

CHAPTER 3

3.000 GENERAL PUBLIC WORKS CONSIDERATIONS

3.010 Standard Specifications

Design detail, workmanship, and materials shall be in accordance with the current edition of the "Standard Specifications for Road, Bridge and Municipal Construction", the "APWA Amendments to Division One", and the "Standard Plans for Road, Bridge and Municipal Construction", all written and promulgated by the Washington State Chapter of the American Public Works Association and the Washington State Department of Transportation, except where these standards provide otherwise. (LMC 14.20.010)

All applicable rules of Washington State shall be adhered to with respect to safety, construction methods, and other state requirements. (LMC 12.16.040) This includes, but is not limited to the Revised Code of Washington (RCW's) and the Washington Administrative Code (WAC's).

In cases where the Development Guidelines and Public Works Standards are in conflict with Lacey Municipal Code, the provisions of these Guidelines and Standards shall take precedence.

The following specifications shall be applicable when pertinent, when specifically cited in the standards, or when required by a higher funding authority.

- A. Conditions and standards as set forth in the City of Lacey Water Comprehensive Plan, most current edition.
- B. Conditions and standards as set forth in the City of Lacey Comprehensive Sanitary Sewer Plan, most current edition.
- C. Conditions and standards as set forth in the Lacey Development Plan, Land Use and Circulation Elements, most current edition.
- D. Conditions and standards as set forth in the Lacey Policy Plan for Comprehensive Development, most current edition.
- E. Rules and regulations as adopted in the Lacey Municipal Code*.

- F. Conditions and standards as set forth in the Thurston County Coordinated Water System Plan, most current edition.
- G. Conditions and standards as set forth in the "Thurston Metropolitan Area Bicycle Plan," Thurston Regional Planning Council, most current edition.
- H. Criteria set forth in the Local Agency Guidelines as amended and approved by Washington State Department of Transportation, most current edition.
- I. Conditions and standards as set forth in the City of Lacey "Urban Beautification Project" plan co-sponsored by U.S. Department of Agriculture and the Washington State Department of Natural Resources, November 7, 1985.
- J. Conditions and standards as set forth in the WSDOT Design Manual as amended and approved by WSDOT.
- K. U.S. Department of Transportation Manual on Uniform Traffic Control Devices (MUTCD), as amended and approved by Washington State Department of Transportation.
- L. DOT Construction Manual as amended and approved by Washington State Department of Transportation.
- M. Rules and regulations of the State Board of Health regarding public water supplies, as published by the State Department of Health.
- N. Conditions and standards as set forth in the State of Washington Department of Ecology "Criteria for Sewage Works Design", most current edition.
- O. Conditions and standards as set forth by the State of Washington, Department of Labor and Industries.
- P. Criteria set forth in the most recent edition of Transportation and Land Development by the Institute of Transportation Engineers.
- Q. Design criteria of federal agencies including Department of Housing and Urban Development and the Federal Housing Administration.

- R. Concepts as outlined in Traffic Engineering for Neo-Traditional Neighborhood Design prepared by ITE Technical Council Committee, February 1994.
- S. Traditional Neighborhood Development Street Design Guidelines prepared by ITE Transportation Planning Council Committee, October 1999.
- T. Conditions and standards as set forth in the Building Code, most current adopted edition.
- U. Other specifications not listed above as may apply when required by the City of Lacey.

3.015 Shortened Designation

These *City of Lacey Development Guidelines and Public Works Standards* shall be cited routinely in the text as the "Standards". This is not to infer that the Guideline portion of this book constitutes Standards, this is simply a shortened designation for the name of this document.

3.020 Applicability

These standards shall govern all new construction and upgrading of facilities both in the right-of-way and on-site for transportation and transportation related facilities; storm drainage facilities; sewer and water improvements; landscape and irrigation; and park, recreation, and open-space facilities within the City of Lacey and within applicable utility service areas.

These standards shall also apply as agreed to December 7th, 1995 in the "Memorandum of Understanding Urban Growth Area Zoning and Development Standards" to the portions of Thurston County that are within the City of Lacey's Urban Growth Management Area.

3.021 Memorandum Of Understanding

A Memorandum of Understanding adopted Dec. 7, 1995, between the City and Thurston County, governs development standards within the City's Urban Growth Area. In part, the agreement states the City of Lacey and Thurston County agree that:

Section 1: Thurston County will adopt each city's zoning standards, except that the County will retain its authority to approve administrative variances and to conditionally approve expansion of non-conforming uses and structures. It is also understood that review procedures under each of the standards will be modified to conform to existing County review procedures.

Section 2: Thurston County will maintain administration of its Critical Areas Ordinance within the Urban Growth Area, except the County will modify its ordinance to adopt each city's method of calculating development densities.

Section 3: Thurston County will adopt a Forest Practices Ordinance that applies a single approach throughout the Urban Growth Area. This approach is intended to support forest management practices that retain and integrate significant stands of trees into the layout and design of developments within the Urban Growth Area.

Section 4: Thurston County will maintain administration of its current Subdivision Ordinance within the Growth Area, except that the County will amend either its subdivision or zoning code to reflect the different open space requirements for each of the three cities.

Section 5: Thurston County will adopt each city's street design standards. It is intended that civil engineering plan review and inspections for streets and utilities related to private development projects will be conducted by each city's staff under the direction of the County Engineer. The cities may charge plan review, permit and inspection fees as necessary to cover the cost of providing these services.

Section 6: Thurston County will adopt city design standards only for commercial and multiple-family projects greater than four-plexes.

Section 7: Thurston County will adopt the various village classifications advanced by the cities, except that some review procedures may need to be modified to accommodate existing County review processes.

Section 8: Thurston County and the cities of Lacey, Olympia and Tumwater agree that it is desirable to annex properties located within village classifications prior to securing development approvals. Where prior annexation is not possible, city staff will lead review processes for village projects. The cities may charge development review fees as necessary to cover the cost of providing these services.

Section 9: The cities of Lacey, Olympia and Tumwater will each provide 75% of the funding to support the preparation of a County bill draft version of each of their respective development standards.

Section 10: The cities of Lacey, Olympia and Tumwater will provide ongoing technical assistance and support to County staff responsible for implementing their development standards in their respective Urban Growth Areas.

Section 11: The cities of Lacey, Olympia and Tumwater agree that the standards adopted in reliance upon this agreement are the complete requirements for developments within the Growth Area. The cities will not apply additional physical development requirements as a condition of utility connection approval.

Section 12: Thurston County and the cities of Lacey, Olympia and Tumwater agree to develop a process for the joint consideration and adoption of future code amendments affecting the Urban Growth Area. The parties further agree to establish a process for resolving disagreements over implementation of this Agreement.

3.025 Definitions and Terms

"Average Daily Traffic" or ADT -- The average number of vehicles passing a specified point during a 24-hour period collected over a number of days greater than one but less than one year.

"Annual Average Daily Traffic" or AADT -- The total number of vehicles passing a specified point in both directions for one year divided by the number of days in the year.

"Bicycle Facilities" -- See 4D.020 for definitions of the various bikeways.

"Building Sewer" or "Side Sewer" -- shall be that portion of the line beginning two feet outside the outer foundation wall of the structure to the sanitary sewer main. (LMC 13.04.160 and 14.06.015).

"City Engineer" -- The City Engineer or his duly authorized representative.

"City of Lacey Coordinate System" -- A ground scale coordinate system derived from the Washington Coordinate System, NAD 83/91. Units are expressed in feet. Data can be obtained from Lacey Public Works Department.

"City of Lacey Vertical Datum" -- Elevations are referenced to the National Geodetic Vertical Datum of 1929 (NGVD29). Units are expressed in feet. A benchmark listing can be obtained from Lacey Public Works Department.

"Developer" -- Any person, firm, partnership, association, joint venture, or corporation or any other entity responsible for a given project.

"Director of Public Works" -- The City of Lacey Public Works Director or his duly authorized representative.

"Easement" -- The right to use a defined area of property for specific purpose/purposes as set forth in the easement document, on a plat or short plat, or as required for purposes as set forth herein.

"Engineer" -- Any Washington State licensed professional engineer who represents the developer.

"ERU" -- The unit used to calculate sewer consumption. One Equivalent Residential Unit (ERU) equals 900 cubic feet of water consumed per month. For purposes of these standards, the term ERU shall be as follows:

1. Single Family residence, including mobile homes: One ERU per living unit.
2. Duplex (two-family residence): two ERUs.
3. Residential buildings containing more than two living units: 7/10 of an ERU per living unit.
4. Commercial, industrial or other customers not readily identified as a residential customer, including but not limited to, hotels, motels, boarding or rooming houses, nursing homes, and transient (overnight) trailer parks: One ERU for each estimated 900 cubic feet of water to be consumed per month. (LMC 13.16.027)

"Force Main" -- A sewer main that transports wastewater under pressure.

"Half-Street" -- Street constructed along an edge of development utilizing half the regular width of the right-of-way and permitted as an interim facility pending construction of the other half of the street by the adjacent owner. In some instances, it may be necessary to construct more than half the street depending on the classification of the street.

"Interceptor" -- Shall be a sewer that receives flow from a number of main or trunk sewers, force mains, etc.

"Land Surveyor" -- Professional Surveyor registered in the State of Washington to practice Land Surveying per RCW 18.43.

"Lateral" -- Shall be that section of the sewer line extending from the City's main to the right-of-way or easement line (i.e., the building

sewer) that has no other common sewers discharging into it. (LMC 14.06.030)

"Lift Station Pressure Main" – The main associated with the lift station, starting at the pumps and ending at the outlet to the vault.

"LMC" -- Lacey Municipal Code.

"Lot Street Frontage" -- The distance between where the two lot lines intersect the fronting right-of-way.

"Plans" -- The plans, profiles, cross sections, elevations, details, and supplementary specifications, signed by a licensed professional engineer and approved by the Director of Public Works, which show the location, character, dimensions, and details of the work to be performed.

"Private Sewer" -- Shall be that portion of the system located on private property where no easements are granted to the City. Maintenance of a private sewer shall be the responsibility of the property owner(s).

"Private Street" -- Private vehicular access provided for by an access tract, easement, or other legal means to serve property that is privately owned and maintained.

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

"Public Sewer" -- Shall be that portion of the system located within public right-of-way or easements and which is operated and maintained by the City. (LMC 13.04.120)

"Public Street" -- Publicly owned and maintained street.

"Right-of-Way" -- A general term denoting public land, property, or interest therein (e.g., an easement) acquired for or devoted to a public street, public access or public use.

"Road" -- Used interchangeably with street.

"Sewer Main" or "Trunk" -- Shall be a sewer that receives flow from one or more mains.

"S.T.E.P. Main" -- Septic Tank Effluent Pumping main. A low pressure, sewer force main that transports only effluent from S.T.E.P. tanks.

"Street" -- Used interchangeably with road.

"Use of Pronoun" -- As used herein, the singular shall include the plural, and the plural the singular; any masculine pronoun shall include the feminine or neuter gender and vice versa; and the term "person" includes natural person or persons, firm, co-partnership, corporation or association, or combination thereof.

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

3.030 Changes to Standards

From time to time, changes may be needed to add, delete, or modify the provisions of these Standards. These Standards may be changed and, upon approval of the Director of Public Works, shall become effective and shall be incorporated into the existing provisions.

The City of Lacey web site currently provides a link to the Development Guidelines and Public Works Standards. There is now an addendum section associated with this document. The addendum section is utilized for revisions to the document in between yearly revisions.

3.035 Severability

If any part of these City of Lacey Development Guidelines as established by ordinance shall be found invalid, all other parts shall remain in effect.

3.040 Design Standards

- A. Detailed plans, prepared by a licensed engineer, must be submitted to the City for plan review and approval prior to the commencement of any construction. The applicant's engineer shall be a Professional Engineer, registered as such in the State of Washington. All plans must be checked, signed and stamped by the applicant's engineer prior to submittal for plan review. Final plans shall be approved by the Director of Public Works prior to the start of construction.

- B. Separate plan and profile drawings are required for all proposed transportation-related improvements; street illumination; traffic signalization; storm drainage facilities (whether public or private); and sewer and water improvements. For specific minimum requirements, see the Plan Checklist on the following pages. On occasion, the scope of a project (i.e., relocating one hydrant) may not require engineered plans and can instead be handled via a Right-of-Way Access Permit. Additionally, some items of the checklist, though called for, may be unnecessary for a given project. This will be decided during Site Plan Review.
- C. Three copies of the plans are required to be submitted along with a completed Plan Review Application form. All plans shall be stapled, rolled and banded. All drawings shall be on 24" x 36" sheet size.
- D. Drawings in PDF format (flattened) in 24 x 36 inch size (not 11 x 17 inch) shall be provided on disk or thumb drive
- E. The engineer's plan certification and checklist verification shall be submitted with the plan review application. Plans submitted without this document will not be routed for review.

Plans submitted at the time of approval shall be submitted in PDF format. These plans shall be signed by the City electronically and returned to the engineer. Also, an electronic file in AutoCad (On City of Lacey Coordinate System)format shall be submitted for all approved final plans unless otherwise waived by the Director of Public Works.
- F. Specifications shall be required and submitted with the plans if General Notes do not adequately cover the project requirements.
- G. Signed originals of all necessary easements and/or right-of-way dedication documents meeting all the current recording standards must be reviewed and approved prior to receiving signed approved plans. See Appendix B for examples.
- H. The coordinates for all plans shall be based on the City of Lacey Coordinate System. Elevation data on all plans shall be referenced to NGVD 1929 Vertical Datum. Coordinate data and benchmark listings can be obtained from Lacey Public Works Survey Division.

- I. Two bound copies of the Drainage Report per the City of Lacey Stormwater Design Manual are required. The report must be reviewed and approved prior to plan approval.
- J. An Engineers Estimate or an itemized contractor's Bid Estimate is required.
- K. Prior to Final Public Works Approval, an AutoCAD drawing and as-built bond drawings with accurate utility elevations along with PDF drawings shall be submitted to the City.
- L. Prior to scheduling a preconstruction conference, three sets of full-size drawings (24" x 36") and 2 sets of "half-size" drawings (11" x 17") must be submitted to the City.

GENERAL PUBLIC WORKS CONSIDERATIONS

Public Works Department
 City of Lacey
 PO Box 3400
 Lacey, WA 98509-3400

H.T.E. # _____
Date Received: _____
Total Fees: _____
Received by: _____

PLAN REVIEW APPLICATION	USE BLACK INK ONLY
<p>Owner: _____ Contact Person: _____ Address: _____ City & State: _____ Zip: _____ Phone: _____ Email Address: _____ Applicant: _____ Contact Person: _____ Address: _____ City & State: _____ Zip: _____ Phone: _____ Email Address: _____ Engineer: _____ Contact Person: _____ Address: _____ City & State: _____ Zip: _____ Phone: _____ Email Address: _____</p>	<p>PROPERTY LOCATION: North South East West side of: (road name): _____ between (road name): _____ and (road name): _____ Property Address: _____ _____ Section ____ Township ____ Range _____ Assessor's Parcel No.: _____</p>
<p>SUMMARY OF REQUEST (List type of uses) _____ _____ _____ No. of proposed dwelling units: _____ Dimensions of property: _____ _____ Total sq. ft. of site: _____ Total sq. ft. in buildings: _____ _____ Total sq. ft. in paved and covered surfaces (include buildings, driveways, streets, sidewalks, and parking lots): _____ _____ _____ _____</p>	<p>_____</p>

**ENGINEER'S CIVIL DRAWINGS CERTIFICATION
AND
CHECKLIST VERIFICATION**

I hereby certify that the submitted civil drawings for

(name of project) have been prepared by me or under my supervision and meet or exceed minimum standards of the City of Lacey and normal standards of engineering practice. I understand that the jurisdiction does not and will not assume liability for the sufficiency, suitability, or performance of civil drawings designed by me or under my supervision stamped by me. I also understand that the City of Lacey will conduct a general review of the plans and that as the engineer of record I am responsible for the accuracy and correctness of the plans and therefore solely responsible for all errors and omissions.

Prior to submitting the drawings to the City of Lacey for review, I have carefully reviewed the checklist and assure that all items provided on it have been included into the civil drawings being submitted.

Signature

Date

Engineer's Seal

**STANDARD ITEMS: WATER, SANITARY SEWER,
STORM SEWER, STREET, LIGHTING, AND SIGNALS**

The City will make a cursory check of the plans against the General Standards on the following plan checklist. If the plans meet the minimum checklist requirements as to content, they will be routed to the appropriate City staff and the plan review process will begin. If the minimum checklist requirements are not met, plans will be returned to the submitting engineer.

GENERAL STANDARDS TO BE INCLUDED ON ALL SHEETS:

- () Title Block:
 - () Title:
 - () Design By:
 - () Drawn By:
 - () Date:
 - () Checked By:
 - () Signature Approval Block - leave room in the bottom right hand corner for the electronic signature block (5" wide x 2" high) –**All Sheets.**
 - () **On the first page only** leave room for two electronic signature blocks (total space of 5" wide x 4" high):
 - () Sheet Number of Total Sheets (i.e. 1 of 20, 2 of 20 etc.):
- () Section, Township and Range (in the title block)
- () Engineers Stamp (signed and dated)
- () North Arrow
- () Datum - Bench Mark Designation, NGVD 1929 Elevation, and Location
(on all sheets where elevations are referenced)
- () Datum - Horizontal, City of Lacey Ground Scale (show ties to control)
- () Scale Bar
- () Revision Block
- () Existing Items and Elevations Including Contour Information have been Surveyed by a Professional Land Surveyor Licensed in the State of Washington and Accurately Reflect the Site Conditions

- () Call Before You Dig Note (on each applicable sheet). Note includes the 811 number to call along with time requirement (48 hours in advance)

COVER SHEET ITEMS:

- () Project Title (cover sheet)
- () Legend (APWA Standard Symbols)
- () Utility System Map (showing all proposed utilities on one drawing)
- () Vicinity Map (on cover sheet only)
- () Adjacent Property Lines, Ownership, Parcel Number, and Street Address
- () Sheet Index providing Sheet Number of Total Sheets (i.e. water plan and profile views sheet 2 of 20, water details sheet 3 of 20 etc.)
- () General Public Works Construction Notes included

UTILITY LAY OUT:

- () Each Utility shown on a Separate Sheet (storm and roadway may be combined)
- () Profile Views are included on the Same Sheet as the Plan View (unless approved by the City prior to plan submittal to be shown in an alternate location –which requires duplicate information in an additional location)
- () Each Drawing Must be 20 or 30 Scale (the same scale shall be utilized throughout the plans)
- () Base lines shall be labeled when the centerline of the roadway is not utilized

PLAN PORTION STANDARD ITEMS (Labeled on All Sheets)

- () Centerline and Stations
- () Edge of Pavement labeled with Width Dimension provided
- () Right-of-Way labeled with width Dimension provided
- () Proposed Survey Monumentation Locations and Details
- () Sidewalk labeled with width Dimension provided
- () Planter Strip labeled with width Dimension provided
- () Roadway Sections
- () Existing Utilities (above and below ground)
- () Existing (active and inactive) and Proposed Wells
- () Identify Street Names, Existing and Proposed Right-of-Way, Lots
- () Identify Match Lines with Sheet Numbers and Stations
- () Easements with Width and Label “City of Lacey Utility Easement” (the City no longer labels easements “water” or “sewer;” they are utility easements)
- () Define Survey Baseline
- () Stations and Offsets for All Structures and Fittings included for all improvements associated with a public roadway. On-site improvements may utilize either stations and offsets or northings and eastings
- () Type of Pipe (actual material to be installed from the City approved material list for each utility is included)
- () Flow Direction Arrows (on sewer and storm mains)
- () Special Features such as Gas Tanks, Gas Mains, etc.

PROFILE PORTION STANDARD ITEMS

- () Profile Grades (decimal Ft./Ft)
- () Existing and Finished Centerline Ground Elevations Labeled (25 foot spacing)
- () Scale (horizontal and vertical)
- () Stationing

- () Vertical Elevation Increments
- () Existing Utilities (if available)
- () Utility Crossings

SANITARY SEWER

Plan View:

- () City of Lacey System Map Showing Tie-In to Existing System, including Line Size and Valves
- () All Fittings and Structures shall be located on the South and West side of the Roadway/Drive Aisle as shown on the Roadway Details
- () Overall map showing the entire sewer design on first sheet of sewer section
- () Plan sheets associated with sewer improvements are presented starting at the connection point of the existing main (Sheet 1) and ending at the point furthest away from the connection

- () Manhole
 - () Station and Offset (or Northings and Eastings on-site) Shown at Each Manhole/Cleanout (watch spacing)
 - () Manholes Numbered (start numbering at the connection point with manhole #1)
 - () Show the Manhole Opening placed Over the Outfall Channel Pipe

- () Pipe
 - () Flow Direction (with arrow on pipe)
 - () Distance from Water Lines
 - () Type of Pipe (actual material to be installed from the City approved sewer material list is included)
 - () Service to Each Lot - include Lineal Footage of each Service (pressure/gravity) Needed for Sewer Testing

- () Bearing/Distance (or station, offset, and angle) of Each Pipe Run Outside of the Right of Way
- () Station and Offset (or Northings and Eastings on-site), Size of Tees, Crosses, Elbows, Adapters, Valves and Clean Outs
- () Existing Septic Tanks/Drainfields (with note to abandon if necessary)

Profile View:

- () Manholes Numbered
- () Invert Elevation Showing Direction, In and Out
- () Rim Elevation
- () Manhole Type Designation
- () Grades Shown (decimal form Ft./Ft.) (minimum slopes)
- () Size of Pipe
- () Length of Pipe (in L.F.)
- () Existing Utilities and Crossings shown
- () Proposed Utility Crossings Where Existing Utility Conflicts occur, include Elevations of the Tops and Bottoms of the conflicting Pipes
- () Show Fixtures (tees, crosses, valves, couplers)
- () Cover Over Pipe (a minimum of 7 feet of cover is required over all gravity sewer mains, 68-inch for pressure sewer mains – pressure sewer mains at a greater depth may only be installed with the approval of the City)

Miscellaneous:

- () Sewer Detail Sheet (include City of Lacey details with Lacey title blocks)
- () Sewer General Notes

WATER

- () Prior to submitting Plans, the Water Modeling Results have been obtained from the City of Lacey. Appropriate Improvements have been included into the Design to satisfy Water Modeling Results

Plan View:

- () City of Lacey System Map showing Existing and Proposed Mains with Line Sizes. The System Map shall also include Hydrants and the Nearest Valves to the Site (one on each side of the project) to assure the Main may be quickly isolated in the Event of an Emergency
- () All Fittings and Structures are located on the North and East side of the Roadway/Drive Aisle as shown on the Roadway Details
- () Overall map showing the entire water design on first sheet of water section
- () Plan sheets associated with water improvements are presented starting at the connection point of the existing main (Sheet 1) and ending at the point furthest away from the connection
- () Fixtures (need horizontal control)
- () Fire Hydrants (Check with Lacey Fire Marshall for location)
- () Blow-off (at end of line if no hydrant)
- () Vacuum and Air Release Valves When Required
- () A Hydrant is included at Each Intersection
- () Station and Offset (or Northings and Eastings on-site), Size of Tees, Crosses, Elbows, Adapters and Valves Need Coupling Type
- () Valves (3 each tee, 4 each cross – if the tee is associated with a fire hydrant, only one valve is required)
- () Fire Department Connection shown if the Building requires Fire Sprinklers
- () “By Separate Permit” written by the Underground Sprinkler Line (Fire Line)
- () Thrust Blocking if Required at all Fittings Including In-Line Valves

- () Distance from Sewer is called out on all Water Sheets
- () Bearing and Distance of Each Pipe Run Outside of the Right of Way
- () Service to each lot (include open tracts) has been provided
- () Domestic Meters with Station, Size and Offset Information are provided for Each Building. Duplexes require a Meter for Each Unit.
- () Commercial Water Services are equipped with Reduced Pressure Backflow Assemblies
- () Sample Station provided, (call Public Works for location - see detail)
- () Show Top of Pipe Elevations when pipe Installations are in Open Areas. Also, provide Elevation Call Out Information at All Fittings. At a Minimum, Elevation Call Out information Shall be provided every 50 feet
- () Contour Lines for Utility Installations occurring in Open Areas are provided

Profile View:

- () Existing and Proposed Utility Crossings
- () Show Fixtures (tees, crosses, hydrants)
- () Type of Pipe (actual material to be installed from the City approved water material list is labeled)
- () Show Valves and Couplers
- () Size of Watermain
- () Length of Watermain in Lineal Feet
- () Cover Over Pipe
- () Where Potential Utility Conflicts occur, include Elevations of the Tops and Bottoms of the conflicting Pipes
- () “Top of Pipe” Elevations Every 50 feet provided (in unimproved areas)
- () Water main is designed at a consistent depth (not ‘snaked’ around other utilities)

- () Water mains at a depth of 3.5 feet are provided (mains located other than 3.5 feet may only be installed with the approval of the City). Water mains are installed at a constant depth, bending mains to avoid other utilities will not be permitted

Miscellaneous:

- () Water Detail Sheet provided (include City of Lacey details with Lacey title blocks)
- () Water General Notes provided

Irrigation

- () Irrigation Plan provided for irrigation in the Right of Way
- () Irrigation Meter location and size provided
- () Irrigation Meters are equipped with a Double Check Valve Assembly
- () Irrigation Sleeves (where irrigation mains cross to irrigate both sides of the street) is provided
- () Master Control Valve Location Identified
- () SealAMatic (SAM) Spray Heads are included for Slopes Greater than 3 Percent
- () Power Source and Type of Service for Irrigation System

STORM

Drainage and Erosion Control Plan Report:

Please see City of Lacey Stormwater Design Manual for drainage report requirements

All Plan Views:

- () Existing and Proposed Contours at maximum 2 foot intervals (confirmed with current survey data, general contours provided by sites like Thurston County Geo-Data are not acceptable). Existing Topography at Least 50 Feet Beyond Site Boundaries

Site Map

- () Finished Grades
- () Existing Structures within 100 Feet of Project Boundary
- () Utilities
- () Easements, Both Existing and Proposed
- () Environmentally Sensitive Areas (includes wetlands, streams, lakes etc.)
- () 100 Year Flood Plain Boundary
- () Major Drainage Features
- () Flow Path
- () Project Boundaries
- () Existing and Proposed Wells within project boundaries
- () Existing and Proposed Fuel Tanks
- () Existing and Proposed On-Site Sanitary Systems within 100 feet of Detention/Retention Facilities
- () Proposed Structures Including Roads and Parking Surfaces (provide square footages of these areas)

- () Proposed Drainage Facilities and Sufficient Cross-Sections and Details to Build (include stations and offsets where necessary)

Plan View - Conveyance System

- () Number at each Manhole/Catch Basin
- () Flow Direction with Arrow on Pipe/Channel
- () The required Roof Drain and Dry Well system note is included on the drawings

Profile View (for private and public systems)

- () Station and Offset (or Northings and Eastings on-site), and Number at each Manhole/Catch Basin
- () Manhole/Catch Basin Type and Size
- () Manhole/Catch Basin Rim Elevation
- () Type and Size of Pipe
- () Stormwater conveyance pipes shall not be located in the planter strip areas
- () Invert in and Out (include compass direction)
- () Length of Pipe in Lineal Feet
- () Grades (Ft./Ft.)
- () Show Catch Basin Crossing Profiles (each crossing) on the Sheet Where They Occur

Erosion Control Drawings are not part of the Civil Submittal – submit erosion control drawings as part of the grading permit to the Community Development department in accordance with the checklist found in Chapter 2 of Development Guidelines and Public Works Standards manual

Construction Inspection Report

Miscellaneous:

- () Storm Detail Sheet provided (include City of Lacey details with Lacey title blocks)
- () Storm General Notes provided

STREET

Plan View:

- () Sight Distance and Clear Sight Triangle at Intersections comply with City standards
- () Flow Direction Arrows at Curb Returns Showing Grade
- () Spot Elevations on Curb Returns
- () Spot Elevations at existing and proposed Driveway Cuts – both sides of street
- () Stationing provided at Point of Curvature PC, Point of Tangent PT, and Intersections
- () Curve Information Delta, Radius, Length and Tangent provided for all curves
- () BCR and ECR (Begin Curb Radius, End Curb Radius) Stationed
- () Edge of Pavement and Right-of-Way (EP & R/W) labeled on the Drawings
- () Signing - Temporary and Proposed Permanent and a Note Indicating that the City will Install both Public and Private Roadway Signs at the Developers Expense
- () Channelization, Striping, and Existing Signing in accordance with M.U.T.C.D., State and City Standards

- () Mailbox Locations (existing and proposed) shown on drawings with Stationing
- () Location of School Bus and/or IT Bus Shelter/Pad shown on drawings with Stationing – the pad meets A.D.A. standards
- () Typical Roadway Sections provided for each Roadway
- () Pavement Marking Details with Station and Offset in accordance with M.U.T.C.D., State and City standards
- () Sidewalks provided in Accordance with the Appropriate Road Section
- () 2 Percent Roadway Slope from Centerline to the Gutter is provided (the slope is also provided for stubbed roads, knuckles and Cul-de-Sacs)
- () Driveway Entrances (information may be shown on tables on each sheet where cuts occur)
- () Centerline Stationing
- () Width, Material (AC, PCC, other)
- () Driveway Type
- () Curb Ramps - Detail and Type
- () All Curb Ramps Proposed or Existing satisfy Current A.D.A. Requirements. In accordance with detail 4-11.1, Spot elevations shall be provided for those critical locations as necessary to assure A.D.A slope requirements are satisfied (slopes shall be labeled on the detail)
- () If the Project has 500 feet of Frontage or the Utility Poles need to be relocated, Direction to underground Overhead Utilities included in the Civil Drawings
- () Landscaping Plan for Plantings within the Right of Way is provided
- () Street trees called out within the Right of Way are Approved Varieties as listed in the Development Guidelines
- () On site landscaping plans shall be separate from Right of Way landscaping. On site landscaping shall be submitted to Community Development for approval

Profile View:

- () Vertical Information VPI, BVC, EVC, AP, 'K' value, Low Point, High Point (for all curves)
- () Proposed and existing centerline elevations provided
- () Show Grades with (+ or -) Slope
- () Super Elevated Roadways Identified
- () Detail - Show Transitions In and Out of the Super Elevated Road Section
- () Special Detail Showing Gutter Flowing Adequately is provided

Miscellaneous:

- () Street Detail Sheet provided (include City of Lacey details with Lacey title blocks)
- () Street General Notes provided
- () Pavement Design AASHTO Method in conformance with details provided Soils Report provided

ILLUMINATION AND SIGNALS

Lighting

- () Design Calculations (for roads with curves and roads that do not meet current roadway standards)
- () Appropriate Street Lighting provided (pedestrian scale, roadway, or dual function)
- () Station and Offset to Lighting Fixtures and Appurtenances provided
- () Pole Type, Including Manufacturer and Model Number
- () Mounting Height and Arm Length
- () Ten foot “clear zone” from the street lighting to private overhead utilities is incorporated into the street lighting design
- () Power Source
- () Wire Size, Type, Conduit (maximum conductor per 2 inch conduit is as follows: 7 - #8 conductors or 5 - #4. When conductors exceed the maximum, (7 - #8 or 5 - #4) an additional 2 inch conduit shall be provided). Upsizing of the Conduit Shall Not Be permitted.
- () Spare 2 inch Conduit (in addition to the previous check list item) included
- () Luminaire Type, Lamp Wattage
- () Location of Service Disconnects (5% Max. Voltage Drop from Source to Farthest Luminaire)
- () J-Box Locations and Stations
- () Overall Map with Luminaire Locations Shown
- () On Boulevards, Arterials and Collector Roadways Where Dual Function Pedestrian Poles are utilized, Two Circuits are shown. One Circuit is on the Right Side of the Street and One Circuit is on the Left Side of the Street.

Signals (Follow WSDOT Specs Unless Otherwise Required by the City)

- () Station and Offset to Signal Base, Cabinets, Ped. Lead, Loops, etc.
- () Pole Type, Including Manufacturer and Model Number
- () Wiring Schedule
- () Signal Heads and mounting Assembly
- () Detection Loops
- () Opticom
- () Control Cabinet, Size and Layout
- () Power Source
- () Conduit
- () Wire Size and Type
- () Phasing Schedule
- () Construction Notes
- () J-Box Schedule with Stationing and Type
- () Pedestrian Signal type with Push Button (meeting A.D.A requirements) provided
- () Controller type, Configuration, and Wiring Schematic

Miscellaneous:

- () Street Lighting Detail Sheet provided (include City of Lacey details with Lacey title blocks)
- () Lighting General Notes provided

MISCELLANEOUS

- () Easements and/or Right of Way Dedication Deeds signed by owner are provided with the civil drawings
- () Detailed Engineers Estimate or Contractor's Bid for Public Works Improvements provided
- () Line Loss Calculations provided
- () Stormwater Maintenance Agreement (in recordable format) provided

Additional Items:

- () Field Verify Note on drawing.- Expose Connection Points and Verify Fittings 48 Hours Prior to Distributing Shut-Down Notices

GENERAL PUBLIC WORKS CONSIDERATIONS

APWA STANDARD SYMBOLS

CHANNELIZATION SYMBOLS

SYMBOL EXIST.	PROP.	DESCRIPTION	BLOCK	LAYER
		BIKE PATH	CB/CBP	TF-CHAN-3333-SYM
		HANDICAP SYMBOL	CHS/CHSP	TF-CHAN-3333-SYM
		H.O.V. LANE SYMBOL	CHOV/CHOVP	TF-CHAN-3333-SYM
		ONLY	CO/COP	TF-CHAN-3333-SYM
		RAILROAD CROSSING	CRR/CRRP	TF-CHAN-3333-SYM
		SCHOOL	CSC/CSCP	TF-CHAN-3333-SYM
		STOP	CS/CSF	TF-CHAN-3333-SYM
		LANE CONTROL ARROWS: STRAIGHT ARROW	CSA/CSAP	TF-CHAN-3333-SYM
		L.T./R.T. STR. ARROW	CLRS/CLRSP	TF-CHAN-3333-SYM
		LEFT-RIGHT ARROW	CLR/CLRP	TF-CHAN-3333-SYM
		2-WAY LEFT TURN	C2W/C2WP	TF-CHAN-3333-SYM
		LEFT TURN ARROW	CLT/CLTP	TF-CHAN-3333-SYM
		RIGHT TURN ARROW	CRT/CRTP	TF-CHAN-3333-SYM
		LEFT-STRAIGHT ARROW	CLS/CLSP	TF-CHAN-3333-SYM
		RIGHT-STRAIGHT ARROW	CRS/CRSP	TF-CHAN-3333-SYM
		RAISED MARKERS: LANE MARKERS TYPE I	CLM1/CLM1P	TF-CHAN-3333-SYM
		LANE MARKERS TYPE II	CLM2/CLM2P	TF-CHAN-3333-SYM 3333 - USE EXST/PROP

SURFACE FEATURES/LANDSCAPING

SYMBOL EXIST.	PROP.	DESCRIPTION	BLOCK	LAYER
		BUS STOP	SFBS/SFBSF	SF-BUSS-3333-SYM
		EMBANKMENT	SFB/SFBP	SF-EMBT-3333-SYM
		MAIL BOX	SFMB/SFMBP	SF-MAIL-3333-SYM
		RIP RAP	SFRR/SFRRP	SF-RIPR-3333-SYM
		ROCKERY	SFR/SFRP	SF-ROCK-3333-SYM
		SHRUB	SFS/SFSP	SF-VEGE-3333-SYM
		SIGN	SFSN/SFSNP	SF-SIGN-3333-SYM
		TREE (Conifer)	SFC/SFCP	SF-VEGE-3333-SYM
		TREE (Deciduous)	SFD/SFDP	SF-VEGE-3333-SYM
		YARD LIGHT	SFL/SFLP	SF-LITE-3333-SYM 3333 - USE EXST/PROP

LINETYPES

LINE TYPE	DESCRIPTION	COLOR	LT NAME	LAYER
---	SURFACE FEATURES:			
---	BUILDING LINE (EXISTING)	GREEN	EXBULD	SF-BLDG-EXST-LIN
---	BUILDING LINE (PROPOSED)	GREEN	CONTINUOUS	SF-BLDG-PROP-LIN
---	CREEK/DITCH CENTERLINE (EXIST.)	WHITE	DITCH	SF-DTCH-EXST-LIN
---	CREEK/DITCH CENTERLINE (PROP.)	GREEN	DITCH	SF-DTCH-PROP-LIN
---	CURB/PAVEMENT/SIDEWALK (EX)	WHITE	CONTINUOUS	SF-222A-EXST-LIN
---	CURB/PAVEMENT/SIDEWALK (PROP)	CYAN	CONTINUOUS	SF-222A-PROP-LIN
---	FENCE (EXISTING)	YELLOW	FNC1	SF-FENC-EXST-LIN
---	FENCE (PROPOSED)	CYAN	FNC1	SF-FENC-PROP-LIN
---	GUARDRAIL (EXISTING)	YELLOW	EGR1	SF-GURD-EXST-LIN
---	GUARDRAIL (PROPOSED)	CYAN	GR1	SF-GURD-PROP-LIN
---	LAKE/POND	WHITE	LAKE	SF-LAKE-EXST-LIN
---	MARSH/SWAMP PERIMETER	WHITE	MARSH	SF-SWMP-EXST-LIN
---	RAILROAD	WHITE	R1R1	SF-RLRD-EXST-LIN
---	RETAINING WALL (EXISTING)	WHITE	ERW1	SF-WALL-EXST-LIN
---	RETAINING WALL (PROPOSED)	CYAN	PRW1	SF-WALL-PROP-LIN
---	RIVERBANK/SHORELINE	CYAN	CONTINUOUS	SF-222B-EXST-LIN
---	SURVEY:			
---	CENTERLINE (EXISTING)	YELLOW	EXCNTL	SV-CNTL-EXST-LIN
---	CENTERLINE (PROPOSED)	GREEN	PROCNTL	SV-CNTL-PROP-LIN
---	CONTOUR (DEPRESSION)	YELLOW	DECT	SV-CONT-DEPR-LIN
---	CONTOUR (EXISTING)	YELLOW	CON	SV-CONT-EXST-LIN
---	CONTOUR (INDEX)	CYAN	CON	SV-CONT-INDX-LIN
---	CONTOUR (PROPOSED)	CYAN	CONTINUOUS	SV-CONT-PROP-LIN
---	DONATION LAND CLAIM (EXIST.)	CYAN	DLG	SV-DLGM-EXST-LIN
---	DONATION LAND CLAIM (PROP.)	GREEN	DLG	SV-DLGM-PROP-LIN
---	EASEMENT (PERMANENT)	CYAN	CONTINUOUS	SV-ESMT-PERM-LIN
---	EASEMENT (TEMPORARY)	CYAN	TEMPESMT	SV-ESMT-TEMP-LIN
---	MEANDER LINE	YELLOW	MEANDER	SV-MEAN-EXST-LIN
---	PROPERTY LINE (EXISTING)	YELLOW	PROPERT	SV-PROP-EXST-LIN
---	PROPERTY LINE (PROPOSED)	CYAN	PROPERT	SV-PROP-PROP-LIN
---	RANGE/TOWNSHIP LINE	GREEN	CONTINUOUS	SV-222A-EXST-LIN
---	RESERVATION/PARK/FOREST (EX)	CYAN	PARK	SV-PARK-EXST-LIN
---	RESERVATION/PARK/FOREST (PRO)	GREEN	PARK	SV-PARK-PROP-LIN
---	RIGHT-OF-WAY (EXISTING)	CYAN	EXROW	SV-ROFW-EXST-LIN
---	RIGHT-OF-WAY (PROPOSED)	GREEN	CONTINUOUS	SV-ROFW-PROP-LIN
---	RIGHT-OF-WAY (LIMITED ACCESS)	CYAN	ROWL1	SV-ROFW-EXST-LIN
---	RIGHT-OF-WAY (LIMITED ACCESS)	GREEN	ROWL1	SV-ROFW-PROP-LIN
---	SECTION LINE	GREEN	SECT	SV-SECT-EXST-LIN
---	QUARTER SECTION LINE	CYAN	QTRSECT	SV-QSCT-EXST-LIN
---	SIXTEENTH SECTION LINE	CYAN	16THSECT	SV-16ST-EXST-LIN
---	STATE/COUNTY/CORPORATE LIMIT	GREEN	STATE	SV-222B-EXST-LIN
---	STATE/COUNTY/CORPORATE LIMIT	GREEN	STATE (PLINE .03"WIDE)	SV-222B-PROP-LIN
---	UTILITIES (EXISTING):			
---	CABLE TELEVISION (AERIAL)	RED	ATV	TV-ALIN-EXST-LIN
---	CABLE TELEVISION (BURIED)	RED	TV	TV-BLIN-EXST-LIN
---	FORCE MAIN	MAGENTA	FM	SS-PLIN-EXST-LIN
---	GAS	MAGENTA	G	GS-PLIN-EXST-LIN
---	OIL	MAGENTA	O	OL-PLIN-EXST-LIN
---	POWER (AERIAL)	RED	AP	PO-ALIN-EXST-LIN
---	POWER (BURIED)	RED	P	PO-BLIN-EXST-LIN
---	SANITARY SEWER	WHITE	S	SS-GLIN-EXST-LIN
---	STEAM	MAGENTA	STE	ST-PLIN-EXST-LIN
---	STORM DRAINAGE	WHITE	D	SD-2222-EXST-LIN
---	TELEPHONE (AERIAL)	RED	AT	TL-ALIN-EXST-LIN
---	TELEPHONE (BURIED)	RED	T	TL-BLIN-EXST-LIN
---	UTILITY SERVICE LINE (GENERAL)	YELLOW	SERV	11-SERV-EXST-LIN
---	WATER	MAGENTA	W	WA-2222-EXST-LIN
---	UTILITIES (PROPOSED):			
---	MAIN LINE (LIST TYPE, SIZE, ETC.)	*	CONTINUOUS	11-2222-PROP-LIN
---	SERVICE (LIST TYPE, SIZE, ETC.)	*	CONTINUOUS	(P-LINE .04" WIDE) 11-SERV-PROP-LIN

* COLOR DEPENDS ON TYPE OF UTILITY (E.G. POWER, WATER, ETC.)
 *** INSERT ELEVATION AT 6" INTERVALS (TEXT 0.1" HIGH)

NOTES

1. PRINT APWADOC2.DOC FOR MORE INFORMATION ON SYMBOL/LINETYPE INSERTION AND USE OF APWA MENUS.
2. INSERT MON OR MON-IN-CASE SYMBOLS INTO CENTER OF MONUMENTED SECTION CORNERS.
3. USE WATER VALVE AND FITTING SYMBOLS FOR SEWER FORCEMAIN VALVES AND FITTINGS.
4. LINETYPES ARE LOADED FROM THE APWALIN2.LIN LINETYPE FILE.
5. DITCH LINETYPE FLOW DIRECTION ARROW MUST BE INSERTED AT ENDS OF DASHED LINES AS SHOWN ABOVE (BLOCK NAME IS "TL").
6. COMPOSITE LINETYPES ARE DRAWN USING USP ROUTINES IN APWA MENUS. AL-
7. LINEWEIGHTS ARE BASED ON DISPOSABLE LIQUID INK PLOTTER

TERNATE METHOD IS TO INSERT BLOCKS ALONG CONTINUOUS LINES AS FOLLOWS:	POINT SIZES:	COLOR	PEN SIZE	NUMBER	
LINE TYPE	BLOCK	SPACING (INCHES)	YELLOW	0.25	3x0
EXISTING FENCE	FP	1.0	MAGENTA	0.35	0
PROPOSED FENCE	FP	1.0	RED		
EXISTING GUARDRAIL	GR	1.0	WHITE		
PROPOSED GUARDRAIL	GRP	1.0			
EXISTING RAILROAD	RR	0.5	CYAN	0.5	1
EXISTING RETAINING WALL	EW	0.25	GREEN	0.7	2 1/2
PROPOSED RETAINING WALL	PW	0.25			
DEPRESSION CONTOUR	DEP	0.1			
LIMITED ACCESS R.O.W.	LA	0.1			

MORE SIZES AVAILABLE IF USE REFILLABLE PLOTTER POINTS.

3.045 General Public Works Construction Notes

GENERAL CONSTRUCTION NOTES (ALL PUBLIC WORKS IMPROVEMENTS)

1. All workmanship and materials shall be in accordance with City of Lacey standards and the most current edition of the *State of Washington Standard Specifications for Road, Bridge and Municipal Construction* (WSDOT/APWA). In cases of conflict, the most stringent standard shall apply.
2. The contractor shall be in compliance with all safety standards and requirements as set forth by OSHA, WISHA and the State of Washington, Department of Labor and Industries.
3. All approvals and permits required by the City of Lacey shall be obtained by the contractor prior to the start of construction.
4. If construction is to take place in the County right-of-way, the contractor shall notify the County and obtain all the required approvals and permits.
5. A pre-construction meeting shall be held with the City of Lacey Construction Inspector a minimum 72 hours prior to the start of construction.
6. The City of Lacey Construction Inspector shall be notified a minimum of 48 hours in advance of a tap connection to an existing main. The inspector shall be present at the time of the tap.
7. The contractor shall be fully responsible for the location and protection of all existing utilities. The contractor shall verify all utility locations prior to construction by calling the Underground Locate Line at 811 not less than two business days and not more than 10 business days prior to any excavation. The contractor will also be responsible for maintaining all locate marks once the utilities have been located.
8. Temporary street patching shall be allowed for as approved by the City engineer. Temporary street patching shall be provided by placement and compaction of 1 inch maximum asphalt concrete cold mix. Contractor shall be responsible for maintenance as required.

9. The contractor shall be responsible for all traffic control in accordance with the *WSDOT/APWA Standard Plans for Road, Bridge and Municipal Construction* (all applicable “K” plans) and/or the *Manual on Uniform Traffic Control Devices* (MUTCD). Prior to disruption of any traffic, a traffic control plan shall be prepared and submitted to the City for approval. No work shall commence until all approved traffic control is in place.
10. Erosion control/water pollution measures shall be required in accordance with Section 1-07.15 of the *WSDOT/APWA Standard Specifications for Road, Bridge and Municipal Construction* and the *City of Lacey Stormwater Design Manual*. At no time will silts and debris be allowed to drain into an existing or newly installed facility unless special provisions have been designed.
11. All surveying and staking shall be performed per the corresponding chapter of the *City of Lacey Development Guidelines and Public Works Standards*.
12. It shall be the responsibility of the contractor to have a copy of an approved set of plans on the construction site at all times.
13. Any changes to the design shall first be reviewed and approved by the project engineer and the City of Lacey.
14. If construction is to take place in other jurisdiction’s right-of-way (i.e., the county, the State, the City of Olympia, or other adjacent municipalities), the contractor shall notify the jurisdiction and obtain all the required approvals and permits.
15. Prior to backfill all mains and appurtenances shall be inspected and approved by the City of Lacey Construction Inspector. Approval shall not relieve the contractor for correction of any deficiencies and/or failures as determined by subsequent testing and inspections. It shall be the contractor's responsibility to notify the City of Lacey for the required inspections.
16. The City will be given 72 hours notice prior to scheduling a shutdown. Where connections require "field verification", connection points shall be exposed by the contractor and fittings verified 72 hours prior to distributing shut-down notices.

3.050 Plan Review

All plans are to be submitted to the City Public Works Department along with required Plan Check fees as required in 3.070. Any necessary easements or dedications shall be signed and notarized and submitted in recordable format along with the plans. An engineer's estimate shall be submitted prior to plan approval. City staff will make a cursory check of the plans against the plans checklist on the preceding pages. Plans that meet the minimum checklist requirements will be routed to the appropriate City staff and the plan review process will begin.

The initial turn around time for the first review of plans submitted is normally four weeks. The length of time for the initial review also depends upon the work load of the department, if there is a backlog of projects, the initial review time may be longer. For subsequent reviews, the engineer will submit one set of drawings for re-review or will be notified of additional required revisions. Additional review time will be required if revisions are necessary. Plan check fees are based on the lineal footage of the improvement being reviewed and on an hourly rate starting with the second review.

Approved plans will be returned to the Engineer only after the plan check fees have been paid.

Plans that have been approved more than two years before construction begins (i.e., a preconstruction meeting scheduled and inspection fees paid) shall be subject to re-review based on the hourly rate as established for third submittal. The re-review will concentrate on matters concerning compliance with construction materials, ADA requirements, and life/safety issues.

3.055 Construction Control

Work performed for the construction or improvement of City roads and utilities whether by or for a private developer, by City forces, or by a City contractor, shall be done to the satisfaction of the City and in accordance with approved plans. It is emphasized that no work shall be started until such plans are approved. The City shall approve any revision to such plans before being implemented. Failure to receive the City's approval can result in removal or modification of construction at the contractors or developers expense to bring it into conformance with approved plans.

3.060 Inspection

All work performed within the public right-of-way or easements, or as described in these standards, whether by or for a private developer, by City forces, or by a City contractor, shall be done to the satisfaction of the City and in accordance with the WSDOT/APWA Standard Specifications, any approved plans and these standards. Unless otherwise approved, the City must approve any revision to construction plans before being implemented.

It is the responsibility of the developer, contractor, or their agents to notify the City in advance of the commencement of any authorized work. A preconstruction meeting and/or field review shall be required before the commencement of work. The developer shall submit 4 sets of full-size drawings and 2 sets of half-size drawings, made from the approved plans, to the City prior to scheduling a preconstruction meeting. Inspection fees shall be paid prior to the preconstruction meeting. **Any necessary easements or dedications are required before plan approval.**

It is the responsibility of the developer, contractor or their agents to have an approved set of plans and any necessary permits on the job site during construction.

The City shall have the authority to enforce these standards as well as other referenced or pertinent specifications. The City will appoint project engineers, assistants and inspectors as necessary to inspect the work and they will exercise such authority as the City Engineer may delegate.

All specific inspections, test measurements or actions required of all work and materials are set forth in their respective chapters herein. Tests shall be performed at the developer or contractor's expense. Failure to comply with the provisions of these standards may result in a stop work order, removal of work accomplished, or other penalties as established by ordinance.

A project is considered final when the Public Works Director issues a Final Public Works Approval letter to the party responsible for the project.

Certificate of Occupancy shall not be released for any lot or building until final Public Works approval has been granted.

3.065 As-Built Drawings

As-built drawings in both hard copy and electronic forms shall be required whenever field changes are made to approved plans unless otherwise specified in this document. The as-built drawing shall be completed by the engineer, the contractor, and/or the developer and the changes shall be approved by the designing engineer as indicated by the designing engineer's signature and stamp on the drawing. The as-built drawing shall be revised electronically and submitted on bond along with PDF drawings . Original drawings with "mark ups" will not be accepted for the final as-built drawings. Final Public Works Approval for the project will not be given until the as-built drawing is submitted.

3.070 Fees

Fees, charges or financial guarantee requirements shall be as established by the City council by the passage of a resolution adopting a fee, charge, and financial guarantee requirement schedule except where specifically set forth in the Lacey Municipal Code (LMC). The City council shall further set the dollar penalty for failure to pay said fee or charge in a timely manner by passage of such resolution. (LMC 1.20.010) A copy of the fee schedule can be found in the appendix. It is the applicant's responsibility to verify that the fees in the appendix are current.

All plan check and inspection fees are due prior to the release of signature drawings.

In addition, there are various service and connection fees and charges. We strongly urge all applicants to request an estimate of these fees and charges from the City's Development Review Services Section as soon as practical.

3.080 Permits

Before any person, firm or corporation shall commence or permit any other person, firm or corporation to commence any work to grade, pave, level, alter, construct, repair, remove, excavate or place any pavement, sidewalk, crosswalk, curb, driveway, gutter, drain, sewer, water, conduit, tank, vault, street banner or any other structure, utility or improvement located over, under or upon any public right-of-way or easement in the City of Lacey, or place any structure, building, barricade, material, earth, gravel, rock, debris or any other material or thing tending to obstruct, damage, disturb, occupy, or interfere with the free use thereof or any improvement situate therein, or cause a

dangerous condition, a Right-of-Way Access Permit shall be obtained. A separate permit shall be obtained for each separate project.

In the case of work contracted for by the Department of Public Works, the signing of the contract shall constitute a Right-of-Way Access Permit and/or a Grading Permit.

Much of the work covered under these standards will require multiple permit authority review and approvals. Several types of permits and approvals require prior approval from the authority before a building or other permit can be issued. Any questions regarding information about permits, approvals and agreements should be directed to the appropriate departments.

The following general categories describe some of the permits, approvals and agreements, along with issuing permit/code authority identified in parentheses:

A. SEPA Review

For most projects, a SEPA Environmental Checklist must be completed by the applicant and submitted along with plans, specifications, and other information when approval or permits are being requested for a project. The SEPA Responsible Official conducts the Environmental Review and makes a SEPA Threshold Determination for the City.

B. Construction Permits

1. Land Clearing Permit (Planning Division of the Community Development Department). A Land Clearing Permit is required for all significant tree alterations, including plats. A Land Clearing Permit is typically issued separately. A strict Inventory and Landscaping Plan is required for all Land Clearing Permits.
2. Grading Permit (Building Department). A Grading Permit is required for all excavation, grading, and earthwork construction, including fills and embankments, on public and private land. See Chapter 2 for additional Grading Permit constraints.
3. Building Permit (Building Division of the Community Development Department). A Building Permit is required for most construction work including alteration, repairs and demolition. Demolition Permits for structures greater than four thousand square feet (4,000 sq. ft.) require the submittal of an Environmental Checklist. See 3.090 and 6.010 for additional building permit constraints.
4. Right-of-Way Access Permit (Public Works Department). A Right-of-Way Access Permit is required for any work within the right-of-way as outlined at the beginning of this Chapter. Such work may include utilities work, lane closures, driveways, curbs, sidewalks, and haul routes. Permission to temporarily close a street or portion thereof for construction activities or special events is obtained through the Right-of-Way Access Permit.

C. Approvals and other Permits

There are several other permits or approvals that may be required and referred to in these Standards: Site Plan

Review; plat and short plat approvals; and Certificate of Occupancy.

1. Final Plat

A Final Plat shall not be recorded and no building permit shall be issued until all Public Works improvements are completed and final approval is granted. Exceptions to this policy may be granted with the approval of the Director of Public Works, submission and approval of a Final Plat Agreement (see example in Appendix I), and a performance guarantee posted with the City as outlined in 3.090A. **No certificate of occupancy shall be issued until all public works improvements are completed and approved unless otherwise allowed by the Director of Public Works.** (LMC 14.20.020)

2. Final Public Works Approval

Final Public Works approval is granted for the project upon completion and acceptance of all transportation and utility work as shown on the approved civil drawings. The following items cannot be issued or authorized without Final Public Works approval:

- a) Final Plat approval (for residential developments)
- b) Installation of S.T.E.P. tanks
- c) Issuance of Certificate of Occupancy

The Final Public Works approval date constitutes the beginning of the warranty period associated with Maintenance and Stormwater bonding.

If the improvements shown on the approved civil drawings have not been completed and approved, the owner/applicant may request an exception to allow other portions of the project to continue or begin. The exception process for residential development (Final Plat) is outlined above in section 3.080 C.1. Exemptions for commercial and industrial development: a request and approval for exception from the Director of Public Works and an approved performance guarantee as outlined in 3.090 A.

In addition, there may be several other City approvals (land use) which need to be obtained as part of the project process. These elements may affect the Standards as contained in this document: Reclassification; Conditional Use; Planned Residential Development; Planned Unit Development; and Shoreline Substantial Development Permit.

3.090 Financial Guarantees

Financial guarantees may be required by the City to guarantee the performance of required work. A financial guarantee shall be required for maintenance as outlined in subsection B. below. The type and amount of security shall be per code, or, if not specified, shall be at the discretion of the City. Types of securities include but are not limited to a bond with a surety qualified to do a bonding business in this state, a cash deposit, an assigned savings account, a set aside letter or a letter of credit.

Final Public Works approval shall not be given until all the required work is done and approved and the maintenance financial guarantee(s) is in place.

The following are the most frequent financial guarantees required:

- A. Performance Guarantee. A Final Plat shall not be recorded and no building permit shall be issued until all Public Works improvements are completed and final approval is granted. Exceptions to this policy may be granted with the approval of the Director of Public Works, submission and approval of a Final Plat Agreement (see example in Appendix I), and a performance guarantee posted with the City in the amount, equal to 150 percent of the cost of the outstanding public works improvements, including the on-site storm system. No certificate of occupancy shall be issued until all public works improvements are completed and approved unless otherwise allowed by the Director of Public Works. (LMC 14.20.020)
- B. Maintenance Guarantee.
 - 1. General Public Works Maintenance Guarantee. Prior to final Public Works approval, the permittee or the contractor for the permittee shall post with the City a maintenance guarantee for the guarantee of the Public Works improvements in an amount equal to

20 percent of the estimated cost of the improvements for a period of two years after the completed job is accepted by the City. Release of the guarantee will occur one year from the date of City acceptance if all maintenance has been accepted by the City. (LMC 14.20.025)

Maintenance shall include cleaning of the storm system at the end of the one-year period at the developer's expense. The developer shall be responsible for cleaning the storm conveyance system, including treatment facilities, after one year.

The above-mentioned Financial Guarantee may also be required in the event that Public Works improvements are undertaken and there is no building permit in conjunction with the project.

3.100 Utility Locations

Utilities shall be subject to the provisions as provided in the Telecommunications Ordinance (LMC 5.60) and these Guidelines.

- A. The installation of a utility as defined in Chapter 3.025, whether new, an enhancement, or a replacement project, within a right-of-way or easement, in a new or existing roadway, shall be located as shown in the typical sections on detail drawings. Deviations of location shall be approved by the Director of Public Works. Existing utilities shall be shown using the best information available. This verification may require exploration/excavation (potholing) if utilities are in conflict with the proposed design.

Underground utilities shall be installed in conduit. Direct-bury cable/wire shall not be allowed. Excess conduit may be required per LMC 5.60.100 (C).

The contractor/developer shall be responsible for utility locates in conjunction with their project until final Public Works approval is given.

- B. All new utilities other than those located on private property shall be installed underground by the utility owning said facility and new and existing facilities shall comply with provisions as set forth

in LMC 12.22, Underground Communication Facilities, and 15.10.050, Easements for Public Utilities, and provisions as set forth in franchise agreements between the City and the utility.

Utilities converted from overhead to underground on existing roadways shall be located as shown on the details for new construction. The location must be approved by the City.

- C. A right-of-way access permit is required of any utility, except City owned facilities and utilities, for any work, including replacing and upgrading existing utilities, done within the right-of-way and shall comply with all provisions as set forth in LMC 12.16, Obstruction of Streets, Chapter 3.080 of these standards, and the Telecommunications Ordinance as set forth in LMC 5.60.

- D. If the cumulative length of overhead utilities is over 500 linear feet along the project frontage or when an overhead utility is reconstructed, relocated, replaced, upgraded, or enhanced, the overhead utility is required to be relocated underground by the developer and/or utility owner. The cumulative frontage includes all sides of the subject property adjacent to a public right-of-way where overhead utilities are located. Exceptions to this standard may be allowed by the Director of Public Works after review of a documented request. (LMC 12.22.020). The following hierarchy shall be used for determining the location of the relocated utility:
 - 1. If the affected utility is adjacent to, or on the project triggering the relocation, sufficient right-of-way or easements shall be granted to place the underground utility as shown in chapter 4 street design details.

 - 2. If the affected utility is “off-site” and not adjacent to the project triggering the relocation, the following options are available in order of preference.
 - a. The utility shall always be relocated underground. The undergrounded utility may be located within the right-of-way as shown on the appropriate roadway detail or on the adjacent lots if a utility easement is existing.

 - b. The utility shall be relocated beneath the existing sidewalk. This will require removal and replacement of the sidewalk.

- c. The utility may be relocated under the ditch or at the edge of pavement if no planter or sidewalk is present.
 - d. In rare instances the City may allow the utility to be relocated within the roadway prism if the trench is wheel cut or limited to one foot maximum width and if the utility is placed in conduit to alleviate the need for future cuts and if the trench is backfilled with C.D.F. (controlled density fill) per details regardless of whether the trench is perpendicular or horizontal to the roadway centerline.
3. If an existing overhead utility is proposing to relocate, replace, upgrade, or enhance their utility, and the proposed length of the project is over 500 feet, the utility shall be relocated underground per number 1 and 2 above.

3.110 Easements

- A. Where public utilities and/or their conveyance systems cross private lands, an easement must be granted to the City. The Public Works Engineering Department will generally process, record and file all easements. If the property is to be platted the easement must be conveyed when the short plat or final plat is filed. All easements not shown on a plat must be prepared by a licensed land surveyor.
- B. Easement widths shall be 15 feet for a single utility and 25 feet for dual utilities. Construction easements shall be 30 feet minimum in total width, including the permanent easement. When trench depths dictate or where pipe diameter or vault widths exceed four feet, a wider easement may be required by the City Engineer.

In certain instances where easement widths cannot be reasonably achieved, the Public Works Director may allow a lesser easement width.

- C. Signed, notarized easements are required prior to final plan approval. Any change in design that places an amenity, i.e., water, sewer, sidewalk, etc., outside of the easement may necessitate stopping of construction until plans and easements can be

resubmitted and approved. Plan review fee shall be based on the rate as established for re-submittals. Easements will be filed by the City upon plan approval.

A copy of the Easement Preparation Standards can be found in Appendix B.

3.120 Latecomers Agreements

Any person who constructs a street, water or sewer main extension at the direction of the City, in excess of that which is required to meet minimum standards or which meets minimum standards and will benefit properties abutting the new main, may, with the approval of the Director of Public Works, enter into a contract with the City that will allow the developer to be reimbursed for that portion of the construction cost that benefits the adjoining properties and/or is in excess of the minimum standard. This contract is commonly termed a "Latecomers Agreement." The format for a Latecomers Agreement **must** be submitted for review and approval prior to plan approval to be considered. An example of a standard format for this document is located in Appendix H. Latecomers Agreements submitted after plan approval **will not** be accepted. There is a plan review fee for reviewing this document. See Appendix A or call the Public Works Department for the most current cost.

Once Final Public Works approval has been given to a project, the developer has 60 days from that date in which to submit the remaining supporting documentation to the City. This generally includes copies of all invoices and canceled checks that support the latecomer's amount claimed. During this 60-day period, only those connections approved with the project will be allowed. If no supporting documentation is received during the 60-day period, the latecomer's agreement will be deemed inactive and connections will be allowed without the City being obligated to collect a latecomer's fee.

The developer is responsible for initiating, executing and, after City approval, filing the latecomers agreement. The agreement shall include a list of those properties that will benefit from the extension, a map outlining and designating these properties, legal descriptions as required by the City, and backup data supporting the costs submitted.

The City will collect the latecomer's fee for recorded agreements from persons wanting to connect to the water, sewer or street extension and subsequently see that the developer receives the payment. (LMC 13.52.030) Latecomer's fees shall be collected prior to the connection

to or use of the facility. For new construction, latecomer's fees shall be collected prior to the Preconstruction Meeting.

3.130 Utility Extension

- A. Anyone who wishes to extend any City utility should contact the Department of Public Works Development Engineer for an Extension/Connection Fee Estimate and any special extension requirements.
- B. Utility mains shall be extended to and through the extremes of the property being developed for loop closures and/or future development as determined by the City.

3.135 Annexation Requirement

Owners of properties lying outside of, but contiguous to City boundaries must apply for annexation of their property to the City prior to being served by a City owned utility. Owners of properties lying outside of but not contiguous to the City must legally commit their property to eventual annexation prior to being served by the City's utility system. (Resolution 510)

These annexation requirements will be applied to all extensions of the City's utility to areas outside the City limits. Anyone who desires to extend the City's utility system should contact the Department of Public Works for specific annexation requirements.

3.140 Traffic Control

- A. The developer/contractor shall be responsible for all traffic control during construction on or along traveled roadways. Traffic control shall be in accordance with the WSDOT/APWA *Standard Plans For Road, Bridge and Municipal Construction* (all applicable "K" plans) and the *Manual on Uniform Traffic Control Devices* (MUTCD). Prior to disruption of any traffic, traffic control plans meeting the above mentioned references shall be prepared and submitted to the City for approval. No work shall commence until all approved traffic control is in place.

Additionally, City utilities constructed within Thurston County right-of-way shall follow all traffic control requirements as set forth by the Thurston County Department of Public Works.

Signs must be legible and visible and should be removed at the end of each workday if not applicable after construction hours.

- B. When road closures and detours cannot be avoided the contractor/developer shall notify the Department of Public Works Construction Inspectors. The City will require a detour plan to be prepared, submitted and approved prior to closing any portion of a City roadway.
- C. A Right-of-Way Access Permit may be required before work in the road can commence. See requirements in Chapter 3.080 and 3.100 and contact the Department of Public Works for specific permit information.

3.150 Call Before You Dig

All developers/contractors are responsible for timely notification of all utilities in advance of any construction in right-of-way or utility easements. The utilities one-call Underground Location Center phone number is 811.

3.160 Staking

All surveying and staking shall be performed by an engineering or surveying firm capable of performing such work. The surveyor directing such work shall be licensed as a Professional Land Surveyor by the State of Washington.

A preconstruction meeting shall be held with the City prior to commencing staking. All construction staking shall be inspected by the City prior to construction. The minimum staking of waterlines shall be as directed by the City Engineer or as follows:

- A. Stake centerline alignment every 50 feet with cut or fill to invert of pipe maintaining 42 inches of cover over pipe.
- B. Stake alignment of all fire hydrants, tees, water meters, setters and other fixtures and mark cut or fill to hydrant flange finished grade.

3.170 Trench Excavation

- A. Clearing and grubbing where required shall be performed within the easement or public right-of-way as permitted by the City and/or governing agencies. Debris resulting from the clearing and

grubbing shall be disposed of by the owner or contractor in accordance with the terms of all applicable permits.

- B. Trenches shall be excavated to the line and depth designated by the City to provide a minimum of 42 inches of cover over the pipe. Except for unusual circumstances where approved by the City, the trench sides shall be excavated vertically and the trench width shall be excavated only to such widths as are necessary for adequate working space as allowed by the governing agency. The trench shall be kept free from water until joining is complete. Surface water shall be diverted so as not to enter the trench. The owner shall maintain sufficient pumping equipment on the job to insure that these provisions are carried out.
- C. The contractor shall perform all excavation. Whatever obstructions are encountered shall be removed or cut out to the width of the trench or roadway section to a depth 6 inches below water main grade. Where materials are removed from below water main grade, the trench shall be backfilled to grade with material satisfactory to the City and thoroughly compacted.
- D. Trenching and shoring operations shall be in conformance with Washington Industrial Safety and Health Administration (WISHA), Washington Department of Labor and Industries (L & I) and the Office of Safety and Health Administration (OSHA) Safety Standards.

3.175 Thrust Blocking

Location of thrust blocking shall be shown on plans. Thrust blocks shall comply with the City thrust blocking details. The addition of restrained joint fittings may not eliminate the need for thrust blocking.

3.180 Bedding and Backfilling

Bedding material per the City bedding detail shall be placed and compacted around and 4 inches under the water mains by hand tools and to a height of 6 inches above the top of the water main. The remaining fill shall be compacted to 95 percent of the maximum density. Where governmental agencies other than the City have jurisdiction over roadways, the fill and compaction shall be done to the satisfaction of the agency having jurisdiction. If suitable material, as determined by the City, is not available from trenching operations, the City may order the placing of imported fill conforming to 9-03.12(3) around the water main and gravel base conforming with Section 9-30.15 of the *WSDOT/APWA Standard Specifications for Road, Bridge and Municipal Construction* for backfilling the trench. Bedding and backfilling shall be required per the detail.

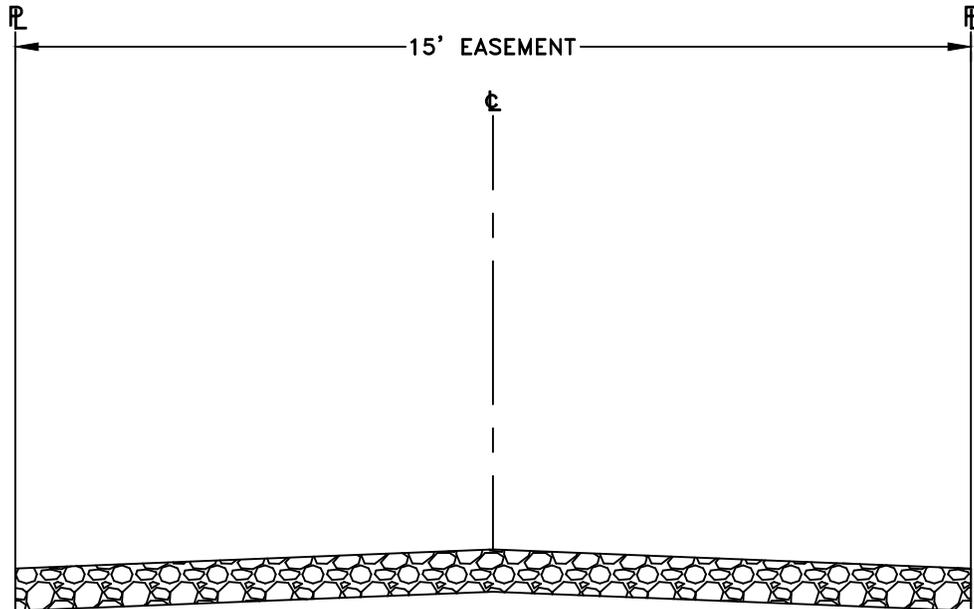
3.195 Street Patching and Restoration

See Chapter 4B.170 and 4B.180 and trench restoration details for requirements regarding street patching and trench restoration.

LIST OF DRAWINGS

CHAPTER 3 – GENERAL PUBLIC WORKS CONSIDERATIONS

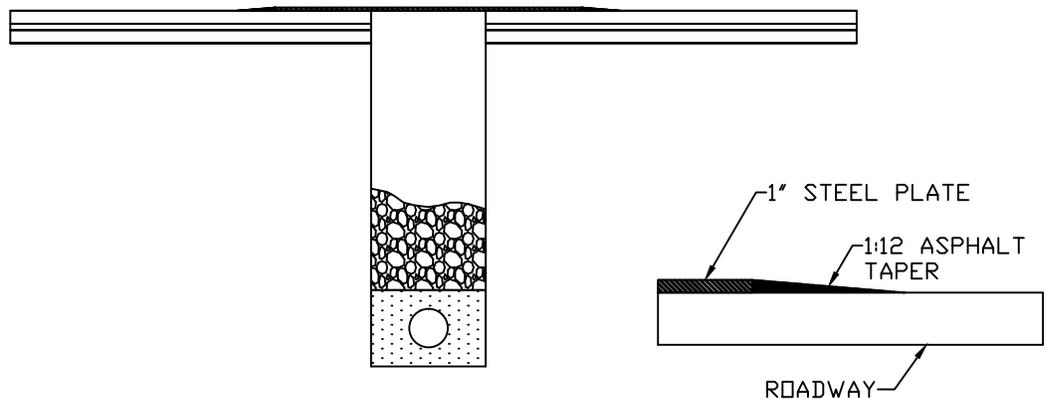
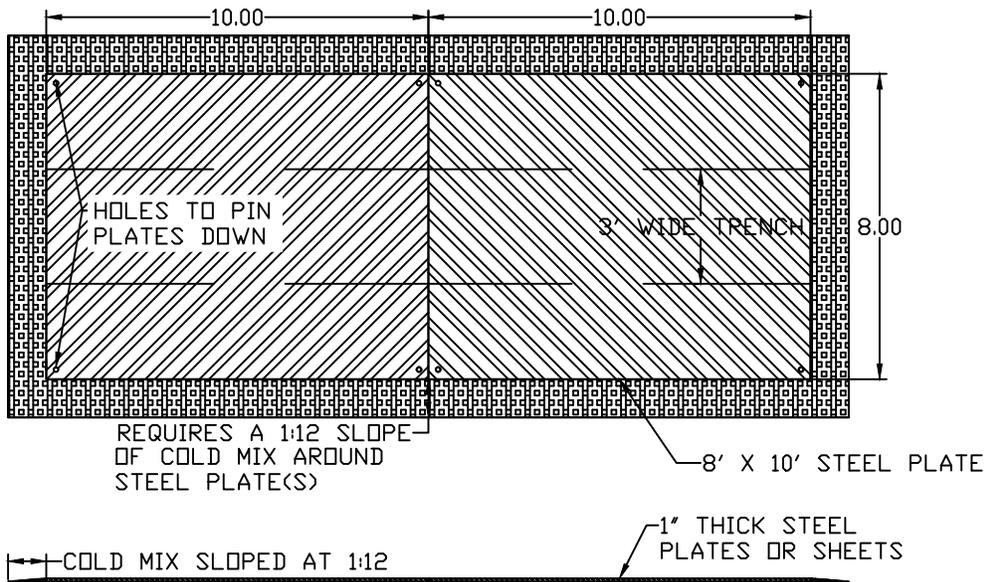
<u>Title</u>	<u>Drawing#</u>
City of Lacey Utility Easement Access Road	3-0
Steel Plates for Roadway Trenches.....	3-2
Tracer Wire Access Port Valve Box Installation	3-11
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GENERAL NOTES:

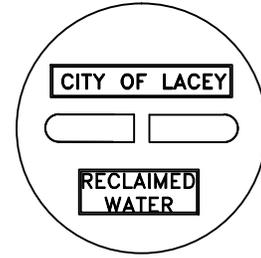
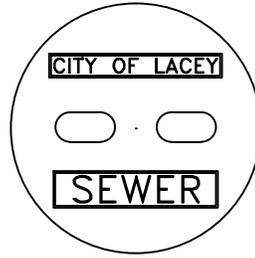
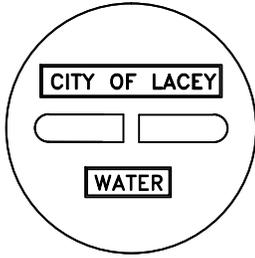
1. ACCESS ROADS SHALL BE REQUIRED IN ALL EASEMENTS WHERE CITY OF LACEY UTILITIES ARE PROPOSED. THE ACCESS ROAD SHALL BE THE FULL WIDTH OF THE EASEMENT. ADDITIONAL EASEMENTS MAYBE REQUIRED FOR MULTIPLE UTILITIES, TURNING RADIUS, DRAINAGE REQUIREMENTS OR AS DIRECTED BY THE CITY. A SINGLE UTILITY SHALL BE CENTERED IN THE EASEMENT. MULTIPLE UTILITIES SHALL BE PER THE REQUIRED SEPARATION FROM THE CENTER OF THE EASEMENT.
2. A "NO PARKING" SIGN SHALL BE MANUFACTURED AND INSTALLED BY THE CITY AT THE OWNERS EXPENSE. THE SIGN SHALL BE INCLUDED WITH THE SIGN REQUEST.
3. ACCESS TO THE EASEMENT SHALL BE MADE WITH A DRIVEWAY CUT.
4. ACCESS ROAD CROSS SLOPES SHALL BE DESIGNED BY THE ENGINEER AND APPROVED BY THE CITY.
5. THE ACCESS ROAD SHALL HAVE A GATE INSTALLED TO LIMIT ENTRANCE TO THE SITE. THE GATE LOCK SHALL INCLUDE A CHAIN SO THAT PAD LOCKS CAN BE "DAISY CHAINED" TOGETHER. A PAVED PARKING AREA FROM THE BACK OF THE DRIVEWAY CUT OR SIDEWALK TO THE GATE SHALL BE PROVIDED FOR CITY VEHICLES. ALL OTHER PAVING SHALL BE AS DIRECTED BY THE CITY.
6. THE ACCESS ROAD STRUCTURE REQUIREMENTS SHALL BE PER DETAIL 4-6.1.
7. THE ACCESS IS A MEANS TO MAINTAIN MAINS OR LINES, MANHOLES, VALVES OR CLEAN OUTS AND ALL APPURTENANCES PROPOSED IN THAT EASEMENT.

CITY OF LACEY, WASHINGTON DEPT. OF PUBLIC WORKS			
CITY OF LACEY UTILITY EASEMENT ACCESS ROAD			
APPROVED <i>Rog A Schoenel</i> CITY ENGINEER			DWG. NO. 3-0
DES WHO	DWN WHO	CKD RAS	DATE 12/15/2014



GENERAL NOTES:
 TRENCHES UP TO 3' WIDE USE 1" THICK PLATES.
 TRENCHES 3' TO 5' WIDE USE 1 1/2" PLATES.
 ALL OTHER TRENCH WIDTHS SHALL BE DESIGNED BY THE DESIGNING ENGINEER.
 THE STEEL PLATES SHALL EXTEND AT A MINIMUM OF 2' BEYOND THE END OF THE TRENCH IN ALL DIRECTIONS.
 TAPERS OR SLOPES OFF OF THE STEEL PLATES SHALL BE AT A MINIMUM 1:12.
 UNEVEN PLATES WILL NOT BE ALLOWED.
 PINNING OF PLATES WILL BE PER THE DIRECTION OF THE CITY.
 AT NO TIME WILL THE STEEL PLATES BE ALLOWED TO EXTEND BEYOND THE CENTER OR THE CROWN OF THE ROAD.
 FRESH COLD MIX ASPHALT SHALL BE REQUIRED WHEN USED AS THE TAPER FOR THE STEEL PLATES.

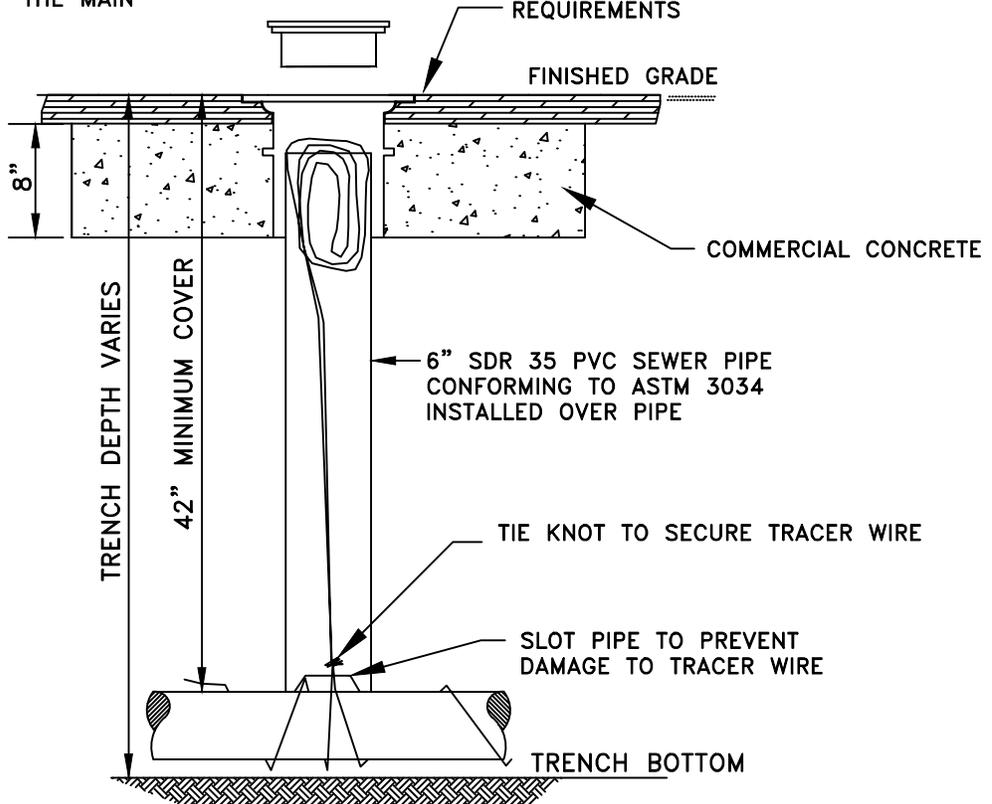
CITY OF LACEY, WASHINGTON DEPT. OF PUBLIC WORKS			
STEEL PLATES FOR ROADWAY TRENCHES			
APPROVED <i>Rog A Schoessel</i> CITY ENGINEER		DATE	
		DWG. NO. 3-2	
DES WHO	DWN WHO	CKD RAS	DATE 12/15/2014



VALVE BOX LIDS SHALL BE PER THE ABOVE

12 GAUGE U.S.E. BLUE,
GREEN OR PURPLE
COATED TRACER WIRE
WITH 3' EXTRA WIRE TO
BE USED TO LOCATE
THE MAIN

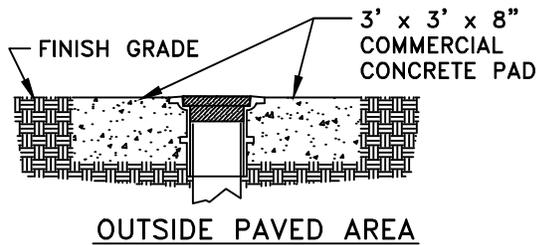
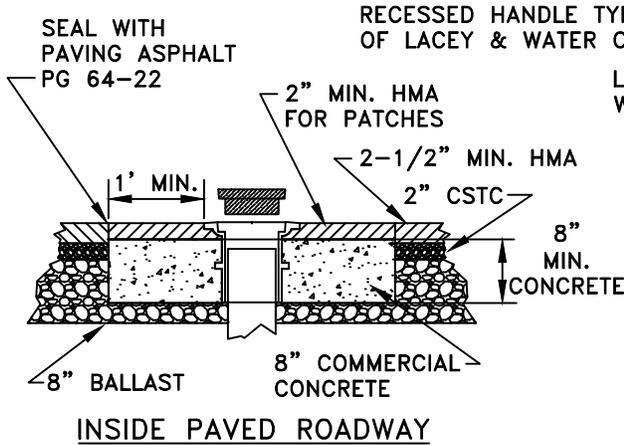
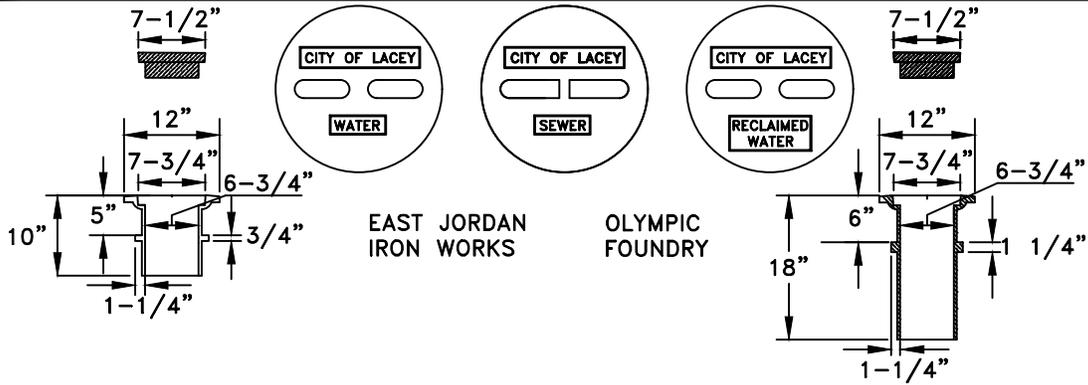
EJ VALVE BOX OR OLYMPIC
FOUNDRY VB-950 VALVE BOX
"LACEY SEWER" CAST IN LID. SEE
DETAIL 6-12 FOR INSTALLATION
REQUIREMENTS



GENERAL NOTE:

1. TRACER WIRE ACCESS PORT SHALL BE INSTALLED EVERY 500 FEET WHEN NO APPURTENANCES ARE CONNECTED TO IT.

CITY OF LACEY, WASHINGTON DEPT. OF PUBLIC WORKS			
TRACER WIRE ACCESS PORT VALVE BOX INSTALLATION			
APPROVED <i>Roger A. Schoenel</i> CITY ENGINEER			DWG. NO. 3-11
DES WHO	DWN WHO	CKD RAS	DATE 12/15/2014

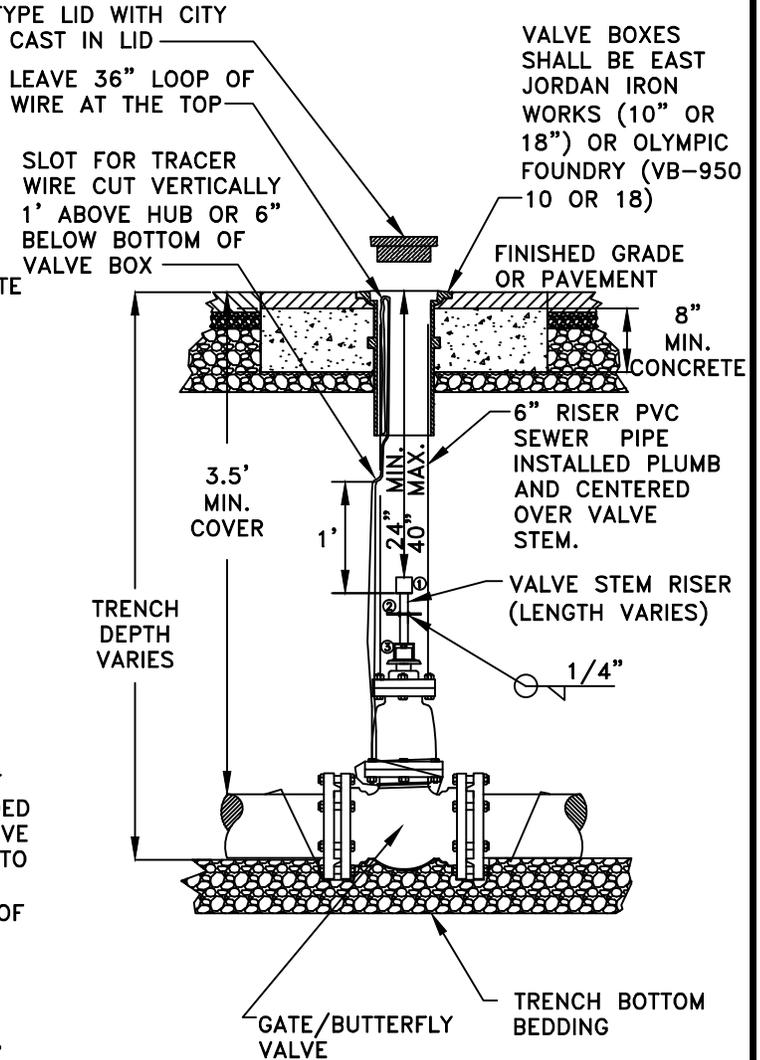


GENERAL NOTES:

1. ALL VALVES SHALL HAVE A U.S.E. 12 GAUGE BLUE COATED COPPER TRACER WIRE TIED OFF AT VALVE BODY. THE WIRE SHALL BE EXTENDED UP ON THE OUTSIDE RISER PIPE A FOOT ABOVE THE VALVE HUB BEFORE THE WIRE IS PUT INTO THE RISER THROUGH A SLOT CUT INTO THE RISER. LEAVE 36" OF WIRE ABOVE THE TOP OF VALVE BOX.
2. ALL WELDS TO THE SHAFT SHALL BE FILLET WELD, AROUND THE ENTIRE PLATE PER #2 BELOW.
3. VALVE BOX AND LID SHALL BE DUCTILE IRON, MANUFACTURED IN THE USA AND SHALL BE A MATCHED SET FROM THE SAME MANUFACTURER.
4. EXISTING SURFACES PAVED WITH PERMEABLE MATERIALS SHALL BE REPLACED IN-KIND WHERE FEASIBLE IN CONFORMANCE WITH 4B.180 TRENCH BACKFILL AND RESTORATION.

VALVE STEM EXTENSION LEGEND

- ① VALVE OPERATING NUT OR 1-7/8" X 1-7/8" X 2" HIGH GRADE STEEL WELDED TO GUIDE PLATE.
- ② 3/16" THICK X 5 1/5" DIA STEEL GUIDE PLATE WELDED TO RISER SHAFT.
- ③ 2"X2"X 3/16" SQUARE STRUCTURAL STEEL TUBING TO FIT OPERATING NUT. LENGTH AS REQUIRED.



CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

STANDARD VALVE BOX
INSTALLATION

APPROVED

CITY ENGINEER

DWG. NO.

3-12

DES

WHO

DWN

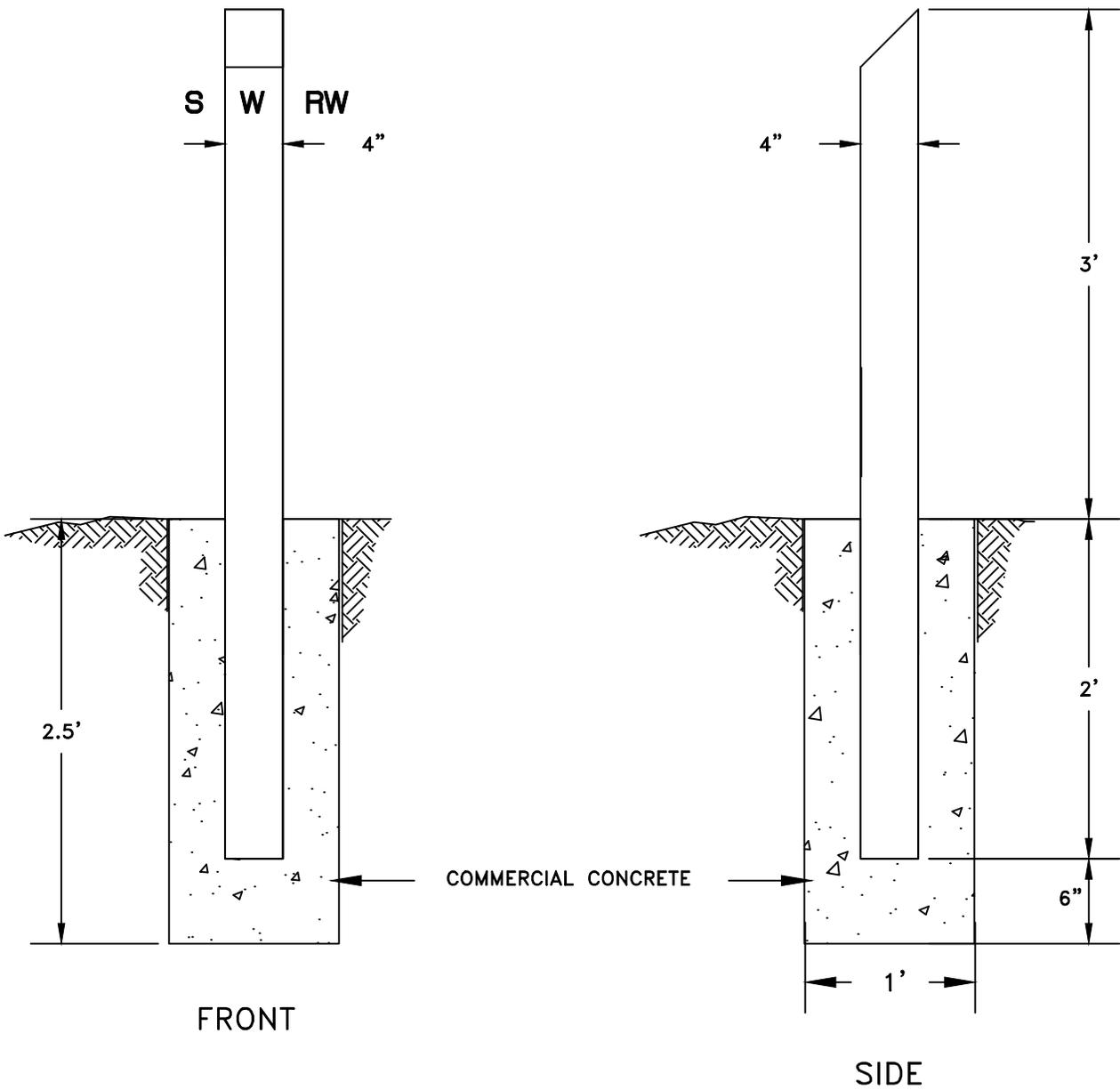
WHO

CKD

RAS

DATE

08/24/2017



GENERAL NOTES:

1. 4" SCHEDULE 40 STEEL OR REINFORCED CONCRETE MARKER POST STAMPED WITH A BLUE "W", GREEN "S", PURPLE "RW" AND DISTANCE TO VALVE.
2. THE POST TO BE COATED WITH ONE PRIME COAT AND TWO COATS OF OUTDOOR OIL BASE ENAMEL (WHITE).

**CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS**

**VALVE MARKER
POSTS**

APPROVED

Roger A. Schoenel
CITY ENGINEER

DWG. NO.

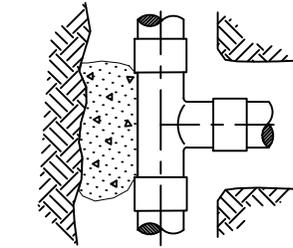
3-13

DES
WHO

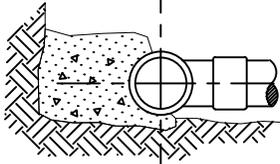
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CKD
RAS

DATE
12/15/2014

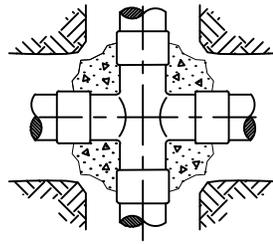


TOP VIEW

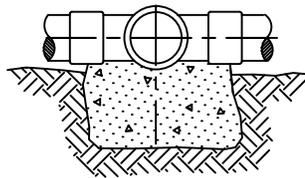


SIDE VIEW

TEE

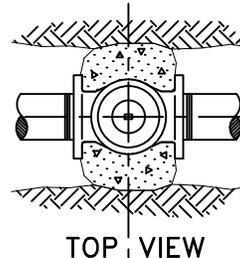


TOP VIEW

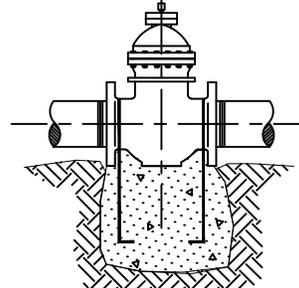


SIDE VIEW

CROSS

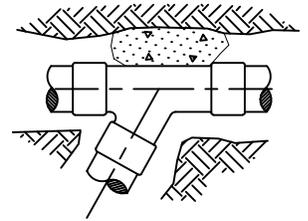


TOP VIEW

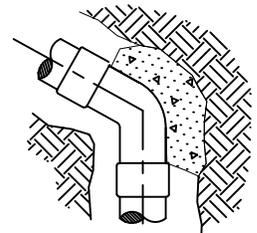


SIDE VIEW

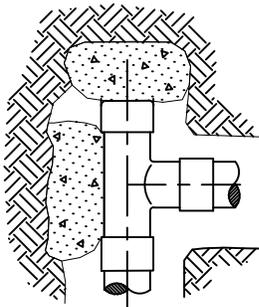
GATE VALVE



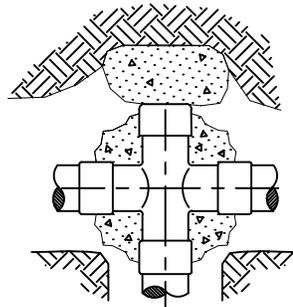
WYE



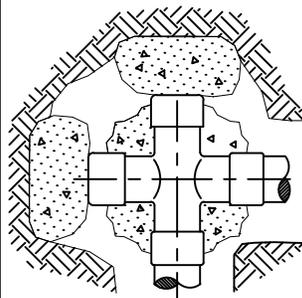
HORIZ. BEND



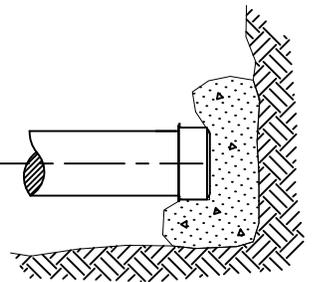
TEE WITH
PLUG



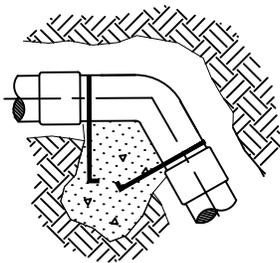
CROSS WITH
PLUG



CROSS WITH
PLUGS



PLUG OR CAP



45° - 90°
VERTICAL BEND

GENERAL NOTES:

1. CONCRETE THRUST BLOCKING TO BE POURED AGAINST UNDISTURBED EARTH.
2. PLASTIC BARRIER SHALL BE PLACED BETWEEN ALL THRUST BLOCKS AND FITTINGS.
3. ANCHOR REBAR SHALL BE 5/8" MINIMUM DIAMETER

CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

STANDARD
BLOCKING DETAIL

APPROVED

Roger A. Schaefer
CITY ENGINEER

DWG. NO.

3-14

DES
WHO

DWN
WHO

CKD
RAS

DATE
12/15/2014

THRUST LOADS

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

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

NOTES:

1. BLOCKING SHALL BE COMMERCIAL CONCRETE POURED IN PLACE AGAINST UNDISTURBED EARTH. FITTING SHALL BE ISOLATED FROM CONCRETE THRUST BLOCK WITH PLASTIC OR SIMILAR MATERIAL.

2. TO DETERMINE THE BEARING AREA OF THE THRUST BLOCK IN SQUARE FEET (S.F.):
 EXAMPLE : 12" – 90° BEND IN SAND AND GRAVEL
 $32,000 \text{ LBS} \div 3000 \text{ LB/S.F.} = 10.7 \text{ S.F. OF AREA}$

3. AREAS MUST BE ADJUSTED FOR OTHER PIPE SIZE, PRESSURES AND SOIL CONDITIONS.

4. BLOCKING SHALL BE ADEQUATE TO WITHSTAND FULL TEST PRESSURE AS WELL AS TO CONTINUOUSLY WITHSTAND OPERATING PRESSURE UNDER ALL CONDITIONS OF SERVICE.

SAFE SOIL BEARING LOADS

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

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

CITY OF LACEY, WASHINGTON
DEPT. OF PUBLIC WORKS

THRUST LOADS

APPROVED

Roger A. Schoenfeld
CITY ENGINEER

DWG. NO.

3-15

DES

WHO

DWN

WHO

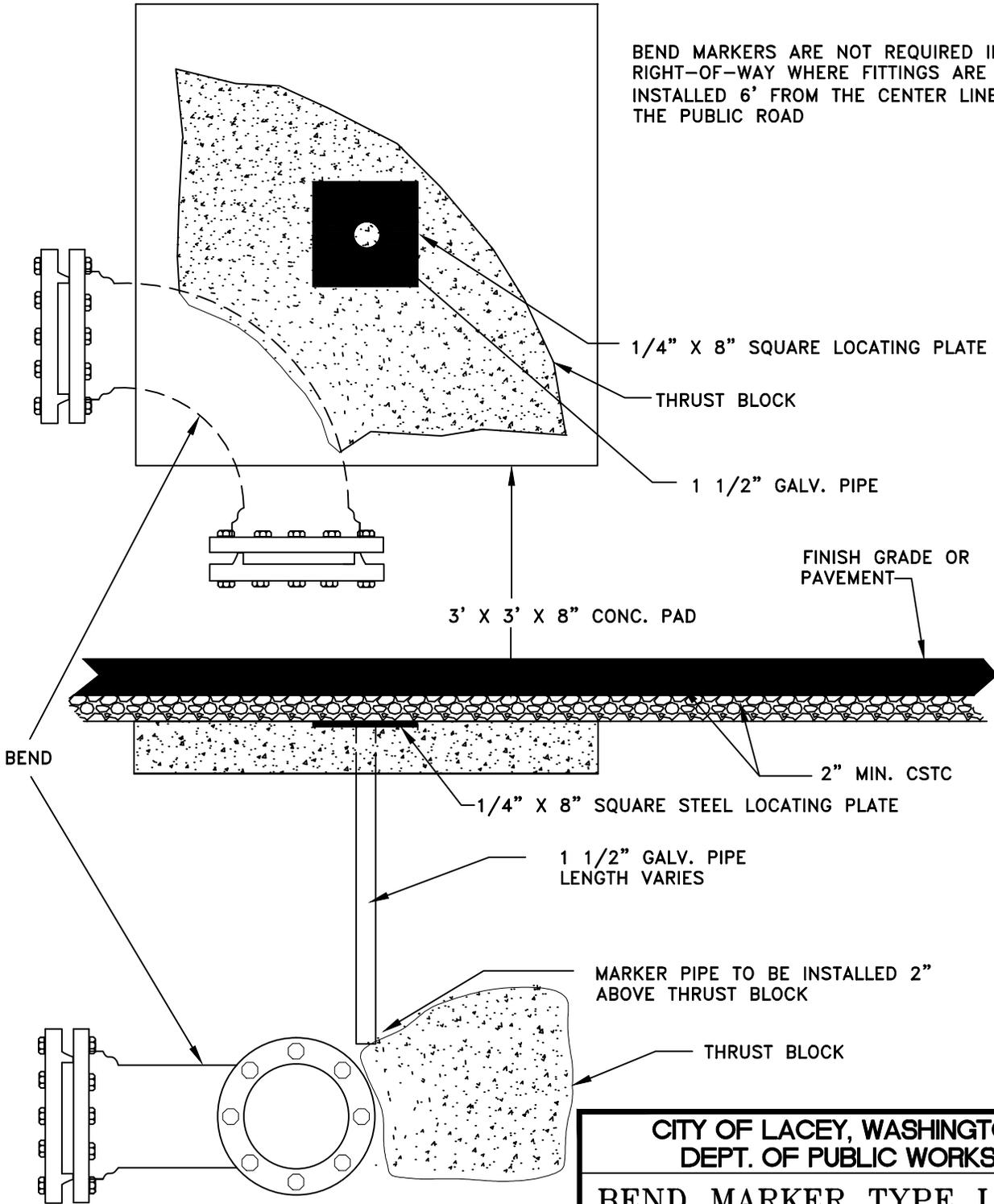
CKD

RAS

DATE

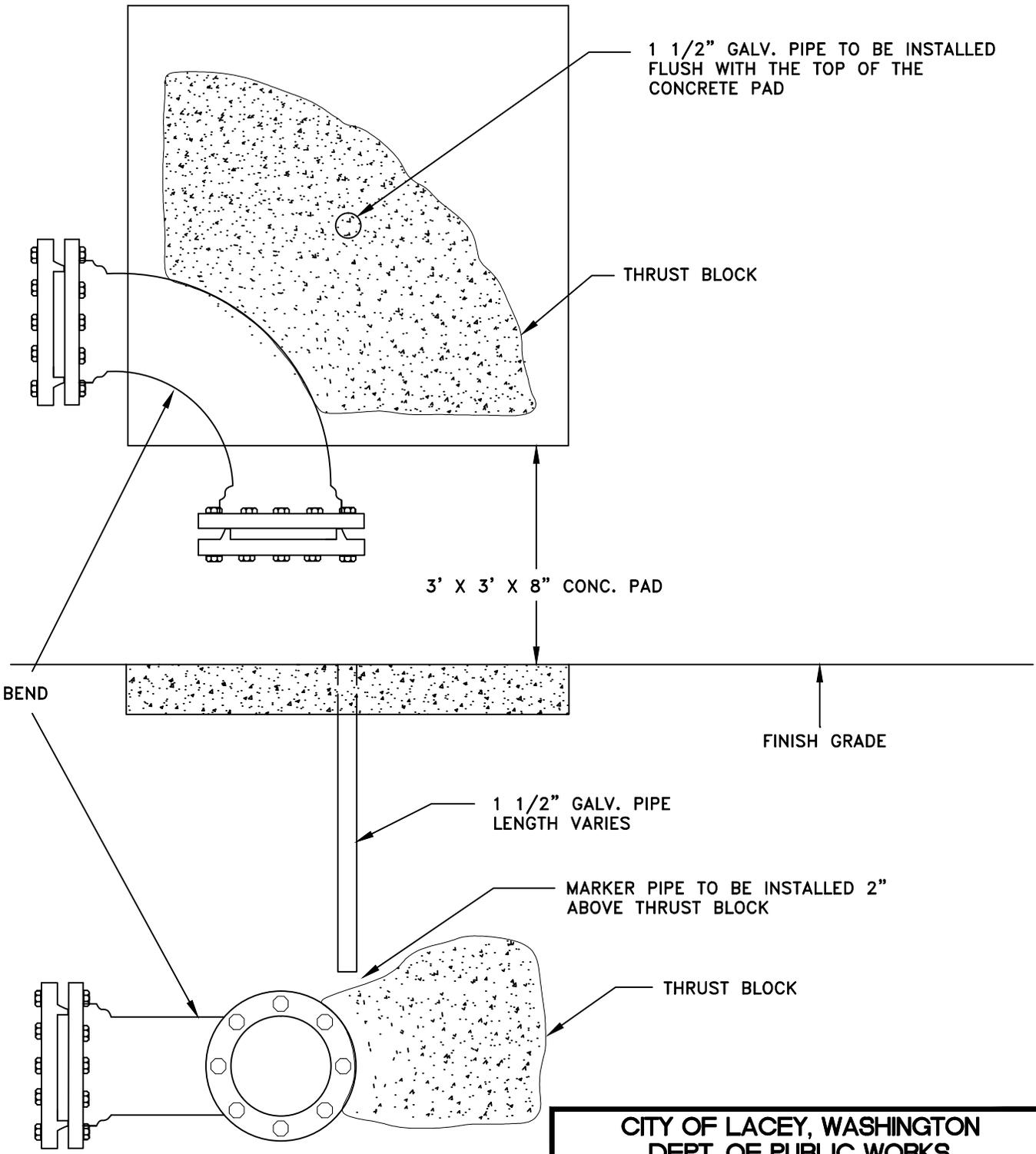
12/15/2014

BEND MARKERS ARE NOT REQUIRED IN THE RIGHT-OF-WAY WHERE FITTINGS ARE INSTALLED 6' FROM THE CENTER LINE OF THE PUBLIC ROAD



GENERAL NOTE:
 1. TO BE INSTALLED IN EASEMENTS SUCH AS GRAVEL ACCESS ROADS, PAVED PRIVATE ROADS, PARKING LOTS AND PLAY GROUNDS.

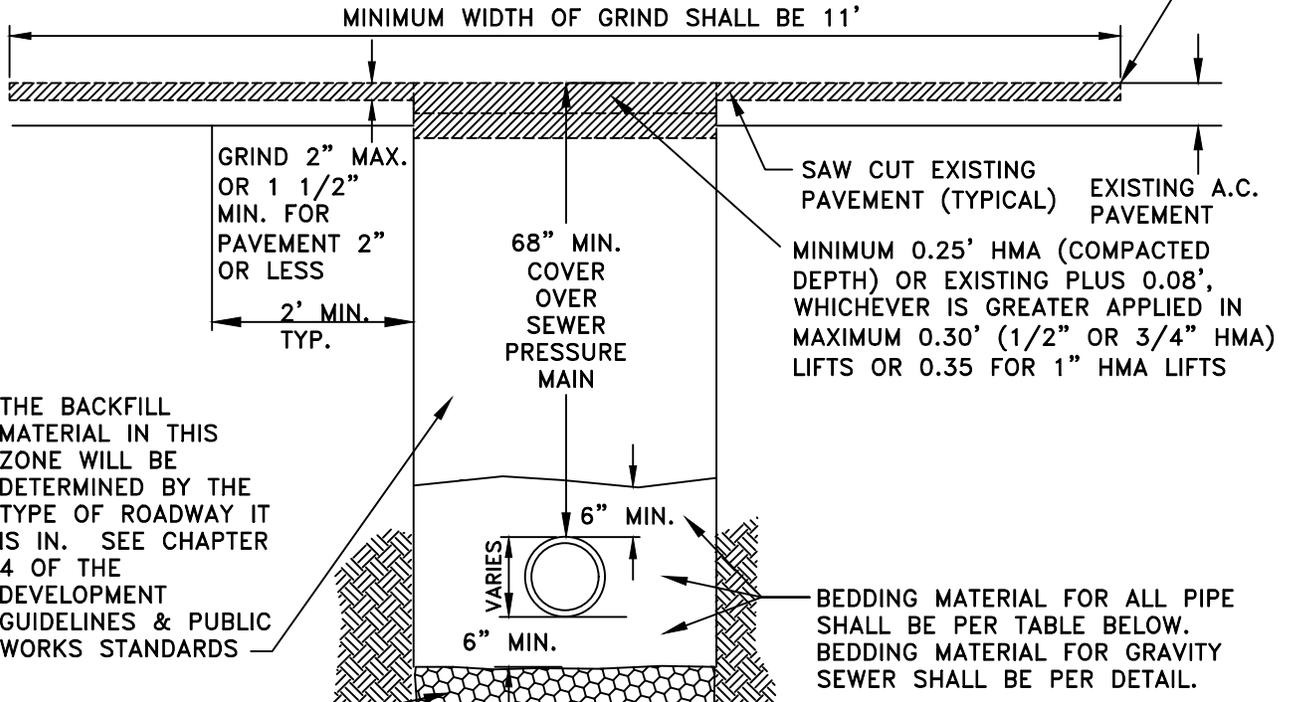
CITY OF LACEY, WASHINGTON DEPT. OF PUBLIC WORKS			
BEND MARKER TYPE I FOR GRAVEL ACCESS AND PAVED AREAS			
APPROVED <i>Ray A. Schoenel</i> CITY ENGINEER			DWG. NO. 3-19
DES WHO	DWN WHO	CKD RAS	DATE 12/15/2014



- GENERAL NOTES:
1. TO BE INSTALLED IN EASEMENTS OTHER THAN PLAY GROUNDS, PARKING LOTS, GRAVEL ACCESS OR PRIVATE ROADS.
 2. THE CONCRETE PAD SHALL BE FLUSH WITH FINISH GRADE.

CITY OF LACEY, WASHINGTON DEPT. OF PUBLIC WORKS			
BEND MARKER TYPE II			
APPROVED <i>Roger A. Schoenfeld</i> CITY ENGINEER			DWG. NO. 3-20
DES WHO	DWN WHO	CKD RAS	DATE 12/15/2014

EMULSIFIED ASPHALT GRADE
 CSS-1 TACK SHALL BE APPLIED
 TO EDGES OF EXISTING PAVEMENT.
 ALL JOINTS SHALL BE SEALED
 USING PAVING ASPHALT PG 64-22



THE BACKFILL MATERIAL IN THIS ZONE WILL BE DETERMINED BY THE TYPE OF ROADWAY IT IS IN. SEE CHAPTER 4 OF THE DEVELOPMENT GUIDELINES & PUBLIC WORKS STANDARDS

FOUNDATION TYPICAL. REQUIRED ONLY WHEN UNSUITABLE MATERIALS ARE ENCOUNTERED OR AS DIRECTED BY THE CITY

MAXIMUM TRENCH WIDTH SHALL BE 1.5' PLUS 1-1/2 TIMES THE OUTSIDE DIAMETER OF THE PIPE OR 2.5', WHICHEVER IS GREATER (TYPICAL)

PIPE BEDDING SPECIFICATION

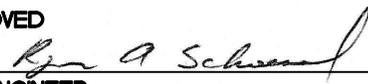
SIEVE SIZE	PERCENT PASSING
3/4" SQUARE	100
3/8" SQUARE	70-100
U.S. NO.4	55-100
U.S. NO. 10	35-95
U.S. NO. 20	20-80
U.S. NO. 40	10-55
U.S. NO. 100	0-10
U.S. NO. 200	0-03

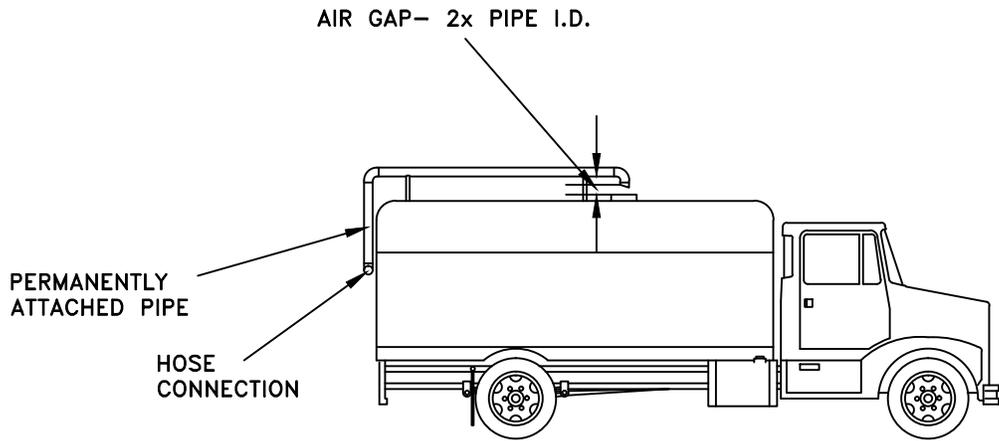
GENERAL NOTES:

1. ALL MATERIALS EXCEPT H.M.A. SHALL BE COMPACTED IN 6-INCH MAXIMUM LIFTS TO 95% DENSITY AS DETERMINED BY ASTM D1557.
2. ALL MATERIALS, WORKMANSHIP, AND INSTALLATION SHALL BE IN CONFORMANCE WITH THE WSDOT STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND MUNICIPAL CONSTRUCTION AS AMENDED BY CITY OF LACEY STANDARDS.
3. KEEP TRENCH BOTTOM COMPACTED WITH UNIFORM GRADE. NO TEMPORARY SUPPORTS, I.E. BLOCKS, WILL BE ALLOWED TO SUPPORT PIPE. TRENCH BOTTOM SHALL BE TO GRADE PRIOR TO PIPE INSTALLATION.
4. WHENEVER GROUND WATER IS PRESENT A BARRIER SHALL BE INSTALLED ABOVE THE BEDDING.
5. DEVIATION FROM COMPACTION STANDARDS MAY BE APPROVED BY THE DIRECTOR, OR DESIGNEE, WHERE RECOMMENDED BY THE LICENSED PROFESSIONAL ENGINEER FOR PLANNED OR EXISTING INFILTRATION FACILITIES.
6. EXISTING SURFACES PAVED WITH PERMEABLE MATERIALS SHALL BE REPLACED IN-KIND WHERE FEASIBLE IN CONFORMANCE WITH 4B.180 TRENCH BACKFILL AND RESTORATION.

**CITY OF LACEY, WASHINGTON
 DEPT. OF PUBLIC WORKS**

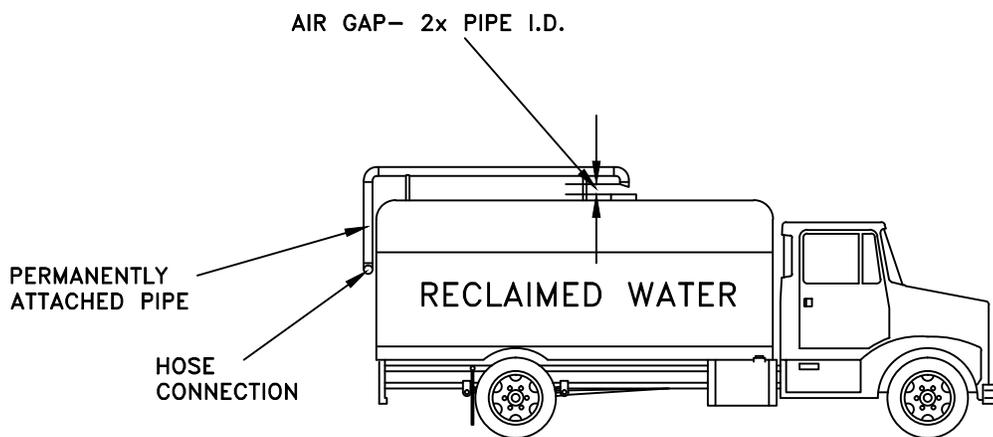
**PIPE ZONE BEDDING
 FOR SEWER PRESSURE
 MAINS & SERVICES**

APPROVED  CITY ENGINEER	DWG. NO. 3-20.1
DES WHO	DWN WHO
CKD RAS	DATE 08/24/2017



APPROVED AIR GAP

CITY OF LACEY, WASHINGTON DEPT. OF PUBLIC WORKS			
BACKFLOW PREVENTION FOR VEHICLE FILLING			
APPROVED <i>Roger A. Schoenel</i> CITY ENGINEER			DWG. NO. 3-21
DES WHO	DWN WHO	CKD RAS	DATE 12/15/2014



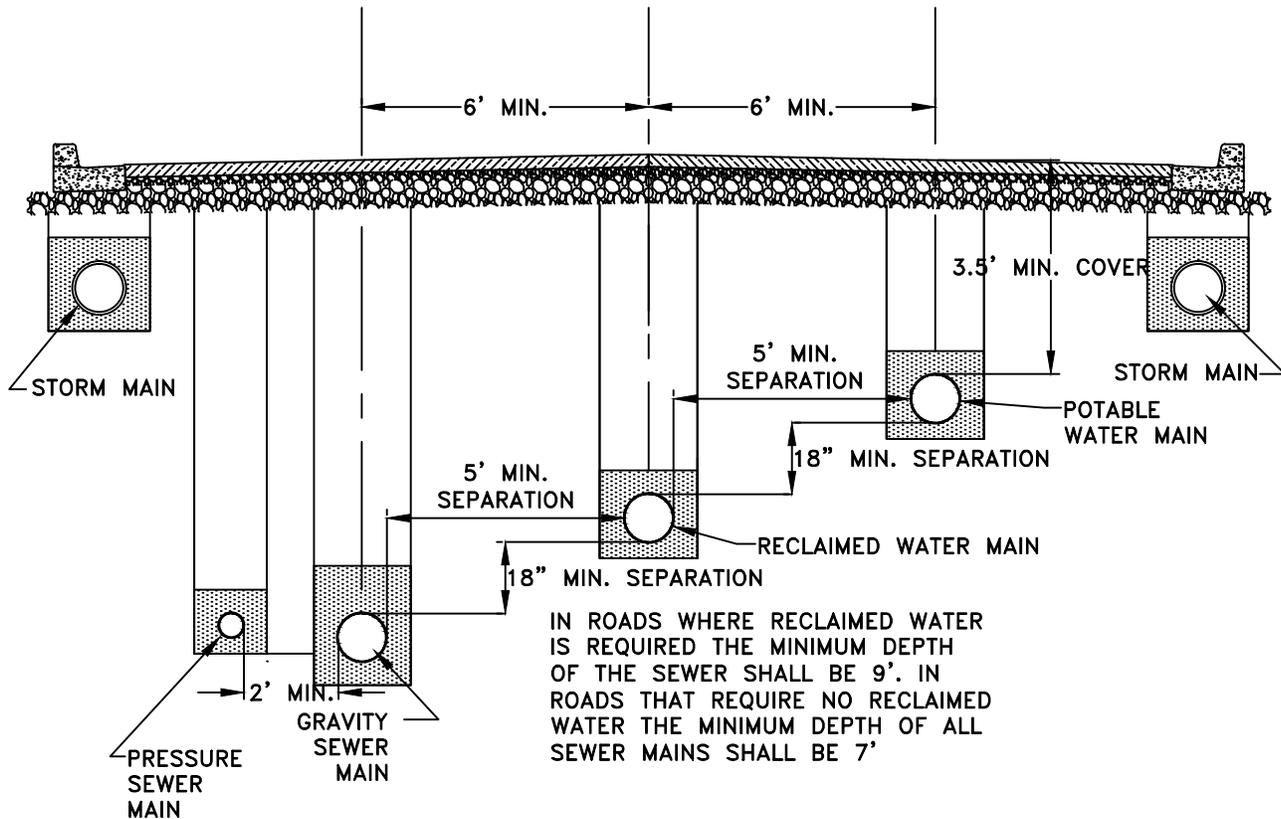
APPROVED AIR GAP

GENERAL NOTES:

1. WHEN USING RECLAIMED WATER IN VEHICLES TO DISTRIBUTE WATER THE TRUCK SHALL BE STENCILED ON THE SIDES AND BACK "RECLAIMED WATER".
2. THE COLOR OF THE TEXT ON THE SIDE OF THE TRUCK SHALL BE PANTONE 512 OR 522.

CITY OF LACEY, WASHINGTON DEPT. OF PUBLIC WORKS			
FILLING TRUCKS WITH RECLAIMED WATER			
APPROVED <i>Roger A. Schoenfeld</i> CITY ENGINEER			DWG. NO. 3-22
DES WHO	DWN WHO	CKD RAS	DATE 12/15/2014

ALL PIPES SHOWN IN THIS DETAIL
ARE 12" IN DIAMETER EXCEPT FOR
THE PRESSURE SEWER WHICH IS 6"



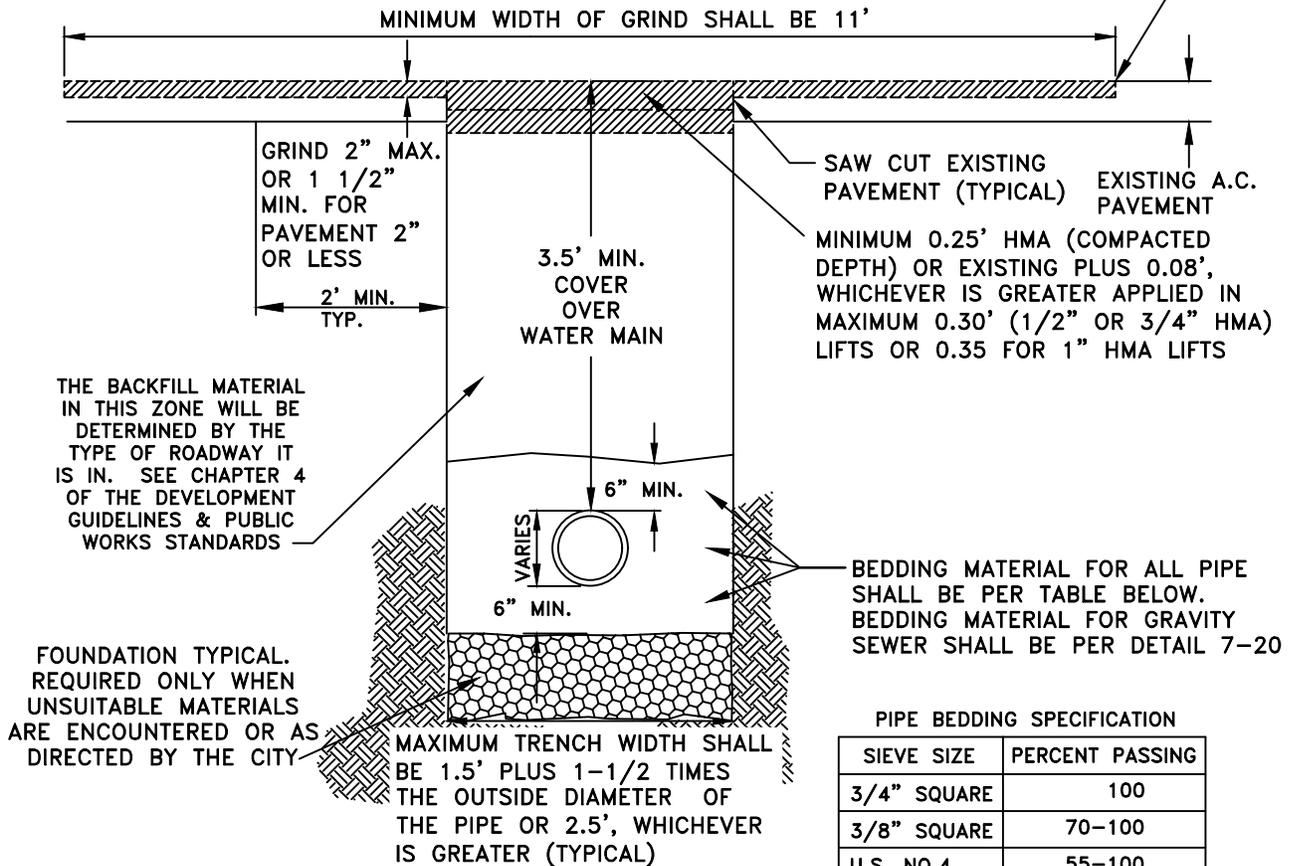
IN ROADS WHERE RECLAIMED WATER
IS REQUIRED THE MINIMUM DEPTH
OF THE SEWER SHALL BE 9'. IN
ROADS THAT REQUIRE NO RECLAIMED
WATER THE MINIMUM DEPTH OF ALL
SEWER MAINS SHALL BE 7'

GENERAL NOTES:

1. THE POTABLE WATER MAIN SHALL BE INSTALLED ON THE NORTH AND EAST SIDE OF THE ROADWAY (6' OFF CENTERLINE).
2. THE SEWER MAIN SHALL BE INSTALLED ON THE SOUTH AND WEST SIDES OF THE ROADWAY (6' OFF CENTERLINE). WHEN THE INSTALLATION REQUIRES BOTH GRAVITY AND PRESSURE SEWER MAINS THE PRESSURE MAIN SHALL BE INSTALLED FURTHER SOUTH OR WEST OF THE GRAVITY SEWER MAIN.
3. THE RECLAIMED WATER MAIN SHALL BE INSTALLED IN THE CENTER OR TO THE SOUTH OR WEST OF THE CENTER LINE OF THE ROADWAY OR AS DIRECTED BY THE CITY.
4. ALL OF THE ABOVE PIPING SHALL BE INSTALLED IN ORDER OF DESCENDING QUALITY WITH A MINIMUM OF 18" SEPARATION FROM THE BOTTOM OF THE HIGHER PIPE TO THE CROWN OF THE LOWER PIPE. NO DEVIATIONS FROM THIS REQUIREMENT SHALL BE ALLOWED.
5. THE HORIZONTAL SEPARATION WHEN ATTAINABLE SHALL BE 10' FROM THE SPRING LINE OF ONE PIPE TO THE SPRING LINE OF THE NEXT PIPE. WHEN THE 10' SEPARATION IS NOT ATTAINABLE, APPROVAL FROM THE CITY IS REQUIRED TO REDUCE THE SEPARATION REQUIREMENTS TO 5' HORIZONTAL AND 18" VERTICAL. REGARDLESS OF ANY CHANGES IN HORIZONTAL SEPARATION THE VERTICAL SEPARATIONS FOR ALL PIPING SHALL REMAIN AS SHOWN IN THE ABOVE STANDARD.
6. THE DESIGN REQUIREMENT ON THIS SHEET SHALL APPLY TO ALL SITUATIONS WITHIN THE RIGHT-OF-WAY OR EASEMENTS, EXISTING OR PROPOSED.

CITY OF LACEY, WASHINGTON DEPT. OF PUBLIC WORKS			
CITY OF LACEY PIPE ZONES IN ORDER OF DESCENDING QUALITY			
APPROVED <i>Bob A. Schaefer</i> CITY ENGINEER			DWG. NO. 3-24
DES WHO	DWN WHO	CKD RAS	DATE 12/15/2014

EMULSIFIED ASPHALT GRADE
 CSS-1 TACK SHALL BE APPLIED
 TO EDGES OF EXISTING PAVEMENT.
 ALL JOINTS SHALL BE SEALED
 USING PAVING ASPHALT PG 64-22



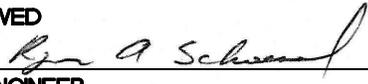
PIPE BEDDING SPECIFICATION

SIEVE SIZE	PERCENT PASSING
3/4" SQUARE	100
3/8" SQUARE	70-100
U.S. NO.4	55-100
U.S. NO. 10	35-95
U.S. NO. 20	20-80
U.S. NO. 40	10-55
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**CITY OF LACEY, WASHINGTON
 DEPT. OF PUBLIC WORKS**

**PIPE ZONE BEDDING FOR
 ALL PRESSURE PIPES**

APPROVED  CITY ENGINEER	DWG. NO. 3-26		
DES WHO	DWN WHO	CKD RAS	DATE 08/24/2017