Basin Metal Castings: All frames and grates shall be capable of withstanding, with a reasonable margin of safety, a concentrated load of 20,000 pounds and shall be as specified in Section 9-05.15(2) of the Standard Specifications and WSDOT Standard Plan B-30.30 or B-30.40. The grate shall be ductile iron and “bicycle safe.” The contact surfaces of the frame and grate shall be machine finished to a common plane and shall be so cast as to prevent rocking.

Type 2 Catch Basin Frames and Covers: Frames and covers shall be class 30 cast iron meeting the requirements of ASTM A48. 24” round covers shall read “STORM” embossed in top (2” raised letters), cover weight 150 lbs, frame weight 185 lbs. Approved manufacturers include East Jordan Iron Works, D&L Foundry, and Olympic Foundry.

Precast Concrete Pretreatment Manhole: Stormwater pretreatment manholes shall be approved by the Washington State Department of Ecology (Ecology) with a General Use Level Designation (GULD), capable of 50% removal of fine (50 micron mean size) and 80% removal of coarse (125 micron mean size) total suspended solids (TSS) for influent concentrations greater than 100 mg/L, but less than 200 mg/L, as required by Ecology.

Pretreatment manholes shall be constructed of pre-cast concrete manhole sections, flat top slab, and adjustment sections (similar to WSDOT Catch Basin Type 2, Standard Plan B-10.20-01), with cast iron covers as described above. The pretreatment insert shall be constructed of fiberglass and/or steel materials that are corrosion resistant. Manhole safety steps shall be provided as shown on the Plans and the pretreatment insert shall act as a platform for maintenance purposes.

The pretreatment manhole shall be capable of handling the specified water quality flows and shall incorporate a bypass within the unit to handle the specified peak flows. The pretreatment manhole shall be capable of incorporating multiple inlets/outlets, with the inlet and outlet pipes at 90 degrees to each other. Access to pretreatment insert ports and openings for maintenance shall be achieved through the cast iron cover(s).

7-05.3(1) Adjusting Manholes and Catch Basins to Grade

Delete and replace with the following:

Manholes, valve boxes, catch basins, and similar utility appurtenances and structures shall not be adjusted until the pavement is completed, at which time the center of each structure shall be relocated from references previously established by the Contractor.

The asphalt concrete pavement shall be cut and removed to a neat circle, the diameter as specified on the Standard Details. The frame shall be placed on cement concrete blocks or adjustment rings and brought up to the desired grade. The base materials shall be removed, and Class 3000 cement concrete shall be placed to the depth specified on the Standard Detail.

On the following day, a tack coat of asphalt shall be applied to the concrete, the edges of the asphalt concrete pavement, and the outer edge of the casting. HMA Cl. 3/8-Inch asphalt concrete shall then be placed and compacted with hand tampers and a patching roller.

The completed patch shall match the existing paved surface for texture, density, and uniformity of grade. The joint between the patch and the existing pavement shall then be sealed with emulsified asphalt and shall be immediately covered with dry paving sand before the tack has broken.

Utility appurtenances outside paved areas shall be adjusted to match the finish grade of the area surrounding the structure. The utility cover shall be cleaned of all concrete prior to acceptance.

7-05.3(3) Connection to Existing Manholes

Supplement this section with the following:

Connections to existing manholes shall be made by core drilling the wall to the specified invert elevation and installing a watertight flexible connector meeting ASTM C923. Openings created by breaking or saw-cutting are not permitted unless approved by the City Engineer. All penetrations shall be sealed to prevent infiltration/exfiltration and shall be finished to maintain the structural integrity of the manhole.

Chapter 7 - Street Improvements

General Requirements for Street Improvements

Street Requirements

All new street design and construction must conform to these Development Design and Construction Standards of the City of Union Gap, and the latest edition of the Manual on Uniform Traffic Control Devices, the Union Gap Municipal Code, the International Fire Code (including Section 503.1), and the WSDOT Standard Specifications.

Arterials and Major Collector streets serve as the high-volume corridors that connect the major traffic generators and shall be designed to meet the minimum right-of-way and roadway dimensions as shown on the City Standard Details. Face of curb radius at intersections shall be a minimum of fifty (50) feet, or as approved by the Public Works Director and City Engineer. Both Arterial and Collector streets shall be designed for a WB-50 vehicle and HS-25 loadings.

Local Access (Residential) streets shall be designed to meet the minimum right-of-way and roadway dimensions as shown on the City Standard Details. If on-street parking is desired by the Developer and required by the City, Local Access (Residential) streets shall be designed to meet the minimum right-of-way and roadway dimensions as shown on the on-street roadway City Standard Detail. Face of curb radius at intersection shall be a minimum of twenty-five (25) feet, or as approved by the Public Works Director and City Engineer.

The street centerline radius shall be designed to meet minimum standards for applicable design speeds as presented in the Policy on Geometric Design of Highways and Streets (Green Book) published by the American Association of State Highway and Transportation Officials, or as approved by the City Engineer.

The cul-de-sac length is the distance between the face of the curb or pavement edge of the intersecting street to the face of the curb or pavement edge at the far side of the closed end of the road in accordance with the City of Union Gap Municipal Code. Where it is not feasible to construct a cul-de-sac turnaround, the City may allow the use of an “L” or “Hammerhead” turnaround upon approval by the Public Works Director, Fire Chief, and City Engineer. The minimum cul-de-sac right-of-way is a radius of 60 feet and a curb radius of 50 feet.

A subdivision of 25 or more lots shall have two or more access points. Street intersection angles shall not be less than 90 degrees, unless approved by the Public Works Director and City Engineer. Offset street intersections shall not be less than 200 feet for Collector streets and 100 feet for Local Access streets. A tangent at least 200 feet long shall be introduced between reverse curves on collectors and arterials, unless otherwise approved by the City of Union Gap and City Engineer.

Street grades shall be kept to a maximum of six (6) percent for Arterials, eight (8) percent for Collectors, and ten (10) percent for Local Access streets. The minimum grade for all streets shall be five-tenths (0.5) percent. Vertical curves shall be designed when the grade difference is greater than two (2) percent. AASHTO requirements for sight-distance shall apply.

Cement concrete barrier curb and gutter and sidewalks shall be constructed along both sides of all proposed streets, unless otherwise approved by the City of Union Gap and the City Engineer.

Rolled curb is permitted only on local access streets in subdivisions. At all intersections on such streets, barrier curb shall be provided for the entire curb return radius and for a distance of twenty (20) feet beyond the tangent point of the intersection radius, after which a ten (10) foot transition from full-height barrier curb to rolled curb shall be constructed.

Pedestrian ramps shall be designed to City Standard Details (WSDOT Standard Plans) and shall meet ADA requirements. Crosswalks between pedestrian ramps shall be designed to meet ADA requirements with cross slopes less than 2%.

Driveways shall be located on the lowest classification of roadway abutting the lot. Driveway widths and locations are limited to one per lot as approved by the Public Works Director. A "Corner" lot driveway shall be located as far as possible from the street intersection (50 feet minimum, measured from the centerline of the intersecting street).

A street light shall be installed at each street intersection, at mid-block, no more than three hundred and thirty (330) feet apart, and at cul-de-sac ends. Street lights shall meet the design and placement requirements of these Development Design and Construction Standards. Power service placement shall be proposed for review and approval consideration by the Public Works Director, City Engineer, and local electric utility.

In all new developments, monuments with cover caps and cases shall be installed at the centerline of street intersections, angle point and points of curves, and at other locations as determined by the Public Works Director.

Traffic signs, posts, sleeves, pavement markings, and channelization devices shall be provided and installed by the Developer in accordance with the latest edition of the Manual of Uniform Traffic Control Devices (MUTCD) and City Development Design and Construction Standards. Center line markings shall be installed on all paved roadways having an ADT of 2,000 vehicles per day or greater, or as required by the Public Works Director and City Engineer.

Fencing, transformers, pedestals, and other above ground utilities shall not inhibit intersection sight triangles or access to any City utility.

The City Fire Chief may require an emergency vehicle access in addition to other access points. If required, the access shall be designed to meet the standards as approved by the Fire Chief.

Traffic Studies

In order to provide sufficient information to assess a development's impact on the transportation system and level of service, the Public Works Director or City Engineer may require a traffic study to be completed by the Developer at the Developer's expense. This decision will be based upon the size of the proposed development, existing roadway condition, existing and expected traffic volumes, accident history, expressed community concern, and other factors relating to transportation. Typically, a traffic study is required when the development includes new trips totaling 90 average daily traffic (ADT), and/or 45 parking stalls. Traffic studies shall be conducted under the direction of a Traffic Engineer or Civil Engineer licensed in the State of Washington and possessing special training and experience in traffic engineering. The level of detail and scope of the traffic study may vary with the size, complexity, and location of the proposed development. A traffic study shall, at a minimum, be a thorough review of the immediate and long-range effects of the proposed development on the City's transportation system. At a minimum, a traffic study shall include the following:

- Description of development (location, current and proposed land use and zoning) AM, PM, and Daily trip generation
- Site plan review
  - Access locations
  - Bike/ped/vehicle circulation
  - Parking evaluation

Traffic study elements that could also be requested by the City include:

- Inventory of existing transportation network
  - Pedestrian, bicyclist, and vehicular
- Trip distribution/assignment
- Surrounding area land uses and zoning
- Existing Conditions (traffic counts collected within previous 12 months)
- No Build Conditions
  - Using background growth and background project trips
- Build Conditions
- Mitigation Conditions (if necessary)
  - Off-site, such as proportionate share of infrastructure improvements
  - On-site, such as traffic management plan (TMP) or parking management plan (PMP)
- Mitigation phasing plan with information regarding phasing, costs, and responsibilities.
- Traffic Impact Analysis Methods and Assumptions summary.
- Safety analysis
  - Crash data for all study intersections from last 5 years
  - Discussion on crash trends, if any
  - Recommendations for safety improvements, if any

Guidelines for the traffic study shall be reviewed by the Public Works Director and City Engineer on a project basis. ADT and peak hour volumes for the development shall be estimated using the trip generators found in the latest edition of the Trip Generation Manual published by ITE.

Special Provisions For Street Improvements

The following sections of the WSDOT Standard Specifications have been amended or supplemented as described below.

3-01 Clearing, Grubbing, and Roadside Cleanup

3-01.1 Description

Supplement this section with the following:

All work beyond the right-of-way line shall be coordinated with affected property owner(s) per Section 1-07.24 Rights of Way.

The Contractor shall support in place or temporarily remove, as necessary, and later replace to its original condition or relocate nearby as directed, all mail boxes, small trees, shrubs, street signs and posts, culverts, irrigation facilities, concrete or rock walls, or other similar obstructions which lie in or near the line of work and are not intended for

removal. Should any damage be incurred, the cost of replacement or repair shall be borne by the Contractor.

All clearing and grubbing includes disposal of unwanted materials, unless otherwise directed by the City.

3-01.3 Construction Requirements

3-01.3(4) Roadside Cleanup

Supplement this section with the following:

Partial cleanup shall be done by the Contractor when he feels it is necessary or when, in the opinion of the City, partial cleanup should be done prior to either final cleanup or final inspection. The cleanup work shall be done immediately upon written notification of the City and other work shall not proceed until this partial cleanup is accomplished. If the contractor fails to restore the surface of the roadway to its original and proper condition upon the expiration of the time fixed by the permit or otherwise fails to satisfactorily complete the work covered by the permit, the City shall have the right to restore the roadway.

3-01.3(5) Fencing (New Section)

The following new section shall be added to the Standard Specifications:

The Contractor shall be required to carefully remove existing fencing located within or near the proposed alignments. All fencing materials to be removed and reset shall be temporarily placed on the adjacent properties or stored as directed by the City. The removal and resetting of all fencing, including any barbed wire, shall be done at the Contractor's expense. Any fencing that is to be reset shall be relocated and reset by the Contractor along the property lines or as directed by the City.

3-02 Removal of Structures and Obstructions

3-02.3 Construction Requirements

3-02.3(2) Removal of Bridges, Box Culverts, and Other Drainage Structures

Supplement this section with the following:

Where structures or installations of concrete, brick, blocks, etc., interfere with the construction, they shall be removed and any pipe openings shall be properly plugged watertight with Class 3000 concrete, or with mortar and masonry, blocks, or brick. The removal and plugging of pipes shall be considered as incidental to the construction.

Where the structures are removed, the voids shall be backfilled with suitable, job-excavated material and compacted, and such work shall be considered as incidental to the removal work. If the City determines the job-excavated material to be unsuitable for backfill, the Contractor shall place ballast or crushed surfacing material as directed by the City.

3-02.3(3) Removal of Pavement, Sidewalks, Curbs, and Gutters

Supplement this section with the following:

Where shown on the Plans or as directed by the City, the Contractor shall be required to remove existing pavement, sidewalks, curbs, etc., which are outside the right-of-way line and are required to be removed for construction of the improvements.

In those areas where asphalt pavement removal is required, the Contractor shall, prior to excavation, score the edge of the asphalt concrete pavement with an approved pavement cutter such as a concrete saw. During the course of the work, the Contractor shall take precautions to preserve the integrity of this neat, clean pavement edge. Should the pavement edge be damaged prior to asphalt concrete paving activities, the Contractor shall be required to trim the edge with an approved pavement cutter as directed by the City immediately prior to paving.

Sawcutting slurry created from asphalt pavement and concrete removal shall be disposed of by vacuum, and remain clear of storm drainage systems and final HMA wearing course at all times. Slurry must be removed the same day work is performed.

3-03 Roadway Excavation and Embankment

3-03.1 Description

Supplement this section with the following:

Street excavation shall consist of removing the existing material of whatever nature encountered to the subgrade elevation and shaping the subgrade to conform to the cross-section shown on the Plans or as staked in the field.

Where directed by the Consultant, the Contractor shall excavate beyond the right-of-way in order to adequately slope adjacent properties.

The Contractor shall use caution while performing roadway excavation. Heavy, rubber-tired equipment, particularly front end loaders, shall limit their travel over a single area as much as possible. Trucks shall observe a 10 mph speed limit when traveling over exposed subgrade areas.

The City will reference all known existing monuments or markers relating to subdivisions, plats, roads, street centerline intersections, etc. The Contractor shall take special care to protect these monuments or markers and also the reference points. In the event the Contractor is negligent in preserving such monuments and markers, the points will be reset by a licensed surveyor at the Contractor's expense.

3-03.3 Construction Requirements

3-03.3(3) Excavation Below Subgrade

Supplement this section with the following:

At the direction of the Consultant, areas within the street subgrade which exhibit instability due to high moisture content shall be:

1. Aerated and allowed to dry;

2. Over-excavated and backfilled with ballast, or crushed surfacing base course. The contractor may be instructed to install construction geotextile for soil stabilization in the excavation; or

3. A combination of any of the above.

3-03.3(14)D Compaction and Moisture Control Tests

Delete this section and replace it with the following:

Compaction shall be 95% of maximum density as determined by ASTM D 698 (Standard Proctor). The Contractor shall notify the City when ready for in-place subgrade density tests. Placement of courses of aggregate shall not proceed until density requirements are met. The Developer/Contractor shall be responsible for scheduling and paying for all testing. All costs associated with failed tests/testing shall be the responsibility of the Contractor.

If any tests are failed, the Public Works Director will require additional testing to determine the extent of the failure and more frequent tests may be required on additional work.

3-06 Watering

3-06.1 Description

Supplement this section with the following:

The Contractor shall be solely responsible for dust control on the Developer's project and shall protect motoring public, adjacent homes and businesses, and school yards from damage due to dust, by whatever means necessary. The Contractor shall be responsible for any claims for damages and shall protect the City from any and all such claims.

When directed by the City, the Contractor shall provide water for dust control within two hours of such order and have equipment and manpower available at all times including weekends and holidays to respond to orders for dust control measures. Should the Contractor fail to comply within two hours, the City may utilize its own staff at the prevailing staff wage rate plus equipment rental charges, and/or contracted watering services. The Contractor will be responsible for reimbursement of all dust control costs including labor, equipment, water, and contractor costs. Subsequent building permits will not be processed until reimbursement is paid in total.

3-08 Trimming and Cleanup

3-08.3 Construction Requirements

Add the following to the first paragraph:

7. Restore all grass area affected by construction with sod and in accordance with the City of Union Gap Construction Standards.
8. Restore all landscaping rock, mulch, and bark with the same materials as existed prior to construction.
9. Restore all shoulders, from edge of pavement to right of way line, with the same material as existed prior to construction, except that earth shoulders shall be restored with 2 inches of compacted crushed surfacing top course.
10. Restore the site and offsite areas damaged by the Work to their original condition or better and to the satisfaction of the Public Works Director and the adjoining homeowners.

4-05 Ballast and Crushed Surfacing

4-05.3 Construction Requirements

4-05.3(5) Shaping and Compaction

Supplement this section with the following:

The Contractor shall notify the City when he is ready for in-place ballast, base course, or top course density tests. Placement of successive courses of aggregate or asphalt concrete shall not proceed until density requirements are met. The Developer/Contractor shall be responsible for scheduling and paying for all testing. All costs associated with failed tests/testing shall be the responsibility of the Contractor.

5-04 Hot Mix Asphalt

Delete Section 5-04, Hot Mix Asphalt, and replace it with the following:

5-04.1 Description

This Work shall consist of providing and placing one or more layers of plant-mixed hot mix asphalt (HMA) on a prepared foundation or base in accordance with these Specifications and the lines, grades, thicknesses, and typical cross-sections shown in the Plans. The manufacture of HMA may include warm mix asphalt (WMA) processes in accordance with these Specifications. WMA processes include organic additives, chemical additives, and foaming.

HMA shall be composed of asphalt binder and mineral materials as may be required, mixed in the proportions specified to provide a homogeneous, stable, and workable mixture.

5-04.2 Materials

Materials shall meet the requirements of the following sections:

Asphalt Binder	9-02.1(4)
Cationic Emulsified Asphalt	9-02.1(6)
Anti-Stripping Additive	9-02.4
HMA Additive	9-02.5
Aggregates	9-03.8
Recycled Asphalt Pavement (RAP)	9-03.8(3)B

Mineral Filler	9-03.8(5)
Recycled Material	9-03.21
Sand	9-03.1(2)
(As noted in 5-04.3(4)A for crack sealing)	
Joint Sealant	9-04.2
Foam Backer Rod	9-04.2(3)A

The Contract documents may establish that the various mineral materials required for the manufacture of HMA will be furnished in whole or in part by the Contracting Agency. If the documents do not establish the furnishing of any of these mineral materials by the Contracting Agency, the Contractor shall be required to furnish such materials in the amounts required for the designated mix. Mineral materials include coarse and fine aggregates, and mineral filler.

The Contractor may choose to utilize recycled asphalt pavement (RAP) in the production of HMA. The RAP may be from pavements removed under the Contract, if any, or pavement material from an existing stockpile.

The Contractor may use up to 20 percent RAP by total weight of HMA with no additional sampling or testing of the RAP. If the Contractor wishes to utilize High RAP/Any RAS, the design must be listed on the WSDOT Qualified Products List (QPL).

The grade of asphalt binder shall be PG 64S-28 or PG 64H-28. Blending of asphalt binder from different sources is not permitted.

The Contractor may only use warm mix asphalt (WMA) processes in the production of HMA with 20 percent or less RAP by total weight of HMA. The Contractor shall submit to the Engineer for approval the process that is proposed and how it will be used in the manufacture of HMA.

Production of aggregates shall comply with the requirements of Section 4-01.
Preparation of stockpile site, the stockpiling of aggregates, and the removal of aggregates from stockpiles shall comply with the requirements of Section 4-02.

5-04.2(1) How to Get an HMA Mix Design on the QPL

If the contractor wishes to submit a mix design for inclusion in the Qualified Products List (QPL), please follow the WSDOT process outlined in Standard Specification 5-04.2(1).

5-04.2(1)A Vacant

5-04.2(2) Mix Design – Obtaining Project Approval

No paving shall begin prior to the approval of the mix design by the Engineer.

Nonstatistical evaluation will be used for all HMA not designated as Commercial HMA in the Contract documents.

Commercial evaluation will be used for Commercial HMA and for other classes of HMA in the following applications: sidewalks, road approaches, ditches, slopes, paths, trails, gores, prelevel, temporary pavement, and pavement repair. Other nonstructural applications of HMA accepted by commercial evaluation shall be as approved by the Project Engineer. Sampling and testing of HMA accepted by commercial evaluation will be at the option of the Project Engineer.

The Proposal quantity of HMA that is accepted by commercial evaluation will be excluded from the quantities used in the determination of nonstatistical evaluation.

Nonstatistical Mix Design. Fifteen days prior to the first day of paving the Contractor shall provide one of the following mix design verification certifications for Contracting Agency review;

- The WSDOT Mix Design Evaluation Report from the current WSDOT QPL, or one of the mix design verification certifications listed below.
- The proposed HMA mix design on WSDOT Form 350-042 with the seal and certification (stamp & signature) of a valid licensed Washington State Professional Engineer.
- The Mix Design Report for the proposed HMA mix design developed by a qualified City or County laboratory that is within one year of the approval date.

The Developer shall be responsible for the mix design. The mix design shall be performed by a lab accredited by a national authority such as Laboratory Accreditation Bureau, L-A-B for Construction Materials Testing, The Construction Materials Engineering Council (CMEC's) ISO 17025 or AASHTO Accreditation Program (AAP) and shall supply evidence of participation in the AASHTO: resource proficiency sample program.

Mix designs for HMA accepted by Nonstatistical evaluation shall:

- Have the aggregate structure and asphalt binder content determined in accordance with WSDOT Standard Operating Procedure 732 and meet the requirements of Sections 9-03.8(2), except that Hamburg testing for ruts and stripping are at the discretion of the Engineer, and 9-03.8(6).
- Have anti-strip requirements, if any, for the proposed mix design determined in accordance with AASHTO T 283 or T 324 or based on historic anti-strip and aggregate source compatibility from previous WSDOT lab testing.

At the discretion of the Engineer, agencies may accept verified mix designs older than 12 months from the original verification date with a certification from the Contractor that the materials and sources are the same as those shown on the original mix design.

Commercial Evaluation Mix Design. Approval of a mix design for "Commercial Evaluation" will be based on a review of the Contractor's submittal of WSDOT Form 350-042 (for commercial mixes, AASHTO T 324 evaluation is not required) or a Mix Design from the current WSDOT QPL or from one of the processes allowed by this section. Testing of the HMA by the Contracting Agency for mix design approval is not required.

For the Bid Item Commercial HMA, the Contractor shall select a class of HMA and design level of ESAL's appropriate for the required use.

5-04.2(2)B Using Warm Mix Asphalt Processes

The Contractor may elect to use additives that reduce the optimum mixing temperature or serve as a compaction aid for producing HMA. Additives include organic additives, chemical additives and foaming processes. The use of Additives is subject to the following:

- Do not use additives that reduce the mixing temperature more than allowed in Section 5-04.3(6) in the production of mixtures.

- Before using additives, obtain the Engineer's approval using WSDOT Form 350-076 to describe the proposed additive and process.

5-04.3 Construction Requirements

5-04.3(1) Weather Limitations

Do not place HMA for wearing course on any Traveled Way beginning October 1st through March 31st of the following year without written concurrence from the Engineer.

Do not place HMA on any wet surface, or when the average surface temperatures are less than those specified below, or when weather conditions otherwise prevent the proper handling or finishing of the HMA.

Minimum Surface Temperature for Paving

Compacted Thickness (Feet)	Wearing Course	Other Courses
Less than 0.10	55°F	45°F
0.10 to .20	45°F	35°F
More than 0.20	35°F	35°F

5-04.3(2) Paving Under Traffic

When the Roadway being paved is open to traffic, the requirements of this Section shall apply.

The Contractor shall keep intersections open to traffic at all times except when paving the intersection or paving across the intersection. During such time, and provided that there has been an advance warning to the public, the intersection may be closed for the minimum time required to place and compact the mixture. In hot weather, the Engineer may require the application of water to the pavement to accelerate the finish rolling of the pavement and to shorten the time required before reopening to traffic.

Before closing an intersection, advance warning signs shall be placed, and signs shall also be placed marking the detour or alternate route.

During paving operations, temporary pavement markings shall be maintained throughout the project. Temporary pavement markings shall be installed on the Roadway prior to opening to traffic. Temporary pavement markings shall be in accordance with Section 8-23.

All costs in connection with performing the Work in accordance with these requirements, shall be the Developer's responsiblity.

5-04.3(3) Equipment

5-04.3(3)A Mixing Plant

Plants used for the preparation of HMA shall conform to the following requirements:

1. **Equipment for Preparation of Asphalt Binder** – Tanks for the storage of asphalt binder shall be equipped to heat and hold the material at the required temperatures. The heating shall be accomplished by steam coils, electricity, or other approved means so that no flame shall be in contact with the storage tank. The circulating system for the asphalt binder shall be designed to ensure proper and continuous circulation during the operating period. A valve for the purpose of sampling the asphalt binder shall be placed in either the storage tank or in the supply line to the mixer.

2. **Thermometric Equipment** – An armored thermometer, capable of detecting temperature ranges expected in the HMA mix, shall be fixed in the asphalt binder feed line at a location near the charging valve at the mixer unit. The thermometer location shall be convenient and safe for access by Inspectors. The plant shall also be equipped with an approved dial-scale thermometer, a mercury actuated thermometer, an electric pyrometer, or another approved thermometric instrument placed at the discharge chute of the drier to automatically register or indicate the temperature of the heated aggregates. This device shall be in full view of the plant operator.

3. **Heating of Asphalt Binder** – The temperature of the asphalt binder shall not exceed the maximum recommended by the asphalt binder manufacturer nor shall it be below the minimum temperature required to maintain the asphalt binder in a homogeneous state. The asphalt binder shall be heated in a manner that will avoid local variations in heating. The heating method shall provide a continuous supply of asphalt binder to the mixer at a uniform average temperature with no individual variations exceeding 25°F. Also, when a WMA additive is included in the asphalt binder, the temperature of the asphalt binder shall not exceed the maximum recommended by the manufacturer of the WMA additive.

4. **Sampling and Testing of Mineral Materials** – The HMA plant shall be equipped with a mechanical sampler for the sampling of the mineral materials. The mechanical sampler shall meet the requirements of Section 1-05.6 for the crushing and screening operation. The Contractor shall provide for the setup and operation of the field-testing facilities of the Contracting Agency as provided for in Section 3-01.2(2). The Contractor shall provide for the setup, operation, and all costs associated with sampling and testing of mineral materials and HMA, including provision of mechanical sampling devices, platforms, and safe access for inspectors. The Contractor shall bear all costs of sampling and testing unless otherwise specified for independent assurance testing performed solely by the Contracting Agency.

5. **Sampling HMA** – The HMA plant shall provide for sampling HMA by one of the following methods:

    a. A mechanical sampling device attached to the HMA plant.

    b. Platforms or devices to enable sampling from the hauling vehicle without entering the hauling vehicle.

5-04.3(3)B Hauling Equipment

Trucks used for hauling HMA shall have tight, clean, smooth metal beds and shall have a cover of canvas or other suitable material of sufficient size to protect the mixture from adverse weather. Whenever the weather conditions during the work shift include, or are forecast to

include precipitation or an air temperature less than 45°F or when time from loading to unloading exceeds 30 minutes, the cover shall be securely attached to protect the HMA.

The Contractor shall provide an environmentally benign means to prevent the HMA mixture from adhering to the hauling equipment. Excess release agent shall be drained prior to filling hauling equipment with HMA. Petroleum derivatives or other coating material that contaminate or alter the characteristics of the HMA shall not be used. For live bed trucks, the conveyer shall be in operation during the process of applying the release agent.

5-04.3(3)C Pavers

HMA pavers shall be self-contained, power-propelled units, provided with an internally heated vibratory screed and shall be capable of spreading and finishing courses of HMA plant mix material in lane widths required by the paving section shown in the Plans.

The HMA paver shall be in good condition and shall have the most current equipment available from the manufacturer for the prevention of segregation of the HMA mixture installed, in good condition, and in working order. The equipment certification shall list the make, model, and year of the paver and any equipment that has been retrofitted.

The screed shall be operated in accordance with the manufacturer's recommendations and shall effectively produce a finished surface of the required evenness and texture without tearing, shoving, segregating, or gouging the mixture. A copy of the manufacturer's recommendations shall be provided upon request by the Contracting Agency. Extensions will be allowed provided they produce the same results, including ride, density, and surface texture as obtained by the primary screed. Extensions without augers and an internally heated vibratory screed shall not be used in the Traveled Way.

The Contractor shall furnish and install all pins, brackets, tensioning devices, wire, and accessories necessary for satisfactory operation of the automatic control equipment.

If the paving machine in use is not providing the required finish, the Engineer may suspend Work as allowed by Section 1-08.6. Any cleaning or solvent type liquids spilled on the pavement shall be thoroughly removed before paving proceeds.

5-04.3(3)D Material Transfer Device or Material Transfer Vehicle

A Material Transfer Device/Vehicle (MTD/V) shall only be used with the Engineer's approval, unless otherwise required by the Contract.

Where an MTD/V is required by the Contract, the Engineer may approve paving without an MTD/V, at the request of the Contractor. The Engineer will determine if an equitable adjustment in cost or time is due.

When used, the MTD/V shall mix the HMA after delivery by the hauling equipment and prior to laydown by the paving machine. Mixing of the HMA shall be sufficient to obtain a uniform temperature throughout the mixture. If a windrow elevator is used, the length of the windrow may be limited in urban areas or through intersections, at the discretion of the Engineer.

To be approved for use, an MTV:

1. Shall be self-propelled vehicle, separate from the hauling vehicle or paver.

2. Shall not be connected to the hauling vehicle or paver.

3. May accept HMA directly from the haul vehicle or pick up HMA from a windrow.

4. Shall mix the HMA after delivery by the hauling equipment and prior to placement into the paving machine.

5. Shall mix the HMA sufficiently to obtain a uniform temperature throughout the mixture.

To be approved for use, an MTD:

1. Shall be positively connected to the paver.

2. May accept HMA directly from the haul vehicle or pick up HMA from a windrow.

3. Shall mix the HMA after delivery by the hauling equipment and prior to placement into the paving machine.

4. Shall mix the HMA sufficiently to obtain a uniform temperature throughout the mixture.

5-04.3(3)E Rollers

Rollers shall be of the steel wheel, vibratory, oscillatory, or pneumatic tire type, in good condition and capable of reversing without backlash. Operation of the roller shall be in accordance with the manufacturer's recommendations. When ordered by the Engineer for any roller planned for use on the project, the Contractor shall provide a copy of the manufacturer's recommendation for the use of that roller for compaction of HMA. The number and weight of rollers shall be sufficient to compact the mixture in compliance with the requirements of Section 5-04.3(10). The use of equipment that results in crushing of the aggregate will not be permitted. Rollers producing pickup, washboard, uneven compaction of the surface, displacement of the mixture or other undesirable results shall not be used.

5-04.3(4) Preparation of Existing Paved Surfaces

When the surface of the existing pavement or old base is irregular, the Contractor shall bring it to a uniform grade and cross-section as shown on the Plans or approved by the Engineer.

Preleveling of uneven or broken surfaces over which HMA is to be placed may be accomplished by using an asphalt paver, a motor patrol grader, or by hand raking, as approved by the Engineer.

Compaction of preleveling HMA shall be to the satisfaction of the Engineer and may require the use of small steel wheel rollers, plate compactors, or pneumatic rollers to avoid bridging across preleveled areas by the compaction equipment. Equipment used for the compaction of preleveling HMA shall be approved by the Engineer.

Before construction of HMA on an existing paved surface, the entire surface of the pavement shall be clean. All fatty asphalt patches, grease drippings, and other objectionable matter shall be entirely removed from the existing pavement. All pavements or bituminous surfaces shall be thoroughly cleaned of dust, soil, pavement grindings, and other foreign matter. All holes and small depressions shall be filled with an appropriate class of HMA. The surface of the patched area shall be leveled and compacted thoroughly. Prior to the application of tack coat, or paving, the condition of the surface shall be approved by the Engineer.

A tack coat of asphalt shall be applied to all paved surfaces on which any course of HMA is to be placed or abutted; except that tack coat may be omitted from clean, newly paved surfaces at the discretion of the Engineer. Tack coat shall be uniformly applied to cover the existing pavement with a thin film of residual asphalt free of streaks and bare spots at a rate between 0.02 and 0.10 gallons per square yard of retained asphalt. The rate of application shall be approved by the Engineer. A heavy application of tack coat shall be applied to all joints. For Roadways open to traffic, the application of tack coat shall be limited to surfaces that will be paved during the same working shift. The spreading equipment shall be equipped with a thermometer to indicate the temperature of the tack coat material.

Equipment shall not operate on tacked surfaces until the tack has broken and cured. If the Contractor's operation damages the tack coat it shall be repaired prior to placement of the HMA.

The tack coat shall be CSS-1, or CSS-1h emulsified asphalt. The CSS-1 and CSS-1h emulsified asphalt may be diluted once with water at a rate not to exceed one-part water to one-part emulsified asphalt. The tack coat shall have sufficient temperature such that it may be applied uniformly at the specified rate of application and shall not exceed the maximum temperature recommended by the emulsified asphalt manufacturer.

5-04.3(4)A Crack Sealing

The Contractor shall seal all cracks 1/4 inch in width and greater, in accordance with Section 5-03.

5-04.3(4)B Vacant

5-04.3(4)C Pavement Repair

The Contractor shall excavate pavement repair areas and shall backfill these with HMA in accordance with the details shown in the Plans and as marked in the field. The Contractor shall conduct the excavation operations in a manner that will protect the pavement that is to remain. Pavement not designated to be removed that is damaged as a result of the Contractor's operations shall be repaired by the Contractor to the satisfaction of the Engineer at no cost to the Contracting Agency. The Contractor shall excavate only within one lane at a time unless approved otherwise by the Engineer. The Contractor shall not excavate more area than can be completely finished during the same shift, unless approved by the Engineer.

Unless otherwise shown in the Plans or determined by the Engineer, excavate to a depth of 1.0 feet. The Engineer will make the final determination of the excavation depth required. The minimum width of any pavement repair area shall be 40 inches unless shown otherwise in the Plans. Before any excavation, the existing pavement shall be sawcut or shall be removed by a pavement grinder. Excavated materials will become the property of the Contractor and shall be

disposed of in a Contractor-provided site off the Right of Way or used in accordance with Sections 3-02.3(3) or 9-03.21.

Asphalt for tack coat shall be required as specified in Section 5-04.3(4). A heavy application of tack coat shall be applied to all surfaces of existing pavement in the pavement repair area.

Placement of the HMA backfill shall be accomplished in lifts not to exceed 0.35-foot compacted depth. Lifts that exceed 0.35-foot of compacted depth may be accomplished with the approval of the Engineer. Each lift shall be thoroughly compacted by a mechanical tamper or a roller.

5-04.3(5) Producing/Stockpiling Aggregates and RAP

Aggregates and RAP shall be stockpiled according to the requirements of Section 4-02. Sufficient storage space shall be provided for each size of aggregate and RAP. Materials shall be removed from stockpile(s) in a manner to ensure minimal segregation when being moved to the HMA plant for processing into the final mixture. Different aggregate sizes shall be kept separated until they have been delivered to the HMA plant.

5-04.3(5)A Vacant

5-04.3(6) Mixing

After the required amount of mineral materials, asphalt binder, recycling agent and anti-stripping additives have been introduced into the mixer the HMA shall be mixed until complete and uniform coating of the particles and thorough distribution of the asphalt binder throughout the mineral materials is ensured.

When discharged, the temperature of the HMA shall not exceed the optimum mixing temperature by more than 25°F as shown on the reference mix design report or as approved by the Engineer. Also, when a WMA additive is included in the manufacture of HMA, the discharge temperature of the HMA shall not exceed the maximum recommended by the manufacturer of the WMA additive. A maximum water content of 2 percent in the mix, at discharge, will be allowed providing the water causes no problems with handling, stripping, or flushing. If the water in the HMA causes any of these problems, the moisture content shall be reduced as directed by the Engineer.

Storing or holding of the HMA in approved storage facilities will be permitted with approval of the Engineer, but in no event shall the HMA be held for more than 24 hours. HMA held for more than 24 hours after mixing shall be rejected. Rejected HMA shall be disposed of by the Contractor at no expense to the Contracting Agency. The storage facility shall have an accessible device located at the top of the cone or about the third point. The device shall indicate the amount of material in storage. No HMA shall be accepted from the storage facility when the HMA in storage is below the top of the cone of the storage facility, except as the storage facility is being emptied at the end of the working shift.

Recycled asphalt pavement (RAP) utilized in the production of HMA shall be sized prior to entering the mixer so that a uniform and thoroughly mixed HMA is produced. If there is evidence of the recycled asphalt pavement not breaking down during the heating and mixing of the HMA, the Contractor shall immediately suspend the use of the RAP until changes have been approved by the Engineer. After the required amount of mineral materials, RAP, new asphalt binder and asphalt rejuvenator have been introduced into the mixer the HMA shall be mixed

until complete and uniform coating of the particles and thorough distribution of the asphalt binder throughout the mineral materials, and RAP is ensured.

5-04.3(7) Spreading and Finishing

The mixture shall be laid upon an approved surface, spread, and struck off to the grade and elevation established. HMA pavers complying with Section 5-04.3(3) shall be used to distribute the mixture. Unless otherwise directed by the Engineer, the nominal compacted depth of any layer of any course shall not exceed the following:

HMA Class 1" 0.35 feet
HMA Class 3/4" and HMA Class 1/2"
wearing course 0.30 feet
other courses 0.35 feet
HMA Class 3/8" 0.15 feet

On areas where irregularities or unavoidable obstacles make the use of mechanical spreading and finishing equipment impractical, the paving may be done with other equipment or by hand.

5-04.3(8) Aggregate Acceptance Prior to Incorporation in HMA

For HMA accepted by nonstatistical evaluation, the aggregate properties of sand equivalent, uncompacted void content, and fracture will be evaluated in accordance with Section 4-04. Sampling and testing of aggregates for HMA accepted by commercial evaluation will be at the option of the Engineer.

5-04.3(9) HMA Mixture Acceptance

Acceptance of HMA shall be as provided under nonstatistical, or commercial evaluation.

Nonstatistical evaluation will be used for the acceptance of HMA unless Commercial Evaluation is specified.

Commercial evaluation will be used for Commercial HMA and for other classes of HMA in the following applications: sidewalks, road approaches, ditches, slopes, paths, trails, gores, prelevel, temporary pavement, and pavement repair. Other nonstructural applications of HMA accepted by commercial evaluation shall be as approved by the Engineer. Sampling and testing of HMA accepted by commercial evaluation will be at the option of the Engineer.

5-04.3(9)A Vacant

5-04.3(9)B Vacant

5-04.3(9)C Mixture Acceptance – Nonstatistical Evaluation

HMA mixture which is accepted by Nonstatistical Evaluation will be evaluated by the Contracting Agency by dividing the HMA tonnage into lots.

5-04.3(9)C2 Mixture Nonstatistical Evaluation Sampling

Samples for acceptance testing shall be obtained by the Contractor when ordered by the Engineer. The Contractor shall sample the HMA mixture in the presence of the Engineer and in accordance with AASH-TO T 168. A minimum of three samples should be taken for each class of HMA placed on a project. If used in a structural application, at least one of the three samples shall be tested.

Sampling and testing HMA in a structural application where quantities are less than 400 tons is at the discretion of the Engineer.

5-04.3(9)C3 Mixture Nonstatistical Evaluation – Acceptance Testing

Testing of HMA for compliance of V_a will be at the option of the Contracting Agency. If tested, compliance of V_a will use WSDOT SOP 731.

Testing for compliance of asphalt binder content will be by WSDOT FOP for AASHTO T 308.

Testing for compliance of gradation will be by FOP for WAQTC T 27/T 11.

Testing costs shall be the responsibility of the Developer.

5-04.3(10) HMA Compaction Acceptance

HMA mixture accepted by nonstatistical evaluation that is used in traffic lanes, including lanes for intersections, ramps, truck climbing, weaving, and speed change, and having a specified compacted course thickness greater than 0.10-foot, shall be compacted to a specified level of relative density. The specified level of relative density shall be a CPF of not less than 0.75 when evaluated in accordance with Section 1-06.2, using a LSL of 92.0 (minimum of 92 percent of the maximum density). The maximum density shall be determined by WSDOT FOP for AASHTO T 729. The specified level of density attained will be determined by the evaluation of the density of the pavement. The density of the pavement shall be determined in accordance with WSDOT FOP for WAQTC TM 8, except that gauge correlation will be at the discretion of the Engineer, when using the nuclear density gauge and WSDOT SOP 736 when using cores to determine density.

Tests for the determination of the pavement density will be taken in accordance with the required procedures for measurement by a nuclear density gauge or Roadway cores after completion of the finish rolling.

If the Contracting Agency uses a nuclear density gauge to determine density the test procedures FOP for WAQTC TM 8 and WSDOT SOP T 729 will be used on the day the mix is placed and prior to opening to traffic.

Roadway cores for density may be obtained by either the Contracting Agency or the Contractor in accordance with WSDOT SOP 734. The core diameter shall be 4-inches minimum, unless otherwise approved by the Engineer. Roadway cores will be tested by the Contracting Agency in accordance with WSDOT FOP for AASHTO T 166.

HMA mixture accepted by commercial evaluation and HMA constructed under conditions other than those listed above shall be compacted on the basis of a test point evaluation of the

compaction train. The test point evaluation shall be performed in accordance with instructions from the Engineer. The number of passes with an approved compaction train, required to attain the maximum test point density, shall be used on all subsequent paving.

HMA for preleveling shall be thoroughly compacted. HMA that is used for preleveling wheel rutting shall be compacted with a pneumatic tire roller unless otherwise approved by the Engineer.

5-04.3(10)A HMA Compaction – General Compaction Requirements

Compaction shall take place when the mixture is in the proper condition so that no undue displacement, cracking, or shoving occurs. Areas inaccessible to large compaction equipment shall be compacted by other mechanical means. Any HMA that becomes loose, broken, contaminated, shows an excess or deficiency of asphalt, or is in any way defective, shall be removed and replaced with new hot mix that shall be immediately compacted to conform to the surrounding area.

The type of rollers to be used and their relative position in the compaction sequence shall generally be the Contractor's option, provided the specified densities are attained. Unless the Engineer has approved otherwise, rollers shall only be operated in the static mode when the internal temperature of the mix is less than 175°F. Regardless of mix temperature, a roller shall not be operated in a mode that results in checking or cracking of the mat. Rollers shall only be operated in static mode on bridge decks.

5-04.3(11) Reject Work

5-04.3(11)A Reject Work General

Work that is defective or does not conform to Contract requirements shall be rejected. The Contractor may propose, in writing, alternatives to removal and replacement of rejected material. Acceptability of such alternative proposals will be determined at the sole discretion of the Engineer. HMA that has been rejected is subject to the requirements in Section 1-06.2(2) and this specification, and the Contractor shall submit a corrective action proposal to the Engineer for approval.

5-04.3(11)B Rejection by Contractor

The Contractor may, prior to sampling, elect to remove any defective material and replace it with new material. Any such new material will be sampled, tested, and evaluated for acceptance.

5-04.3(11)C Rejection Without Testing (Mixture or Compaction)

The Engineer may, without sampling, reject any batch, load, or section of Roadway that appears defective. Material rejected before placement shall not be incorporated into the pavement. Any rejected section of Roadway shall be removed.

5-04.3(12) Joints

5-04.3(12)A HMA Joints

5-04.3(12)A1 Transverse Joints

The Contractor shall conduct operations such that the placing of the top or wearing course is a continuous operation or as close to continuous as possible. Unscheduled transverse joints will be allowed, and the roller may pass over the unprotected end of the freshly laid mixture only when the placement of the course must be discontinued for such a length of time that the mixture will cool below compaction temperature. When the Work is resumed, the previously compacted mixture shall be cut back to produce a slightly beveled edge for the full thickness of the course.

A temporary wedge of HMA constructed on a 20H:1V shall be constructed where a transverse joint as a result of paving or planing is open to traffic. The HMA in the temporary wedge shall be separated from the permanent HMA by strips of heavy wrapping paper or other methods approved by the Engineer. The wrapping paper shall be removed and the joint trimmed to a slightly beveled edge for the full thickness of the course prior to resumption of paving.

The material that is cut away shall be wasted and new mix shall be laid against the cut. Rollers or tamping irons shall be used to seal the joint.

5-04.3(12)A2 Longitudinal Joints

The longitudinal joint in any one course shall be offset from the course immediately below by not more than 6 inches nor less than 2 inches. All longitudinal joints constructed in the wearing course shall be located at a lane line or an edge line of the Traveled Way. A notched wedge joint shall be constructed along all longitudinal joints in the wearing surface of new HMA unless otherwise approved by the Engineer. The notched wedge joint shall have a vertical edge of not less than the maximum aggregate size or more than ½ of the compacted lift thickness and then taper down on a slope not steeper than 4H:1V. The sloped portion of the HMA notched wedge joint shall be uniformly compacted.

5-04.3(12)B Bridge Paving Joint Seals

Bridge Paving Joint Seals shall be in accordance with Section 5-03.

5-04.3(13) Surface Smoothness

The completed surface of all courses shall be of uniform texture, smooth, uniform as to crown and grade, and free from defects of all kinds. The completed surface of the wearing course shall not vary more than ⅛ inch from the lower edge of a 10-foot straightedge placed on the surface parallel to the centerline. The transverse slope of the completed surface of the wearing course shall vary not more than ¼ inch in 10 feet from the rate of transverse slope shown in the Plans.

When deviations in excess of the above tolerances are found that result from a high place in the HMA, the pavement surface shall be corrected by one of the following methods:

1. Removal of material from high places by grinding with an approved grinding machine, or
2. Removal and replacement of the wearing course of HMA, or
3. By other method approved by the Engineer.

Correction of defects shall be carried out until there are no deviations anywhere greater than the allowable tolerances.

When utility appurtenances such as manhole covers and valve boxes are located in the traveled way, the utility appurtenances shall be adjusted to the finished grade prior to paving. This requirement may be waived when requested by the Contractor, at the discretion of the Engineer or when the adjustment details provided in the project plan or specifications call for utility appurtenance adjustments after the completion of paving.

Utility appurtenance adjustment discussions will be included in the Pre-Paving and Pre-Planing Briefing (5-04.3(14)B3). Submit a written request to waive this requirement to the Engineer prior to the start of paving.

5-04.3(14) Planing Bituminous Pavement

The planing plan must be approved by the Engineer and a pre-planing meeting must be held prior to the start of any planing. See Section 5-04.3(14)B2 for information on planing submittals.

Where planing an existing pavement is specified in the Contract, the Contractor must remove existing surfacing material and to reshape the surface to remove irregularities. The finished product must be a prepared surface acceptable for receiving an HMA overlay.

Use the cold milling method for planing unless otherwise specified in the Contract. Do not use the planer on the final wearing course of new HMA.

Conduct planing operations in a manner that does not tear, break, burn, or otherwise damage the surface which is to remain. The finished planed surface must be slightly grooved or roughened and must be free from gouges, deep grooves, ridges, or other imperfections. The Contractor must repair any damage to the surface by the Contractor’s planing equipment, using an Engineer approved method.

Repair or replace any metal castings and other surface improvements damaged by planing, as determined by the Engineer.

A tapered wedge cut must be planed longitudinally along curb lines sufficient to provide a minimum of 4 inches of curb reveal after placement and compaction of the final wearing course. The dimensions of the wedge must be as shown on the Drawings or as specified by the Engineer.

A tapered wedge cut must also be made at transitions to adjoining pavement surfaces (meet lines) where butt joints are shown on the Drawings. Cut butt joints in a straight line with vertical faces 2 inches or more in height, producing a smooth transition to the existing adjoining pavement.

After planing is complete, planed surfaces must be swept, cleaned, and if required by the Contract, patched and preleveled.

The Engineer may direct additional depth planing. Before performing this additional depth planing, the Contractor must conduct a hidden metal in pavement detection survey as specified in Section 5-04.3(14)A.

5-04.3(14)A Pre-Planing Metal Detection Check

Before starting planing of pavements, and before any additional depth planing required by the Engineer, the Contractor must conduct a physical survey of existing pavement to be planed with equipment that can identify hidden metal objects.

Should such metal be identified, promptly notify the Engineer.

See Section 1-07.16(1) regarding the protection of survey monumentation that may be hidden in pavement.

The Contractor is solely responsible for any damage to equipment resulting from the Contractor's failure to conduct a pre-planing metal detection survey, or from the Contractor's failure to notify the Engineer of any hidden metal that is detected.

5-04.3(14)B Paving and Planing Under Traffic

5-04.3(14)B1 General

In addition, the requirements of Section 2-03 and the traffic controls required in Section 2-04, and unless the Contract specifies otherwise or the Engineer approves, the Contractor must comply with the following:

1. Intersections:

    a. Keep intersections open to traffic at all times, except when paving or planing operations through an intersection requires closure. Such closure must be kept to the minimum time required to place and compact the HMA mixture, or plane as appropriate. For paving, schedule such closure to individual lanes or portions thereof that allows the traffic volumes and schedule of traffic volumes required in the approved traffic control plan. Schedule work so that adjacent intersections are not impacted at the same time and comply with the traffic control restrictions required by the Traffic Engineer. Each individual intersection closure or partial closure must be addressed in the traffic control plan, which must be submitted to and accepted by the Engineer, see Section 1-10.2(2).

    b. When planing or paving and related construction must occur in an intersection, consider scheduling and sequencing such work into quarters of the intersection, or half or more of an intersection with side street detours. Be prepared to sequence the work to individual lanes or portions thereof.

    c. Should closure of the intersection in its entirety be necessary, keep such closure to the minimum time required to place and compact the HMA mixture, plane, remove asphalt, tack coat, and as needed.

    d. Any work in an intersection requires advance warning in both signage and a number of Working Days advance notice as determined by the Engineer, to alert traffic and emergency services of the intersection closure or partial closure.

e. Allow new compacted HMA asphalt to cool to ambient temperature before any traffic is allowed on it. Traffic is not allowed on newly placed asphalt until approval has been obtained from the Engineer.

2. Temporary centerline marking, post-paving temporary marking, temporary stop bars, and maintaining temporary pavement marking must comply with Section 8-23.

3. Permanent pavement marking must comply with Section 8-22.

5-04.3(14)B2 Submittals - Planing Plan and HMA Paving Plan

The Contractor must submit a separate planing plan and a separate paving plan to the Engineer at least 5 Working Days in advance of each operation's activity start date. These plans must show how the moving operation and traffic control are coordinated, as they will be discussed at the pre-planing briefing and pre-paving briefing. When requested by the Engineer, the Contractor must provide each operation's traffic control plan on 24 x 36 inch or larger size Shop Drawings with a scale showing both the area of operation and sufficient detail of traffic beyond the area of operation where detour traffic may be required. The scale on the Shop Drawings is 1 inch = 20 feet, which may be changed if the Engineer agrees sufficient detail is shown.

The planing operation and the paving operation include, but are not limited to, metal detection, removal of asphalt and temporary asphalt of any kind, tack coat and drying, staging of supply trucks, paving trains, rolling, scheduling, and as may be discussed at the briefing.

When intersections will be partially or totally blocked, provide adequately sized and noticeable signage alerting traffic of closures to come, a minimum 2 Working Days in advance. The traffic control plan must show where police officers will be stationed when signalization is or may be, countermanded, and show areas where flaggers are proposed.

At a minimum, the planing and the paving plan must include:

1. A copy of the accepted traffic control plan, see Section 1-10.2(2), detailing each day's traffic control as it relates to the specific requirements of that day's planing and paving. Briefly describe the sequencing of traffic control consistent with the proposed planing and paving sequence, and scheduling of placement of temporary pavement markings and channelizing devices after each day's planing, and paving.

2. A copy of each intersection's traffic control plan.

3. Haul routes from supplier facilities, and locations of temporary parking and staging areas, including return routes. Describe the complete round trip as it relates to the sequencing of paving operations.

4. Names and locations of HMA supplier facilities to be used.

5. List of all equipment to be used for paving.

6. List of personnel and associated job classification assigned to each piece of paving equipment.

7. Description (geometric or narrative) of the scheduled sequence of planing and of paving and intended area of planing and of paving for each day's work, must include the directions of proposed planing and of proposed paving, sequence of adjacent lane paving, sequence of skipped lane paving, intersection planing and paving scheduling and sequencing, and proposed notifications and coordinations to be timely made. The plan must show HMA joints relative to the final pavement marking lane lines.

8. Names, job titles, and contact information for field, office, and plant supervisory personnel.

9. A copy of the approved Mix Designs.

10. Tonnage of HMA to be placed each day.

11. Approximate times and days for starting and ending daily operations.

5-04.3(14)B3 Pre-Paving and Pre-Planing Briefing

At least 2 Working Days before the first paving operation and the first planing operation, or as scheduled by the Engineer for future paving and planing operations to ensure the Contractor has adequately prepared for notifying and coordinating as required in the Contract, the Contractor must be prepared to discuss that day's operations as they relate to other entities and to public safety and convenience, including driveway and business access, garbage truck operations, transit operations and working around energized overhead wires, school and nursing home and hospital and other accesses, other Contractors who may be operating in the area, pedestrian and bicycle traffic, and emergency services. The Contractor, and Subcontractors that may be part of that day's operations, must meet with the Engineer and discuss the proposed operation as it relates to the submitted planing plan and paving plan, approved traffic control plan, and public convenience and safety. Such discussion includes, but is not limited to:

1. General for both the Paving and Planing:

    a. The actual times of starting and ending daily operations.

    b. In intersections, how to break up the intersection, and address traffic control and signalization for that operation, including use of peace officers.

    c. The sequencing and scheduling of paving operations and of planing operations, as applicable, as it relates to traffic control, public convenience and safety, and other Contractors who may operate in the Project limits.

    d. Notifications required of Contractor activities and coordinating with other entities and the public as necessary.

    e. Description of the sequencing of installation and types of temporary pavement markings as it relates to planning and paving.

    f. Description of the sequencing of installation of, and the removal of, temporary pavement patch material around exposed castings and as may be needed.

g. Description of procedures and equipment to identify hidden metal in the pavement, such as survey monumentation, monitoring wells, streetcar rail, and castings, before planing as per Section 5-04.3(14)B2.

h. Description of how flaggers will be coordinated with the planing, paving, and related operations.

i. Description of sequencing of traffic controls for the process of rigid pavement base repairs.

j. Other items the Engineer deems necessary to address.

2. Paving – additional topics:

a. When to start applying tack and coordinating with paving.

b. Types of equipment and numbers of each type of equipment to be used. If more pieces of equipment than personnel are proposed, describe the sequencing of the personnel operating the types of equipment. Discuss the continuance of operator personnel for each type of equipment as it relates to meeting Specification requirements.

c. Number of JMFs to be placed, and if more than one JMF is used, how the Contractor will ensure different JMFs are distinguished, how pavers and how MTVs are distinguished, and how pavers and MTVs are cleaned so that one JMF does not adversely influence the other JMF.

d. Description of contingency plans for that day's operations such as equipment breakdown, rain out, and supplier shutdown of operations.

e. Number of sublots to be placed, sequencing of density testing, and other sampling and testing.

5-04.3(15) Sealing Pavement Surfaces

Apply a fog seal where shown in the plans. Construct the fog seal in accordance with Section 5-02.3. Unless otherwise approved by the Engineer, apply the fog seal prior to opening to traffic.

6-02 Concrete Structures

6-02.3(14) Finishing Concrete Surfaces

Supplement this section with the following:

The completed surface shall be of uniform texture, smooth, uniform as to grade, and free from defects of all kinds. The completed surface shall not vary more than 1/8-inch from the lower edge of a 10-foot straightedge placed on the surface parallel to the centerline.

The finish shall be a light broom finish, or as noted in the City of Union Gap Standard Plans, or as approved by the Public Works Director. A non-uniform finish, an overworked finish, a finish where a cement layer has formed, discolored, is spalling, or a finish

damaged by the weather, will not be accepted, and shall be replaced at the Contractor's expense.

8-04 Curbs, Gutters, and Spillways

8-04.3 Construction Requirements

Supplement this section with the following:

Testing requirements shall be as follows:

Project Quantity	Test Requirement
Less than 5 CY	None
5 CY – 10 CY	1 Slump, 4 Cylinders
10+ CY	2 Slump, 4 Cylinders per 25 CY

For project quantities above five (5) cubic yards, test requirements shall be based on concrete placed during one (1) working day. If the concrete fails any test, the Public Works Director will require additional testing to determine the extent of the failure and more frequent tests may be required on additional concrete being placed. Testing and samples shall be in accordance with Section 1-06.2(1).

Regardless of quantity, a Certification of Compliance shall be provided for all concrete delivered to the site in accordance with Section 6-02.3(5)B.

8-04.3(1) Cement Concrete Curbs, Gutters, and Spillways

Supplement this section with the following:

Cement concrete traffic curb and gutter shall be as shown on the City's Standard Plans. Full Height or "Barrier" cement concrete traffic curb and gutter as shown shall be used on the roadway as shown on the Plans. Depressed or "Driveway" cement concrete traffic curb and gutter as shown shall be used at all driveway entrances and sidewalk ramp locations as shown on the Plans and as directed in the field by the City. Mountable or "Rolled" curb may be used on the Local Access roadway as shown on the Plans. Cement concrete curb and gutter which does not comply with the City's details shall be removed and replaced at the Contractor's expense.

A template shall be required to be placed at the back of curb for construction of driveway transitions from Barrier to Driveway or Rolled curb and gutter. The template shall extend from the bottom of curb to the top of the curb and shall have a minimum length to provide a maximum slope of 8.3%. The transition shall be no less than six (6) feet long. When the transition is on a street with a steep grade making the 8.3% maximum slope unachievable, the transition length shall be 15 feet. The Contractor shall also be required to use a template at the back of Driveway/Depressed curb and gutter to ensure a straight and uniform back of curb in conformance with the Standard Plan.

The new concrete curb and gutter shall be cured in accordance with Section 5-05.3(13)A of the Standard Specifications. Application of the curing compound shall be in accordance with the manufacturer's recommendations.

Cement concrete curb and gutter which does not comply with the section details on the Plans, or in the Engineer's opinion does not demonstrate first-class workmanship and finish, shall be removed and replaced at the Contractor's expense. Should the Contractor's equipment or methods be unable to produce curb and gutter meeting the requirements of the Details and specifications, no further curb and gutter construction will be allowed until corrections have been made to said equipment or methods.

8-06 Cement Concrete Driveway Entrances

8-06.3 Construction Requirements

Supplement this section with the following:

The concrete driveway entrance/sidewalk shall be six (6) inches in thickness. Both the curb and gutter as well as the sidewalk portion must comply the requirement of 8-04.3(1) and 8-14.3(3). Class 4000 air entrained concrete conforming to Section 6-02 shall be required.

8-13 Monument Cases

8-13.1 Description

Replace the first sentence with the following:

This work consists of furnishing and placing monument cases and covers in accordance with the lines and locations as shown on the Plans.

8-13.3(2)B Reinstalling Monument Case and Cover

Delete this section in its entirety and replace with the following:

The adjusted or reinstalled monument case and cover shall be reset to 1/8-inch below the finished pavement and in accordance with the following additional requirements:

1. The asphalt concrete pavement shall be cut and removed to a neat circle, the diameter of which shall be equal to the outside diameter of frame plus two (2) feet, or as shown in the Plan details. The base materials shall be removed and Class 3000 cement concrete shall be placed as shown in the Plans.

2. On the following day, a tack coat of asphalt shall be applied to the concrete, the edges of the asphalt concrete pavement, and the outer edge of the casting. HMA CI. 3/8-Inch asphalt concrete shall then be placed and compacted.

3. The completed patch shall match the existing paved surface for texture, density, and uniformity of grade. The joint between the patch and the existing pavement shall then be crack sealed per Section 5-02.

4. Monument cases outside paved areas shall be adjusted to match the finish grade of the area surrounding the structure and shall include a concrete collar extending one foot in all directions beyond the cover. The utility cover shall be cleaned of all concrete prior to acceptance.

8-14 Cement Concrete Sidewalks

8-14.3 Construction Requirements

Supplement this section with the following:

Testing requirements shall be as follows:

Project Quantity	Test Requirement
Less than 5 CY	None
5 CY – 10 CY	1 Slump, 4 Cylinders
10+ CY	2 Slump, 4 Cylinders per 25 CY

For project quantities above five (5) cubic yards, test requirements shall be based on concrete placed during one (1) working day. If the concrete fails any test, the Public Works Director will require additional testing to determine the extent of the failure and more frequent tests may be required on additional concrete being placed. Testing and samples shall be in accordance with Section 1-06.2(1).

Regardless of quantity, a Certification of Compliance shall be provided for all concrete delivered to the site in accordance with Section 6-02.3(5)B.

8-14.3(3) Placing and Finishing Concrete

Supplement this section with the following:

All sidewalks not located in driveway entrance areas shall be four (4) inches in thickness. All concrete approaches located behind a depressed curb and gutter section including wings, or behind a mountable curb and gutter section, shall be six (6) inches in thickness.

Sidewalks shall be scored across the entire width every five (5) feet and with preformed asphalt impregnated joint fillers 3/8-inch thick every twenty (20) feet. When sidewalk width exceeds six (6) feet, a longitudinal joint shall split the width (eg. 10-foot wide sidewalk shall have a longitudinal joint at five (5) feet). Concrete sidewalk shall be cured in accordance with Section 5-05.3(13)A of the Standard Specifications. Application of the curing compound shall be in accordance with the manufacturer's recommendations. Failure to properly cure or seal the cement concrete sidewalk will require the Contractor to remove and replace the sidewalk section at his expense.

Sidewalk ramps shall be constructed as shown on the Plans in accordance with the Standard Plans or as shown otherwise in the Details.

Cement concrete sidewalk which does not comply with the section details on the Plans, or in the Engineer's opinion does not demonstrate first-class workmanship and finish, shall be removed and replaced at the Contractor's expense. Should the Contractor’s equipment or methods be unable to produce sidewalk meeting the requirements of the Plans and Specifications, no further sidewalk construction will be allowed until corrections have been made to said equipment or methods.

The finish shall be a light broom finish, or as noted in the City of Union Gap Standard Plans, or as approved by the Public Works Director. A non-uniform finish, an overworked finish, a finish where a cement layer has formed, discolored, is spalling, or a finish damaged by the weather, will not be accepted, and shall be replaced at the Contractor's expense.

8-20 Illumination, Traffic Signal Systems, Intelligent Transportation Systems, and Electrical

8-20.1 Description

Supplement this section with the following:

The work under this item includes furnishing and installation of underground PVC conduits with pull tape, pull boxes, conductors, street lights, cement concrete anchor bases, anchor bolts, and electrical service for a complete installation ready for service.

8-20.2 Materials

Supplement this section with the following:

The provisions of Section 9-29 shall apply, except for the following modifications or additions:

Conduit: Below grade conduit shall be Schedule 40 PVC, conforming to NEMA TC 2. When the conductors are pulled, pull tape shall also be pulled with the conductor and left for future use. Pull tape shall be installed in all conduits, in-use and spares alike.

Light Standards: Poles and arms shall be hot-dipped galvanized over their entire surface per ASTM A-123. Anchor bolts, nuts, and washers shall be hot-dipped galvanized over their entire length per ASTM A-153. All poles, arms and accessories shall be furnished by the same manufacturer.

Arms shall be Valmont DS-210, Union Metal 71049-B48, or Ameron Series N. The pole base shall be of the "fixed" type. Handholes shall be 4 inches by 6-1/2 inches, located 18 inches above the base, turned toward the street. A 1/2-inch NC ground stud shall be located inside the handhole.

Accessories shall include anchor bolts (each with heavy hex nuts and washers) as sized by the manufacturer, bolt templates, full base covers, and removable pole end caps.

Luminaires: LED luminaires shall be standard 4000k, minimum 100W, 120-277V, without individual photoelectric controls. Luminaires shall be Autobahn ATB2 Series, or approved equal.

Service Cabinets: A 200 AMP pad-mounted service cabinet type EUSERC 308 with photocell in window, as approved by Pacific Power. All coordination and expenses with PPL for the new service will be the Developer's responsibility. Once the new service is installed and accepted by the City, the meter shall be transferred to the City of Union Gap.

The Developer may submit alternative decorative illumination materials for consideration by the City of Union Gap. Specifications shall be provided to the Public Works Director and City Engineer for review and approval consideration.

8-20.3 Construction Requirements

8-20.3(1) General

Supplement this section with the following:

Prior to installation, the Contractor shall inform the City when the luminaire equipment has arrived on-site. The City will compare the supplied luminaire equipment to these Design and Construction Standards prior to installation and must be present during installation to check for socket settings and luminaire head orientation.

The Contractor is responsible for coordinating with the Department of Labor and Industries, the Engineer, and Pacific Power for all required inspections and service.

8-20.3(2) Excavating and Backfilling

Delete the first paragraph and replace it with the following:

The excavation required for the installation of conduit, cement concrete anchor bases, and pullboxes shall be performed in such a manner as to cause the least possible injury to streets, sidewalks, and other improvements. The trenches shall not be excavated wider than necessary for the proper installation of the conduit and pullboxes. Anchor base excavation shall be augered or dug by hand with proper care to avoid damage to other utilities. Excavation shall not be performed until immediately prior to installation of conduit and/or structures. The material from the excavation shall be placed so as to cause the least interference to vehicular and pedestrian traffic and to surface drainage. All surplus excavated material shall be removed and disposed of by the Contractor. Backfilling shall be as shown on the Plans and shall conform to the provisions specified herein. Compaction of conduit trenches and structure backfill shall be accomplished by a method which will result in backfill compacted to at least 95% of maximum density.

8-20.3(4) Foundations

Supplement this section with the following:

The top six inches (anchor base) of the concrete foundation shall be formed and finished 24-inches square with 3/4-Inch chamfer edges, and the top shall be at finish sidewalk grade. The anchor base shall be separated from adjacent concrete surfaces by means of expansion joints. Forms for the anchor bases shall be true to line and grade and the conduit ends and anchor bolts shall be held in proper position and height by means of a temporary template. After standards are plumbed, the Contractor shall grout between the base plate and anchor base as shown on the Plans.

Precast bases meeting contract requirements are acceptable for use. If the Contractor elects to use precast bases, the Contractor shall furnish, install, and compact six (6) inches of crushed surfacing top course below the base, and backfill/compact around the sides with clean native material or crushed surfacing as directed. The precast base top

shall be set six inches below finish sidewalk grade and a six-inch depth concrete pad with 3/4-inch chamfer edges shall be formed and finished at the ground surface. The concrete pad shall be separated from adjacent concrete surfaces by means of expansion joints. All requirements pertaining to use of precast bases shall be considered as incidental work to the various bid items and no separate payment will be made.

8-20.3(5) Conduit

Supplement this section with the following:

The ends of conduits for future connection shall be marked with an 8’ treated 2x4 inside of an 8’ steel stud, painted red, extending 24”-36” above finished ground surface.

Conduit installed within existing public streets shall be installed using trenchless methods where feasible. Open-cut trenching shall only be allowed when approved by the City.

8-20.3(6) Junction Boxes, Cable Vaults, and Pull oxes

Replace the first paragraph with the following:

The terms "pullbox" and "junction box" are considered interchangeable.

Pullboxes shall be constructed as shown on the Plans and in accordance with Standard Plan J-40.10 Type 1. The pullboxes shall be installed true to line and grade. The pullboxes shall be placed where shown on Plans and shall be separated from other concrete surfaces by an expansion joint.

8-20.3(10) Service, Transformer and ITS Cabinets

Supplement this section with the following:

A 120/240 V single phase electrical service shall be provided as determined by the City. The Contractor shall coordinate the final location of the service with the local electrical utility company and City. A State electrical permit will be required for the service. All wiring and equipment shall be in conformance with the appropriate electrical codes.

All of the work shall meet the requirements of Pacific Power and the National Electric Code. The Contractor shall provide conduits to the proposed service locations shown on the Plans and shall coordinate the location of the service(s) with Pacific Power.

8-20.3(13)A Light Standards

Supplement this section with the following:

Light standards shall have base flanges requiring four (4) anchor bolts for connection to foundation. Anchor bolt covers shall be provided on all light standards.

8-21 Permanent Signing

8-21.2 Materials

Supplement this section with the following:

Sign posts for permanent traffic control signing shall be 2"x2" 12-gauge perforated steel tubing. Socket sleeves for the sign post shall be 2-1/4"x 2-1/4"x30" 12-gauge perforated steel tubing.

8-21.3 Construction Requirements

Supplement this section with the following:

Socket sleeves for sign posts shall be set in 12" diameter x 12" deep base of class 3000 cement concrete at finish grade so that erected signs will be plumb with roadway/sidewalk. The Contractor shall correct any misaligned socket sleeves at his own expense.

8-22 Pavement Marking

8-22.1 Description

Supplement this section with the following:

This work includes temporary pavement markings, which shall be installed per the material and construction requirements of Section 8-22.

8-22.2 Materials

Supplement this section with the following:

All arrows, letters, symbols, stop lines, and crosswalks shall be Plastic Type B, 125 mil. thickness. Longitudinal and parking markings shall be painted, two (2) coats.

8-22.3(3)E Installation

Supplement this section with the following:

All pavement lines over 50 feet long shall be applied using a truck mounted striping machine.

Contractor shall wait a minimum of one (1) week after paving to apply pavement markings, unless otherwise approved by Engineer.

8-27 Controlled Density Fill (New Section)

The following new section shall be added to the Standard Specifications:

8-27.1 Description

Controlled Density Fill (CDF) may be required for street crossings by the Public Works Director. It shall be a mixture of Portland Cement, fly ash, aggregate, water, and admixtures proportioned

to provide a non-segregating, self-consolidating, free-flowing material which will result in a hardened, dense, non-settling fill.

8-27.2 Materials

Materials shall meet the requirements of the following Sections of the Standard Specifications:

Portland Cement	9-01 Type II
Fly Ash	Class F or C
Aggregates	9-03.1
Water	9-25
Admixtures	9-23.6

8-27.3 Construction Requirements

8-27.3(1) Construction Materials

The CDF shall be a mixture of Portland Cement, fly ash, aggregate, water, and admixtures which has been batched and mixed in accordance with Section 6-02.3 of the Standard Specifications.

The following mix provides a guideline for proportioning the Controlled Density Fill for this project. The final mix provided by the Contractor shall result in a material which is excavatable by machine with a maximum unconfined compressive strength of 300 psi.

Water	50 gals per cubic yard
Cement	50 lbs per cubic yard
Fly Ash	250 lbs per cubic yard
Aggregate	3,200 lbs per cubic yard

The above table provides a guideline for the CDF mixture. The weights shown are only an estimate of the amount to be used per cubic yard of CDF. Actual amounts may vary from those shown as approved by the City or approved mix data from similar projects which provided proper strength, workability, consistency, and density.

8-27.3(7) Placing Controlled Density Fill

The floatable CDF shall be placed in the trench area where directed by the City and brought up uniformly to the top of the pipe zone backfill as shown on the Plans. In the cases where existing concrete slabs have been undermined by excavation, the Contractor shall ensure that the CDF is flowed completely under the slab.

Mixing and placing may be started if weather conditions are favorable, when the temperature is at least 34°F and rising. At the time of placement, CDF must have a temperature of at least 40°F.
Mixing and placing shall stop when the temperature is 38°F and falling. Each filling stage shall be as continuous an operation as practicable. CDF shall not be placed on frozen ground.

The trench section to be filled with CDF shall be contained at either end of trench section by bulkhead or earth fill.

Appendix A

Transfer of Ownership Forms

TRANSFER OF OWNERSHIP OF PUBLIC INFRASTRUCTURE
(Individual)

_____, owner(s), do(es) hereby transfer(s), deliver(s) and relinquish(es) to the City of Union Gap, Washington, all right, title and interest in, and ownership of, the following described utility system:

- ☐ Water: _____
- ☐ Sewer: _____
- ☐ Storm: _____
- ☐ Road: _____
- ☐ Other: _____

The undersigned owner(s) agree(s) and understand(s) that this transfer of ownership of the above described Public Infrastructure to the City of Union Gap is subject to the conditions of the 3rd paragraph of Section 1-05.12 Final Acceptance, of the latest edition of the Standard Specifications for Road, Bridge, and Municipal Construction, Washington State Department of Transportation.

This Transfer of Ownership of Public Infrastructure shall be effective only upon the City Council's final approval and acceptance of the public infrastructure.

_____
Signature

_____
Written Name and Date

STATE OF WASHINGTON
Yakima County

I certify that I know or have satisfactory evidence that _____ and _____ (is/are) the person(s) who personally appeared before me and that said person(s) acknowledged that (he/she/they) signed this instrument, and acknowledged it to be (his/her/their) free and voluntary act and for the uses and purposes mentioned in the instrument.

Dated: _____

Given under my hand and official seal the day and year last written.

_____
Notary Public in and for the State of Washington

Residing at _____

My Commission expires _____

TRANSFER OF OWNERSHIP OF PUBLIC INFRASTRUCTURE
(Corporate)

_____, owner(s), do(es) hereby transfer(s), deliver(s) and relinquish(es) to the City of Union Gap, Washington, all right, title and interest in, and ownership of, the following described public infrastructure:

- ☐ Water: _____
- ☐ Sewer: _____
- ☐ Storm: _____
- ☐ Road: _____
- ☐ Other: _____

The undersigned owner(s) agree(s) and understand(s) that this transfer of ownership of the above described Public Infrastructure to the City of Union Gap is subject to the conditions of the 3rd paragraph of Section 1-05.12 Final Acceptance, of the latest edition of the Standard Specifications for Road, Bridge, and Municipal Construction, Washington State Department of Transportation.

This Transfer of Ownership of Public Infrastructure shall be effective only upon the City Council's final approval and acceptance of the above described Public Infrastructure.

_____
Signature

_____
Written Name and Date

STATE OF WASHINGTON
Yakima County

I certify that I know or have satisfactory evidence that _____ is the person who appeared before me, and said person acknowledged that he signed this instrument, on oath stated that he was authorized to execute the instrument, and acknowledged it as the _____ of _____ to be the free voluntary act of such party for the uses and purposes mentioned in the instrument.

Dated: _____

Given under my hand and official seal the day and year last written.

_____
Notary Public in and for the State of Washington

Residing at _____

My Commission Expires _____

Appendix B

Standard Details

UNION GAP STANDARD DETAILS INDEX

Water Details

W-1 Water Main Trench Section
W-2 Fire Hydrant Assembly
W-3 Water Valve Box
W-4 Air Release / Vacuum Valve Assembly
W-5A Blow-Off Assembly - Above Ground
W-5B Blow-Off Assembly - Below Ground
W-6 Concrete Thrust Blocking
W-7 New Water Service (1” or Smaller)
W-8 New Water Service (1 1/2” - 2”)
W-9 New Water Service (3” - 8”)
W-10 Irrigation Backflow Preventer
W-11 Hydrant Guard Posts and Concrete Pad
W-12 Double Detector Check Valve Assembly
W-13 Slope Protection
W-14 Valve Stem Extension
W-15 Sampling Station
W-16 Gate Post Position Indicator
W-17 Fire Suppression System
W-18 Tapping Sleeves and Tapping Valves
W-19 Standard Waterline Cut In

Sewer Details

SS-1 Storm/Sewer Pipe Trench Section
SS-2 Manhole Type 1
SS-3 Manhole Safety Step
SS-4 Drop Connection
SS-5 Manhole Adjustment
SS-6 Sanitary Sewer Cleanout
SS-7 Side Sewer Connection
SS-8 Shallow Manhole Type 3
SS-9 Doghouse Manhole
SS-10 Force Main Junction Manhole
SS-11 Force Main Cleanout Manhole
SS-12 Side Sewer / Water Line Crossing
SS-13 Manhole Ring and Cover
SS-14 Locking Cleanout Ring and Cover

Stormwater Details

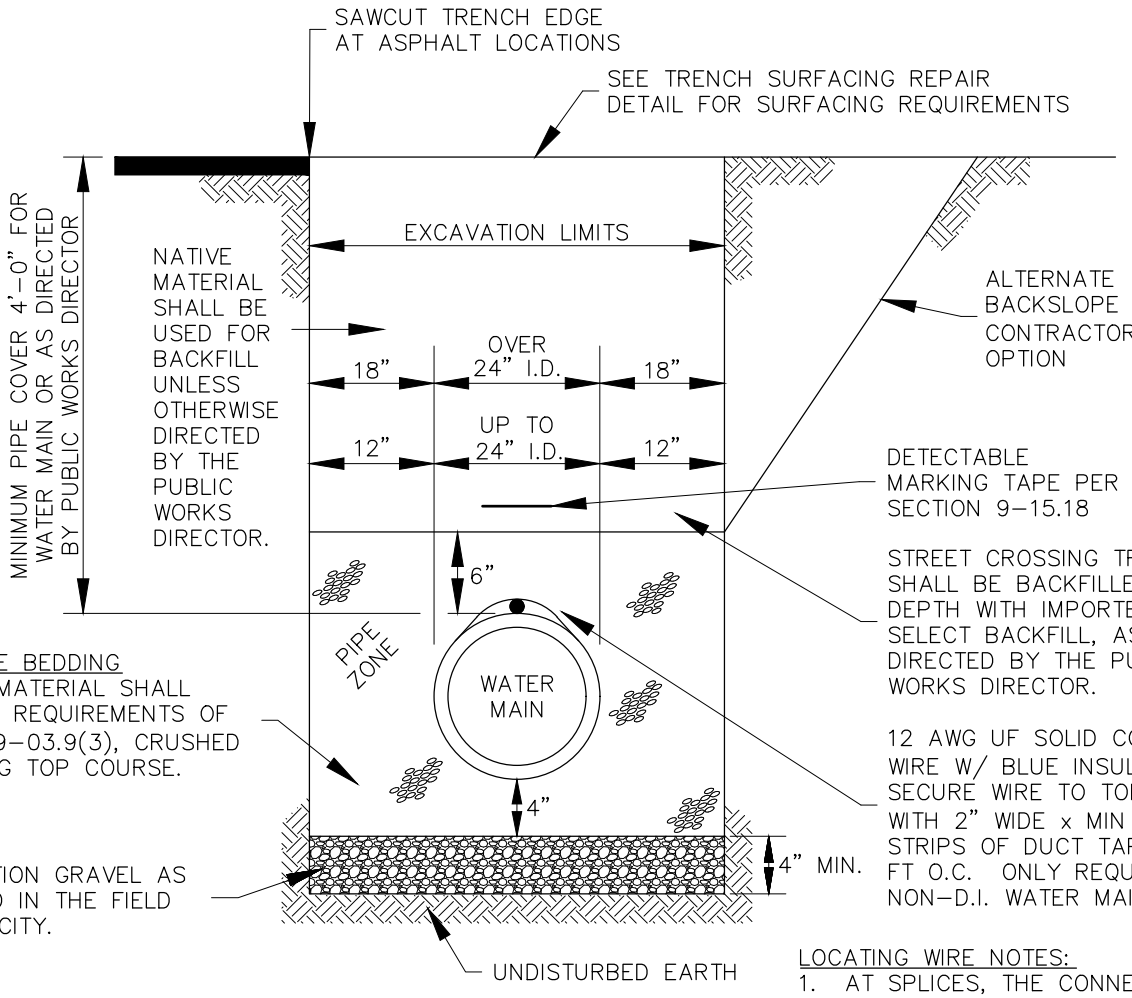
D-1 Catch Basin Type 1/1L
D-2 Infiltration System
D-3 Oil/Water Separator

Electrical Details

E-1 Conduit Trench Section
E-2 Conduit Entrance at Junction Box
E-3 Street Light

Street Details

ST-1	Typical Arterial Roadway Section
ST-2	Typical Collector Roadway Section
ST-3	Typical Local Access Roadway Section
ST-4	Typical Alley Roadway Section
ST-5	Concrete Curb and Gutter
ST-6	Concrete Sidewalk Sections
ST-7	Sidewalk Jointing
ST-8	Asphalt Sidewalk Ramp
ST-9	Residential Driveway Approach
ST-10	Commercial Driveway Approach
ST-10A	Commercial Driveway Approach Alternate
ST-11	Trench Surfacing Repair
ST-12	Monument Detail
ST-13	Cul-de-Sac Layout
ST-14	Permanent Bollard
ST-15	Corner Lot Vision Clearance



LOCATING WIRE NOTES:

1. AT SPLICES, THE CONNECTING ENDS OF THE WIRES SHALL BE OVERLAPPED AND TIED. THE ENDS SHALL BE STRIPPED AND CONNECTED WITH A WIRE NUT. WATERPROOF CONNECTION WITH SILICONE SPLICE KIT.
2. ACCESS TO LOCATING WIRE TERMINAL ENDS SHALL BE MADE AT ALL VALVE BOXES AND FIRE HYDRANTS, SECURE TO EXTERIOR OF VALVE BOXES AND HYDRANTS WITH STAINLESS STEEL PIPE STRAPS.

COMPACTION

ALL TRENCH BACKFILL INCLUDING BEDDING MATERIAL SHALL BE COMPACTED IN ACCORDANCE WITH THE SPECIFICATIONS EXCEPT HAND TAMP ONLY DIRECTLY OVER PIPE FOR 6 INCHES. MECHANICAL COMPACTION IS REQUIRED UNLESS WATER SETTLING IS ALLOWED BY THE SPECIFICATIONS.

NOTE:

CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE O.S.H.A. AND W.I.S.H.A. SAFETY AND HEALTH REGULATIONS.

WATER MAIN TRENCH SECTION

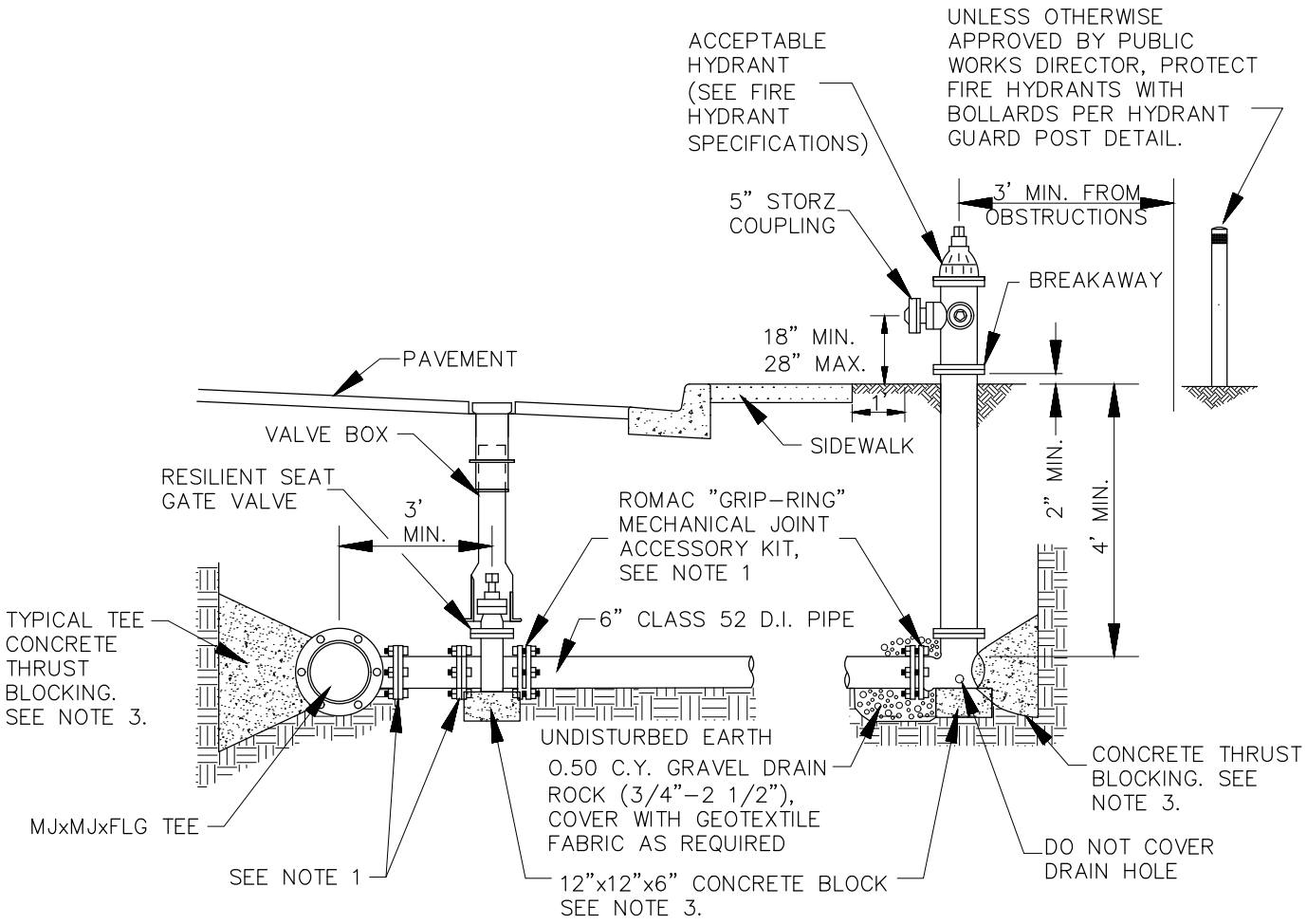
NOT TO SCALE

NOTE:

ONLY THE LATEST DETAIL, AS APPROVED BY THE DIRECTOR OF PUBLIC WORKS, SHALL BE USED.

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NOTES:

1. ROMAC "GRIP RING" MECHANICAL JOINT ACCESSORY KITS SHALL BE USED ON ALL MECHANICAL JOINT CONNECTIONS FROM VALVE TO HYDRANT.

2. HYDRANTS SHALL BE HOODED UNTIL OPERATIONAL.

3. THRUST RESTRAINT FOR HYDRANT ASSEMBLIES SHALL BE IN ACCORDANCE WITH DWG NO. W-6. RESTRAINED JOINT DEVICES ARE THE PREFERRED METHOD OF THRUST RESTRAINT. CONCRETE THRUST BLOCKING MAY BE USED AS SHOWN ON THIS DETAIL WHEN APPROVED BY THE CITY.

4. BACKFILL AND COMPACTION SHALL CONFORM TO SECTIONS 7-08 AND 7-09 OF THESE DEVELOPMENT DESIGN AND CONSTRUCTION STANDARDS.

FIRE HYDRANT ASSEMBLY

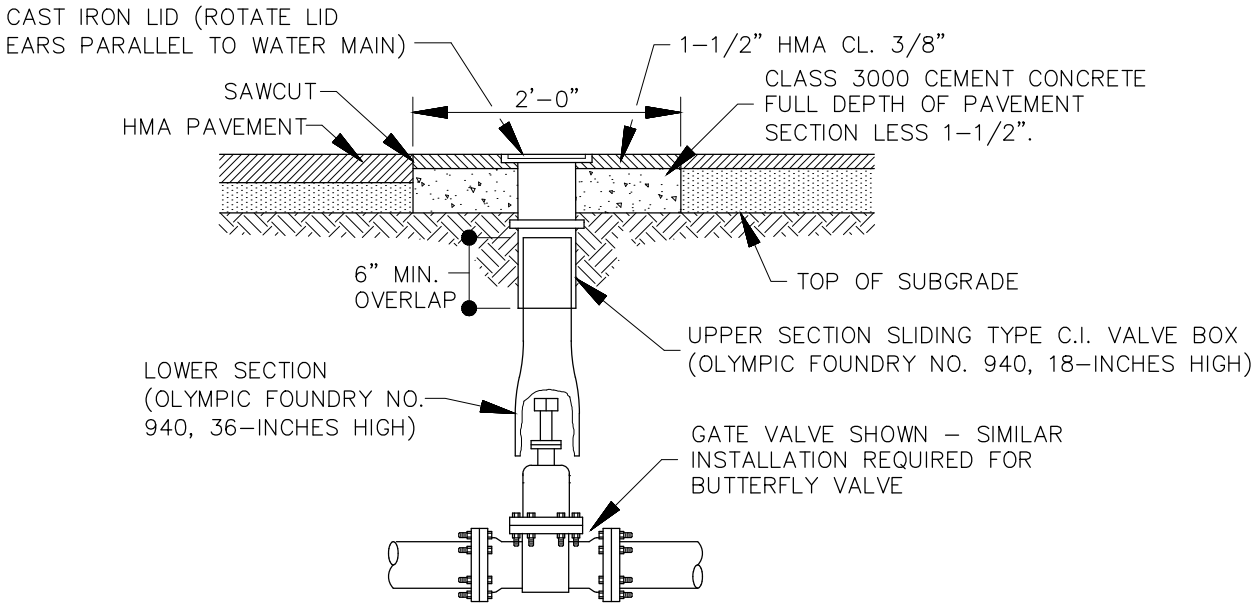
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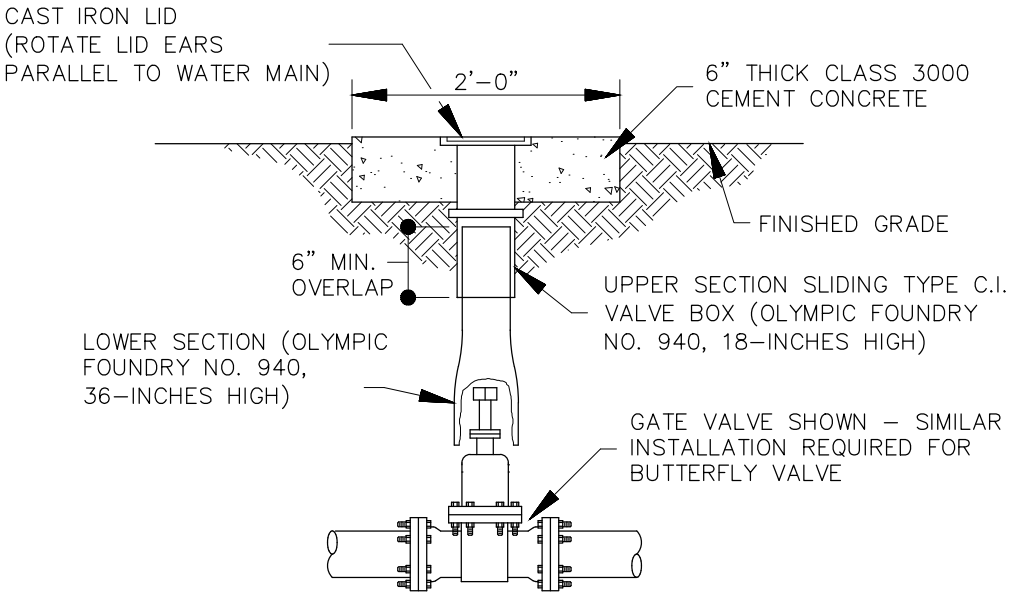
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CITY OF UNION GAP-STANDARD DETAIL	FIRE HYDRANT ASSEMBLY	W-2



WATER VALVE BOX - IN PAVEMENT

NOT TO SCALE



WATER VALVE BOX - NOT IN PAVEMENT

NOT TO SCALE

NOTES:

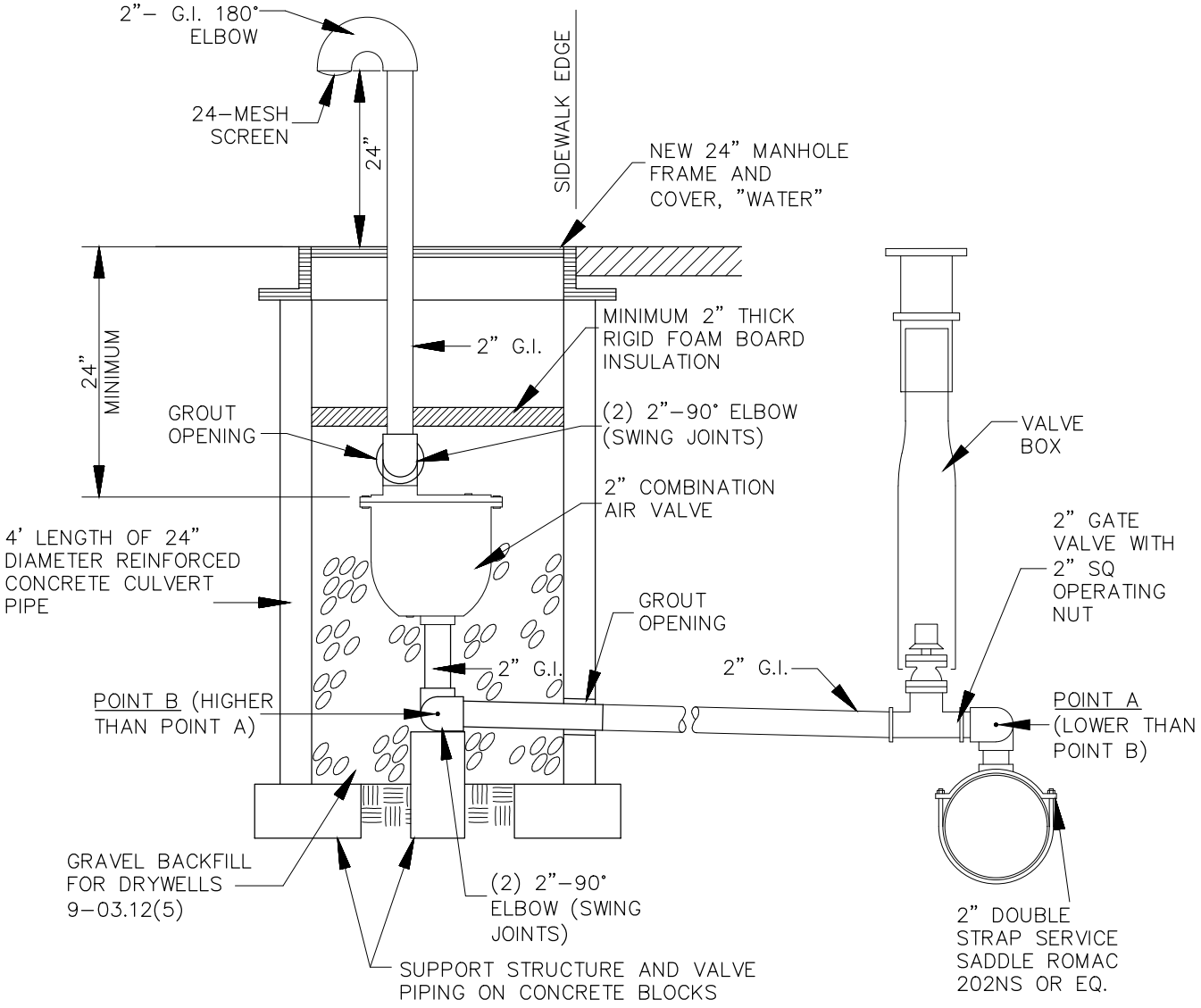
1. VALVE BOX SHALL BE ADJUSTED NO MORE THAN 1/4" BELOW FINISH GRADE.
2. PROVIDE EXTENSION PIECE WHERE REQUIRED FOR VALVE BOX (OLYMPIC FOUNDRY NO. 940R 12, 12–INCHES HIGH).
3. BACKFILL AND COMPACTION SHALL CONFORM TO SECTIONS 7–08 AND 7–09 OF THESE DEVELOPMENT DESIGN AND CONSTRUCTION STANDARDS.

NOTE:
ONLY THE LATEST DETAIL, AS APPROVED BY THE DIRECTOR OF PUBLIC WORKS, SHALL BE USED.

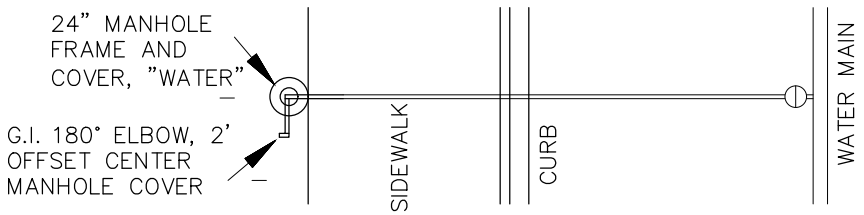
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CITY OF UNION GAP-STANDARD DETAIL	WATER VALVE BOX	W-3



SECTION VIEW



PLAN VIEW SCHEMATIC

AIR RELEASE / VACUUM VALVE ASSEMBLY

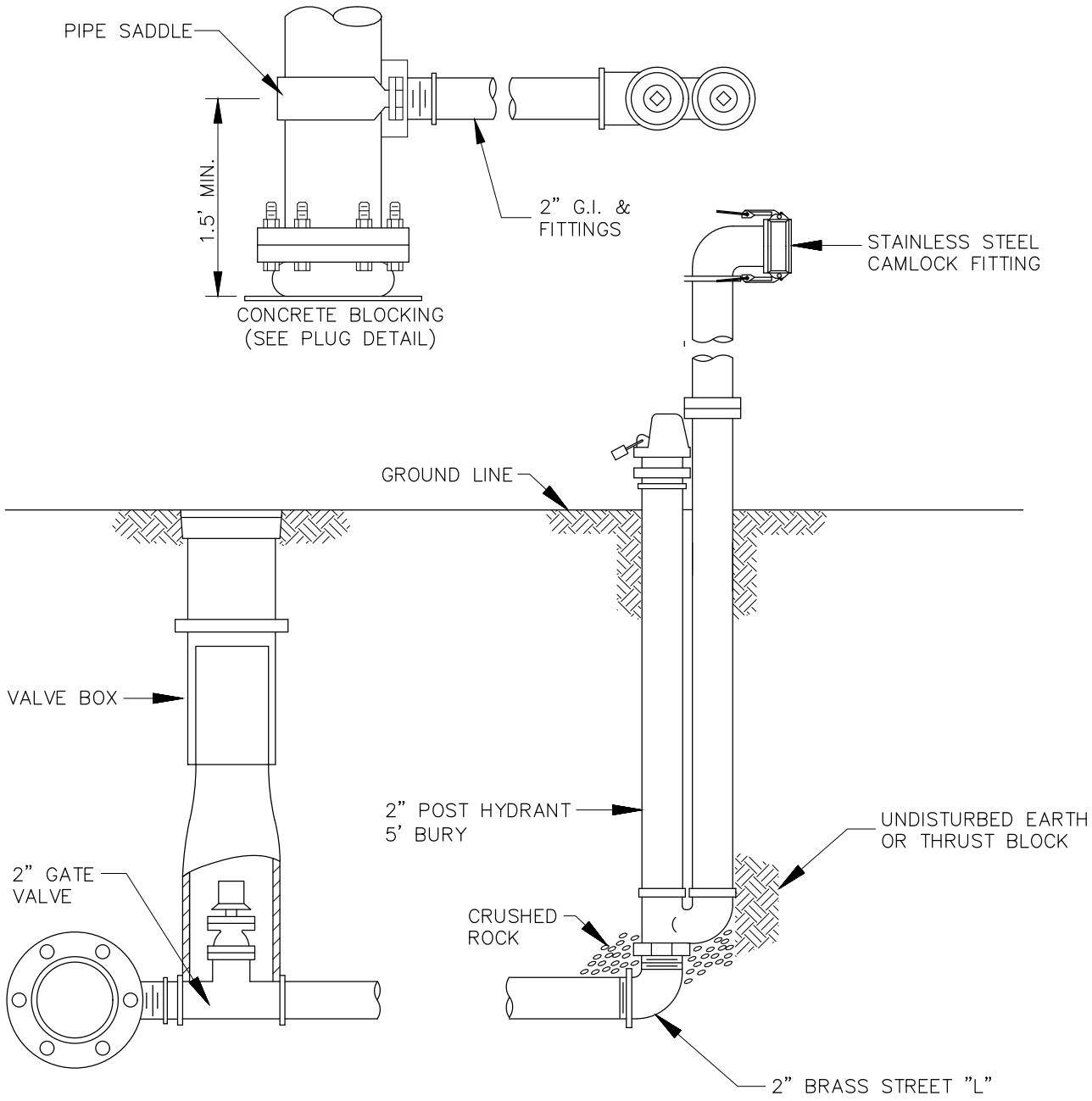
NOT TO SCALE

NOTE:
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CITY OF UNION GAP 1883

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ORIG.	5/26		

CITY OF UNION GAP-STANDARD DETAIL	AIR RELEASE / VACUUM VALVE ASSEMBLY	W-4



NOTE:
1. BACKFILL AND COMPACTION SHALL CONFORM TO SECTIONS 7-08 AND 7-09 OF THESE DEVELOPMENT DESIGN AND CONSTRUCTION STANDARDS.

BLOW-OFF ASSEMBLY - ABOVE GROUND

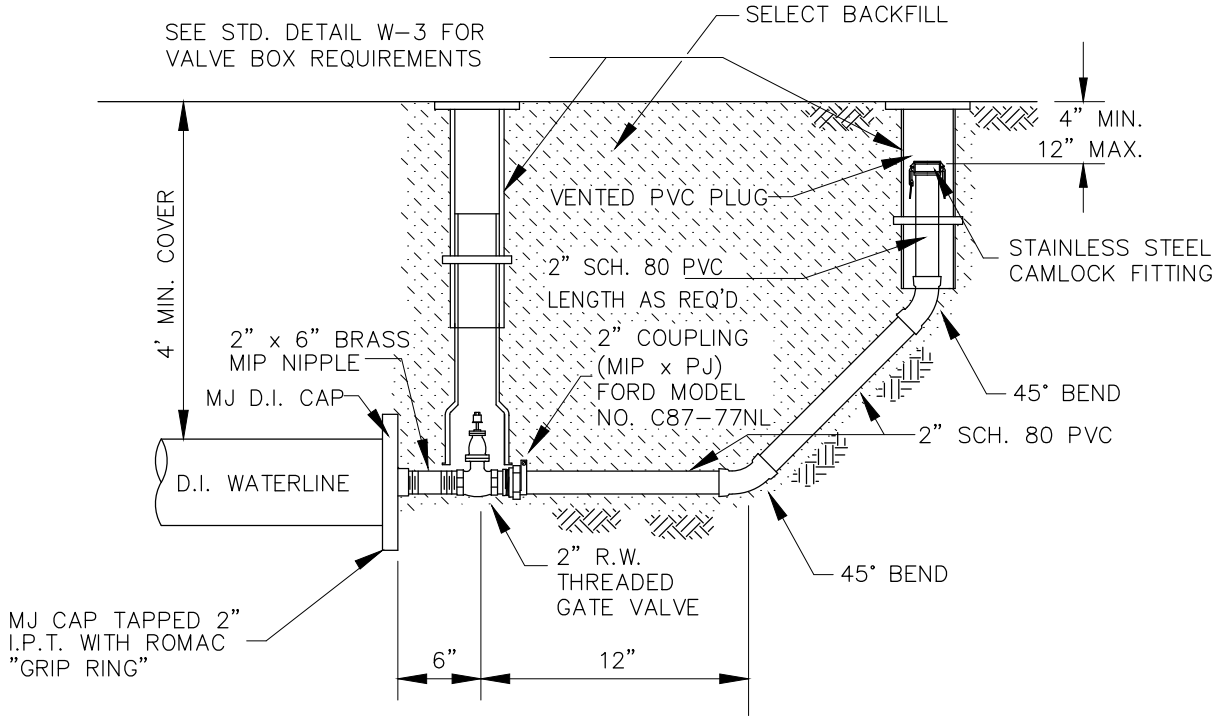
NOT TO SCALE

NOTE:
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CITY OF UNION GAP-STANDARD DETAIL	BLOW-OFF ASSEMBLY - ABOVE GROUND	W-5A



NOTES:

1. RESTRAIN MINIMUM OF 70 LF OF PIPE WITH FIELD-LOK GASKETS PRIOR TO BLOW OFF ASSEMBLY.
2. ALL BRASS TO BE NON-LEAD.
3. BACKFILL AND COMPACTION SHALL CONFORM TO SECTIONS 7-08 AND 7-09 OF THESE DEVELOPMENT DESIGN AND CONSTRUCTION STANDARDS.

BLOW-OFF ASSEMBLY - BELOW GROUND

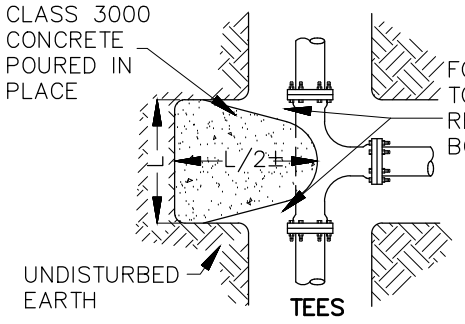
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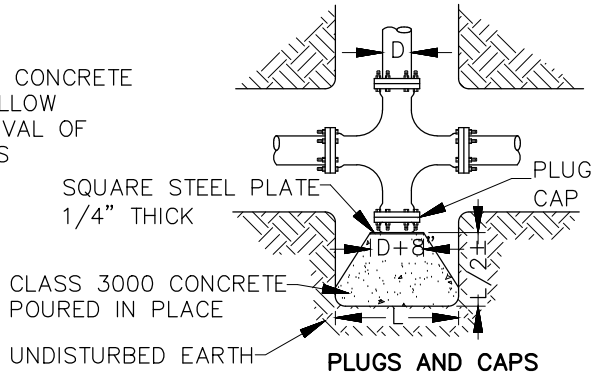
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Revision	Date	Description	Appr
ORIG.	5/26		

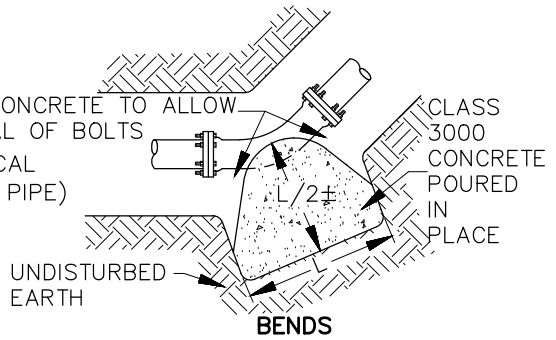
CITY OF UNION GAP-STANDARD DETAIL	BLOW-OFF ASSEMBLY - BELOW GROUND	W-5B



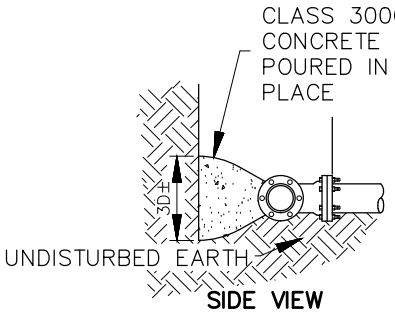
TEES



PLUGS AND CAPS

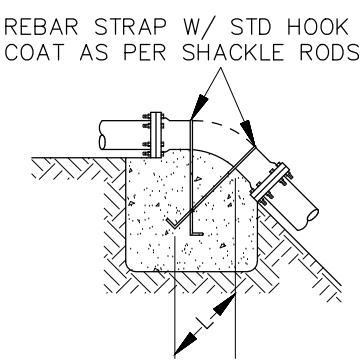


BENDS



SIDE VIEW

THIS VIEW TYPICAL OF ALL BLOCKING



VERTICAL OVERBEND

VERTICAL OVERBEND				
PIPE SIZE (D)	22½° BEND	45° BEND	REBAR SIZE	L
6"	20 CU FT	39 CU FT	#5	2.0 FT
8"	34 CU FT	67 CU FT	#5	2.0 FT
10"	56 CU FT	110 CU FT	#5	2.0 FT
12"	79 CU FT	157 CU FT	#6	2.5 FT
14"	107 CU FT	212 CU FT	#7	3.0 FT
16"	139 CU FT	275 CU FT	#9	4.0 FT

MINIMUM END AREAS				
PIPE SIZE (D)	TEES & PLUGS	90° BENDS	45° BENDS	11¼° AND 22½° BENDS
6"	5.1 SQ FT	7.2 SQ FT	3.9 SQ FT	2.0 SQ FT
8"	8.8 SQ FT	12.4 SQ FT	6.7 SQ FT	3.4 SQ FT
10"	14.3 SQ FT	20.2 SQ FT	11.0 SQ FT	5.6 SQ FT
12"	20.4 SQ FT	28.9 SQ FT	15.7 SQ FT	7.9 SQ FT
14"	27.7 SQ FT	39.2 SQ FT	21.2 SQ FT	10.7 SQ FT
16"	35.8 SQ FT	51.2 SQ FT	27.5 SQ FT	13.9 SQ FT

NOTES:

1. D IS APPROXIMATE PIPE DIAMETER. THE ABOVE END AREAS ARE BASED ON AN ALLOWABLE SOIL BEARING PRESSURE OF 1500 PSF AND 250 PSI TEST PRESSURE.

2. DIMENSIONS LISTED DENOTE MINIMUM STANDARDS FOR SOIL AND TEST PRESSURES SHOWN. SHOULD TEST PRESSURE AND/OR SOIL CONDITIONS VARY. THE CONTRACTOR SHALL CONTACT THE ENGINEER FOR SPECIAL THRUST BLOCK DESIGN.

3. ALL FITTINGS AND/OR PIPE MAKING DIRECT CONTACT WITH CONCRETE SHALL BE WRAPPED WITH 4 MIL POLYETHYLENE SHEETING PRIOR TO PLACEMENT OF CONCRETE.

4. THE PREFERRED METHOD OF THRUST RESTRAINT SHALL BE RESTRAINED JOINT DEVICES (E.G., MEGA–LUG OR EQUAL) IN LIEU OF CONCRETE THRUST BLOCKING MAY ONLY BE USED IN COMBINATION WITH JOINT RESTRAINT DEVICES. RESTRAINED LENGTHS SHALL BE CALCULATED IN ACCORDANCE WITH AWWA AND MANUFACTURER'S RECOMMENDATIONS, BASED ON DESIGN/TEST PRESSURE AND SOIL CONDITIONS.

CONCRETE THRUST BLOCKING

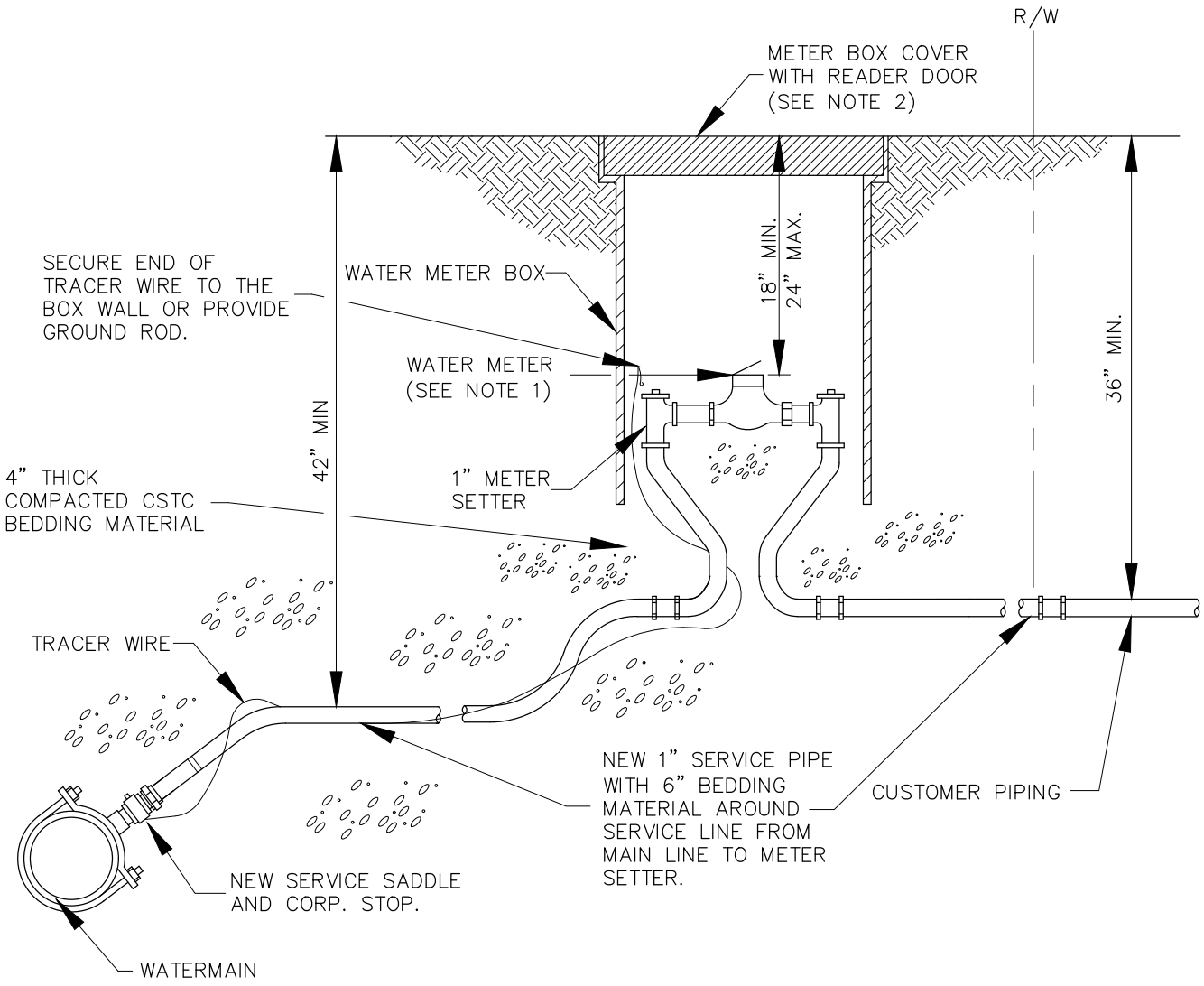
NOT TO SCALE

NOTE:
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CITY OF UNION GAP 1883

Revision	Date	Description	Appr
ORIG.	5/26		

CITY OF UNION GAP-STANDARD DETAIL	CONCRETE THRUST BLOCKING	W-6



NOTES:

1. ALL NEW METERS WILL BE FURNISHED AND INSTALLED BY THE CITY, AT THE DEVELOPER'S EXPENSE.
2. METER BOX COVERS SHALL BE DUCTILE IRON FOR VEHICULAR TRAVEL AREAS AND SIDEWALKS AND HEAVY DUTY PLASTIC FOR NON-VEHICULAR AREAS.
3. FUTURE WATER SERVICES (STUBS) SHALL BE MARKED AT THE PROPERTY LINE PER THE SPECIFICATIONS AND EXTEND 5' – 10' BEYOND PROPERTY LINE AND CAPPED.
4. SEE SPECIFICATIONS FOR ALL MATERIAL TYPES AND MODELS.
5. BACKFILL AND COMPACTION SHALL CONFORM TO SECTIONS 7-08 AND 7-09 OF THESE DEVELOPMENT DESIGN AND CONSTRUCTION STANDARDS.

NEW WATER SERVICE (1" OR SMALLER)

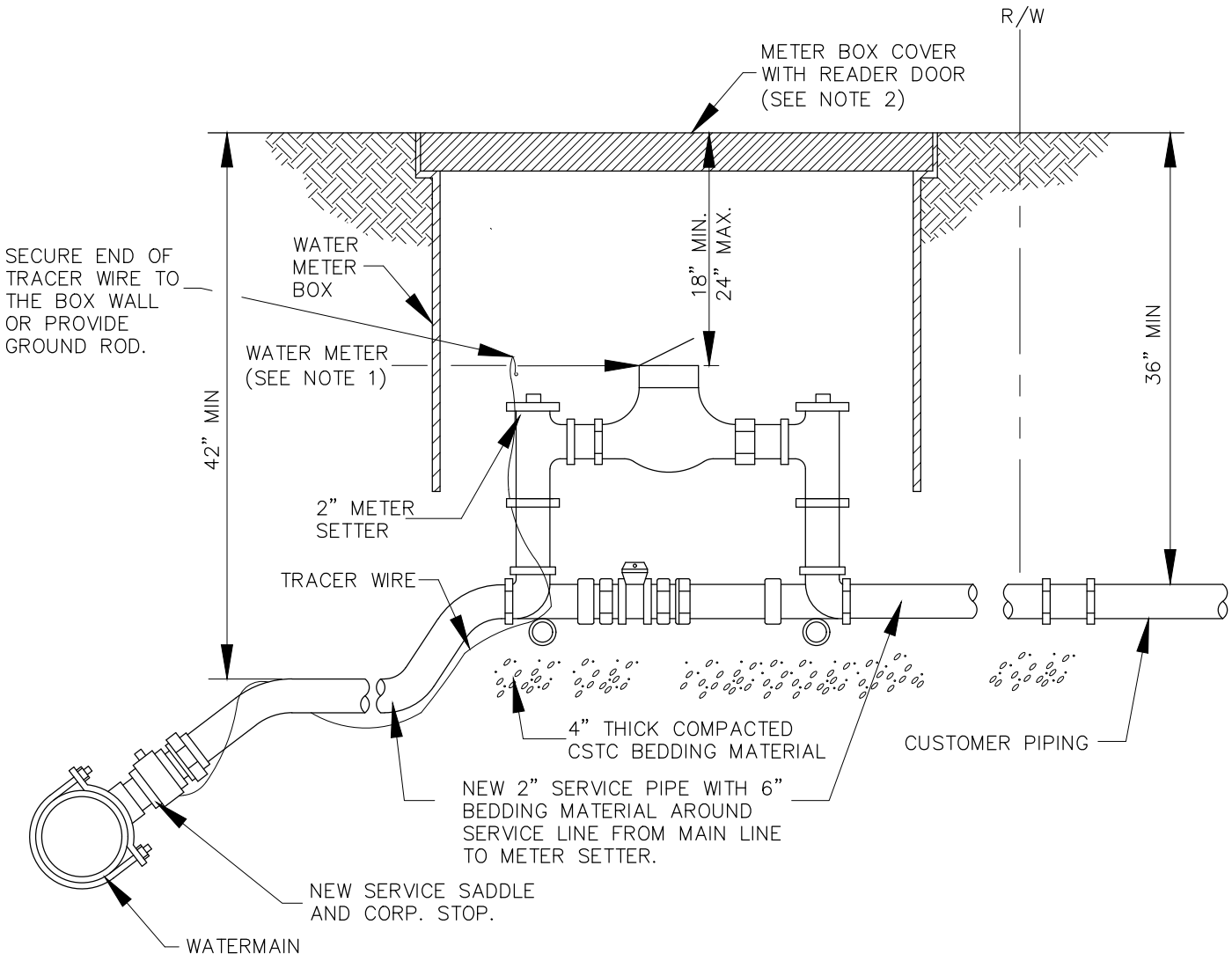
NOT TO SCALE

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CITY OF
UNION GAP
1883

Revision	Date	Description	Appr
ORIG.	5/26		

CITY OF UNION GAP-STANDARD DETAIL	NEW WATER SERVICE (1" OR SMALLER)	W-7



NOTES:

1. ALL NEW METERS WILL BE FURNISHED AND INSTALLED BY THE CITY, AT THE DEVELOPER'S EXPENSE.
2. METER BOX COVERS SHALL BE DUCTILE IRON FOR VEHICULAR TRAVEL AREAS AND SIDEWALKS AND HEAVY DUTY PLASTIC FOR NON-VEHICULAR AREAS.
3. FUTURE WATER SERVICES (STUBS) SHALL BE MARKED AT THE PROPERTY LINE PER THE SPECIFICATIONS AND EXTEND 5'-10' BEYOND PROPERTY LINE AND CAPPED.
4. SEE SPECIFICATIONS FOR ALL MATERIAL TYPES AND MODELS.
5. BACKFILL AND COMPACTION SHALL CONFORM TO SECTIONS 7-08 AND 7-09 OF THESE DEVELOPMENT DESIGN AND CONSTRUCTION STANDARDS.

NEW WATER SERVICE (1 1/2" - 2")

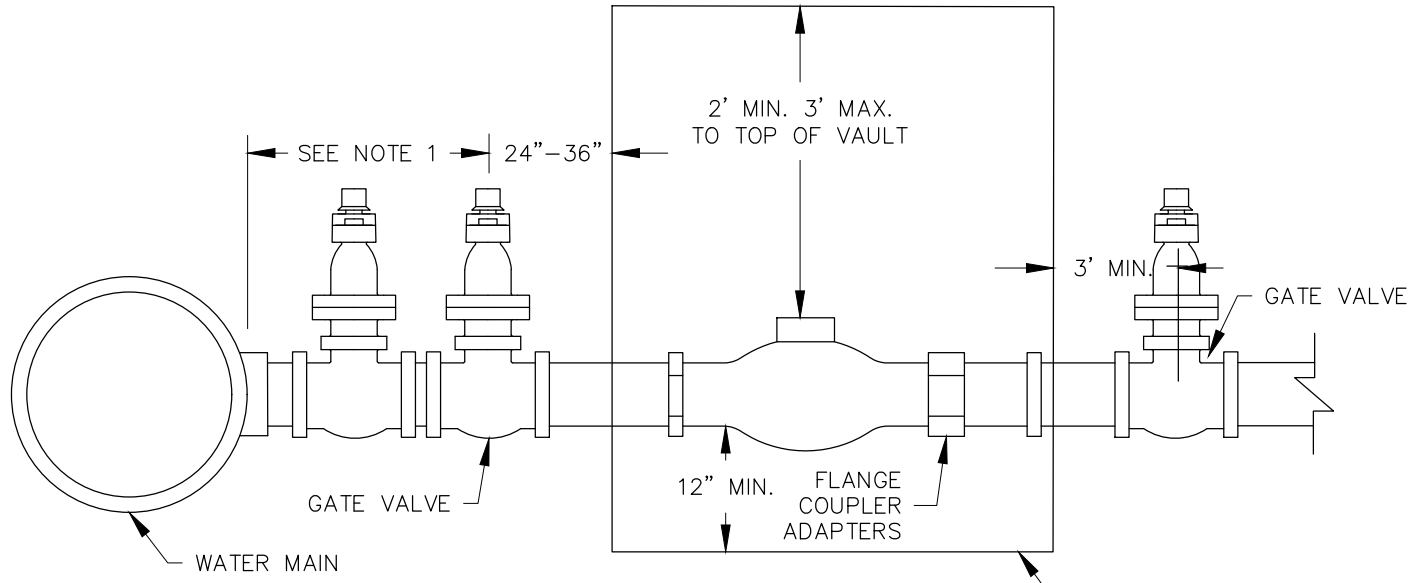
NOT TO SCALE

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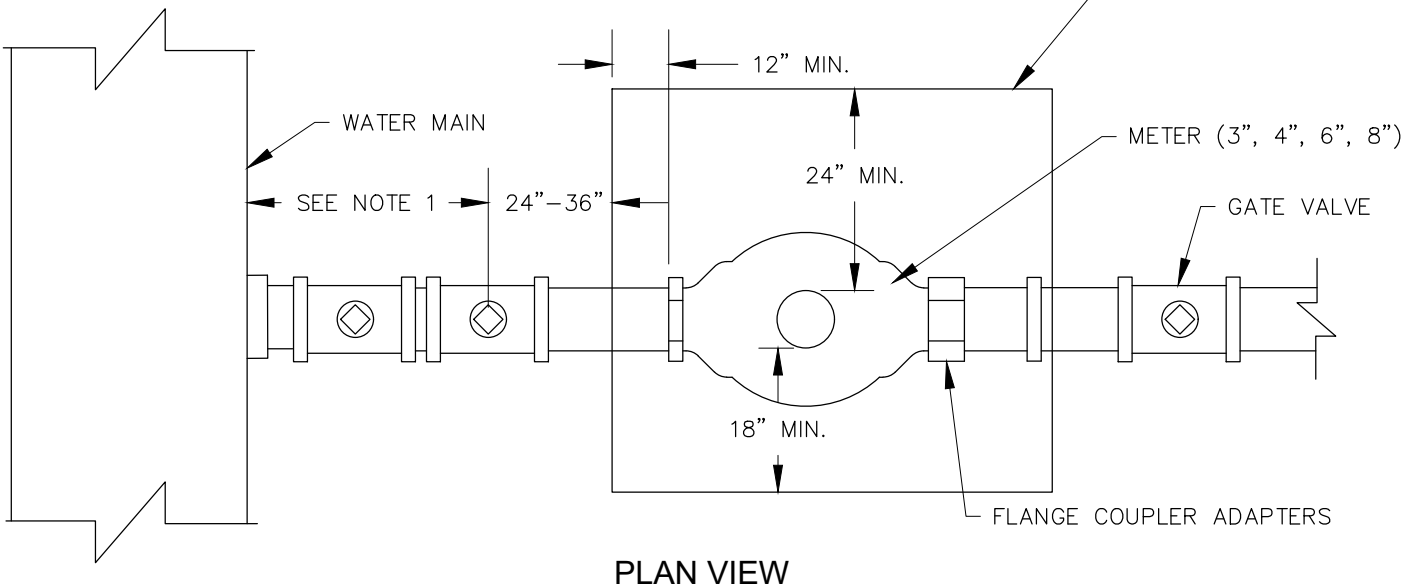
CITY OF
UNION GAP
1883

Revision	Date	Description	Appr
ORIG.	5/26		

CITY OF UNION GAP-STANDARD DETAIL	NEW WATER SERVICE (1 1/2" - 2")	W-8



SIDE VIEW



PLAN VIEW

NOTES:

1. IF MAINLINE BRANCH VALVE IS MORE THAN 10' FROM THE VAULT, A SECOND GATE VALVE WILL BE REQUIRED.
2. VAULT REQUIREMENTS SHALL BE PER SPECIFICATIONS. SIZING SHALL BE THE RESPONSIBILITY OF THE DEVELOPER FOR REVIEW/APPROVAL BY CITY OF UNION GAP.
3. BACKFILL AND COMPACTION SHALL CONFORM TO SECTIONS 7–08 AND 7–09 OF THESE DEVELOPMENT DESIGN AND CONSTRUCTION STANDARDS.

NEW WATER SERVICE (3"-8")

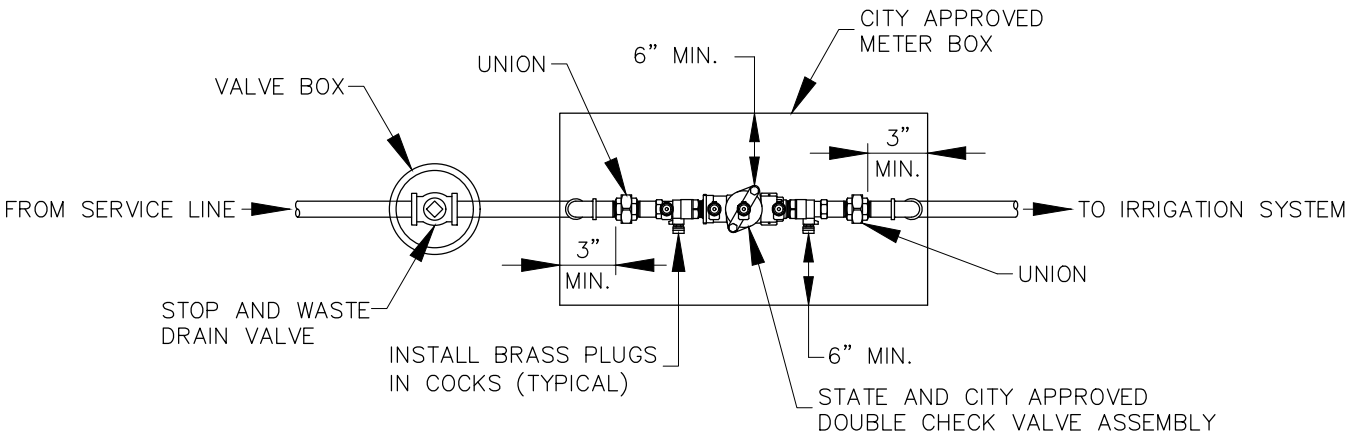
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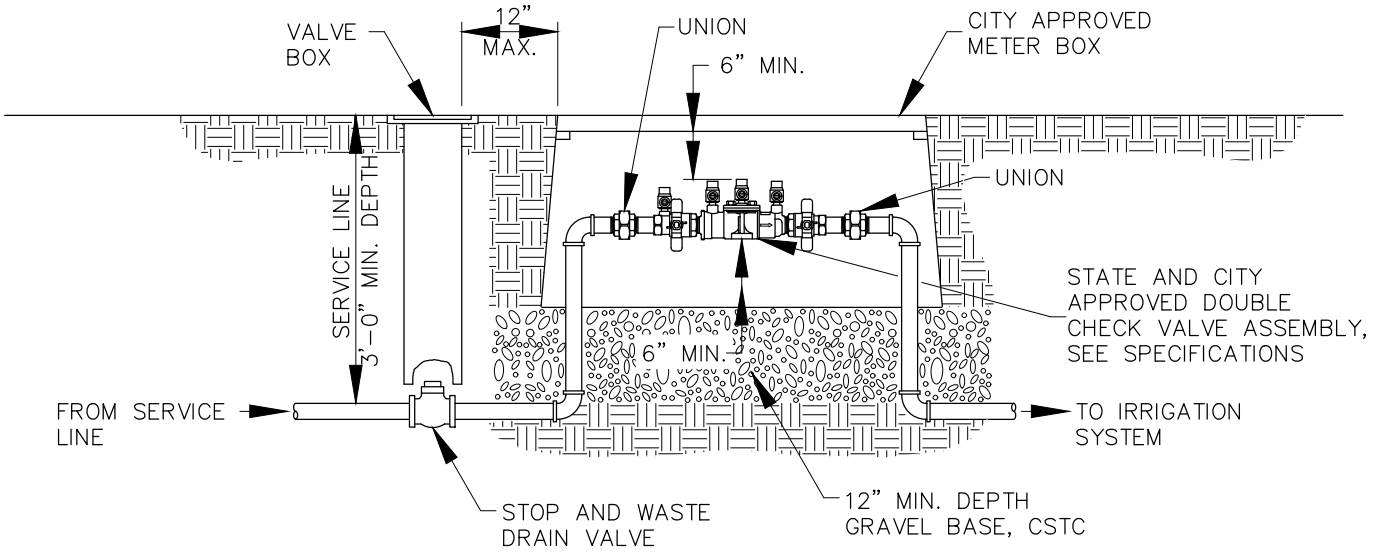
CITY OF
UNION GAP
1883

ORIG.	5/26		
Revision	Date	Description	Appr

CITY OF UNION GAP-STANDARD DETAIL	NEW WATER SERVICE (3" - 8")	W-9



PLAN



ELEVATION

NOTES:

1. DOUBLE CHECK VALVE ASSEMBLY SHALL MEET REQUIREMENTS OF THE AWWA "ACCEPTED PROCEDURE AND PRACTICE IN CROSS-CONNECTION CONTROL" MANUAL.
2. DEVICES MUST BE ON STATE DEPT. OF HEALTH LIST OF "APPROVED CROSS CONNECTION CONTROL DEVICES".
3. METER BOX SIZE SHOULD BE SIZED TO PROVIDE THE MINIMUM CLEARANCES SHOWN IN THE DETAIL.
4. BACKFILL AND COMPACTION SHALL CONFORM TO SECTIONS 7-08 AND 7-09 OF THESE DEVELOPMENT DESIGN AND CONSTRUCTION STANDARDS.

IRRIGATION BACKFLOW PREVENTER

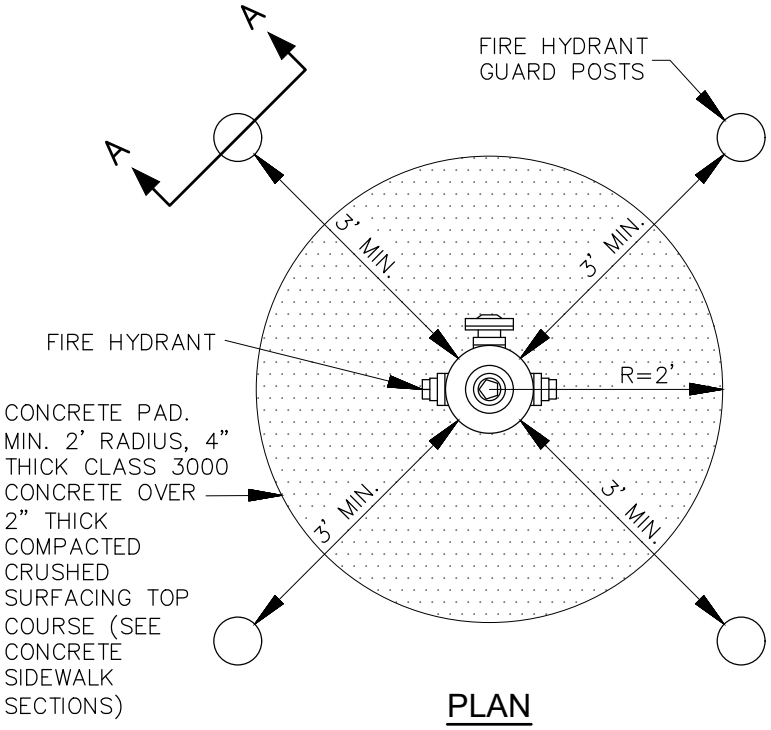
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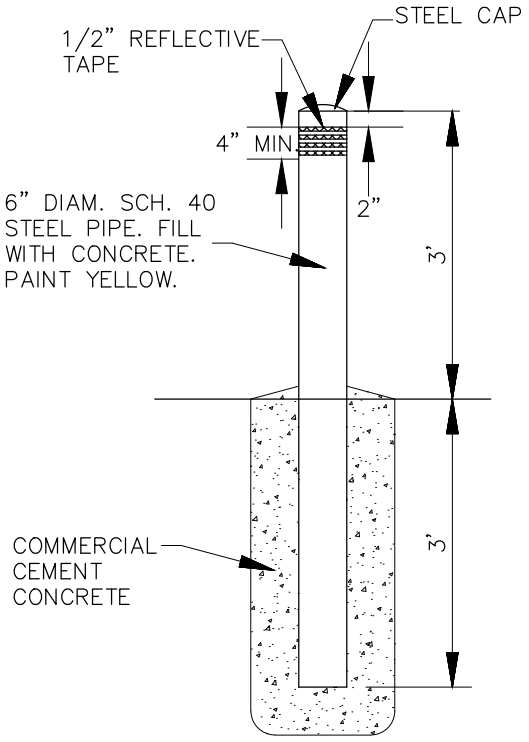
CITY OF
UNION GAP
1883

Revision	Date	Description	Appr
ORIG.	5/26		

CITY OF UNION GAP-STANDARD DETAIL	IRRIGATION BACKFLOW PREVENTER	W-10



PLAN



SECTION A-A

HYDRANT GUARD POSTS AND CONCRETE PAD

NOT TO SCALE

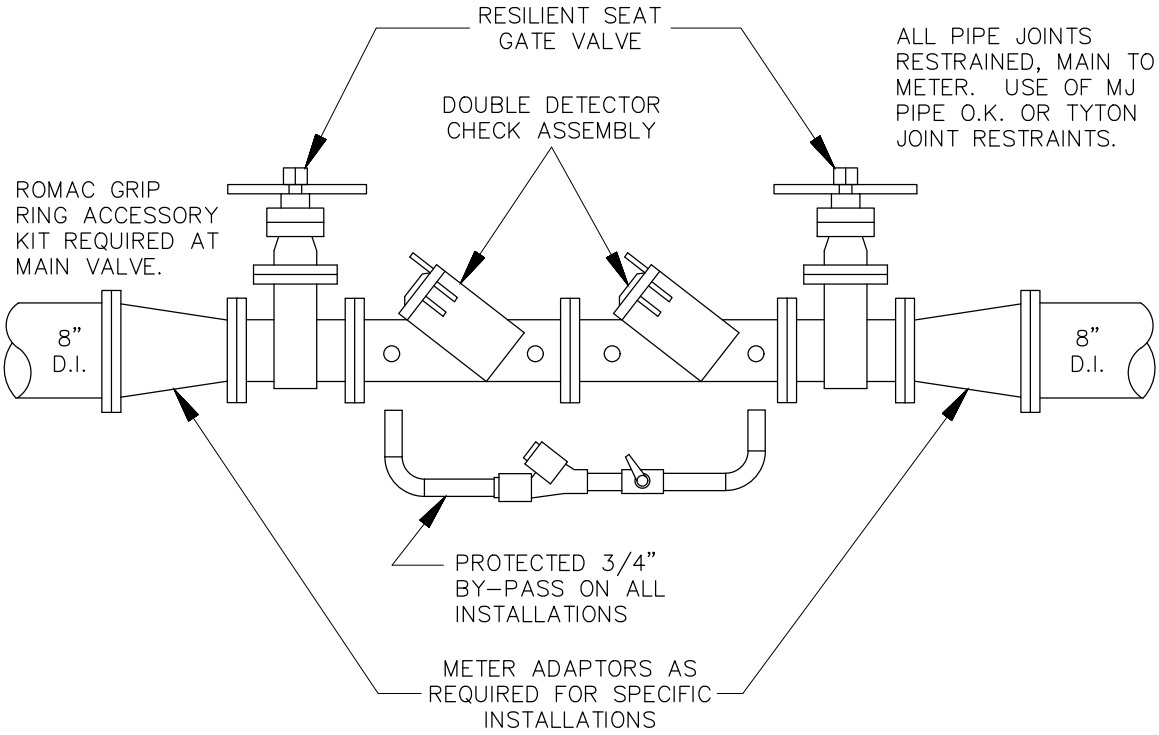
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CITY OF UNION GAP 1883

Revision	Date	Description	Appr
ORIG.	5/26		

CITY OF UNION GAP-STANDARD DETAIL	HYDRANT GUARD POSTS AND CONCRETE PAD	W-11

*VAULT NOT SHOWN, SEE SPECIFICATIONS



NOTES:

1. MIN. 3" DIA. FLOOR DRAIN, WITH 1" ROUND DRAIN ROCK SUMP (2'X2'X2'), WITH GEOTEXTLE FABRIC ALL AROUND.
2. INSTALL VAULT ON 4' CSTC COMPACTED BASE.
3. PIPE SUPPORTS SHALL BE INSTALLED UNDER BOTH GATE VALVES.
4. MUST BE ON THE LATEST USCFCCHR LIST OF APPROVED BACKFLOW PREVENTION ASSEMBLIES.
5. THE BACKFLOW ASSEMBLY SHALL BE TESTED AT THE TIME OF INSTALLATION BY A CERTIFIED TESTER APPROVED BY THE CITY.

DOUBLE DETECTOR CHECK VALVE ASSEMBLY

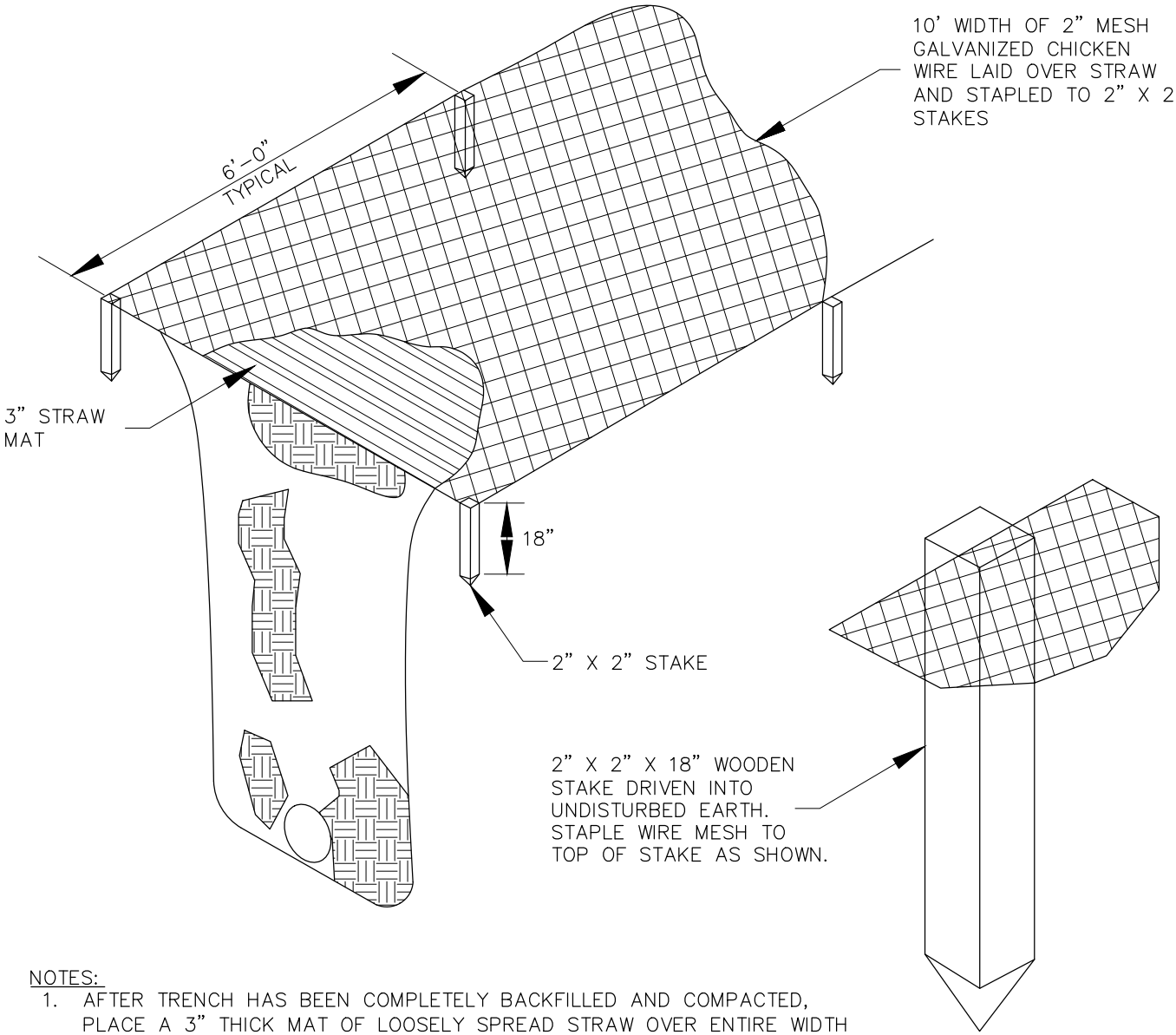
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CITY OF UNION GAP 1883

Revision	Date	Description	Appr
ORIG.	5/26		

CITY OF UNION GAP-STANDARD DETAIL	DOUBLE DETECTOR CHECK VALVE ASSEMBLY	W-12



NOTES:

1. AFTER TRENCH HAS BEEN COMPLETELY BACKFILLED AND COMPACTED, PLACE A 3" THICK MAT OF LOOSELY SPREAD STRAW OVER ENTIRE WIDTH OF BACKFILLED AREA FOLLOWED BY 2" WIRE MESH.
2. WIRE MESH FOR SLOPE PROTECTION SHALL BE USED WHEN SO DIRECTED BY THE DISTRICT AND/OR ENGINEER.
3. THE SLOPE PROTECTION DETAIL REPRESENTS MINIMUM REQUIREMENTS FOR MATERIALS AND INSTALLATION.

SLOPE PROTECTION

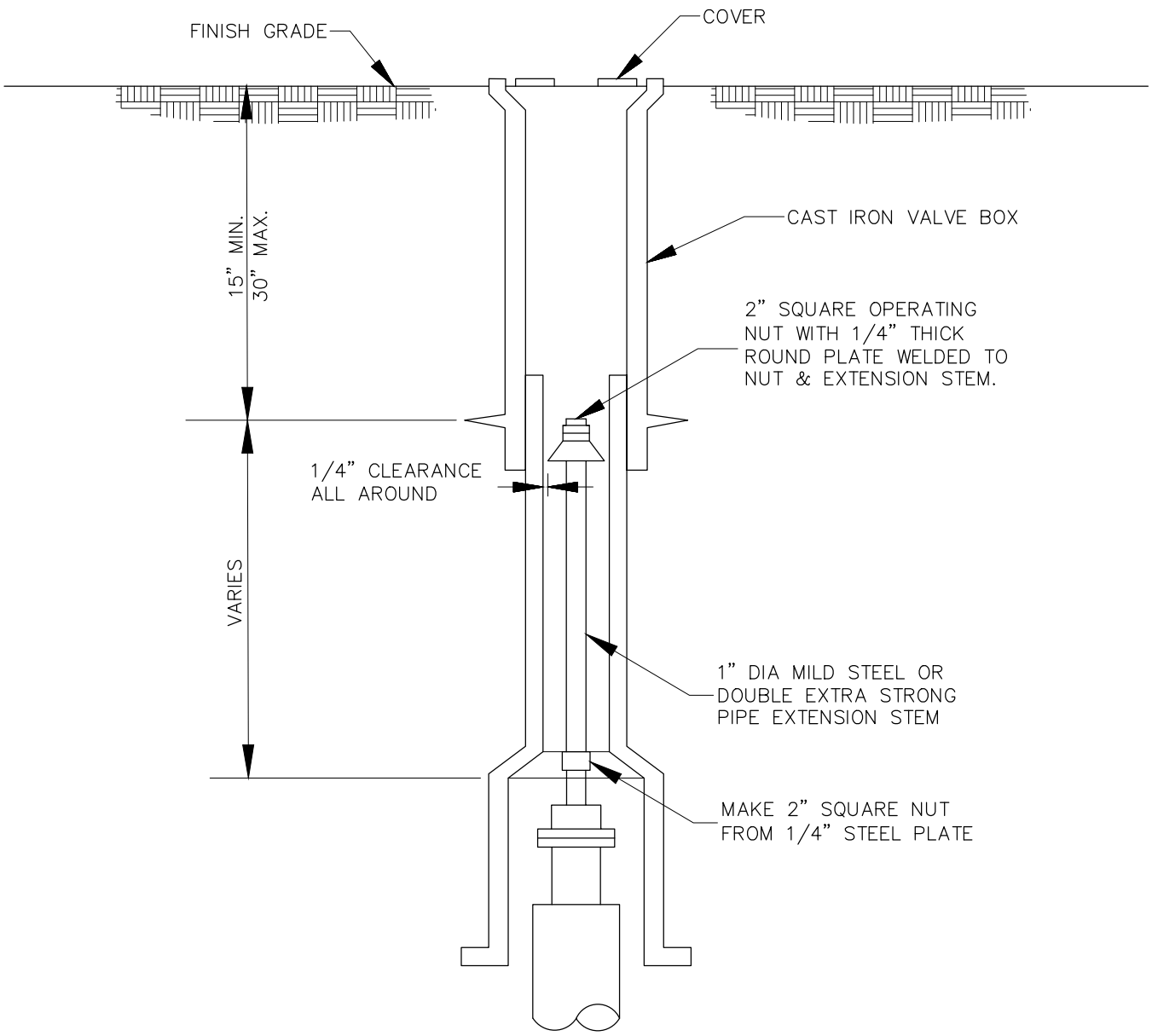
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CITY OF UNION GAP 1883

Revision	Date	Description	Appr
ORIG.	5/26		

CITY OF UNION GAP-STANDARD DETAIL	SLOPE PROTECTION	W-13



NOTES:

1. VALVE BOX SHALL BE ADJUSTED NO MORE THAN 1/4"BELOW FINISH GRADE.
2. BACKFILL AND COMPACTION SHALL CONFORM TO SECTIONS 7-08 AND 7-09 OF THESE DEVELOPMENT DESIGN AND CONSTRUCTION STANDARDS.

VALVE STEM EXTENSION

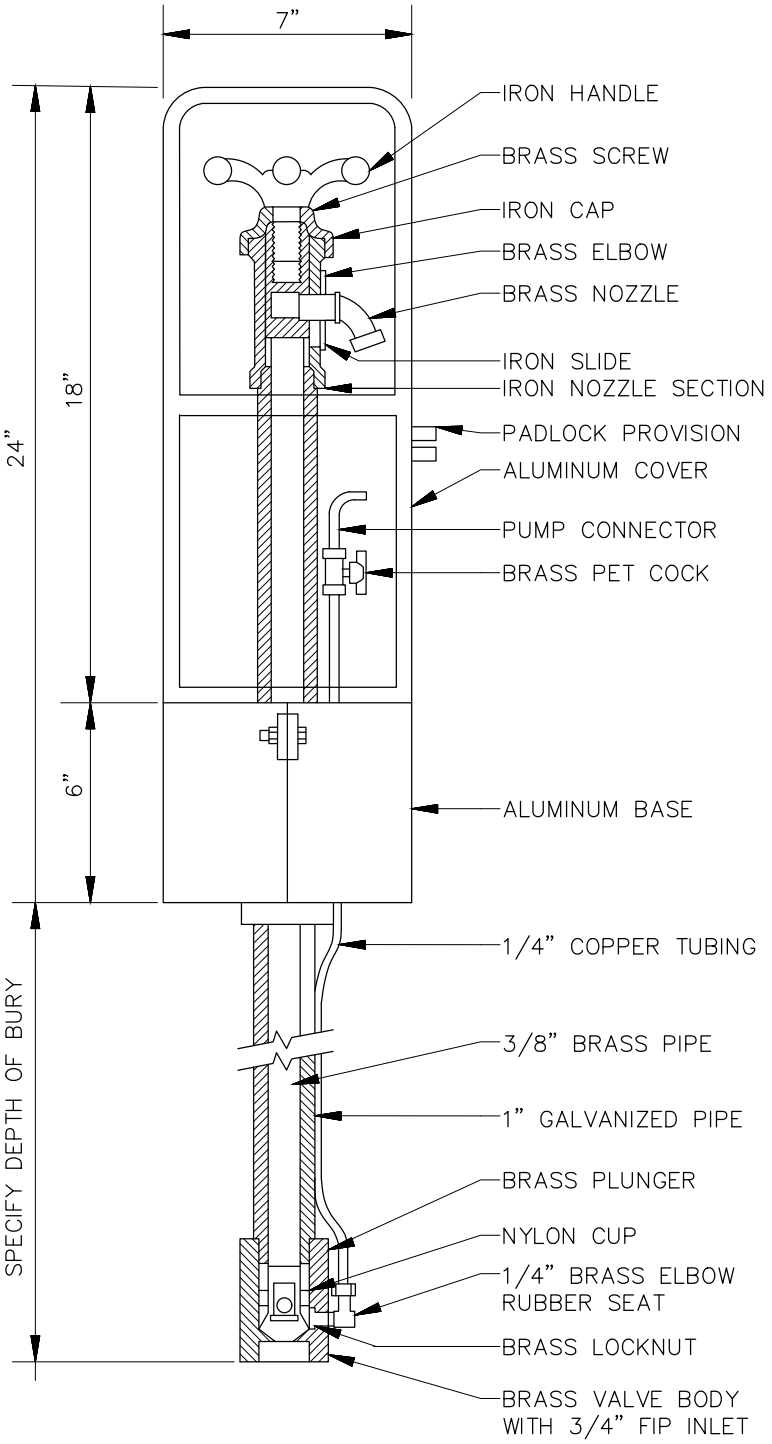
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CITY OF UNION GAP 1883

Revision	Date	Description	Appr
ORIG.	5/26		

CITY OF UNION GAP-STANDARD DETAIL	VALVE STEM EXTENSION	W-14



SAMPLING STATION

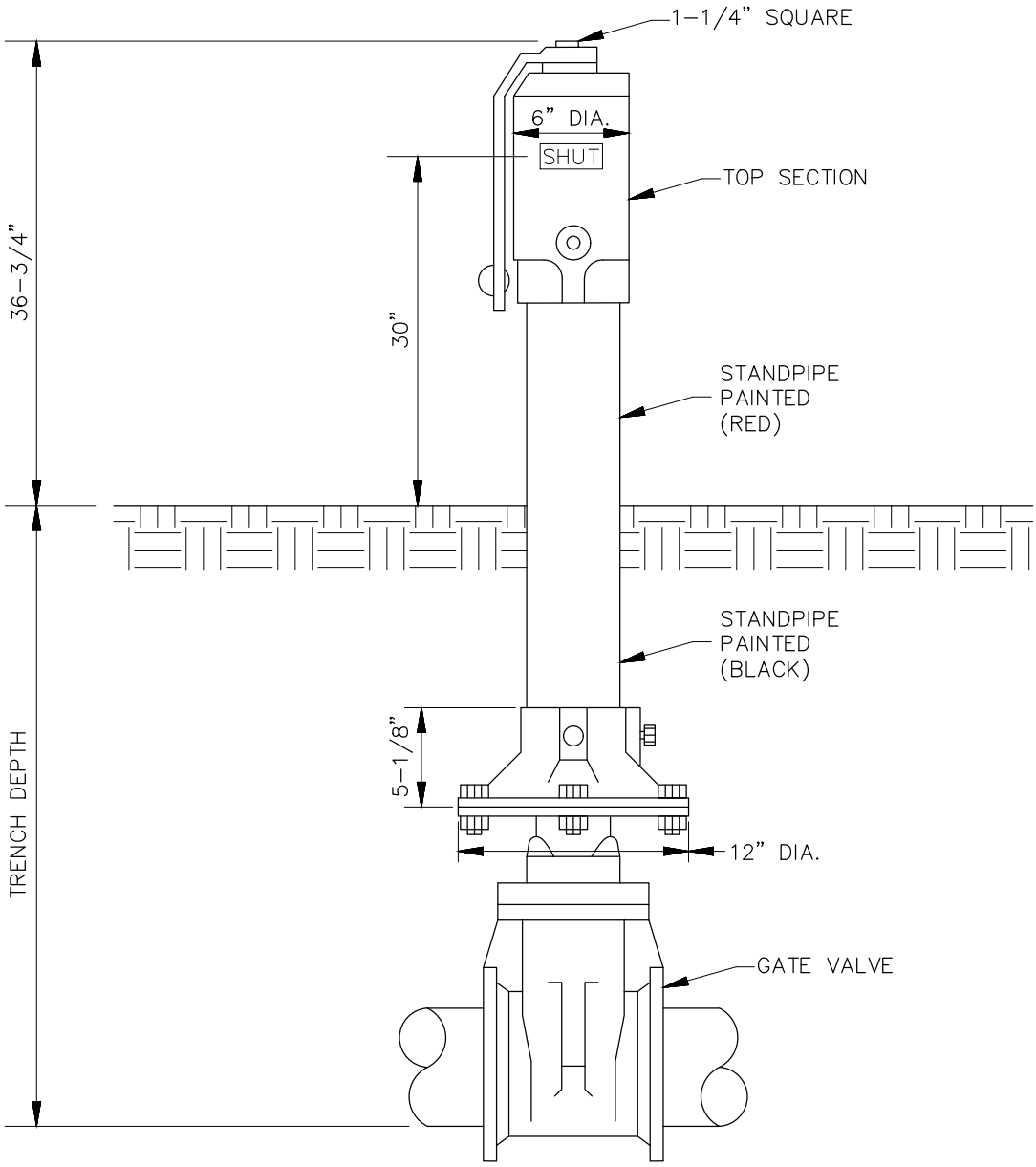
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CITY OF UNION GAP 1883

Revision	Date	Description	Appr
ORIG.	5/26		

CITY OF UNION GAP-STANDARD DETAIL	SAMPLING STATION	W-15



GATE POST POSITION INDICATOR

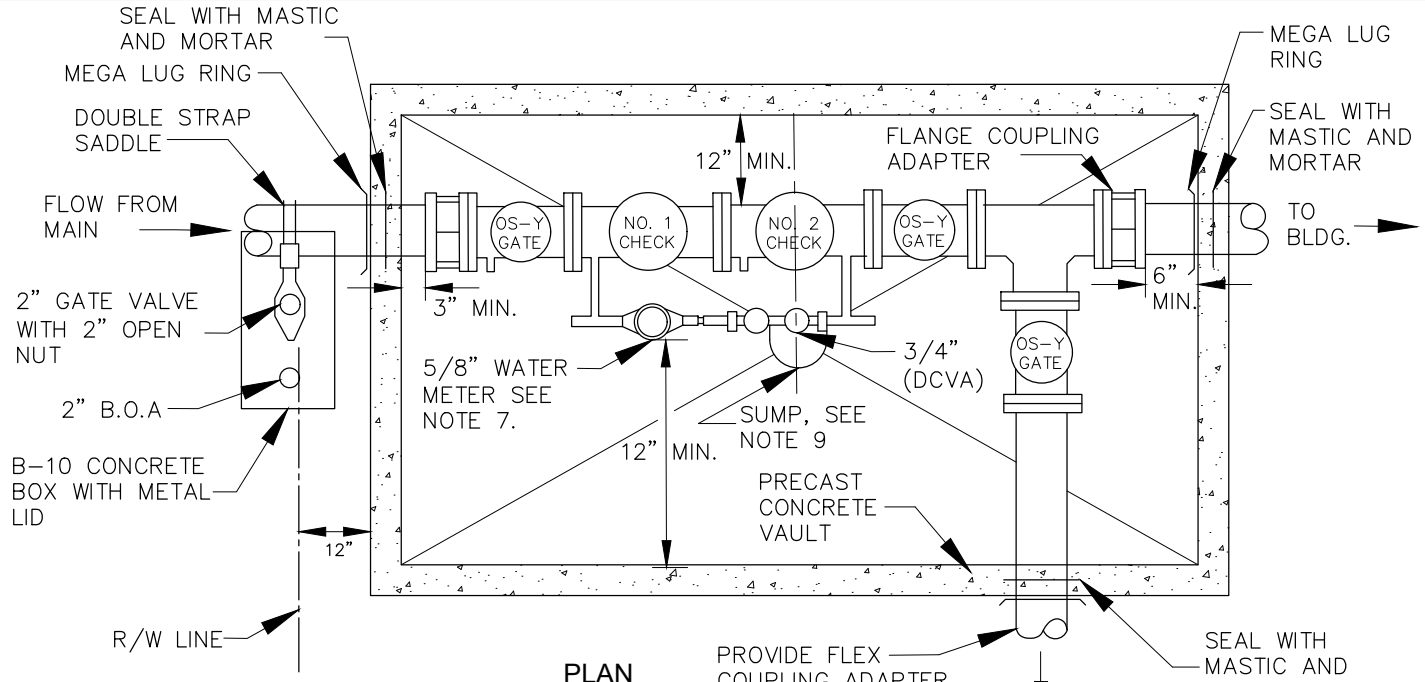
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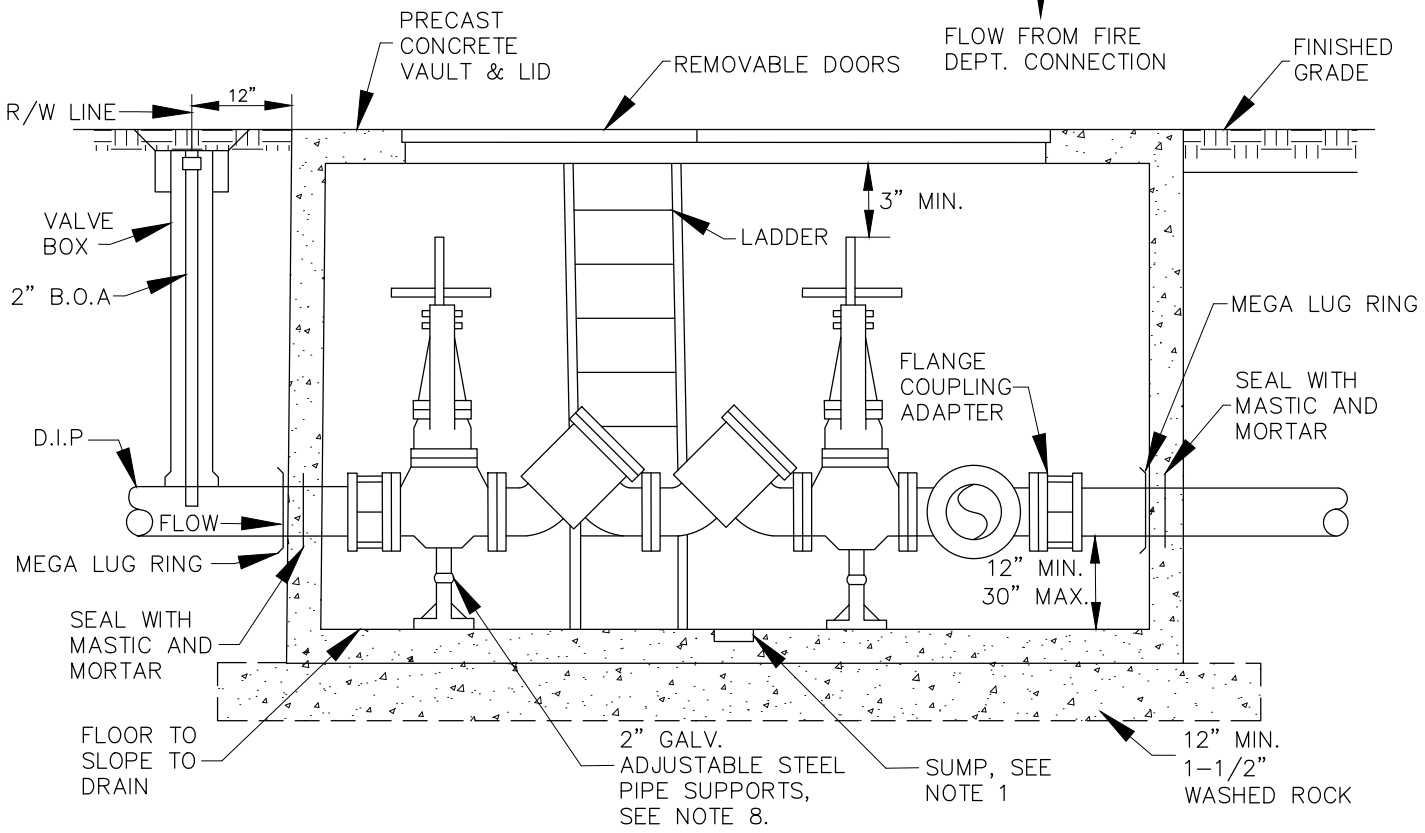
CITY OF UNION GAP 1883

Revision	Date	Description	Appr
ORIG.	5/26		

CITY OF UNION GAP-STANDARD DETAIL	GATE POST POSITION INDICATOR	W-16



PLAN



SECTION

FIRE SUPPRESSION SYSTEM

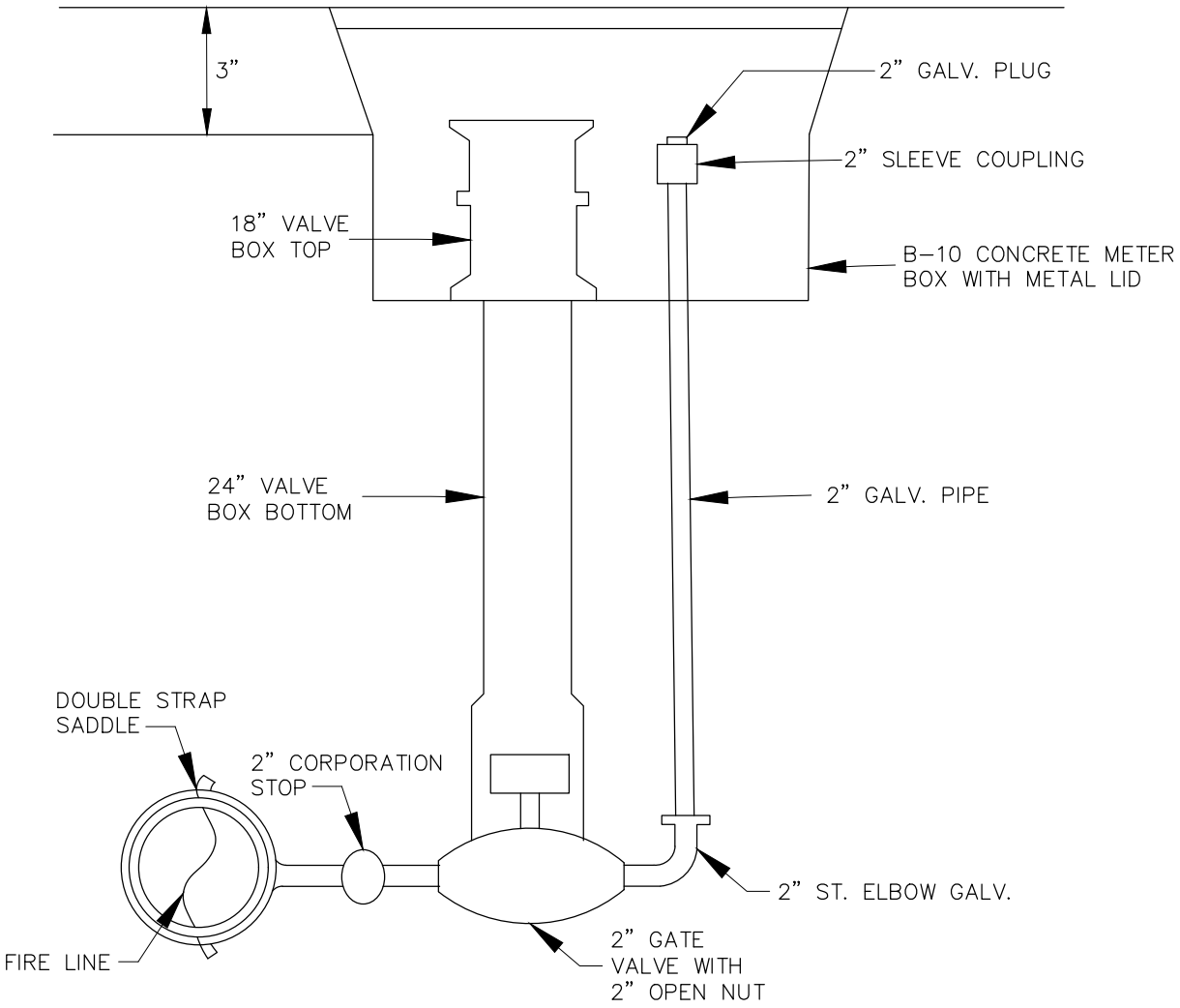
NOT TO SCALE

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CITY OF UNION GAP 1883

ORIG.	5/26		
Revision	Date	Description	Appr

CITY OF UNION GAP-STANDARD DETAIL	FIRE SUPPRESSION SYSTEM	W-17A



FIRE SUPPRESSION SYSTEM

NOT TO SCALE

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CITY OF
UNION GAP
1883

Revision	Date	Description	Appr
ORIG.	5/26		

CITY OF UNION GAP-STANDARD DETAIL	FIRE SUPPRESSION SYSTEM	W-17B

NOTES:

1. INSTALLATION OF THE APPROVED BACKFLOW ASSEMBLY SHALL BE IN ACCORDANCE WITH THE "ACCEPTED PROCEDURE AND PRACTICE IN CROSS-CONNECTION CONTROL" MANUAL, OF THE CROSS-CONNECTION CONTROL COMMITTEE, PACIFIC N.W. SECTION OF THE A.W.W.A., DECEMBER 1995, 6TH EDITION MANUAL OR CURRENT ADDITION AND AWWA MANUAL M14 CURRENT EDITION.

2. BACKFLOW ASSEMBLY MUST BE SELECTED FROM WASHINGTON STATE DEPARTMENT OF HEALTH LIST OF BACKFLOW PREVENTION ASSEMBLIES APPROVED FOR INSTALLATION IN WASHINGTON STATE, LATEST EDITION.

3. UPON INSTALLATION OF THE APPROVED BACKFLOW ASSEMBLY, AND YEARLY THEREAFTER, THE ASSEMBLY SHALL BE TESTED BY A WASHINGTON STATE CERTIFIED BACKFLOW ASSEMBLY TESTER, WHO SHALL PROMPTLY FORWARD THE TEST RESULTS TO: THE CITY OF UNION GAP PUBLIC WORKS DEPARTMENT, PRIOR TO OCCUPANCY.

4. DOUBLE DETECTOR CHECK VALVE ASSEMBLY OS & Y GATE VALVES SHALL HAVE SUPERVISED TAMPER SWITCHES.

5. ALL ELECTRICAL SHALL BE INSPECTED BY A WASHINGTON STATE ELECTRICAL INSPECTOR.

6. DOUBLE DETECTOR CHECK VALVE ASSEMBLY (DDCVA) MUST BE PURCHASED AS A UNIT. NO MODIFICATIONS TO ASSEMBLY ARE ALLOWED.

7. PIPE SUPPORTS SHALL BE RUST-PROTECTED WITH ALUMINUM PAINT.

8. THE FIRE DEPARTMENT CONNECTION SHALL BE LOCATED WITHIN 15 FEET OF A FIRE HYDRANT BUT NOT LESS THAN 10 FEET.

9. WHEN DDCVA IS LOCATED WITHIN A BUILDING, THE BALL DRIP SHALL DRAIN TO THE NEAREST APPROVED CATCH BASIN.

10. A 2" BLOWOFF ASSEMBLY IS REQUIRED WHEN THE DOUBLE DETECTOR CHECK VALVE ASSEMBLY IS LOCATED FURTHER THAN 18' FROM THE LOOPED WATER LINE SUPPLY.

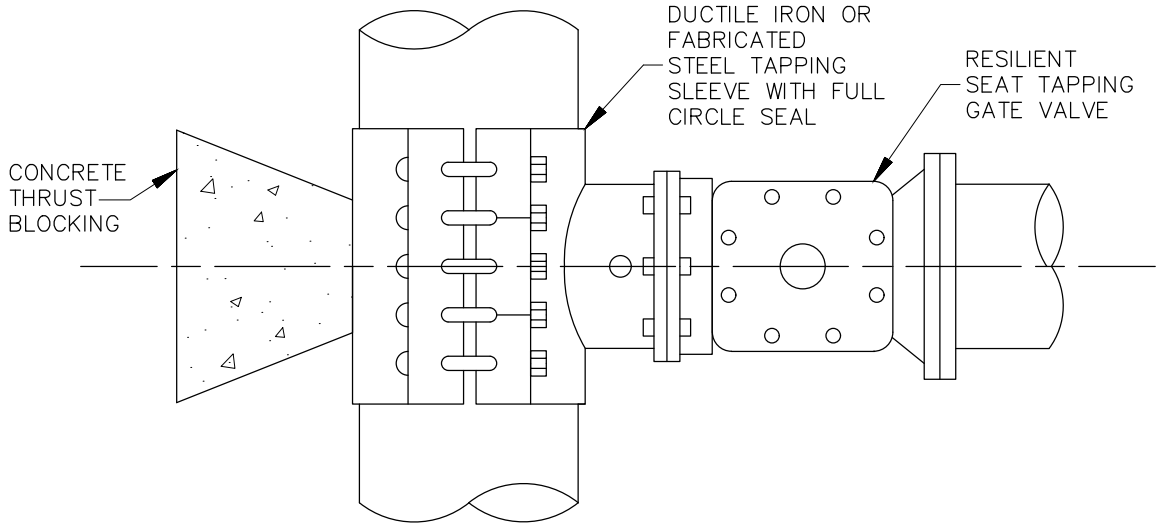
11. BACKFILL AND COMPACTION SHALL CONFORM TO SECTIONS 7-08 AND 7-09 OF THESE DEVELOPMENT DESIGN AND CONSTRUCTION STANDARDS.

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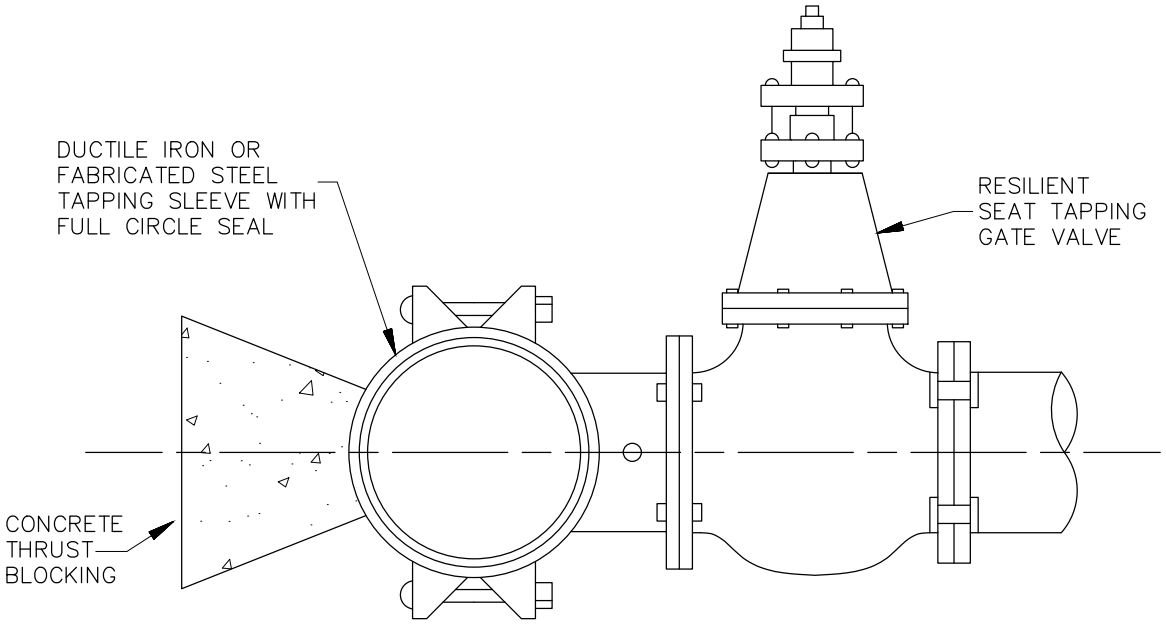
CITY OF
UNION GAP
1883

Revision	Date	Description	Appr
ORIG.	5/26		

CITY OF UNION GAP-STANDARD DETAIL	FIRE SUPPRESSION SYSTEM	W-17C



PLAN



ELEVATION

TAPPING SLEEVES AND TAPPING VALVE

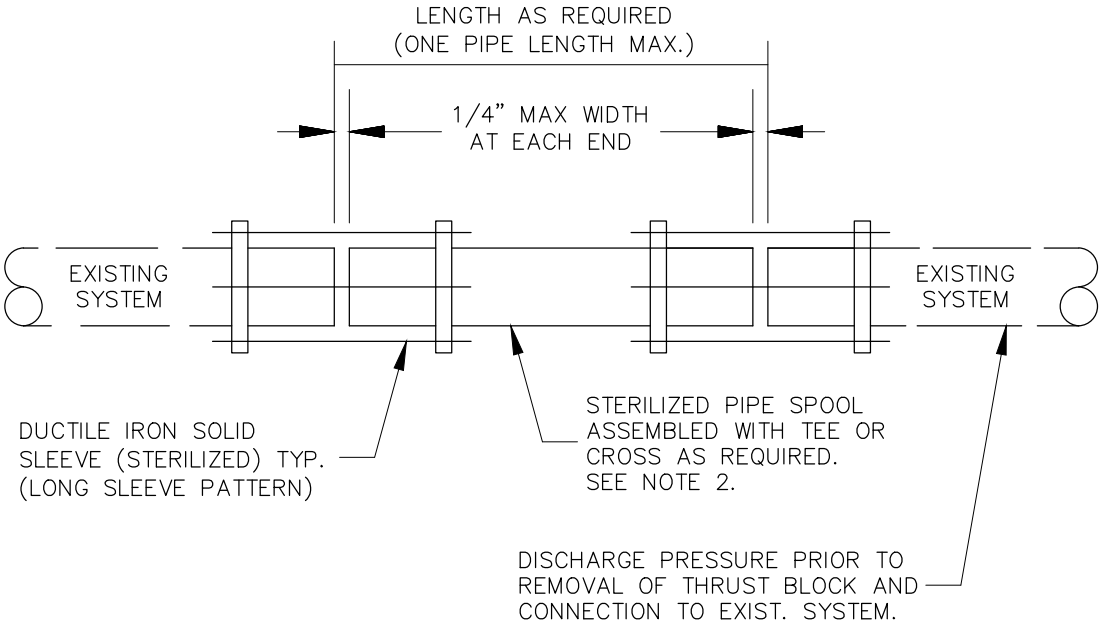
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CITY OF
UNION GAP
1883

ORIG.	5/26		
Revision	Date	Description	Appr

CITY OF UNION GAP-STANDARD DETAIL	TAPPING SLEEVES AND TAPPING VALVE	W-18



NOTES:

1. NO DEFLECTION SHALL BE ALLOWED AT EITHER COUPLING.
2. CUT–IN CONNECTIONS ON STEEL PIPE TO USE D.I. X O.D. STEEL TRANSITION COUPLINGS ROMAC OR EQUAL.
3. IN–LINE VALVE(S) IN EXISTING SYSTEM MAY BE REQUIRED AT THE SOLE DISCRETION OF THE CITY AT ALL NEW INTERTIE LOCATIONS. (NOTE: VALVE(S) ARE NOT SHOWN ABOVE FOR CLARITY)

STANDARD WATERLINE CUT IN

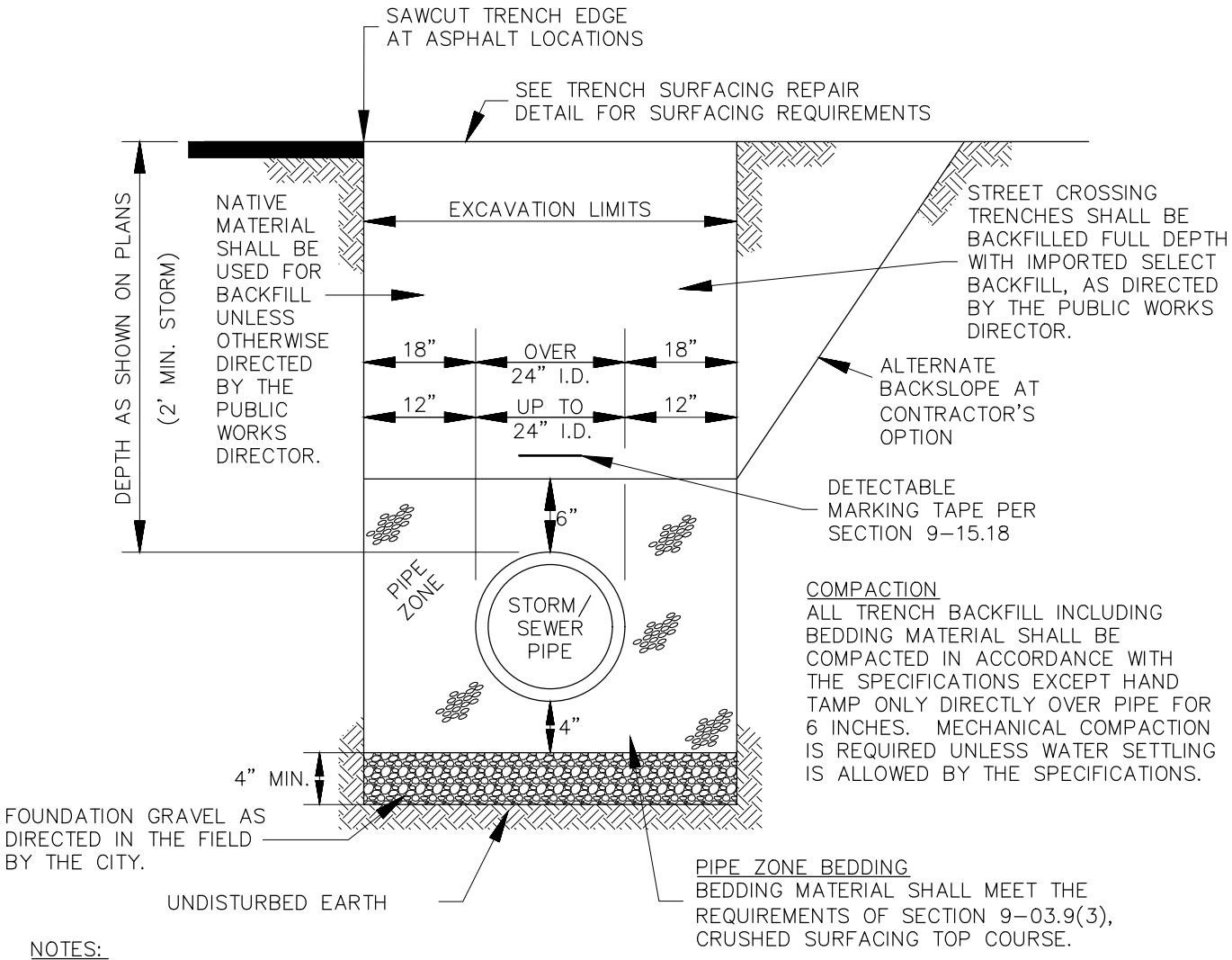
NOT TO SCALE

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CITY OF
UNION GAP
1883

ORIG.	5/26		
Revision	Date	Description	Appr

CITY OF UNION GAP-STANDARD DETAIL	STANDARD WATERLINE CUT IN	W-19



NOTES:

1. FOR 4" AND 6" SIDE SEWERS, INSTALL IMPORTED PIPE ZONE BEDDING A MINIMUM OF 4" THICK ON ALL SIDES OF PIPE.
2. CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE O.S.H.A. AND W.I.S.H.A. SAFETY AND HEALTH REGULATIONS.

STORM/SEWER PIPE TRENCH SECTION

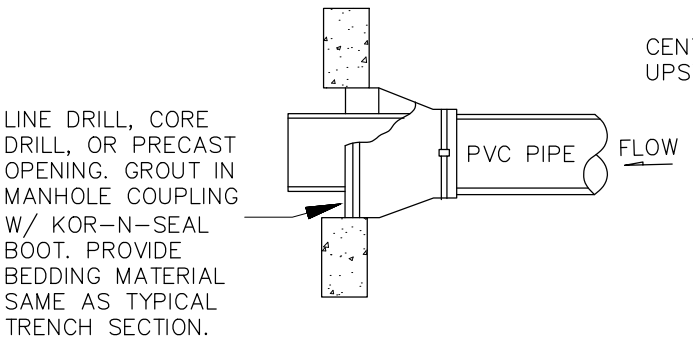
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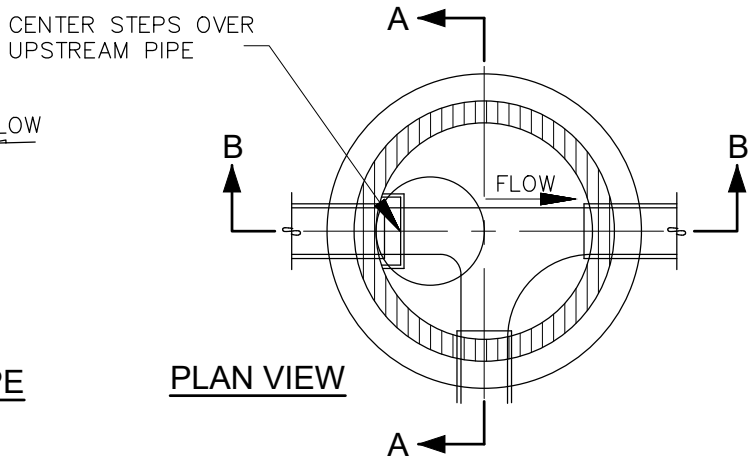
CITY OF UNION GAP 1883

Revision	Date	Description	Appr
ORIG.	5/26		

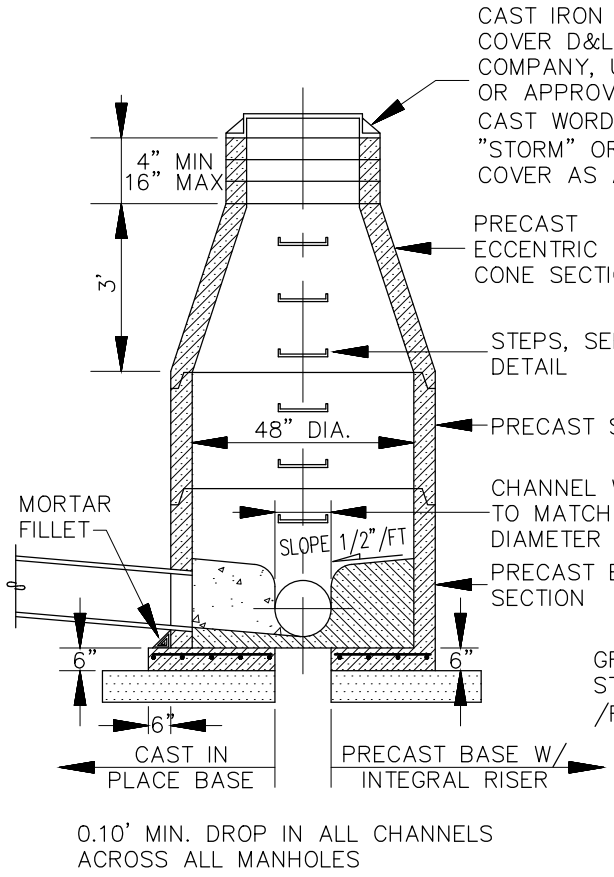
CITY OF UNION GAP-STANDARD DETAIL	STORM/SEWER PIPE TRENCH SECTION	SS-1



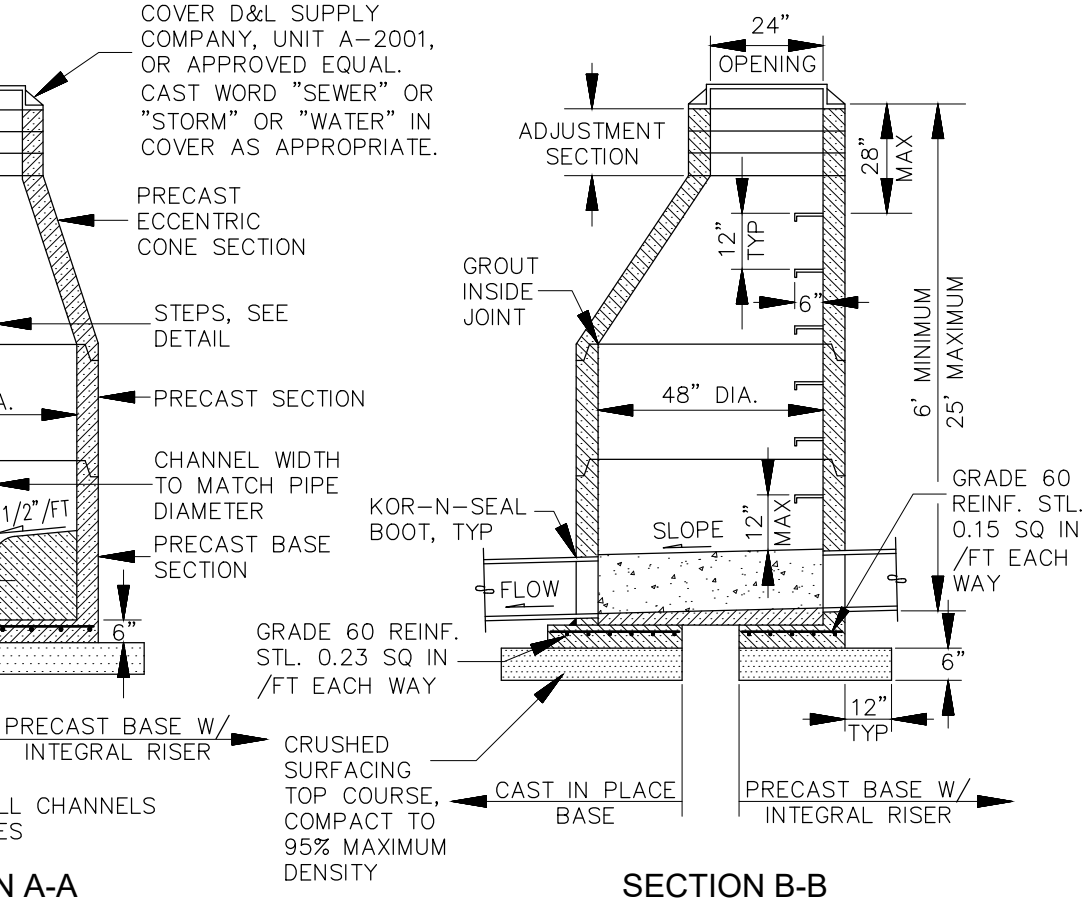
MANHOLE CONNECTION USING PVC PIPE



PLAN VIEW



SECTION A-A



SECTION B-B

MANHOLE TYPE 1

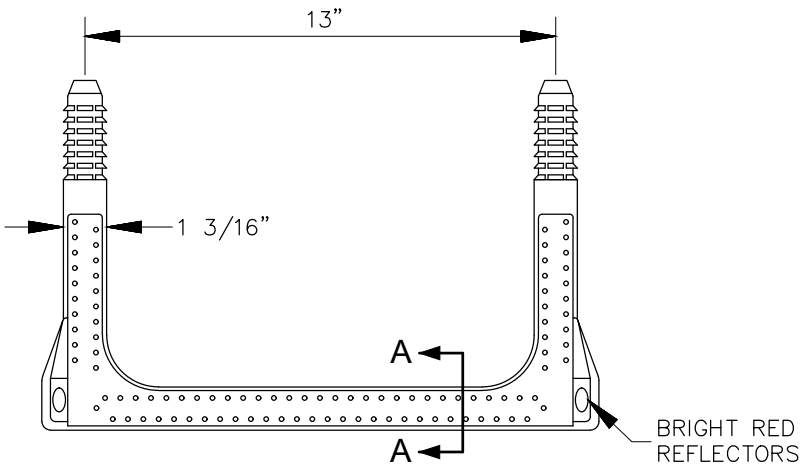
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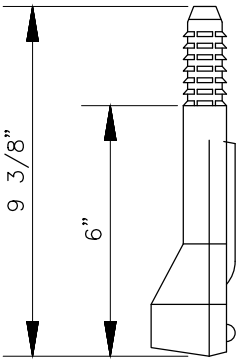
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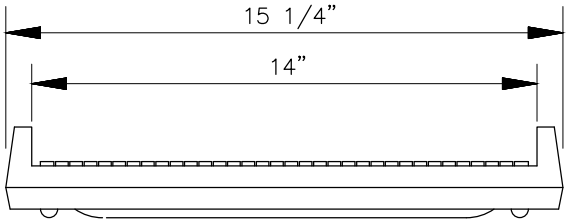
CITY OF UNION GAP 1883

Revision	Date	Description	Appr
ORIG.	5/26		

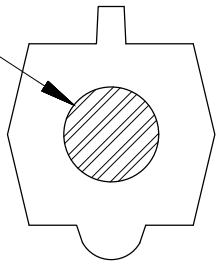
CITY OF UNION GAP-STANDARD DETAIL	MANHOLE TYPE 1	SS-2



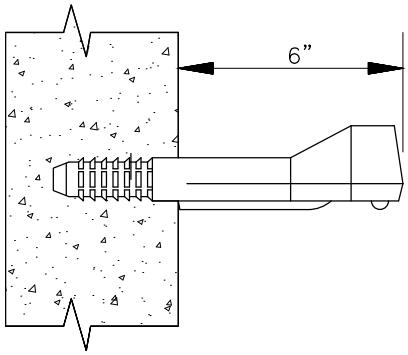




COPOLYMER
POLYPROPYLENE
PLASTIC COATED 1/2”
GRADE 60 STEEL
REINFORCEMENT



SECTION A-A



NOTE:
MANHOLE STEPS SHALL BE COPOLYMER POLYPROPYLENE PLASTIC COATED 1/2” GRADE 60 STEEL REINFORCEMENT, MODEL P–14938, AS MANUFACTURED BY LANE INTERNATIONAL CORPORATION, OR APPROVED EQUAL

MANHOLE SAFETY STEP

NOT TO SCALE

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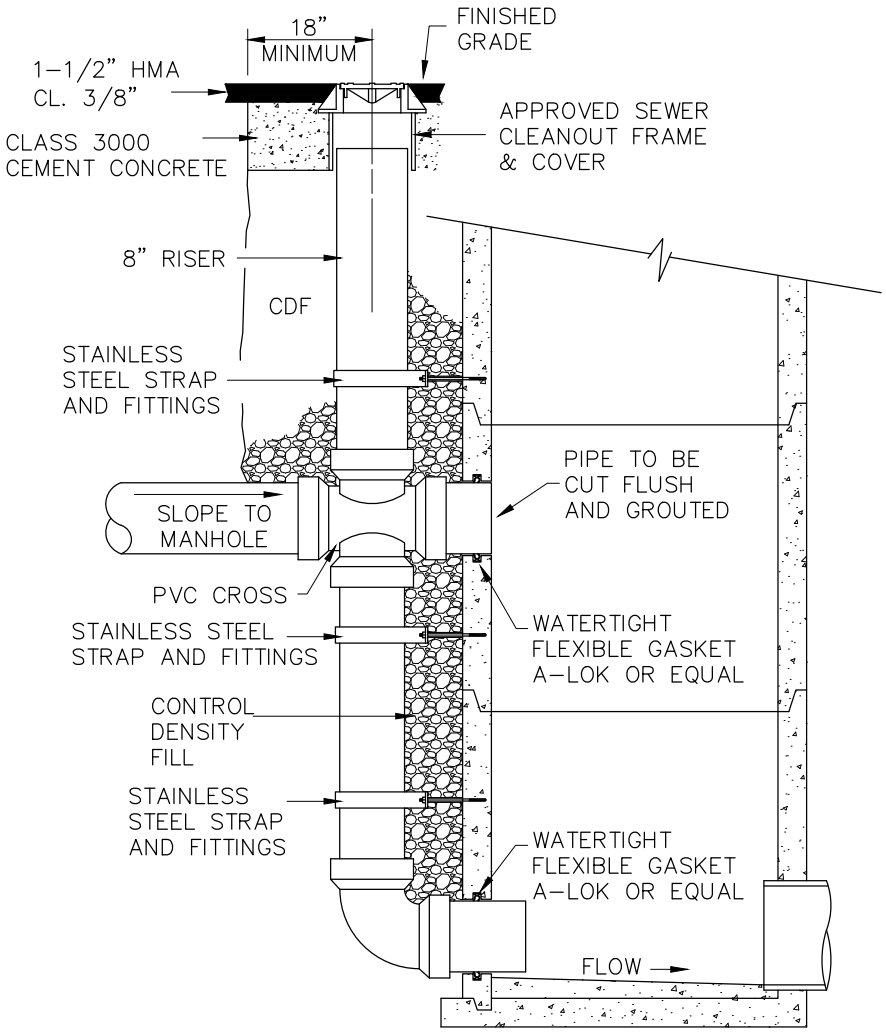
CITY OF
UNION GAP
1883

Revision	Date	Description	Appr
ORIG.	5/26		

CITY OF UNION GAP-STANDARD DETAIL	MANHOLE SAFETY STEP	SS-3

NOTES:

1. DROP CONNECTION PIPE DIAMETER AND FITTINGS SHOULD BE EQUAL TO OR GREATER THAN THE DIAMETER OF THE SEWER MAIN.
2. DROP CONNECTION SHALL ONLY BE USED WITH PERMISSION FROM THE CITY ENGINEER.
3. BACKFILL OF STRUCTURES, MANHOLES AND DROP–PIPES SHALL BE IN ACCORDANCE WITH SECTION 2–09 OF THE WSDOT STANDARD SPECIFICATION AND BE BACKFILLED IN 24" LIFTS AND THEN COMPACTED UTILIZING CSTC MATERIAL NOT TO EXCEED 5/8" IN SIZE.
4. PIPE INLET TO BE 24" MINIMUM BELOW CONE SECTION OF THE MANHOLE OR AS DIRECTED BY THE CITY ENGINEER PIPE INLET TO BOTTOM OF MANHOLE SHALL NOT EXCEED 72" UNLESS APPROVED BY THE CITY ENGINEER.
5. STAINLESS STEEL STRAPPING SHALL CONSIST OF STAINLESS UNISTRUT WITH UNISTRUT AROUND PIPE OR STAINLESS STEEL U–BOLT, FLAT WASHERS, AND HEX NUTS OR AS APPROVED BY THE CITY ENGINEER. VERTICAL SPACING SHALL NOT EXCEED 36" BETWEEN SUPPORTS.
6. INSTALL FLEX COUPLING TO ALLOW FOR REMOVAL, CLEANING AND RE–ROUTING OF DIRECTIONAL ELBOW. ELBOW TO REST ON THE MANHOLE FLOW CHANNEL AND BE GLUED TO STANDPIPE.
7. CITY INSPECTOR MUST BE PRESENT DURING PLACEMENT, ATTACHMENT AND COMPACTION OF MATERIALS IN EACH INSTANCE.
8. REMOVABLE SLIP–ON PVC CAP TO BE INSTALLED AT THE CITY ENGINEERS DISCRETION.



DROP CONNECTION

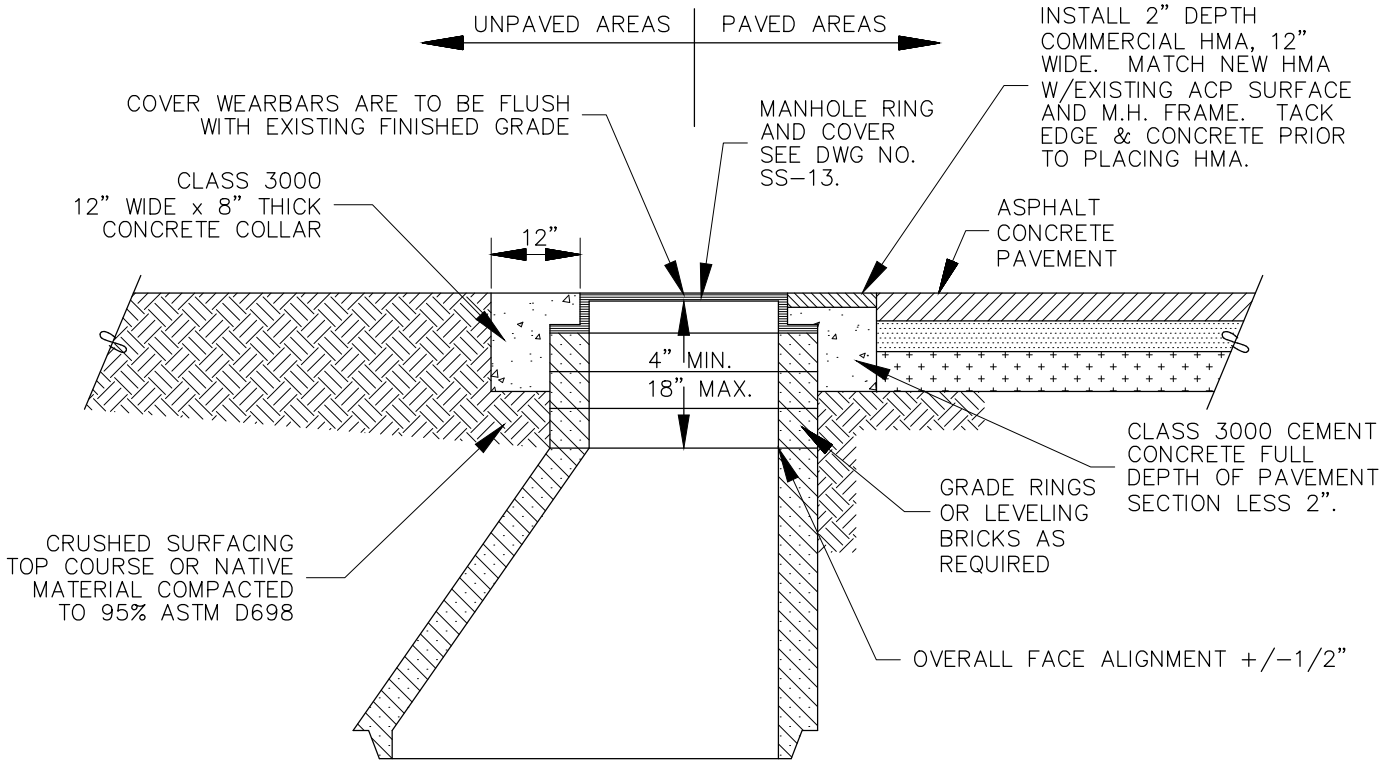
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CITY OF
UNION GAP
1883

Revision	Date	Description	Appr
ORIG.	5/26		

CITY OF UNION GAP-STANDARD DETAIL	DROP CONNECTION	SS-4



NOTES:

1. IN PAVED AREAS, MANHOLE LID AND FRAME SHALL BE ADJUSTED NO MORE THAN 1/4" BELOW FINISHED GRADE.

2. GRADE RINGS AND/OR LEVELING BRICKS SHALL BE GROUTED IN PLACE AND BE WATER TIGHT.

MANHOLE ADJUSTMENT

NOT TO SCALE

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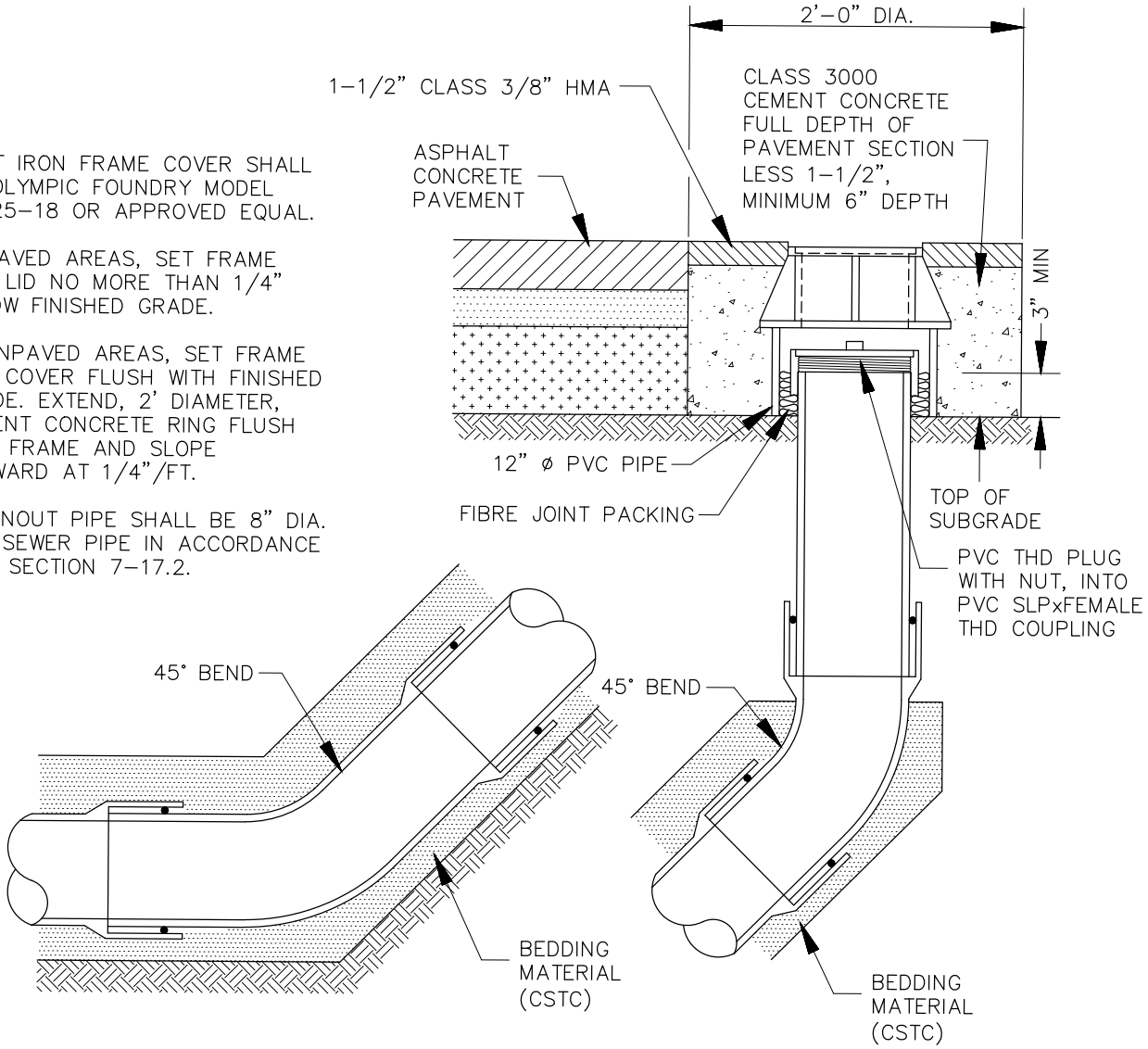
CITY OF UNION GAP 1883

Revision	Date	Description	Appr
ORIG.	5/26		

CITY OF UNION GAP-STANDARD DETAIL	MANHOLE ADJUSTMENT	SS-5

NOTES:

1. CAST IRON FRAME COVER SHALL BE OLYMPIC FOUNDRY MODEL M1025-18 OR APPROVED EQUAL.
2. IN PAVED AREAS, SET FRAME AND LID NO MORE THAN 1/4" BELOW FINISHED GRADE.
3. IN UNPAVED AREAS, SET FRAME AND COVER FLUSH WITH FINISHED GRADE. EXTEND, 2' DIAMETER, CEMENT CONCRETE RING FLUSH WITH FRAME AND SLOPE OUTWARD AT 1/4"/FT.
4. CLEANOUT PIPE SHALL BE 8" DIA. PVC SEWER PIPE IN ACCORDANCE WITH SECTION 7-17.2.



SANITARY SEWER CLEANOUT

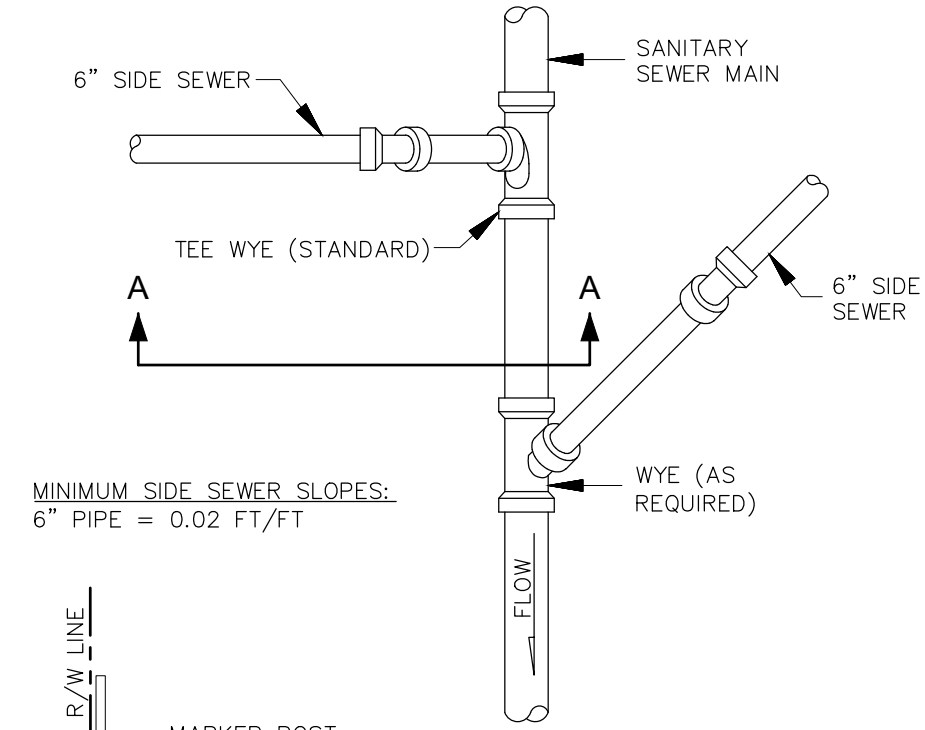
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CITY OF UNION GAP 1883

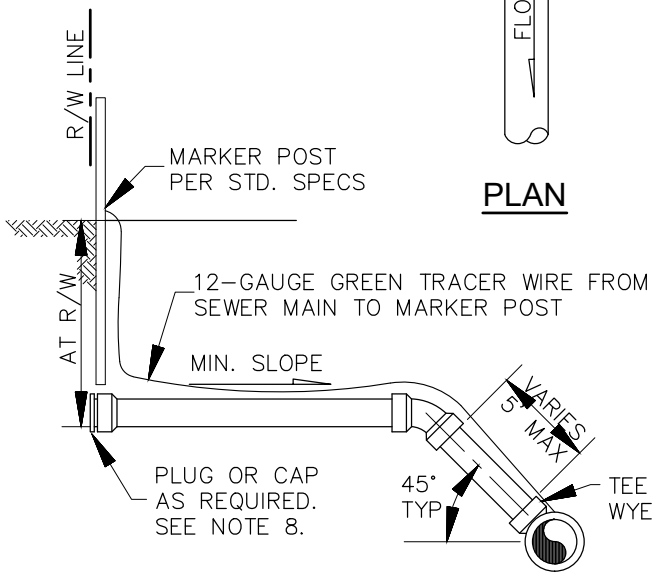
Revision	Date	Description	Appr
ORIG.	5/26		

CITY OF UNION GAP-STANDARD DETAIL	SANITARY SEWER CLEANOUT	SS-6



MINIMUM SIDE SEWER SLOPES:
6" PIPE = 0.02 FT/FT

PLAN

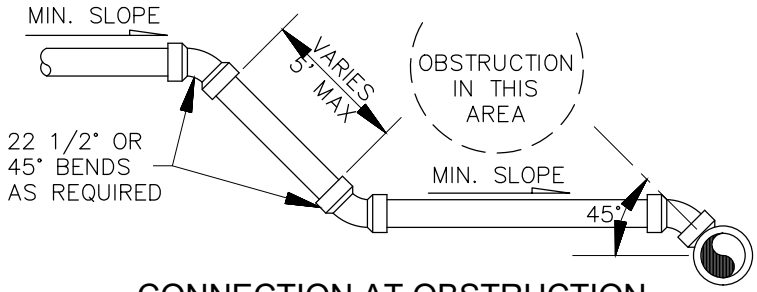


SECTION A-A

NOTE:
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NOTES:

1. ROTATE SANITARY SEWER MAIN TEE WYE OR WYE 45° UPWARD.
2. TEE WYES OR WYES SHALL BE INSTALLED IN NEW SANITARY SEWER MAINS. WHEN INSTALLING SIDE SEWERS IN EXISTING MAINS, CONNECTION SHALL BE MADE BY MACHINE MADE TAP AND APPROVED SADDLE, ROMAC STYLE CB. THE REMOVED PIPE COUPON SHALL BE RETRIEVED AND PROVIDED TO THE CITY.
3. WHERE DEPTH IS INSUFFICIENT TO ALLOW CONNECTION AS SHOWN, CONNECT SERVICE AS DIRECTED BY ENGINEER.
4. TERMINATE SIDE SEWER AT R/W LINE UNLESS OTHERWISE DIRECTED BY ENGINEER OR SHOWN OTHERWISE ON PLANS.
5. ALL SIDE SEWER MATERIALS SHALL BE PVC SEWER PIPE CONFORMING TO THE REQUIREMENTS OF SECTION 9-05.12 OF THE STANDARD SPECIFICATIONS.
6. NO GLUED FITTINGS IN RIGHT-OF-WAY.
7. SERVICE CONNECTIONS 8" OR LARGER SHALL BE APPROVED BY CITY ENGINEER AND MUST BE MADE AT MANHOLE. A CLEANOUT SHALL BE PLACED AT THE RIGHT OF WAY LINE MAKING THE DISTINCTION BETWEEN PUBLIC AND PRIVATE LINES.
8. CONNECTIONS TO EXISTING SIDE SEWER SHALL BE MADE USING APPROVED, SHIELDED RUBBER TRANSITION COUPLINGS WITH FULL STAINLESS STEEL SHEAR BANDS.



CONNECTION AT OBSTRUCTION

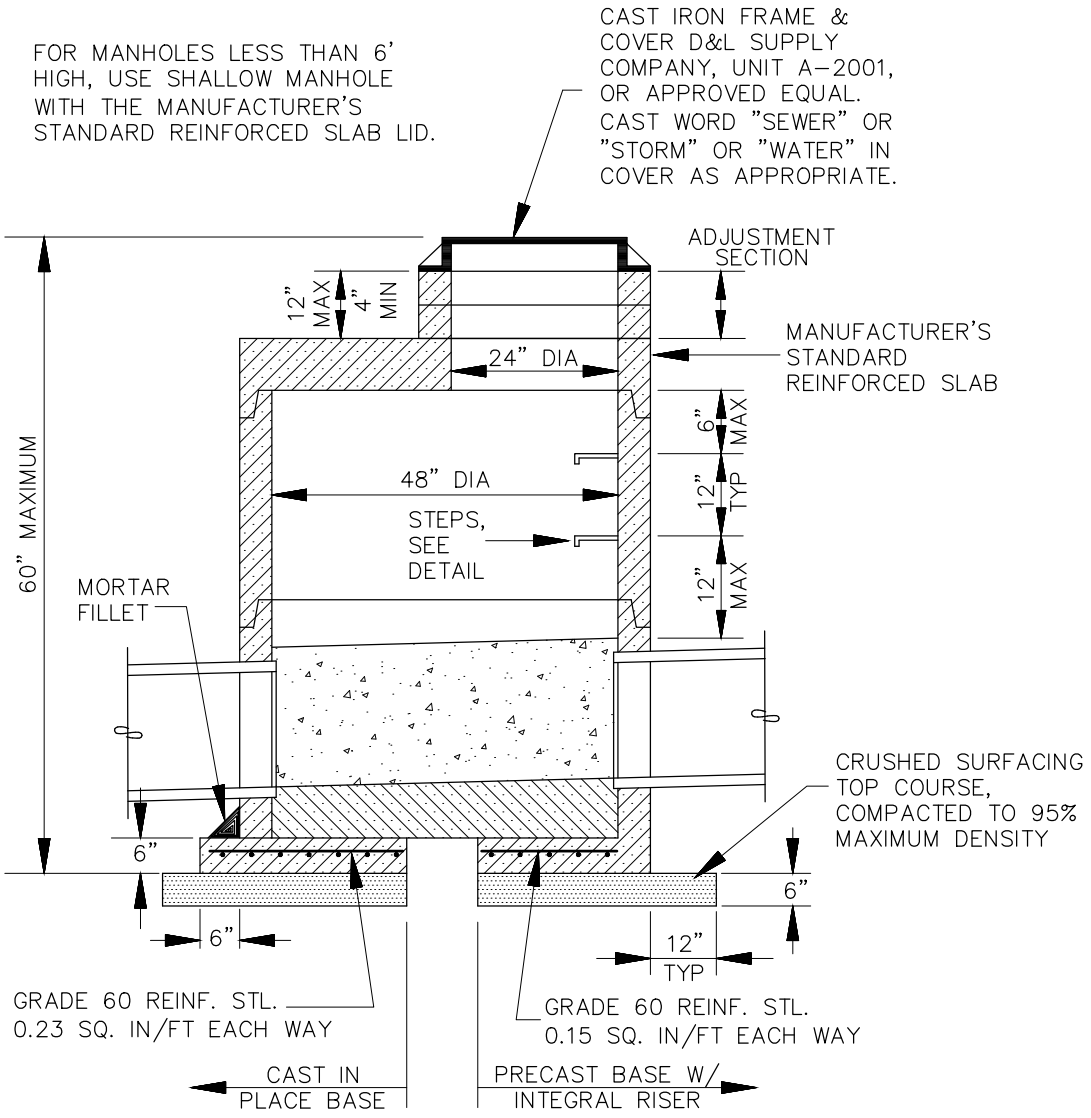
SIDE SEWER CONNECTION

NOT TO SCALE

CITY OF UNION GAP 1883

Revision	Date	Description	Appr
ORIG.	5/26		

CITY OF UNION GAP-STANDARD DETAIL | SIDE SEWER CONNECTION | SS-7



SHALLOW MANHOLE TYPE 3

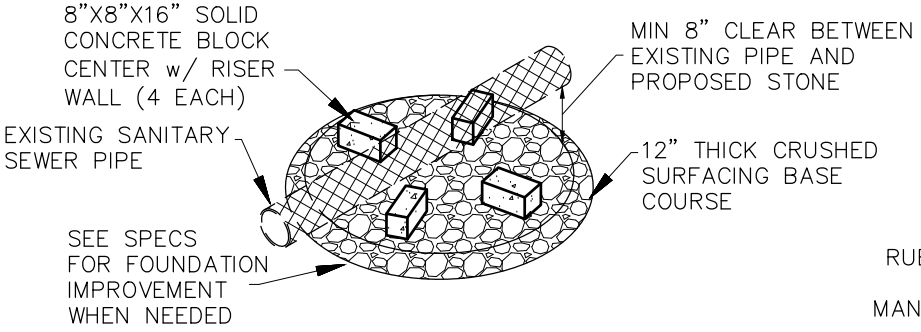
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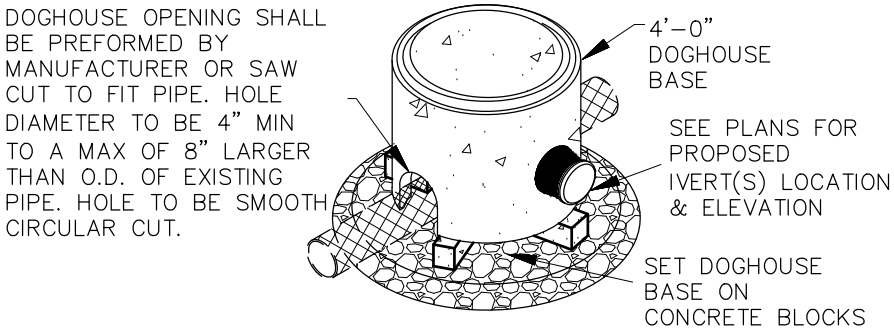
CITY OF UNION GAP 1883

Revision	Date	Description	Appr
ORIG.	5/26		

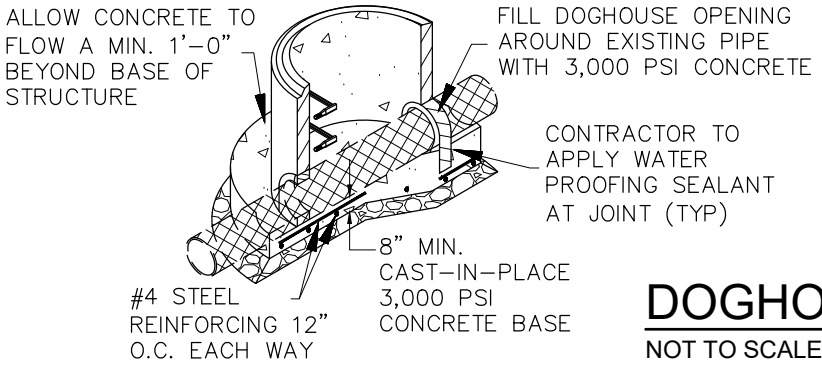
CITY OF UNION GAP-STANDARD DETAIL	SHALLOW MANHOLE TYPE 3	SS-8



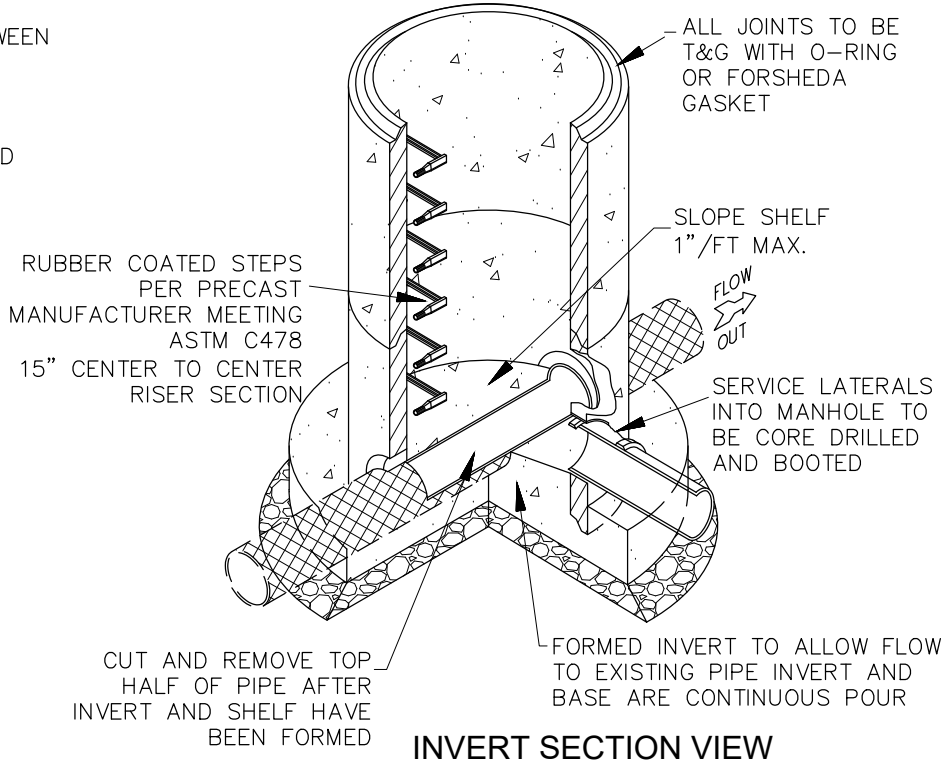
BASE ISOMETRIC VIEW



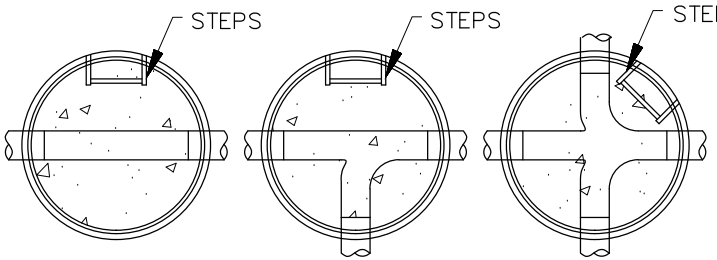
RISER ISOMETRIC VIEW



FOUNDATION SECTION VIEW



INVERT SECTION VIEW



MANHOLE STEPS SHALL BE ORIENTED ON THE UPSTREAM SIDE OF THE FLOW CHANNEL UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER.

STEP ORIENTATION

DOGHOUSE MANHOUSE

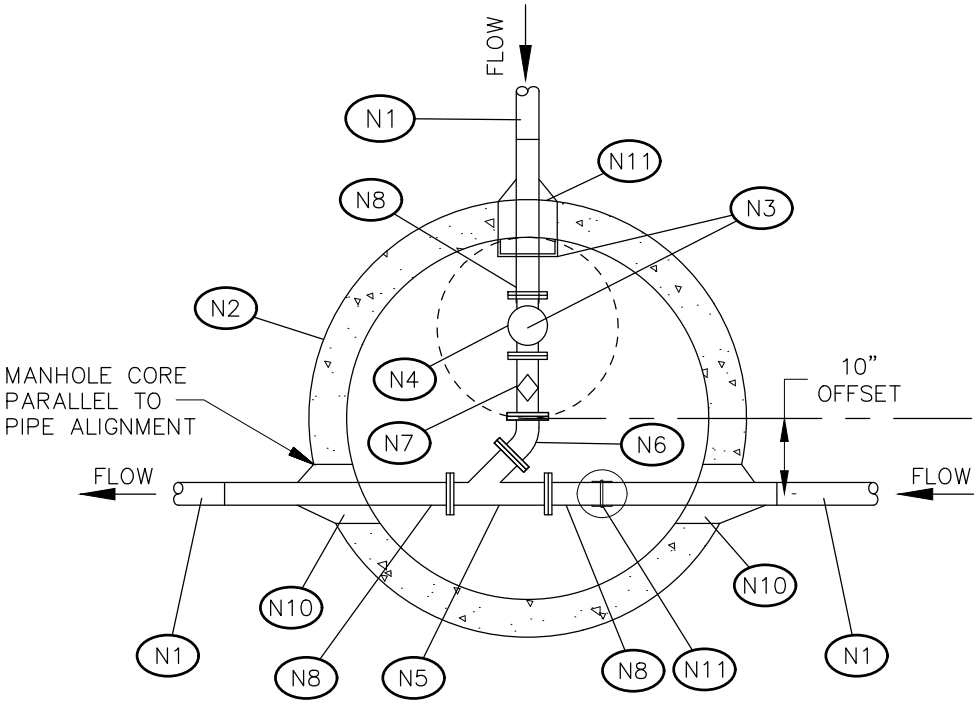
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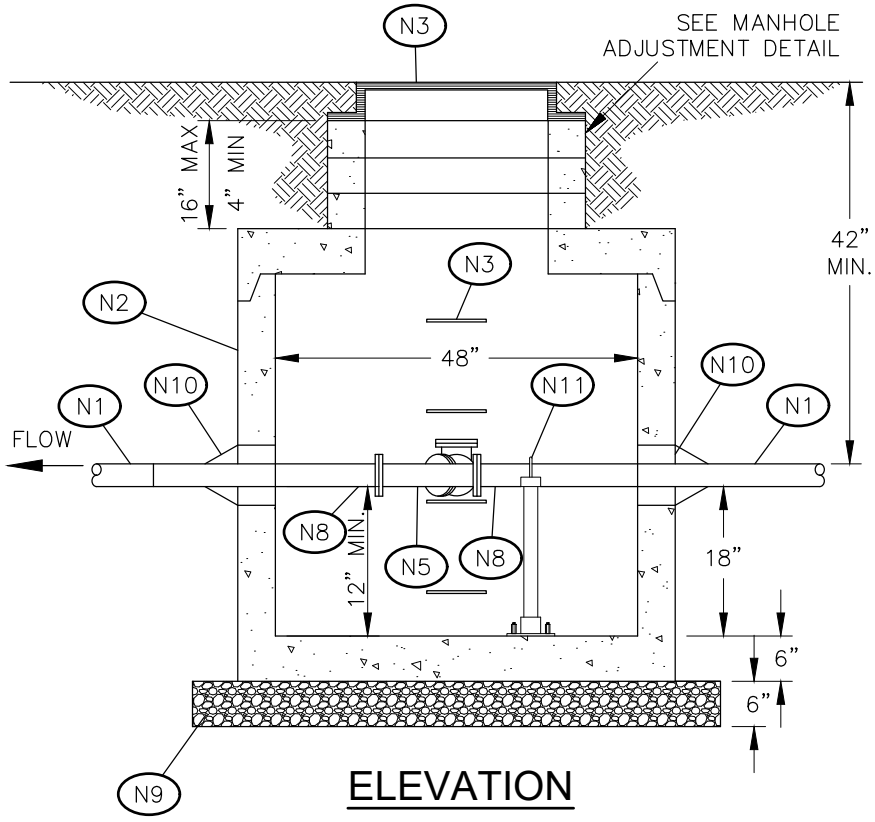
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CITY OF UNION GAP 1883

Revision	Date	Description	Appr
ORIG.	5/26		

CITY OF UNION GAP-STANDARD DETAIL	DOGHOUSE MANHOLE	SS-9





ELEVATION

FORCE MAIN JUNCTION MANHOLE

NOT TO SCALE

KEY NOTES

- N1 HDPE FORCE MAIN.
- N2 TYPE 2 48" INSIDE DIAMETER PRECAST MANHOLE WITH FLAT TOP AND SOLID BOTTOM (SUMP).
- N3 LOCKING MANHOLE LID AND ACCESS LADDER, LOCATE OVER GATE VALVE FOR ACCESSIBILITY.
- N4 FULL PORT SWING CHECK VALVE ASSEMBLY (FLxFL).
- N5 LATERAL WYE (FLxFL).
- N6 45° ELBOW (FLxFL).
- N7 RESILIENT WEDGE GATE VALVE (FLxFL).
- N8 HDPE x D.I. ADAPTER 30" LONG (PExFL).
- N9 6" CRUSHED SURFACING TOP COURSE, COMPACTED TO 95% MAXIMUM DENSITY.
- N10 KOR-N-SEAL AND NON-SHRINK GROUT.
- N11 3" ANVIL ADJUSTABLE PIPE SADDLE SUPPORT WITH U-BOLT.

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CITY OF UNION GAP 1883

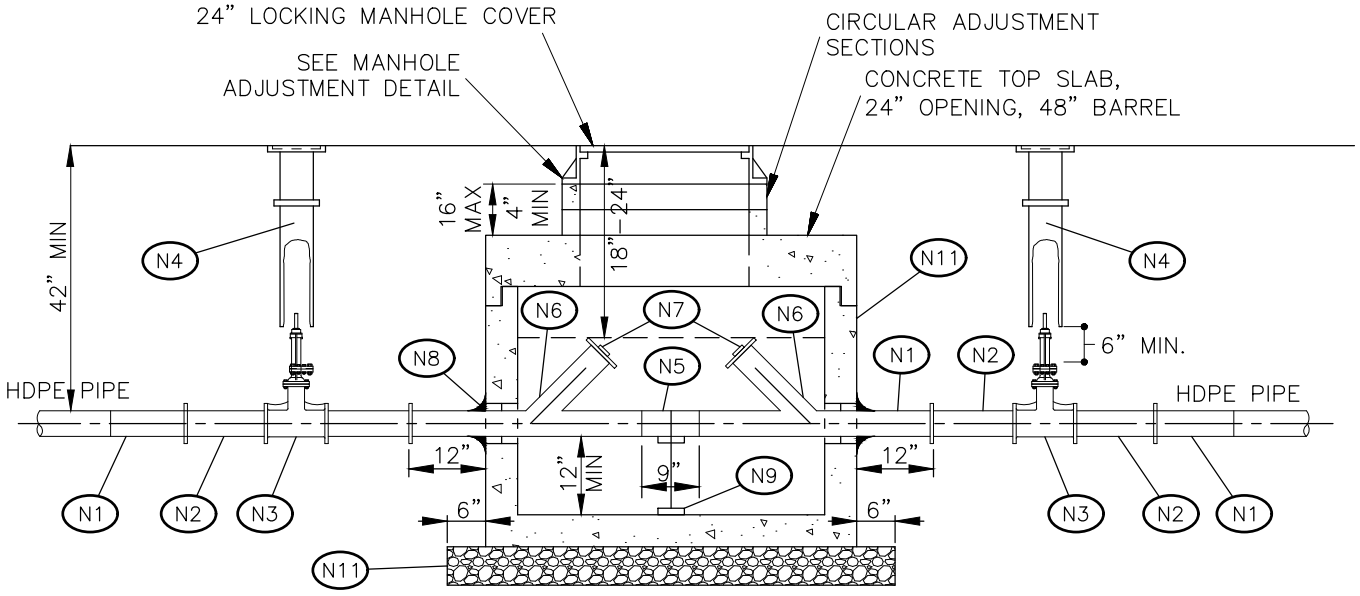
Revision	Date	Description	Appr
ORIG.	5/26		

CITY OF UNION GAP-STANDARD DETAIL	FORCE MAIN JUNCTION MANHOLE	SS-10

KEY NOTES

- (N1) HDPE FITTINGS FLANGE ADAPTOR.
- (N2) HDPE SPOOL, 12" LONG, (FL x FL).
- (N3) RESILIENT WEDGE GATE VALVE, (FL x FL).
- (N4) C.I. VALVE BOX, STAMPED "SEWER".
- (N5) HDPE FUSED MAIN.
- (N6) HDPE FITTINGS FABRICATED 45–DEGREE LATERAL WYE – THREE SEGMENT.
- (N7) D.I. BLD FLG WITH 2" BRASS PLUG.
- (N8) KOR–N–SEAL AND NON–SHRINK GROUT AT OPENING.
- (N9) 3" ANVIL ADJUSTABLE PIPE SADDLE SUPPORT WITH U–BOLT.
- (N10) 48" INSIDE DIAMETER PRE–CAST MANHOLE WITH FLAT TOP AND SOLID BOTTOM (SUMP). PROVIDE SOLID LID MARKED "SEWER".
- (N11) 6" CRUSHED SURFACING TOP COURSE, COMPACTED TO 95% MAXIMUM DENSITY.

NOTE:
1. CLEANOUT PLUGS MUST BE ACCESSIBLE FROM COVER.
2. HDPE FITTINGS SHALL TYPICALLY BE ELECTROFUSION.
3. CLEANOUTS SHALL BE SPACED A MAXIMUM OF 1,000 FEET ALONG ALL FORCEMAINS.



NOTE:
PROVIDE 12–INCH EXTENSION PIECE WHERE REQUIRED FOR VALVE BOX.

FORCE MAIN CLEANOUT MANHOLE

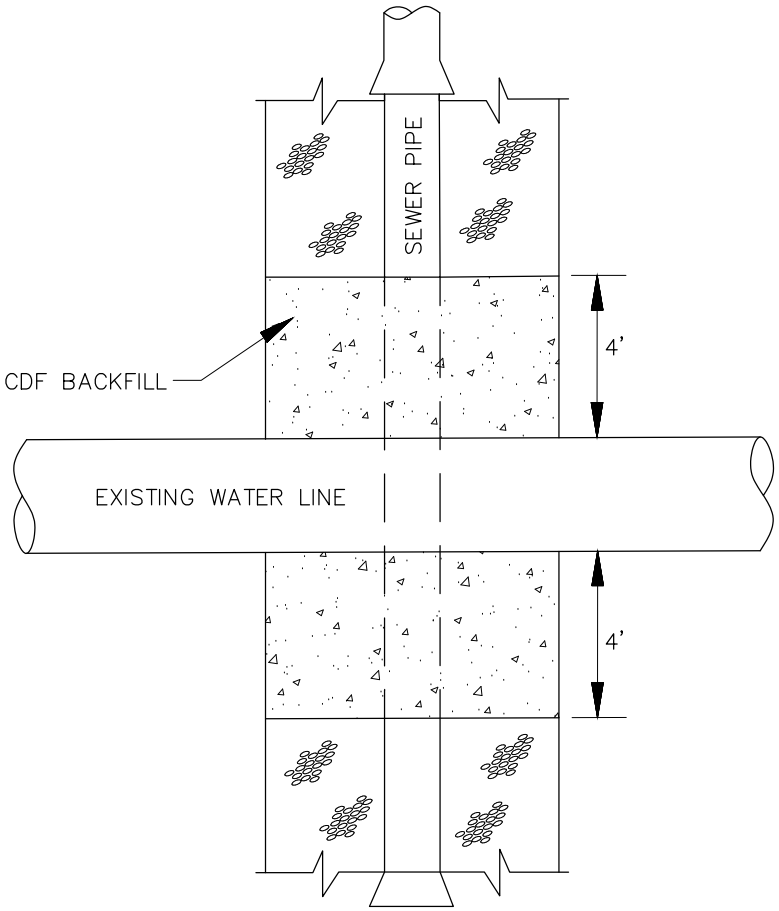
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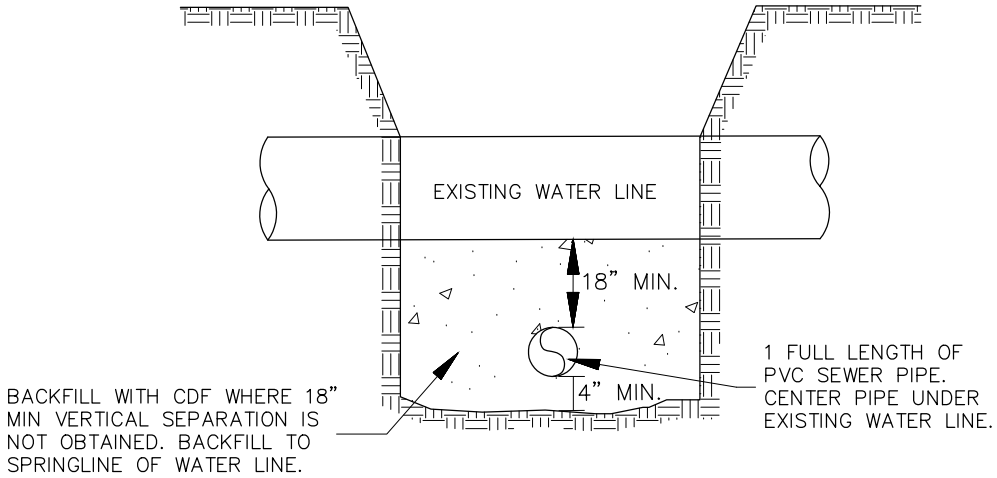
CITY OF UNION GAP 1883

Revision	Date	Description	Appr
ORIG.	5/26		

CITY OF UNION GAP-STANDARD DETAIL	FORCE MAIN CLEANOUT MANHOLE	SS-11



PLAN



SECTION

SIDE SEWER/WATER LINE CROSSING

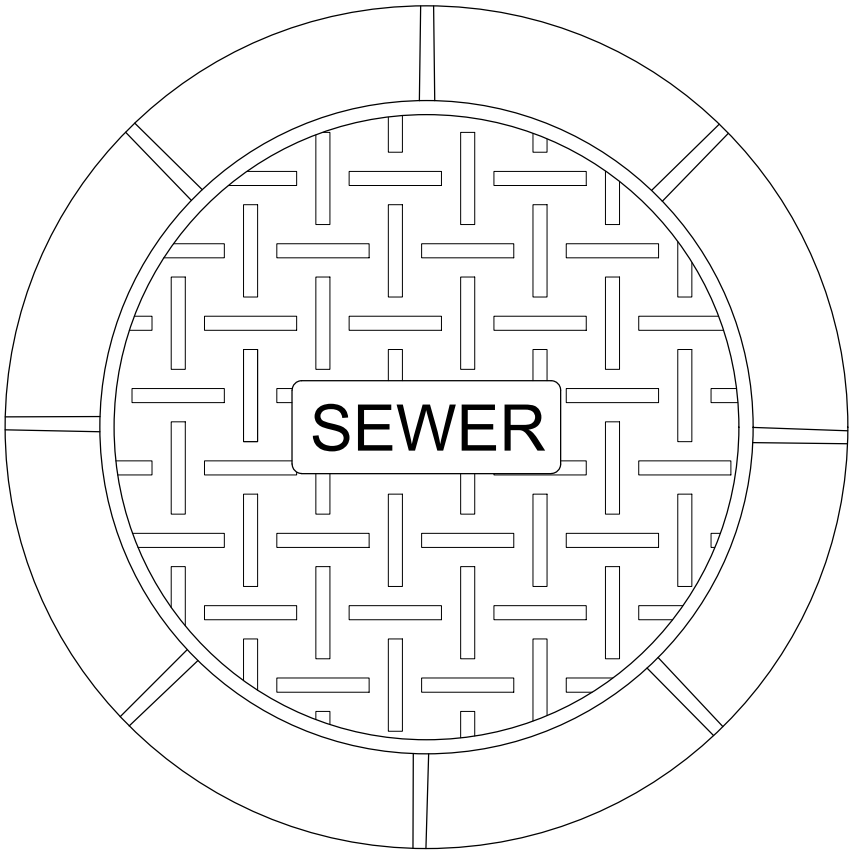
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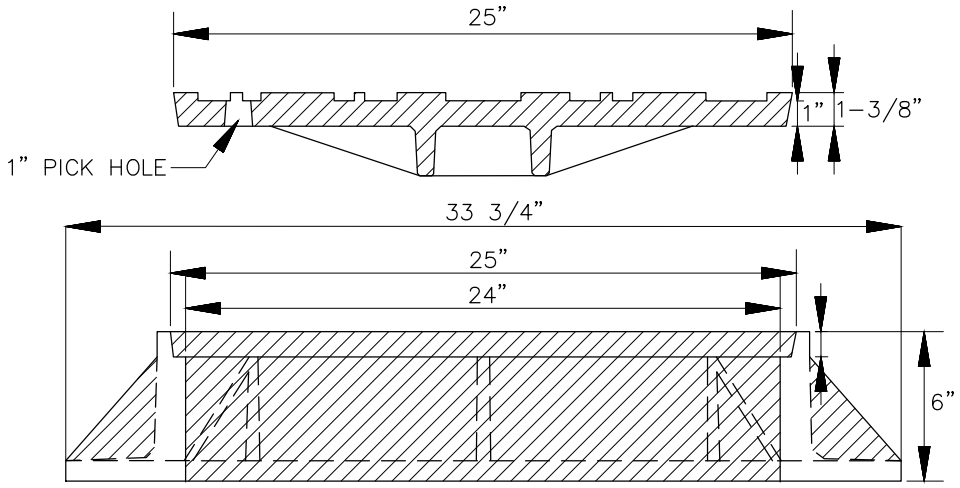
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ORIG.	5/26		

CITY OF UNION GAP-STANDARD DETAIL	SIDE SEWER / WATER LINE CROSSING	SS-12





MANHOLE RING AND COVER

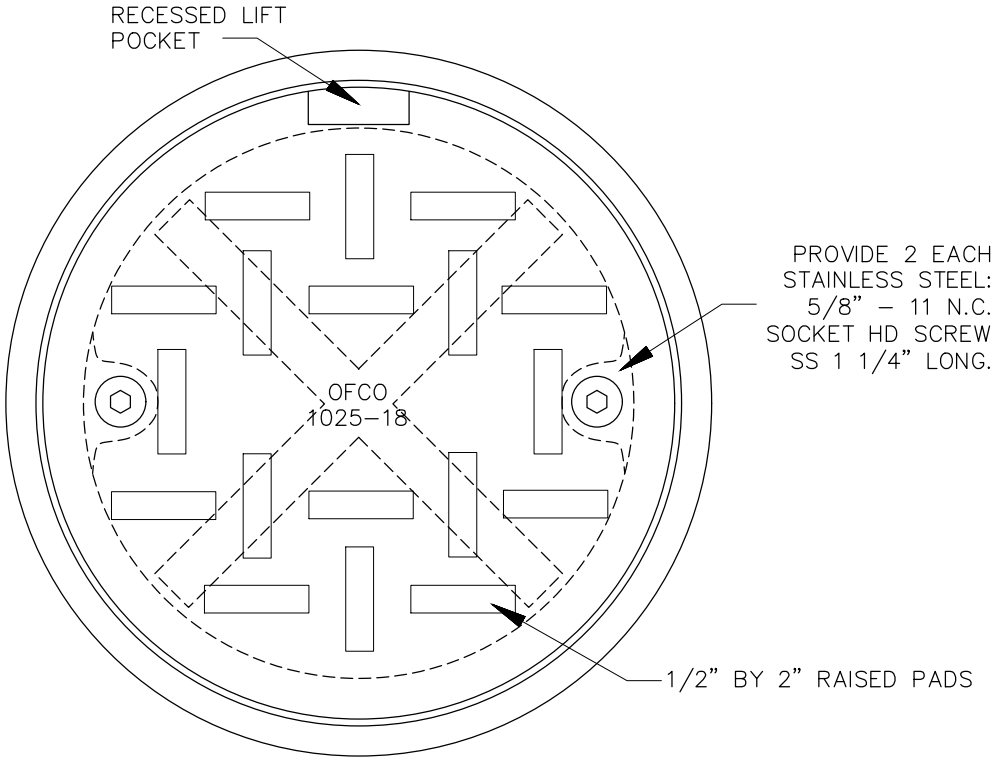
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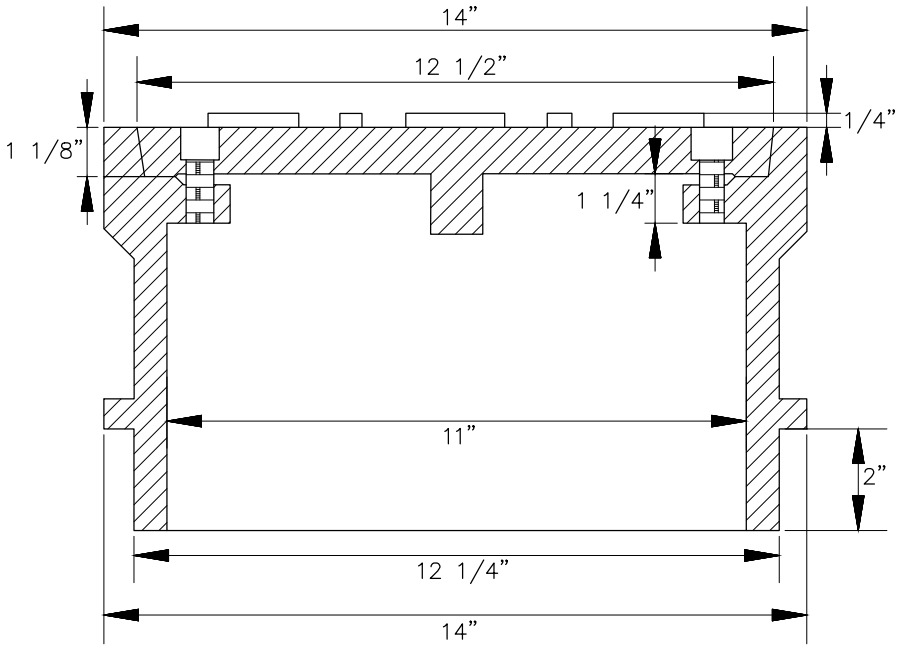
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CITY OF UNION GAP 1883

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ORIG.	5/26		

CITY OF UNION GAP-STANDARD DETAIL	MANHOLE RING AND COVER	SS-13





LOCKING CLEANOUT RING AND COVER

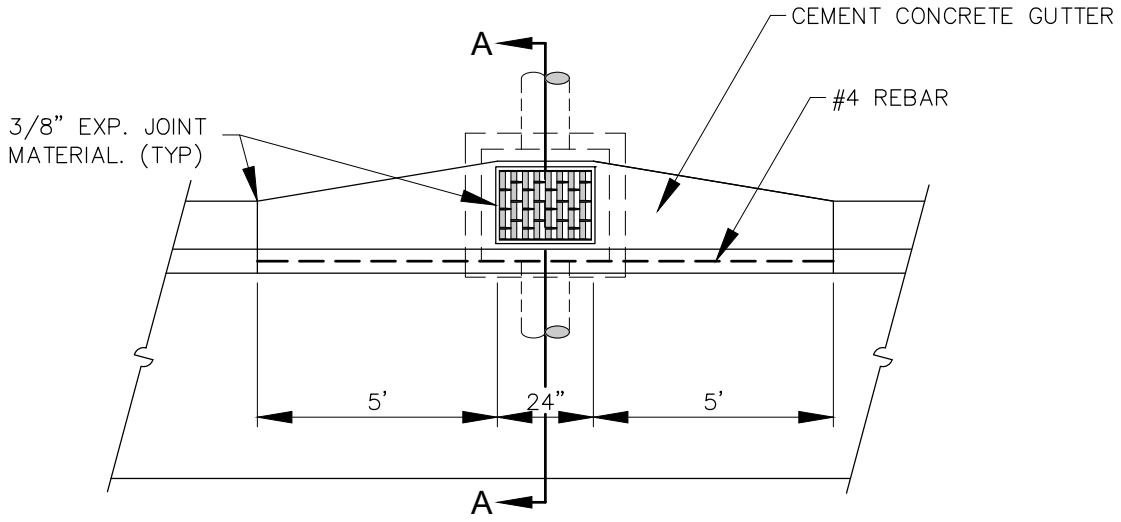
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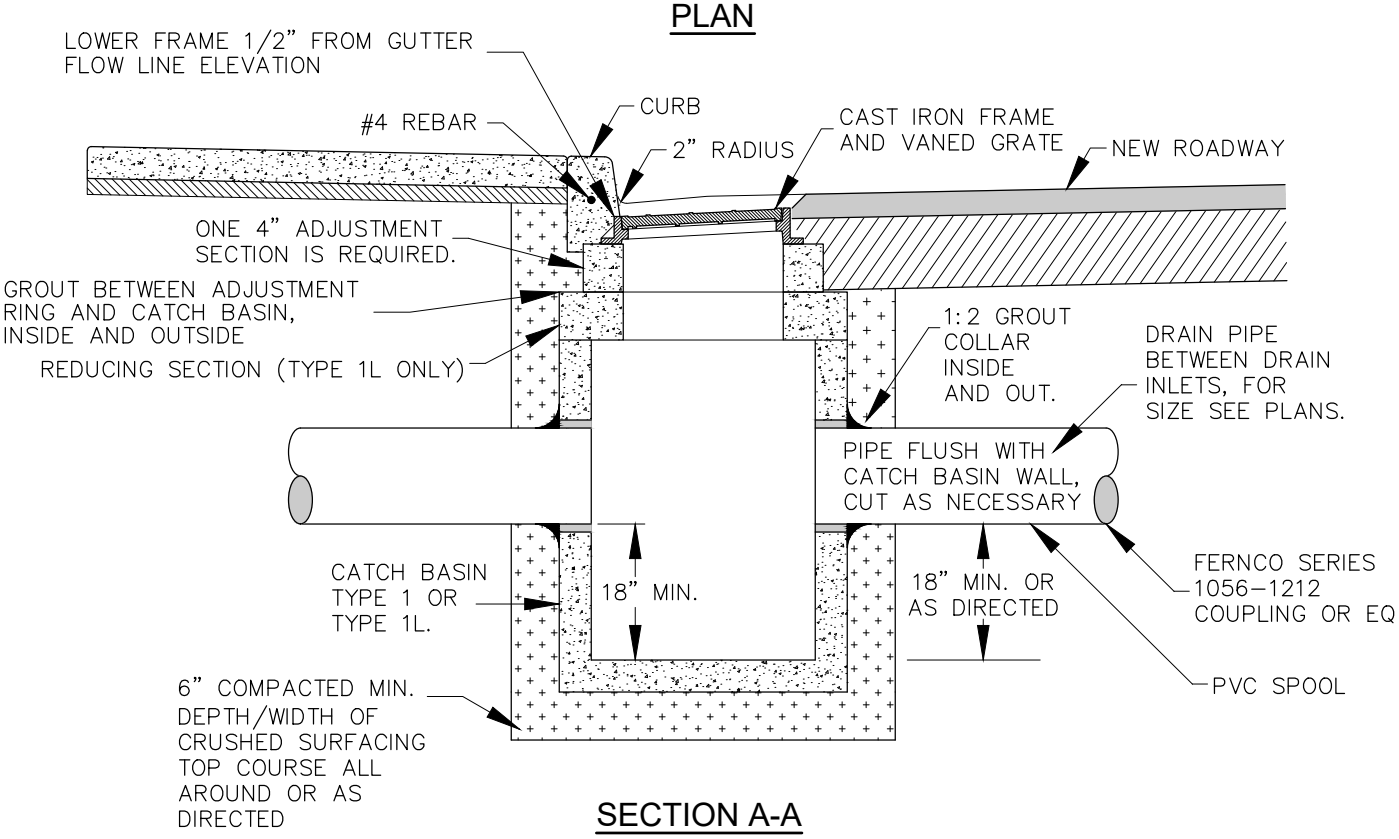
CITY OF
UNION GAP
1883

Revision	Date	Description	Appr
ORIG.	5/26		

CITY OF UNION GAP-STANDARD DETAIL	LOCKING CLEANOUT RING AND COVER	SS-14



PLAN



SECTION A-A

CATCH BASIN TYPE 1/1L

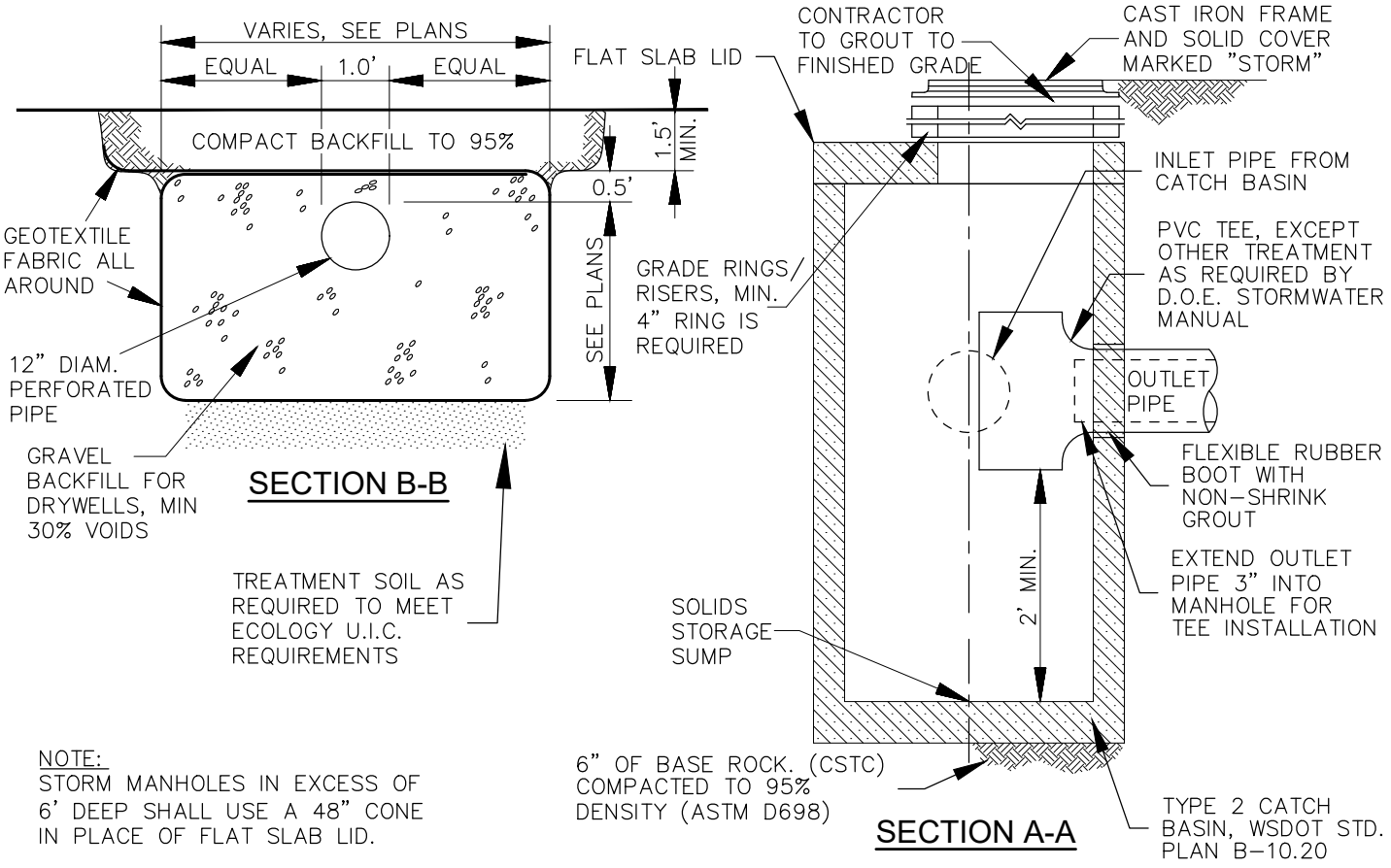
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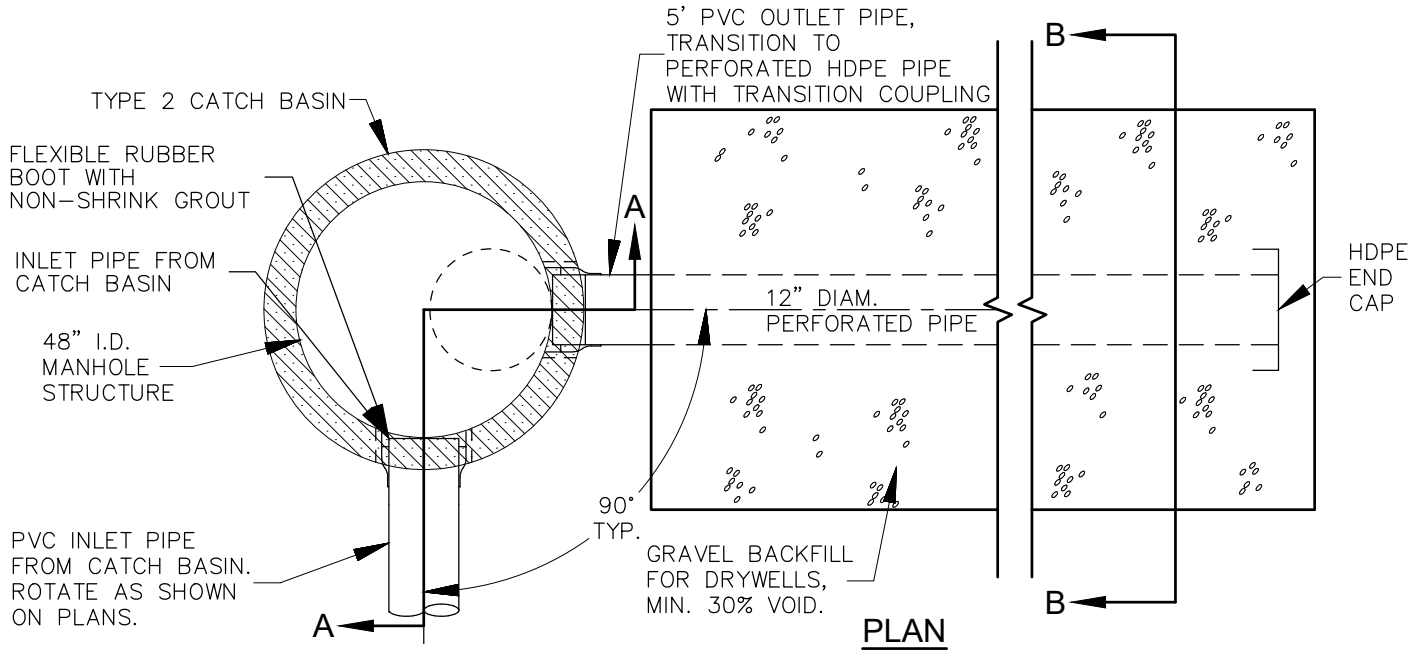
CITY OF UNION GAP 1883

Revision	Date	Description	Appr
ORIG.	5/26		

CITY OF UNION GAP-STANDARD DETAIL	CATCH BASIN TYPE 1/1L	D-1



NOTE:
STORM MANHOLES IN EXCESS OF 6' DEEP SHALL USE A 48" CONE IN PLACE OF FLAT SLAB LID.



INFILTRATION SYSTEM

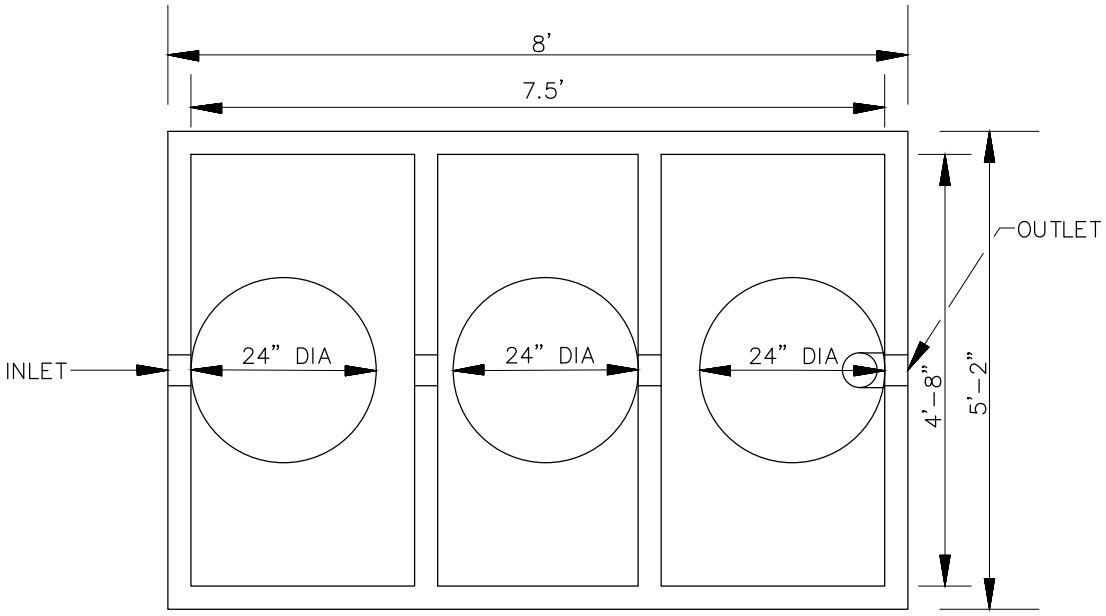
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CITY OF UNION GAP 1883

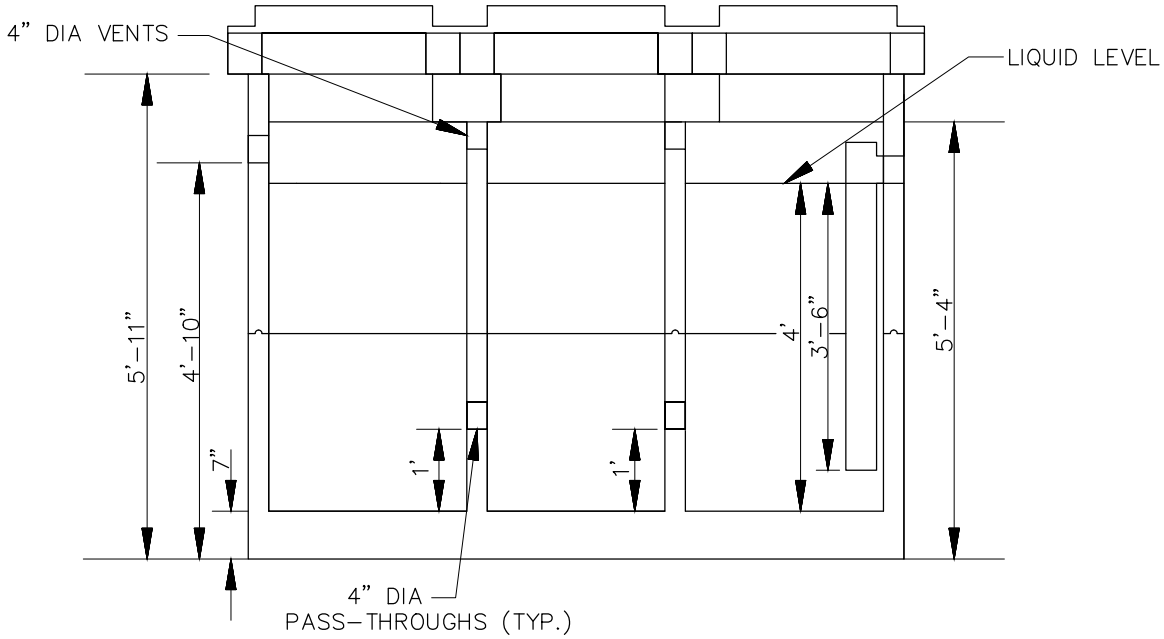
ORIG.	5/26		
Revision	Date	Description	Appr

CITY OF UNION GAP-STANDARD DETAIL	INFILTRATION SYSTEM	D-2



1,000 GALLON 3 COMPARTMENT SEPARATOR

4X24 CAST IRON "GAS TIGHT" OR "SEWER" GRADE RINGS AS NEEDED.



NOTES:
1. 2-PIECE CONSTRUCTION WITH BUTYL TAPE SEAL
2. REINFORCEMENT:
   TOP AND BOTTOM:
   #4 BARS AT 12"OC LENGTHWISE
   #5 BARS AT 9"OC WIDTHWISE.
   SIDES: 6X6-10/10 WIRE MESH
3. 4" PRESS SEAL @ INLET – 4" PRESS SEAL @ OUTLET

SECTION

OIL/WATER SEPARATOR

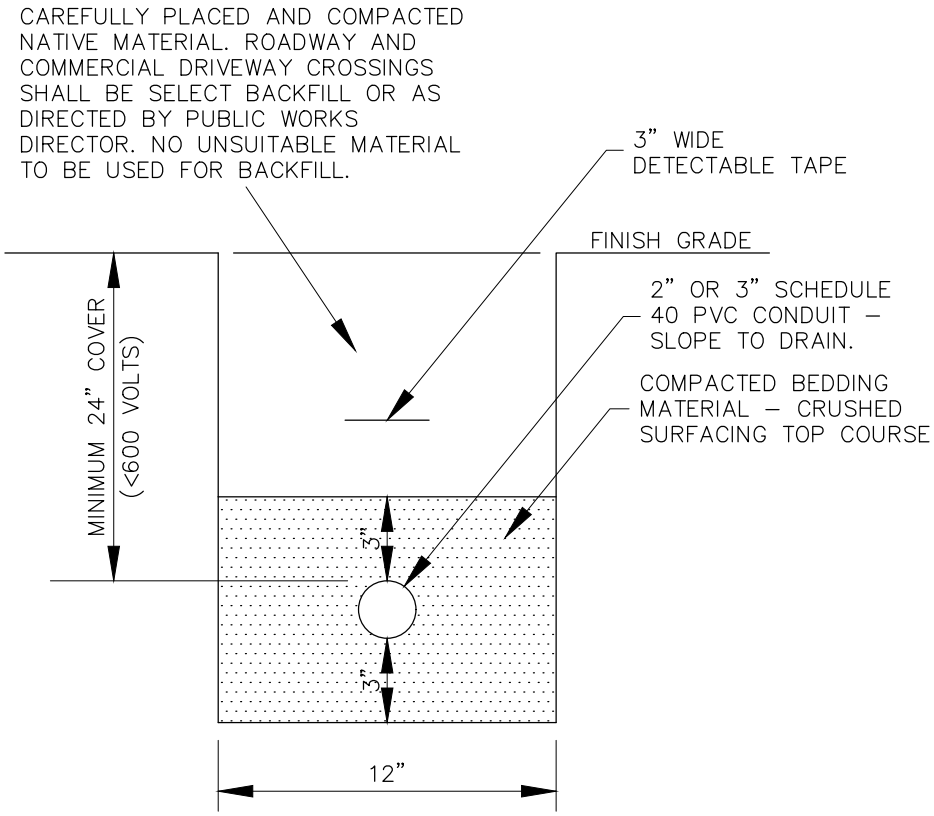
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CITY OF UNION GAP 1883

Revision	Date	Description	Appr
ORIG.	5/26		

CITY OF UNION GAP-STANDARD DETAIL	OIL/WATER SEPARATOR	D-3



NOTE:
ALL CONDUIT RUNS CROSSING ROADWAYS SHALL INCLUDE A 2" SPARE CONDUIT INSTALLED PARALLEL TO THE MAIN RUN, COMPLETE WITH PULL CORDS AND CAPS.

CONDUIT TRENCH SECTION

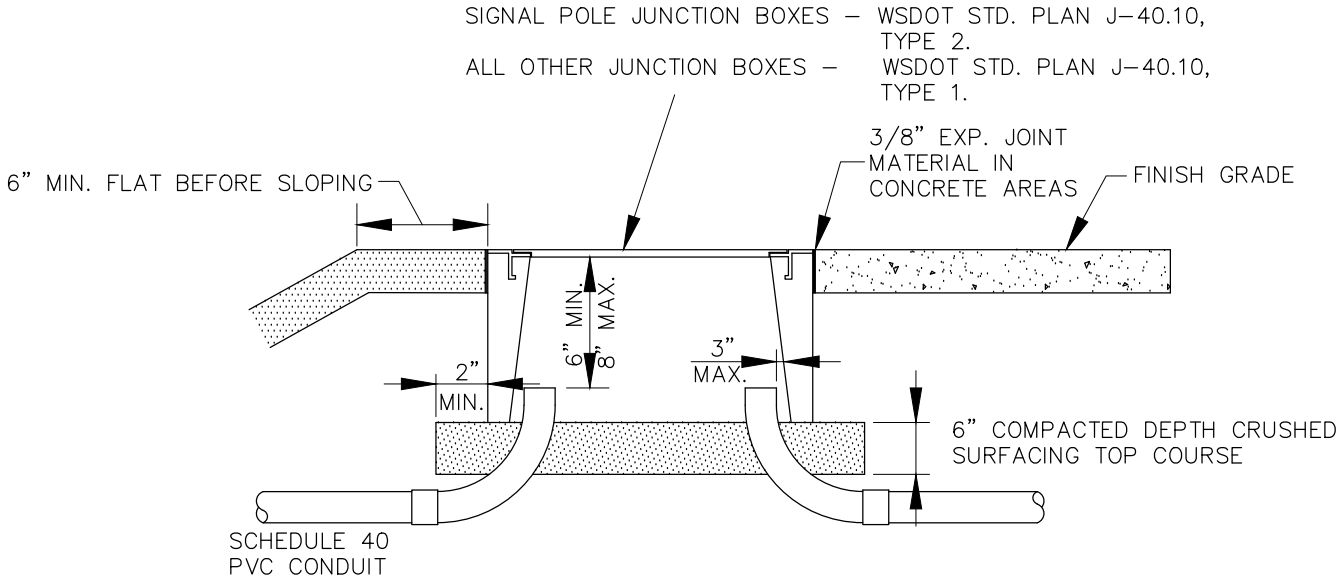
NOT TO SCALE

NOTE:
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CITY OF UNION GAP 1883

Revision	Date	Description	Appr
ORIG.	5/26		

CITY OF UNION GAP-STANDARD DETAIL	CONDUIT TRENCH SECTION	E-1



NOTE:
INFORMATION CONTAINED HEREIN DOES NOT ALLEVIATE THE DEVELOPER FROM CONTRACTING AND ABIDING BY UTILITY COMPANY STANDARDS

CONDUIT ENTRANCE AT JUNCTION BOX

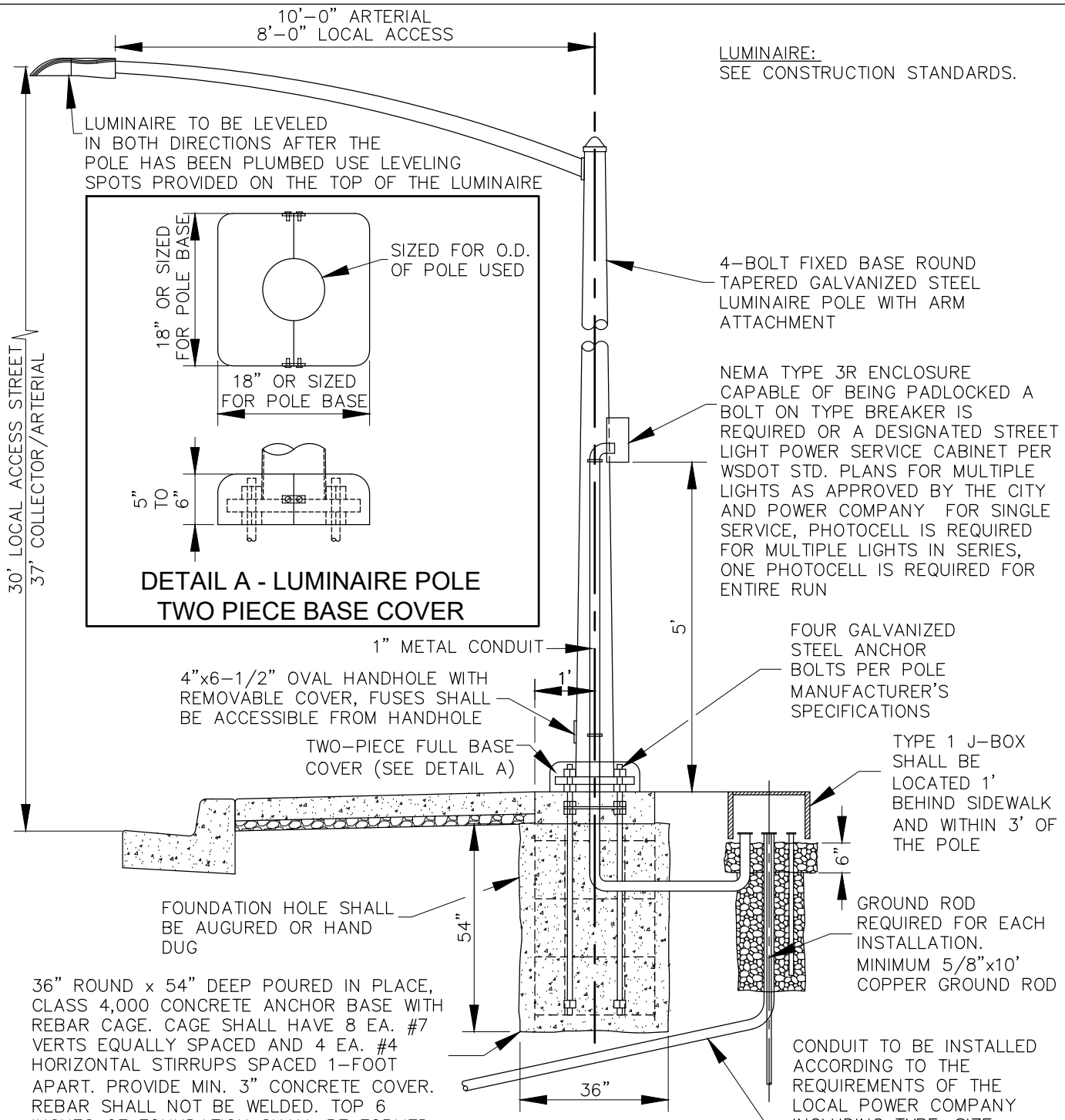
NOT TO SCALE

NOTE:
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CITY OF UNION GAP 1883

Revision	Date	Description	Appr
ORIG.	5/26		

CITY OF UNION GAP-STANDARD DETAIL	CONDUIT ENTRANCE AT JUNCTION BOX	E-2



TYPICAL SECTION

STREET LIGHT

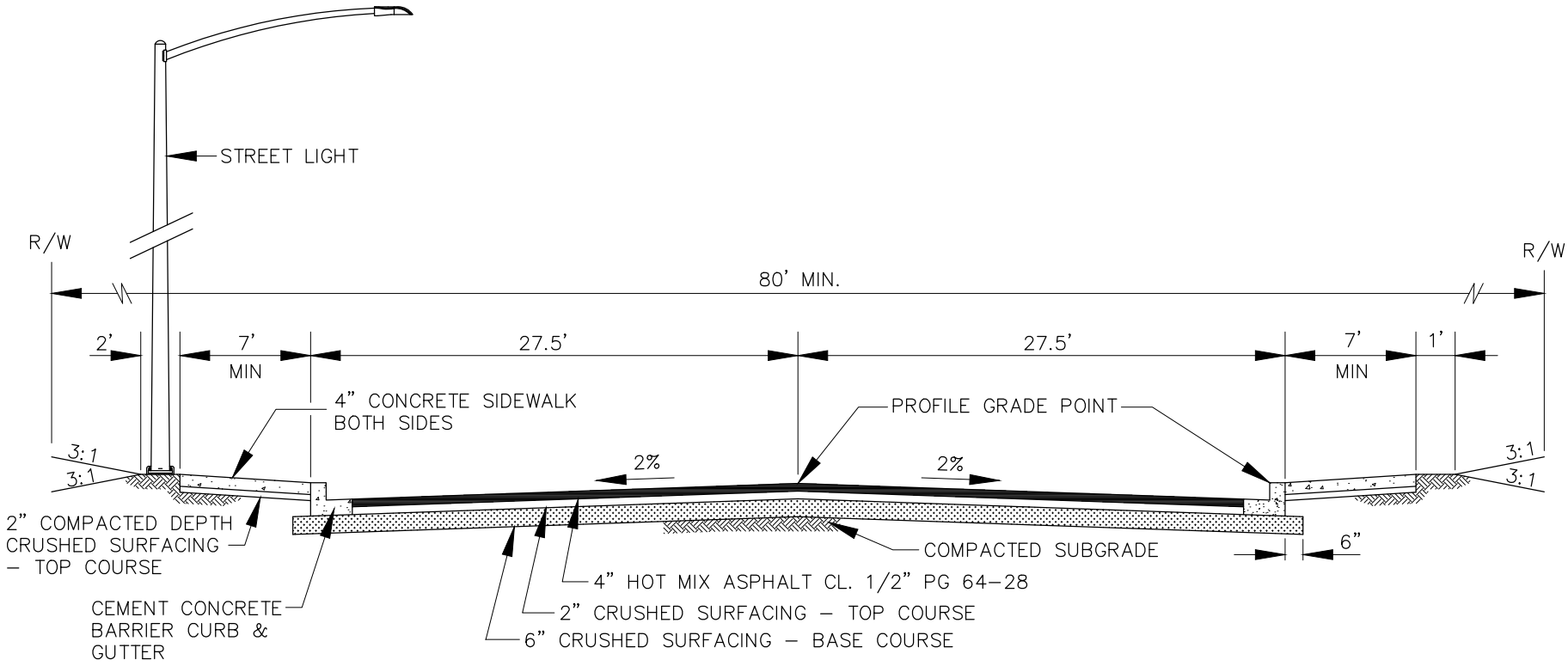
NOT TO SCALE

NOTE:
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CITY OF UNION GAP 1883

Revision	Date	Description	Appr
ORIG.	5/26		

CITY OF UNION GAP-STANDARD DETAIL	STREET LIGHT	E-3



NOTES:

1. ALL THICKNESSES ARE COMPACTED DEPTHS.
2. BACK SLOPES SHALL BE 3:1 UNLESS OTHERWISE APPROVED BY PUBLIC WORKS DIRECTOR.
3. CONCRETE SIDEWALK TO BE: 6" THICK AT DRIVEWAYS, 4" THICK ALL OTHER LOCATIONS.
4. 10' PAVED HMA PATHWAY (2" HOT MIX ASPHALT, 4" CSBC) ON ONE SIDE MAY BE CONSTRUCTED IN LIEU OF SIDEWALKS WITH PUBLIC WORKS DIRECTOR APPROVAL.
5. A 12' TWO WAY LEFT TURN LANE SHALL BE ADDED WHERE WARRANTED BY A TRAFFIC STUDY.

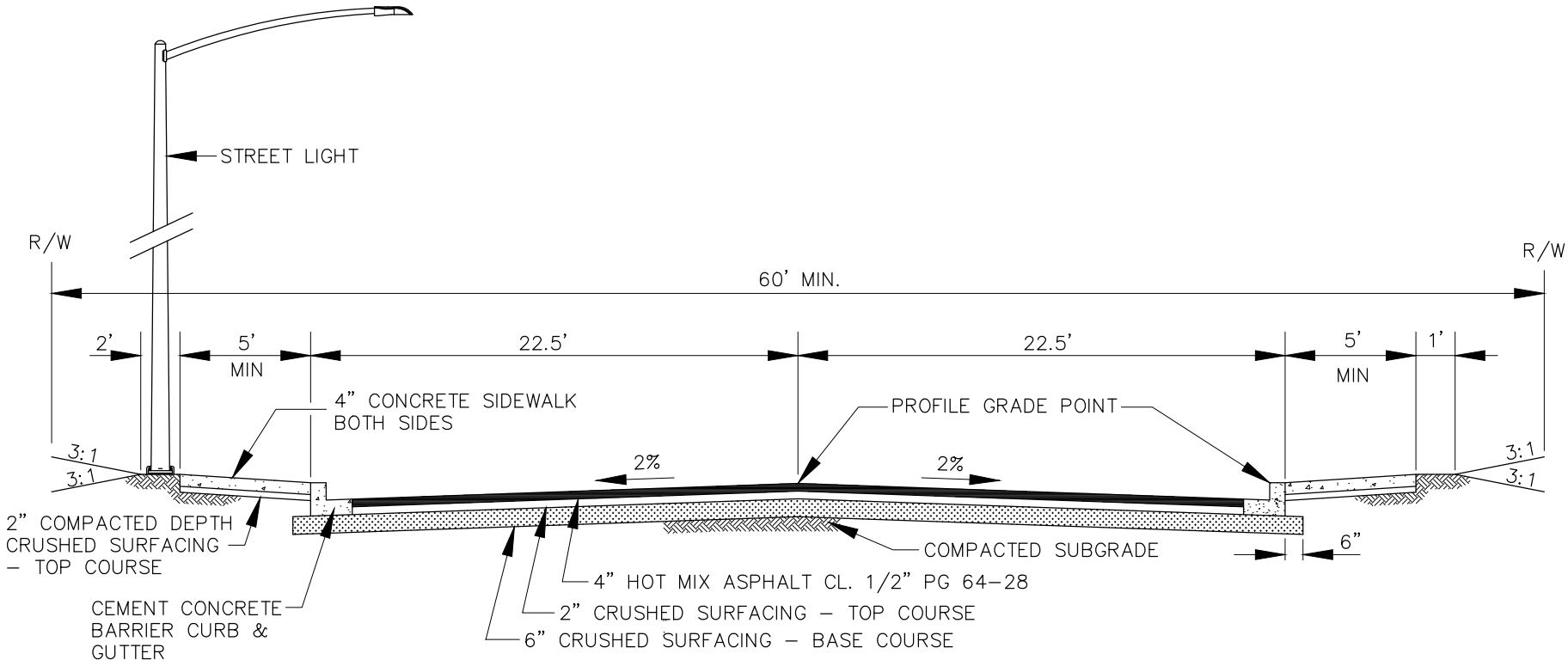
LANES:
4 – 11' TRAVEL LANES
2 – 5' BIKE LANES (INCLUDES GUTTER)

NOTE:
ONLY THE LATEST DETAIL, AS APPROVED BY THE DIRECTOR OF PUBLIC WORKS, SHALL BE USED.

CITY OF
UNION GAP
1883

Revision	Date	Description	Appr
ORIG.	5/26		

CITY OF UNION GAP-STANDARD DETAIL	TYPICAL ARTERIAL ROADWAY SECTION	ST-1



NOTES:

1. ALL THICKNESSES ARE COMPACTED DEPTHS.
2. BACK SLOPES SHALL BE 3:1 UNLESS OTHERWISE APPROVED BY PUBLIC WORKS DIRECTOR.
3. CONCRETE SIDEWALK TO BE: 6" THICK AT DRIVEWAYS, 4" THICK ALL OTHER LOCATIONS.
4. IF ROLLED CURB AND GUTTER IS APPROVED, SIDEWALK SHALL BE 6" THICK.
5. 10' PAVED HMA PATHWAY (2" HOT MIX ASPHALT, 4" CSBC) ON ONE SIDE MAY BE CONSTRUCTED IN LIEU OF SIDEWALKS WITH PUBLIC WORKS DIRECTOR APPROVAL.

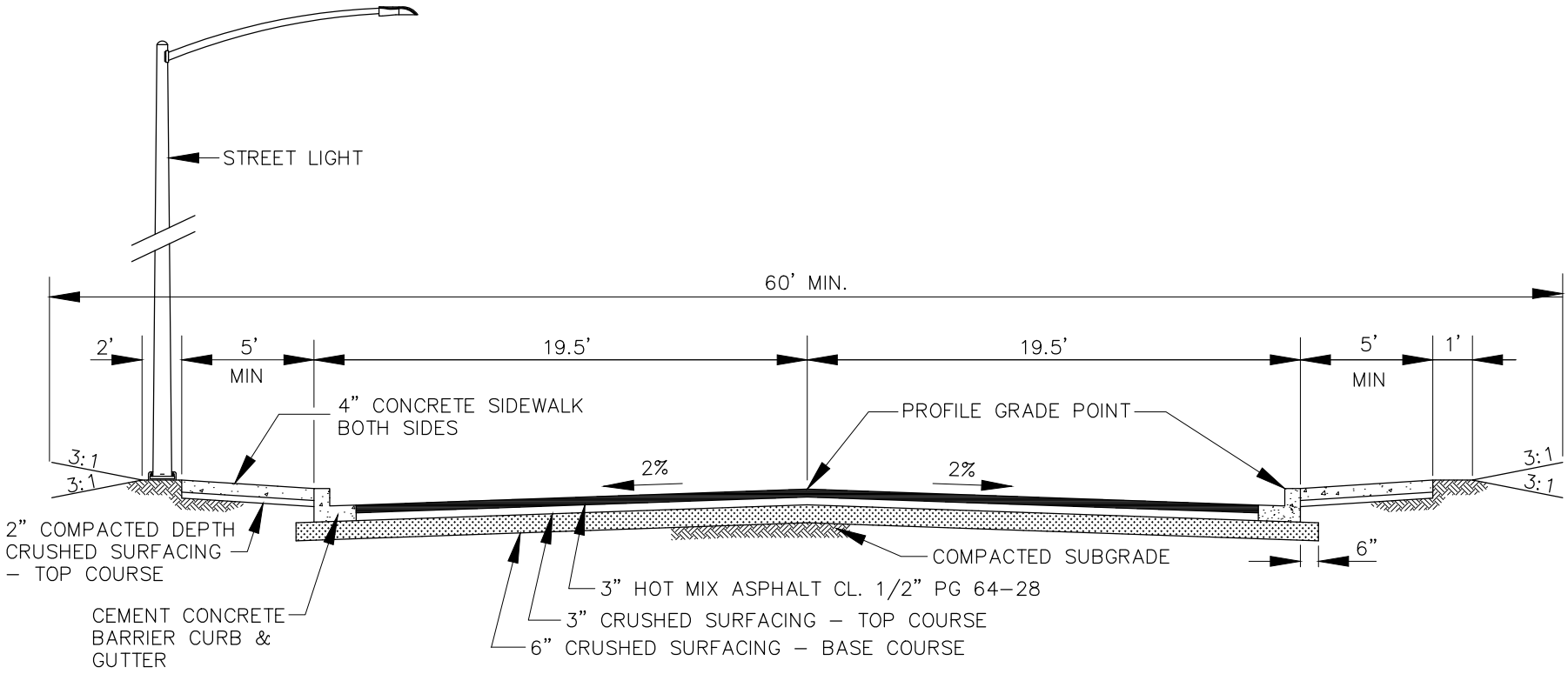
LANES:
1 – 12' TWO WAY LEFT TURN (TWLT) LANE
2 – 11' TRAVEL LANES
2 – 5' BIKE LANES (INCLUDES GUTTER)

NOTE:
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CITY OF UNION GAP
1883

Revision	Date	Description	Appr
ORIG.	5/26		

CITY OF UNION GAP-STANDARD DETAIL	TYPICAL COLLECTOR ROADWAY SECTION	ST-2



NOTES:

1. ALL THICKNESSES ARE COMPACTED DEPTHS.
2. BACK SLOPES SHALL BE 3:1 UNLESS OTHERWISE APPROVED BY PUBLIC WORKS DIRECTOR.
3. CONCRETE SIDEWALK TO BE: 6" THICK AT DRIVEWAYS, 4" THICK ALL OTHER LOCATIONS.
4. IF ROLLED CURB AND GUTTER IS APPROVED, SIDEWALK SHALL BE 6" THICK.
5. 10' PAVED HMA PATHWAY (2" HOT MIX ASPHALT, 4" CSBC) ON ONE SIDE MAY BE CONSTRUCTED IN LIEU OF SIDEWALKS WITH PUBLIC WORKS DIRECTOR APPROVAL.

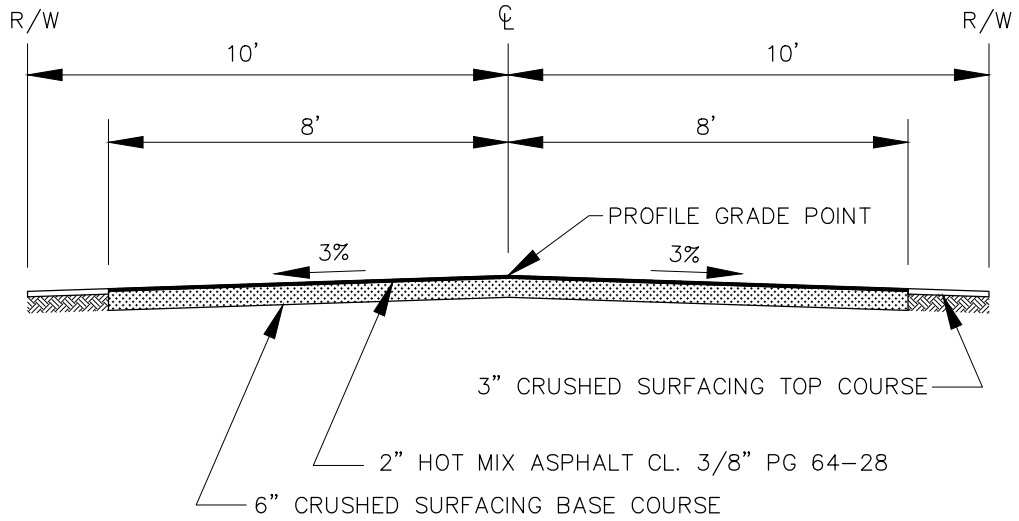
LANES:
2 – 11' TRAVEL LANES
2 – 8' PARALLEL PARKING
LANES (INCLUDES GUTTER)

NOTE:
ONLY THE LATEST DETAIL, AS APPROVED BY THE DIRECTOR OF PUBLIC WORKS, SHALL BE USED.

CITY OF
UNION GAP
1883

ORIG.	5/26		
Revision	Date	Description	Appr

CITY OF UNION GAP-STANDARD DETAIL	TYPICAL LOCAL ACCESS ROADWAY SECTION	ST-3



NOTES:
1. ALL THICKNESSES ARE COMPACTED DEPTHS.
2. BACK SLOPES SHALL BE 3:1 UNLESS OTHERWISE APPROVED BY PUBLIC WORKS DIRECTOR.

ROADWAY SECTION - ALLEY

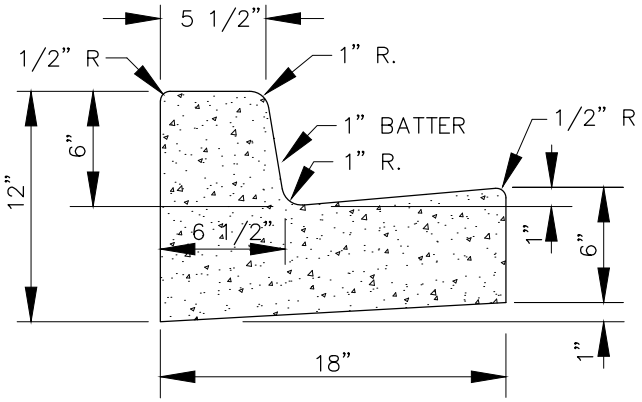
NOT TO SCALE

NOTE:
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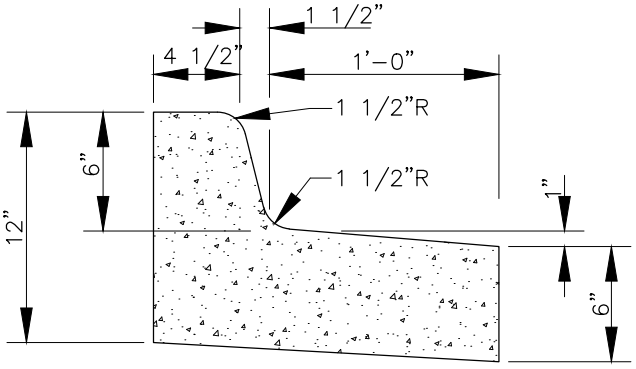
CITY OF
UNION GAP
1883

Revision	Date	Description	Appr
ORIG.	5/26		

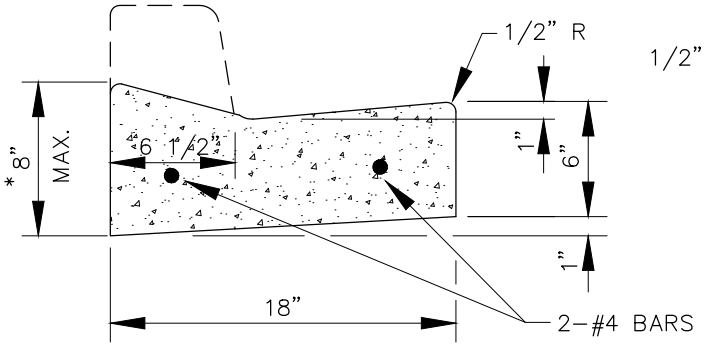
CITY OF UNION GAP-STANDARD DETAIL	TYPICAL ALLEY ROADWAY SECTION	ST-4



FULL HEIGHT - BARRIER

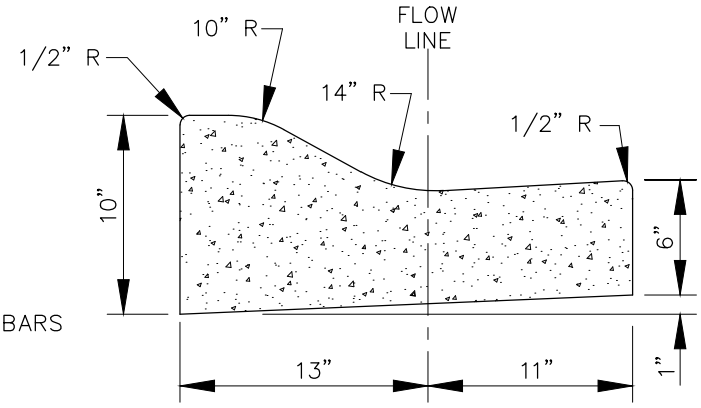


CONCRETE SPILL CURB



DEPRESSED - DRIVEWAYS

*AS DIRECTED BY ENGINEER. MAY VARY DEPENDING UPON GRADE OF SIDEWALK AND DRIVEWAY BEYOND CURB. FLUSH WITH GUTTER PAN AT CURB ENTRANCE, NO LIP.

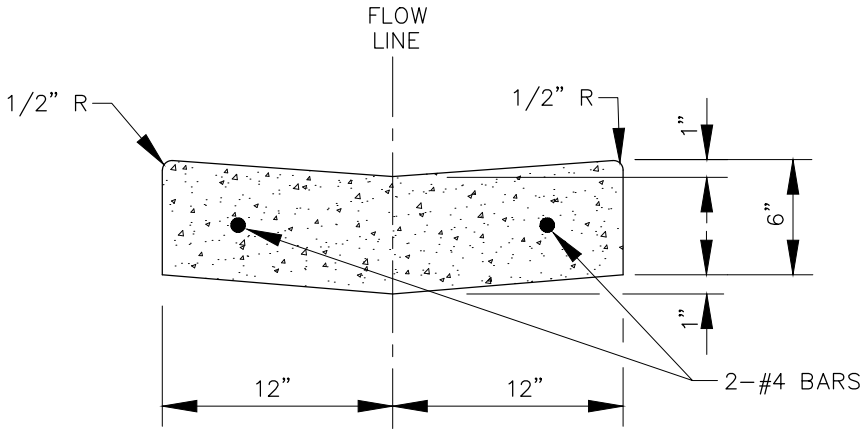


ROLLED CURB

NOTE:
TOP OF CURB ELEVATION SHOWN IS TOP OF FULL HEIGHT CURB. SUBTRACT 0.17' FOR TOP OF ROLLED CURB.

NOTES:

1. 3/8" THICK MASTIC EXPANSION JOINT TO BE PLACED AT ALL POINTS OF TANGENCY.
2. FOR STATIONARY FORM CONSTRUCTION STANDARD PLATES AND HALF PLATES TO BE PLACED AT 10'-0" INTERVALS.
3. FOR SLIP-FORM CONSTRUCTION, PROVIDE FULL DEPTH JOINTS AT 10'-0" INTERVALS.
4. BACKFILL BEHIND CURB SHALL EXTEND FROM TOP OF CURB BACK TO A POINT AS DIRECTED BY THE PUBLIC WORKS DIRECTOR. THE TOP 4" OF BACKFILL OR EXISTING MATERIAL SHALL BE OF A FINE GRADED MATERIAL, SUITABLE FOR LAWNS, AND BE DAMPENED AND THEN BE MECHANICALLY COMPACTED TO OBTAIN A REASONABLE LEVEL OF COMPACTION.



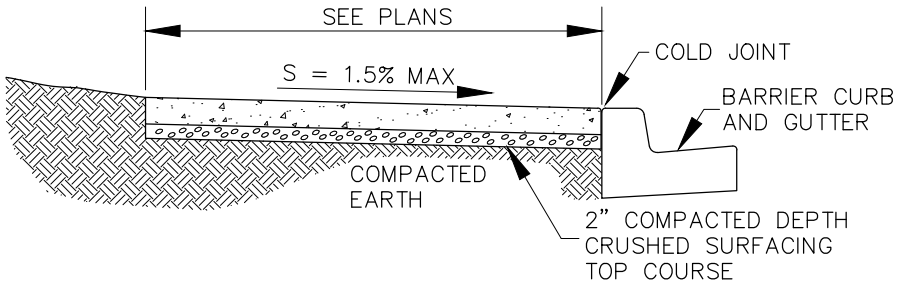
VALLEY GUTTER

NOTE:
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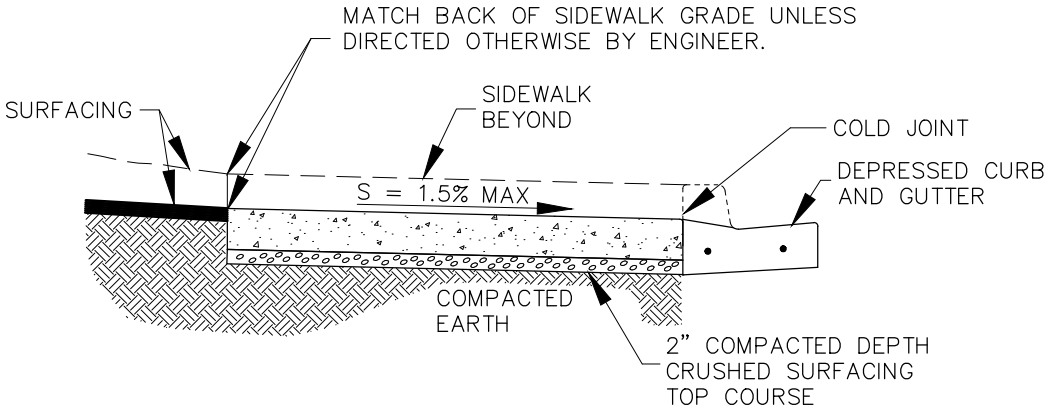
CITY OF
UNION GAP
1883

ORIG.	5/26		
Revision	Date	Description	Appr

CITY OF UNION GAP-STANDARD DETAIL	CONCRETE CURB AND GUTTER	ST-5



4" THICK SIDEWALK SECTION



6" THICK CONCRETE APPROACHES AT DRIVEWAYS AND ADJACENT TO ROLLED CURBS

NOTES:
1. DRIVEWAYS SHALL MEET REQUIREMENTS OF SECTION 8-06.
2. DRIVEWAY CONCRETE SHALL BE CLASS 4000 PER SECTION 8-06.3 (4,000 PSI AT 28 DAYS) AND SHALL ACHIEVE 2,500 PSI MINIMUM STRENGTH IN 3 DAYS PRIOR TO OPENING TO TRAFFIC.

CONCRETE SIDEWALK SECTIONS

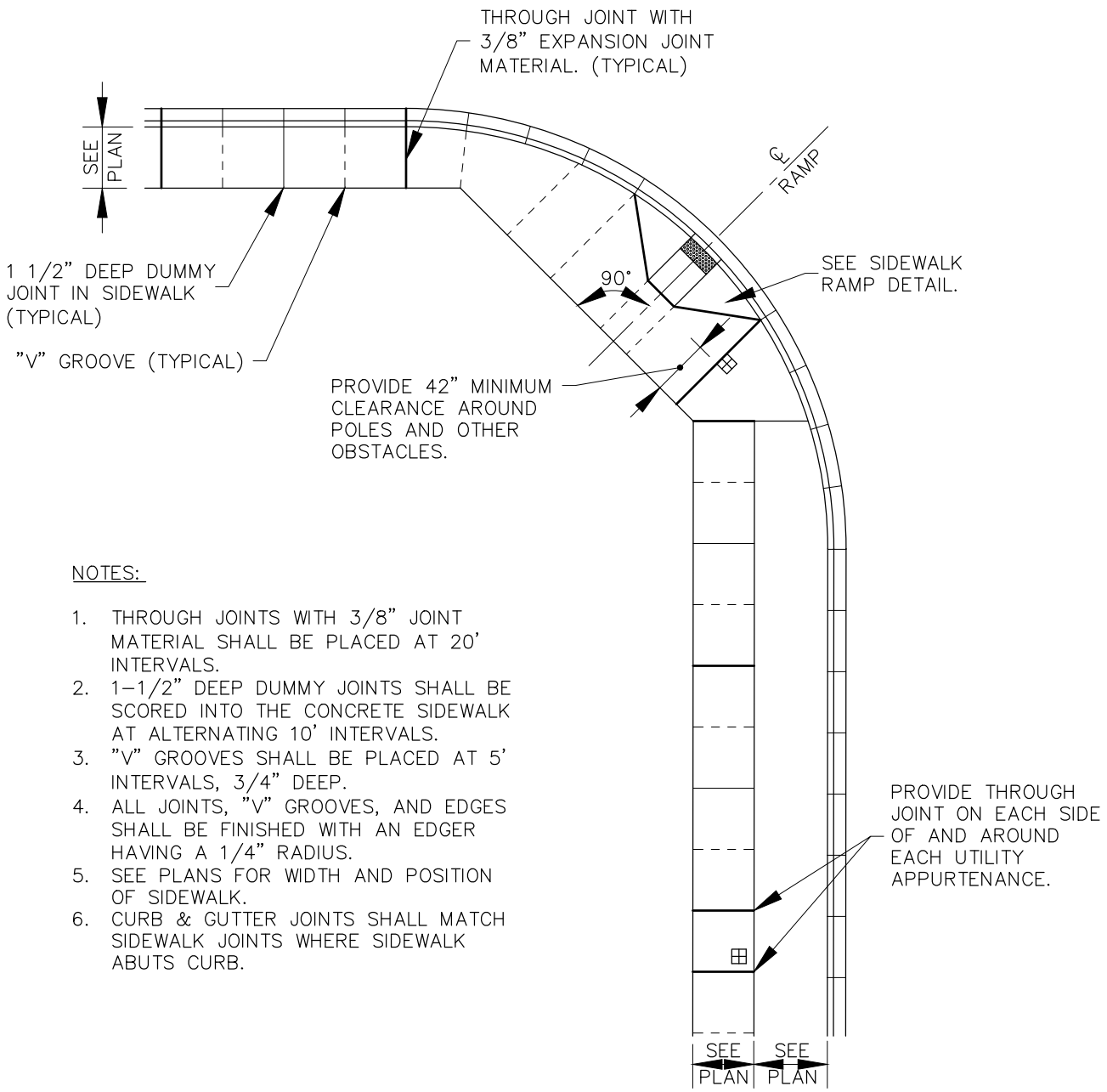
NOT TO SCALE

NOTE:
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CITY OF
UNION GAP
1883

Revision	Date	Description	Appr
ORIG.	5/26		

CITY OF UNION GAP-STANDARD DETAIL	CONCRETE SIDEWALK SECTIONS	ST-6



NOTES:

1. THROUGH JOINTS WITH 3/8" JOINT MATERIAL SHALL BE PLACED AT 20' INTERVALS.
2. 1–1/2" DEEP DUMMY JOINTS SHALL BE SCORED INTO THE CONCRETE SIDEWALK AT ALTERNATING 10' INTERVALS.
3. "V" GROOVES SHALL BE PLACED AT 5' INTERVALS, 3/4" DEEP.
4. ALL JOINTS, "V" GROOVES, AND EDGES SHALL BE FINISHED WITH AN EDGER HAVING A 1/4" RADIUS.
5. SEE PLANS FOR WIDTH AND POSITION OF SIDEWALK.
6. CURB & GUTTER JOINTS SHALL MATCH SIDEWALK JOINTS WHERE SIDEWALK ABUTS CURB.

SIDEWALK JOINTING

NOT TO SCALE

NOTE:
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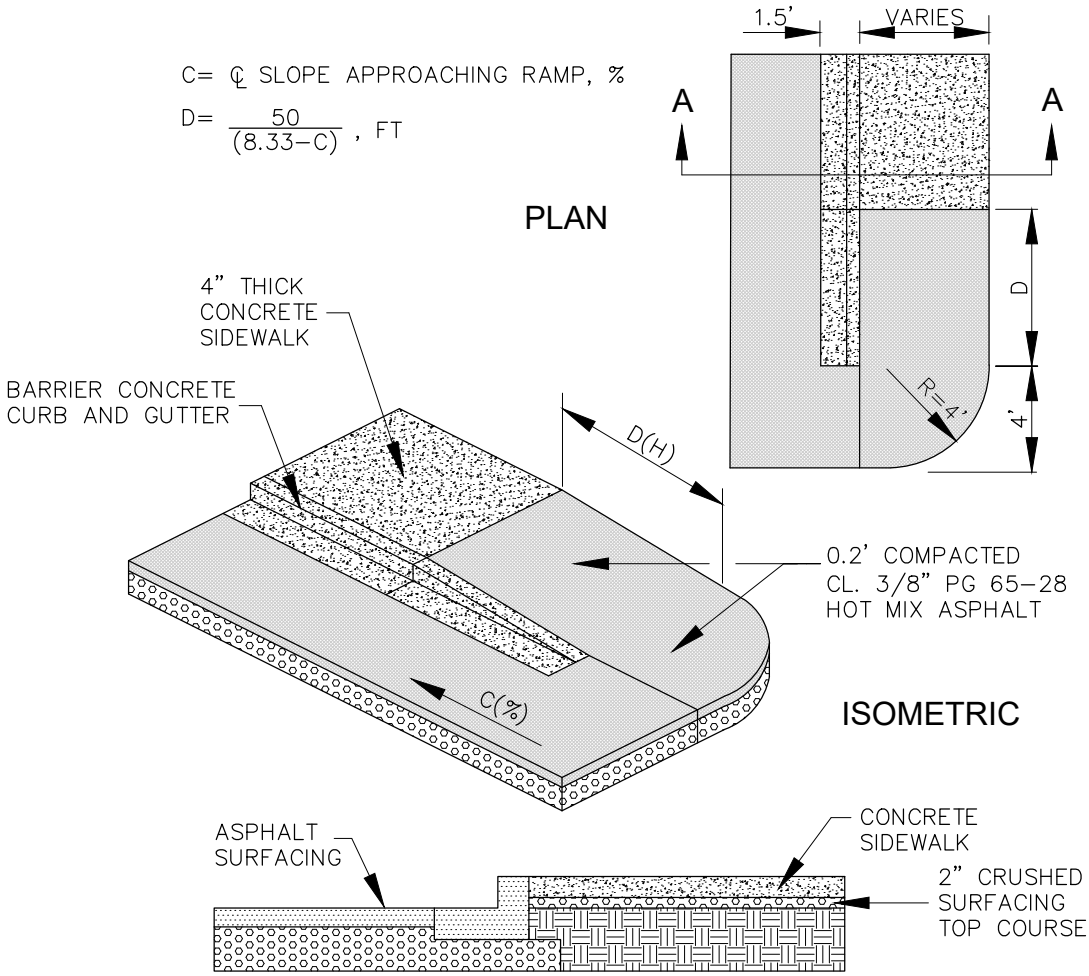
CITY OF
UNION GAP
1883

Revision	Date	Description	Appr
ORIG.	5/26		

CITY OF UNION GAP-STANDARD DETAIL	SIDEWALK JOINTING	ST-7

C= ℄ SLOPE APPROACHING RAMP, %

$D = \frac{50}{(8.33 - C)}$, FT



SECTION A-A

NOTE:
ALL THICKNESSES ARE COMPACTED DEPTHS.

ASPHALT SIDEWALK RAMP

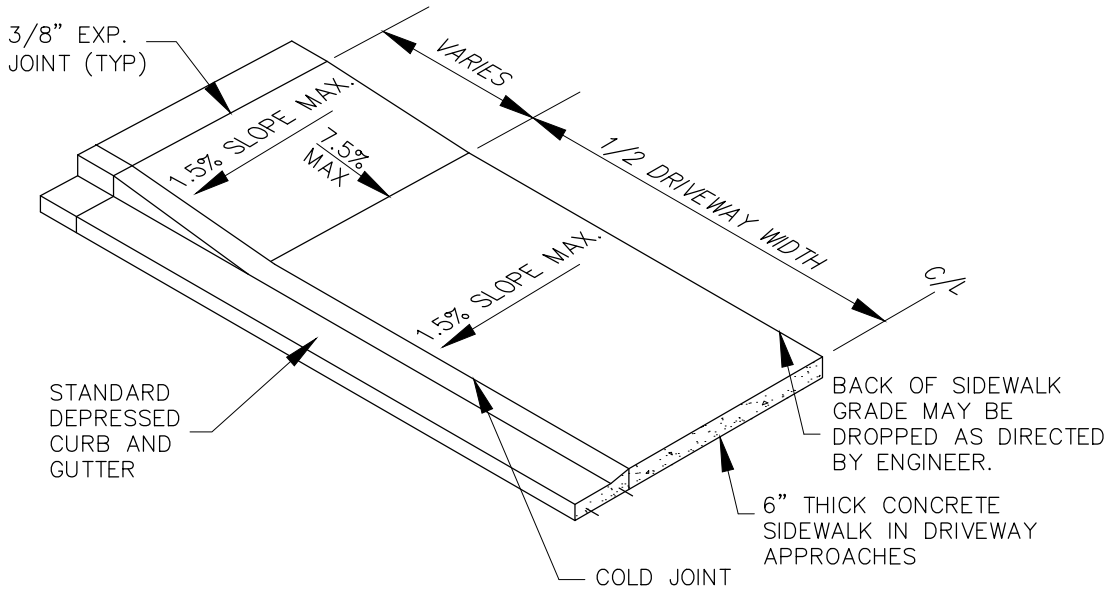
NOT TO SCALE

NOTE:
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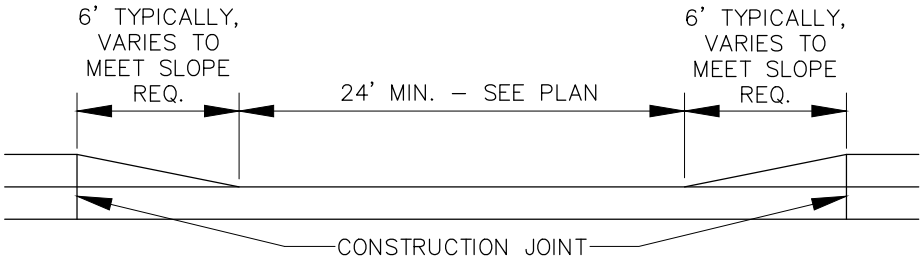
CITY OF UNION GAP 1883

Revision	Date	Description	Appr
ORIG.	5/26		

CITY OF UNION GAP-STANDARD DETAIL	ASPHALT SIDEWALK RAMP	ST-8



ISOMETRIC VIEW



ELEVATION VIEW

NOTES:
1. REINFORCEMENT NOT SHOWN FOR CLARITY. EXTEND REINFORCEMENT TO CONSTRUCTION JOINTS.
2. DRIVEWAYS ARE CONCRETE APPROACHES PER SECTION 8–06.
3. DRIVEWAY CONCRETE SHALL BE CLASS 4000 PER SECTION 8–06.3 (4,000 PSI AT 28 DAYS) AND SHALL ACHIEVE 2,500 PSI MINIMUM STRENGTH IN 3 DAYS PRIOR TO OPENING TO TRAFFIC.

RESIDENTIAL DRIVEWAY APPROACH

NOT TO SCALE

NOTE:
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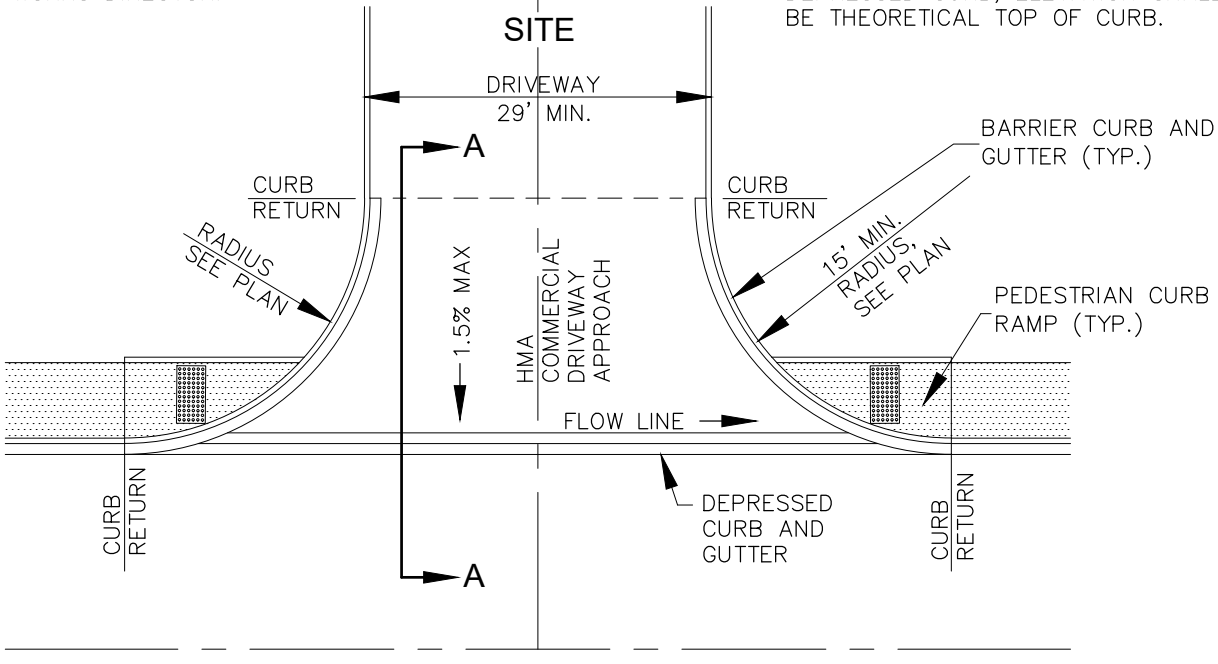
CITY OF
UNION GAP
1883

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ORIG.	5/26		

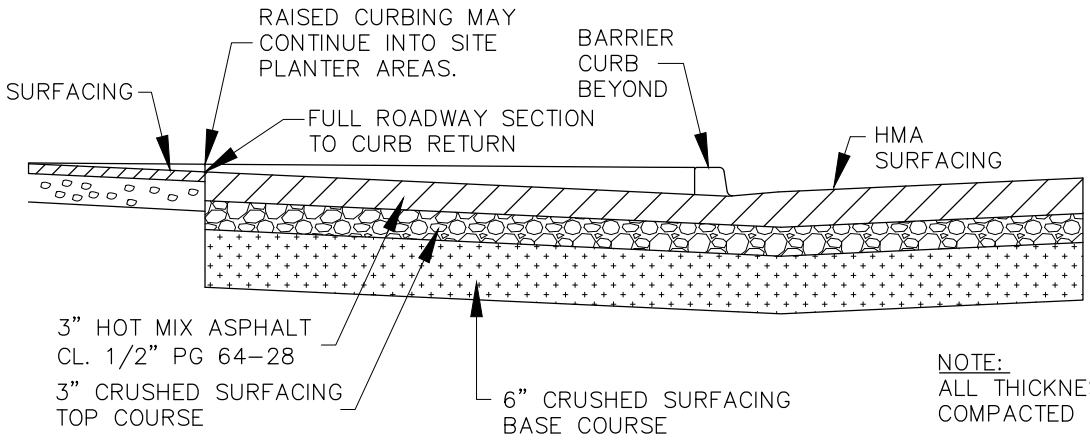
CITY OF UNION GAP-STANDARD DETAIL	RESIDENTIAL DRIVEWAY APPROACH	ST-9

NOTE:
ST–10A ALTERNATE AVAILABLE FOR USE FOLLOWING APPROVAL BY PUBLIC WORKS DIRECTOR.

NOTE:
ALL ELEVATIONS SHALL REPRESENT TOP OF CURB. IN AREAS OF DEPRESSED CURB, ELEVATION SHALL BE THEORETICAL TOP OF CURB.



PLAN



NOTE:
ALL THICKNESSES ARE COMPACTED DEPTHS.

SECTION A-A

COMMERCIAL DRIVEWAY APPROACH

NOT TO SCALE

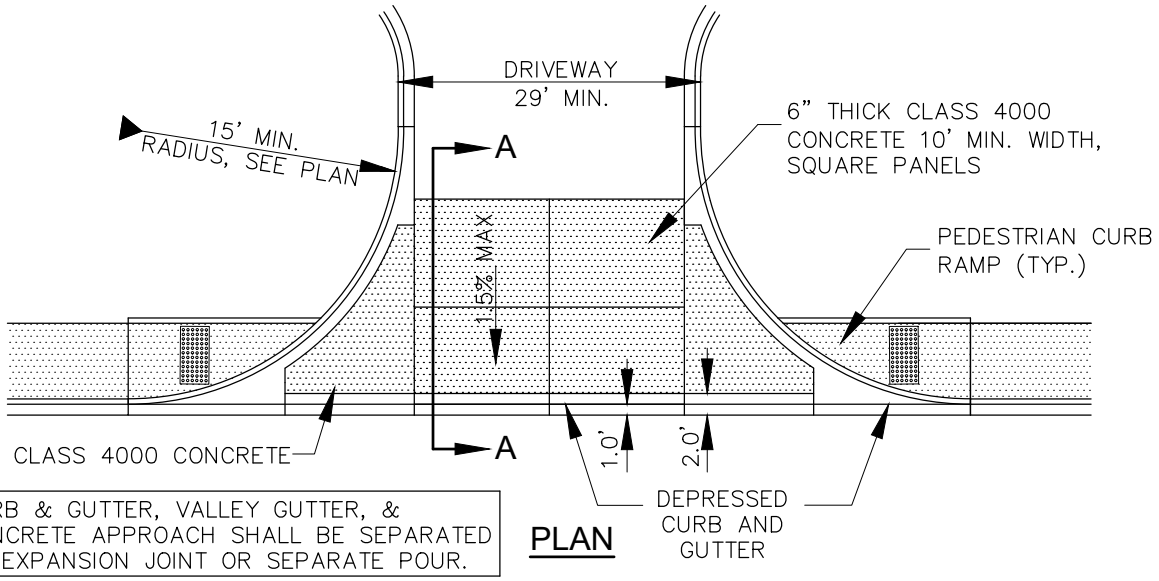
NOTE:
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CITY OF
UNION GAP
1883

Revision	Date	Description	Appr
ORIG.	5/26		

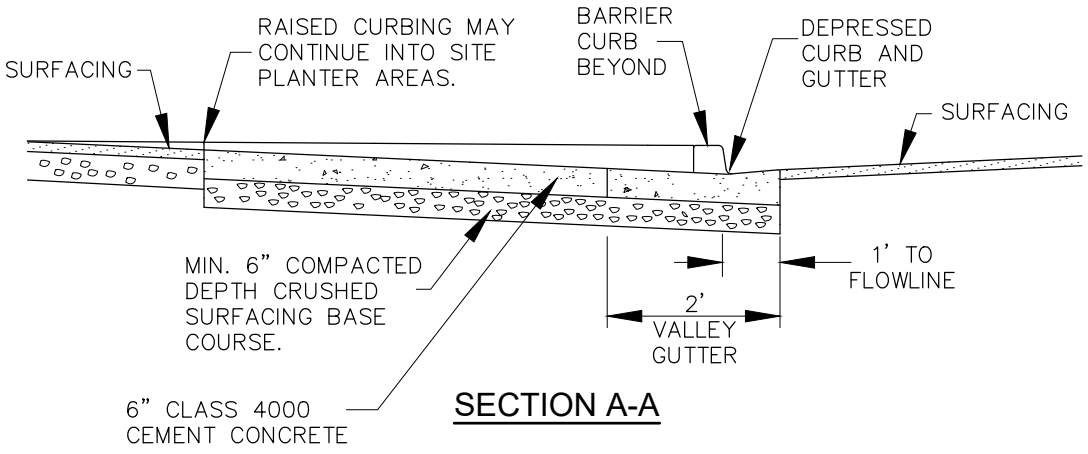
CITY OF UNION GAP-STANDARD DETAIL	COMMERCIAL DRIVEWAY APPROACH	ST-10

NOTE:
COMMERCIAL DRIVEWAY APPROACH ALTERNATE SHALL BE REQUIRED WHEN 5 OR MORE HEAVY VEHICLES ARE PROJECTED TO ENTER SITE DAILY, OR BY THE DISCRETION OF THE PUBLIC WORKS DIRECTOR. DEVELOPER MAY ELECT TO USE ALTERNATE ON OWN TERMS WITH APPROVAL BY PUBLIC WORKS DIRECTOR.



CURB & GUTTER, VALLEY GUTTER, & CONCRETE APPROACH SHALL BE SEPARATED BY EXPANSION JOINT OR SEPARATE POUR.

PLAN



SECTION A-A

COMMERCIAL DRIVEWAY APPROACH ALTERNATE

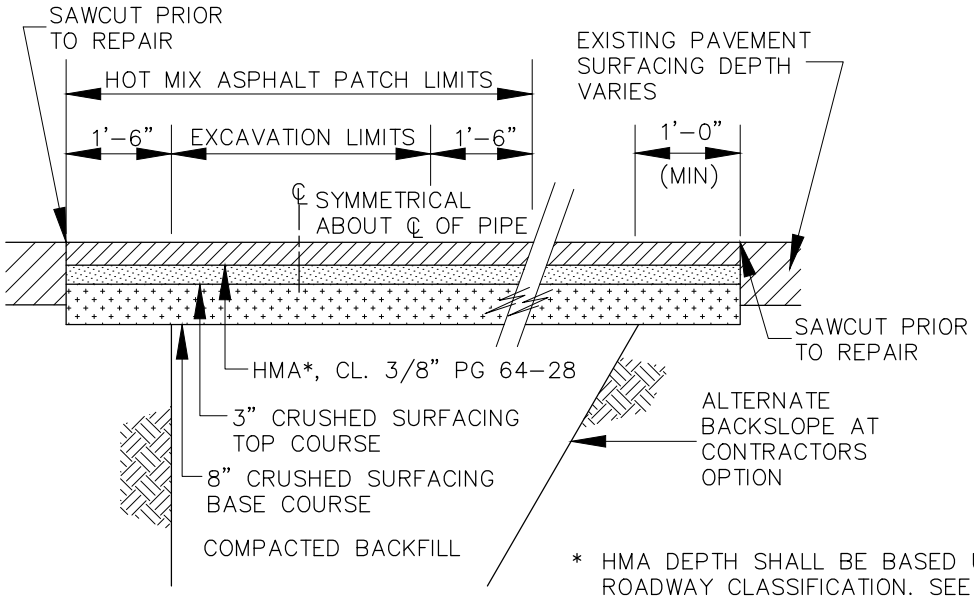
NOT TO SCALE

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CITY OF UNION GAP 1883

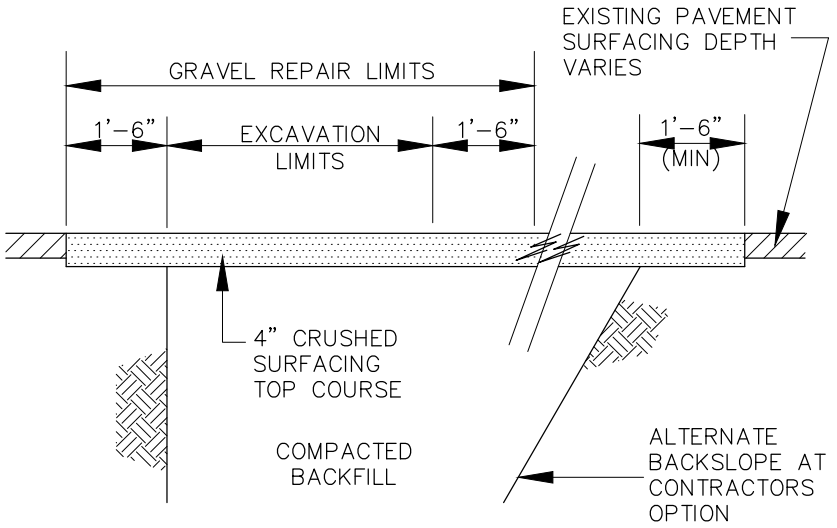
Revision	Date	Description	Appr
ORIG.	5/26		

CITY OF UNION GAP-STANDARD DETAIL	COMMERCIAL DRIVEWAY APPROACH ALTERNATE	ST-10A

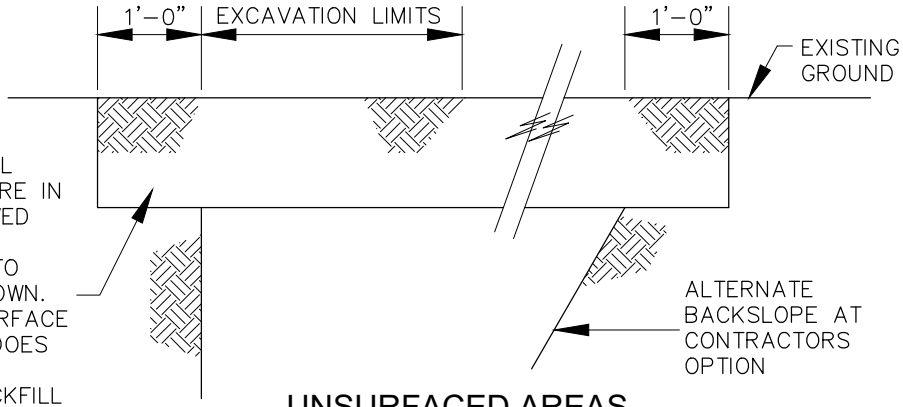


HMA PAVEMENT REPAIR

* HMA DEPTH SHALL BE BASED UPON ROADWAY CLASSIFICATION. SEE DWG NO. ST-1, ST-2, AND ST-3.



GRAVEL SURFACING



UNSURFACED AREAS

NOTES:

1. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TRENCH SURFACE RESTORATION BEYOND THE LIMITS SHOWN, INCLUDING WIDER TRENCH SECTIONS RESULTING FROM LAYING BACK TRENCH SIDES AT THE CONTRACTORS OPTION. NO MEASUREMENT OR PAYMENT WILL BE MADE FOR SURFACE REPAIR BEYOND THE PAYMENT LIMITS.
2. NO AREA REQUIRING ASPHALT CONCRETE SURFACING REPAIR SHALL REMAIN UNPAVED FOR MORE THAN FIVE WORKING DAYS FOLLOWING INITIAL EXCAVATION.
3. IF HMA PATCH IS COMPLETED BETWEEN NOVEMBER AND MARCH, COLD MIX ASPHALT MAY BE INSTALLED TEMPORARILY. COLD MIX SHALL BE REPLACED WITH HMA TO THE STANDARDS SHOWN BY MAY 1ST OF THAT YEAR.
4. IF HMA PATCH IS COMPLETED BETWEEN NOVEMBER AND MARCH, COLD MIX ASPHALT MAY BE INSTALLED TEMPORARILY. COLD MIX SHALL BE REPLACED WITH HMA TO THE STANDARDS SHOWN BY MAY 1ST OF THAT YEAR.

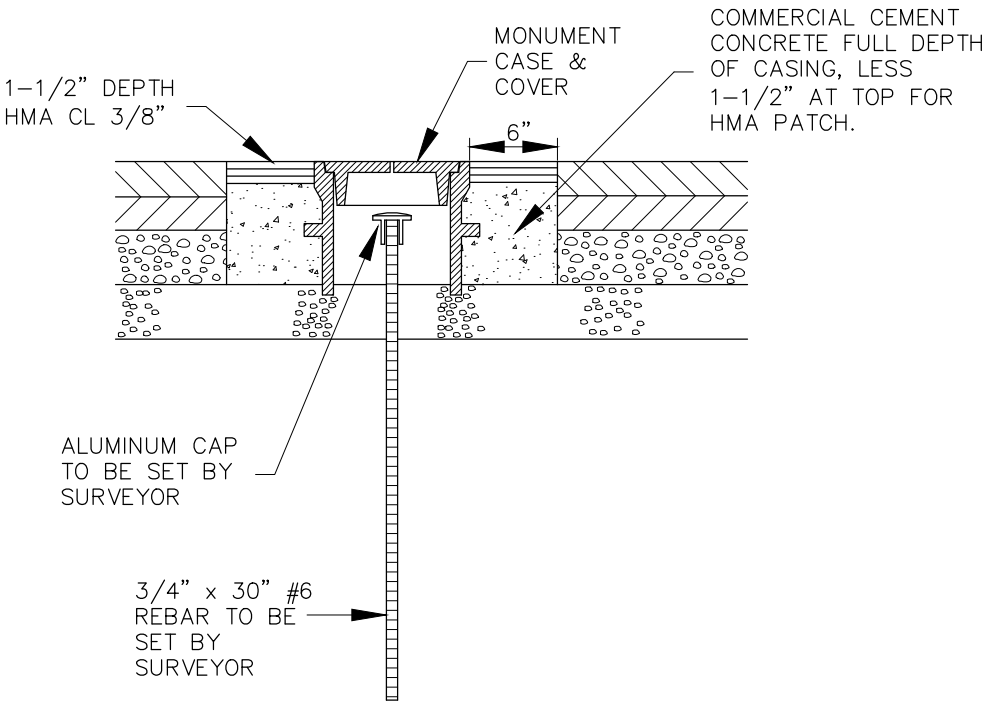
TRENCH SURFACING REPAIR

NOT TO SCALE

NOTE:
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CITY OF UNION GAP 1883

Revision	Date	Description	Appr
ORIG.	5/26		



NOTES:

1. TOP OF MONUMENT CAP SHALL BE 3" BELOW FINISH GRADE.
2. MONUMENT, MONUMENT CASE & COVER TO BE PLACED AFTER FINAL LIFT OF HMA.
3. MONUMENT CASE, COVER AND RISERS SHALL MEET REQUIREMENTS OF SECTION 9–22 AS MANUFACTURED BY OLYMPIC FOUNDRY OR EQUAL.

MONUMENT DETAIL

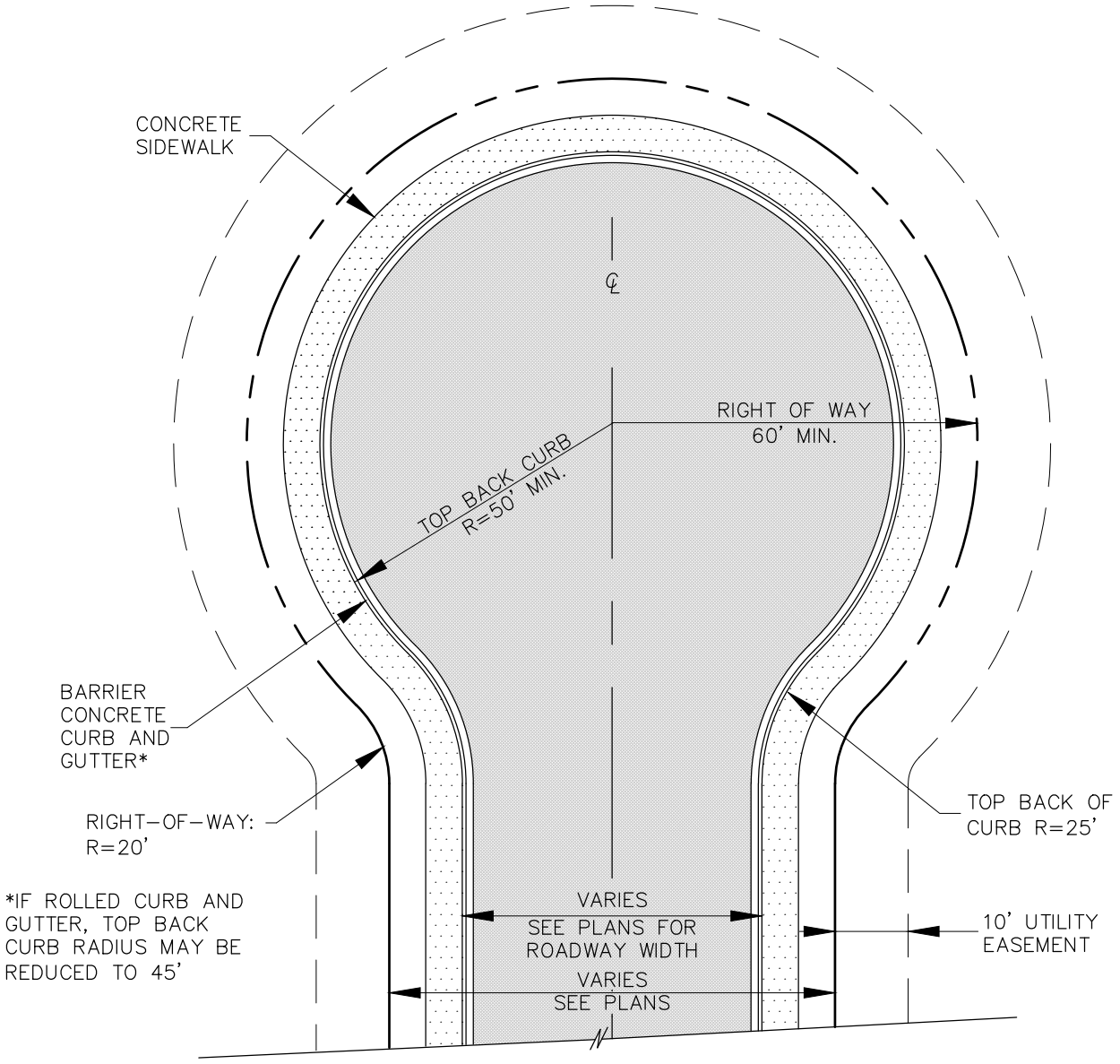
NOT TO SCALE

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CITY OF UNION GAP 1883

Revision	Date	Description	Appr
ORIG.	5/26		

CITY OF UNION GAP-STANDARD DETAIL	MONUMENT	ST-12



PLAN VIEW

CUL-DE-SAC LAYOUT

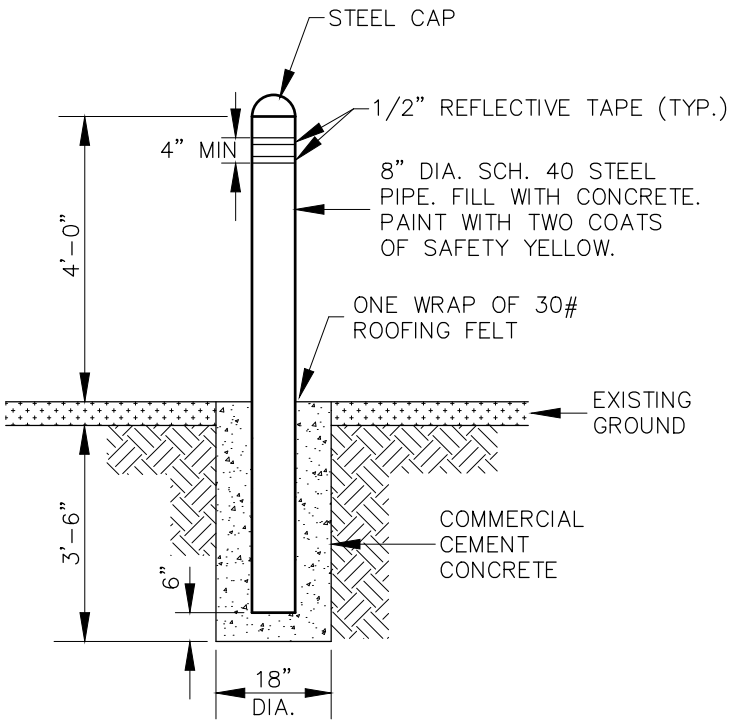
NOT TO SCALE

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CITY OF UNION GAP 1883

Revision	Date	Description	Appr
ORIG.	5/26		

CITY OF UNION GAP-STANDARD DETAIL	CUL-DE-SAC LAYOUT	ST-13



PERMANENT BOLLARD

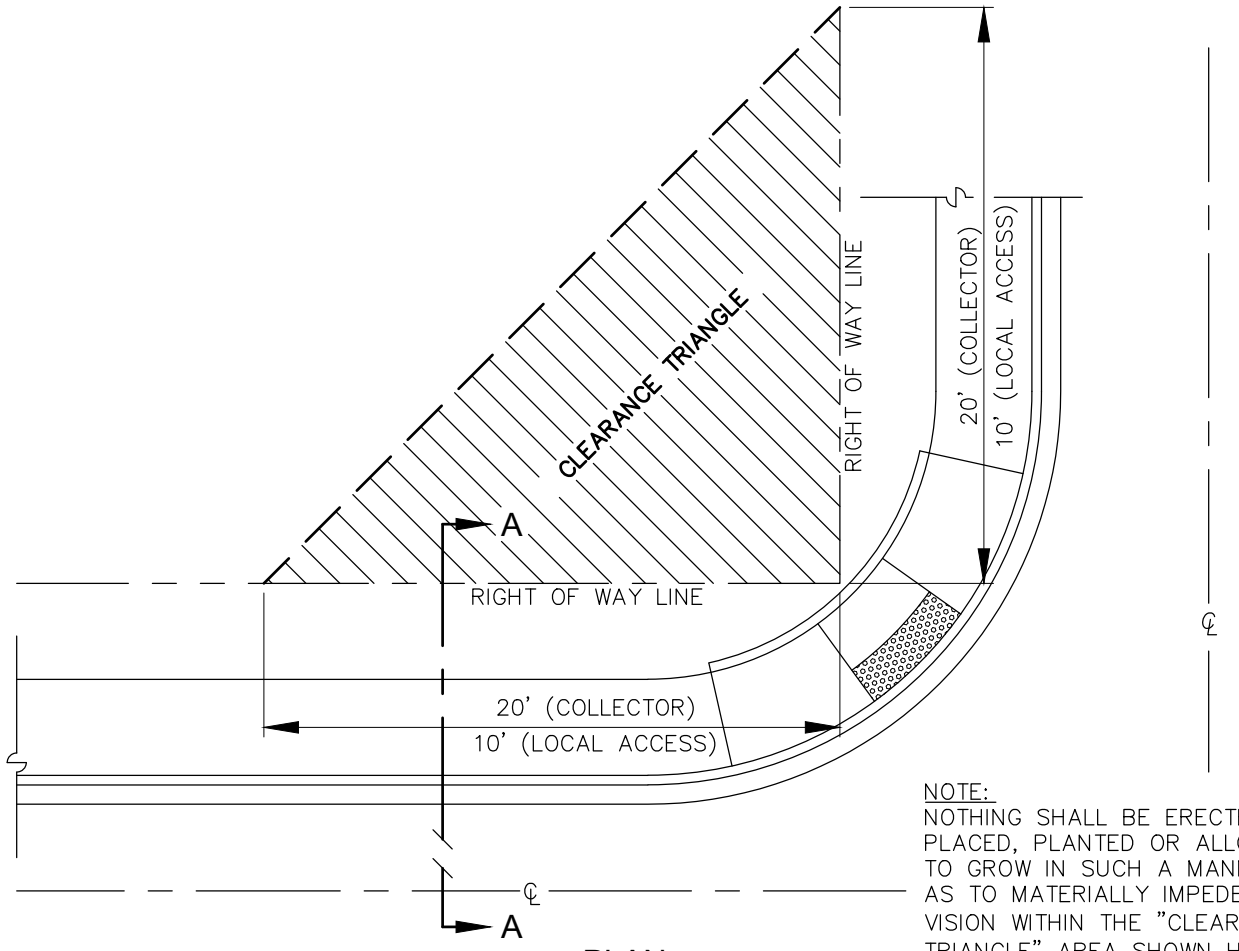
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CITY OF UNION GAP 1883

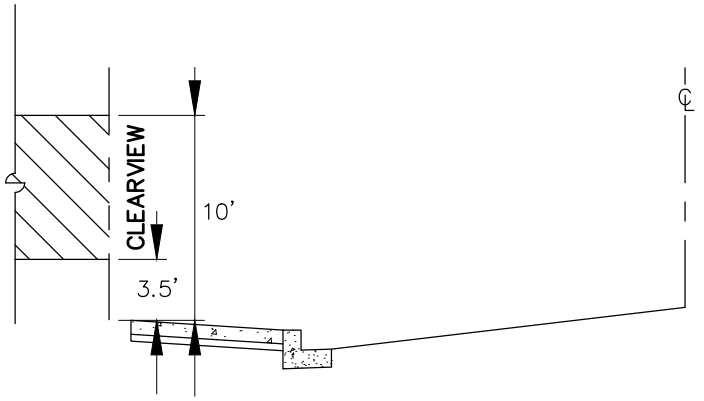
Revision	Date	Description	Appr
ORIG.	5/26		

CITY OF UNION GAP-STANDARD DETAIL	PERMANENT BOLLARD	ST-14



PLAN

NOTE:
NOTHING SHALL BE ERECTED, PLACED, PLANTED OR ALLOWED TO GROW IN SUCH A MANNER AS TO MATERIALLY IMPEDE VISION WITHIN THE "CLEARANCE TRIANGLE" AREA SHOWN HERE AND DEFINED IN ZMC 17.22.045.



SECTION A-A

CORNER LOT VISION CLEARANCE

NOT TO SCALE

NOTE:
ONLY THE LATEST DETAIL, AS APPROVED BY THE DIRECTOR OF PUBLIC WORKS, SHALL BE USED.

CITY OF UNION GAP 1883

Revision	Date	Description	Appr
ORIG.	5/26		

CITY OF UNION GAP-STANDARD DETAIL	CORNER LOT VISION CLEARANCE	ST-15