

City of Chelan Development Standards Manual



CITY DEVELOPMENT STANDARDS MANUAL

In the event of conflict between these standards and sections of the Chelan Municipal Code, these standards shall prevail.

Compliance with Provisions and Concurrency Requirements

All subdivisions and developments shall conform to the design standards of this manual in addition to the City comprehensive plan and all zoning regulations in effect at the time any preliminary plat of a subdivision is submitted for approval. Lots shall be of sufficient area, width, and length to satisfy zoning requirements. Further, the standards established in this manual shall apply to all streets to be constructed and subsequently dedicated to the City as a right-of-way, to all development projects that require a development permit (planned development, conditional use permits, etc.) and propose to utilize an existing City street, a private road, or otherwise on all proposed improvements to existing City streets and to all extensions to existing water, sewer and storm drain systems. If the development results in a level of service lower than those set forth in these standards or in the Comprehensive Plan, the development may be approved if improvements or strategies to raise the level of service above the minimum standard are made concurrent with the development. For the purpose of this section, "concurrent with the development" is defined as the required improvements or strategies in place at the time of occupancy.

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DOMESTIC WATER MAIN EXTENSIONS**GENERAL:****INTRODUCTION:**

The items herein contained are the domestic water main extension and repair Standards, Conditions, and Specifications for the City of Chelan. These are minimums only when they exceed the minimums required in the Washington State DOH Standard (Department of Health "Water System Design Manual"), and may be increased or altered at the discretion of the Public Works Director to fit particular situations, but in no event shall said standards be reduced below the DOH standard. In the event of conflicting standards the higher standard shall control.

STANDARDS AND CONDITIONS

- A. When extension of the existing water distribution system is required for service, an Agreement for Domestic Water Main Extension in the form which is attached hereto and incorporated herein by this reference as Appendix B, Exhibit 1, shall be entered into between the Developer and the City.
- B. To initiate the Water Main Extension process the Developer shall submit a water plan designed by a registered professional engineer licensed in the State of Washington. Final plan and profile drawings shall be stamped by the same.
- C. The licensed professional engineer shall certify that the design and construction of the water distribution system meets or exceeds all applicable standards, to include backflow prevention and cross connection control.
- D. Obtaining necessary permits will be the responsibility of the Developer.
- E. Where franchises, easements or deeds to property are required it shall be the responsibility of the Developer to obtain and provide the same and submit appropriate documentation to the City.
- F. Easements shall be as per Section 10 of this code.
- G. All developments shall be required to provide sufficient water storage for fire protection which shall be in addition to those water supplies required for domestic purposes.
- H. A development containing forty lots or more shall contain at least two water supply routes, completing a system loop.
- I. In a development where lot size is larger than one acre, fire hydrants shall be spaced no further than one thousand feet apart and in subdivisions where lot size

is less than one acre, fire hydrants shall be spaced no further than six hundred feet apart. Where multiple family housing developments are developed within a subdivision, fire hydrant spacing shall be no further than five hundred feet apart, with additional fire hydrants located as may be necessary to permit all sides of a building to be reached by hose outlays of no greater than three hundred feet. In industrial or commercial areas, hydrants will be installed at three hundred (300) foot spacing. Typically, hydrants will be installed on alternating sides of the street. The size, type and location of fire hydrants shall meet the approval of Fire District 7. Fire hydrants shall conform with the Uniform Fire Code as adopted by the City.

- J. The minimum size water main permitted shall be eight inch (8") diameter. Hydraulic calculations shall be submitted where required to validate designs involving two or more pressure zones, a pressure reducing station, a booster pump, or a reservoir. Six inch (6") pipe shall be allowed at the discretion of the City Engineer, when hydraulic analysis shows it will be adequate to transport peak daily demand plus fire flow.
- K. The Developer shall supply an "as-built" drawing on approved mylar film and electronic CD format as an AutoCAD file.
- L. The Developer is required to supply bonding and insurance as per the Section on "Bonding and Liability Insurance."
- M. The Developer shall notify the City 48 hours prior to connection between the City's existing system and the new water distribution system.
- N. All main lines must be designed to provide proper circulation of water and fire flow to all lands serviced by the development. Extensions shall be required through and to the extremes of the property for future service as determined by the City. Fire flow demand shall be in accordance with the Uniform Fire Code Appendix Table III-A as now exists or as may be amended.
- O. Hydrostatic testing (see page-1-13) shall be accomplished by the developer on lines before completion of backfilling, with the pipe joints accessible for examination. Sufficient backfill material shall be placed over the pipe barrel between joints to prevent movement.
- P. Final acceptance shall not constitute acceptance of any unauthorized or defective work or material. The City shall not be barred from requiring the Developer to reimburse the City for the removal, adjustment, replacement, repair or disposal of any unauthorized or defective work or material or from recovering costs for any such work or material within two years.
- Q. Meters smaller than 2" shall be furnished and set by the City. Meters shall not be activated prior to payment by water user of all applicable hook-up fees. The City owns and maintains only appurtenances from and including the water meter to the

water main.

- R. Water Main Extension projects shall be conveyed to the City for operation and maintenance upon final project acceptance.
- S. Installation and testing shall be in conformance with the current edition of APWA (American Public Work Association) specifications, Division IV. The City must supervise the owner taking necessary samples for bacteriological tests. The system shall not be placed into service until the City provides written permission.
- T. For existing platted lots, the City may enter into Latecomer Agreements with Developers, prior to installation of water mains and appurtenances, in order to provide for the reimbursement to Developers for a pro-rata share of the cost of construction pursuant to Chelan Municipal Code Chapter 13.36 and Chapter 12.28 as now exists or as may hereafter be amended.
- U. Interim Water Systems
 - 1. Individual or small group domestic wells are allowed in unincorporated areas (i.e., outside city limits) within the City's Urban Growth Area where domestic water service is not available within 750 feet in the following cases only:
 - a. In the case of single family residential land divisions, provided:
 - i. The parcel to be divided shall be at least 20 acres in size;
 - ii. The parcel may be divided into no more than four lots; and
 - iii. Each lot must be at least five acres in size.
 - b. To serve agricultural tourism uses and small-scale craft beverage production uses.
 - 2. Domestic wells shall meet all applicable requirements of the Chelan-Douglas Health District, the Washington State Department of Health, and the Washington State Department of Ecology, including compliance with Chapter 173-160 WAC.
 - 3. Domestic wells for agricultural tourism uses and small-scale craft beverage production uses must be decommissioned in accordance with Chapter 173-160 WAC if the agricultural tourism or small-scale craft beverage production use is discontinued.
 - 4. The property owner shall sign an agreement not to protest a future local improvement district (LID), later comer agreement or other pro rata sharing of costs to construct and extend public water to the property.
 - a. Said agreement shall describe the property, shall be recorded with the Chelan County auditor's office, and shall constitute a covenant running with the property. The agreement and all provisions of the on-site well approval shall bind the owner and all other persons subsequently acquiring any right, title or interest in or to the property.
 - b. In addition to the cost of constructing and extending public water to the property, the owner shall be required to pay all applicable General Facilities Charges.

5. The property owner shall sign an agreement not to protest annexation of the property to the city. Said agreement shall allow the city to execute a petition for annexation on behalf of the owner if the owner does not do so when requested by the city; and shall describe the property, be recorded with the Chelan County auditor's office, and constitute a covenant running with the property. The agreement and all provisions of the on-site well approval shall bind the owner and all other persons subsequently acquiring any right, title or interest in or to the property.
6. Future roadway development.
 - a. In the case of land divisions, the layout of the parcels shall accommodate future urban growth, providing for road access to all parcels created by the division and to neighboring properties.
 - b. In all cases, building setbacks from the front and, where applicable, side property lines must be adequate to accommodate future development of a street meeting the City's standards, which may include sidewalks, parking lanes, bicycle lanes, planter strips, and utility easements.
 - c. The City may impose requirements for future urban development, including requiring dedication of easements for future roadway and utility easements.
 - d. The property owner shall sign an agreement not to protest a future LID or other pro rata sharing of costs to construct and extend public streets to and adjacent to the property. Said agreement shall describe the property, shall be recorded with the Chelan County auditor's office, and shall constitute a covenant running with the property. The agreement shall bind the owner and all other persons subsequently acquiring any right, title or interest in or to the property.
7. The property owner shall comply with all requirements of the city's comprehensive land use plan, zoning and building codes, and development standards when dividing, developing, or redeveloping the property. In particular:
 - a. Domestic wells must comply with Chapter 14 CMC, Critical Areas.
 - b. The property owner shall improve the city right-of-way adjacent to the property in conformance with the City's standards or, in cases in which concurrent street improvement is not required (e.g., where access via private driveway is allowed), shall execute a waiver of protest for an LID to construct any street improvements required for access to or through adjacent property.

SPECIFICATIONS

EXTENSIONS:

All extensions to the water system shall conform to the design standards of the City

as set forth herein. The system must be capable of future expansion if required and be constructed of permanent materials.

PLANS AND SPECIFICATIONS:

The installation of water extensions shall be in accordance with construction plans and specification approved by the City.

METHODS AND MATERIALS OF CONSTRUCTION:

1. Water pipe shall be ductile iron or C900 PVC. Ductile iron shall typically be class 50 in improved areas and class 52 in easement areas. PVC shall be class 200.
2. Fire hydrants shall be installed in accordance with these standards and the current fire code as adopted.
3. Valving shall be installed at all intersections, on each end of easement lines and in line at maximum spacing of 600 feet.
4. Minimum cover for all water mains shall be four (4) feet to top of pipe unless otherwise approved.
5. Except as otherwise noted herein, all work shall be accomplished as recommended in the current applicable American Waterworks Association (AWWA) and American Public Works Association/Department of Transportation Standard Specifications and according to the recommendations of the manufacturer of the material or equipment use. Contractor shall have a copy of the specifications on the job site at all times. Contractor shall furnish a water tight plug of the appropriate size which shall be installed in the end of the water main when work is delayed or stopped at the end of the work day.
6. All materials shall be new and undamaged. Unless otherwise approved by the City, the same manufacturer of each item shall be used throughout the work.

TRENCH EXCAVATION:

Clearing and grubbing where required shall be performed within the easement or public right-of-way and as permitted by the property owner and/or governing agencies. Debris resulting from the clearing and grubbing shall be disposed of by the Developer in accordance with the terms of all applicable permits.

Trenches shall be excavated to the line and depth designated by the approved plans to provide a minimum of 48 inches of cover over the pipe, unless otherwise

approved. The trench width shall be excavated only to such widths as are necessary for adequate and safe working space. Trench width to one foot above the pipe crown shall not exceed 30 inches or 1.5 times the pipe nominal O.D. plus 18 inches, whichever is greater. The trench shall be kept free from water until complete. Surface water shall be diverted so as not to enter the trench. The Developer shall maintain sufficient pumping equipment on the job to insure that these provisions are carried out.

The Developer shall perform all excavation. Boulders, rocks, roots and other obstructions shall be entirely removed or cut out to the width of the trench and to a depth 6 inches below water main grade. Where material is removed from below subgrade, the trench shall be backfilled to grade with material satisfactory to the City and thoroughly compacted to 85% for easements outside of roadway and 95% in streets, alleys or traveled ways, using modified proctor testing. The Developer shall be responsible for meeting current Labor and Industry Trench and Shoring Protection and Washington State Safety Standards.

Unsuitable material below the depth of the proposed pipe shall be removed and replaced with satisfactory materials as determined by the City.

When trenching operations cut through asphalt/concrete pavement, the pavement shall be removed to a solid edge along the width of the trench as approved by the City engineer. The pavement shall be saw cut on a straight line and shall be beveled so that the cut will be approximately 1 inch wider at the top than at the bottom.

Trenching operation shall not proceed more than 200 feet in advance of pipe laying without written approval of the City.

PIPE INSTALLATION WITHIN STREET RIGHT-OF-WAYS:

The Developer may use any method which provides satisfactory results which complies with Chapter 12.20 of the Chelan Municipal Code as it now exists or may be hereafter amended and is acceptable to the City and the agency having control of the road, provided that the Developer restores the roadway to its original condition. Permits shall be required for all crossings. Highway crossings may require the placing of steel pipe casing by jacking or tunneling and laying the water main within this casing.

PIPE IN FILLED AREAS:

Special treatment may be required at the discretion of the City. This treatment may consist of compacting the backfill in 6" layers, use of select backfill materials, use of Mechanical Joint Ductile Iron Pipe in short lengths, welded HDPE pipe, or such other reasonable methods or combinations as may be necessary in the opinion of the City based upon topography, soil type and any other unique characteristics or

the area.

PIPE BEDDING:

1. Except when excavating in pure sand, where imported bedding material will not be required, the pipe shall be placed on a prepared subgrade of imported bedding material four inches under the pipe for all pipe sizes of 27 inches diameter and smaller and 6 inches for all pipe sizes 30 inches and larger. Bedding material shall consist of clean, granular, unfractured material of which 100 percent will pass the U.S. Standard 5/8 inch opening; not more than 3 percent will pass the U.S. No. 200 (wet sieve). Bell holes shall be excavated so the pipe, when laid, will have a uniform bearing under the full length of the pipe. The Developer shall be responsible for adequate support and bedding for the pipe. The trench shall be backfilled from the spring line of the pipe to six inches above the top of the pipe as shown in the Standard Detail drawing. The material shall be placed in four-inch layers and compacted to no less than 95 percent of the maximum theoretical density as measured by a soil lab, using the modified proctor test.
2. Where the undisturbed trench below the four-inch bedding is unstable, the unstable material shall be removed and backfilled with foundation gravel upon which to place the bedding, as approved by the City engineer. The Contractor shall be responsible for providing a stable foundation for placing of the bedding.
3. Boulders, rocks, roots and other obstructions shall be entirely removed or cut out to the full width of the trench and to a depth six inches below the pipe. In solid rock, the trench shall be excavated six inches below the pipe bottom and backfilled as provided above.
4. Whenever the trench is excavated below the depth required for proper bedding, it shall be backfilled with bedding gravel and compacted, as provided above.

DUCTILE IRON PIPE:

Ductile iron pipe shall be cement-lined standard thickness Class 50 in improved areas or Class 52 in non-roadway easement areas, unless otherwise specified and shall conform to the standards of USA Standard A-21.51 (AWWA C-111).

Rubber gasket pipe joints to be push-on-joint (Tyton) or mechanical joint (M.J.) in accordance with USA Standard A21-11 (AWWA C-111), unless otherwise specified.

Flanged joint shall conform to USA Standard B16.1.

Standard Thickness cement lining shall be in accordance with USA Standard A21.4

(AWWA C-1-4).

The Developer shall furnish written certification from the manufacturer of the pipe and gasket being supplied that the inspection and all of the specified tests have been made and the results thereof comply with the requirements of this standard.

DUCTILE IRON PIPE INSTALLATION:

Ductile iron pipe shall be installed in accordance with AWWA Standard C-151 and the manufacturers recommendation.

The bottom of the trench shall be finished to grade with hand tools in such a manner that the pipe will have bearing along the entire length of the barrel. The bell holes shall be excavated with hand tools to sufficient size to make up the joint. Bolts on mechanical joint pipe and fittings shall be tightened uniformly with a "Torque" wrench which measures the torque applied. Required torque for mechanical joints shall be as follows:

4" - 24" pipe size 3/4" bolts 60-90# torque.

Installation of push-on-joint (Tyton) pipe shall be in accordance with the manufacturer's instructions.

PVC PIPE:

PVC pipe shall be AWWA C900-81 high pressure water pipe, class 200, and shall meet the requirements of DR 14.

The gasketed joint assembly shall conform to ASTM D3139 with gaskets conforming to ASTM F477.

The Developer shall furnish written certification from the manufacturer of the pipe and gasket being supplied that the inspections and all of the specified tests have been made and the results thereof comply with the requirements of this standard.

PVC PIPE INSTALLATION:

PVC pipe shall be installed in accordance with AWWA M23 and the manufacturers recommendation.

The bottom of the trench shall be finished to grade with hand tools in such a manner that the pipe will have bearing along the entire length of the barrel. The bell holes shall be excavated with hand tools to sufficient size to make up the joint.

TRACER WIRES

The Contractor shall install a tracer wire, in addition to the location ribbon, over all non-metallic water mains. The tracer wire shall be 14 gauge copper wire with blue coded UF insulation. The tracer wire shall be installed as shown on the City of Chelan Standard Drawing. Bare wire contact points shall be provided at valve boxes, air release and blow off installations.

DETECTABLE MARKING TAPE:

Detectable Marking Tape (S.9-15.18) shall be installed 12" to 18" above pipe crown over all pipe located within public street right-of-ways. Pipe locator ribbon shall be two inches wide, plastic coated aluminum and shall be clearly marked, "CAUTION BURIED WATER LINE" continuously along the length of the ribbon with minimum 1-1/2 inch letters. The ribbon shall be blue in color for water pipe.

DUCTILE IRON FITTINGS:

Ductile iron fittings shall be short body for pressure rating of 150 psi, unless otherwise noted. Metal thickness and manufacturing process shall conform to applicable portions of USA Standard A21.10, A21.11, B16.2 and B16.4.

Fittings shall be cement-lined in accordance with USA Standard A21.4 (AWWA C-104).

Rubber gaskets for mechanical joint (M.J.) in accordance with USA Standard A21.11 (AWWA C-111).

Gasket material for flanges shall be neoprene, Buna N, chlorinated butyl. Type of connections shall be specified as push-on-joint (Tyton), mechanical joint (M.J.), plain end (P.E.), flanged (FL.) or threaded.

BOLTS IN PIPING:

Bolts shall be cast iron, zinc or chromium plated or stainless steel, as approved by the City.

GALVANIZED IRON PIPE AND FITTINGS:

Where specified, galvanized iron pipe shall be standard weight, Schedule 80. Fittings shall be threaded malleable iron galvanized per USA Standard B16.3.

CONCRETE THRUST BLOCKING:

Concrete thrust blocking shall be cast in place and have a minimum of 1/4 square foot bearing against the fitting and two square feet bearing area against undisturbed

soil. Blocking shall bear against fittings only and shall be clear of joints so as to permit taking up or dismantling joint. All poured in place blocking shall have a minimum measurement of twelve inches (12") between the pipe and the undisturbed bank. All bends and tees shall be blocked in accordance with Standard Blocking as per design details which shall be adequate to withstand full test pressures as well as to continuously withstand operating pressure under all conditions of service. Polyethylene sheeting shall be installed to cover joints and bolts for future dismantling.

BEDDING CONCRETE:

Bedding concrete shall be mixed from materials acceptable to the City and shall have a 30-day compressive strength of not less than 1,500 psi. The mix shall contain four sacks of cement per cubic yard and shall be of such consistency that the slump is between 1 inch and 5 inches.

GATE VALVES:

Gate Valves shall be used in all applications unless otherwise specified by the City Engineer. They shall conform to the Standards of AWWA C-515 . Buried gate valves shall be iron body, bronze mounted, resilient wedge, nonrising stem, operating stems equipped with Standard two (2) inch operation nut, and O-ring stem seals, suitable for installation with the type and class of pipe being installed. Ends to be as specified.

Valves not buried shall be so specified.

BUTTERFLY VALVES:

When specified, butterfly valves shall conform to AWWA Standard C504, Class 150, with cast iron short body and O-ring stem seal. Valves in chambers shall have a manual crank operation. Buried valves shall have stem extension with AWWA 2-inch operation nut. Full cycle open and close shall be confirmed after installation but prior to backfill. Butterfly valves shall not be directly connected to C900 pipe.

CHECK VALVES:

Check valves shall be for 150 psi working pressure, unless otherwise specified. Valve shall have adjustable tension lever and spring to provide non-slamming action under all conditions unless otherwise specified. Check valves shall be equal to Empire Fig. 230 single increasing lever and spring.

AIR AND VACUUM RELEASE VALVES:

Air and vacuum release valves shall be APCO - Valve and Primer Corporation, "Heavy-Duty", combination air release valve, or equal.

Installation shall be as shown on the Standard Detail, Section Two, page 5.

Piping and fittings shall be copper or brass. The installation shall be set at the high point of the line. Water line must be constructed so the air release valve may be installed in a convenient location.

VALVE INSTALLATION:

The valve and valve box shall be set plumb with the valve box centered on the valve. Valve boxes shall be set flush in pavement and in gravel roads as required by the City. An area around the top shall be black topped in unimproved roads for 2 feet. Where valve operation nut is more than 3 feet below finished grade, a stem extension shall be installed conforming to the Standard Detail, Section 2, pg 2-6.

VALVE BOXES:

Valve boxes shall be cast iron, two-piece with tabs, for 42-inch trench with extension, Tyler 7126 top and 7100 bottom.

VALVE MARKER INSTALLATION:

When specified, concrete marker posts painted with two coats, Rust-Oleum yellow paint shall be set for all valves except auxiliary hydrant valves. The post shall be set at right angles to the road from the valve and shall be situated in a safe and reasonably conspicuous location, normally on the property line. Distance to valve shall be neatly stenciled on the post with two inch numerals. Valve markers shall be installed in unimproved or unpaved areas.

Valve marker posts shall be reinforced concrete posts, 4" x 4" on one end, 42 inches long. Fogtite Meter Seal Co. or equal.

FIRE HYDRANTS:

Fire hydrants shall have a minimum valve opening of 5-1/4" O-ring stem seal, two 2½" N.S.T. hose nozzle connections, and one 4½" N.S.T. pumper connection. The shoe connection shall be 6" mechanical joint or flanged. The operation nut shall be 1¼" pentagonal. Hydrants shall be Mueller Centurion or approved equal, with approved breakaway features and Storz fitting. A minimum of one field re-build kit will be supplied by the Developer. On large projects, one kit will be supplied for every ten hydrants installed.

HYDRANT GUARDS:

When required by City engineer, hydrant guards shall consist of individually designed curbed planters. Hydrant guards shall be required where hydrants are susceptible to potential vehicle contact as determined by the City.

SERVICE CONNECTION:

Connections shall be installed with pipe saddles and corporation stops on C900 PVC, asbestos cement, and steel, and by direct tap into Class 52 or thicker ductile. Installation shall be as shown in the Standard Details. Minimum size tap is 1 inch.

METER BOX:

Meter box shall be complete with full lid. Lid shall have a hole for Sensus Touch Read. One inch service box shall be Mueller/McCullough thermal-coil meter box 18" diameter 48" depth equipped with inlet angle meter stop with lockwing, dual angle check valve outlet and insulating pad. 1½" and 2" meter boxes shall be concrete H 2 precast 2019.

PLASTIC SERVICE PIPE AND CONNECTIONS:

Plastic pipe shall be manufactured from high molecular weight polyethylene (average molecular weight of 1,750,000) defined by ASTM-1248, as polyethylene Type 111 (3306) (PE). Pipe shall be made of all virgin material and conform to CS-255-63. Plastic pipe shall meet all requirements of ASTM D2241-67. The pipe shall be copper tube size, and have a working pressure of 200 psi at 73.4 degrees F. It shall sustain 300 psi at 73.4 degrees F. for 1000 hours. All connections to this pipe shall be of the Ford Packjoint, Mueller instatite, or equal, compression type connection with a stainless steel insert stiffener or by O-ring type self sealing fittings. All connections shall be rated at a working pressure of 160 psi.

DETECTOR CHECK AND BACKFLOW DEVICE:

Cross connection control is governed by Chelan Municipal Code, Chapter 13.05. All backflow devices are to be tested and certified upon installation and annually thereafter by a Washington State certified backflow assembly tester. All backflow devices must be models included on the current list of backflow prevention assemblies approved for use in Washington State. The current approved assemblies list is available from the Office of Drinking Water.

Detector checks will be installed on all fire lines. See Standard Details, Section 2.

In addition to Chelan Municipal Code, Chapter 13.05.070, an approved backflow device will be required on the following fire systems:

- a. All foamite or chemically charged installations.
- b. Systems where an unapproved water source is permanently connected to the fire system.
- c. Systems in which anti-freeze is allowed.

- d. Systems with private hydrants.
- e. Wet systems with an in-line booster pump or building over three stories high.
- f. Wet systems with pumper connection within 1700 feet of an auxiliary water supply.
- g. Dry systems with pumper connection.
- h. Sprinkler systems.

PUMP AND PRESSURE REDUCING STATION:

Pipe, fittings, and equipment shall be supported and blocked against static and dynamic loading in accordance with the "Concrete Thrust Blocking" standard drawing, and the equipment manufacturer's recommendations.

Drain lines from pumps and other equipment shall be piped to a below grade drainage system connected to the station sump or drain.

BACKFILLING:

Backfilling and surface restoration shall closely follow installation and testing of pipe, so that not more than 200 feet is left exposed without express approval of the City. Selected backfill material shall be placed and compacted around and under the water mains by hand tools to a height of 6 inches above the top of the water main. The remaining backfill shall be compacted to current WSDOT Standards, modified proctor test, of the maximum density as determined by a certified soils lab. Where other agencies have jurisdiction over roadways, the backfill and compaction shall be done to the standard of the agency having jurisdiction.

HYDROSTATIC TESTS:

Prior to the acceptance of the work, the installation shall be subjected to a hydrostatic pressure test of 200 psi for 15 minutes at the high point in the line, as per APWA (American Public Works Association), and any leaks or imperfections developing under said pressure shall be remedied by the Developer before final acceptance of the work. No air will be allowed in the line. The main shall be tested between valves. Insofar as possible, no hydrostatic pressure shall be placed against the opposite side of the valve being tested. Test pressure shall be maintained while the entire installation is inspected. The Developer shall provide all necessary equipment including valves to test against where needed and shall perform all work connected with tests. Tests shall be made after all connections as shown on the plan are complete. Insofar as is practical, tests shall be made with

pipe joints, fittings and valves exposed for inspection. For approval, the quantity of water lost from the main shall not exceed the number of gallons per hour as determined by the formula
$$L = (ND(P)^{1/2})/7400$$

in which L = Allowable leakage, gallons/hour
 N = No. of joints in the length of pipeline tested
 D = Nominal diameter of the pipe in inches
 P = Average test pressure during the leakage test, psi

There shall not be an appreciable or abrupt loss in pressure during the 15 minute test period. The Developer shall test to assure that the equipment to be used for the test is adequate and in good operating condition and the air in the line has been released before requesting the City to witness the test. The City engineer shall witness the test; if the test does not pass inspection for any reason, additional trips required to witness the test may be at the Developer's expense.

STERILIZATION AND FLUSHING OF WATER MAINS:

Sterilization of water mains shall be accomplished by the Developer in accordance with the requirements of the State Health department and in a manner satisfactory to the City. The section to be sterilized shall be thoroughly flushed at maximum flow prior to chlorination. At no time shall chlorinated water from a new main be flushed into a body of fresh water. This includes lakes, rivers, streams and any and all other waters where fish or other natural water life can be expected. Flushing period must be approved by the City. Sections will ordinarily be sterilized between adjacent valves unless, in the opinion of the City, a longer section may be satisfactorily handled. Chlorine shall be applied by solution fed at one end of the section with a valve or hydrant at the opposite end opened sufficiently to permit a flow through during chlorine application. The chlorine solution shall be fed into the pipeline already mixed by an automatically proportioning applicator so as to provide a steady application rate of not less than 60 PPM chlorine. Hydrants along the chlorinated section shall be opened during application until the presence of chlorine has definitely been detected. When a chlorine concentration of not less than 50 PPM has been established throughout the line, the valves shall be closed and the line left undisturbed for 24 hours. The line shall then be thoroughly flushed and water samples taken for approval by the City. Flushing period must be approved by the City. The Developer shall exercise special care in flushing to avoid damage to surrounding property. Should the initial treatment result in an unsatisfactory bacteriological test, the original chlorination procedure shall be repeated by the Developer until satisfactory results are obtained.

HYDRANT TESTING

Upon connection of new water main extension to the existing system, all new fire hydrants shall be flow tested to confirm fire flow projections.

SANITARY SEWER CROSSINGS**Required Separation Between Water Lines and Sanitary Sewers**

The basic separation requirements apply to sewers of 24-inch diameter or less; larger sewers may create special hazards because of flow volumes and joint types. The special construction requirements given are for the normal conditions found with sewage and water systems. More stringent requirements may be necessary in areas of high ground water, unstable soil conditions, etc.

A. Horizontal Separation (Parallel)

A minimum horizontal separation of ten (10) feet between gravity sanitary sewers and any existing potable water lines shall be maintained, whenever possible. The distance shall be measured edge to edge.

B. Unusual Conditions (Parallel)

When local conditions prevent a horizontal separation as described previously, a gravity sewer may be laid closer than 10 feet to a water line provided:

- a. It is laid in a separate trench; or, it is laid in the same trench with the water line that is located at one side on a bench of undisturbed earth; and
- b. In either case, the elevation of the crown of the gravity sewer must be at least 18 inches below the invert of the water line. When this vertical separation cannot be obtained, the gravity sewer shall be constructed of materials and joints that are equivalent to water main standards of construction and shall be pressure tested to assure water tightness prior to backfilling.

C. Vertical Separation (Perpendicular)

Sewer lines crossing water lines shall be laid below the water lines to provide a separation of at least 18 inches between the invert of the water pipe and the crown of the sewer, whenever possible.

D. Unusual Conditions (Perpendicular)

When local conditions prevent a vertical separation the following construction shall be used:

- a. Gravity sewers passing over or under water lines shall be:

1. Constructed of material described in this section. The one segment of the maximum standard length of pipe, (but no less than 18 feet long) shall be used with the pipes centered to maximize joint separation.
 2. Standard gravity sewer material encased in concrete or in a 1/4" thick continuous steel casing with all voids pressure-grouted with sand-cement grout.
 3. The length of sewer pipe shall be centered at the point of crossing so that the joints will be equi-distant and as far as possible from the water line. The sewer pipe shall be the longest standard length available from the manufacturer.
- b. Water lines passing under gravity sewers, in addition, shall be protected by providing:
1. A vertical separation of at least 18 inches between the invert of the sewer and the crown of the water line;
 2. Adequate structural support for the sewers to prevent excessive deflection of joints and settling on and breaking of the water lines; and
 3. The length of sewer pipe shall be centered at the point of crossing so that the joints will be equi-distant and as far as possible from the water line. The sewer pipe shall be the longest standard length available from the manufacturer.
- c. Pressure sewers shall only be constructed under water lines with ductile iron pipe or standard sewer pipe in a steel casing for a distance of at least ten (10) feet on each side of the crossing.

SUMMARY:

Any material, design, standard or testing not specifically addressed within these standards shall be as per the current edition of American Public Works Association Standard Specifications for Road, Bridge, and Municipal Construction, Washington State Department of Transportation and the American Water Works Association Standards, both of which are hereby adopted by this reference.

DOMESTIC WATER MAIN EXTENSIONS CHECKLIST

1. Developer submits legal description of proposed development.
2. City provides standards, conditions and specifications.
3. Developer submits water distribution plan designed by registered civil engineer licensed in Washington State.
4. Developer signs Domestic Water Service Extension Agreement.
5. If the project is in full compliance with the water system comprehensive plan, as determined by the City engineer, administrative approval is sufficient.
6. After the water distribution plan is accepted, City enters into agreement with the Developer for water main extension, which will include a right-of-way Excavation Permit.
7. Water main extension to be constructed by a licensed and bonded contractor to City standards as certified by a licensed engineer. The construction contract management shall be at the Developer's expense. At the City's option, the project inspectors may be City staff or may be contracted for by the City. (See Appendix B, Exhibit 2)
8. Contractor posts required bonds and insurance.
9. City inspects and observes testing of water main prior to approval.
10. Developer conveys system to City for operation and maintenance.
11. All services from the new water main extension are installed.
12. After two years, City inspects improvements and, if appropriate, releases bond/returns deposit balance.

**DOMESTIC WATER MAIN EXTENSION
AS-BUILT DRAWINGS**

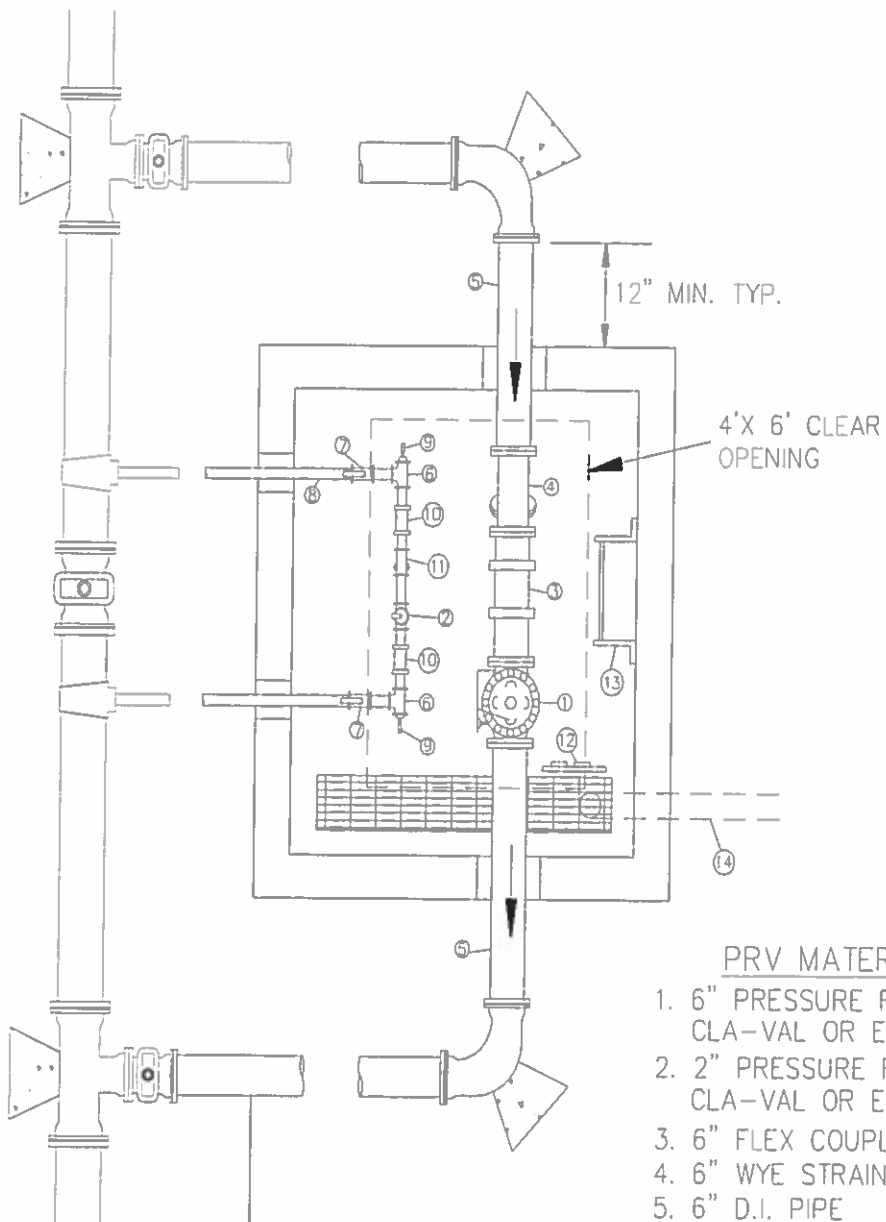
As-built drawings of all improvements deeded or conveyed to the City of Chelan shall be provided. As-built drawings shall show all modifications made during construction. They shall also show precisely the location of all buried utilities, including the measured distance to all sewer tees or wyes, and the distance from valves to fittings. The location of water and sewer facilities shall be indicated by showing measured distances to monuments or other approved permanent reference.

As-built drawings for water improvements shall include a copy of the Engineer's Certificate of Completion form, as required by Washington State Department of Health.

As-built drawings turned over to the City upon acceptance of the utilities shall meet the drafting standards in Section 8.

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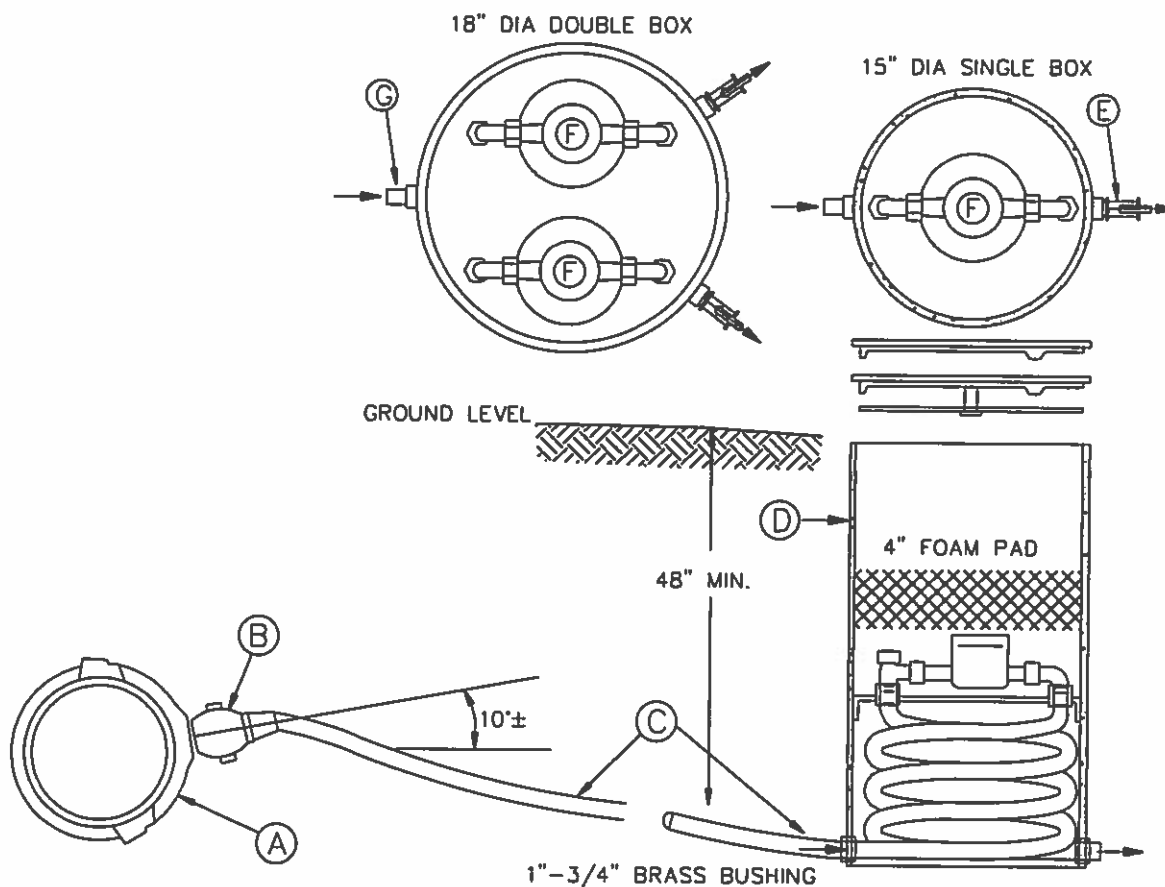
PRESSURE REDUCING STATIONPRV MATERIALS LIST

1. 6" PRESSURE REDUCING VALVE, CLA-VAL OR EQUAL.
2. 2" PRESSURE REDUCING VALVE CLA-VAL OR EQUAL.
3. 6" FLEX COUPLER
4. 6" WYE STRAINER, 1/8" SCREEN
5. 6" D.I. PIPE
6. 2" TEE (THREADED)
7. 2" THREADED BRONZE BALL VALVE W/ LEVER HANDLE
8. 2" PIPE
9. 1/4" GAUGE COCK & PRESSURE GAUGE
10. 2" FLEX COUPLER
11. 2" WYE STRAINER WITH 20 MESH SCREEN
12. GAUGE ASSEMBLY
13. LADDER
14. DRAIN LINE

ID-069

3/4"-1" SINGLE and DOUBLE WATER SERVICE~

1" - 3/4" WATER METER SERVICE

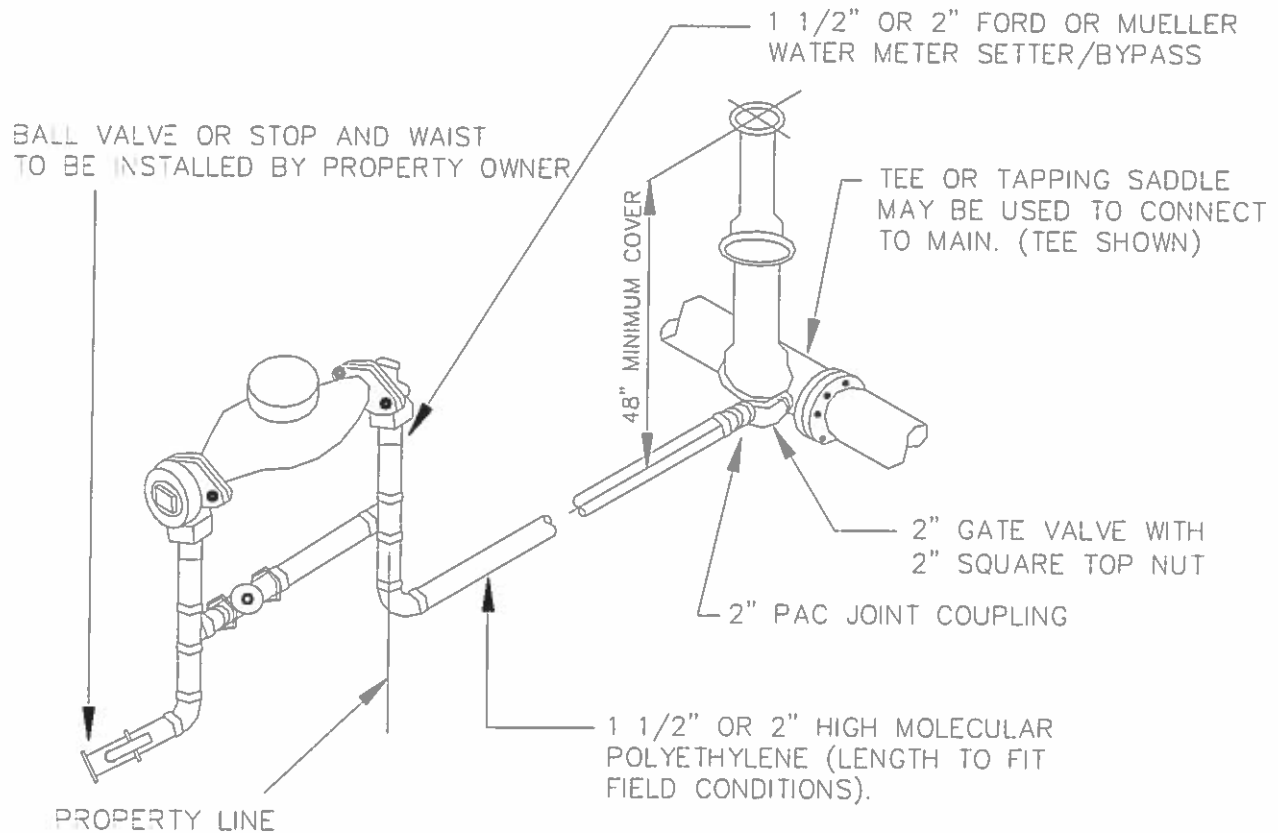


- A. 1" SADDLE, ROMAC 101S OR 202S OR EQUAL.
 B. 1" CORPORATION STOP, MUELLER OR APPROVED EQUAL.
 C. 1" HDPE COPPER TUBE SIZE WITH A WORKING PRESSURE OF 200 PSI OR EQUAL
 D. 3/4" MUELLER METER COIL BOX.
 E. PRIVATE ISOLATION VALVE(S) TO BE INSTALLED BY PROPERTY OWNER DOWNSTREAM OF METER BOX
 F. SENSUS TRPO GALLON READ METER BY CITY
 G. DOUBLE METER, 1 1/2" SUPPLY LINE AND FITTINGS

ID-019

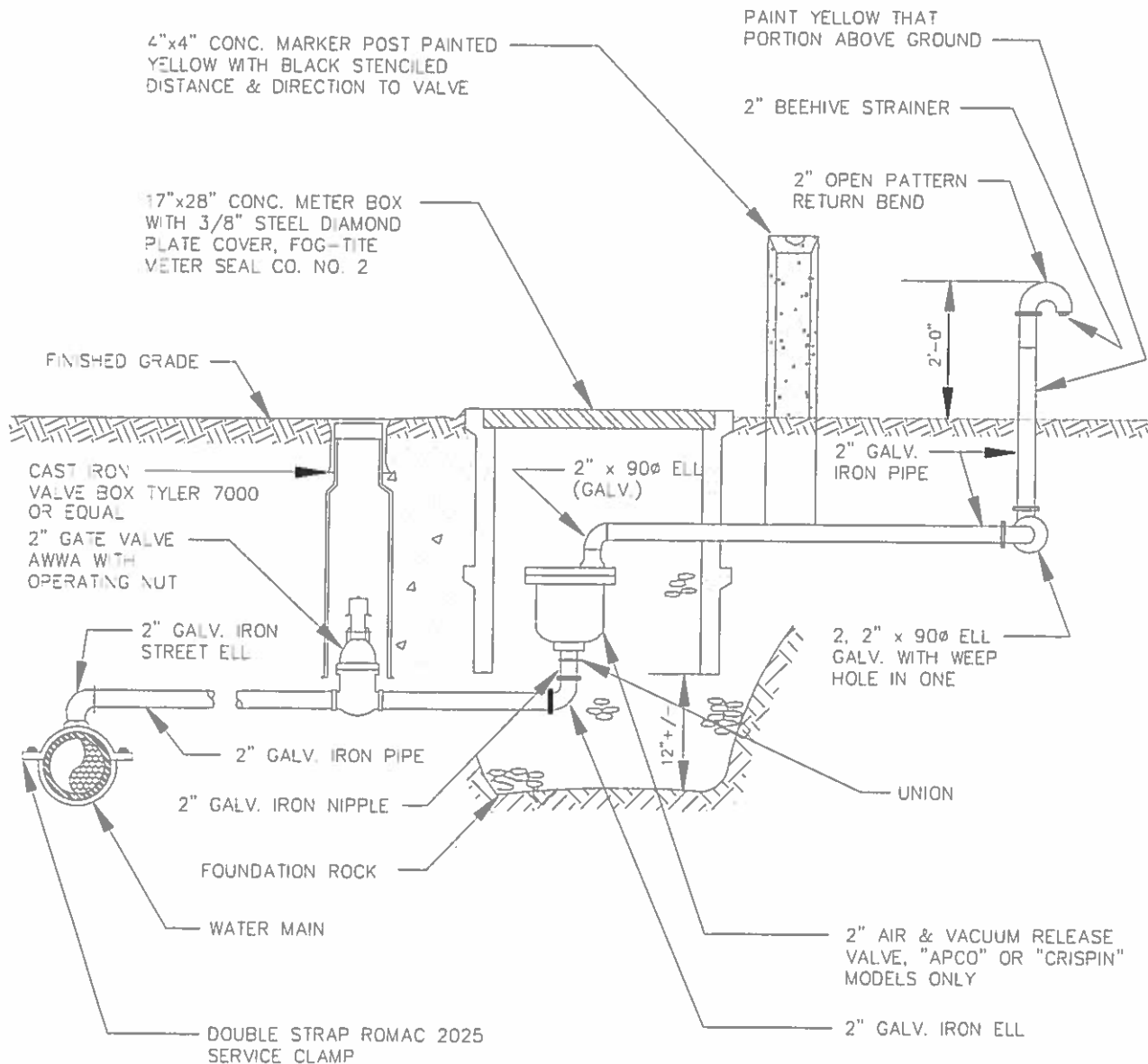
NOTES:

1. MATERIAL SUBSTITUTIONS OR DETERMINATION OF EQUAL ARE DISCRETION OF THE PUBLIC WORKS DIRECTOR.
2. SERVICE LINE TO BE 90' OF MAIN.
3. ALUMINUM BACKED LOCATE TAPE OVER SERVICE LINE FOR LOCATION AND TONING WIRE
4. DRAWING NOT TO SCALE.
5. ALL HARDWARE SUPPLIED BY DEVELOPER UNLESS NOTED OTHERWISE.

1-1/2-2" SERVICE CONNECTION DETAILNOTES:

1. USE "PAC" JOINT ON COUPLINGS
2. ANY METERS DAMAGED OR CLOGGED DURING CONSTRUCTION SHALL BE REPLACED BY THE CITY AND BACKCHARGED TO THE DEVELOPER.
3. USE METER SETTER WITH 1" BYPASS LOCKING ANGLE STOP & CHECK VALVE.
4. LOCATE METER TO PROPERTY LINE, INSTALL NEW METER BOX-H2 PRE-CAST BOTTOM SECTION # WCB AND TOP SECTION # WCT. METER LIDS ARE TO BE H2 PRE-CAST 2019 IN TRAFFIC AREAS OR 2020 IN NON TRAFFIC AREAS.
5. SENUS TOUCH READ GALLON WATER METER.

ID-021

AIR & VACUUM RELEASE ASSEMBLY

NOTE: AIR & VACUUM VALVE ASSEMBLY MUST BE INSTALLED AT HIGHEST POINT OF LINE. IF HIGH POINT FALLS IN A LOCATION WHERE ASSEMBLY CANNOT BE INSTALLED, PROVIDE ADDITIONAL DEPTH OF LINE TO CREATE HIGH POINT AT A LOCATION WHERE ASSEMBLY CAN BE INSTALLED.

GUARDPOSTS TO BE INSTALLED AS NEEDED.

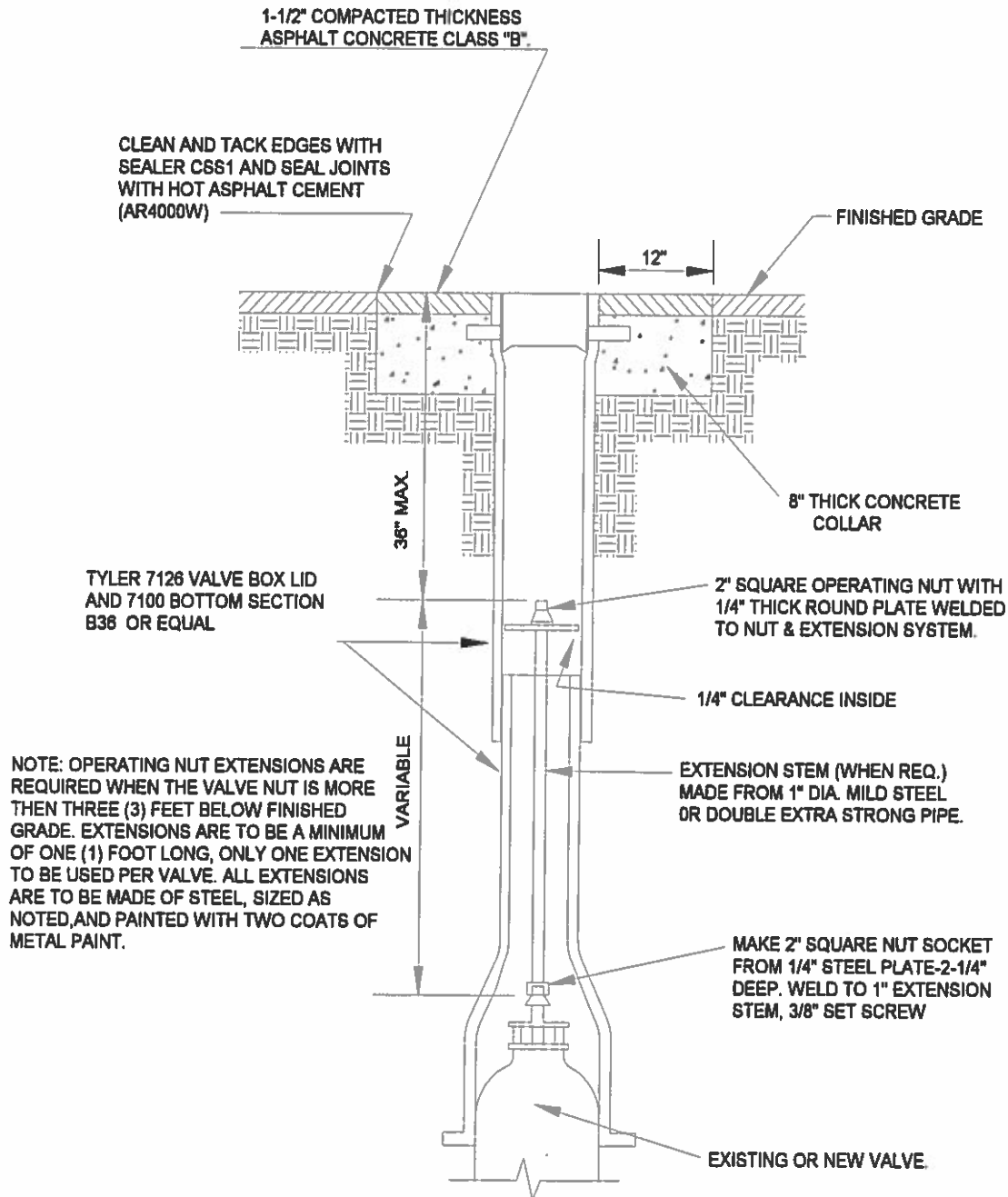
DRAWING NOT TO SCALE.

ID 001

WATER VALVE BOX SETTING

All existing concrete valve boxes shall be replaced with cast iron boxes and adjusted to grade.

All existing cast iron valve boxes shall be adjusted to grade with cast iron components. Alignment of the valve box shall be the developer's responsibility and care shall be taken to ensure that the valve may be operated.

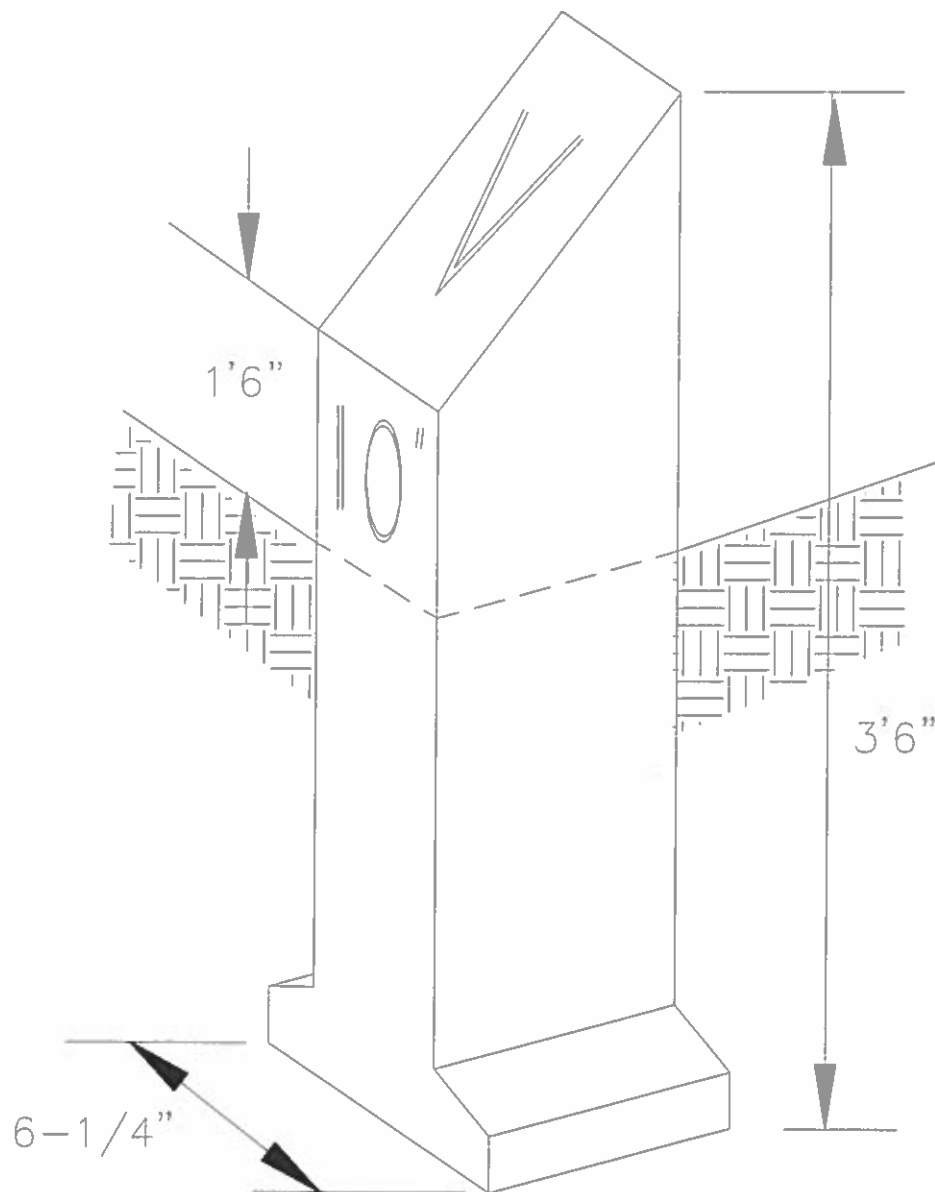


ID-048

VALVE MARKER POST

VALVE MARKER POST SHALL BE EQUAL TO FOG-TITE, WITH TWO COATS OF HIGH GLOSS YELLOW PAINT. PAINT DISTANCE FROM THE VALVE MARKER TO THE VALVE ON THE POST WITH BLACK ENAMEL PAINT.

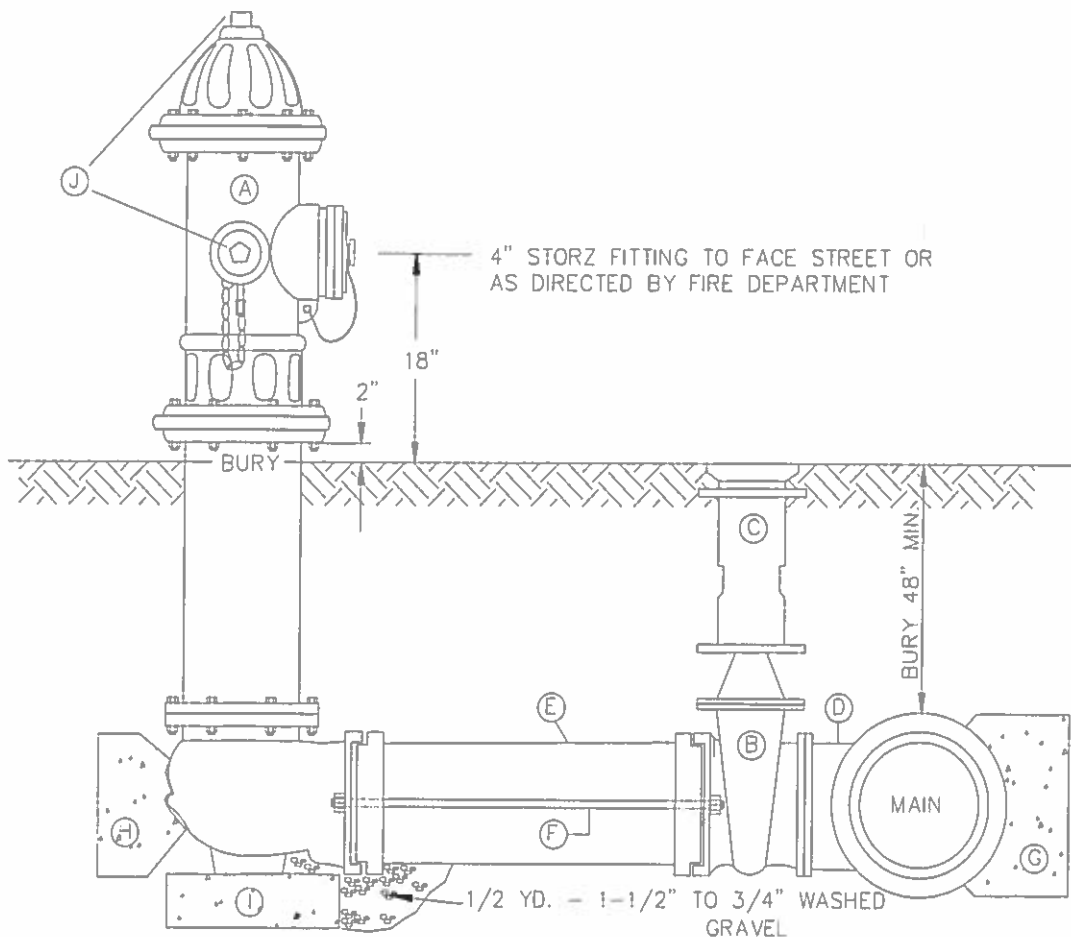
VALVE MARKER POST TO BE USED FOR ALL MAINLINE VALVES OUTSIDE PAVED AREAS.



VALVE MARKER POST

ID-051

FIRE HYDRANT ASSEMBLY

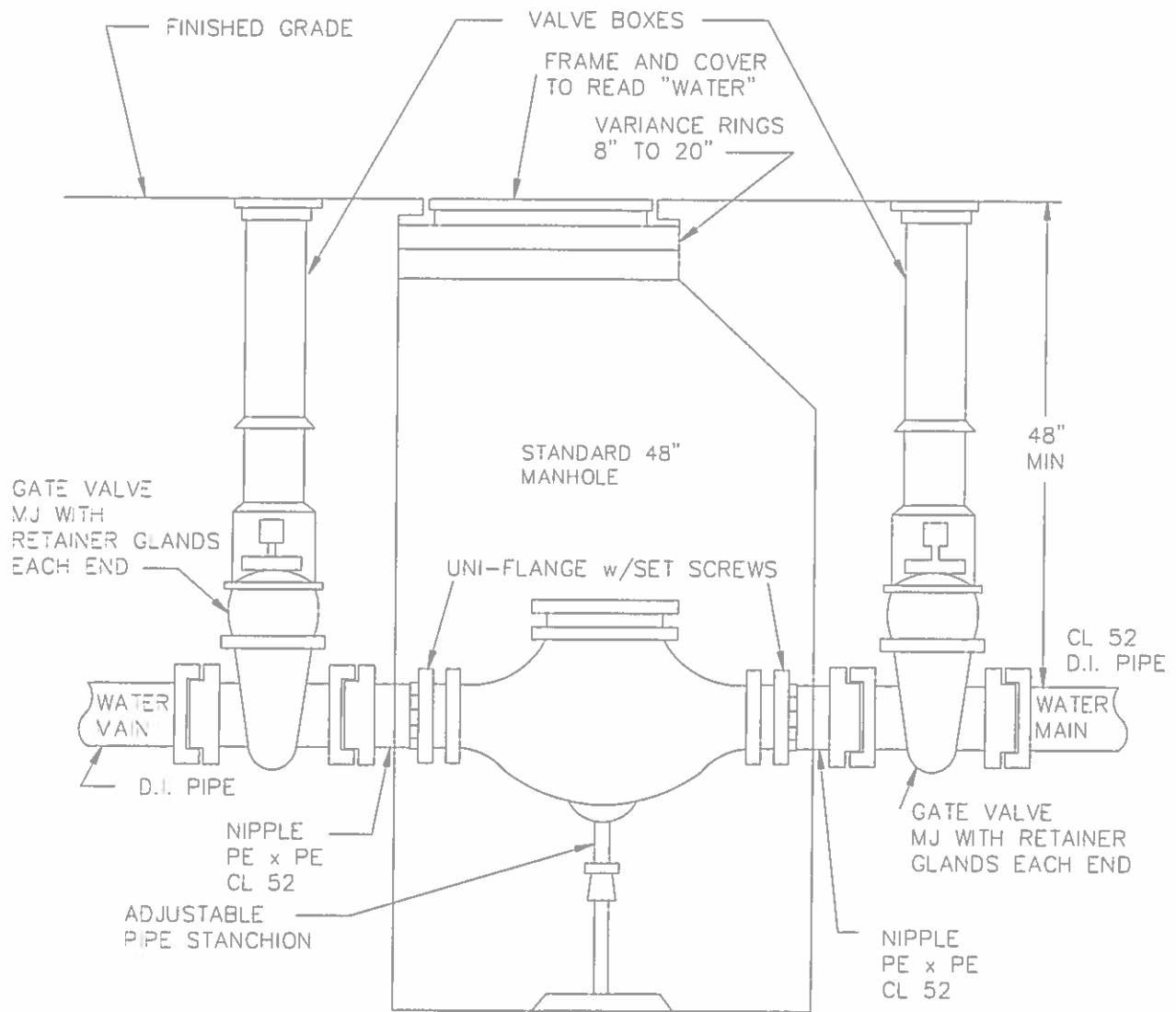


- A. ONE 5-1/4" M.V.O. HYDRANT WITH TWO 2-1/2" N.S.T. AND ONE 4 1/2" PUMPER N.S.T. THE 4 1/2" OUTLET SHALL BE FITTED WITH A 4-INCH HIGH-STRENGTH ALUMINUM ALLOY TEFLON COATED LOCKING STORZ ADAPTER WITH RUBBER GASKET AND SET SCREW. THE STORZ ADAPTER SHALL BE PROVIDED WITH AN APPROVED ALUMINUM ALLOY PRESSURE CAP ATTACHED TO THE HYDRANT BARREL WITH AN APPROVED CABLE. THE HYDRANT SHALL BE MUELLER CENTURION OR EQUAL. PAINT HYDRANT TRAFFIC YELLOW, # 1072 FARWEST PAINT CO.
- B. 6" RESILIENT SEAT GATE VALVE, FL x MJ
- C. CAST IRON VALVE BOX, TYLER OR EQUAL
- D. ONE CAST IRON TEE - M.J. x FL.
- E. PIPE / SPOOL AS NEEDED - DUCTILE IRON
- F. TWO 3/4" GALVANIZED STEEL SHACKLES. MEGALUG INSTEAD OF SHACKLES IS ACCEPTABLE.
- G. CONCRETE THRUST BLOCK, 4 SF THRUST AREA. (SEE 2-13)
- H. CONCRETE THRUST BLOCK, 6 SF THRUST AREA. (SEE 2-13)
- I. 12"x12"x4" CONCRETE BLOCK. (SEE 2-13)
- J. 1 1/2" PANEL OP NUT AND PORT COVER NUT

ID-011

SINGLE CHECK VALVE ASSEMBLY

TO BE USED AS BYPASS AROUND PUMP STATION OR PRV WHEN NEEDED

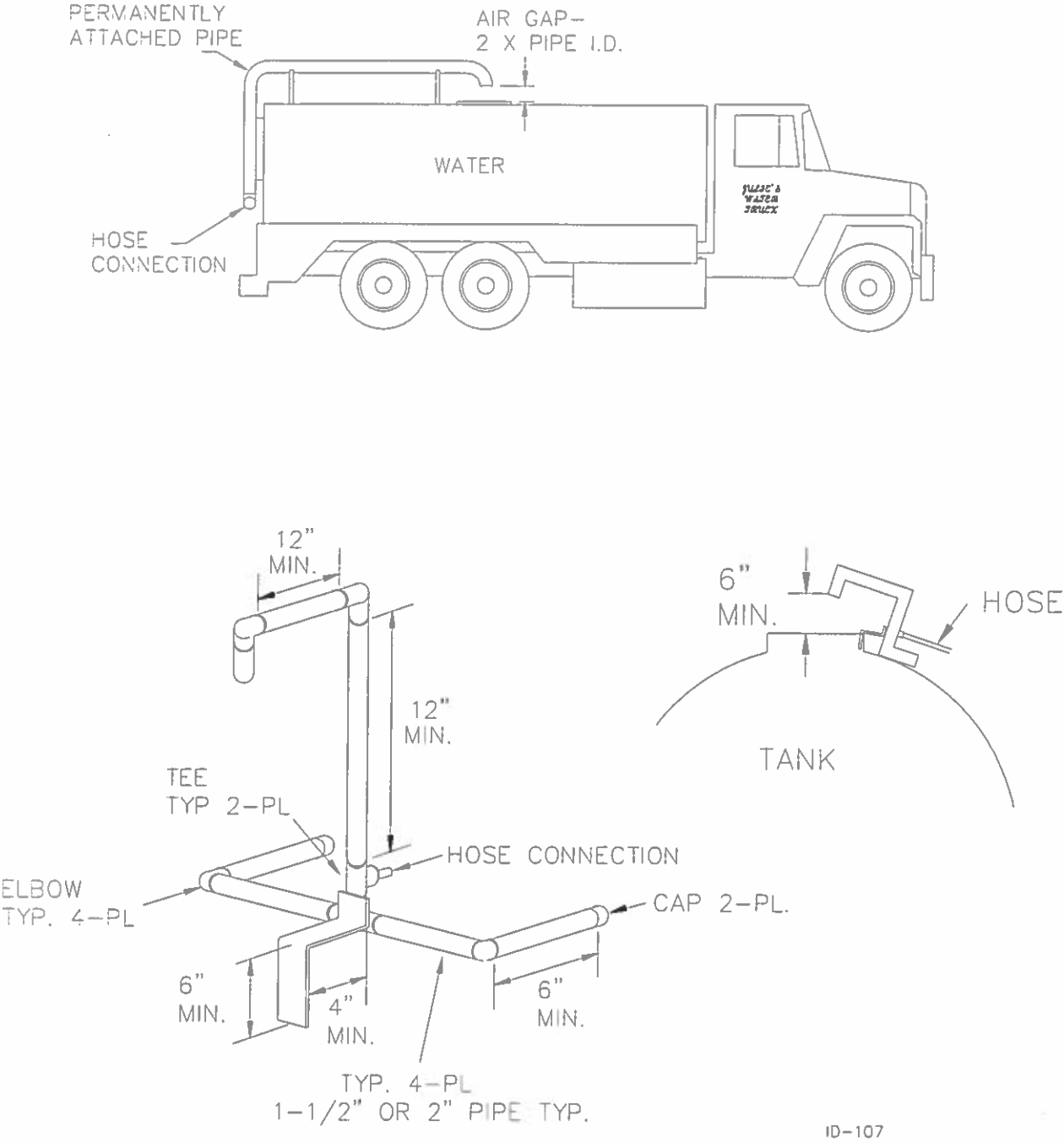


NOTE: CHECK VALVE ASSEMBLY TO BE INSTALLED
AS INDICATED ON INDIVIDUAL DESIGN

ID-004

SPRAY TANK FILLER PIPE

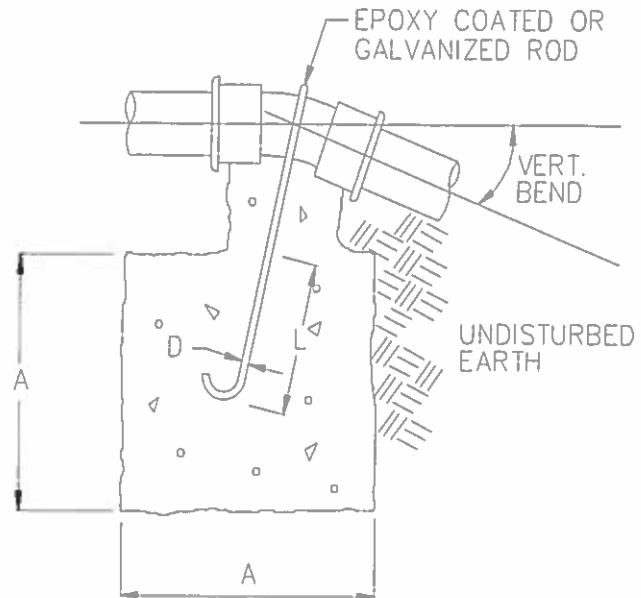
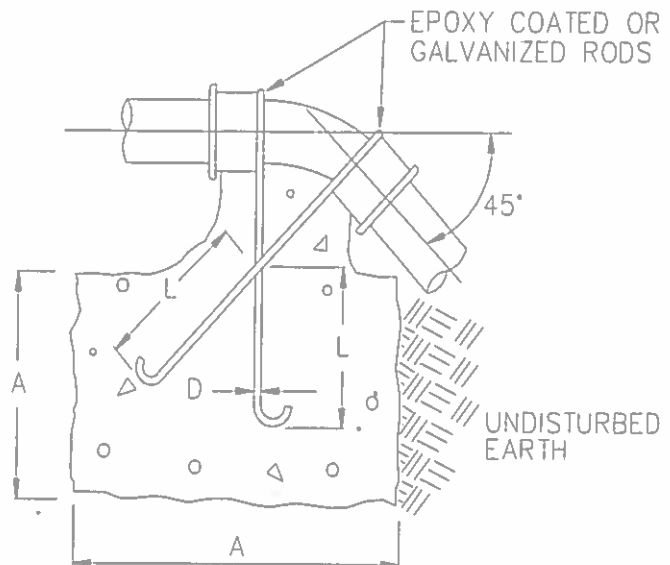
WATER TRUCK WITH AIR GAP



CONCRETE BLOCKING - VERTICAL

VERTICAL BLOCKING

VERTICAL BLOCKING FOR 11 1/4° & 22 1/2° BENDS					
PIPE SIZE	V B	CU FT	A	D	L
4"	11 1/4° 22 1/2°	8 11	2.0' 2.2'	3/4"	1.5' 2.0'
6"	11 1/4° 22 1/2°	11 25	2.2' 2.9'	3/4"	2.0'
8"	11 1/4° 22 1/2°	16 47	2.5' 3.6'	3/4"	2.0'
12"	11 1/4° 22 1/2°	32 88	3.2' 4.5'	3/4" 7/8"	2.0' 3.0'
16"	11 1/4° 22 1/2°	70 184	4.1' 5.7'	7/8" 1 1/8"	3.0' 4.0'
20"	11 1/4° 22 1/2°	91 225	4.5' 6.1'	7/8" 1 1/4"	3.0' 4.0'
24"	11 1/4° 22 1/2°	128 320	5.0' 6.8'	1" 1 3/8"	3.5' 4.5'
VERTICAL BLOCKING FOR 45° BENDS					
4"	45°	30	3.1'	3/4"	2.0'
6"		68	4.1'		
8"		123	5.0'		
12"		232	6.1'	3/4"	2.5'
16"		478	7.8'	1 1/8"	4.0'
20"		560	8.2'	1 1/4"	
24"		820	9.4'	1 3/8"	4.5'

VERTICAL BLOCKING
FOR 11 1/4°, 22 1/2°VERTICAL BLOCKING
FOR 45° BENDS

NOTE: CONCRETE BLOCKING BASED ON 200 PSI PRESSURE AND 2500 PSI CONCRETE.
PROVIDE POLYETHYLENE SHEETING TO COVER BOLTS AND JOINTS FOR DISMANTLING.

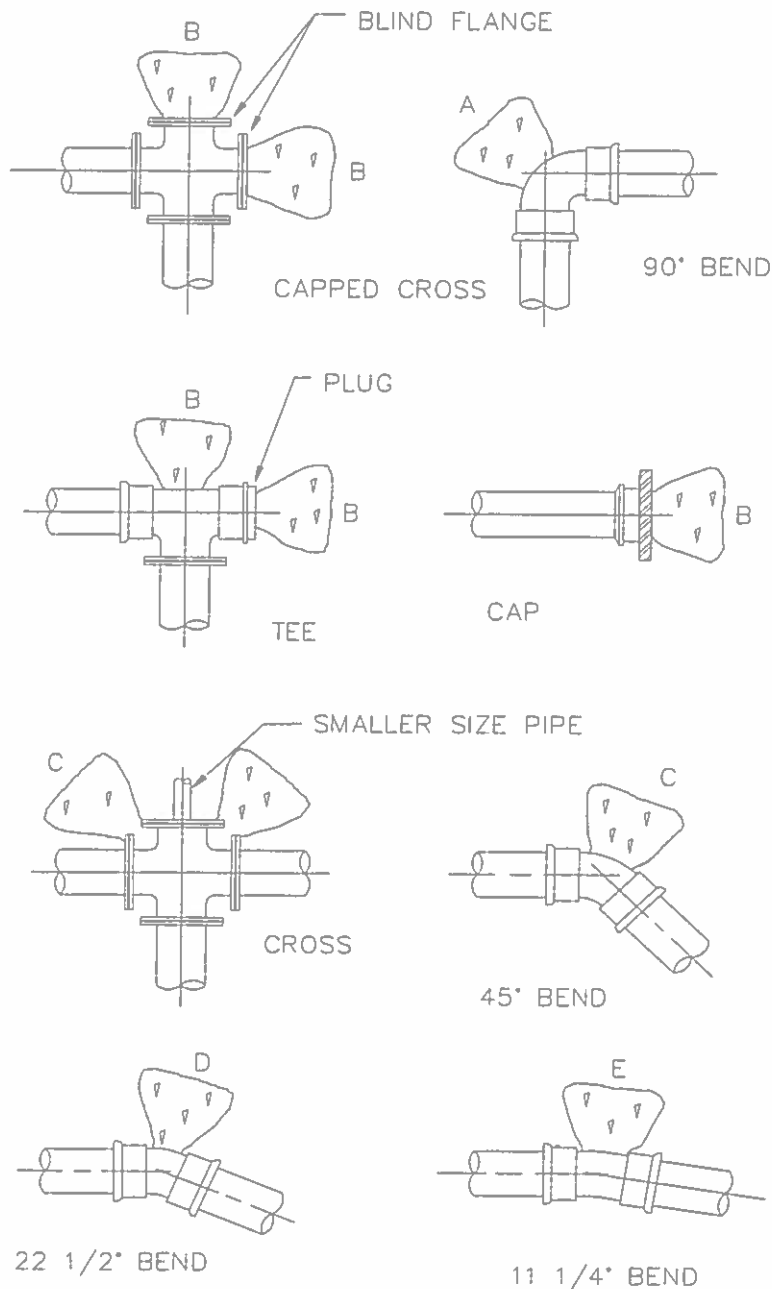
ID-020

THRUST BLOCK TABLE

MIN. BEARING AREA AGAINST UNDISTURBED SOIL SQUARE FEET					
PIPE SIZE	A (FT. ²)	B (FT. ²)	C (FT. ²)	D (FT. ²)	E (FT. ²)
3"	3	2	2	2	2
6"	4	4	2	2	2
8"	7	6	4	2	2
10"	11	10	6	3	2
12"	16	14	9	5	3
14"	22	19	12	6	3
16"	29	25	16	8	4
18"	36	31	20	10	5
20"	45	39	24	13	6
22"	54	47	29	15	8
24"	64	56	35	18	9
28"	87	76	48	24	12
30"	101	87	55	28	14
36"	145	125	78	40	20
42"	197	171	107	55	27
48"	257	223	140	71	36
<p>NOTE: Bearing area of conc. thrust block based on 200 psi pressure and safe soil bearing load of 2,000 pounds per square foot.</p> <p>Areas must be adjusted for other pipe sizes, pressures and soil conditions.</p> <p>Concrete blocking shall be cast in place and have a minimum of 1/4 square foot bearing against the fitting.</p> <p>Block shall bear against fittings only and shall be clear of joints to permit taking up or dismantling of joint.</p> <p>Contractor shall install blocking adequate to withstand full test pressure as well as to continuously withstand operation pressure under all conditions of service.</p>					

CONCRETE BLOCKING - HORIZONTAL

- NOTE:
- See thrust block table on page 2-12 for bearing areas.
 - Provide Polyethylene sheeting to cover bolts and joints for dismantling.



NOTES: PROVIDE POLYETHYLENE SHEETING TO COVER BOLTS AND JOINTS FOR DISMANTLING.

ID-023

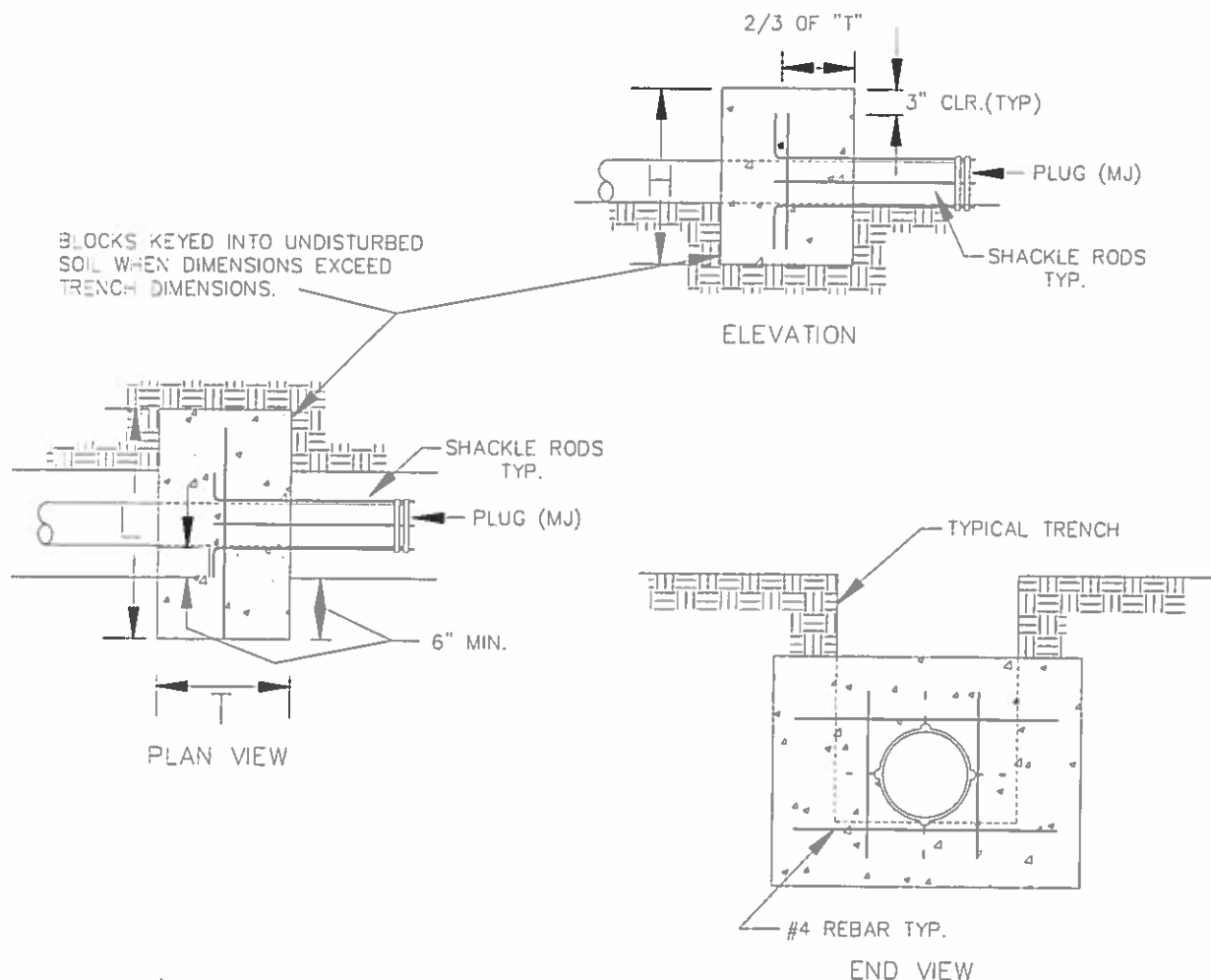
DEADMAN THRUST BLOCKING

SIZING TABLE				MIN. BLOCK LENGTH (L)						
PIPE DIA	T (min)	H (min)	SHACKLE RODS	SOIL CONDITION						
				PIPE DIA	SOFT CLAY	SILT	SAND Y SILT	SAND	SAND Y CLAY	HARD CLAY
6"	18"	30"	(4)#5 (½"dia)	6"	30"	30"	30"	30"	30"	30"
8"	18"	36"		8"	42"	38"	36"	34"	32"	32"
10"	18"	46"		10"	54"	48"	40"	38"	37"	36"
12"	24"	48"		12"	72"	64"	50"	47"	44"	42"
14"	36"	50"		14"	96"	80"	62"	56"	50"	47"
16"	42"	52"		16"	120"	100"	72"	65"	58"	53"

BLOCK SIZES GOOD TO 300 psi TEST PRESSURE

NOTES:

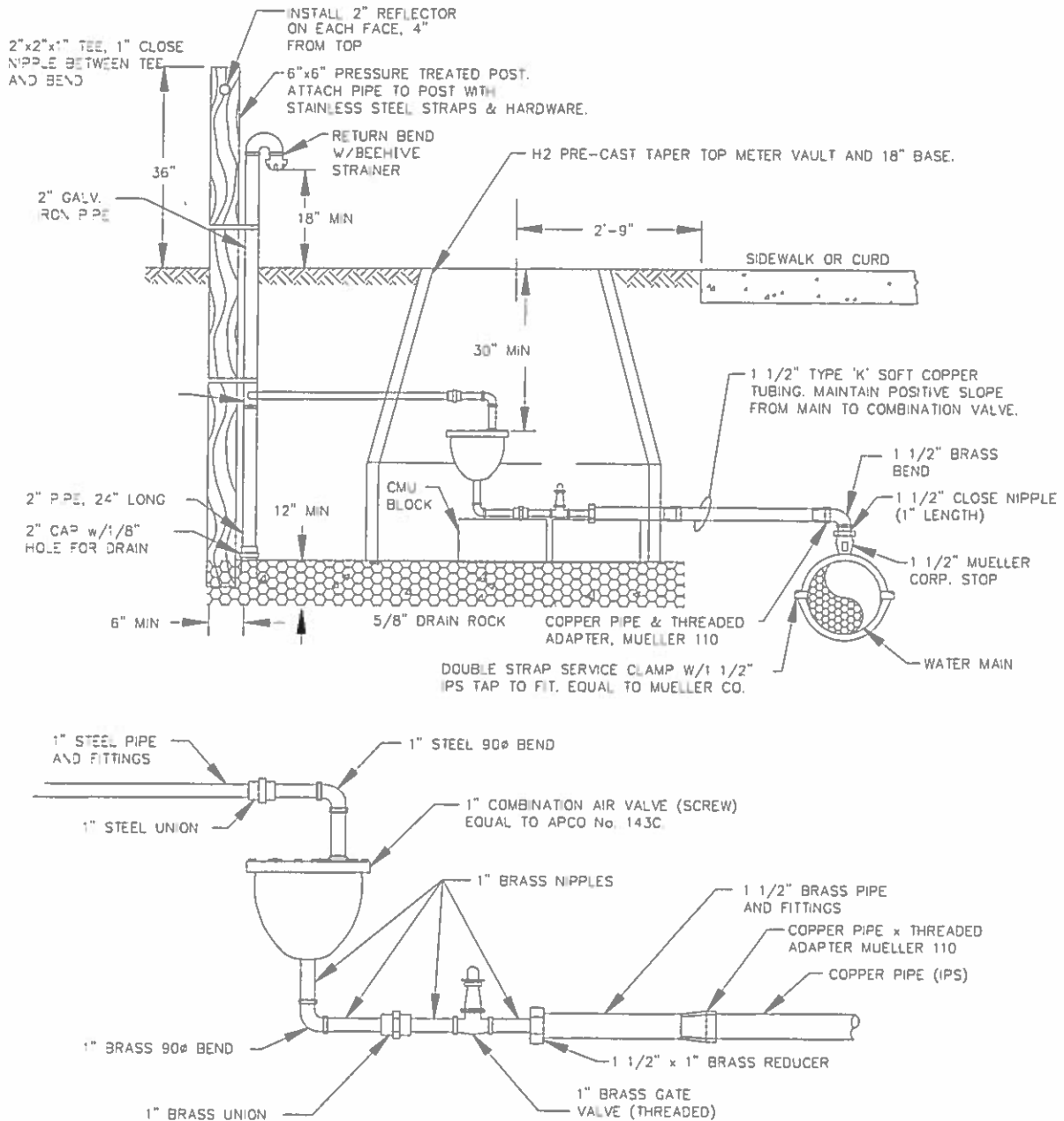
- This standard detail is for deadman blocking only.
- Concrete block shall be per APWA specification 7-11.3(13) 1988.
- Maintain 18" minimum cover over the top of block.
- Bottom of block is to be on undisturbed soil.
- Trench to be backfilled with crushed rock compacted to 95% density on all sides of block and a distance of 4' min. in front of block to full depth of block.
- Upon extension of water main, shackle rods are to be cut, remove plug. Concrete block to remain in place.
- For soil conditions not shown, block is to be designed by engineer.



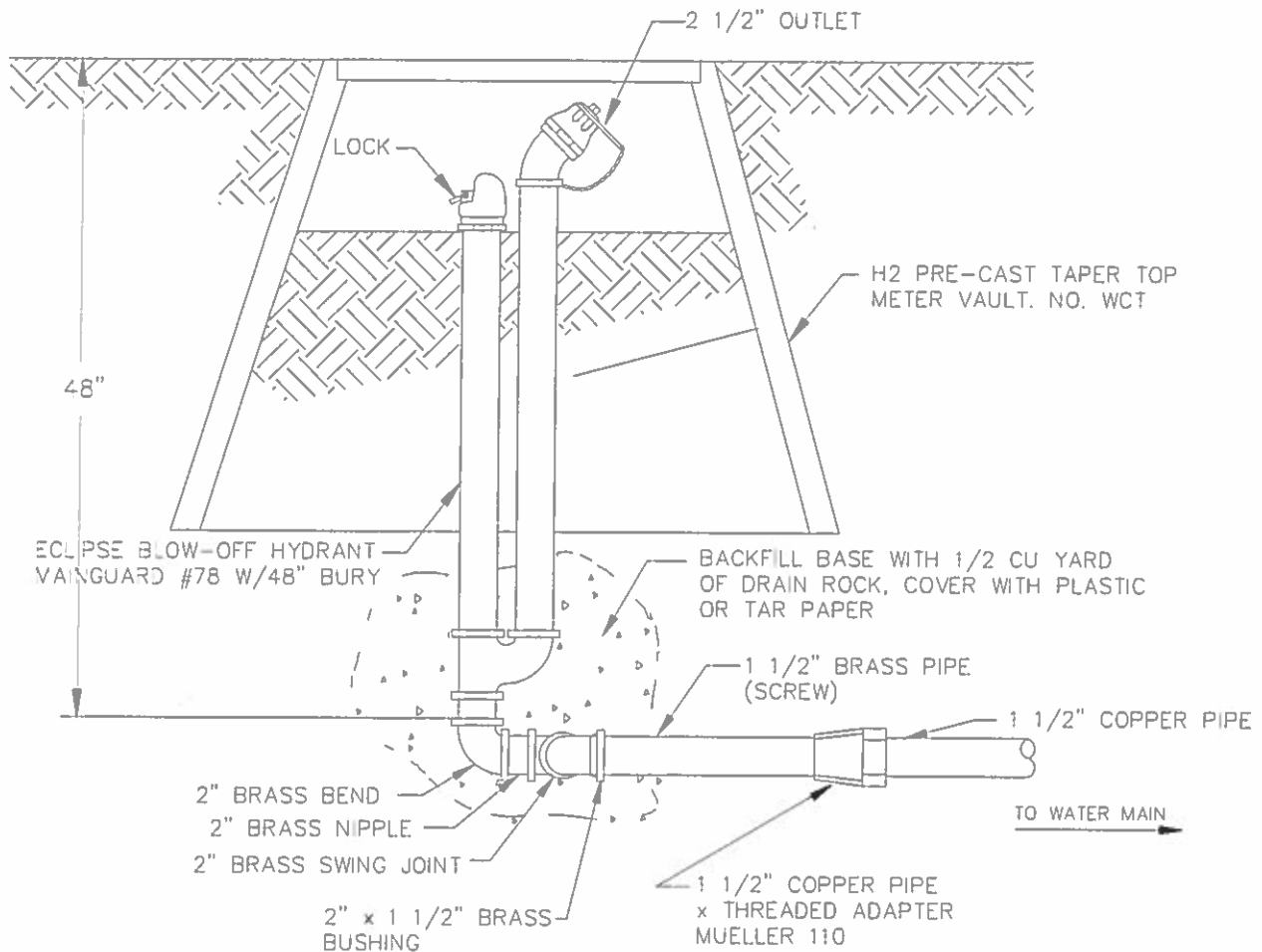
ID-050

1" COMBINATION AIR VALVE

NOTE: Air valve assembly shall be installed at highest point of line.



10-002

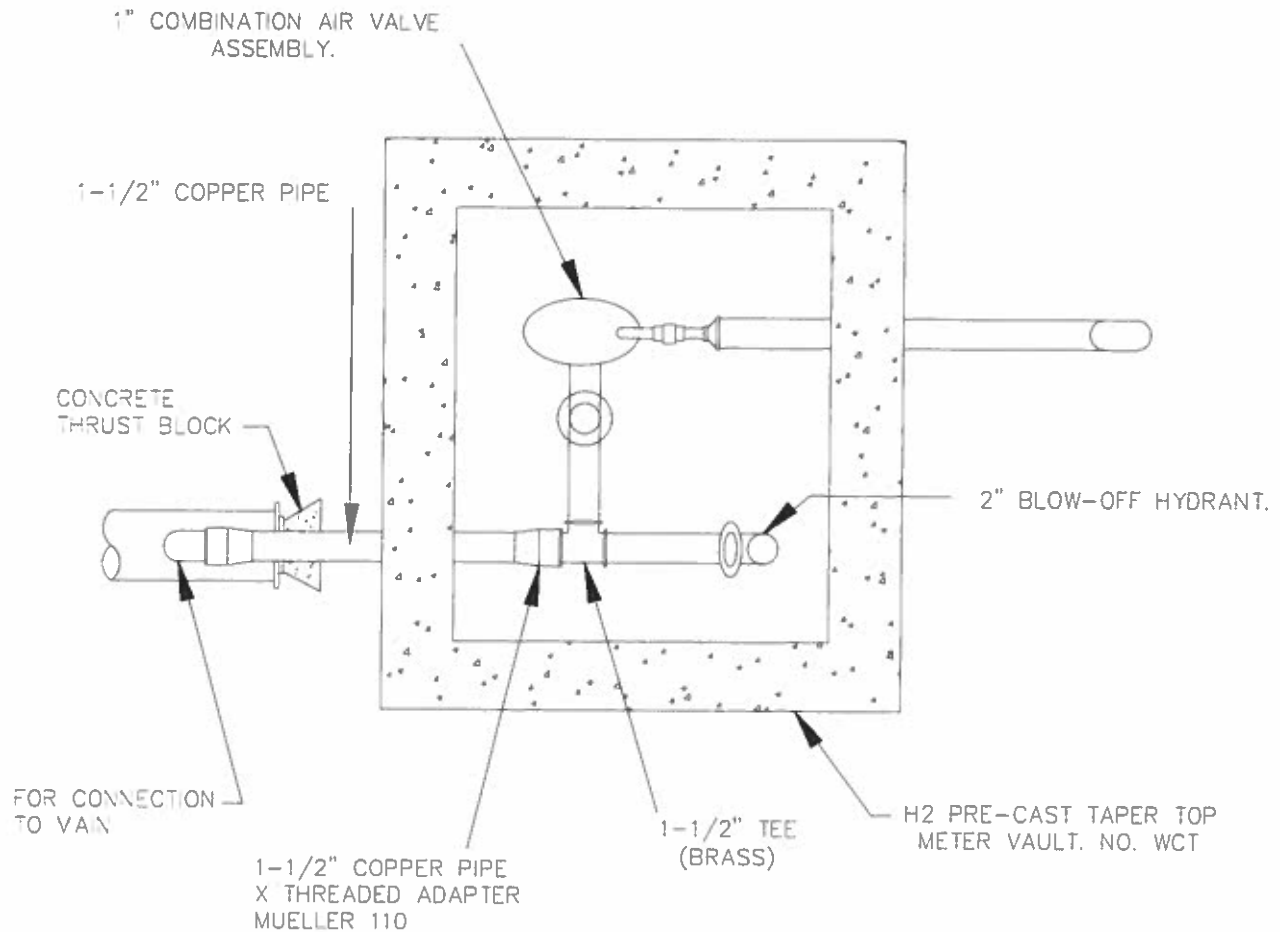
BLOW-OFF HYDRANT FOR DEAD END MAINS**NOTES**

1. INSTALL STANDARD MARKER POST IDENTIFYING VALVE LOCATION
2. SET METER BOX FLUSH WITH SIDEWALK OR CURB LOCATED IN LAWN AREA.
SET METER BOX APPROX. 2" ABOVE FINISHED GRADE IF IN LANDSCAPING AREA.
3. ALL FITTINGS TO BE BRASS UNLESS OTHERWISE NOTED.

ID-003

COMBINATION AIR VALVE & BLOW-OFF ASSEMBLIES

- NOTE: • Install standard marker post identifying valve location.
 • Set meter box flush with sidewalk or curb in located in lawn area. Set meter box approx. 2" above finished grade is in landscaping area.
 • All fittings to be brass unless otherwise noted.



ID-046

RESTRAINED PIPE JOINT REQUIREMENTS

RESTRAINED JOINTS TO ADHERE TO THE FOLLOWING REQUIREMENTS OR AS RECOMMENDED BY THE MANUFACTURER IF MORE STRINGENT.

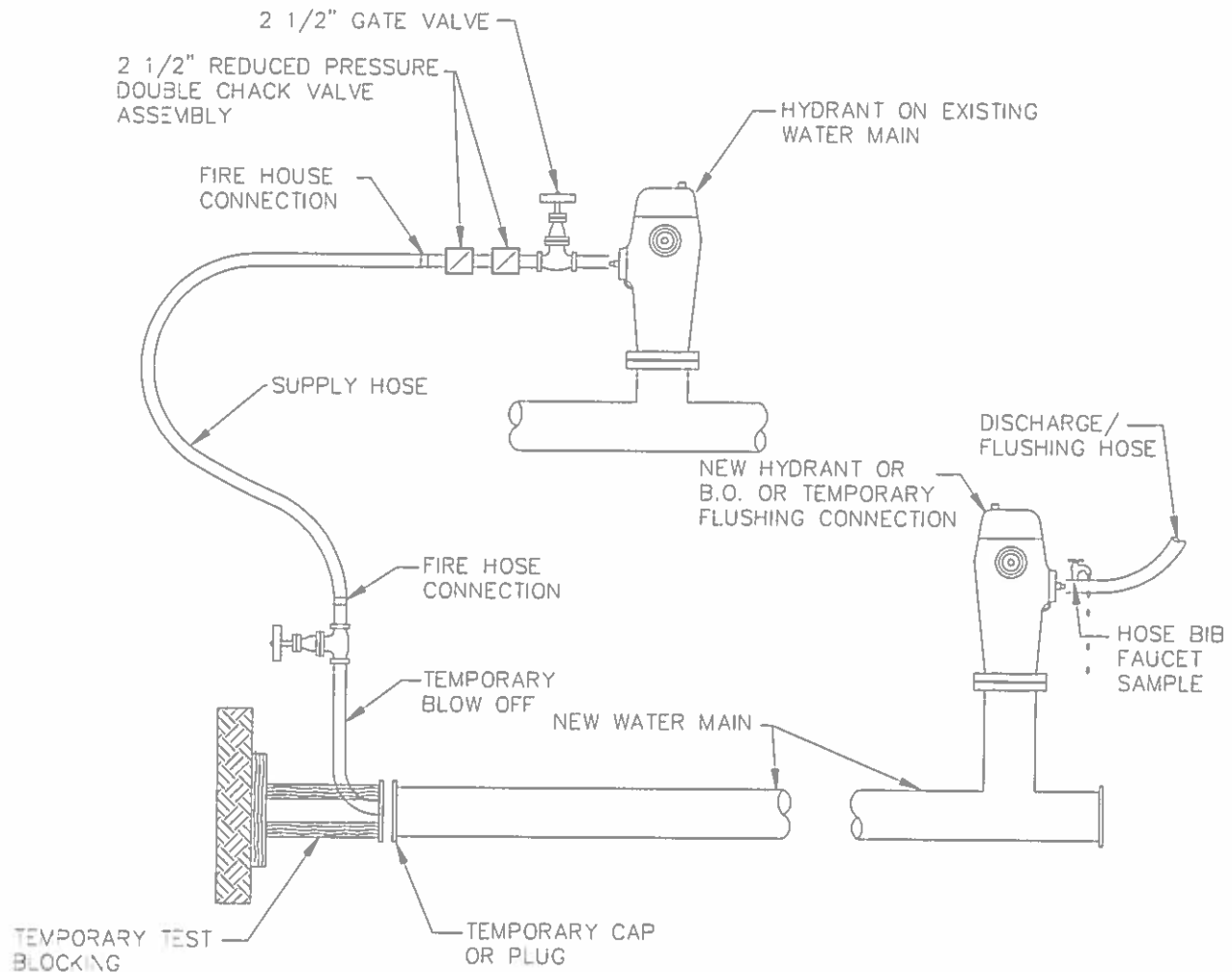
RESTRAINED JOINTS ARE REQUIRED: ON ADJACENT RUNS OF PIPE AT ALL BENDS AND PLUGS.
ON RUNS CONNECTED TO TEES AND CROSSES ONLY OPPOSITE THRUST BLOCKS.
ON ALL PIPE PLACED IN CASING PIPES.

MATERIALS: DUCTILE IRON PIPE WILL BE USED WITH ALL RESTRAINED JOINTS. ALL METHODS OF RESTRAINED JOINTS SHALL BE APPROVED BY THE CITY.

LENGTH OF RESTRAINED JOINT PIPE FROM EACH SIDE OF FITTING

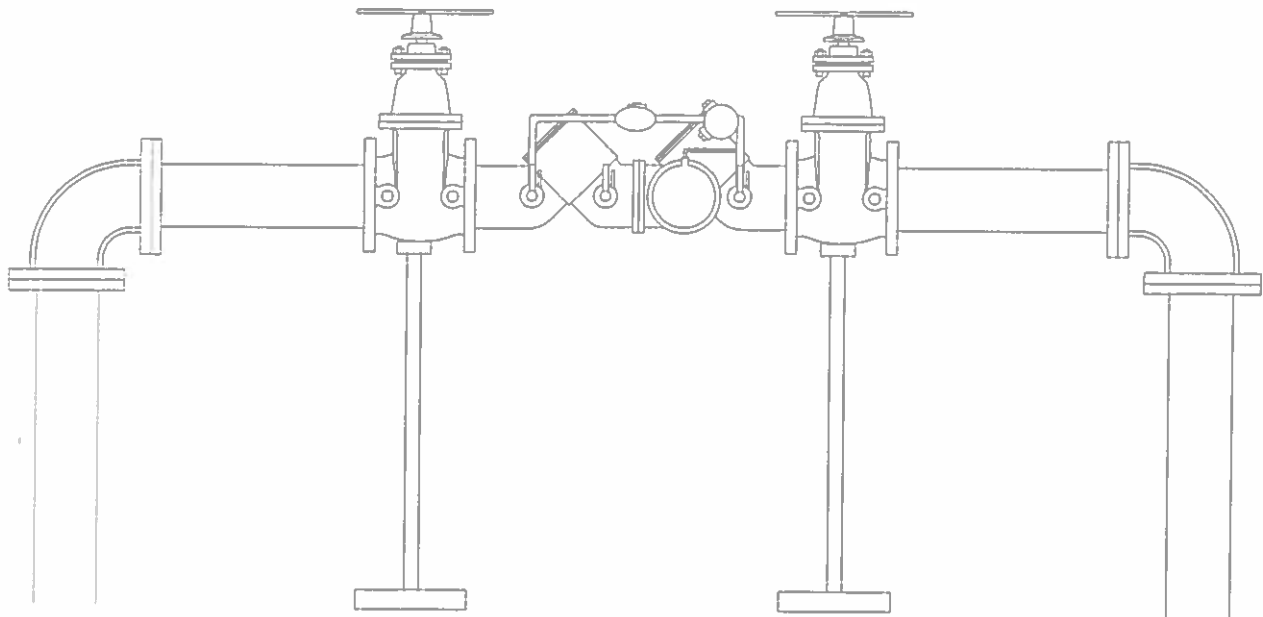
PIPE DIA	CROSS. PLUG. TEE	90° BEND	45° BEND	22 1/2° BEND	11 1/4° BEND
6"	38' (49')	22' (28')	18' (18')	18' (18')	18' (18')
8" & 10"	53' (69')	34' (44')	20' (26')	18' (18')	18' (18')

VALUES IN PARENTHESES WILL BE USED FOR PIPE WITH POLYETHYLENE WRAPPING, WHERE BENDS REQUIRE TWO FITTINGS AS SHOWN ON CONTRACT DRAWINGS, LENGTH OF PIPE WITH RESTRAINED JOINTS SHALL BE AS SPECIFIED FOR THE NEXT ANGLE GREATER THAN THE SUM OF THE ANGLES FORMED BY THE FITTINGS BUT NOT GREATER THAN FOR A 90° BEND.

FILLING OF NEW WATER MAINS**NOTES:**

1. DO NOT DISPOSE OF CHLORINATED WATER INTO STREAMS, LAKES, OR WETLANDS.
2. INSPECTION OF TEMPORARY CONNECTION REQUIRED BEFORE FILLING WATERMAIN
3. CONTRACTOR TO PROVIDE VALVES FOR TESTING PURPOSES WHERE NEEDED.

ID-010

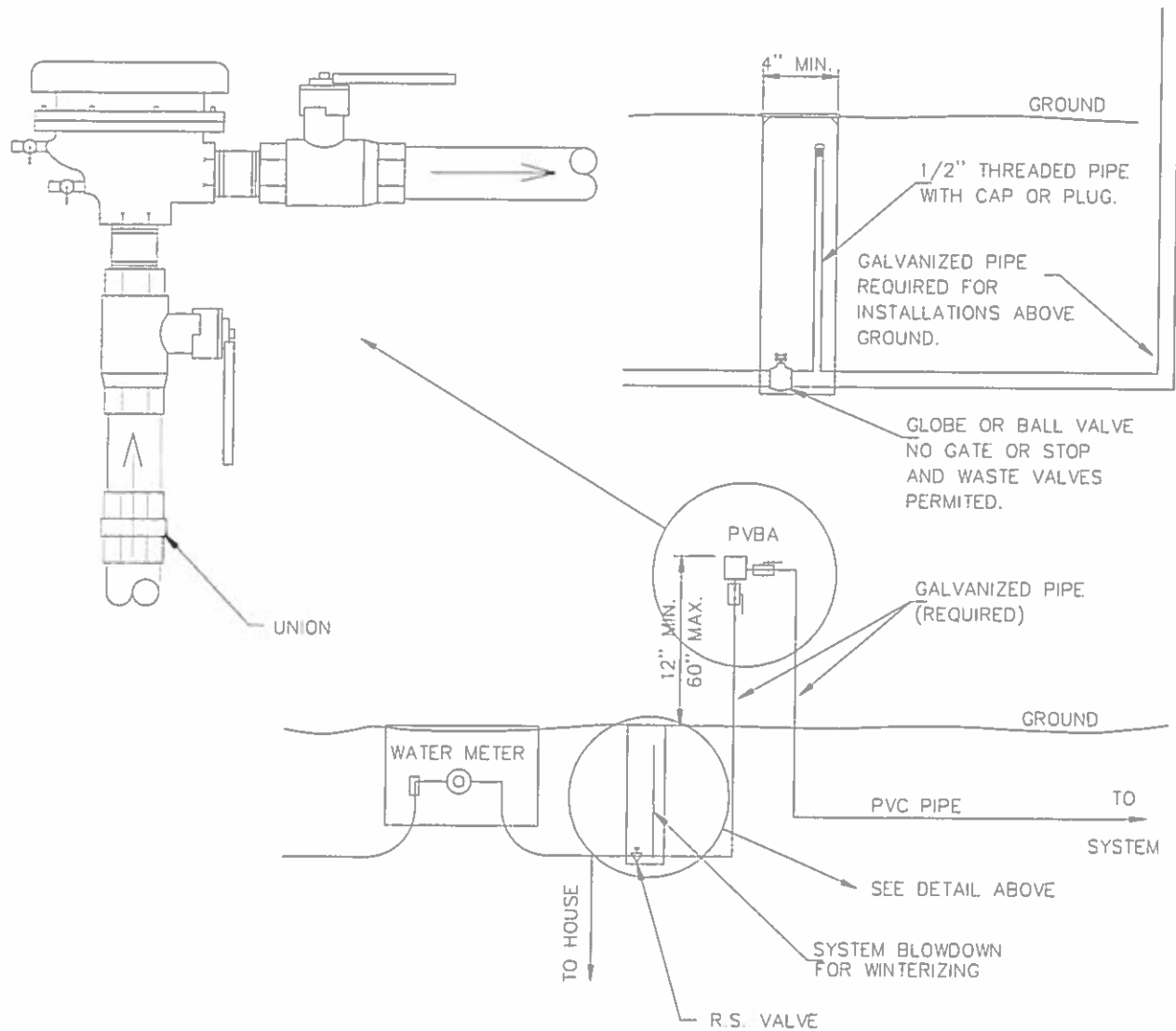
DETECTOR CHECK VALVE INSTALLATION

NOTES:

- 1) MUST BE ON THE LATEST DEPT. OF HEALTH APPROVED LIST OF BACKFLOW PREVENTION ASSEMBLIES.
- 2) A CITY OF CHELAN CROSS CONNECTION SPECIALIST MUST BE PRESENT DURING INSTALLATION.
- 3) A MIN. 3" DIA. FLOOR DRAIN IS REQUIRED.

TD-106

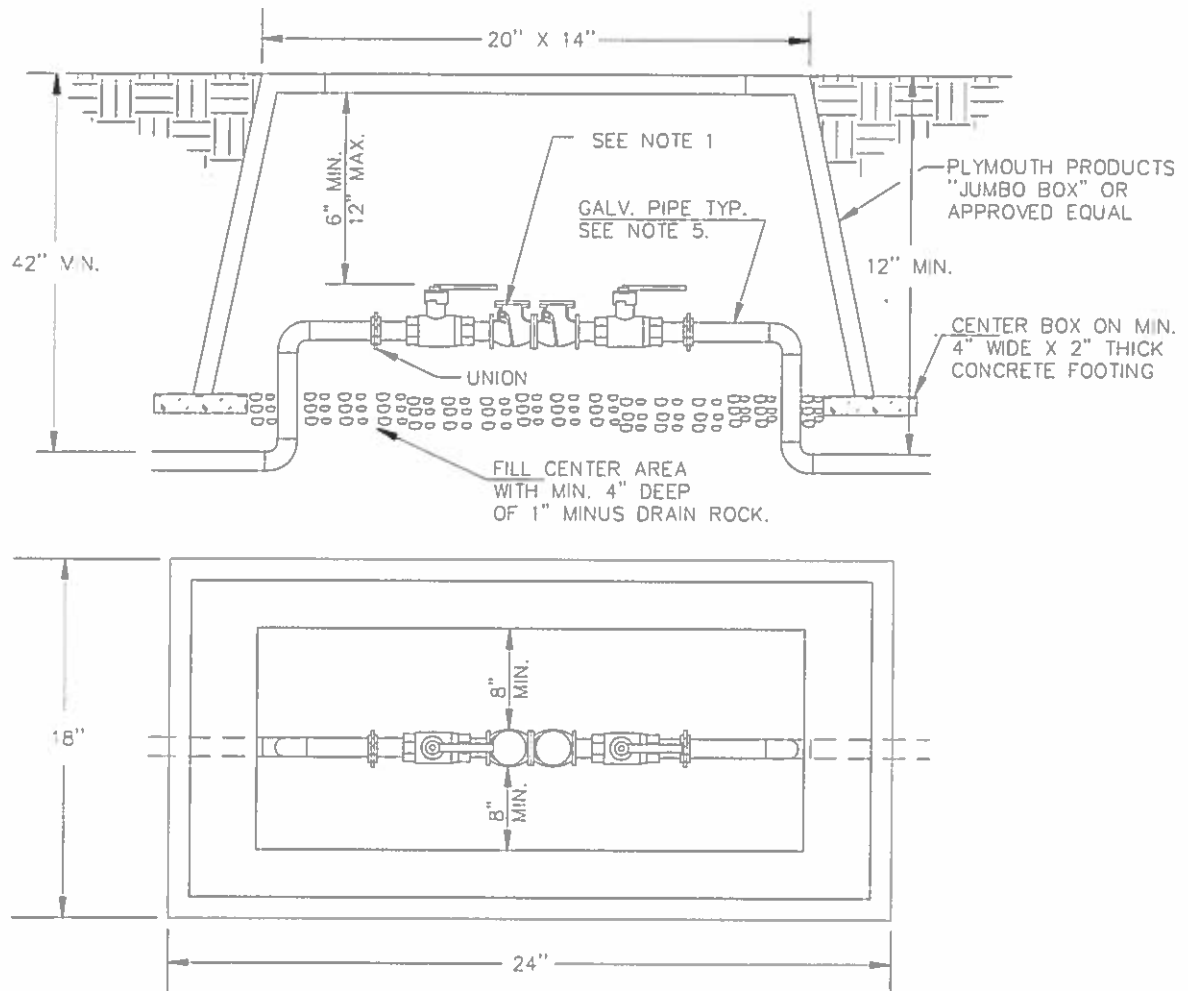
PVBA INSTALLATION



NOTES:

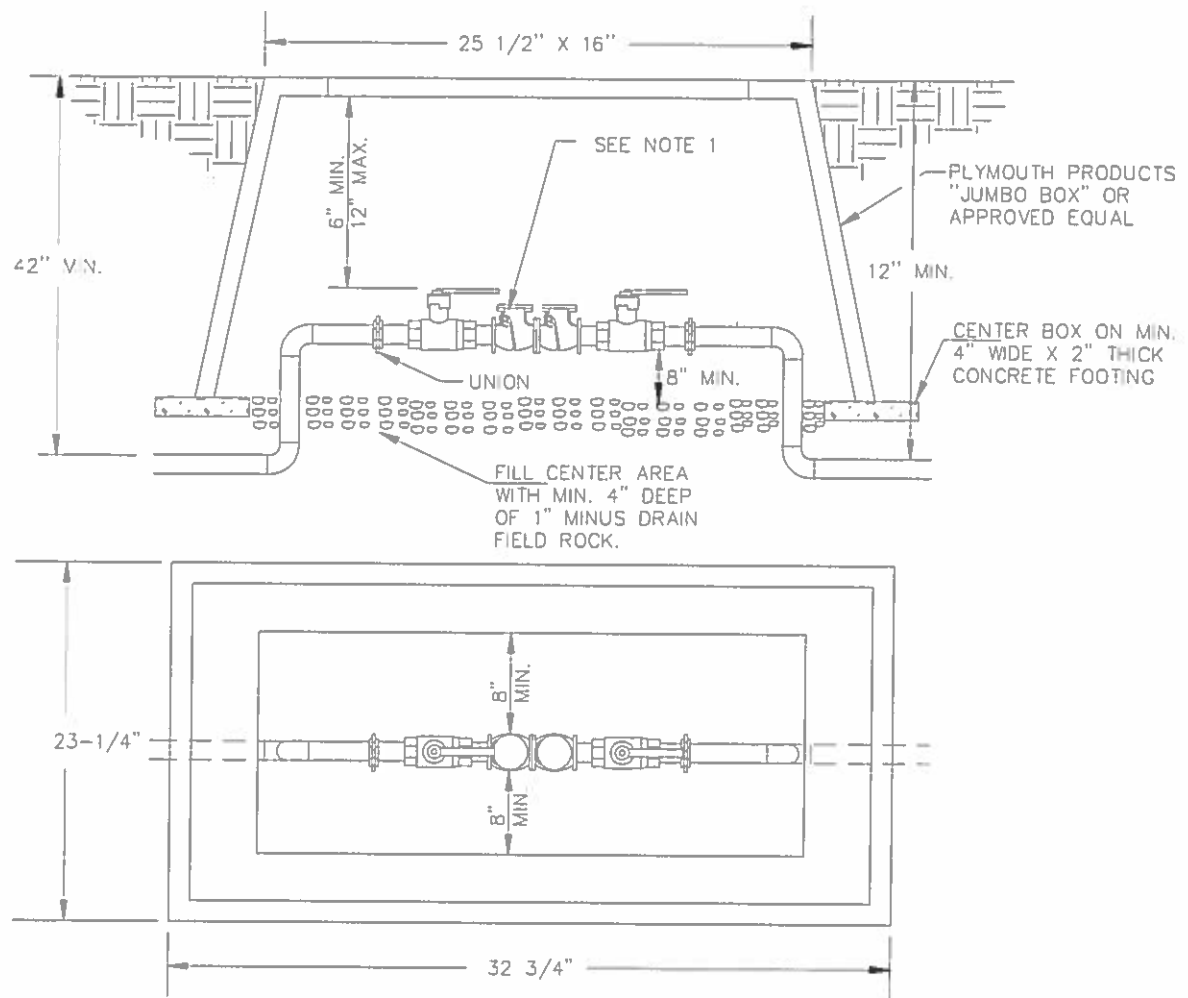
- 1) PVBA MAY BE INSTALLED ON LOW HAZARD POTABLE WATER SUPPLY SYSTEMS ONLY.
- 2) A CITY OF CHELAN CROSS CONNECTION SPECIALIST MUST BE PRESENT DURING INSTALLATION.
- 3) PVBA MUST BE INSTALLED NOT LESS THAN 12" ABOVE THE HIGHEST POINT OF USE AND NOT MORE THAN 60" HIGH.

ID-077

DOUBLE CHECK VALVE ASSEMBLY INSTALLATION 3/4" TO 1"**NOTES:**

- 1) MUST BE ON THE LATEST DEPT. OF HEALTH APPROVED LIST OF BACKFLOW PREVENTION ASSEMBLIES.
- 2) MAY BE INSTALLED BELOW GROUND IN AN APPROVED VAULT.
- 3) A CITY OF CHELAN CROSS CONNECTION SPECIALIST MUST BE PRESENT DURING INSTALLATION.
- 4) FREEZE PROTECTION IS THE RESPONSIBILITY OF THE OWNER.
- 5) RISERS AND ALL PIPE IN BOX TO BE GALVANIZED.
- 6) A LADDER IS REQUIRED IF ACCESS OPENING TO FLOOR EXCEEDS 36"

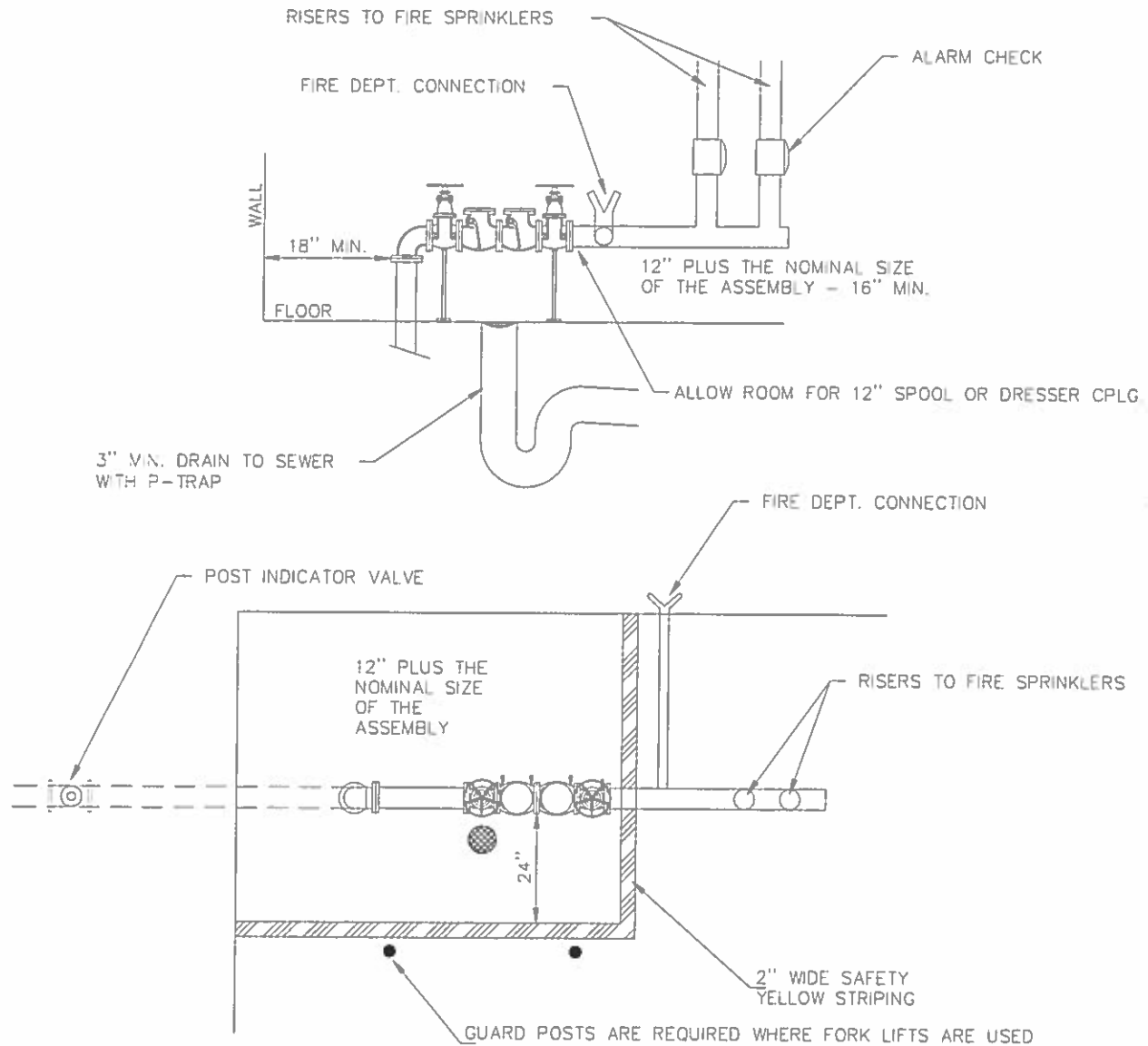
ID-079

DOUBLE CHECK VALVE ASSEMBLY INSTALLATION 1-1/4" TO 2-1/2"

NOTES:

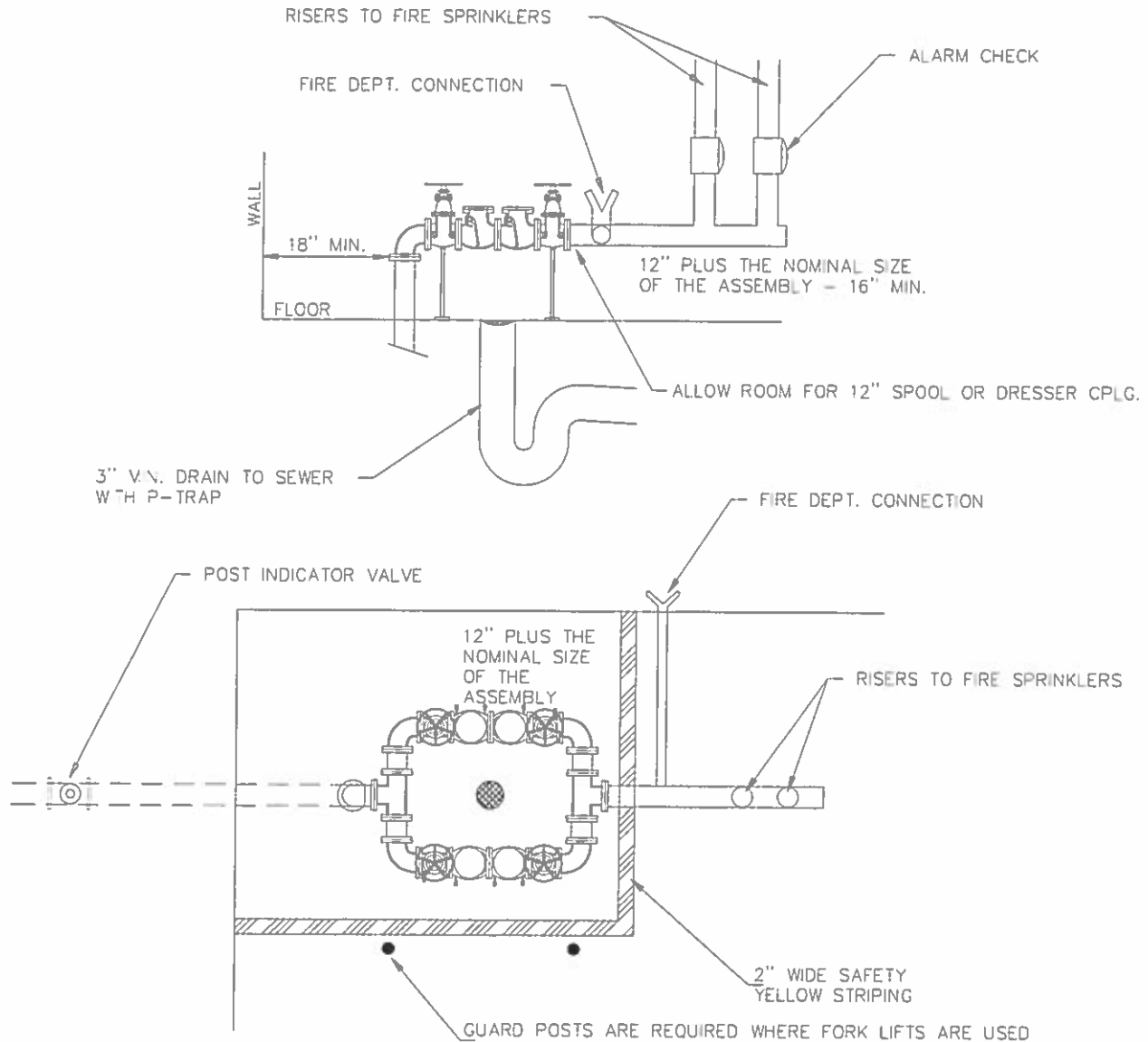
- 1) MUST BE ON THE LATEST DEPT. OF HEALTH APPROVED LIST OF BACKFLOW PREVENTION ASSEMBLIES.
- 2) MAY BE INSTALLED BELOW GROUND IN AN APPROVED VAULT.
- 3) A CITY OF CHELAN CROSS CONNECTION SPECIALIST MUST BE PRESENT DURING INSTALLATION.
- 4) FREEZE PROTECTION IS THE RESPONSIBILITY OF THE OWNER.
- 5) RISERS AND ALL PIPE IN BOX TO BE GALVANIZED.
- 6) A LADDER IS REQUIRED IF ACCESS OPENING TO FLOOR EXCEEDS 36"

10-080

DOUBLE CHECK VALVE ASSEMBLY INSTALLATION 3" & LARGER IN BUILDING**NOTES:**

- 1) MUST BE ON THE LATEST DEPT. OF HEALTH APPROVED LIST OF BACKFLOW PREVENTION ASSEMBLIES.
- 2) A CITY OF CHELAN CROSS CONNECTION SPECIALIST MUST BE PRESENT DURING INSTALLATION.
- 3) A MIN. 3" DIA. FLOOR DRAIN IS REQUIRED.

ID-081

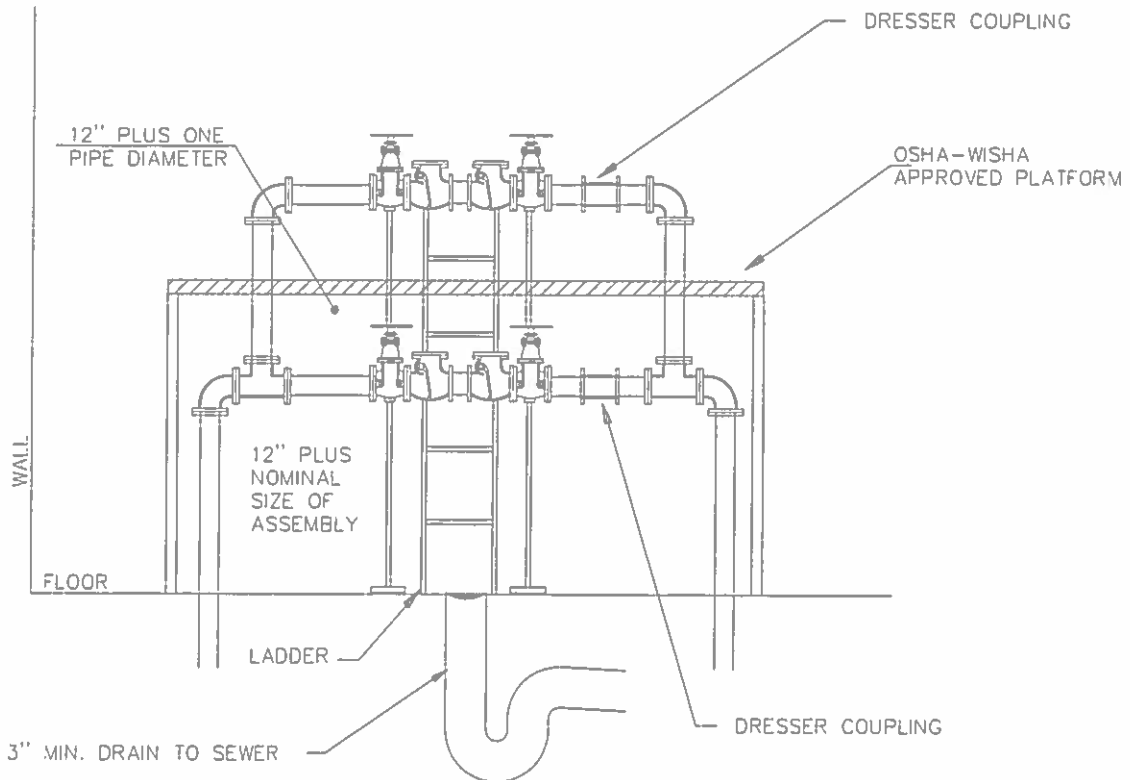
SIDE BY SIDE DCVA DUAL INSTALLATION 3" & LARGER IN BUILDING

NOTES:

- 1) MUST BE ON THE LATEST DEPT. OF HEALTH APPROVED LIST OF BACKFLOW PREVENTION ASSEMBLIES.
- 2) A CITY OF CHELAN CROSS CONNECTION SPECIALIST MUST BE PRESENT DURING INSTALLATION.
- 3) A MIN. 3" DIA. FLOOR DRAIN IS REQUIRED.

ID-082

VERTICAL APPLICATION DCVA DUAL INSTALLATION 3" & LARGER IN BUILDING

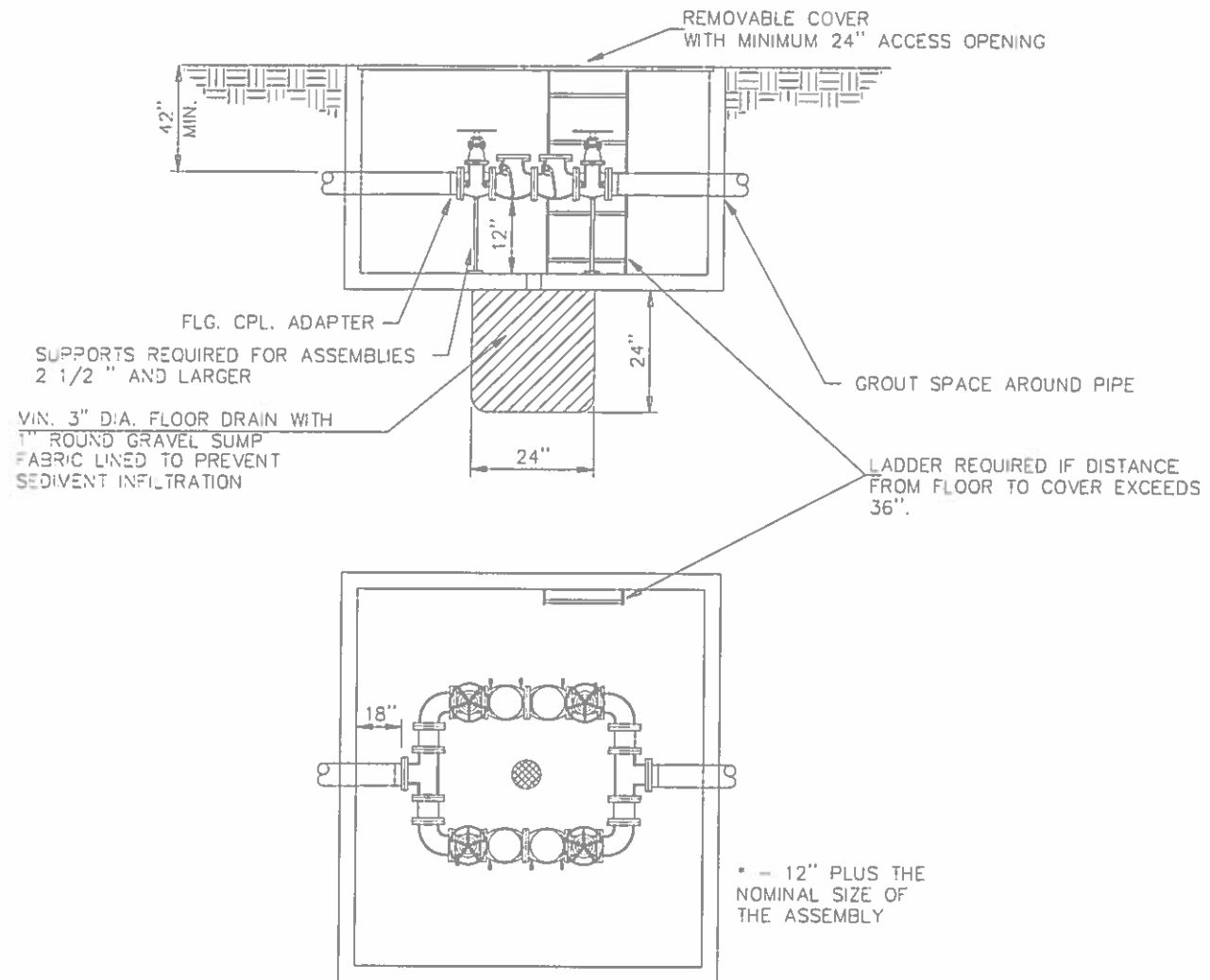


NOTES:

- 1) MUST BE ON THE LATEST DEPT. OF HEALTH APPROVED LIST OF BACKFLOW PREVENTION ASSEMBLIES.
- 2) MAY BE INSTALLED BELOW GROUND IN AN APPROVED VAULT.
- 3) A CITY OF CHELAN CROSS CONNECTION SPECIALIST MUST BE PRESENT DURING INSTALLATION.
- 4) FREEZE PROTECTION IS THE RESPONSIBILITY OF THE OWNER.
- 5) A MIN. 3" DIA. FLOOR DRAIN IS REQUIRED.
- 6) A LADDER IS REQUIRED IF THE DISTANCE FROM THE ACCESS OPENING TO THE FLOOR EXCEEDS 36".
- 7) A SPACE EQUALING 12" PLUS ONE PIPE DIAMETER IS REQUIRED BETWEEN ASSEMBLIES.
- 8) AN OSHA-WISHA APPROVED PLATFORM MUST BE ERECTED FOR MAINTENANCE AND TESTING WHEN INSTALLED 60" ABOVE FLOOR LEVEL.
- 9) GUARD POST ARE REQUIRED IN AREAS WHERE FORK LIFTS ARE USED

ID-083

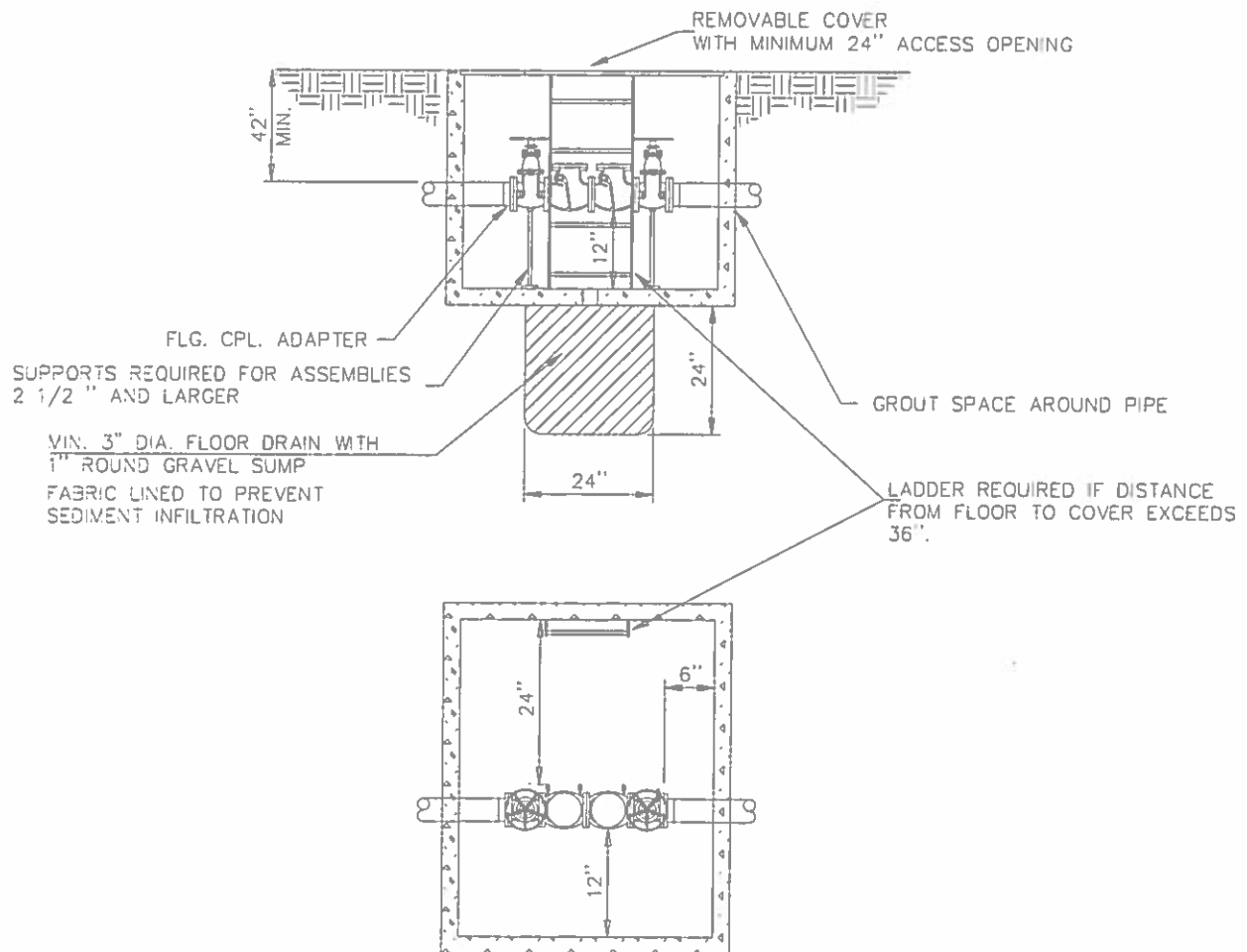
SIDE BY SIDE DCVA DUAL INSTALLATION 3" & LARGER IN VAULT



NOTES:

- 1) MUST BE ON THE LATEST DEPT. OF HEALTH APPROVED LIST OF BACKFLOW PREVENTION ASSEMBLIES.
- 2) MAY BE INSTALLED BELOW GROUND IN AN APPROVED VAULT.
- 3) A CITY OF CHELAN CROSS CONNECTION SPECIALIST MUST BE PRESENT DURING INSTALLATION.
- 4) FREEZE PROTECTION IS THE RESPONSIBILITY OF THE OWNER.
- 5) A VIN. 3" DIA. FLOOR DRAIN IS REQUIRED.
- 6) A LADDER IS REQUIRED IF ACCESS OPENING TO FLOOR EXCEEDS 36"

ID-084

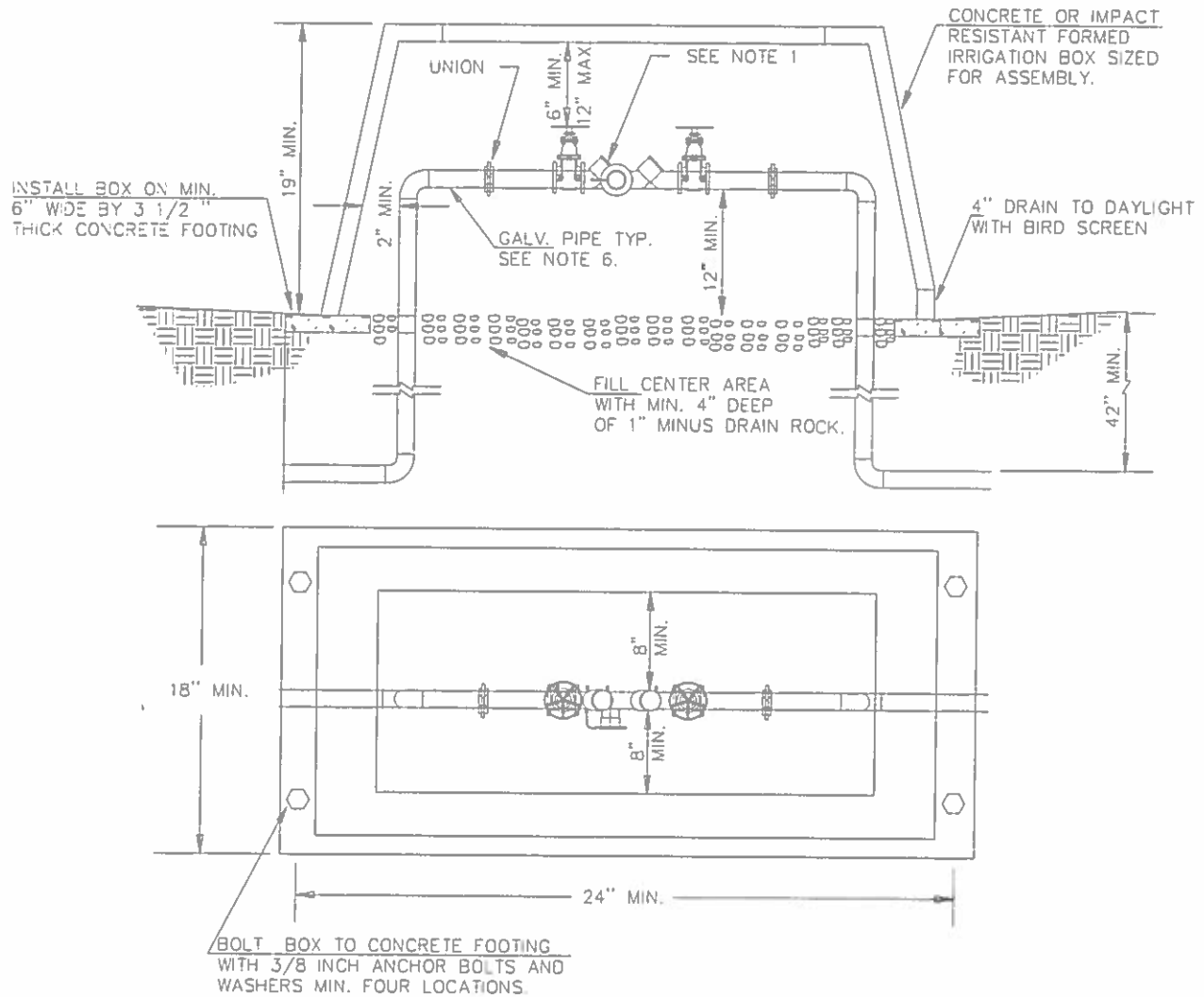
DOUBLE CHECK VALVE ASSEMBLY INSTALLATION 3" & LARGER IN VAULT

NOTES:

- 1) MUST BE ON THE LATEST DEPT. OF HEALTH APPROVED LIST OF BACKFLOW PREVENTION ASSEMBLIES.
- 2) MAY BE INSTALLED BELOW GROUND IN AN APPROVED VAULT.
- 3) A CITY OF CHELAN CROSS CONNECTION SPECIALIST MUST BE PRESENT DURING INSTALLATION.
- 4) FREEZE PROTECTION IS THE RESPONSIBILITY OF THE OWNER.
- 5) A MIN. 3" DIA. FLOOR DRAIN IS REQUIRED.
- 6) A LADDER IS REQUIRED IF ACCESS OPENING TO FLOOR EXCEEDS 36"

ID-085

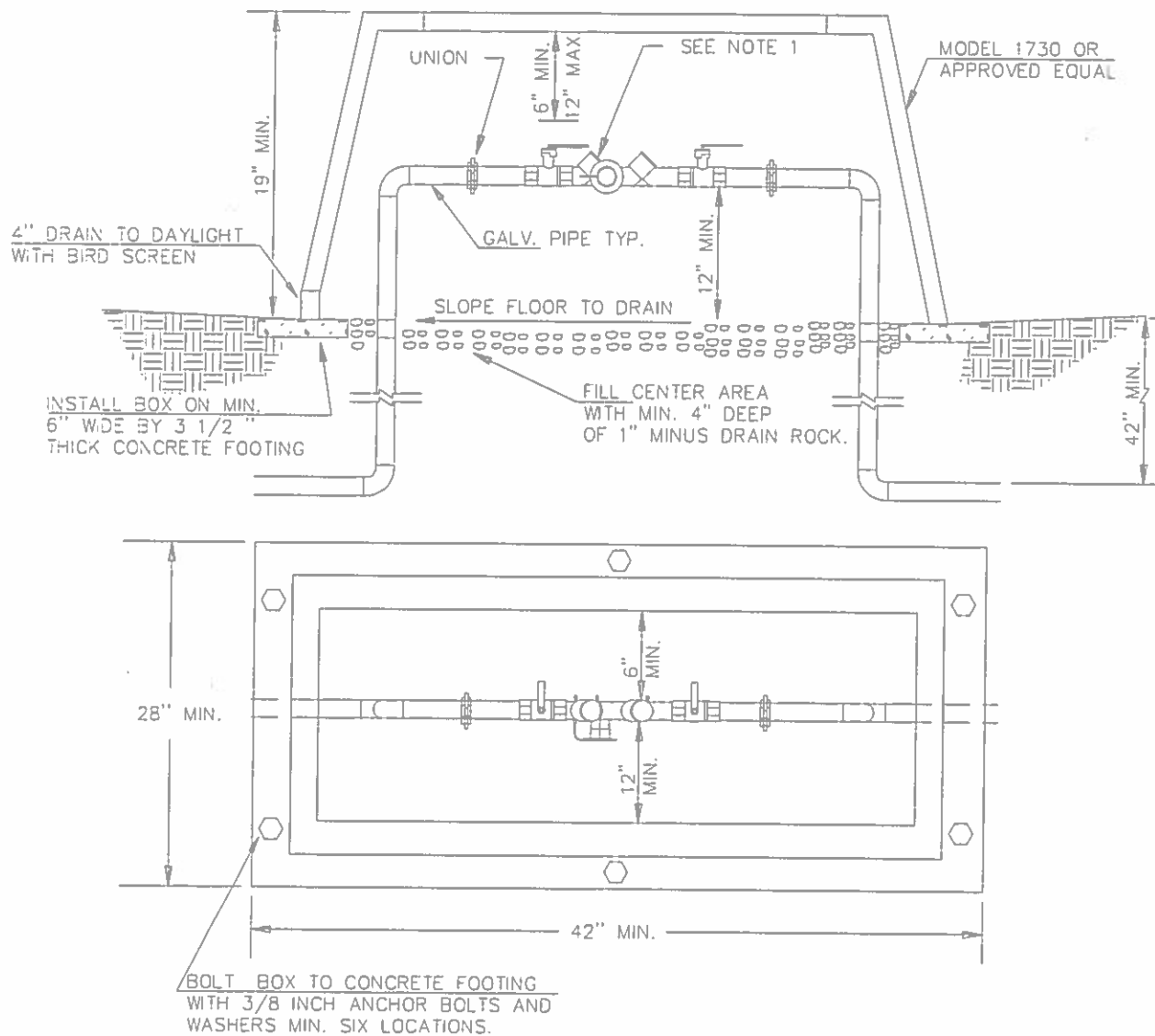
REDUCED PRESSURE BACKFLOW ASSEMBLY INSTALLATION 3/4" TO 1"



NOTES:

- 1) MUST BE ON THE LATEST DEPT. OF HEALTH APPROVED LIST OF BACKFLOW PREVENTION ASSEMBLIES.
- 2) MUST BE INSTALLED ABOVE GROUND MIN. 12 INCHES.
- 3) A CITY OF CHELAN CROSS CONNECTION SPECIALIST MUST BE PRESENT DURING INSTALLATION.
- 4) WHEN INSTALLED INSIDE A BUILDING, A FLOOR DRAIN SIZED TO ACCEPT MAXIMUM DISCHARGE FROM THE RELIEF ASSEMBLY IS REQUIRED.
- 5) FREEZE PROTECTION IS THE RESPONSIBILITY OF THE OWNER.
- 6) RISERS AND ALL PIPE IN BOX TO BE GALVANIZED STEEL.

ID-086

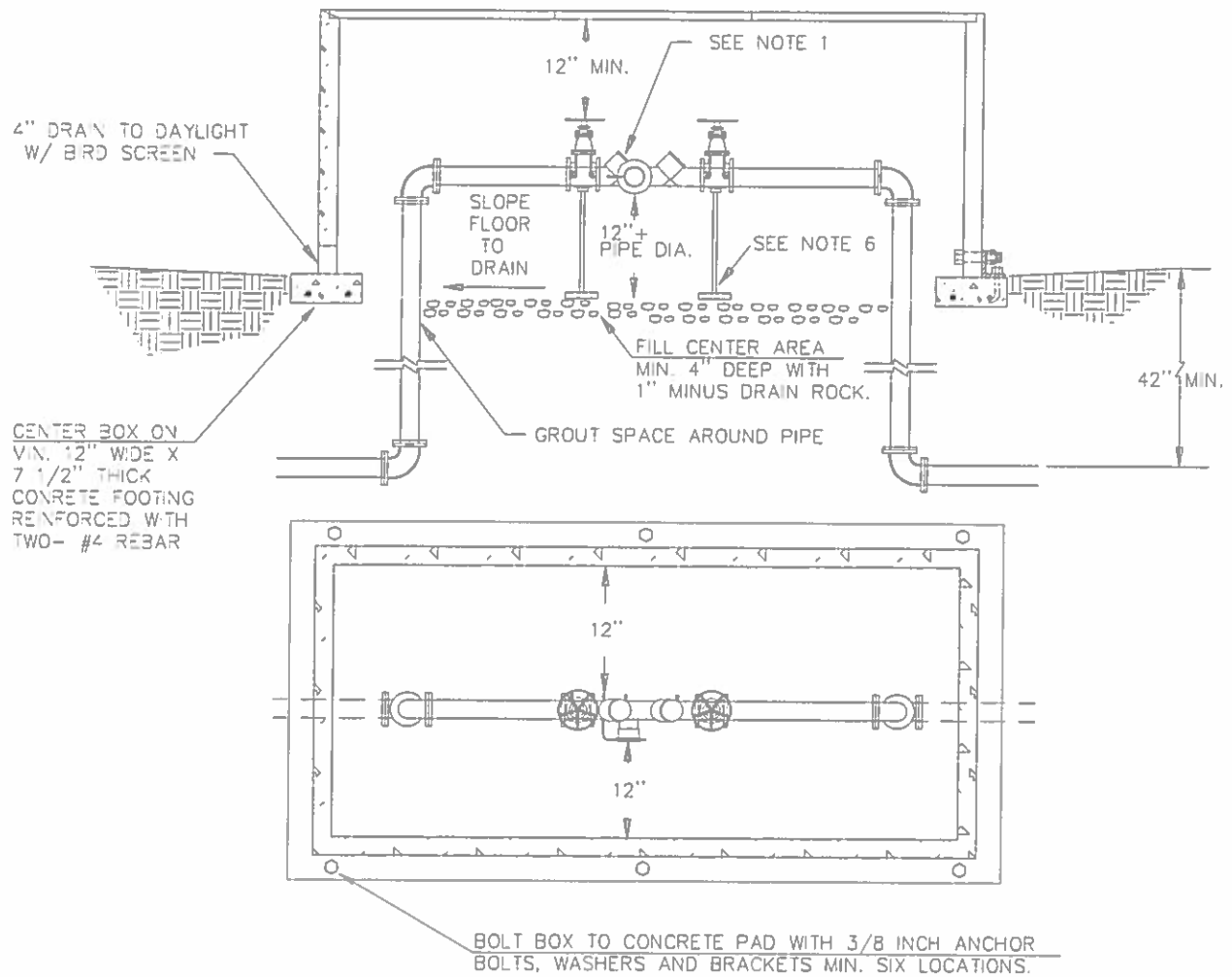
REDUCED PRESSURE BACKFLOW ASSEMBLY INSTALLATION 1-1/4" TO 2"

NOTES:

- 1) MUST BE ON THE LATEST DEPT. OF HEALTH APPROVED LIST OF BACKFLOW PREVENTION ASSEMBLIES.
- 2) MUST BE INSTALLED ABOVE GROUND MIN. 12 INCHES.
- 3) A CITY OF CHELAN CROSS CONNECTION SPECIALIST MUST BE PRESENT DURING INSTALLATION.
- 4) WHEN INSTALLED INSIDE A BUILDING, A FLOOR DRAIN SIZED TO ACCEPT MAXIMUM DISCHARGE FROM THE RELIEF ASSEMBLY IS REQUIRED.
- 5) FREEZE PROTECTION IS THE RESPONSIBILITY OF THE OWNER.

ID-087

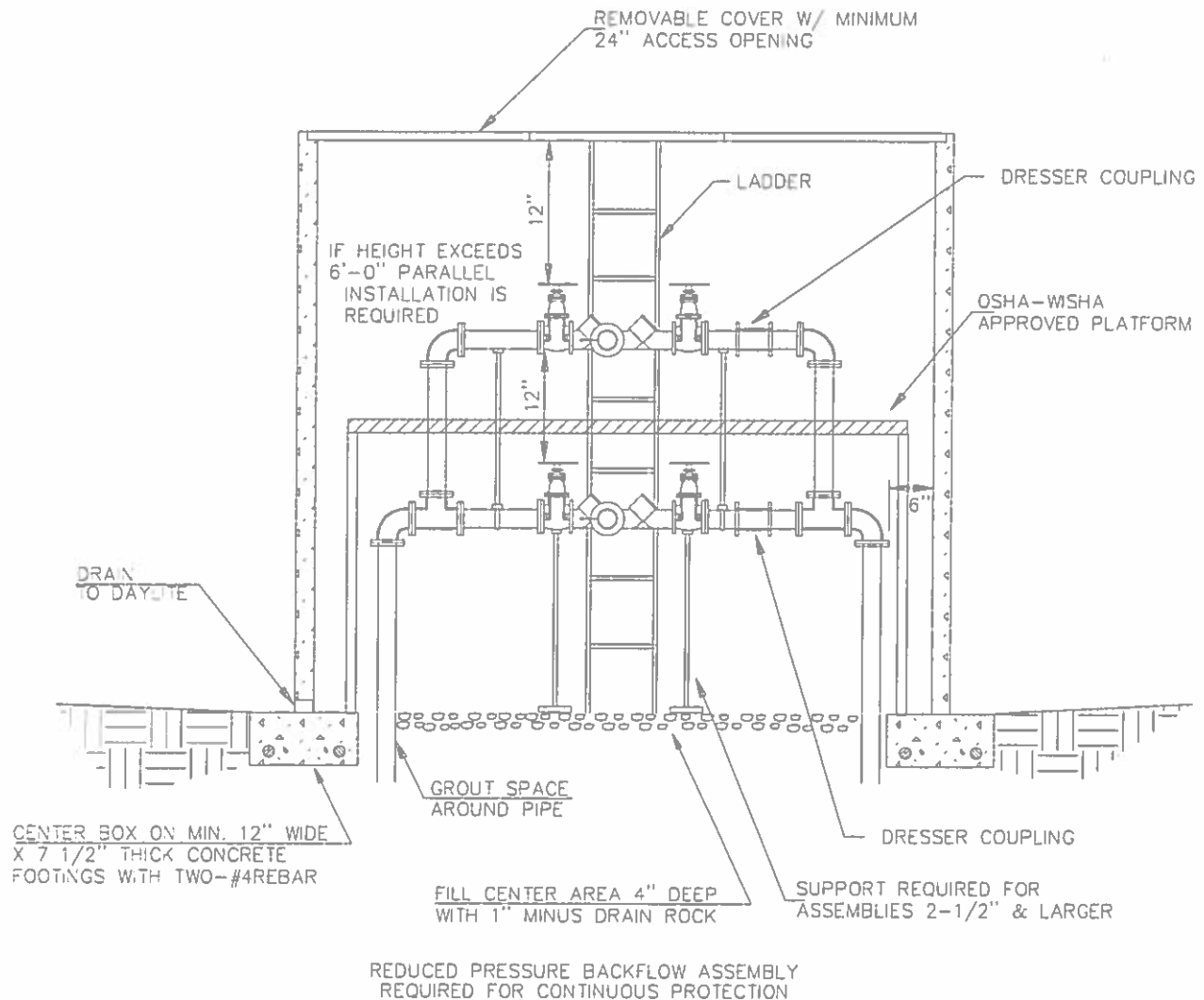
REDUCED PRESSURE BACKFLOW ASSEMBLY INSTALLATION 2-1/2" AND LARGER



NOTES:

- 1) MUST BE ON THE LATEST DEPT. OF HEALTH APPROVED LIST OF BACKFLOW PREVENTION ASSEMBLIES.
- 2) MUST BE INSTALLED ABOVE GROUND, MIN. 12" PLUS PIPE DIAMETER.
- 3) A CITY OF CHELAN CROSS CONNECTION SPECIALIST MUST BE PRESENT DURING INSTALLATION.
- 4) WHEN INSTALLED INSIDE A BUILDING, A FLOOR DRAIN SIZED TO ACCEPT MAXIMUM DISCHARGE FROM THE RELIEF ASSEMBLY IS REQUIRED.
- 5) FREEZE PROTECTION IS THE RESPONSIBILITY OF THE OWNER.
- 6) SEE DWG. PAGE 10-14 FOR PIPE SUPPORTS, SET SUPPORTS ON CONCRETE BLOCKS.

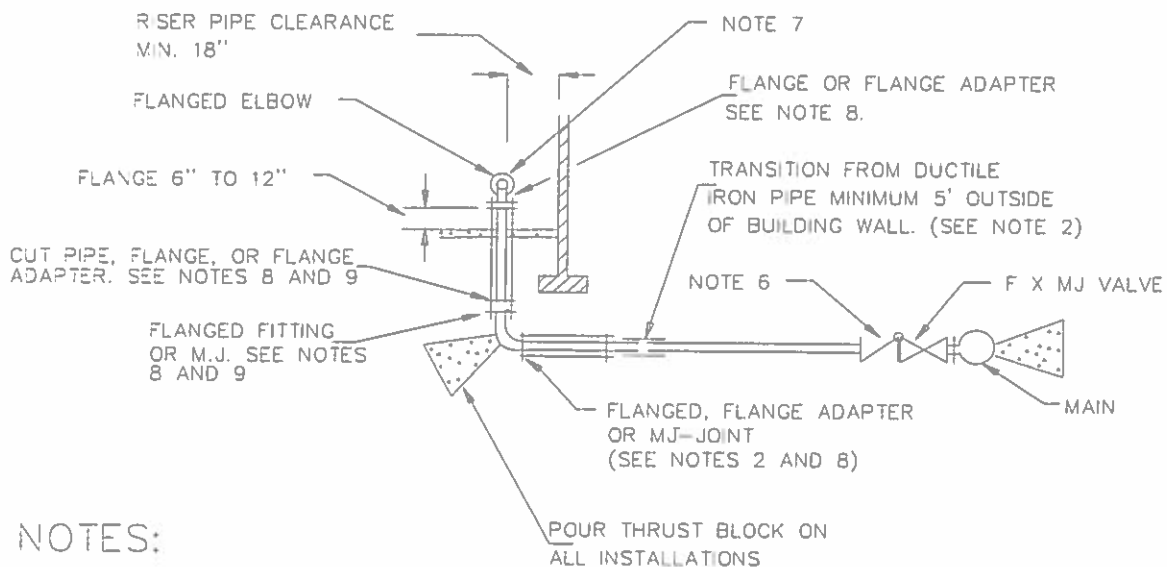
10-088

REDUCED PRESSURE BACKFLOW ASSEMBLY DUAL INSTALLATION**NOTES:**

- 1) MUST BE ON THE LATEST DEPT. OF HEALTH APPROVED LIST OF BACKFLOW PREVENTION ASSEMBLIES.
- 2) MUST BE INSTALLED ABOVE GROUND.
- 3) A CITY OF CHELAN CROSS CONNECTION SPECIALIST MUST BE PRESENT DURING INSTALLATION.
- 4) WHEN INSTALLED INSIDE A BUILDING, A FLOOR DRAIN SIZED TO ACCEPT DISCHARGE FROM BOTH ASSEMBLIES IS REQUIRED.
- 5) FREEZE PROTECTION IS THE RESPONSIBILITY OF THE OWNER.
- 6) SUFFICIENT CLEARANCE IS REQUIRED FROM THE TOP OF THE VALVE STEM WHEN FULLY OPEN TO THE BOTTOM OF THE TOP ASSEMBLY.
- 7) AN OSHA-WISHA APPROVED PLATFORM MUST BE ERECTED FOR MAINTENANCE AND TESTING.
- 8) GUARD POSTS ARE REQUIRED IN AREAS WHERE FORK LIFTS ARE USED

ID-089

FIRE LINE INTO BUILDING

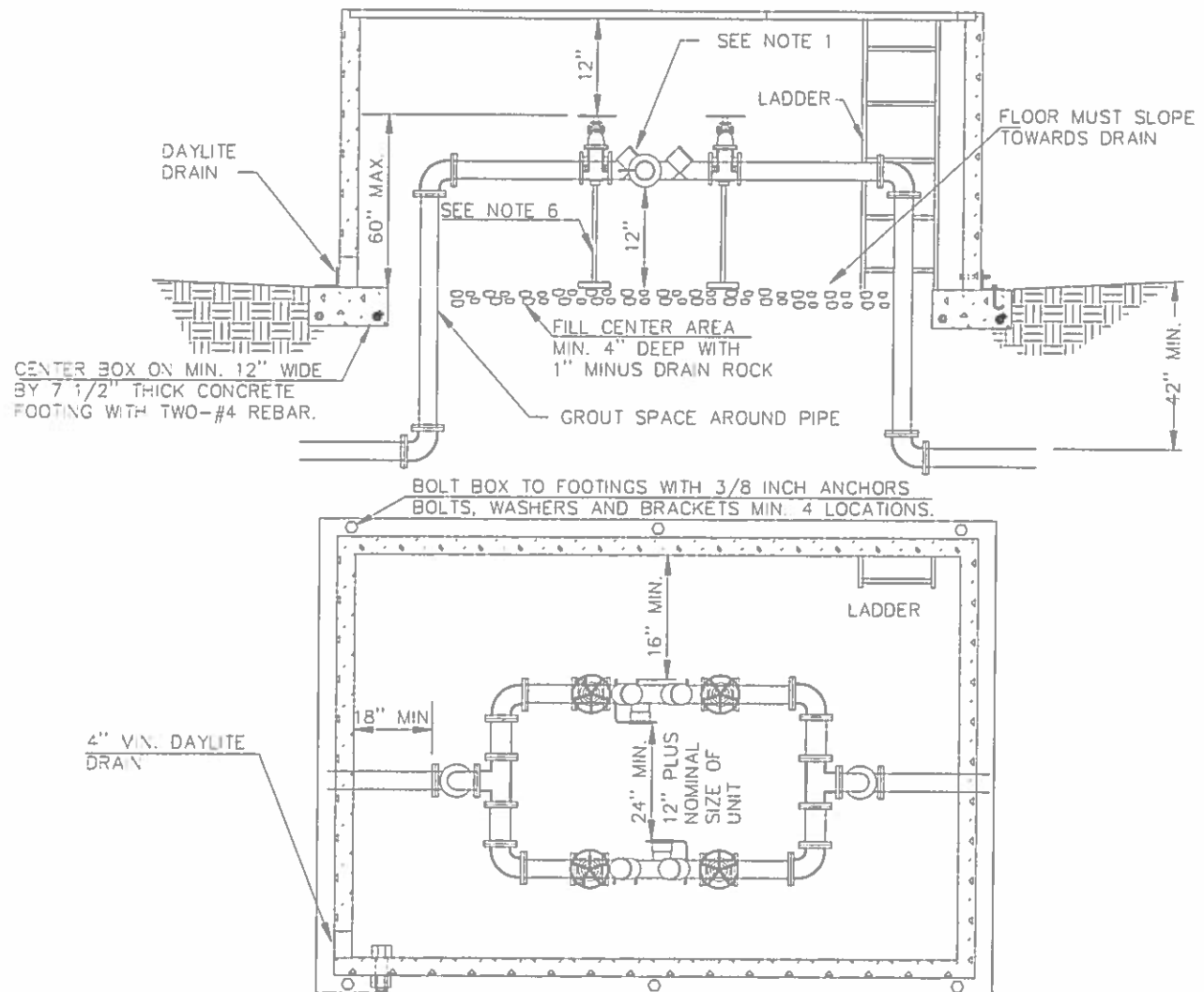


NOTES:

1. ENGINEERING INSPECTOR WILL INSPECT TO THE BACKFLOW DEVICE OUTSIDE OF THE BUILDING, OR TO THE FLANGE ABOVE THE BUILDING FLOOR.
2. JOINT TO BE FLANGED, OR FLANGE ADAPTER, EXCEPT MJ JOINT MAY BE USED WHEN BEND IS SHACKLED TO A RETAINER GLAND LOCATED A MINIMUM OF 5 FEET OUTSIDE OF THE BUILDING.
3. CONSTRUCT A THRUST BLOCK ON THE 90° BEND UNDER THE FLOOR SIZED FOR THE SIZE OF PIPE AND TYPE OF FILL. SIZE TO BE 1.34 TIMES THAT CALLED FOR IN STD. DWG. PAGES 2-12 AND 2-13.
4. FITTINGS AND PIPE WITHIN THE BUILDING LIMITS, AND TO A MINIMUM 5 FEET OUTSIDE OF THE BUILDING, SHALL BE AWWA CAST OR DUCTILE IRON.
5. PRESSURE TEST ALL FIRE LINE INSTALLATIONS AT 200 PSI FOR 2 HOURS.
6. SINGLE SOFT SEAT CHECK VALVE REQUIRED WHEN THE DISTANCE (LENGTH) FROM THE MAIN TO THE FLANGE ABOVE THE FLOOR IS GREATER THAN 50 FT.
7. APPROVED DOUBLE DETECTOR CHECK VALVE ASSEMBLY REQUIRED SEE PAGE 2-21
8. FLANGE ADAPTER TO BE 250 PSI RATED DUCTILE OR CAST IRON "UNION FLANGE" AS MFG. BY UNION FOUNDRY CO., UNIFLANGE OR EQUAL.
9. ALTERNATE MJ X 90° BEND MAY BE USED PROVIDED THAT 250 PSI RATED STEEL TIE RODS ARE UTILIZED TO ABOVE FLOOR FITTING. USE 2 RODS FOR 4"-6" PIPE, 3 RODS FOR 8", AND 4 RODS FOR 10"+. FOLLOWING ASSEMBLY, COAT ALL ROD ASSEMBLIES WITH BITUMASTIC SEALANT.

ID-090

SIDE BY SIDE RPBA DUAL INSTALLATION 3" OR LARGER



RPBA DUAL INSTALLATION

REDUCED PRESSURE BACKFLOW ASSEMBLY
FOR ASSEMBLIES 3" AND LARGER

NOTES:

- 1) MUST BE ON THE LATEST DEPT. OF HEALTH APPROVED LIST OF BACKFLOW PREVENTION ASSEMBLIES.
- 2) MUST BE INSTALLED ABOVE GROUND.
- 3) A CITY OF CHELAN CROSS CONNECTION SPECIALIST MUST BE PRESENT DURING INSTALLATION.
- 4) WHEN INSTALLED INSIDE A BUILDING, A FLOOR DRAIN SIZED TO ACCEPT MAXIMUM DISCHARGE FROM BOTH RELIEF ASSEMBLIES IS REQUIRED.
- 5) FREEZE PROTECTION IS THE RESPONSIBILITY OF THE OWNER.
- 6) SEE DWG. PAGE 10-14 FOR PIPE SUPPORTS. SET SUPPORTS ON CONCRETE BLOCKS.

ID-109

SECTION THREE TABLE OF CONTENTS

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SEWER MAIN EXTENSIONS**GENERAL:****INTRODUCTION:**

The items herein contained are the sewerage system standards, conditions, and specifications of the City of Chelan. These are minimums only and may be increased or altered to fit particular situations. Any material, design, standard, or testing not specifically addressed within this document shall be as per the current edition of American Public Works Association Standard Specifications for Road, Bridge, and Municipal Construction and/or Washington State D.O.E. Criteria for Sewage Works Design which are hereby adopted by this reference as if fully set forth herein. (See CMC 13.06.050 F)

STANDARDS AND CONDITIONS:

- A. When extension of the existing sewer system is required for service, an Agreement for Sewer Main Extension shall be entered into between the Developer and the City, substantially in the form which is attached hereto and incorporated herein by this reference as Appendix B, Exhibit 1.
- B. To initiate the Developer Extension process the Developer shall submit a sewer plan prepared by a Professional Civil engineer licensed in the State of Washington. Plan/Profile drawing shall be produced on mylar copy and CD electronic format.
- C. The licensed professional civil engineer shall certify that the design and construction of the sewerage collection system meets or exceeds all applicable standards.
- D. Obtaining necessary permits will be the responsibility of the Developer.
- E. Where franchises, easements or deeds to property are required it shall be the responsibility of the Developer to provide same and submit appropriate documentation to the City.
- F. Easements shall be as per Section 10 of this code.
- G. The Developer shall supply a certified "As-built" drawing meeting all standards established in Appendix B
- H. The Developer is required to supply insurance and bonding as per Section 13 of this code.
- I. Connection between the City's existing system and the new sewerage collection system shall be made by the Developer at the expense of the Developer.
- J. All main lines must be designed to provide for proper collection of sewerage from all lands served by the development. Extensions shall be required through and to the extremes of the property for future service as determined by the City.
- K. Pressure and leakage testing shall be accomplished as per specifications contained herein before final acceptance.
- L. Final acceptance shall not constitute acceptance of any unauthorized or defective work or material. The City shall not be barred from requiring the developer to reimburse the City for the removal, adjustment, replacement, repair or disposal of any unauthorized or defective work or material or from recovering costs for any such work or material.
- M. Sewer hook-ups shall be made by the lot owner. Sewer service shall not begin prior to payment by

of all applicable hook-up fees.

- N. Sewer Main Extension projects shall be conveyed to the City for operation and maintenance upon final project acceptance.
- O. For existing platted lots, the City may enter into latecomer agreements with Developers prior to installation of sewer mains and appurtenances, to provide for the reimbursement of a pro-rata share of the cost of construction by the sewer service users of any real estate who have not contributed to the original cost of such facilities and who subsequently connect to the sewerage collection system, pursuant to Chapter 12.28 of the Chelan Municipal Code as it now exists or as may be hereafter amended.
- P. Interim On-Site Septic Systems
 1. On-site septic systems are allowed in unincorporated areas (i.e., outside city limits) within the City's Urban Growth Area where a public, sanitary or combined sewer is not available within 750 feet of the property line in the following cases only:
 - a. In the case of single family residential land divisions, provided:
 - i. The parcel to be divided shall be at least 20 acres in size;
 - ii. The parcel may be divided into no more than four lots; and
 - iii. Each lot must be at least five acres in size.
 - b. To serve agricultural tourism uses and small-scale craft beverage production uses.
 2. On-site septic systems for agricultural tourism uses and small-scale craft beverage production uses must be abandoned if the agricultural tourism or small-scale craft beverage production use is discontinued.
 3. The property owner shall sign an agreement not to protest a future local improvement district (LID), late comer agreements or other pro rata sharing of costs to construct and extend public sewer to the property.
 - a. Said agreement shall describe the property, shall be recorded with the Chelan County auditor's office, and shall constitute a covenant running with the property. The agreement and all provisions of the on-site septic system approval shall bind the owner and all other persons subsequently acquiring any right, title or interest in or to the property.
 - b. In addition to the cost of constructing and extending public sewer to the property, the owner shall be required to pay all applicable General Facilities Charges.
 4. The property owner shall sign an agreement not to protest annexation of the property to the city. Said agreement shall allow the city to execute a petition for annexation on behalf of the owner if the owner does not do so when requested by the city; and shall describe the property, be recorded with the Chelan County auditor's office, and constitute a covenant running with the property. The agreement and all provisions of the on-site septic system approval shall bind the owner and all other persons subsequently acquiring any right, title or interest in or to the property.
 5. Future roadway development:
 - a. In the case of land divisions, the layout of the parcels shall accommodate future urban growth, providing for road access to all parcels created by the division and to neighboring properties.
 - b. In all cases, building setbacks from the front and, where applicable, side property lines must be adequate to accommodate future development of a street meeting the City's standards, which may include sidewalks, parking lanes, bicycle lanes, planter strips, and utility easements.
 - c. The City may impose requirements for future urban development,

- including requiring dedication of easements for future roadway and utility development.
- d. The property owner shall sign an agreement not to protest a future LID or other pro rata sharing of costs to construct and extend public streets to and adjacent to the property. Said agreement shall describe the property, shall be recorded with the Chelan County auditor's office, and shall constitute a covenant running with the property. The agreement shall bind the owner and all other persons subsequently acquiring any right, title or interest in or to the property.
6. The property owner shall comply with all requirements of the city's comprehensive land use plan, zoning and building codes, and development standards when dividing, developing, or redeveloping the property. In particular:
- a. On-site septic systems must comply with Chapter 14 CMC, Critical Areas.
 - b. The property owner shall improve the city right-of-way adjacent to the property in conformance with the City's standards or, in cases in which concurrent street improvement is not required (e.g., where access via private road is allowed), shall execute a waiver of protest for an LID to construct any street improvements required for access to or through adjacent property.

SPECIFICATIONS:**EXTENSIONS:**

All extensions to the sewer system must conform to the design standards of the City. The system must be capable of future expansions, if required, and be constructed of permanent materials. The following are required:

1. Plans and Specifications. The installation of sewer extensions shall be in accordance with construction plans and specifications approved by the City.
2. Sewer pipes shall be P.V.C. or ductile iron. City shall approve type.
3. Manholes shall be precast, 48" I.D. and shall generally conform to A.S.T.M. specification for equivalent size reinforced concrete sewer pipe. Outside drop structures shall be constructed of ductile iron. Inside drop structures may be constructed of ductile iron or P.V.C. pipe and fittings.
4. Pressure mains shall be ductile iron, P.V.C., or H.D.P.E.
5. All joints for sewers or pressure mains shall be of the rubber gasket type.
6. Pipe sizes shall be selected as required by standard engineering practice and shall conform to the overall sewerage plan of the City.
7. Minimum depth of sewer main and side sewer stubs shall be 4 feet over the top of pipe.
8. The sewer grades shall be sufficient to maintain a velocity of 2 feet per second at design flow. Minimum grade shall be one-half of one percent (0.005) for 8" diameter pipe, 0.008 for 6" and/or be in accordance with the Washington DOE "Criteria for Sewage Works Design".

9. Manhole covers shall be IFCO Number 619 or approved equivalent. Manhole cover surface shall be raised style B, lifting device shall be style 2 with one inch diameter pick hole. Where specified, locking cover shall be style 1.

GENERAL GRAVITY SEWER PIPE:

1. All material shall be new and undamaged. Unless otherwise approved by the City, the same manufacturer of each item shall be used throughout the work.
2. Where reference is made to an ASTM, AWWA or APWA designation, it shall be the latest revision at the time of construction, except as noted on the plans or special provisions of the plans.

PVC PIPE:

P.V.C. pipe shall conform with the provisions of ASTM D-3034, SDR35 unless otherwise specified. Rubber gaskets for P.V.C. pipe shall conform with ASTM 3034.

DUCTILE IRON PIPE:

1. Ductile iron pipe shall be standard thickness Class 50 cement lined unless otherwise specified and shall conform to the standards of USA Standard A-21.51 (AWWA C-151).
2. Rubber gasket pipe joints to be push-on-joint (Tyton) or mechanical joint (M.J.) in accordance with USA Standard A21.11 (AWWA C-111), unless otherwise specified.
3. Flanged connection shall conform to USA Standard B16.1.
4. Standard thickness cement lining shall be in accordance with USA Standard A21.4 (AWWA C-104).
5. The Contractor shall furnish certification from the manufacturer of the pipe and gasket being supplied that all specified tests have been made and the results thereof comply with the requirements of this standard.

DUCTILE IRON FITTINGS:

1. Ductile iron fittings shall be short body for pressure rating of 150 psi, unless otherwise noted. Metal thickness and manufacturing process shall conform to applicable portions of USA Standard A21.10, A21.11, B16.2 and B16.4.
2. Standard cement lining in accordance with USA Standard A21.4 (AWWA C-104).
3. Rubber gaskets for push-on-joint (Tyton) or mechanical joint (M.J.) in accordance with USA Standard A21.11 (AWWA C-111).
4. Gasket material for flanges shall be neoprene, Buna N chlorinated butyl, or cloth-inserted rubber. Type of ends shall be specified as push-on-joint (Tyton), mechanical joint (M.J.), plain end (P.E.), flanged (Fl.) or threaded (TH.).

GATE VALVES:

1. The minimum requirements for all gate valves shall, in design, material and workmanship, conform to the Standards of AWWA C-509.
2. Buried gate valves shall be iron body, bronze mounted, double disc, nonrising stem,

operation stems equipped with standard two (2) inch operation nut, and O-ring stem seals, suitable for installation with the type and class of pipe being installed. Ends to be as specified.

CHECK VALVES:

Check valves shall be for 150 psi working pressure, unless otherwise specified. Valve shall have adjustable tension lever and spring to provide nonslamming action under all conditions unless otherwise specified. Check valves shall be equal to Rensselaer List 340.

BOLTS IN PIPING:

Bolts shall be stainless steel or cast iron, zinc or chromium plated.

BEDDING AND BLOCKING CONCRETE:

Concrete shall be mixed from materials acceptable to the City and shall have a 30-day compressive strength of not less than 1,500 psi. The mix shall contain four (4) sacks of cement per cubic yard and shall be of such consistency that the slump is between 1 inch and 5 inches.

DETECTABLE MARKING TAPE:

Identifying tape shall be installed 12" to 18" above pipe crown over all pipe located within public street right-of-ways. Pipe locator ribbon shall be two inches (2") wide, plastic coated aluminum and shall be clearly marked, "CAUTION BURIED SEWER LINE" continuously along the length of the ribbon with minimum 1-1/2 inch letters. The ribbon shall be green in color for sewer pipe.

METHODS OF CONSTRUCTION:**PIPE LAYING:**

1. Pipe laying shall be in accordance with the latest edition of APWA Construction Manual for Municipal Public Works, Volume 3.
2. The first section of pipe not less than 300 feet in length installed by each crew shall be tested in order to qualify the crew and/or material. Successful installation of this section as determined by the City shall be a prerequisite to further pipe installation of said crew.
3. Each pipe shall be laid with bells upgrade with the invert of the pipe to the alignment and grade shown on the plans. Care shall be exercised to insure close concentric joints and a smooth invert. Open ends of pipe or fittings shall be temporarily blocked and covered when laying is not in progress.
4. Trench shall be kept dewatered during pipelaying.
5. Adjustment to the line and grade shall be done by scraping away or filling in and tamping approved pipe bedding material under the body of the pipe. Adjustment to the line and grade by wedging and blocking shall not be permitted.
6. The pipe shall be lowered into the trench by means of ropes, tripod, crane or any other suitable means. The pipe shall not be dropped or handled roughly. The pipe shall be checked for cracks and defects prior to use, and any defective pipe shall be rejected.
7. Wyes shall be installed as shown on the Standard Details as contained herein and at such

locations as are shown on the plans or as otherwise directed by the City. These items shall not be covered until the City has recorded their exact location.

8. Pipe laying shall start from the lowest point unless otherwise approved by the City.

PRESSURE SEWER PIPE:

1. All materials shall be new and undamaged. Unless otherwise approved by the City, the same manufacturer of each item shall be used throughout the work.
2. Where reference is made to an AWWA, APWA or ASTM designation, it shall be the latest revision at the time of construction, except, as noted on the plans or special provisions of the plans.
3. Non-metallic pressure sewer pipe shall have tracer wire attached to pipe as per these standards. Access points to tracer wire shall be as directed by Public Works.

PRESSURE SEWER MAINS:

1. P.V.C. pressure pipe shall conform to AWWA C-900. Joints shall be made up as recommended by the pipe manufacturer for pressure pipe. Shall be class 200 minimum.
2. Ductile iron pipe shall conform to AWWA C-100. Joints shall be made up as recommended by the pipe manufacturer for the particular joint as specified.
3. Pressure sewer mains shall be laid so that no high point exists except at the discharge manhole or an air release assembly. Valves with O-ring seals shall be opened and shut under pressure to check operation without leakage. Two-piece cast iron valve boxes shall be set as directed by the City.

JOINTS:

1. Joints shall not be covered until examined and approved by the City. Only pipe layers experienced with the type of gasket being used shall be allowed to lay the pipe. The City may demand proof of such experience before pipe laying may begin or be continued.
2. Joint material shall be used in accordance with the recommendations of the manufacturer. Pipe handling after the gasket has been affixed shall be carefully controlled to avoid bumping the gasket and thus knocking it out of position or loading it with dirt or other foreign material. Any gasket so disturbed shall be removed and replaced, cleaned and relubricated, if required, before the joint is attempted.
3. Care shall be taken to properly align the pipe before joints are seated. During insertion of the tongue or spigot, the pipe shall be partially supported by hand, sling or crane as required to minimize lateral pressure on the gasket and to maintain concentricity until the gasket is properly positioned. Pipe deflection and straightening shall be held to a very minimum once the joint is seated to prevent creep of the joint.
4. Sufficient pressure shall be applied in making the joint to assure that the joint is seated as defined in the standard installation instructions provided by the pipe manufacturer. Sufficient restraint shall be applied to the line to assure the joints, once seated, are held so, by tamping approved pipe bedding material under and alongside the pipe or otherwise. At the end of the day's work, the last pipe shall be blocked in such a manner as may be required to prevent creep during down time.

ALIGNMENT & GRADE TOLERANCE:

1. The maximum tolerance from true line and grade shall be as follows:
 - a. Maximum deviation from established line and grade shall not be greater than one thirty-second (1/32) inch per inch of pipe diameter and not to exceed one-half (1/2) inch per pipe length.
 - b. No adverse grade in any pipe length will be permitted.
 - c. The difference in deviation from established line and grade between two successive joints shall not exceed 1/3 of the amounts specified above.
 - d. Refer to DOE Drainage Design Manual for maximum deflection.

TRENCH EXCAVATION:

Trenching shall be as per Section One of this code

SHORING:

The Developer shall provide and install shoring as necessary to protect workmen, the work, existing utilities, and other properties.

TUNNELING:

Tunneling may be ordered by the City or agency having jurisdiction over the roadway. The Developer may tunnel in lieu of trenching for deep cuts.

JACKING OR BORING - ROADWAY CROSSINGS:

The Developer may use any method which provides satisfactory results and is acceptable to the governmental agency having control of the road and to the City, provided that the Developer restores the crossing to its original condition. Normally, these crossings require the placing of steel, cast iron or concrete pipe casing by jacking or tunneling and laying the sewer line within the casing.

PIPE BEDDING:

Pipe bedding shall be as per Section One of this code.

CONCRETE BLOCKING AND ENCASEMENT:

Blocking shall be installed at changes in direction and in a manner acceptable to the City. Blocking and encasement of pipe shall be as shown in Standard Detail for water lines or as otherwise directed by the City.

FOUNDATION GRAVEL:

Foundation gravel shall be coarse graded gravel or crushed rock passing a 3-inch mesh. Pit run passed through a 3-inch screen thoroughly compacted may be used provided that it is, in the opinion of the City, properly graded and otherwise suitable.

MANHOLES:

1. Manholes shall be constructed as shown in Standard Details for manholes and drop manholes. Manholes shall be precast reinforced concrete. Manhole ring and covers shall be adjusted to the elevation required by the City prior to final acceptance of the work. Invert

elevations in shall be one tenth of a foot (0.1 foot) higher than invert elevations going out.

2. The manhole base slab shall be placed on firm soil. If the foundation material is inadequate, the Developer shall use foundation gravel, bedding gravel or concrete under the normal base to support the manhole.
3. All joints and connections to manholes shall be made with cement mortar or other approved jointing material and shall be watertight. Joints and connection shall be finished on interior and exterior of manhole. There shall be a 3/4 inch thick smooth plaster finish on the inside and outside of leveling concrete blocks at top of manholes.
4. Manholes shall be placed at every angle point, street and alley intersection, and catch basin junction, and in no case shall manholes be spaced greater than 500 feet apart. A connection serving more than one building lot shall require a manhole.
5. Where manholes are installed over an existing sewer main, the manhole base shall be poured-in-place on firm soil or foundation material as described above. Sewer main inside manhole will not be cut away until approved by City.

INSTALLATION STAKING:

The Developer shall furnish grade, cut and finish staking for the excavation and installation of sanitary sewer mains, manholes and appurtenances.

CLEANING AND FLUSHING:

1. Prior to pipe testing, all pipes shall be cleaned and flushed.
2. All debris flushed out shall be removed at the first manhole where its presence is noted. In the event cemented or wedged debris, or a damaged pipe exists, the Developer shall remove the debris and replace the damaged pipe.

TESTING OF GRAVITY SEWERS:

Method of testing gravity sewers and manholes shall be at the option of the City engineer.

WATER TEST:

1. Tests for watertightness shall be made by the Developer in the presence of the City. A test shall be made of every section of the sewer, including the side sewers, after completion of backfill. Where the groundwater table is so high as to preclude a proper exfiltration test, an infiltration test may be used.
2. The exfiltration test shall be made by plugging the inlets of the lower manhole and filling the test section with water to a height of six (6) feet above the crown of the sewer at the upper end of the sewer being tested.
3. In no case shall the static level be less than six (6) feet above the water table at the upper end of the sewer being tested. Where the static pressure on the lower manhole would exceed 15 feet, the Developer shall test the sewer between manholes in two or more sections. The Developer shall provide for sectional testing by installing tees in the main line. The tees shall be of a type that permit plugging of both the upper and lower run of the tee. The required static water head

shall be obtained by installing vertical lengths of pipe in the tee or from the upper end of the sewer pipe being tested at shallow manholes.

4. At the discretion of the Public Works Director, the Developer shall provide a groundwater observation well at each manhole for determining the level of groundwater during the test. The observation well shall consist of one-inch plastic pipe installed vertically adjacent to the manhole. The lower end of the test well shall be placed in a one (1) cubic yard pocket of washed gravel and shall be at the same elevation as the invert of the manhole. The upper end of the test well shall be a maximum of two (2) feet below the finished grade elevation and left exposed until completion of the test.
5. The time of exfiltration tests shall be a minimum of one (1) hour. The leakage during the test shall not exceed the flowing allowances:

ALLOWABLE LEAKAGE - EXFILTRATION						
Allowable Leakage in gal/100 linear feet/hr. Head above crown on lower end of test section.						
Pipe	6 Ft.	8 Ft.	10 Ft.	12 Ft.	14 Ft.	16 Ft.
6	0.6	0.7	0.7	0.8	0.8	0.9
8	0.8	0.9	1.0	1.0	1.1	1.2
10	1.0	1.1	1.2	1.3	1.4	1.5
12	1.2	1.3	1.4	1.6	1.7	1.8
15	1.5	1.7	1.8	2.0	2.1	2.3
18	1.8	2.0	2.2	2.3	2.5	2.7
24	2.4	2.6	2.9	3.1	3.4	3.6
Repair by chemical grouting will not be allowed.						

6. For static head above the basic six feet at the crown of the sewer at the lower end of the test section, the allowable leakage shown above shall be increased at a ratio of 5 percent per foot increase.
7. Where the groundwater exceeds a height of six feet above the crown of the sewer at the upper end of the test section, the section shall be tested by infiltration. The infiltration test shall be conducted by placing a plug in the inlet sewer at the upper manhole and inserting an approved measuring device in the inlet sewer at the lower manhole. Prior to making measurements, care shall be taken to assure that the flow over or through the measuring device is constant. A minimum of four measurements shall be made over a period of one hour.

AIR TESTING:

1. The following procedures shall be used in conducting the low pressure air test. The Developer shall furnish all facilities and personnel for conducting the test under the

observation of the City. The equipment and personnel shall be subject to the approval of the City.

2. The Developer may desire to make an air test prior to backfilling for his own purposes. However, the acceptance air test shall be made after backfilling has been completed and compacted.
3. All wyes, tees, or end of side sewer stubs shall be plugged with flexible joint caps, or acceptable alternate, securely fastened to withstand the internal test pressures. Such plugs or caps shall be readily removable and their removal shall provide a socket suitable for making a flexible jointed lateral connection or extension. No double plugs shall be allowed.
4. Immediately following the pipe cleaning, the pipe installation shall be tested with low-pressure air. Air shall be slowly supplied to the plugged pipe installation until the internal air pressure reaches 4.0 pounds per square inch greater than the average back pressure of any groundwater that may submerge the pipe. At least two minutes shall be allowed for temperature stabilization before proceeding further.
5. The requirements of this specification shall be considered satisfied if the time required in seconds for the pressure to decrease from 3.5 to 3.0 pounds per square inch is greater than the average back pressure above the center of the pipe. The following chart shall determine the time requirement:

Size of Pipe	Seconds per Lineal Foot of Pipe
4 inch	0.11
6 inch	0.25
8 inch	0.46
10 inch	0.72
12 inch	1.04
15 inch	1.63
18 inch	2.35
21 inch	3.20
24 inch	4.18

6. The use of air pressure for testing sewer lines creates hazards that must be recognized. The Developer shall be certain that all plugs are securely blocked to prevent blow outs. A supply air regulator shall be installed on the air supply line to the sewer that shall permit a maximum of 10 psi in the line to be tested. All pressure shall be relieved from the sewer section being tested prior to removal of test plugs.

TESTING OF PRESSURE SEWER MAINS:

Prior to acceptance of the project, the pressure line shall be subjected to a hydrostatic pressure test equal to three times the maximum working pressure at the high point of the line. Any leaks or imperfections developing or occurring under the test pressure shall be remedied by the developer

before final acceptance of the project. Leakage measurement method shall be performed by the Developer and approved by the City. Test pressure shall be maintained while the entire installation is inspected. The developer shall provide all necessary equipment and shall perform all work connected with the tests. Insofar as is practical, test shall be made with pipe joints and fittings exposed for inspection. Maximum leakage allowable shall be .05 gallons per hour per inch of pipe diameter per 100 feet of pipe.

SIDE SEWERS:

1. See Chelan Municipal Code 13.06.030.

SEWER CONNECTION INSPECTIONS

Sewer connection inspections are required as per the Public Works right-of-way permits. All connection inspections require a report filed with Public Works using the City Standard Form in Appendix B, Exhibit 5.

SEPTIC TANKS:

1. See Chelan Municipal Code 13.06.040.

PUMP STATIONS:

1. Pump stations shall only serve those properties which cannot otherwise be served by conventional gravity sewers or septic tanks.
2. Pump stations to be maintained by the City shall be approved for design by the City.
3. Pump stations shall be approved on an individual basis by the City.

TELEVISION INSPECTION

Upon completion, and prior to acceptance, of installation or repair of any sewer main, all sewer mains shall be video and television inspected by the City. This inspection and recording shall be performed in the presence of the City inspector and the Developer. Any defects in material or workmanship discovered shall be repaired by the Developer prior to acceptance. The City will charge the Developer a reimbursement fee to cover all required man hour costs.

TYPICAL BUILDING SEWER CONNECTION:

MATERIALS ALLOWED: (Main to property line)

PVC pipe and fittings ASTM D-3034 (molded gasket type bell, usually 20 foot length).

GENERAL REQUIREMENTS:

1. Service to single family residences shall be 4" diameter minimum. All others shall be 6" diameter minimum or larger as per Department of Ecology requirement.
2. A cleanout is required just outside the building on new construction. An additional cleanout is required at intervals of not more than 100' from the sewer main or after each 135° of

accumulated bend of fittings.

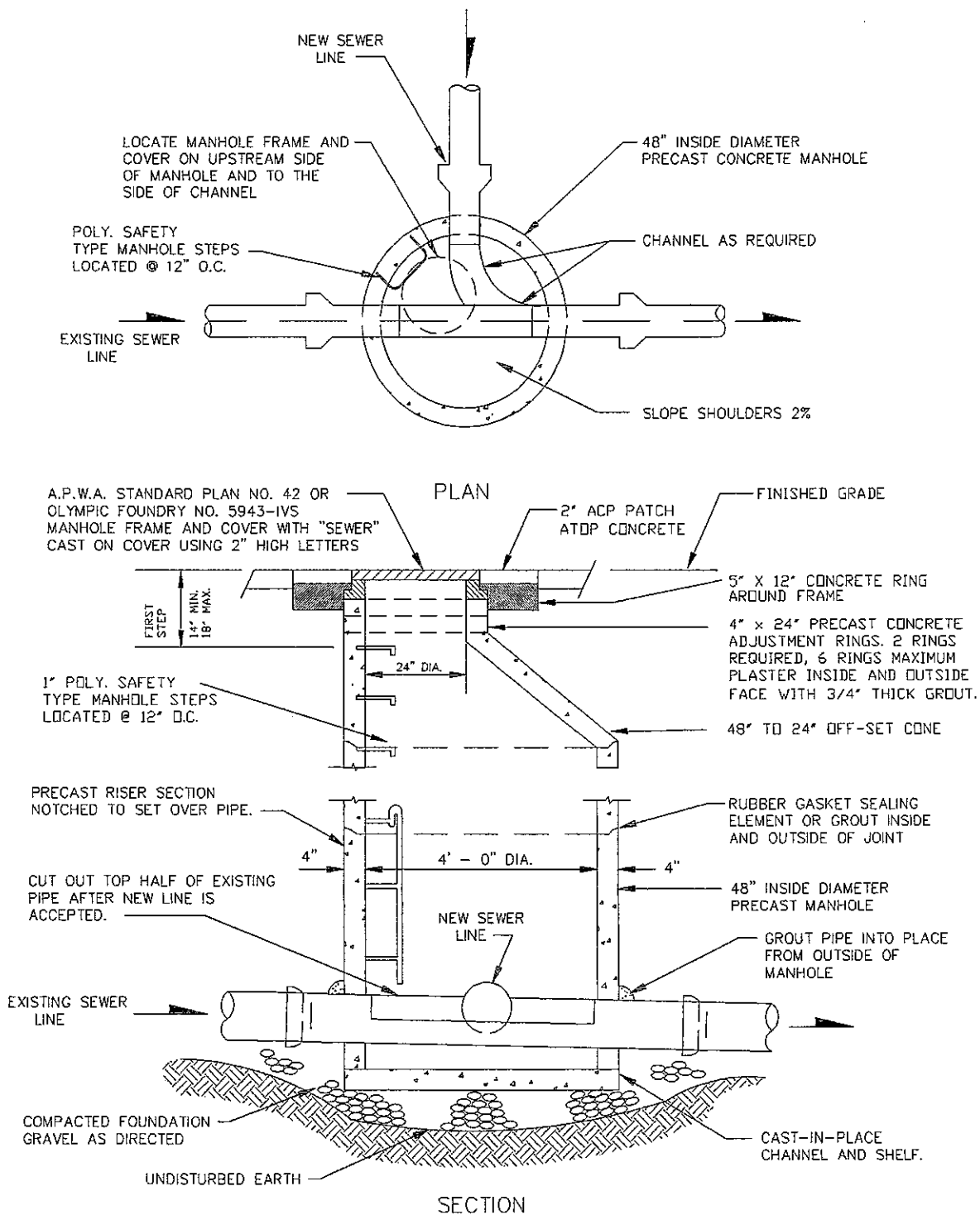
3. If installation is near a tree, cutting off gasketed bell and using glue couplings may be required by City engineer.
4. Pipe must be installed bell up.
5. Minimum slope 2%, no maximum.
6. If the lowest floor served is lower than the lowest manhole lid in the street, a backflow valve must be installed.
7. Pipe must be bedded and any rock contacting pipe must be no larger than 1".
8. Abandoned septic tanks must meet requirements of the current or as hereafter amended plumbing code.
9. Property owner shall have maintenance responsibility for the entire sewer lateral from the main to the residence.
10. Storm sewers may not under any circumstances be connected to the sanitary sewer system.
11. Developer shall install sewer laterals from the main to the property line. The end of the lateral shall be at least four feet (4') deep unless building lot requires an unusual depth. The lateral shall be capped and marked with a white painted treated 2 x 4 extending from in front of the cap bottom vertically to at least 24" above ground level. An eighteen inch long #4 rebar shall then be driven flush with the ground marking the 2 x 4 location.

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SEWER DESIGNS

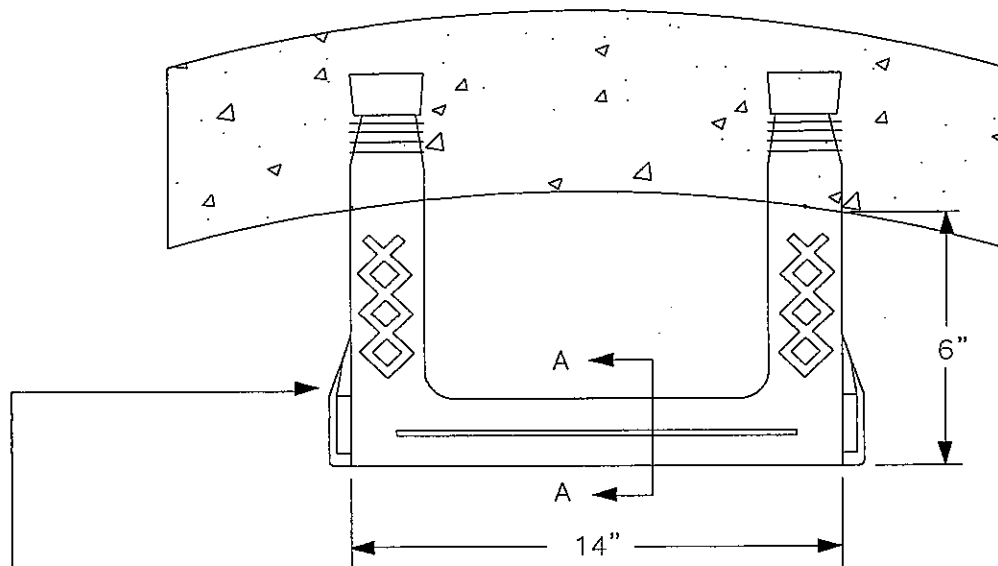
NEW MANHOLE ON EXISTING SEWER



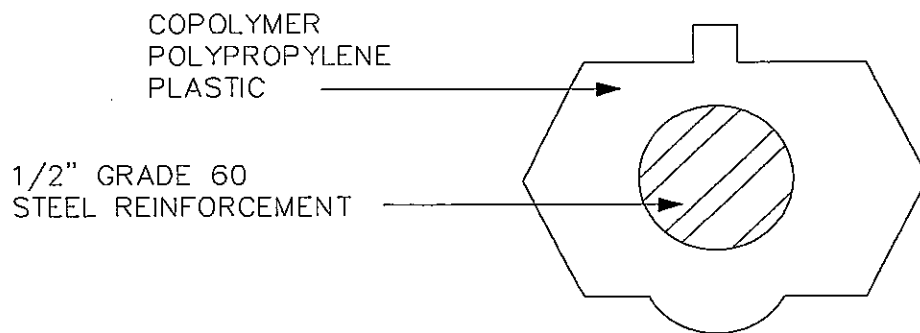
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MANHOLE STEP

Note: Embedment depth to meet manufacturer's specifications.



'MA INDUSTRIES, INC.'
1/2" GRADE 60 STEEL
REINFORCED COPOLYMER
POLYPROPYLENE PLASTIC
PS2-PF MANHOLE STEPS

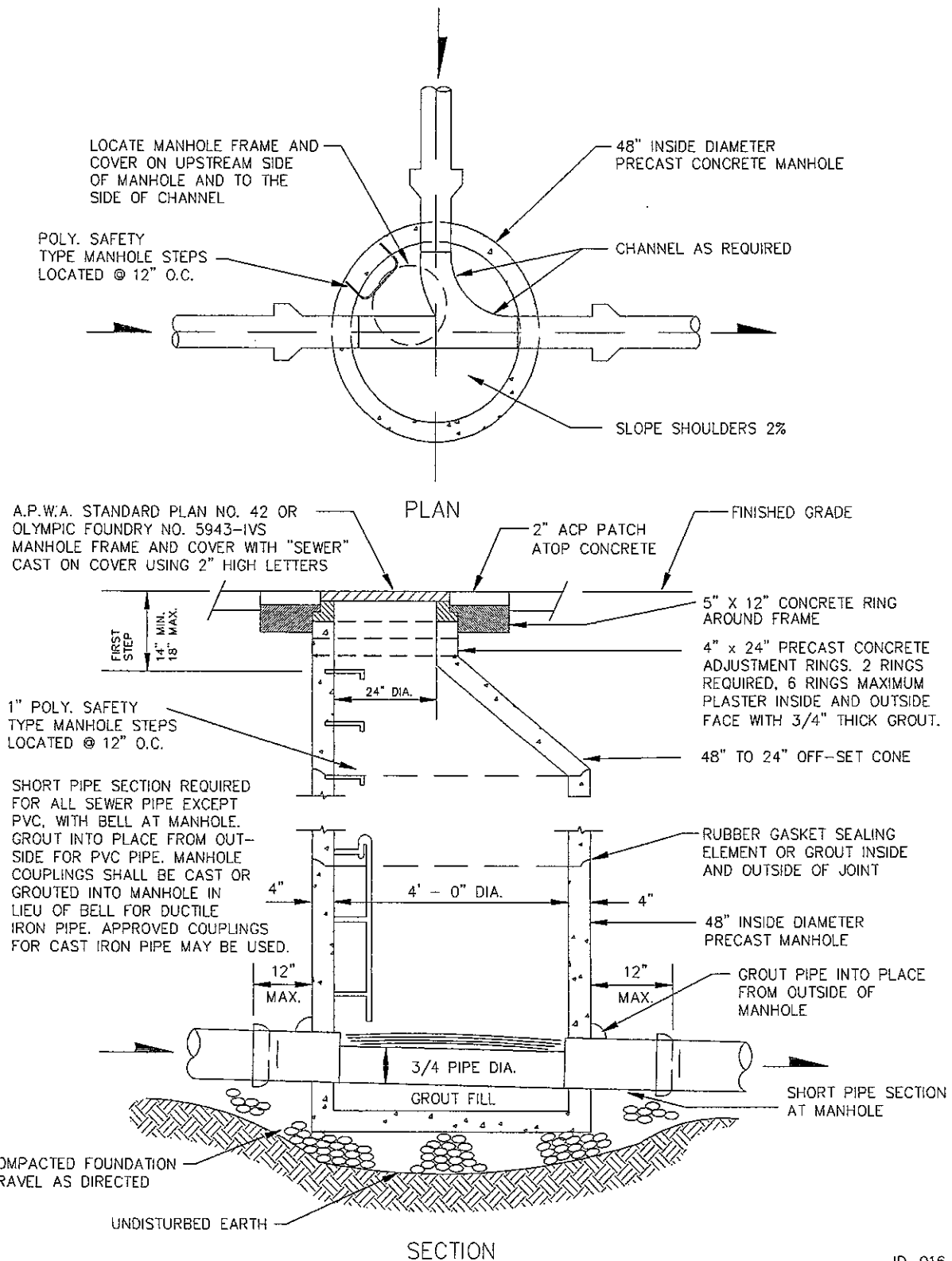


SECTION A-A

N.T.S.

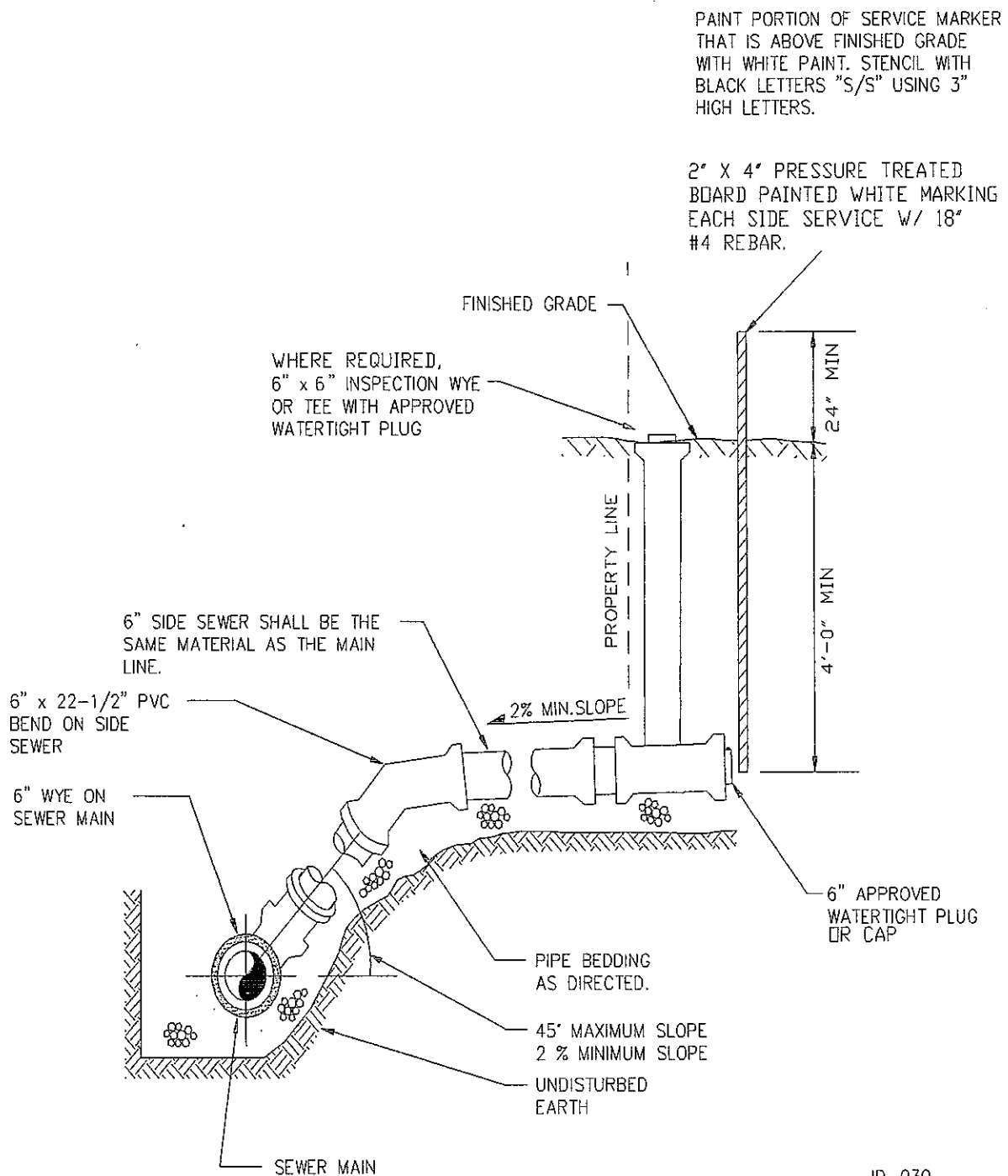
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TYPICAL PRECAST MANHOLE



ID-016

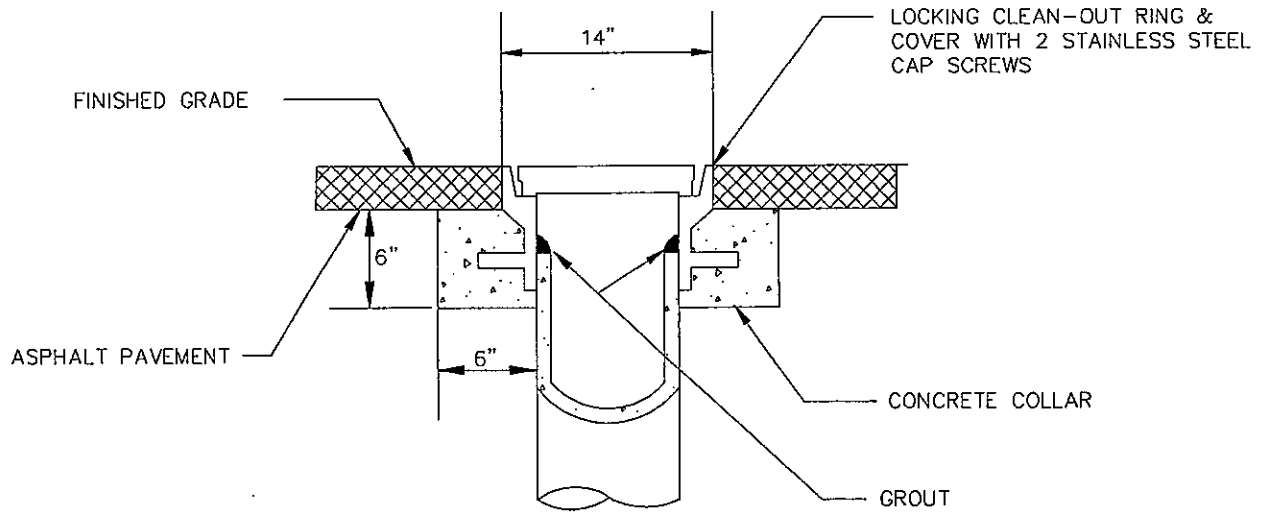
SIDE SEWER DETAILS



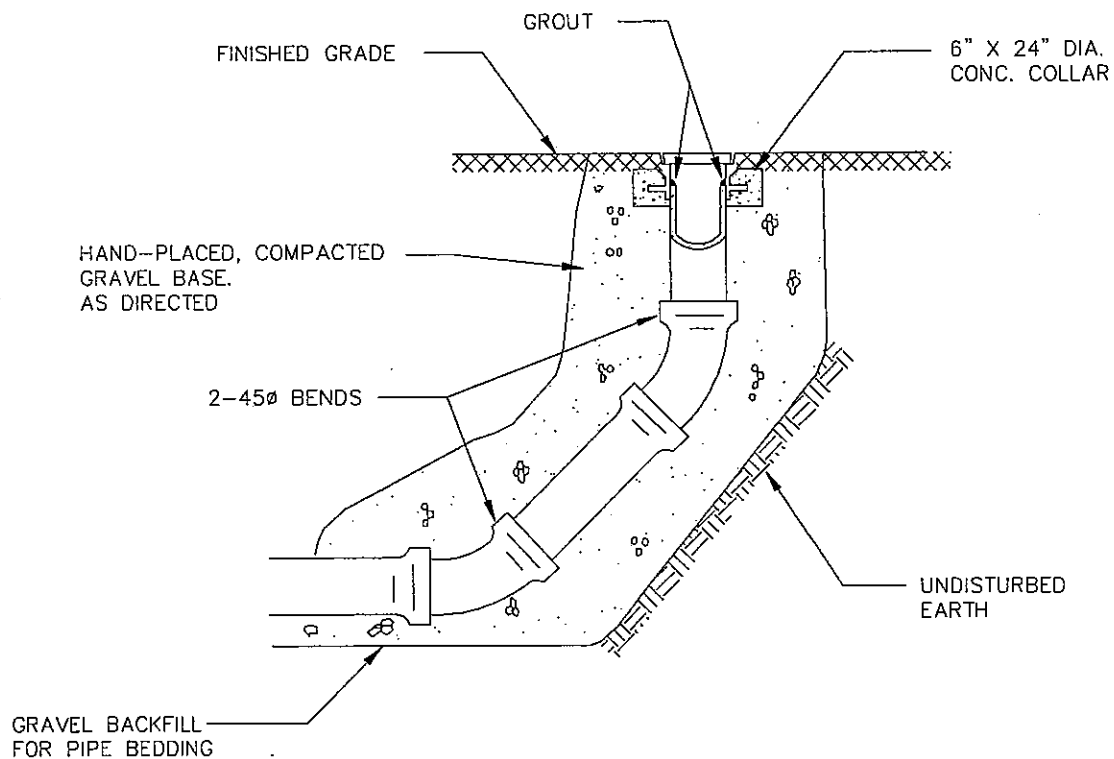
ID-030

NOTES:

- 1) PROVIDE CONCRETE BLOCK BENEATH SEWER TEE FOR SLOPES EXCEEDING 15%
- 2) IF LOWEST FLOOR SERVED IS LOWER THAN MANHOLE LID, A CHECK VALVE MUST BE INSTALLED AT PROPERTY LINE

SANITARY SEWER CLEANOUT - 8" MIN.

STREET USE

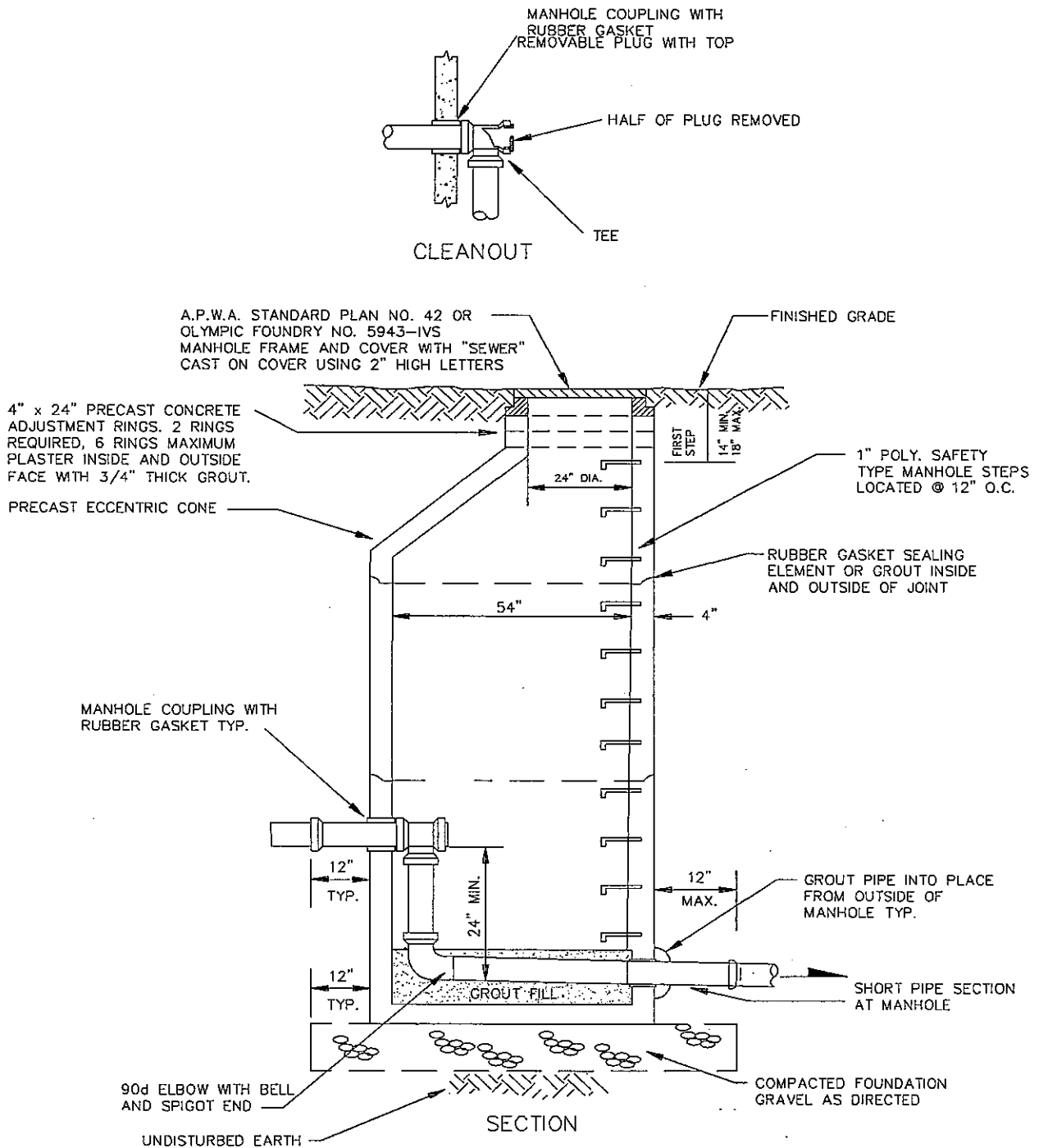


NON STREET USE

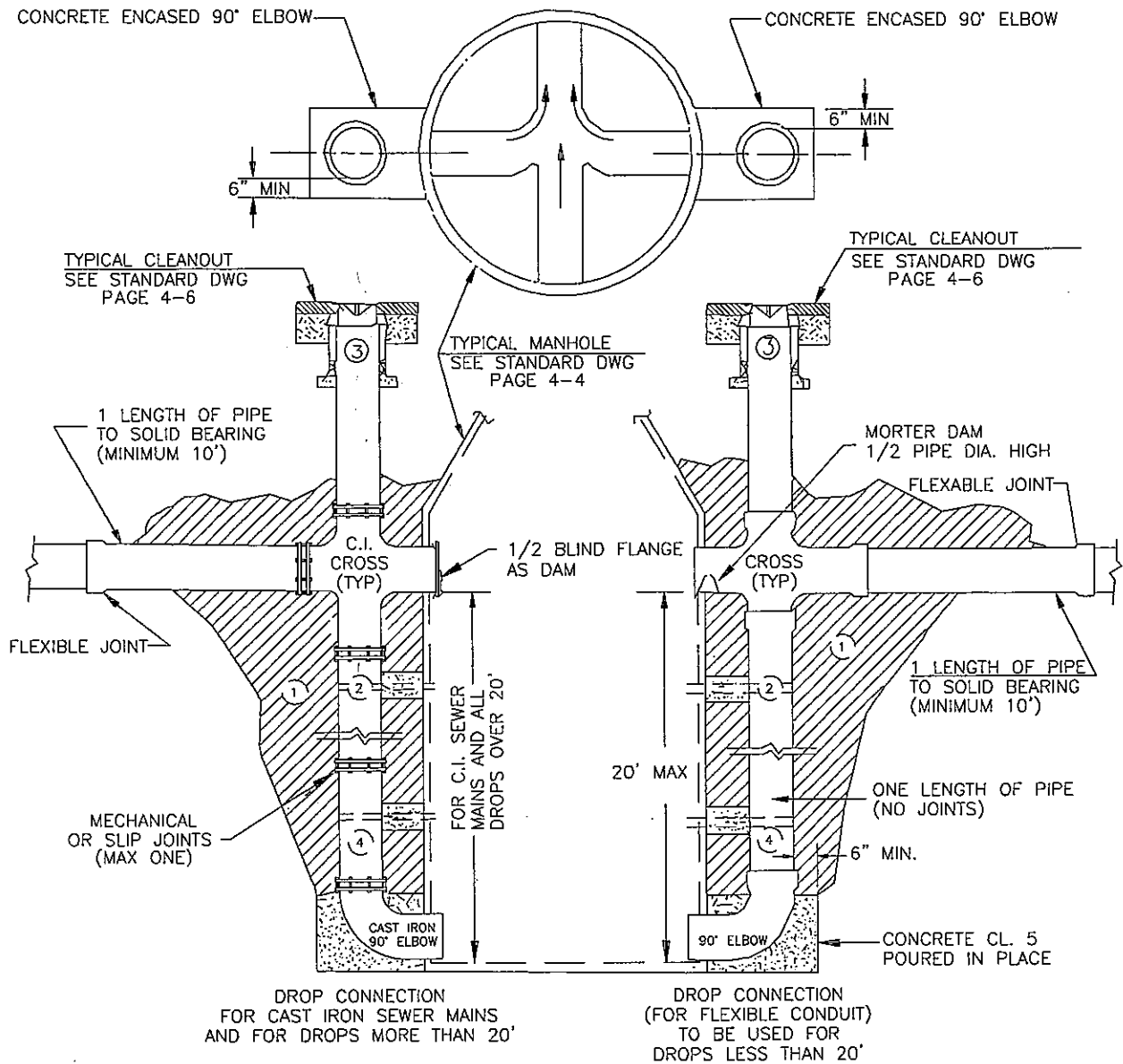
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INSIDE DROP SANITARY SEWER MANHOLE

Note: See page 4-4 for channel finishing requirements.



ID-036

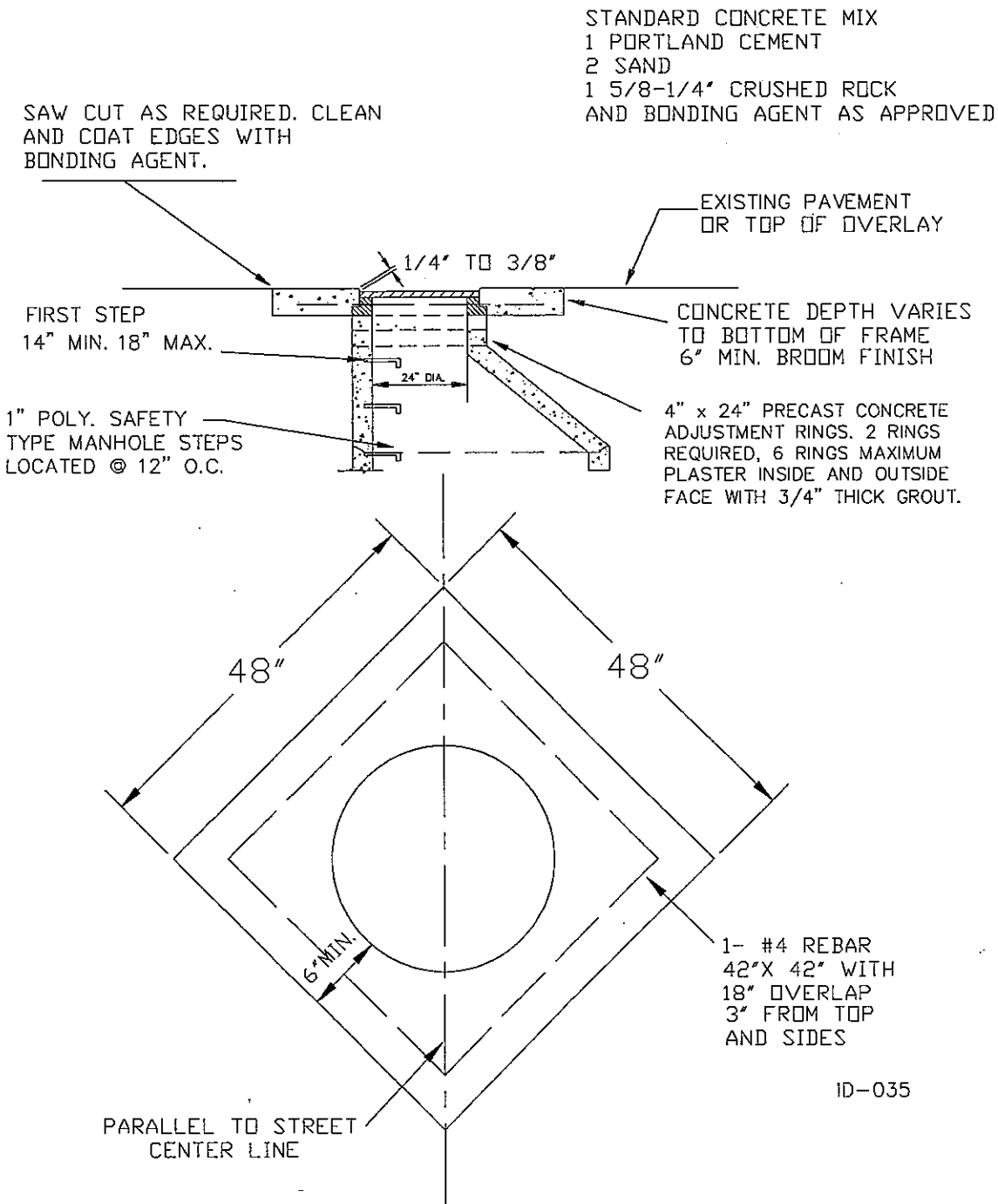
OUTSIDE DROP SANITARY SEWER MANHOLE**NOTES:**

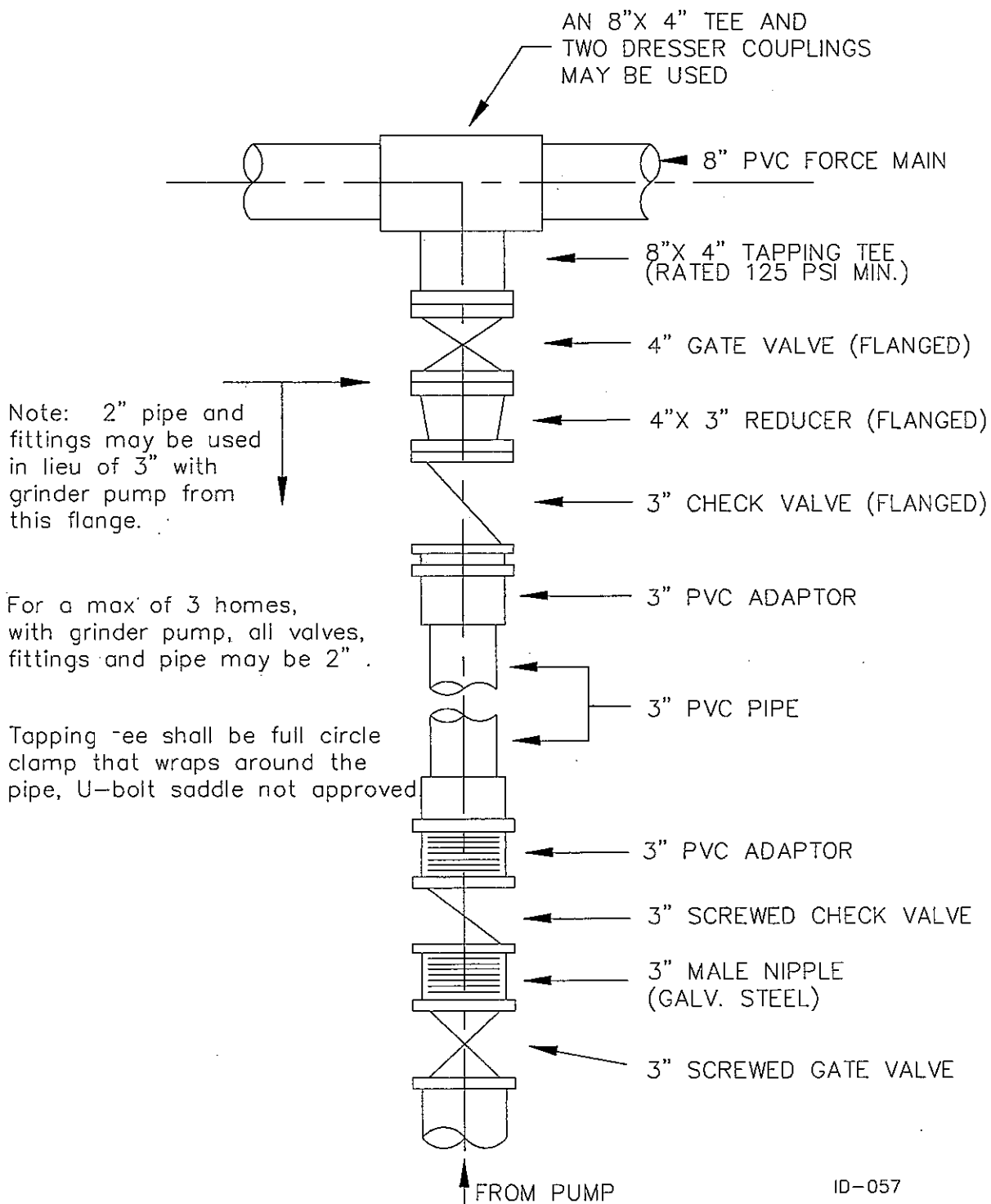
1. SELECT NATIVE BACKFILL MATERIAL OR IMPORTED BACKFILL MATERIAL COMPACTED PER SPECIFICATIONS
2. STAINLESS BANDS WITH CONCRETE SPACER TO MANHOLE (5' MAX. SPACING, 1' MIN.)
3. SEE STD DWG PAGE 4-6 FOR CLEANOUT DETAILS (NOT SHOWN)
4. DROP CONNECTION PIPE DIAMETER AND FITTINGS SHALL BE EQUAL TO OR GREATER THAN THE DIAMETER OF THE SEWER MAIN.
5. SEE PAGE 4-4 FOR CHANNELING FINISH REQUIREMENTS.
6. ALL OUTSIDE DROP M.H. SHALL BE CONSTRUCTED WITH DUCTILE IRON PIPE.

ID-118

MANHOLE GRADE ADJUSTMENT DETAIL (For existing manholes)

- NOTE:** 1. Remove existing frame & lid, bricks, conc. collar and top riser section. Install new reinforced concrete manhole riser section (field verify height) and maximum of four concrete adjustment rings (16") and existing frame and collar.



FORCE MAIN SERVICE CONNECTION

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5A. GENERAL

The overall goal of this chapter is to encourage the uniform development of an integrated, fully accessible public transportation system that will facilitate present and future travel demand with minimal environmental impact to the community as a whole. All design standards shall follow accepted engineering practices with an emphasis on safety.

The street layout of every development shall be in conformance with these standards and with the City's adopted comprehensive plan, including the Transportation Element thereof, and shall provide for the continuation of major streets which serve property contiguous to the development. Street networks shall provide ready access for fire and other emergency vehicles and the Council, upon recommendation of the planning commission, may require additional access points if such are found to be necessary to protect the public safety. Street layout in mountainous areas may allow alignment cross section shifts as approved by the City engineer to accommodate topographical conditions.

5B. PUBLIC WORKS CONSIDERATIONS**5B.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.

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

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

1. Conditions and standards as set forth in the City of Chelan Water Comprehensive Plan, most current edition.
2. Conditions and standards as set forth in the City of Chelan Comprehensive Sanitary Sewer Plan, most current edition.
3. Rules and regulations as adopted in the City of Chelan Municipal Code.
4. Criteria set forth in the City of Chelan Traffic Circulation Enhancement Study.
5. Criteria set forth in the Local Agency Guidelines as amended and approved by Washington State Department of Transportation, most current edition.
6. Conditions and standards as set forth in the WSDOT Design Manual as amended and approved by WSDOT.
7. U.S. Department of Transportation Manual on Uniform Traffic Control Devices (MUTCD) as amended and approved by Washington State

- Department of Transportation.
8. DOT Construction Manual as amended and approved by Washington State Department of Transportation.
 9. Standard Specifications for Road, Bridge, and Municipal Construction as amended and approved by Washington State Department of Transportation.
 10. Policy on Design of Highways and Streets by American Association of State Highway and Transportation Officials (AASHTO).
 11. Trip Generation Manual by Institute of Traffic Engineers (ITE)
 12. Conditions and standards as set forth by the state of Washington, Department of Labor and Industries.
 13. Other specifications not listed above as may apply when required by the City of Chelan.

5B.020 Plan Checklist

The Plan Checklist is provided in Appendix E of the Development Standards.

5B.030 Plan and Profile Submittal

A plan and profile of the proposed street meeting all drafting standards of Section 8 and showing the following data shall be submitted to the City engineer for approval prior to preliminary development approval and construction:

Plan:

- Street alignment in stations of one-hundred foot intervals;
- Bearings on street centerline; (construction drawings only)
- Curve data on all horizontal curves, 50' stations minimum;
- Right-of-way lines and width for proposed streets;
- All topography within the right-of-way limits, including all utilities;
- Label all streets and adjoining subdivisions;
- Typical roadway section of proposed street;
- Existing and proposed drainage structures indicating direction of flows; and
- Map size shall be twenty four inches by thirty six inches. A one & one half-inch margin shall be provided on the left edge and a one half-inch margin shall be provided on the other edges of the map. All mapping to be drawn on mylar sheets.

Profile:

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

5B.040 Workmanship and Materials

Workmanship and materials shall be in accordance with Sections 1-05 and 1-06 of the

current edition of the Washington State Department of Transportation Standard Specifications for Roads, Bridges, and Municipal Construction.

5B.050 Bonding and Insurance

Developers shall meet all standards as set forth in Section 13 of this manual, "Bonding and Liability Insurance."

5B.060 Latecomers

For existing platted lots, the City may enter into latecomer agreements with developers prior to installation of infrastructure to provide for the reimbursement of a pro-rata share of the cost of construction by the service users of any real estate who have not contributed to the original cost of such facilities and who subsequently connect to the system, pursuant to Chapters 12.28 and 13.36 of the Chelan Municipal Code as it now exists or as may be hereafter amended.

5B.070 Streets Vacated by Operation of Law

The City will not issue building permits to property of lots served by streets or alleys vacated by operation of law unless recorded and dedicated access is provided meeting full street standards of the City.

5C. STREETS**5C.010 General Notes (Street Construction)**

- A. All workmanship and materials shall be in accordance with City of Chelan standards and the most current copy of the WSDOT/APWA Standard Specifications for Road, Bridge and Municipal Construction. In cases of conflict, the most stringent standard shall apply.
- B. The contractor shall be in compliance with all safety standards and requirements as set forth by OSHA, WISHA and the Washington State Department of Labor and Industries.
- C. 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.
- D. All approvals and permits required by the City of Chelan shall be obtained by the contractor prior to the start of construction.

- E. If construction is to take place in another jurisdiction's right-of-way (i.e., the County or the State), the contractor shall notify the jurisdiction and obtain all the required approvals and permits.
- F. A pre-construction meeting shall be held with the City of Chelan Public Works Department a minimum of 72 hours prior to the start of construction.
- G. 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 1-800-424-5555 a minimum of two business days prior to any excavation.
- H. 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.
- I. All surveying and staking shall be performed per the corresponding sections of the City of Chelan Development Standards Manual.

5C.020 Traffic Impact Analysis

A Traffic Impact Analysis (TIA) is a specialized study of the impacts that development will have on the surrounding transportation system. The TIA is an integral part of the development impact review process. It is specifically concerned with the generation, distribution, and assignment of traffic from the new development, as defined in Appendix A. "New development" shall not include individual one or two-family residential lots within plats.

In accordance with the City of Chelan Traffic Impact Analysis Guideline, a full or partial TIA may be required if:

- 1. The new development generates 20 or more new PM peak hour trips; or
- 2. The project requires a SEPA review; or
- 3. The new development will generate more than 50 peak hour trips at a time other than the PM peak hour.

The TIA Guidelines are provided in Appendix D of the Development Standards Manual.

5C.030 Minimum Street Design Standards

Functional Classification		Local/ Private	Minor Collector	Major Collector	Principal Arterial
Minimum horizontal curve radius on inside face of curb	Terrain ≤ 15% Mountainous > 15%	80' 80'	100' 80'	150' N/A	300' N/A
Maximum Grade in %	Terrain ≤ 15% Mountainous > 15%	10% 12%	10% 12%	10% N/A	8% N/A
Minimum roadway width, curb face to curb face	Terrain ≤ 15% Mountainous > 15%	28' 28'	32' 28'	52' N/A	46' (Note 4) N/A
Sidewalk minimum width (add 0.5' for curb) (see note 1)	Terrain ≤ 15% Mountainous > 15%	5' both sides 5' one side	5' both sides 5' both sides	5' both sides N/A	10' both sides (Note 5) N/A
Bank Slope (h:v)	Terrain ≤ 15% Mountainous > 15%	2:1 2:1	2:1 2:1	2:1 N/A	2:1 N/A
Minimum Right of Way	Terrain ≤ 15% Mountainous > 15%	50' (Note 2) 38' (Note 3)	54' 43' (Note 3)	74' N/A	100' N/A
Parking Lane	Terrain ≤ 15% Mountainous > 15%	1 ⊕ 8' 1 ⊕ 8'	1 ⊕ 8' 1 ⊕ 8'	2 ⊕ 8' N/A	Note 6 N/A
Bike Lanes	Terrain ≤ 15% Mountainous > 15%	N/A N/A	N/A N/A	2 ⊕ 6' N/A	2 ⊕ 6' N/A
Traffic Lanes	Terrain ≤ 15% Mountainous > 15%	2 ⊕ 10' 2 ⊕ 10"	2 ⊕ 12' 2 ⊕ 10'	2 ⊕ 12' N/A	Note 7 N/A
Planter Strip	Terrain ≤ 15% Mountainous > 15%	2 ⊕ 6' N/A	2 ⊕ 6' N/A	2 ⊕ 6' N/A	2 ⊕ 6' (Note 8) N/A
Utility Easement (See Note 9)	Terrain ≤ 15% Mountainous > 15%	2 ⊕ 6' N/A	2 ⊕ 6' N/A	2 ⊕ 6' N/A	2 ⊕ 6' N/A
Road Surface (See Note 10)		3" asphalt, 3" top course, 4" base	3" asphalt, 3" top course, 4" base	4" asphalt, 4" top course, 6" base	4" asphalt, 4" top course, 6" base

Notes to Table:

- 10' width in commercial or industrial areas as required by City engineer.
- Private road right-of-way width may be reduced to 40' at discretion of City engineer.
- For mountainous terrain, an additional 2 feet of right-of-way is provided behind the back of curb and/or sidewalk.
- Based on two 11-foot lanes, one 12-foot center lane, and two 6-foot bike lanes. Actual width will be determined by number of travel lanes based on the projected volume of traffic, and by on-street parking requirements.
- The minimum sidewalk width for arterials will be six feet for all other areas not designated within City planning documents.
- Parking lane required in designated areas per approved planning documents.
- Actual width will be determined based on two-five travel lanes depending on projected volume of traffic using the facility. (Refer to Transportation Plan.)
- Planter strips will be required for all areas where the sidewalk width is between 5-8 feet; otherwise, street trees may be included within the 10-foot sidewalk width. The City engineer will make the final determination.
- Utility easement strips will be located immediately adjacent to the back of sidewalk and/or street right-of-way edge. For mountainous terrain areas, non-City utilities will be located within the roadway prism at the location approved by the City engineer. The easement strips are provided for all non-City utilities and snow removal.
- Base course depths may require a design depth by a soils engineer if determined by the City engineer.

Additional notes:

11. Rolled curb (see City standard plan) is allowed at the discretion of the City Engineer on local and minor collector streets in excess of 32' between curbs in width, except in mountainous terrain where access or parking is not permitted.
12. The City Engineer may allow reduction in paving width to a minimum 24' and an increase in grade up to a maximum of 18% on mountainous terrain where no driveway access is provided to the street and no feasible alternative exists, providing all emergency services approve of the same.
13. Cut slopes steeper than 2:1 may be used where favorable soil conditions exist or stepped construction is used, when approved by the City engineer. The City engineer may also require slopes flatter than 2:1, depending on native soil conditions.
14. Right of way limits shall be per the information presented above and as depicted on the street cross-section details.
15. Street design standards specified in approved plans, including the Non-Motorized Transportation Implementation Plan, the Downtown Master Plan, and any adopted neighborhood plans, may be substituted for the standards shown in the table above at the discretion of the City engineer.
16. Switch backs, when necessary, shall be designed with a minimum centerline radius of 55' and a minimum inside radius of 25' with pavement widening on the inside edge accordingly. The limits of additional pavement widening will be confirmed based on design vehicle turning radius requirements as depicted on approved "auto-turn" exhibits. The City engineer may also require pavement widening on other curve sections as deemed necessary.
17. In a Planned Development District, curbside sidewalks may be replaced as a functional equivalent by a separate path or trail with equivalent surface and dimensions, with all-weather impervious surfacing on a public easement, when approved as part of the Homeowners Association ownership and responsibility in lieu of public sidewalks as normally placed adjacent to the roadway and serving the same function.
18. Additional right-of-way width may be required where a clear pattern of future development is present (such as to serve areas included in the Urban Growth Boundary).
19. Sidewalks, where necessary because of topographic constraints, may be, upon approval of the City engineer, required on only one side.
20. Any roadway surface that restricts parking shall be so posted at the expense of the developer.
21. Curb radius shall be 25' radius to face of curb on local and minor collectors and 35' on major collectors and arterials.
22. An approved traffic safety control plan is required when working in the right-of-way.
23. Dust and erosion control will be required for all construction projects.

5C.035 Minimum Street Design Standards for the Downtown Planning Area

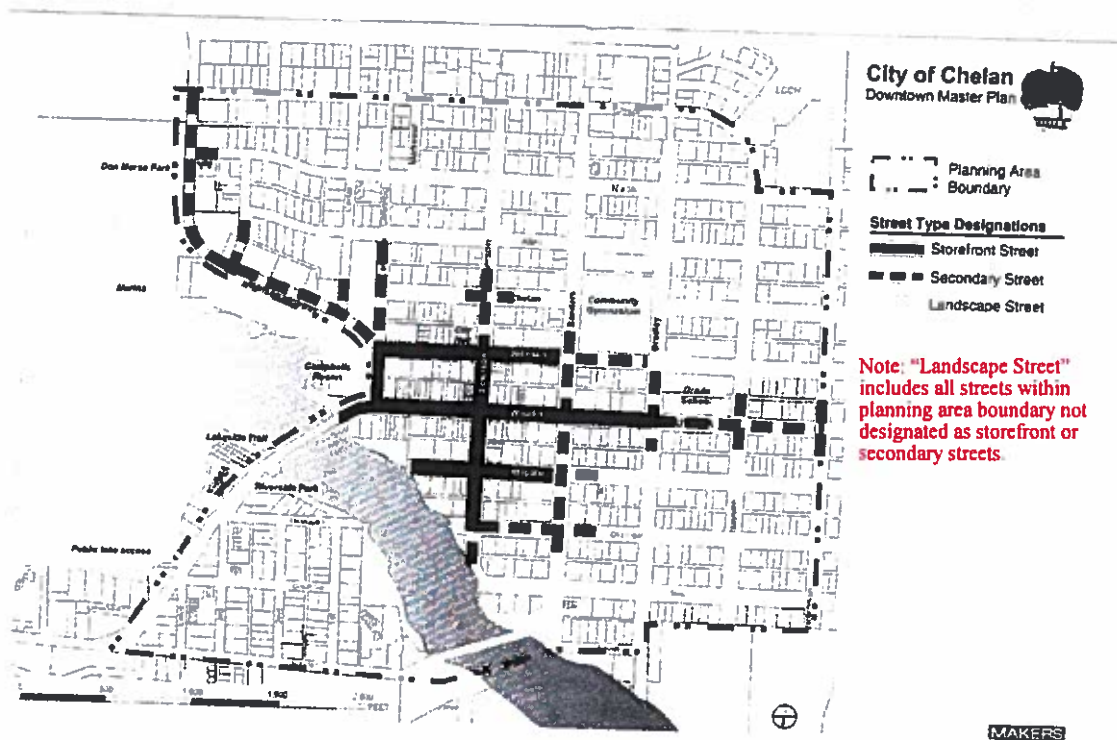


Figure 1. Downtown Planning Area and street type designations.

- A. All streets within the Downtown Planning Area (see figure 1 above) shall comply with the Minimum Street Design Standards as set forth in subsection 5C.030 above, with the following exceptions:
1. **Compliance with the Non-motorized Transportation Improvement Plan.** Street improvements shall comply with provisions in the Non-Motorized Transportation Improvement Plan, except where more recent and detailed improvements have been adopted for a specific street or streets.
 2. **Compliance with the goals and policies of the Downtown Master Plan.** Street improvements shall comply with the goals and policies of the Downtown Master Plan, except where more recent and detailed improvements have been adopted for a specific street or streets.
 3. **Compliance with adopted street improvement plans.** Street improvements shall comply with detailed improvement plans adopted by the City for specific streets.
 4. **Designated Storefront Streets.** Designated storefront streets shall include minimum 12-foot wide sidewalks on both sides of the street with trees placed in grates every 30 feet on average towards the curb edge. Tree grates may be up to 6 feet square provided there is a minimum unobstructed walking

surface of 8 feet (space between the edge of tree grate and outside edge of sidewalk). On-street parking is required. Curb extensions at all intersections are required in order to reduce street crossing widths for pedestrians and improve the visual appearance and character of the streets. Curb extension design shall be approved by the City engineer.

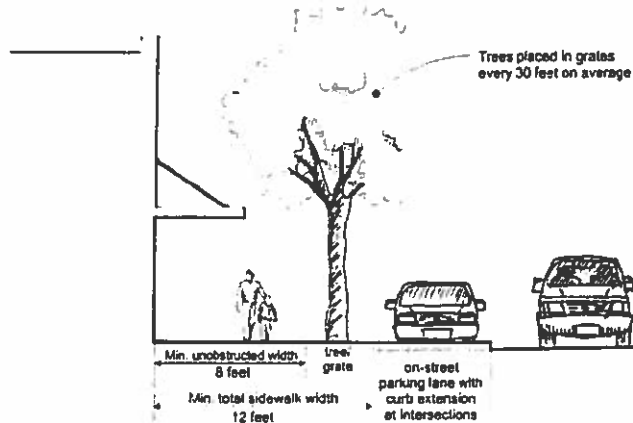


Figure 2. Standards for designated Storefront Streets.

5. **Manson Highway** (portion within Downtown Planning Area): Provide bicycle and pedestrian improvements as set forth in the Non-Motorized Transportation Improvement Plan and any subsequent adopted improvement plans. At minimum, street trees shall be included along both sides of the street edge spaced every 30 feet on average. Unobstructed sidewalk widths shall be at least 8 feet on the north/east side of the street.
6. **Designated Secondary Streets** (except Manson Highway). Where street improvements are required in conjunction with new development, the following requirements or options apply:
 - a) On portions of these streets containing storefront development, sidewalks on both sides of the street shall be a minimum of 10 feet in width with trees placed in grates every 30 feet on average towards the curb edge. Tree grates may be up to 6 feet square provided there is a minimum unobstructed walking surface of 6 feet (space between the edge of tree grate and outside edge of sidewalk). Exceptions: 4' x 4' planting strips may be used in place of tree grates at the discretion of the City engineer. Alternatively, continuous planting strips may be used along the curb edge instead of trees within grates, provided the sidewalks and planting strips are at least 6 feet wide each.
 - b) For non-storefront developments, sidewalks and planting strips shall be at least 6 feet wide each.
 - c) On-street parking is required on all streets, except where provided in adopted improvement plans.
 - d) Curb returns are required on all street corners, except where provided in adopted improvement plans. Curb extension design shall be

approved by the City engineer.

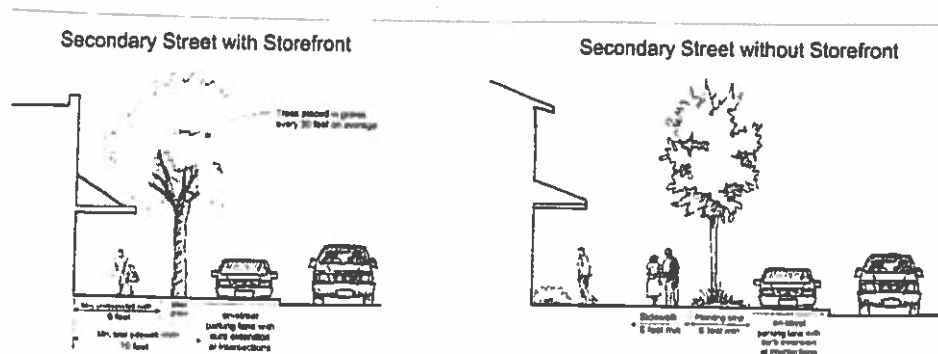


Figure 3. Streetscape standards for designated Secondary Streets.

7. **Designated Landscape Streets.** Where street improvements are required in conjunction with new development, the following requirements or options apply:
- Minimum sidewalk widths on both sides of the street are 5 feet.
 - Planting strips at least 6 feet wide along curb edge with trees spaced every 30 feet on average.
 - On-street parking is required on all streets, except where provided in adopted improvement plans.

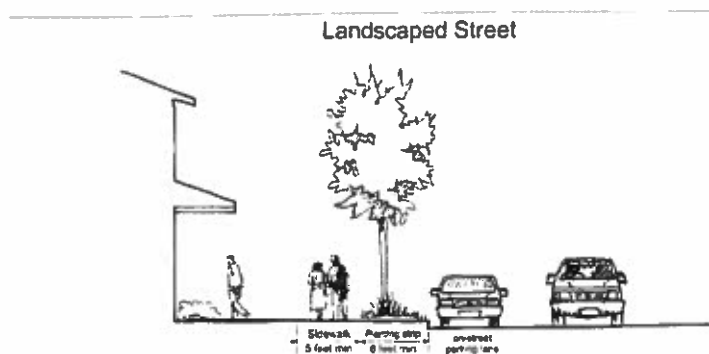


Figure 4. Streetscape standards for designated Landscaped Streets

5C.040 Street Frontage Improvements

A. All commercial and residential development (except single-family residences and owner-occupied duplexes), subdivisions, short subdivisions and binding site plans shall install street frontage improvements at the time of construction as required by the Public Works Department. For new proposals which fall under the definition of development in Appendix A, if Site Plan Review (SPR) approval is necessary, frontage improvements shall be required. If an existing use is being altered or improved, frontage improvements shall be required if the project meets all of the following conditions:

1. The project requires binding site plan, conditional use permit, or SPR approval per CMC 19.01, and
2. The site has more than 100 feet of total frontage, and
3. The project meets the threshold requirements as determined by all applicable CMCs.

Per the Site Plan Review approval, such improvements include but are not limited to: curb and gutter; sidewalk; street storm drainage; street lighting system; holiday lighting features; traffic signal modification, utility conduit, traffic control devices, signal interconnect, relocation or installation; public transit amenities, street signing; utility relocation; planter strips; landscaping and irrigation; and street widening all per these Standards. Plans shall be prepared and signed by a licensed engineer registered in the State of Washington.

B. All frontage improvements shall be made across full frontage of property to include full street section with sidewalk on development side of street only. Off project site frontage improvements may be required if determined by the City for public safety.

C. Utility relocations shall follow the requirements as outlined in Section 10, Utility Designs, in these Standards.

D. If contiguous parcels are under the same ownership, frontage improvements shall be required if the project meets all of the following conditions:

1. The project requires binding site plan, conditional use permit, or SPR approval, and
2. The contiguous sites have more than 100 lineal feet of combined frontage, and,
3. The project meets the threshold requirements as determined by all applicable CMCs.

E. Exceptions. When the City engineer deems the above such improvements cannot be accomplished at the time of building construction, frontage improvements may be deferred, modified or waived. These exceptions shall be made a condition of Site Plan Review approval or as a condition of subdivision, short subdivision, binding site plan, and conditional use permit approval.

Improvements may be deferred by signing a Waiver of Protest for a Local Improvement District (L.I.D.), by signing a Deferral of Frontage Improvements Agreement, or by paying a fee in lieu of constructing the improvements. If a fee-in-lieu is paid, it shall be based on the engineer's estimate and the City will be responsible for constructing said facilities at a later date.

If the frontage improvements are deferred, all necessary right-of-way must be dedicated as a condition of approval. If additional right-of-way is required and the side slopes exceed 7:1 slope, then a 10-foot slope easement shall also be required to facilitate construction of future improvements. All methods of deferral, and components thereof, must be in place, signed, collected, and/or processed prior to the project scheduling a preconstruction meeting.

5C.050 Right-of-Way

Right-of-way shall be dedicated for a subdivision, short subdivision, binding site plan, for a project that triggers Site Plan Review, or for a conditional use permit. The requirement to dedicate right-of-way shall be determined by Public Works. Although a right-of-way dedication may be required, frontage improvements may be deferred per Chapter 5C.040 of the Development Standards Manual.

Right-of-way width is determined by the functional classification of a street. Refer to Table 5C.030 Minimum Street Design Standards.

Right-of-way requirements may be increased if additional lanes, turn pockets, intersection treatments, transit lanes, bus loading zones, bus shelters, operational speed, bike lanes, utilities, schools or future planned improvements are required as determined by the City Engineer.

The right-of-way boundaries at intersections shall be sufficient to contain all portions of the sidewalk, curb ramps, all signal and lighting appurtenances, and any other appurtenance associated with a public utility.

Right-of-way shall be conveyed to the City on a recorded subdivision or by a right-of-way dedication deed. If the dedication is by deed, the deed shall be submitted and approved upon completion of the street improvement that reflects the "as-built" condition of the roadway. For all developments requiring a subdivision of property, the right-of-way shall be a condition of approval and conveyed through the final plat process.

When right-of-way is conveyed to the City by plat or by dedication deed, the right-of-way centerline or other appropriate control line shall be monumented by a Washington licensed Professional Land Surveyor. A monumentation plan shall be submitted to the Public Works Department for approval prior to placement of the monument positions.

5C.060 Existing Unimproved Street Requirements**Residential**

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

1. Minimum surfacing of all local private access streets shall conform to design standards in Table 5C.030.
2. An improved turn-around shall be provided consistent with the current edition of these standards if the lot to be developed is located at the end of any road that is over 150 feet in length.
3. All utilities which have not already been installed to serve the site shall be constructed to full City standards as set forth herein and installed underground. The list of affected utilities shall include but not be limited to water, sewer, storm drainage, electrical and communications.
4. Existing subgrade soils may require additional compacted depths as directed by the City engineer.

B. All developments will require improvement of the road, sidewalks, curbs, gutters, and utilities in full compliance with these development standards, which shall include completion of conditions in A-3 above. However, street improvements for singular lot development that is non-contiguous to improved streets in existing plats, the existing R/W width, AC width and sidewalk status shall be extended to match the nearest impervious surfaced street. If the developer does not or can not bear the cost of connectivity and if the latecomers agreement does not apply, Council shall form an LID if improvements are required as a health and safety issue. Otherwise, development will not be allowed. The grades shall be established by the developer's engineer. The AC matching width shall be a minimum of 20 feet and must meet access standards as per Section 902 of the Uniform Fire Code as it now exists or as may be hereafter amended. The cross section of the said street shall meet specifications of these standards. The intent of the exception for singular lot development herein is to allow a private party to build and access a single family residence without the financial burden of completely developing the facilities to all the lots. Should the private party acquire an interest in the intermediate lots, he will be considered as a developer and the above exception shall be disallowed.

C. Properties installing improvements as required in Section A above shall receive credit for the current value of such improvements, to the extent that the improvements reduce the cost of a LID, against the cost of any future LID assessment for street improvements for a period of up to ten years after the date of installation of such improvements, as demonstrated by their acceptance by the City of Chelan.

Commercial/Industrial

All new commercial development, including multifamily dwelling units, and conditional uses for business other than a home occupation, shall make the following minimum street improvements as a condition of any development permit issuance on any right-of-way

which is not fully improved to current City standards:

- A. Improve the frontage of the property along the street right-of-way with curbs, gutters, sidewalks, planter strips, storm drainage facilities and paving between the edge of gutter and existing asphalt.
- B. Improve the alley serving the property by complying with "Alleys" standards contained herein.
- C. Subject to the limitations set forth in RCW 35.43.182 as it now exists or as may be hereafter amended, when the City determines that improvements should be delayed, property owners shall sign an agreement to support and not oppose formation of a local improvement district for completion of the road and all utilities to City standards.
- D. Properties installing improvements as required in Sections A and B above shall receive credit for the current value of such improvements, to the extent that the improvements reduce the cost of a LID, against the cost of their LID assessment for a period of up to ten years after the date of installation of such improvements, as demonstrated by their acceptance by the City of Chelan.

5C.070 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 pre-construction 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 streets shall be as directed by the City engineer or as follows:

- A. Stake centerline every 50 foot in tangent sections and 25 feet in curved sections plus grade breaks, PVCs, PVTs, high points and low points, with cut and/or fill to subgrade.
- B. Stake top of ballast and top of crushed surfacing at centerline and edge of pavement at the above-described intervals.
- C. Stake top back of curb at a minimum 3 foot offset at the above-described intervals with cut or fill to finished grade.

5C.080 Testing

Testing shall be required at the developer's or contractor's expense. The testing shall be ordered by the City construction inspector from a testing lab approved by the City. Testing shall be done on all materials and construction as specified in the WSDOT/APWA Standard Specifications for Road, Bridge and Municipal Construction and with frequency as specified in Sampling and Testing Frequency Guide located in section 9-5.7 of the

WSDOT Construction Manual.

In addition, the City shall be notified before each phase that street construction commences (i.e., staking, grading, subgrade, ballast, base, top course, and surfacing).

5C.090 Access Management

Access Management is a tool to address traffic congestion, crashes, and loss of street capacity. The intent of Access Management is to provide access for land development while preserving the flow of traffic in terms of safety, capacity and speed of travel. Studies show the uncontrolled proliferation of driveways and intersections along a given section of roadway reduces the capacity, increases the number and severity of crashes, and inhibits bicycle and pedestrian usage. In addition, poorly designed entrances and exits cause congestion and create a negative image for a commercial district.

A. Connection to State Highways and Work Within State Right-of-Way

Where City streets connect to state highways, design standards from the most recent edition of the Washington State Department of Transportation (WSDOT) Standards for intersection design shall apply. The developer is responsible to obtain review and approval from WSDOT for work within State Right-of-Way.

B. Functional Classifications and Connectivity

Roadway hierarchy based on functional classification provides a network of streets based on the service they provide. Roadway layout shall be based primarily on the safety, efficiency of traffic flow, and functional use of the roadway. Roadways are divided into arterials, major and minor collectors, local/private access streets and alleys.

Roadways of all classifications shall be planned to provide for connectivity of existing and proposed streets in relation to adjoining parcels and possible future connections as approved by Public Works. New development roadway systems should be designed so as to minimize the distance pedestrians travel to bus stops.

The classifications of all streets shall be established by the Public Works Department. Arterials and collectors are identified in the most current adopted version of the Transportation Element. Street changes in classifications or classifications applied to new streets shall be shown to meet the following criteria.

1. **Local/Private Access Street:** A short street, cul-de-sac, court or a street with branching places or lanes. A Local Access Street is a minor residential street, and usually there is not through traffic between two streets of a higher classification. ADT (Average Daily Trips) less than or equal to 1,000.

Local access streets shall interconnect with each other and with minor collectors and have a minimum level of access control. Alleys in residential neighborhoods are encouraged. Traffic calming techniques shall be designed into all residential subdivisions. The pedestrian network shall be paramount in the residential roadway network. Local residential streets

serve as land access from residences and generally connect with minor collectors. Safety is always the major consideration when determining intersection locations and connectivity.

2. **Minor Collector:** The typical residential street, the minor collector is most commonly recognized as the lesser through street of a residential grid. While vehicular traffic could often travel through on a minor collector, intersections are either controlled or encumbered with stop signs, thus encouraging vehicles to use a major collector for through traffic. ADT greater than 1,000 and less than 2,000.
3. **Major Collector:** The Major Collector is the major street in the urban system and correspondingly has the highest average daily traffic (ADT). The Major Collector generally receives many Minor Collector or Residential streets and/or is the major route to significant activity centers. These streets should not generally be encumbered with stop signs. ADT= 2,000+.

Collectors generally connect commercial, industrial and residential projects to other collectors and arterials and have a moderate level of access control.

4. **Arterial:** The Arterial will generally be a state road or other major facility that moves urban traffic along to other urban areas or higher class state or federal highways. The number of travel lanes and facilities will be determined by the carrying capacity to accommodate projected traffic levels. Arterials are intended for the efficient movement of people and goods and have the highest level of access control. They have limited access and accommodate controlled intersections. The level of service standard for the state-owned facilities will be established by WSDOT and the City will set the LOS standard for all other designated arterials.

Unless directed otherwise by the City Engineer, centerline striping will be performed for Arterial and Major Collector Streets only. (See street classification map)

All new developments shall provide for the continuation of streets that will potentially serve property contiguous to the new development. Extending the improved street up to the common property line will fulfill this requirement. Each street with the potential for extension into contiguous properties shall be sized based on the estimated number of Average Daily Trips (ADTs) which will be generated by all properties within the Urban Growth Area (UGA) served by this road. The number of ADTs shall be determined based on the land use designation of the properties in question. In no case shall any parcel of property within City limits and/or the Urban Growth Boundary be allowed to become "landlocked" due to development in adjoining properties.

C. Determination of Access Classification

Determination of access shall be the responsibility of the City except on State highways, where WSDOT maintains strict standards for access. The developer shall provide the

following information along with recommendations to assist the City in determining access locations:

1. Local land use plans, zoning, and land development regulations as set forth in adopted comprehensive plans.
2. The current and potential functional classification of the roadway.
3. Existing and projected traffic volumes, accident history, and other operational considerations.
4. Existing and projected state, local and regional planning organization transportation plans and needs, including considerations of new or improved facilities.
5. Drainage requirements.
6. The physical features of lands adjoining the roadway.
7. The availability of alternative connections to the existing roadway network.
8. The cumulative effect of existing and projected connections on the roadway's ability to provide safe and efficient movement of people and goods.

D. Access Spacing

Minimum access spacing provides drivers with sufficient perception-reaction time to address one potential conflict area at a time. Access points shall be located to reduce the possibility of weaving, lane shifts, or other conflicts in the traffic stream. Existing access on both sides of the roadway shall be analyzed to determine proper location for a new access. Spacing is important to the safety and capacity of a roadway, as well as the appearance of a corridor. Bicyclists and pedestrians will benefit from the reduced conflicts generated by excessive access points. The following guidelines shall be used for minimum spacing between access points.

Functional Classification	Access Spacing
Arterial	660 feet
Major Collector	330 feet
Major Collector in Business District	165 feet

The spacing standards are for full access. Restricted access (right-in, right-out), shall be half the amount shown in the table above. If the spacing requirements and the connectivity requirements as outlined in this Chapter cannot be met, the access shall be designed using the objectives herein and as approved by the City. All distances in this chapter are measured centerline to centerline.

E. Additional Access

Developments shall provide a secondary access way to an Arterial or Major Collector when a traffic count of 1,000 ADT is reached. The number of ADTs shall be determined using both (1) existing development within the area that would be served by the secondary access way and (2) the development proposal. A third access point may be required if necessary for public safety and/or reasonable level of service. If additional accesses

cannot be installed due to topography, waterways, negotiable grades, or other similar conditions, the requirement may be waived, and mitigation measures will be required.

F. Secondary Access Requirements

1. Single-Family Residential Developments

Developments consisting of single-family residential housing where the number of dwelling units exceeds 30 shall provide two separate and approved access roads. Where the number of dwelling units is from 31 to 100, the requirement for a second access road may be waived if the secondary road cannot be installed due to topography, waterways, non-negotiable grades, or other similar conditions. If the requirement for a secondary access is waived, all dwelling units shall be protected by approved residential sprinkler systems. When the number of dwelling units exceeds 100, two separate and approved access roads shall be required regardless of whether the homes are equipped with approved residential sprinkler systems.

2. Multi-family Residential Developments

Developments consisting of multi-family residential units where the number of dwelling units exceeds 100 shall provide two separate and approved access roads. Where the number of dwelling units is from 101-150, the requirement for a second access road may be waived if the secondary road cannot be installed due to topography, waterways, non-negotiable grades, or other similar conditions. If the requirement for a secondary access is waived, all buildings including nonresidential occupancies, shall be equipped throughout with approved automatic sprinkler systems. When the number of dwelling units exceeds 150, two separate and approved access roads shall be required regardless of whether the buildings are equipped with an approved automatic sprinkler system.

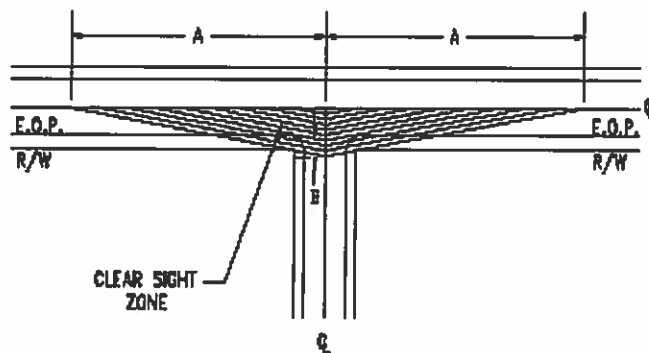
3. Mixed Developments

For developments that contain both single-family and multi-family units, two separate and approved access roads shall be required when the number of Average Daily Trips (ADTs) exceeds 300. The total number of ADTs shall be estimated using the trip rate identified in the latest edition of the Trip Generation Manual as published by the Institute of Transportation Engineers (ITE). Where the total number of ADTs is between 300 and 1,000, the requirement for a second access road may be waived if the secondary road cannot be installed due to topography, waterways, nonnegotiable grades, or other similar conditions. If the requirement for a secondary access is waived, all dwelling units and accessory buildings shall be protected by approved automatic sprinkler systems. When the number of ADTs reaches 1,000, two separate and approved access roads shall be required regardless of whether the buildings are equipped with an approved automatic sprinkler system.

5C.100 Sight Distance Requirements

The criteria in this chapter shall be used as a reference for streetscape amenities such as signs, trees, fences, bus shelters, etc. Use AASHTO Design standards to determine sight distance criteria for all road and intersection designs. Use WSDOT design standards for access to State highways. Intersections may include public and private driveways and pedestrian crossings. See Chapter 5C.120 for intersection definition.

The area within the sight distance triangle shall be subject to restrictions to maintain a clear view on the intersection approach. The ultimate roadway width (number of lanes) per the most current version of the City's Transportation Plan shall be used to calculate the dimensions of the sight distance triangle.

STOP OR YIELD CONTROLLED INTERSECTIONS

The centerline of the road is the actual physical centerline regardless of the number of lanes. Sight distance B is 15 feet measured from the near edge of traveled way to the eye of the driver on the minor road. The following table shall apply to both vertical and horizontal sight distance.

Posted Speed (mph)	Minimum Distance "A" (in feet)*							Multiplier
	20	25	30	35	40	45	50	
Residential Streets	200	250	300	350	400	450	500	10
Collectors and Arterials	240	300	360	420	480	540	600	12

*Based on Sight of Distance per 10 mph for Design Vehicle "P" Crossing Arterial.

If your speed is not shown above, use the following formula for distance A:

$$\text{Multiplier} \times \text{posted speed} = \text{sight distance A}$$

On roadways with 5 or more lanes or roadways with medians more than 20 feet wide, use AASHTO Design Standards. WSDOT design standards shall be used for access to State highways.

The vertical clearance area within the sight distance triangle shall be free from obstructions to a motor vehicle operator's view between a height of 3 feet and 8 feet above the existing surface of the street.

Exclusions: Sight obstructions that may be excluded from these requirements include: fences in conformance with this chapter, utility poles, regulatory signs, trees trimmed from the base to a height of 8 feet above the street, places where the contour of the ground is such that there can be no cross visibility at the intersection, saplings or plant species of open growth habits and not in the form of a hedge which are so planted and trimmed as to leave at all seasons a clear and unobstructed cross view, buildings constructed in conformance with the provisions of appropriate zoning regulations and pre-existing buildings.

5C.110 Illumination

All new commercial or residential subdivisions, short plats, binding site plans shall provide street lights in accordance with the standards for such improvements of the City and they shall be owned and operated by the City. All improvements shall be provided and constructed as detailed in Section Eleven - Street Illumination.

5C.120 Intersections

An intersection may be any access point, whether a public street or a public or private driveway, onto a public street. See Chapter 5C.100 for Access Management criteria and for intersections as they relate to functional classification.

Street intersections shall be as nearly at right angles as is practicable and street jogs with offsets of less than one hundred twenty-five feet between center lines are not allowed.

For safe design, the following types of intersection features shall be avoided unless approved by the City engineer:

1. Intersections with more than four intersection streets;
2. "Y" type intersections where streets meet at acute angles;
3. Intersections adjacent to bridges and other sight obstructions.

5C.130 Driveways

All abandoned driveway areas along the frontage of redeveloped property shall be removed and the curbing, planter strip, sidewalk, or shoulder and ditch section shall be properly restored. All driveway approaches shall be constructed of Commercial Concrete and shall be subject to the same testing and inspection requirements as curb, gutter, and sidewalk construction.

Joint use driveways serving two adjacent parcels are encouraged whenever feasible. A joint use driveway serving two adjacent parcels is required if contiguous property is under the same ownership unless joint access is not feasible due to topography constraints, as determined by the City Engineer. An easement and a maintenance agreement shall be recorded for both parcels specifying maintenance and joint usage in perpetuity.

A. Residential Driveways

Residential driveways shall be those driveways constructed on private property to serve up to three single-family residential structures or a duplex. A driveway to multiple residences must be upon a 20-foot easement and must have fire department approval, but will generally consist of 12-foot width of all-weather surfacing and a maximum grade of 12%. Driveway easement documentation shall be as per these standards. Regardless of access, all lots must front upon a platted public street or private road. In all cases, the portion of the driveway within the right-of-way shall be asphalt surface.

1. All residential driveways shall meet the sight distance requirements of Chapter 5C.100.
2. Maximum grade for a driveway to a single residence shall be 18%.
3. A driveway to multiple residences must provide an emergency vehicle turnaround as per these standards.
4. The maximum residential driveway width onto an arterial or major collector roadway shall be 25 feet. The maximum residential driveway width onto a local or minor collector roadway shall be 25 feet; minimum width shall be 10 feet (net flat width without transition ramp).
5. No more than one access shall be permitted onto an arterial or major collector roadway, regardless of the frontage. Not more than one access shall be permitted for a frontage of 75 feet or less on a local or minor collector roadway. Two accesses on a local or minor collector may be permitted for frontage of 75 feet to 150 feet. The two accesses may be combined into a single access of up to 35 feet net flat width.
6. Driveway parking space shall not interfere with pedestrian traffic on sidewalks.
7. Within the Downtown Planning Area, the following supplemental driveway standards apply:
 - a. No more than one driveway per dwelling unit.
 - b. Driveways for individual lots 50 feet or wider may be up to 20 feet in width.
 - c. Driveways for individual lots less than 50 feet wide may be up to 12 feet in width. Tandem parking configurations may be used to accommodate two-car garages.

B. Public Driveways

Public Driveways are those driveways constructed on private property to serve commercial, industrial and multi-family projects. Public Driveways shall be curb cuts. A traffic engineer shall design public driveways with safety being the primary design criteria. The following criteria shall apply to all public driveways:

1. Commercial properties shall provide internal connections between neighboring properties. Developments must give priority to internal access before access to the public roadway system is permitted. Cross access allows vehicles to circulate between commercial properties without having to re-enter the public street system.
2. Public driveways shall meet the sight distance requirement of Chapter 5C.100.
3. No public driveway shall be approved where backing onto the sidewalk or street will occur.
4. Parking lot circulation and signing shall be met on site. The public right-of-way shall not be utilized as part of the parking lot flow. Alleys may be utilized with the approval of the City engineer.
5. The maximum driveway width for a two-way, public driveway with curb returns shall be the same as listed for curb cut, per Section 6-20. A wider public driveway may be approved by the City engineer where a substantial percentage of oversized vehicle traffic exists, where divisional islands are desired, or where multiple exit or entrance lanes are needed.
6. The maximum one-way public driveway width for a curb cut or a driveway with curb return shall be 20 feet for multi-family residential, commercial, and industrial uses. The storage length of a driveway must be adequate to prevent vehicles from waiting in thru lanes to enter the site or causing unsafe conflicts with on-site circulation and parking. General standards appear below but these requirements will vary according to the projected volume of the individual driveway. The length shall be measured from the face of curb into the site.

Adequate Driveway Storage Lengths	
Development Type	Minimum Driveway Throat Length
Commercial Center > 150,000 GLA ⁽¹⁾	200 feet
Smaller Project < 150,000 GLA ⁽¹⁾	40-95 feet ⁽²⁾
Signalized Driveway	Based on operational analysis for 95% queue

⁽¹⁾ Gross Leasable Area

⁽²⁾ Distance confirmed by City engineer

7. Road approaches and/or ingress and egress tapers may be required in industrial and commercially zoned areas as directed by the City engineer. Tapers shall be designed per the ITE (Institute of Transportation Engineers) publication, Transportation and Land Development, latest edition.

C. Residential Driveway Access Spacing

1. In new construction, residential driveways shall not be permitted to access arterials, major collectors, or minor collectors unless the property has no other reasonable access to the general street system.
2. If an existing residential parcel abuts an arterial, major collector or minor collector, no residential access shall be allowed to those streets within 150-feet of the nearest right-of-way line of an intersecting street.
3. Corner lots shall access the roadway with the lower functional classification.

If the above standards cannot be met, the developer's engineer must design the most appropriate access with safety being the primary design criteria.

D. Public Driveway Access Spacing

1. Access to a public street shall be limited to one public driveway connected to the lowest classified roadway for each parcel of property separately owned. Property fronting more than one public street may be permitted an access to each public street if the Traffic Impact Analysis supports multiple accesses. Two or more public driveways accessing a public street will only be allowed with the approval of the City engineer. Properties contiguous to each other and owned by the same person are considered to be one parcel.
2. If all other access management techniques have been exhausted, the City will permit public driveways utilizing the following minimum corner clearance requirements. Corner clearance is the distance between a private access and the nearest cross road intersection and is applicable to all roadway classifications. Corner Clearance is necessary to provide adequate perception-reaction time to reduce potential downstream conflicts and is aimed at preventing the location of driveways within the functional area of an intersection. Minimum driveway setback and corner clearance requirements shall meet the most current ITE standard. The minimum corner clearance setbacks are shown in the following table.

Minimum Corner Clearance Distance (in feet) from Near Side of Street to Near Side of Access Driveway		
Posted Speed (mph)	Major Traffic Generator	Minor Traffic Generator
30	200	150
35	260	215
40	330	260
45	395	310
50	460	345

Reference: Traffic Engineering Handbook

Major traffic generators are developments that require or would be required to complete a Traffic Impact Analysis per City of Chelan TIA Guidelines.

5C.140 Private Roads

Private roads shall meet the definition as given in this section and shall be allowed in the following instances:

1. As part of a Planned Development District (Zone P-D);
2. As permanently established by plat or easement providing legal access to serve two, three, or four single-family dwelling units and conforming to design standards in Table 5C.030;
3. For access to multifamily housing, subject to approval by the City engineer.

Private roads must meet all of the following conditions:

1. Said road shall be accessible at all times for emergency and public service use.
2. Private roads shall have covenants which provide for the maintenance of the private roads by the owners, homeowners association, or other legal entity, and are recorded with the Chelan County Auditor's Office.
3. Private streets will not landlock present or future parcels nor obstruct public street circulation. If there is the ability for a future roadway connection, a private street will not be allowed.
4. The design and construction of sidewalks along private streets shall meet all applicable standards as for sidewalks along public roadways as specified in Chapter 5D.040.

Acceptance of private roads as public streets will be considered only if the road(s) meet all applicable public street and utility standards.

5C.150 Gated Access

A. Gated Residential Access

Gates to neighborhoods or gated communities shall be allowed only on private streets. Private streets shall meet all the conditions as set forth in Chapter 5C.140. In addition the following conditions shall apply:

1. A minimum stacking distance as shown in the table below shall be required:

Intersecting Public Street Classification	Minimum Stacking Distance
Arterial	If only one access, use 5-feet per PM peak hour trip. Minimum stacking distance shall be 100 feet.
Major and Minor Collector	1-foot per PM peak hour trip. Minimum stacking distance shall be 20 feet.
Local and Private	0.5-foot per PM peak hour trip. Minimum stacking distance shall be 10 feet.

2. A turn around shall be provided on the public right-of-way side of the gate.
3. Mailboxes meeting U.S. Postal standards shall be located on the public side of the gate.
4. Gates shall be equipped with an emergency pre-emption system capable of operating from the public side of the gate to facilitate immediate entry of emergency vehicles into the development and shall have the concurrence of emergency services. This system must be maintained in proper working order by the owners of the development or the proper homeowners or business owners association, whichever shall be the case. A copy of the access key, code, or combination shall be provided to the City to facilitate access.

B. Gated Commercial Access

Gated access in commercial or industrial projects shall follow the standards as set forth in 5C.150.A. The stacking distance shall be based on vehicle length, access street classification, and entering volumes in the PM peak hour. A Traffic Impact Analysis shall be used to determine an appropriate stacking distance.

5C.160 Cul-de-Sacs

To encourage connectivity, cul-de-sacs shall be discouraged. Cul-de-sacs may be allowed with the approval of the City engineer where geographical, topographic or environmental conditions preclude connection. When these conditions preclude street connections, continuous non-vehicular connections should still be attempted.

Cul-de-sacs may also be allowed for short subdivisions bordered on three sides by properties developed to their maximum use. Dead ends or a shared access may be required for subdivisions where the potential for future connectivity exists due to the proximity of under-developed properties.

Streets designed to have one end permanently closed shall typically be no longer than 600 feet as measured from the intersecting right-of-way line extended, to the center of the cul-de-sac. At the closed end, there shall be a widened bulb having a minimum paved traveled radius as shown in the Cul-de-Sac Plan Detail. Where the total number of ADTs generated by residences served by the cul-de-sac is between 300 and 1,000, the limitations on length and on number of lots served may be waived if additional access cannot be installed due to topography, waterways, non-negotiable grades, or other similar conditions. If the limitation on length, number of lots served, or both is waived, all dwelling units and accessory buildings shall be protected by approved automatic sprinkler systems. A cul-de-sac may not serve an area generating 1,000 ADTs or more without providing additional access, whether or not the buildings are equipped with approved automatic sprinkler systems.

5C.170 Dead End Roadways

Where a street is temporarily dead ended, turn around provisions and a Type III red and white barricade the full width of the roadway must be provided where the road serves more than one lot. Hammerheads or L turnarounds may be used in lieu of a cul-de-sac only upon approval of the City Engineer and shall be designed in accordance with details in the

Standard Details Section. Permanent dead ends shall be properly signed per Section 3C-4 of the MUTCD.

At the end of a sidewalk to be extended in the future, a red and white type II barricade the full width of a sidewalk is required.

5C.180 Alleys

Alleys, where provided at the rear of lots, shall have a minimum right-of-way width of twenty feet. Dead-end alleys and alleys with sharp changes in direction are prohibited. Alleys as a primary access are encouraged, subject to the following standards:

1. The alley right-of-way must be at least twenty feet wide; and
2. The alley must be paved; and
3. Alley access shall be subject to approval by the City engineer. The City engineer's review shall include, but not be limited to, review of provisions for trash collection and snow removal, and access by fire trucks and other emergency service vehicles.

Existing lots that have no alternative access may be exempted from the standards by the City engineer.

Alleys immediately north and south of Woodin Avenue between Columbia and Sanders Streets are also subject to the following design provisions:

1. Storage areas shall be enclosed within the building or by 5-foot minimum tall screens made of durable material as determined by the City (chain link is not acceptable.)
2. 6-feet wide elevated (at least 4-inches high) platforms located outside of the required clearance area are required for waste receptacles. Where more than one dumpster is needed, the platform must be sized to allow for a minimum 2-foot clearance between dumpsters for service vehicles.
3. Lighting over all entries facing the alley is required.
4. Lights, hanging baskets, canopies, or other overhead features within the alley right-of-way shall be at least 15 feet above the ground to accommodate service vehicles.
5. All businesses shall provide at least one sign along the alley. Permitted sign types include a wall sign, a projecting sign or suspended sign, and a window sign. See CMC Chapter 17.58 for applicable sign standards.
6. Alley design amenity toolbox. New buildings and Level III Additions [per CMC 17.14.010 (B)] shall incorporate at least two amenity features. Level I and II Remodels/Additions [per CMC 17.14.010 (B)] shall incorporate at least one feature. All other existing or new businesses occupying existing buildings are encouraged to incorporate one or more amenity features from the list.
 - a. Transparent windows occupying at least 15 percent of the facade.
 - b. Decorative light fixtures.
 - c. Decorative signage
 - d. Decorative mural or other similar artistic feature.

- e. Decorative use of building materials that add special interest to the building.
- f. Permanent landscaping features(s). Irrigation or other feature shall be included in order to ensure long term survival of landscaping as determined by the Director.
- g. Decorative paving within the alley adjacent to the building.
- h. Hanging flower baskets and potted plants are encouraged along alleys provided they meet clearance requirements.

"Decorative" elements referenced above must be distinctive or "one-of-a-kind" elements or unusual designs that require a high level of craftsmanship as determined by the City.

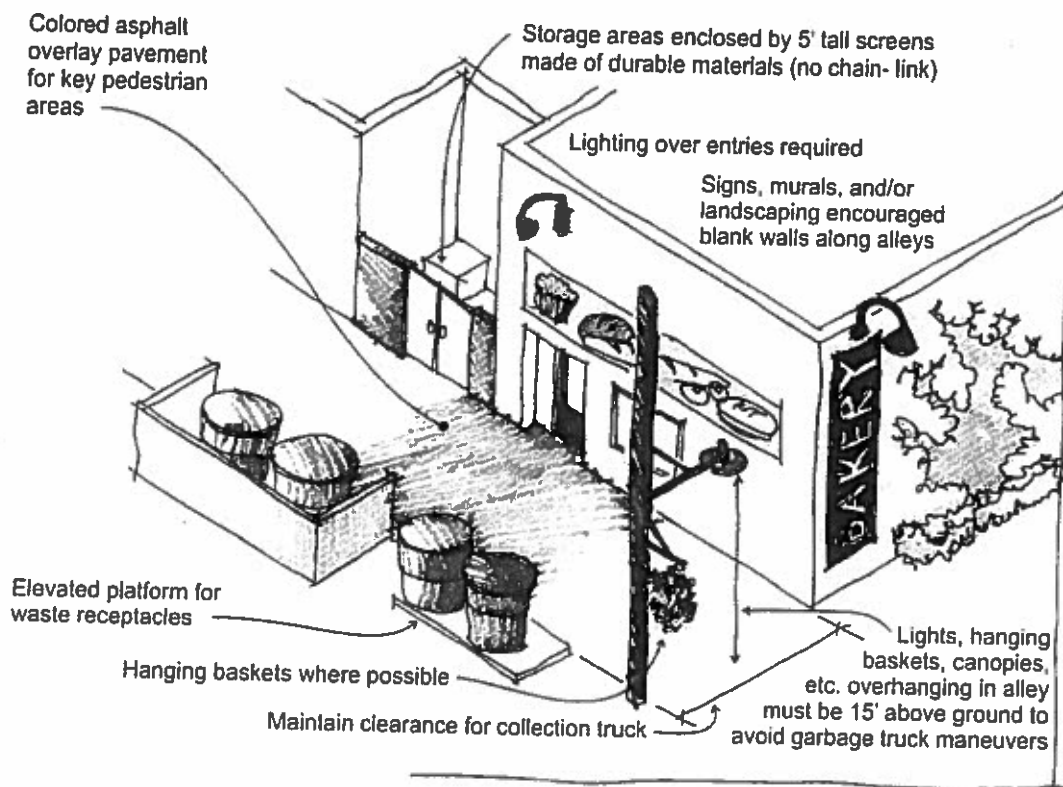


Figure 5. Design guidelines for alley improvements in the historic core.

5C.190 Fire Access Roads

Roads which are designated as fire access roads shall conform to the minimum street standards for new construction as shown in Section 5C.030 of the Development Standards or shall be designed and installed per the most current adopted edition of the Fire Code as adopted and amended by the Chelan Municipal Code.

5C.200 Naming

Streets and roads shall be named according to specific criteria. "Avenues" run east-west, and "Streets" generally run north-south. All avenues lying east of Columbia St. are designated east (E) and west of Columbia Street are designated west (W). Streets north of Woodin Avenue are designated north (N) and south of Woodin Avenue are designated (S).

An address number will be assigned to all new buildings at the time of final plat, site plan review, or at the time the building permit is issued. This will be done by the Building Official per CMC 12.08.

The developer must check with the Building Official regarding the naming of streets. This should be done at the time the subdivision is submitted and again upon approval of the subdivision. The Building Official will insure the name assigned to a new street is consistent with policies of the City.

Street signs for public and private roadways, including poles and hardware, will be supplied and installed by the developer. A signage plan will be required with the project submittal. The City Public Works Department will have final approval over materials and types of signs.

All sign types and installations shall meet MUTCD standards and City standard details.

5C.210 Traffic Control - Construction

The contractor shall be responsible for all traffic control in accordance with the WSDOT/AWA Standard Plans for Road, Bridge and Municipal Construction, "K" plan sheets, and the Manual on Uniform Traffic Control Devices (MUTCD). Prior to the disruption of any traffic, a traffic control plan shall be prepared and submitted to the City for approval. At no time shall a roadway be blocked without the approval of the City engineer. No work shall commence until the City has approved the plan and the traffic control is in place. A street closure permit is required if a roadway is to be closed or restricted.

There shall be no restrictions or interruptions to traffic on Saturdays, Sundays or holidays. In addition, there shall be no restrictions or interruptions to traffic after 12:00 noon on the day prior to a holiday or holiday weekend.

There shall be no restrictions or interruptions to traffic on arterial roadways during the peak traffic hours of 7:00 a.m. to 9:00 a.m. and from 3:30 p.m. to 6:00 p.m. Monday through Friday, except when deemed necessary by the City. If the City determines the peak hours differ from those specified, the contractor will be required to adjust his working hours accordingly.

Work shall comply with all applicable state and local noise regulations. Construction hours in or adjacent to a residential zone shall be in accordance with hours specified in the Chelan Municipal Code.

The City may require roadway work to commence at night when it is in the best interest of the public.

Two-way traffic shall be maintained at all times unless specifically approved in the traffic control plan. Flaggers shall be shown on the traffic control plan except for emergency situations. The developer is responsible for traffic control signing per Chapter 5E.090.

All lane restrictions shall be held to a minimum time and length. Lane closures shall comply with the traffic control plans, these specifications, the MUTCD, and the WSDOT Standard Plans. If the City determines that lane restrictions are causing congestion, the contractor will be required to open any lanes, as determined by the City, until the congestion is eliminated.

There shall be no delay to medical, fire, police, or other emergency vehicles with flashing lights or sirens.

The contractor shall maintain pedestrian access through or around the project site at all times without having pedestrians enter the travel lane.

Flaggers shall possess a current flagging card issued by the State of Washington prior to performing any traffic control work on a project. Workers engaged in flagging shall wear reflective clothing and hard hats in accordance with the WSDOT/APWA Standard Specifications for Road, Bridge and Municipal Construction. Flagger's paddles shall meet MUTCD standards.

5D. NON-MOTORIZED TRANSPORTATION

5D.010 General

All properties, with the exception of an individual single family residence or owner-occupied duplex, abutting public streets shall, in conjunction with new construction on such properties where the estimated cost of the alterations or improvements constitute 50% or more of the value of the existing structures on the property according to current Assessor records, have sidewalks constructed along abutting streets. Curbs and gutters must also be constructed along the abutting street when the City engineer determines that the conditions of drainage require curbs and gutters.

Upon approval of the City engineer, sidewalk construction may be deferred as described in 5C.040.E, although the necessary right-of-way shall be granted to facilitate future construction of the sidewalk.

Building footings shall not be located under a public sidewalk. Footings may be located under a sidewalk if the sidewalk is in an easement and not in the public right-of-way. If building footings are to be located under a sidewalk located within an easement, all the private utilities located within that easement and under that sidewalk shall be located within conduit.

5D.020 Design Standards

The City has set forth minimum standards as shown in the Standard Details which must be met in the design and construction of sidewalks, curbs and gutters. Because they are minimum standards, they may be modified by the City engineer should the City engineer feel circumstances require increased or decreased widths. Plans for the construction of sidewalks, curbs and gutters are to be submitted as part of the street plans when applicable.

5D.030 Curb and Gutter

Commercial concrete curb and gutter per the detail in the Standard Details Section shall be used for all street edges unless otherwise approved by the City Engineer. Form and subgrade inspection by the City are required before curb and gutter are poured.

The face or top of all new curbs shall be embossed to denote the location of water and sewer services crossings. Water services shall be marked ¼-inch into concrete with a "W" and side sewers shall be marked with an "S".

5D.040 Sidewalks

All public streets shall have sidewalks on both sides of the street as shown on the roadway details in the Standard Details Section. Sidewalks, when necessary because of topographic constraints, may be required on only one side, upon approval of the City engineer. Sidewalk widths may vary based on plans and studies adopted by the City but, except as provided in this section, shall not be less than those shown in the Standard Detail Section. The design and construction of all sidewalks, curbs and gutters shall be in accordance with the details shown in the Standard Detail Section.

- A. If sidewalk widening is required, it shall be accomplished with a monolithic width pour. This may require removal of an existing sidewalk.
- B. The City engineer may reduce the sidewalk width for sidewalks over six feet wide if the City engineer does not anticipate probable pedestrian traffic through the horizon year indicated by the traffic analysis. If the width of the sidewalk is reduced, the right-of-way width shall not be reduced. Instead, the planter width shall be increased accordingly.
- C. Monolithic pour of curb, gutter and sidewalk may be allowed with approval of the City engineer.
- D. Sidewalks that dead-end at the project property line shall extend not more than 15 feet beyond the project line and shall transition to existing grade, unless otherwise specified by City Engineer.

5D.050 Pathways and Trails

Trails and pathways should be developed in accordance with the City's Comprehensive Plan, including the Open Space and Recreation Sub-Element, the Transportation Element, the Parks and Recreation Comprehensive Plan, the Lake Chelan Valley Trails Master Plan,

the Lakeside Trail Study, the Non-Motorized Transportation Implementation Plan, and any other plans or studies adopted as components of the Comprehensive Plan.

5D.060 Bicycle Facilities

Bicycle facilities should be developed in accordance with the City's Comprehensive Plan, including the Open Space and Recreation Sub-Element, the Transportation Element, the Parks and Recreation Comprehensive Plan, the Lake Chelan Valley Trails Master Plan, the Lakeside Trail Study, the Non-Motorized Transportation Implementation Plan, and any other plans or studies adopted as components of the Comprehensive Plan.

When the need for a bikeway is identified in approved Planning documents, bikeway construction is required in conjunction with any new development or redevelopment where the estimated cost of improvements on such properties exceeds 25% of the value of the existing structures, or subdivision or short subdivision approval.

The design of bikeways shall depend upon their type and usage. Bike lanes and shared roadways shall be surfaced the same as the adjacent motor vehicle roadway.

In general, all bikeway facilities shall be signed per the MUTCD or as specified herein. The bike lane stripes and pavement markings shall be as shown on the details in the Standard Details Section.

5D.070 Staking

All surveying and staking shall be as set forth in Chapter 5C. 070.

5D.080 Testing

Testing shall be required per Chapter 5C. 080. In addition, the City shall be notified before each phase of sidewalk, curb and gutter construction commences.

5E. ROADSIDE FEATURES**5E.010 General**

Miscellaneous features included in this section shall be developed and constructed to encourage the uniform development and use of roadside features wherever possible. The design and placement of roadside features shall adhere to the specific requirements as listed for each feature, and, where applicable, to the appropriate standards as set forth in Chapters 5B.010 and 5B.030.

5E.020 Survey Monuments

All existing survey control monuments which will be disturbed or destroyed during construction shall be referenced prior to construction and replaced after construction by or at the direction of a Professional Land Surveyor licensed by the State of Washington. All applicable RCWs and WACs will be complied with, including but not limited to, WAC 332-120, WAC 332-130, RCW 58.09, and RCW 58.24.040. The monuments shall be replaced with the proper type at the expense of the responsible builder or developer.

- A. An iron cased monument and lid shall be installed per City of Chelan standard details
- B. Monument locations. Appropriate intervisible monuments shall be placed:
 - 1. At all intersections. At intersections with arterials or collectors, the centerline of the minor street may be monumented at the edge of the arterial or collector right-of-way.
 - 2. At the PC, PT, PCC, and PRC of horizontal curves, or at the PI if it lies within the travel roadway. The City engineer may waive monument requirement at a particular location if sufficient intervisible monumentation is provided. The City engineer may also require additional monumentation such as POT or POC to ensure intervisibility of monumentation.

5E.030 Mailboxes

Mailboxes shall generally be located per City of Chelan Development Standard Details. New developments shall utilize cluster mailboxes and must receive US Postal Service and Public Works approval as to their specific type and location.

During construction, existing mailboxes shall be accessible for the delivery of mail, or, if necessary, moved to a temporary location. Temporary relocation shall be coordinated with the U.S. Postal Service. The mailboxes shall be reinstalled at the original location or, if construction has made it impossible, to a location as approved by the U.S. Postal Service.

On existing improved frontages with on-street parking, new mailboxes for infill lot development and/or existing homes shall be clustered to maximize on-street parking availability. Specific location and layout shall be approved by the U.S. Postal Service and City engineer.

5E.040 Bus Pads, Shelters and Amenities

Different population densities dictate the number and placement of bus stops. The location of LINK Transit and/or Lake Chelan School District (LCSD) bus pads, shelters, or amenities will be evaluated on a case-by-case basis for each project. LINK Transit and LCSD shall make every effort to coordinate the location of bus stops and shall work with the City Public Works Department to determine the best location for the required amenity.

The first consideration in locating any bus stop or amenity shall be safety. The following considerations shall also be considered in determining a bus stop or amenity: operational efficiency, integration with non-motorized facilities, and minimizing impacts to adjacent property. Bus pullouts may be required if road geometry requires, such as determined by the City, LINK Transit and LCSD.

Shelters, pavement markings and signs shall be provided and installed by the developer

LINK Transit shelters shall be maintained by LINK Transit. School bus stop shelters shall be maintained by the subdivision's Homeowner's Association or apartment owner, whichever is appropriate.

Developments enclosed by walls or fences shall provide openings or gates for walkways to provide direct access between developments and bus facilities.

The City and Lake Chelan Public Schools will use the following criteria in placement and design of school bus stops:

1. A school bus stop shall be required for each new residential subdivision or apartment complex where school children are to be boarding or deboarding unless it is determined by Lake Chelan School District (LCSD) that a new bus stop is not required because adjacent facilities already exist for the site.
2. School bus facilities shall meet the same design standards as specified for Link Transit except that the contractor shall install the required school bus amenities. School bus facilities shall also meet safety design guidelines of the LCSD.
3. Placement shall be determined by LCSD and the City.

5E.050 Retaining Walls in Right-of-Way

Poured-in-place concrete, mechanically stabilized earth (MSE) walls, gabion walls, rock, concrete building block, or other approved material may be used for erosion protection of cut or fill embankments, for structurally retaining embankments, or as desired for aesthetic purposes. Retaining walls may be subject to design review.

The height of a retaining wall is that distance as measured from the top of the footing, regardless of whether the footing is buried or exposed, to the top of the wall. Structural walls on private property require the issuance of a Building Permit prior to construction, and fall under the jurisdiction of the Building Official, per CMC 17.04.077.

Retaining walls over 4 feet in height located on a public right-of-way shall meet or exceed WSDOT design standards and be designed by a Washington State Licensed Professional Engineer, and be approved by the City engineer.

5E.060 Street Trees

Blank.

5E.070 Planter Strips/Islands

Blank.

5E.080 Parking Lots

Access and drainage issues are governed by the Public Works Department. Contact the City of Chelan Planning Department to determine if the parking lot requires a site plan review process. The configuration of the stalls shall be as outlined in the Standard Details Section of these Standards.

The storm drainage system must be designed by a licensed professional engineer. Plans and specifications as required by Storm Water development standards, shall be required to be submitted for review and approval by the City with respect to storm drainage discharge and on-site retention or detention, matching street and/or sidewalk grades,

access locations, parking layout and to check for future street improvement conformity and zoning regulations.

5E.090 Traffic Signs

1. All street name and traffic directional signs shall be provided and installed by developer. Sign materials, lettering and placement shall be in accordance with the current edition of the "Manual on Uniform Traffic Control Devices" published by the Federal Highway Administration, and as directed by the City Engineer.
2. Crosswalk bars, stop bars, and arrows and wording on asphalt shall be preformed thermoplastic, Premark or approved equal.
3. All costs for signage shall be paid by the proponent and installation shall be complete prior to final plat approval.
4. The naming of all streets shall receive approval from the City of Chelan Building Department to assure consistency and elimination of confusing or inconsistent address numbers. Address number shall be assigned to all new lots prior to recording any plat. The Building Official shall review addresses prior to recording to insure that the addresses are consistent with City policies.

5E.100 Guard Rails

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

5E.110 Hand Rails

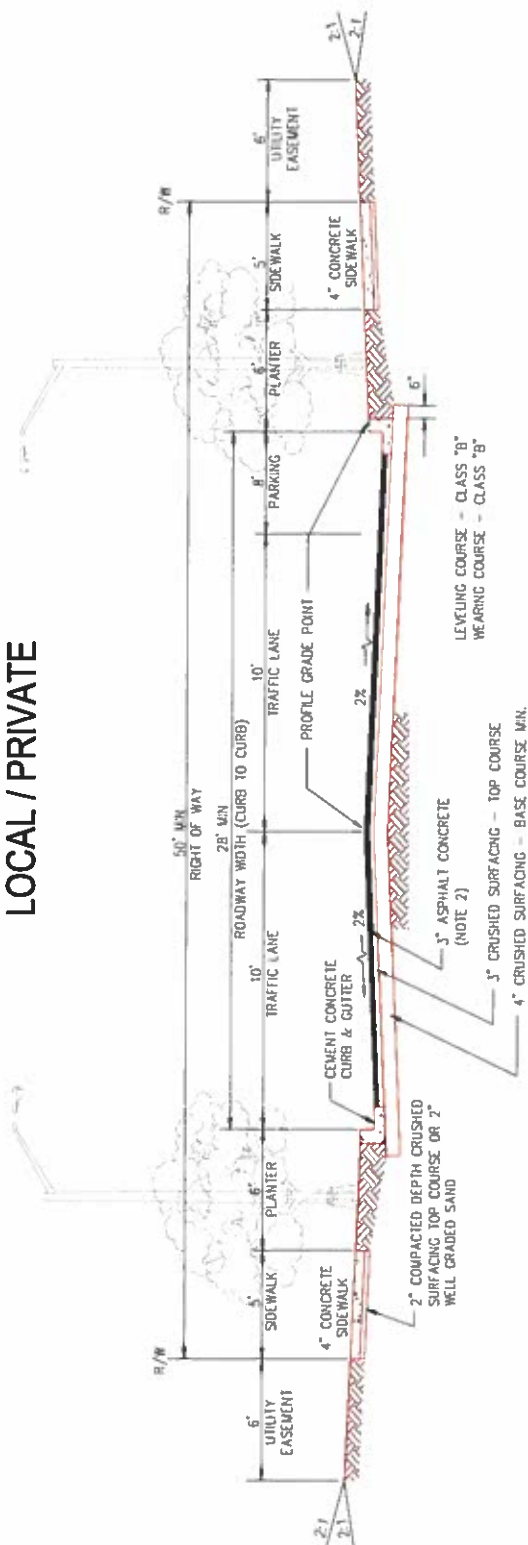
A hand rail or fence is required to be constructed along the back of the sidewalk if required by the current Building Code adopted by the City of Chelan.

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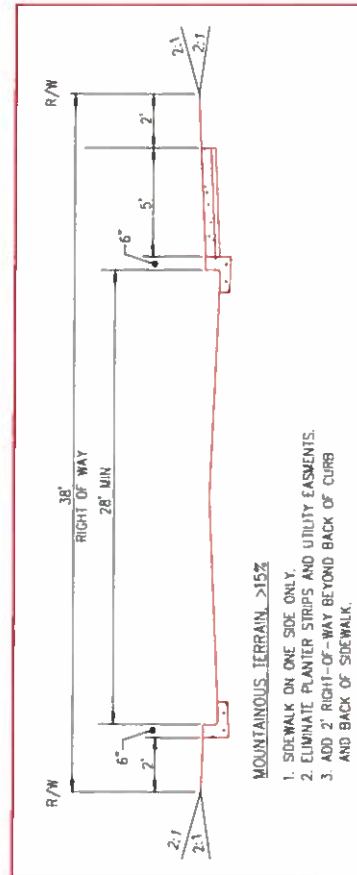
LOCAL/PRIVATE STREET DESIGN

LOCAL / PRIVATE



NOTES:

1. ALL THICKNESSES ARE COMPACTED DEPTHS.
2. CONTRACTOR WILL BE REQUIRED TO PAVE NEW ROADWAY IN TWO (2) EQUAL LIFTS, UNLESS PERMISSION IS GRANTED BY CITY ENGINEER TO PAVE IN ONE LIFT.
3. PRIVATE ROADS SHALL BE APPROVED BY CITY ENGINEER (WIDTHS MAY BE MODIFIED).



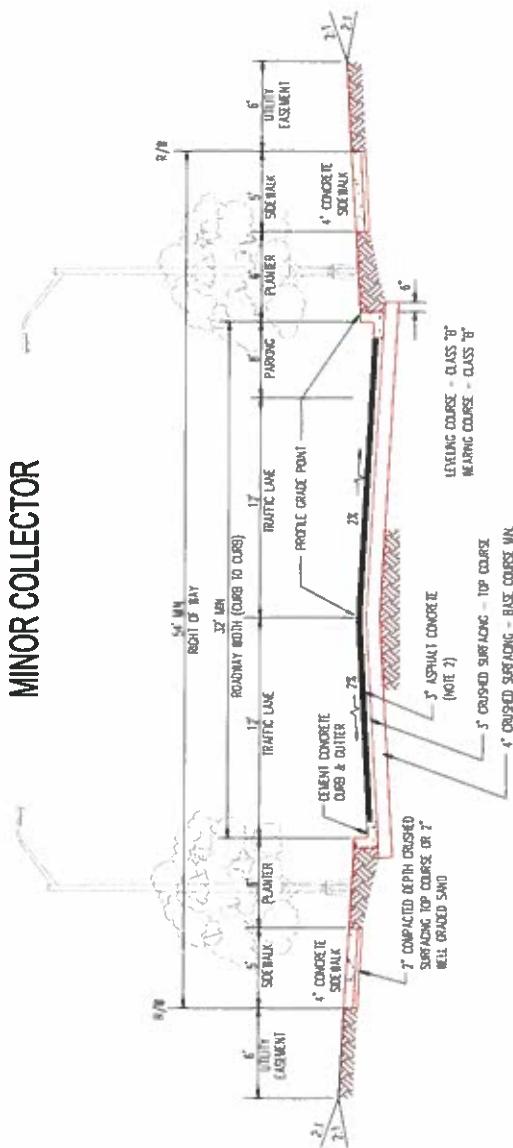
MOUNTAINOUS TERRAIN >15%

1. SIDEWALK ON ONE SIDE ONLY.
2. ELIMINATE PLANTER STRIPS AND UTILITY EASEMENTS.
3. ADD 2' RIGHT-OF-WAY BEYOND BACK OF CURB AND BACK OF SIDEWALK.

10-073

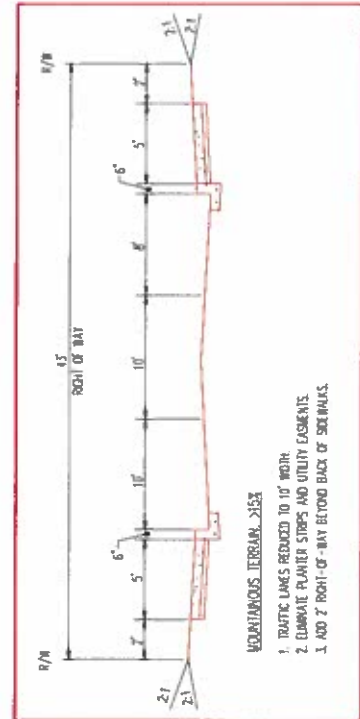
MINOR COLLECTOR STREET DESIGN

MINOR COLLECTOR



NOTES:

1. ALL THICKNESSES ARE COMPACTED DEPTHS.
2. CONTRACTOR WILL BE REQUIRED TO PAVE NEW ROADWAY IN TWO (2) EQUAL LOTS, UNLESS PERMISSION IS GRANTED BY CITY ENGINEER TO PAVE IN ONE LOT.



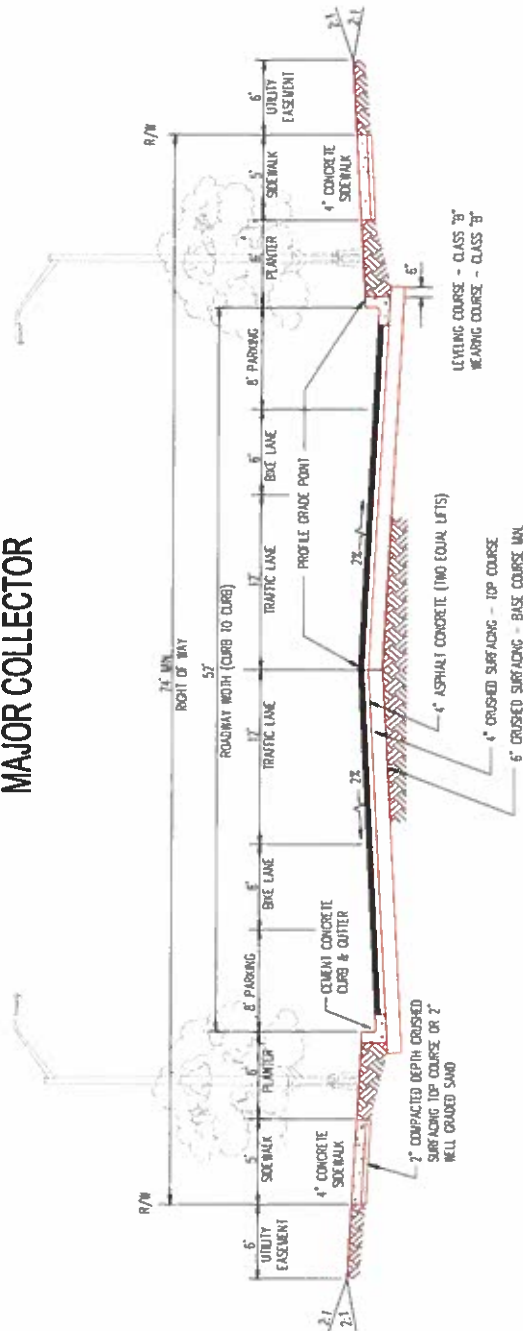
MOUNTAINOUS TERRAIN, 3152

1. TRAFFIC LANES REDUCED TO 10' WIDTH
2. ELIMINATE PLANTER STRIPS AND UTILITY EASEMENTS
3. ADD 2' RIGHT-OF-WAY BEYOND BACK OF SOOBALKS

ID-071

MAJOR COLLECTOR STREET DESIGN

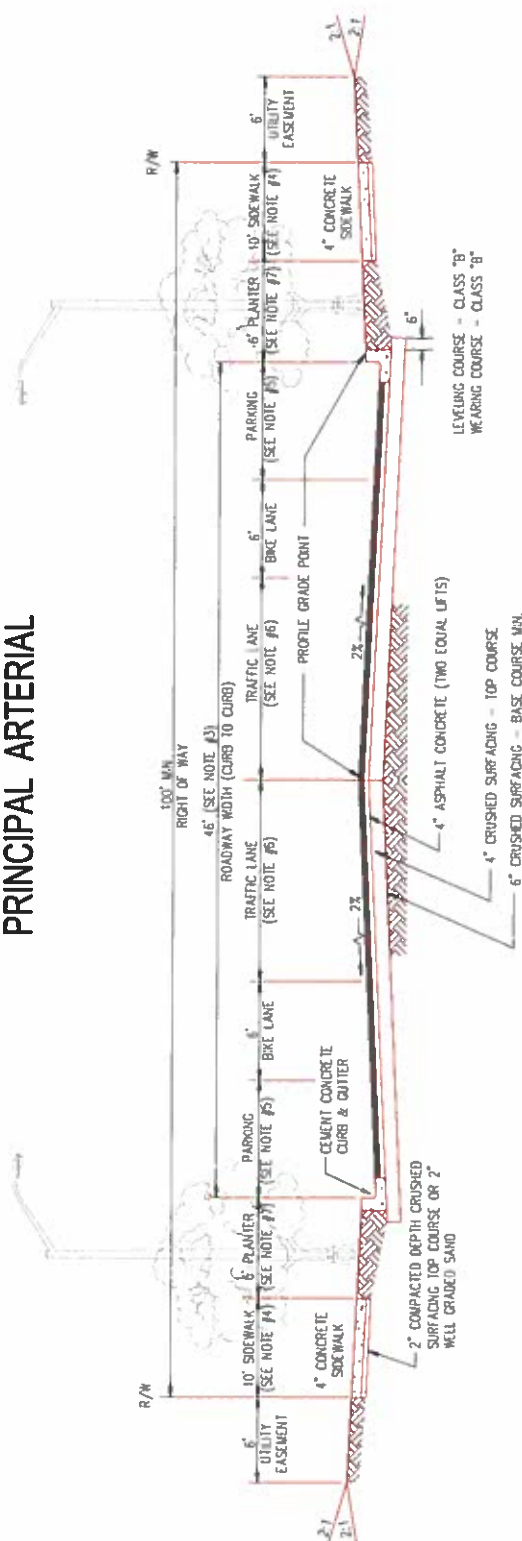
MAJOR COLLECTOR



10-072

ARTERIAL STREET DESIGN

PRINCIPAL ARTERIAL



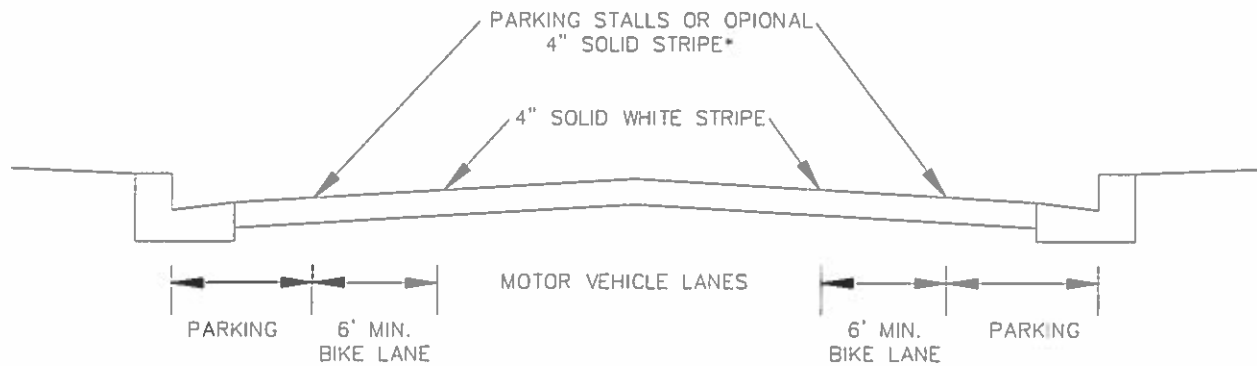
NOTES:

1. ALL THICKNESSES ARE COMPACTED DEPTHS.
2. CONTRACTOR WILL BE REQUIRED TO PAVE NEW HIGHWAY IN TWO (2) LIFTS.
3. TWO 11-FOOT LANES, ONE 12-FOOT CENTER LANE, AND TWO 6-FOOT BKE LANES. ACTUAL WIDTH WILL BE DETERMINED BY NUMBER OF TRAVEL LANES BASED ON THE PROJECTED VOLUME OF TRAFFIC.
4. THE MAXIMUM SIDEWALK WIDTH WILL BE SIX FEET FOR ALL OTHER AREAS NOT DESIGNATED WHEN CITY PLANNING DOCUMENTS
5. PARKING LANE REQUIRED IN DESIGNATED AREAS PER APPROVED PLANNING DOCUMENTS.
6. ACTUAL WIDTH WILL BE DETERMINED BASED ON TWO-FIVE TRAVEL LANES DEPENDING ON PROTECTED VOLUME OF TRAFFIC USING THE FACILITY (REFER TO TRANSPORTATION PLAN.)
7. PLANTER STRIPS WILL BE REQUIRED FOR ALL AREAS WHERE THE SIDEWALK WIDTH IS BETWEEN 5-8 FEET; OTHERWISE, STREET TREES MAY BE INCLUDED WITHIN THE 10-FOOT SIDEWALK WIDTH. THE CITY ENGINEER WILL MAKE THE FINAL DETERMINATION.

10-025

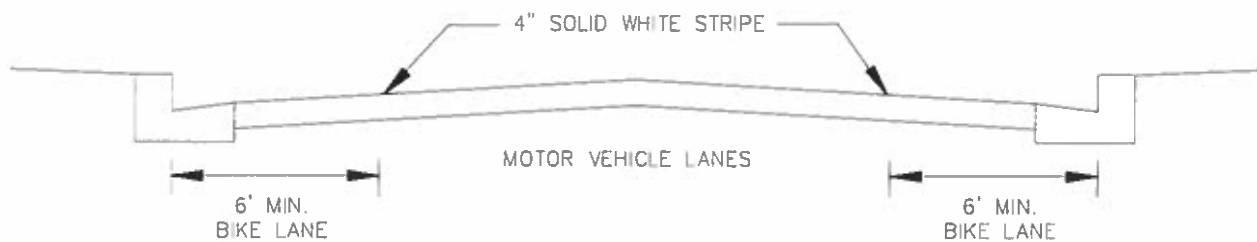
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BIKE LANES

* THE OPTIONAL SOLID WHITE STRIPE MAY BE ADVSABLE WHERE STALLS ARE UNNECESSARY (BECAUSE PARKING IS LIGHT) BUT THERE IS CONCERN THAT MOTORISTS MAY MISCONSTURE THE BIKE LANE TO BE A TRAFFIC LANE.

DESIGN-A STRIPED PARKING



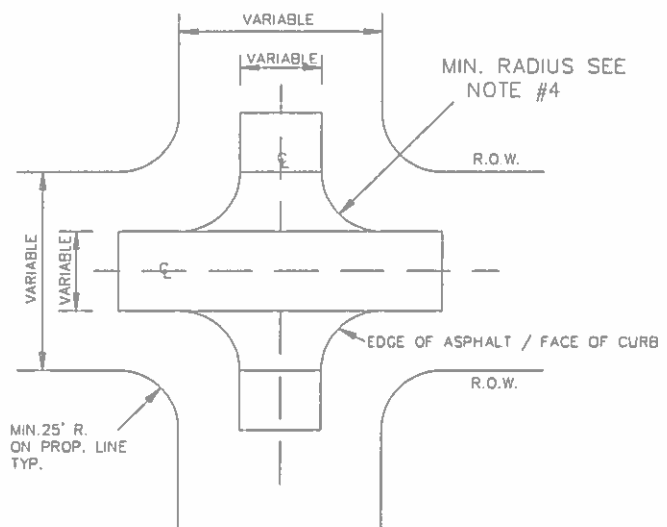
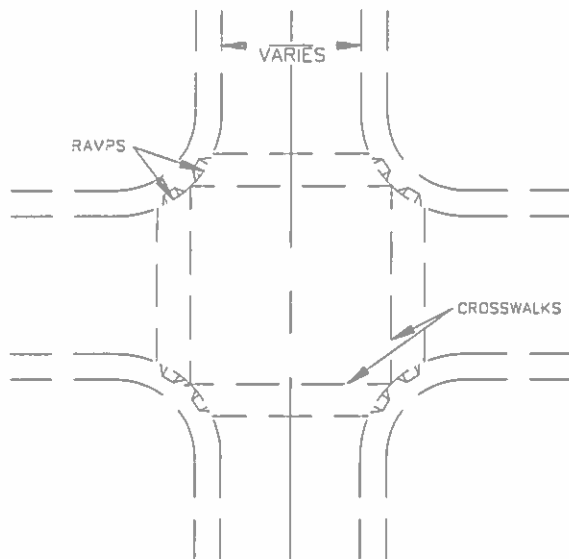
DESIGN-B PARKING PROHIBITED

3-120

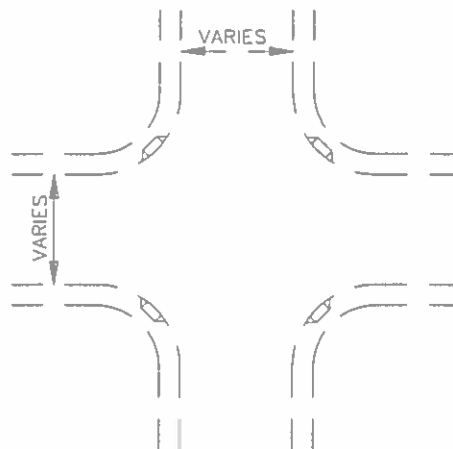
INTERSECTION PLANS AND CURB RAMP LOCATIONS

Notes:

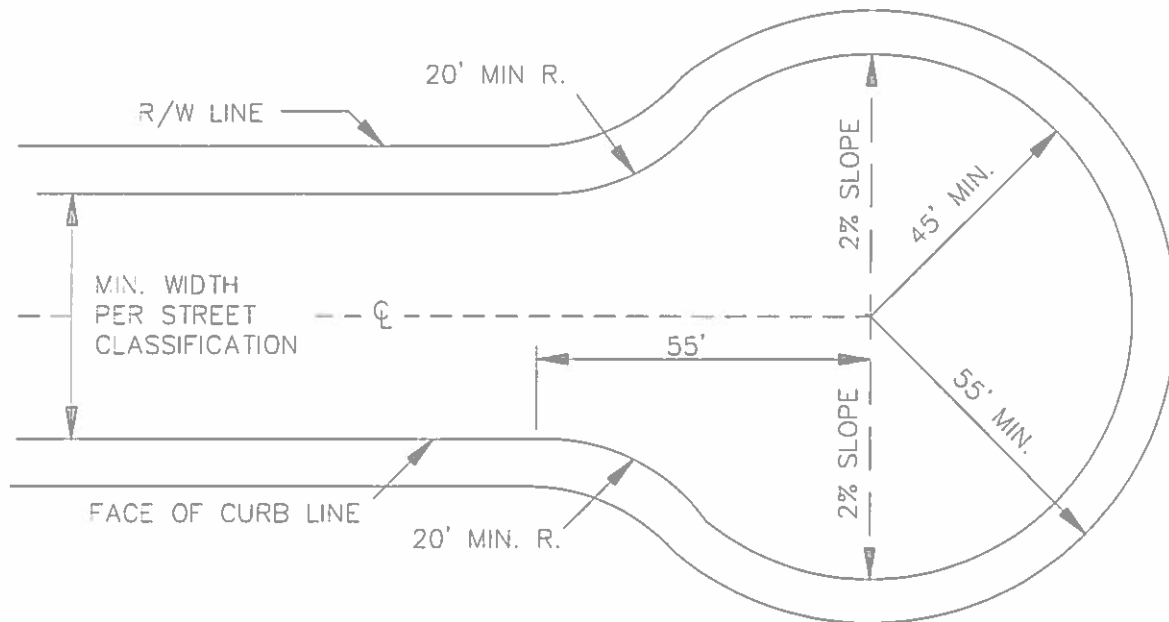
1. Catch basin and inlets shall be outside the curb ramp (24" min. Clearance from ramp).
2. Care shall be taken to keep the ramp from conflicting with hydrants, poles, inlets, and other utilities.
3. When ramps are constructed on one side of street, ramps shall be constructed at corresponding locations on opposite side of street.
4. Minimum 20' R. local and minor collector, 35' R. major collector and arterial.



TYPICAL ROAD INTERSECTION



ID-038

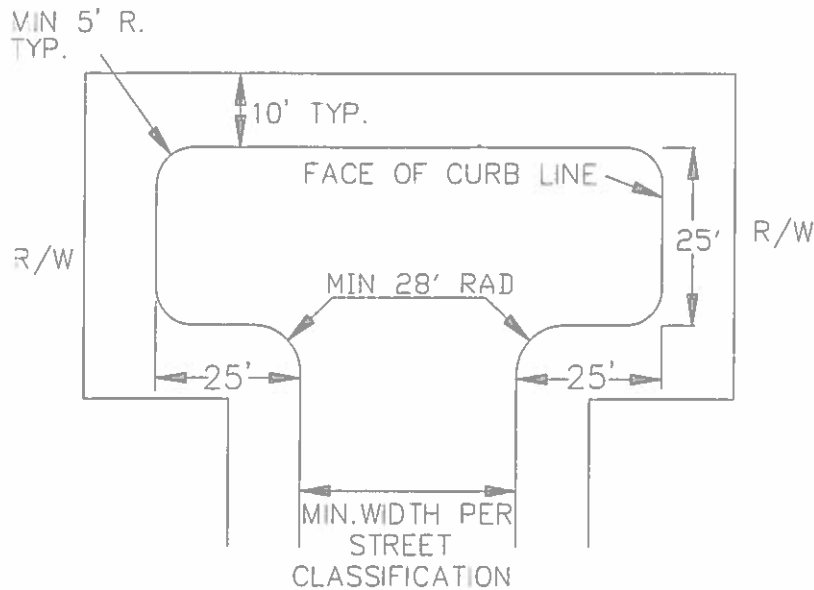
CUL-DE-SAC PLAN

NOTE: A "Hammerhead" or "L" turnaround may be used, with City Engineer approval, as an alternate when a cul-de-sac is not feasible, or as a means of intermediate turnaround for permanent streets longer than 150'. ID-039

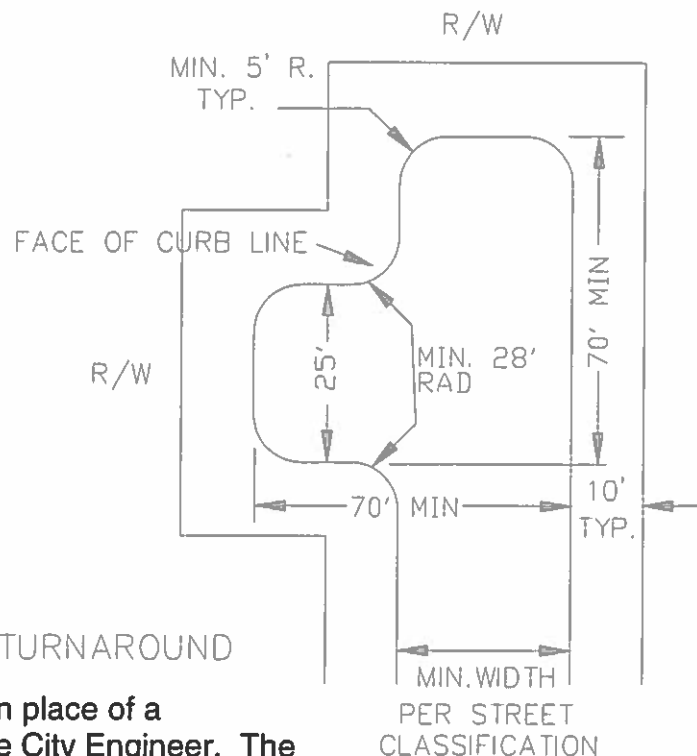
A street that is planned to dead-end against a subdivision boundary for future extension, shall have temporary easement for right-of-way and be paved without curb and gutter for ease of removal of extra pavement and easement when street is extended.

At least one sign stating "No parking - Fire Lane" shall be installed at the beginning of Cul-de-sac by developer.

OTHER TYPE TURNAROUND PLANS



"T" OR HAMMERHEAD TURNAROUND



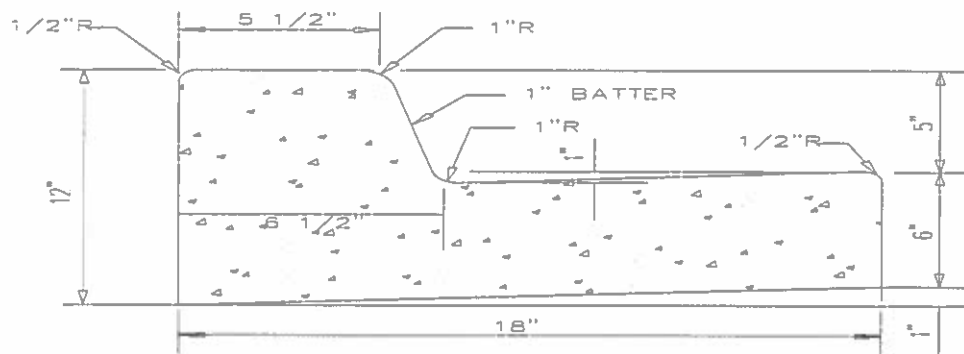
"L" TURNAROUND

NOTE: These plans may be used in place of a cul-de-sac only upon approval of the City Engineer. The turnaround must be clearly marked or signed "No parking - Fire Lane" with as many signs as is necessary at the beginning of the turnaround, installed by the owner/developer.

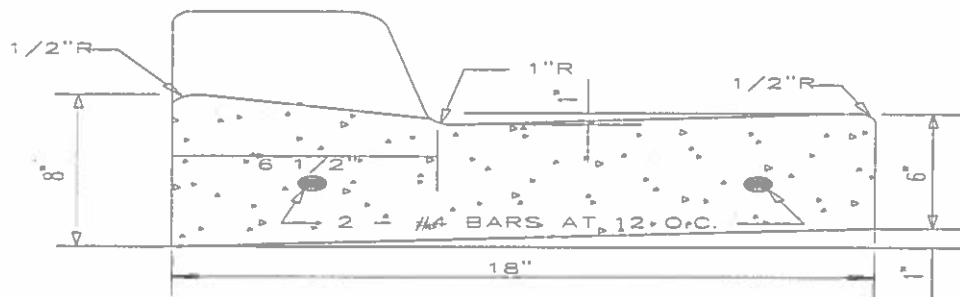
ID-040

CURB & GUTTER SECTIONS

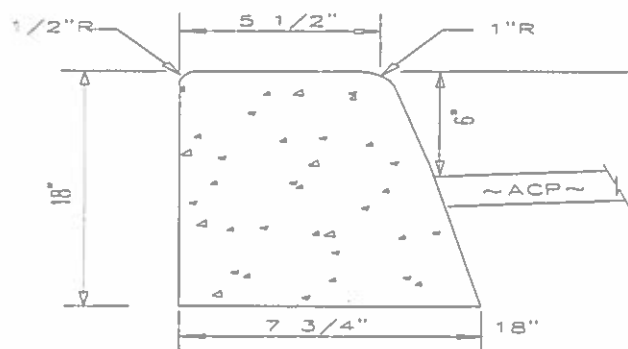
MONOLITHIC POUR W/SIDEWALK PERMITTED W/3/8" EXPANSION JOINT FELT OR CURB & GUTTER SHALL BE POURED SEPARATELY FROM SIDEWALK



CURB & GUTTER SECTION
TYPE "A"



CURB & GUTTER @ DRIVEWAY
TYPE "D"

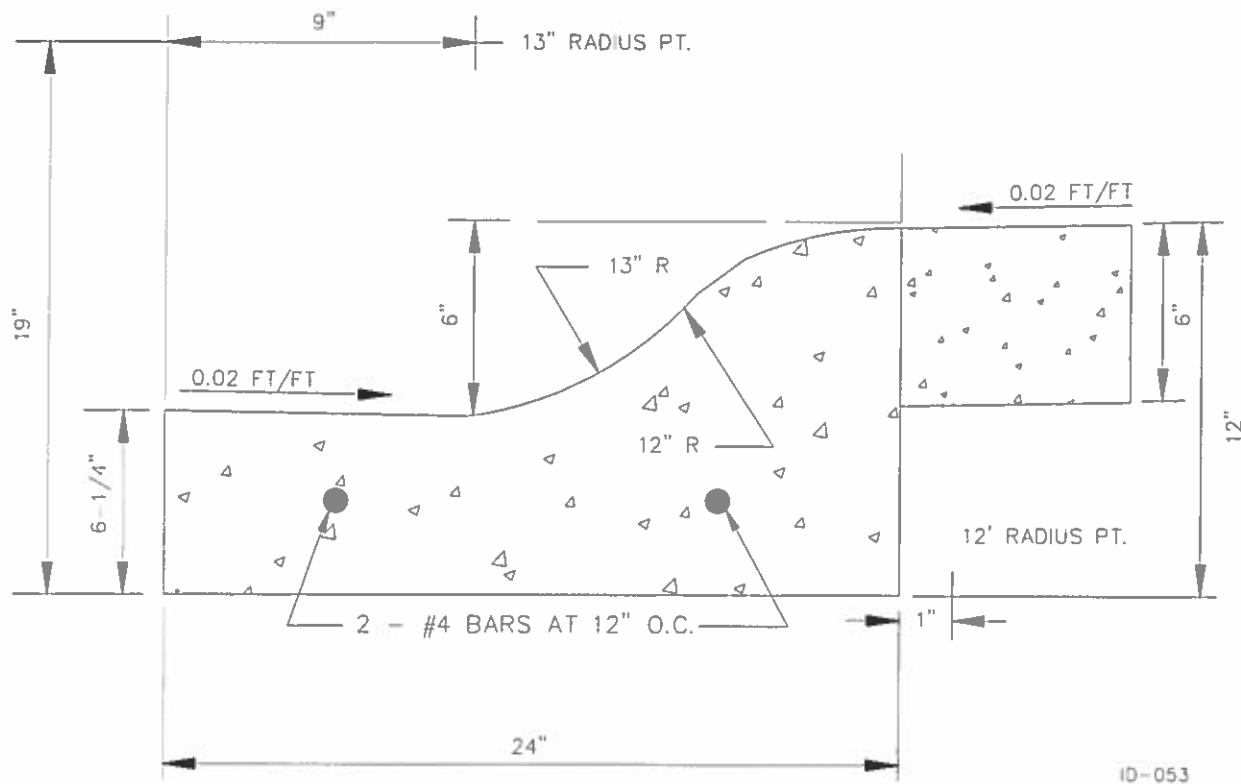


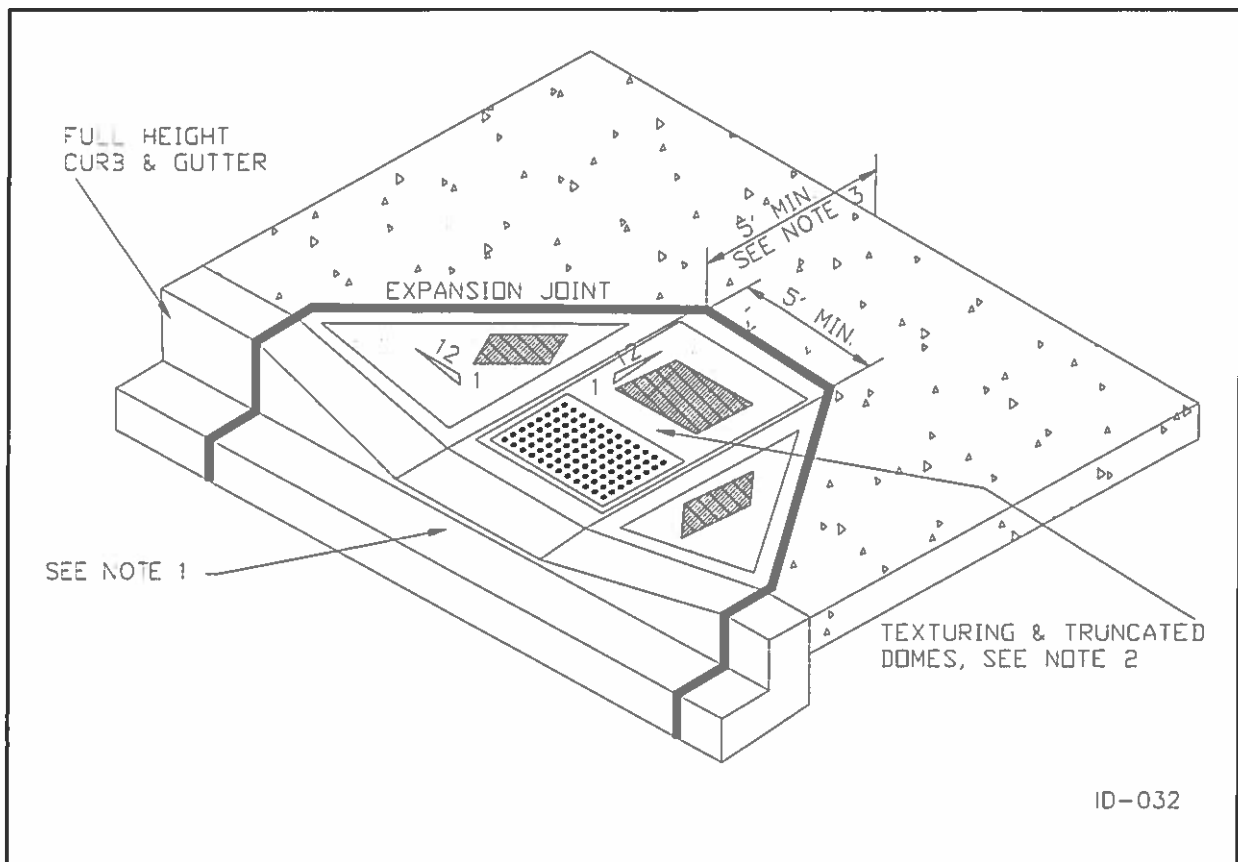
CURB SECTION
TYPE "E" - SPECIFIC APPROVAL REQUIRED

ID-007

ROLLED CURB SECTION (Sidewalk Adjacent or Separated)

- NOTE:**
1. Rolled curb is only permitted on local and minor collector streets by developer request and only if curbside sidewalks are built at the same time. It is not allowed by developer request in mountainous terrain where property access is prohibited or not intended to occur.
 2. 4000 psi concrete required for sidewalks abutting rolled curbs.
 3. 6 x 6 W1.4 x W1.4 welded wire fabric as per ASHTO M55 reinforcement required in rolled curb sidewalk sections. 8" overlap on splices required.

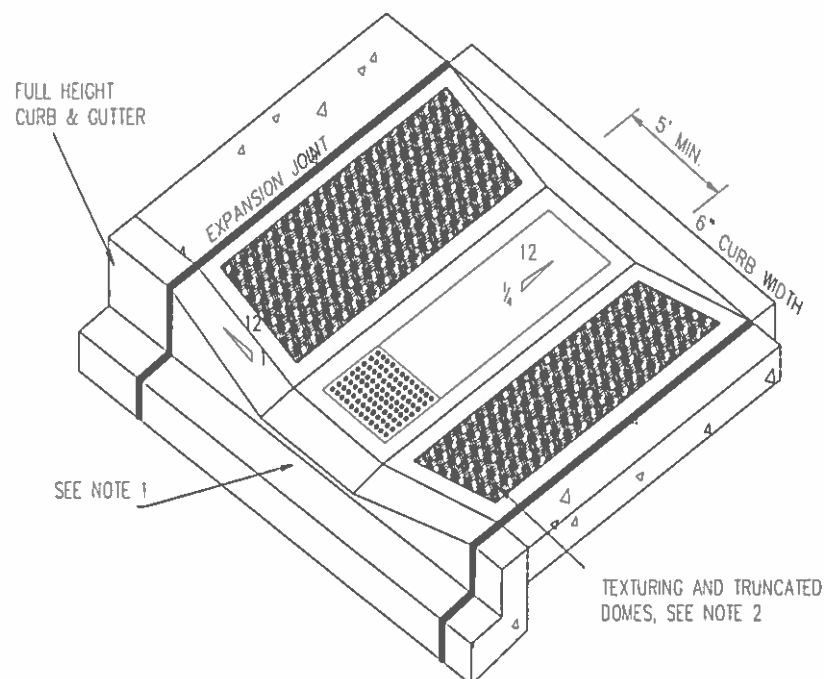


WHEELCHAIR RAMP DETAIL WITH LANDING

1. Depressed curb shall have no more than a 1/2" radius lip at gutter in wheelchair ramp sections.
2. Texturing with metal grid placed in wet concrete and then removed to leave ridged surface pattern. Texturing shall cover upper sloped area in ramp and shall not exceed 1/2" depth. Contractor to provide sample for approval by engineer prior to performing work. ADA truncated domes as per WSDOT standards. Dome material as approved by Public Works.
3. Minimum 5' landing, or use detail #6-15 without landing.
4. See also WSDOT Standard Plan F-3a.

WHEELCHAIR RAMP DETAIL WITHOUT LANDING

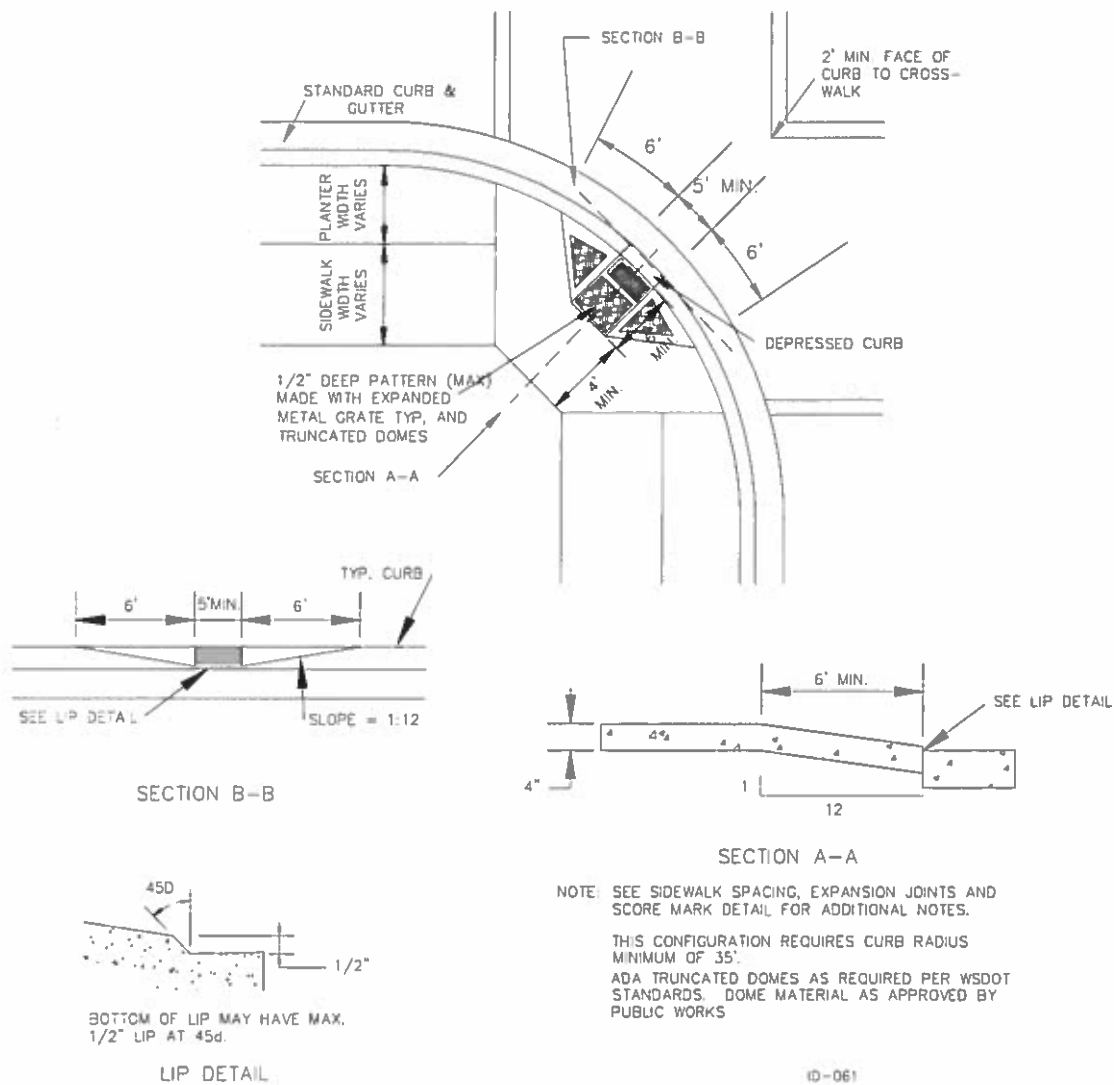
1. Depressed curb shall have no more than a $\frac{1}{2}$ " radius lip at gutter in wheelchair ramp sections.
2. Texturing with metal grid placed in wet concrete and then removed to leave ridged surface pattern. Texturing shall cover all sloped area in ramp and shall not exceed $\frac{1}{2}$ " depth. Contractor to provide sample for approval by engineer prior to performing work. ADA truncated domes as per WSDOT Standards . Dome material as approved by Public Works.
3. See also WSDOT Standard Plan F-3b.



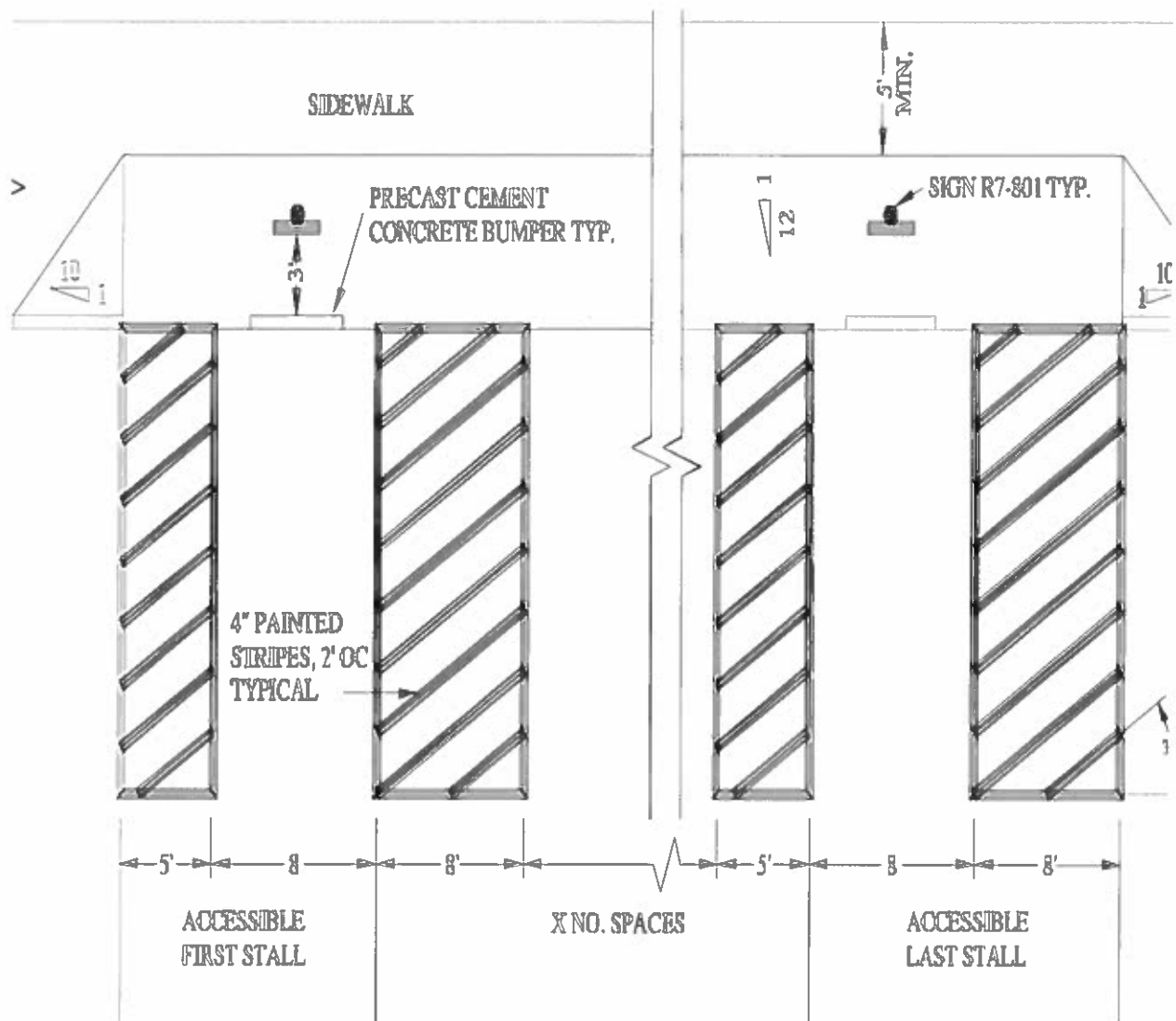
WHEELCHAIR RAMP WITHOUT LANDING

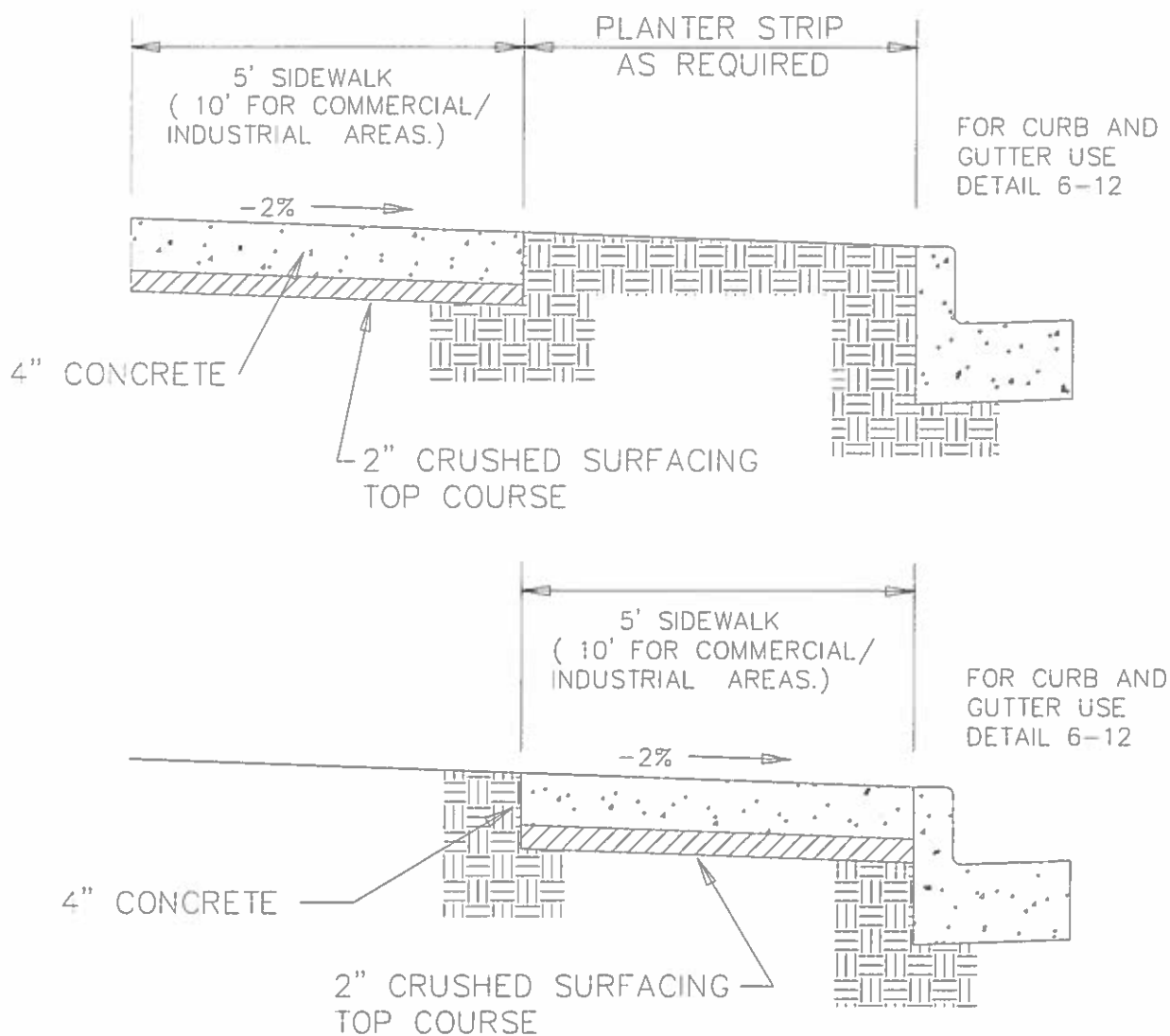
ID-041

HANDICAP RAMP TYPE I



ACCESSIBLE PARKING SHOWN WITH CONTINUOUS CURB RAMP

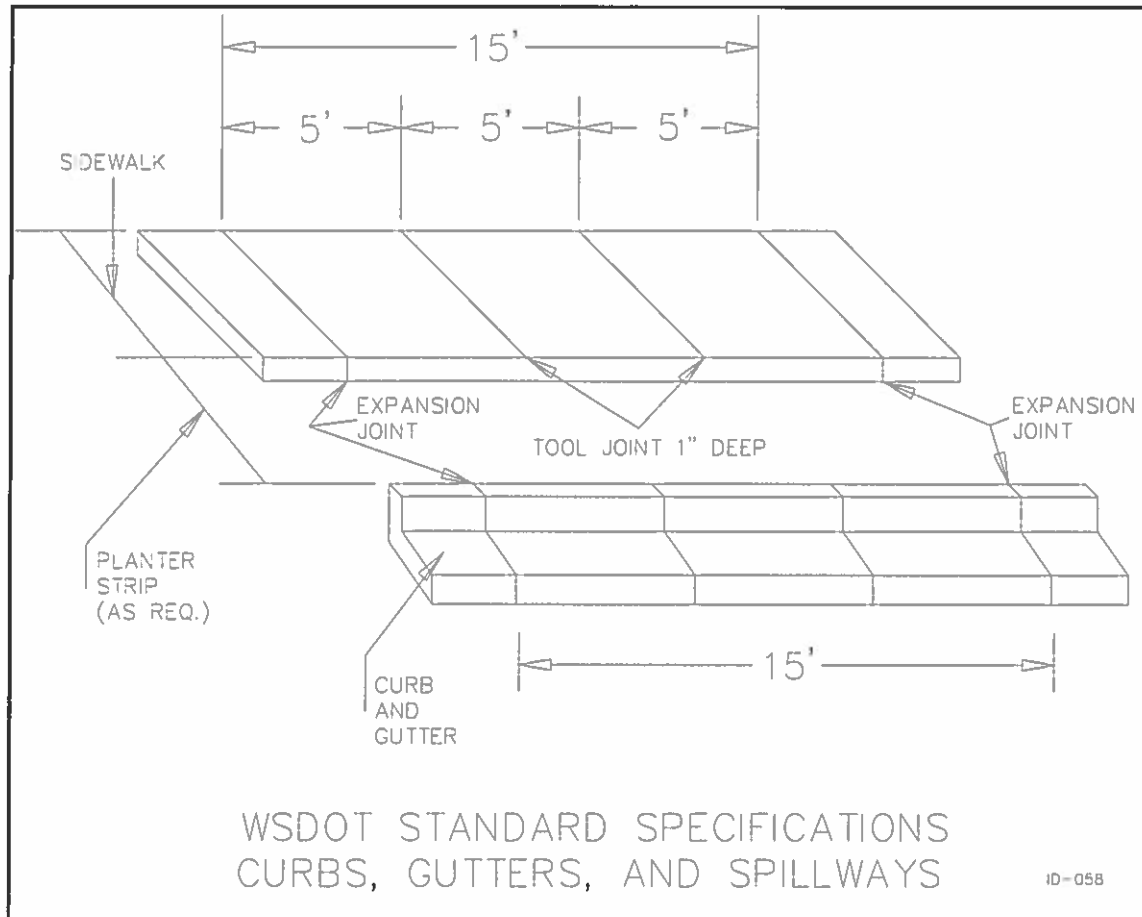


SIDEWALK

ID-059

GENERAL NOTES:

1. For joints and scoring, see standard for sidewalk spacing, expansion joints, and score marks.
2. Concrete driveways require a minimum depth of 6".

SIDEWALK SPACING**GENERAL NOTES:**

1. Expansion joint material to be 3/8" thick premolded joint filler full thickness of concrete.
2. Form and subgrade inspection required before pouring concrete.
3. Score marks shall be $\pm 1/8$ " wide by ± 1 " deep for sidewalks 10' in width, a longitudinal score mark shall be made along center of walk.
4. Expansion joints shall be installed in curb and gutter and in sidewalk at PC and PT at all curb returns. Expansion joints shall be placed in sidewalk at same locations as those in curb and gutter when sidewalk is adjacent to curb and gutter, unless otherwise directed by Public Works.
5. Brush finish.
6. Extruded cement concrete curb allowed with approval of City Engineer.

ACCESS APPROACH CONTROL (DRIVEWAYS & PRIVATE ROADS)

A residential driveway is an access which serves one, two, or three single family residences. Recorded easements are necessary for such joint use access. All other accesses are commercial access.

Width shall be determined as the net width of opening, exclusive of side slopes.

The maximum width of residential driveway curb cuts shall be 25', minimum 10'. If a parcel is entitled to two accesses, these may be combined into one single access of 35' maximum width. (Does not apply to rolled curb section.)

The maximum width of commercial access shall be 35', minimum 15'.

Not more than one access shall be permitted for frontage 75' or less. Two accesses shall be permitted for frontage greater than 75'. Permission to have three or more accesses on a frontage greater than 150' must be approved by the engineer.

As a condition of issuance of any Right of Way Permit, all abandoned access improvements on the same frontage shall be removed and the curbing and sidewalks properly restored. Location and extent of all commercial access is subject to approval of the engineer.

No concrete shall be poured until forms are inspected by engineer.

Joint use accesses are encouraged in commercial areas.

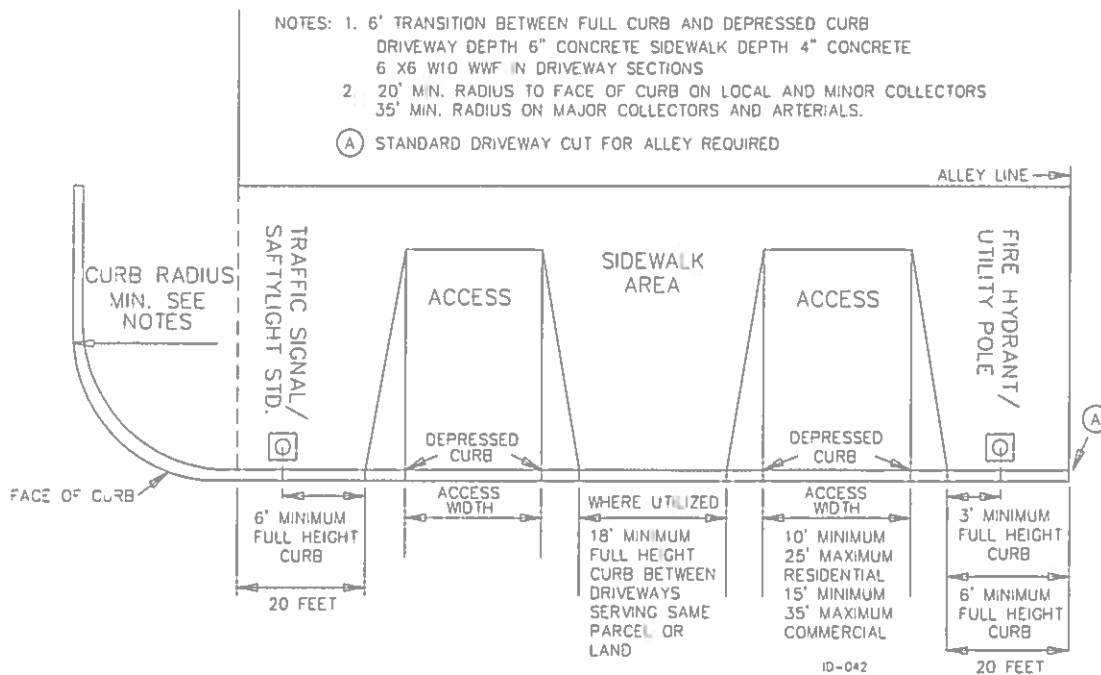
Upon remodel of existing commercial accesses, standards may be modified to allow minimum turning radius required for related commerce as approved by the City engineer.

The centerline of the approach extended, shall intersect the centerline of the City street at an angle not less than 75°.

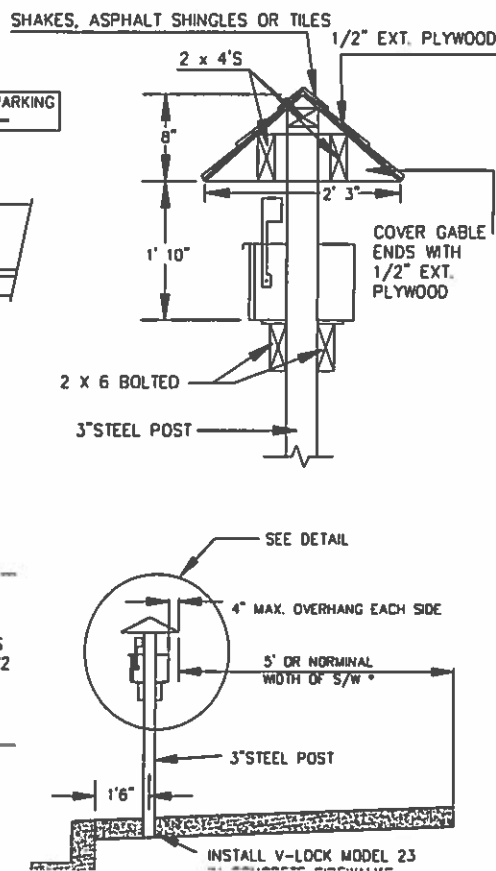
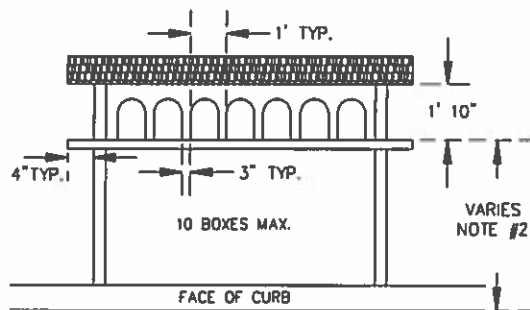
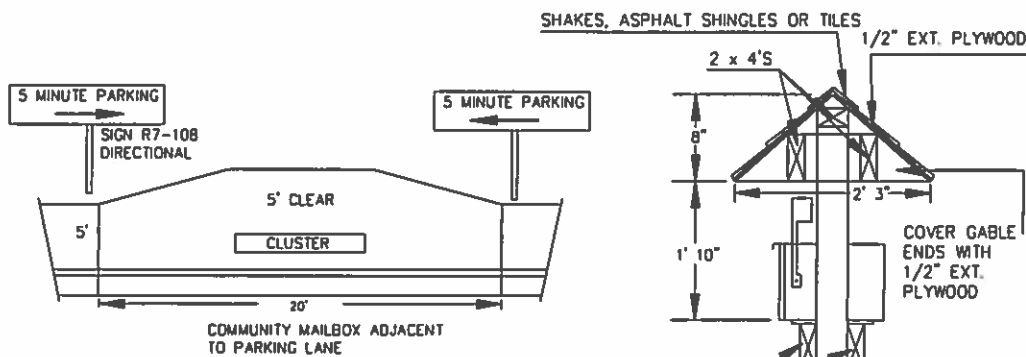
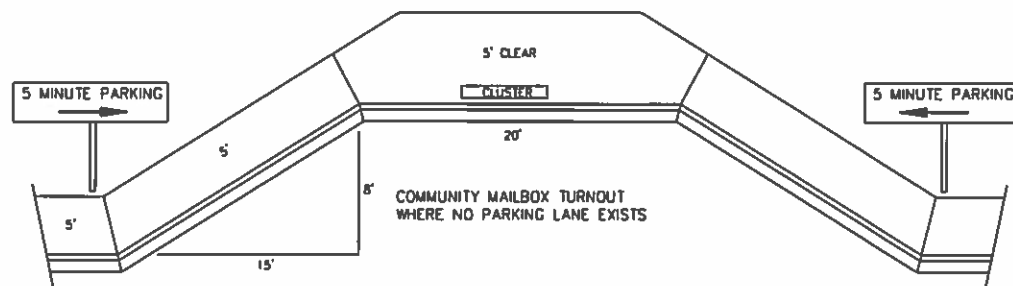
Wherever topographic conditions permit, there shall be a level section on the approach extending back from the road shoulder a distance of fifteen feet (15').

Road approaches must be ballasted and leveled with crushed stone surfacing (standard top course.) Approaches shall be paved and must slope away from the road shoulder at a minimum rate of three inches (3") per ten feet (10'). Maximum driveway slope shall not exceed 18%.

No access approach shall be constructed until a permit from the City has been issued.

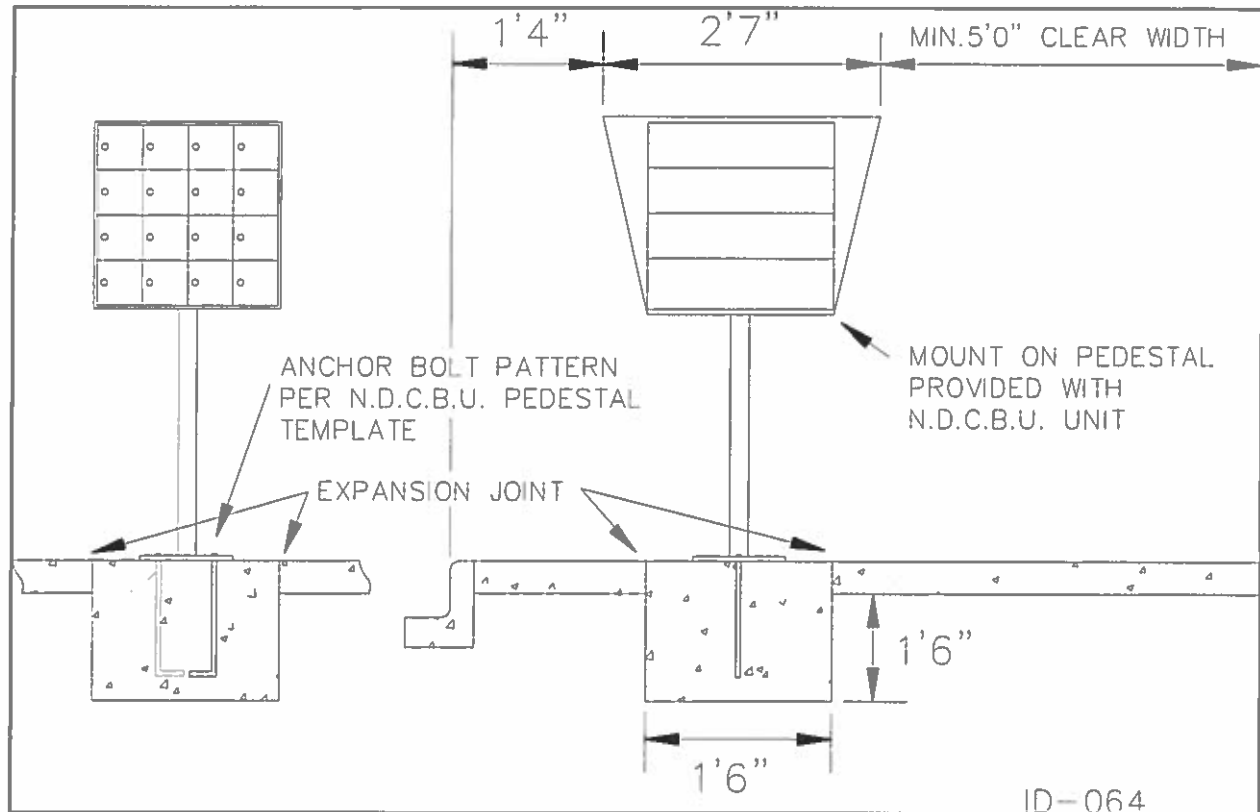


MAILBOX MOUNTING CURB TYPE INSTALLATION



NOTE: SEE SHEET 6 - 22 FOR GENERAL NOTES AND ALTERNATE LOCATION SCHEME FOR MANUFACTURED DELIVERY / COLLECTION BOX UNITS

NEIGHBORHOOD DELIVERY AND COLLECTION BOX UNIT

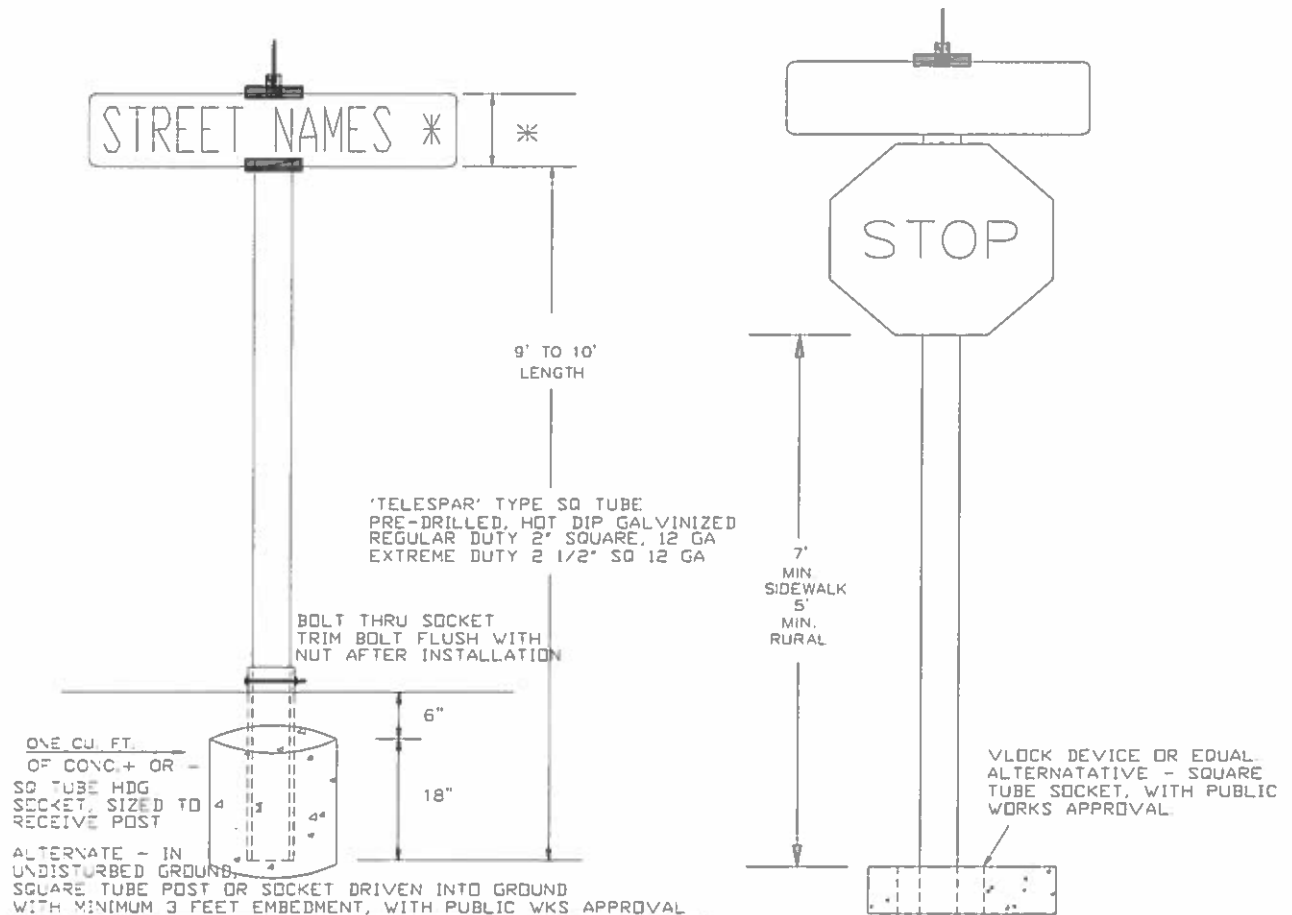


NOTE: SEE SHEET 6 - 1 FOR TURNOUT DETAILS

Mailbox Locations Shall Be:

1. For three or more mailboxes on urban residential access streets where the speed limit is 25 mph.
2. Mailbox height varies according to the type of delivery vehicle. These heights shall be determined by the postmaster during plan review.
3. Mailboxes must be postmaster approved with a uniform box style and method of address identification.
4. Location of mailboxes subject to approval of postmaster and City engineer.
5. Optional newspaper box structures are subject to approval of postmaster and City engineer.
6. Roof is optional.
7. The minimum spacing between the centers of support posts shall be three-fourths the height of the posts above the groundline.
8. Mailbox support designs not described in this regulation will be acceptable if approved by the chief engineer of the United States Post Office.
9. It will be the responsibility of the postal patron to inform the USPO of any new or existing mailbox installation where shoulder construction is inadequate to permit all-weather vehicular access to the mailbox.
10. Any mailbox that is found to violate the intent of this regulation shall be removed by the postal patron upon notification by the USPO. At the discretion of the USPO, based on an assessment of hazard to the public, the patron will be granted not less than 24 hours nor more than 30 days to remove an unacceptable mailbox. After the specified removal period has expired, the unacceptable mailbox will be removed by the USPO at the postal patron's expense.

SIGN INSTALLATION



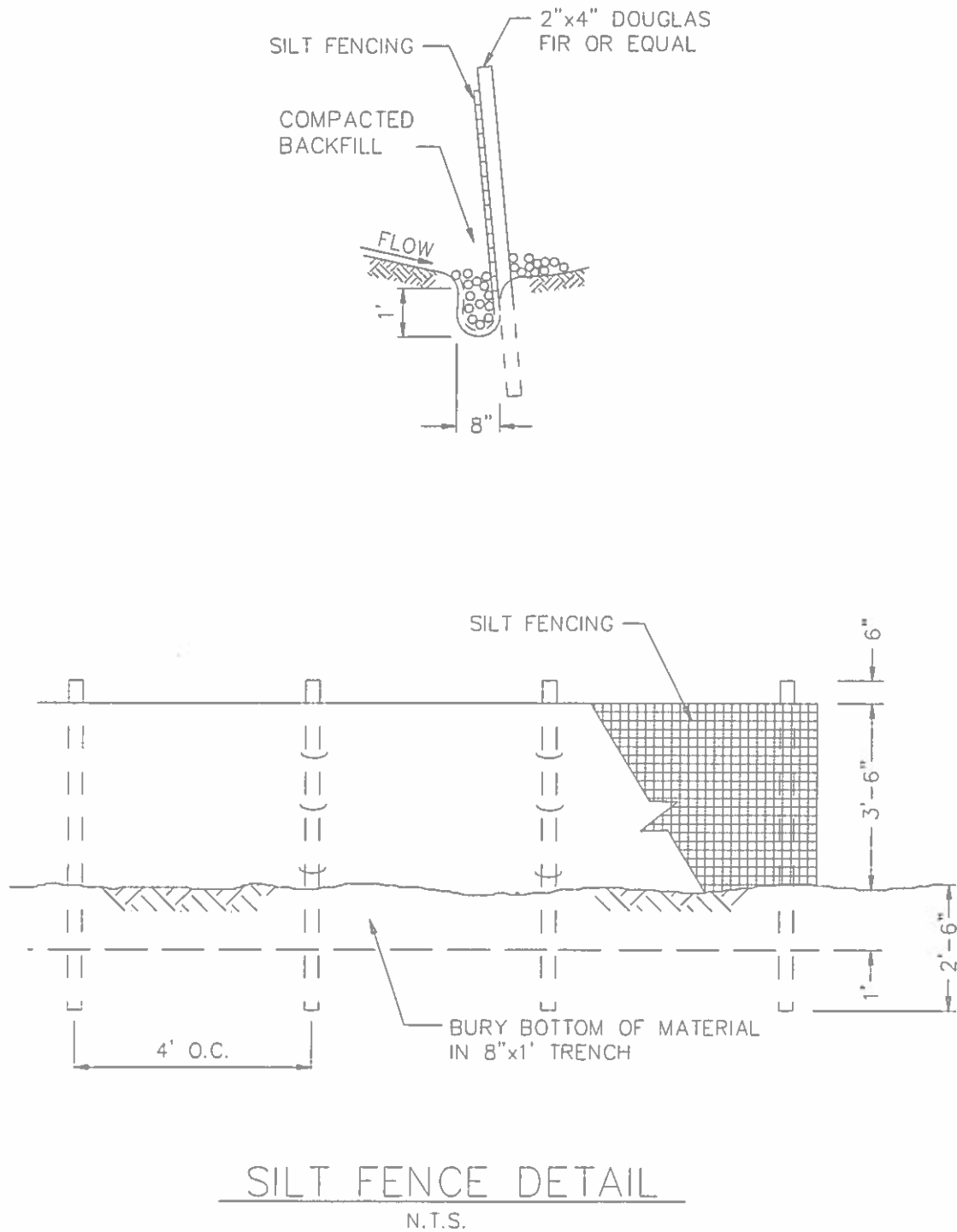
ALL SIGN TYPES AND INSTALLATIONS ARE GOVERNED BY CURRENT MUTCD.
ALL SIGNAGE REFLECTIVITY SHALL BE HIGH INTENSITY GRADE AT MINIMUM

SIDEWALK INSTALLATION

- STREET NAME SIGNS ARE ALL ALUMINUM, 0080" MATERIAL WITH LEGEND COLOR WHITE AND BACKGROUND GREEN, AND NAMES ON BOTH SIDES. LETTERS ARE STANDARD 'B' SERIES, PREFIX AND SUFFIX ABBREVIATIONS ARE STANDARD 'C' SERIES. SPEED ZONES LESS THAN 30 MPH MAY HAVE 6" SIGNS WITH 4" LETTERS. SPEED ZONES AT OR GREATER THAN 30 SHALL HAVE 9" SIGNS WITH 6" LETTERS

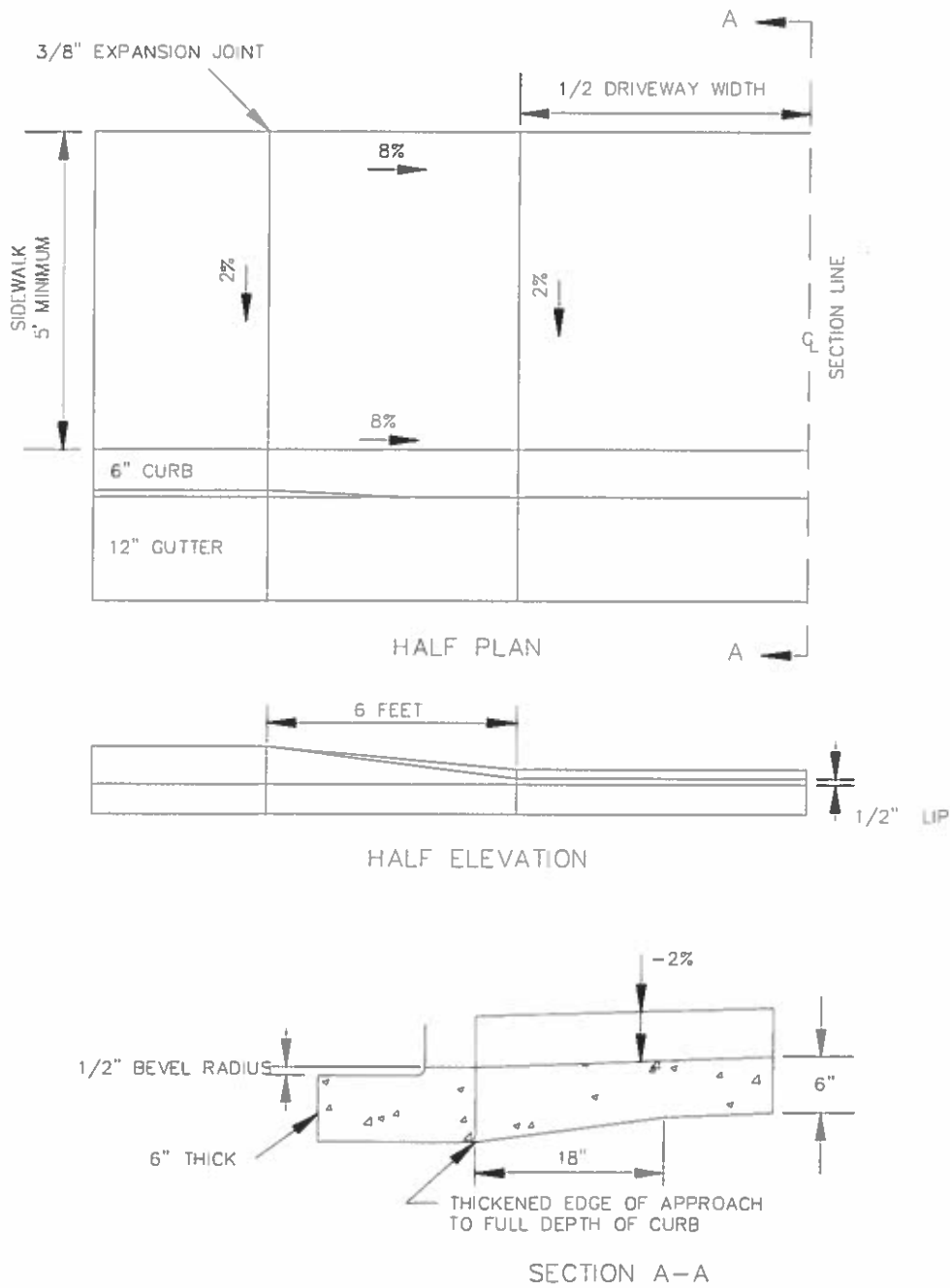
10-029

SILT FENCING



ID-031

DRIVEWAY WITH DEPRESSED SIDEWALK

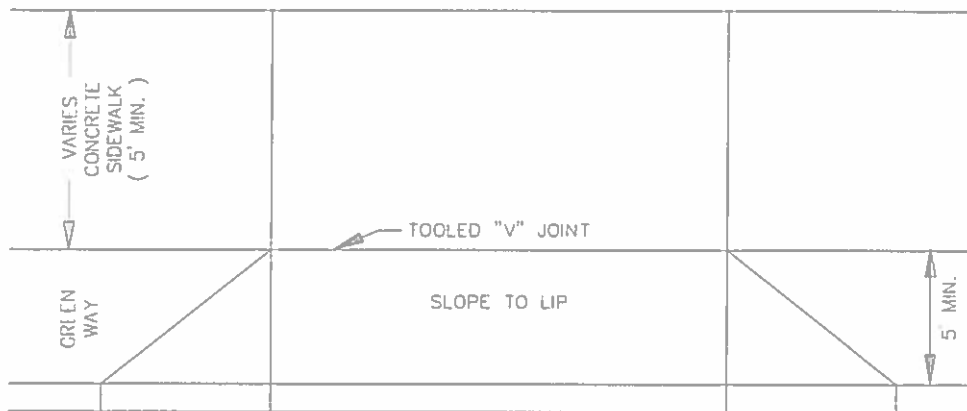


NOTES:

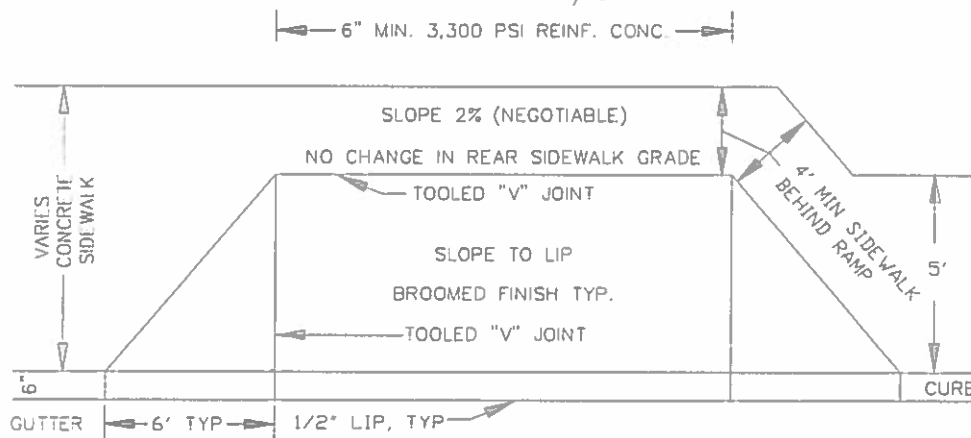
- 1 CEMENT CONCRETE APPROACHES SHALL BE CONSTRUCTED OF AIR-ENTRAINED CONCRETE CLASS B
- 2 CONTRACTION JOINTS SHALL BE PLACED AT 15' MAXIMUM SPACING.
- 3 ALL JOINTS SHALL BE CLEANED AND EDGED.

ID-043

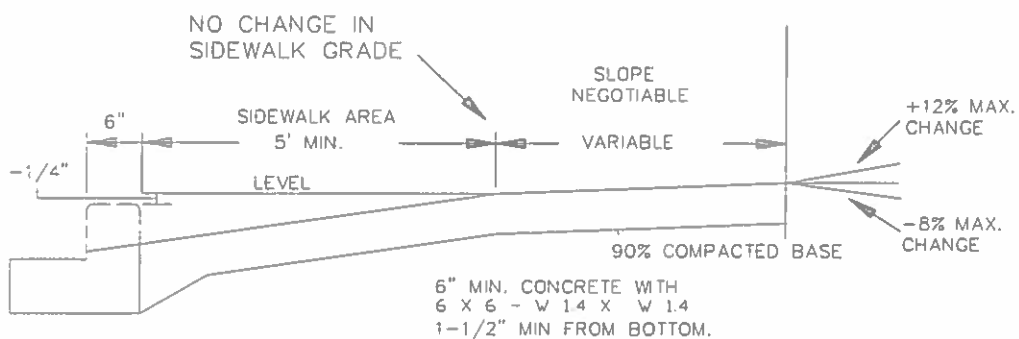
TYPICAL DRIVEWAY WITH CURB/WALK, WITH AND WITHOUT GREEN STRIP



TYPICAL DRIVEWAY W/GREENWAY



TYP DRIVEWAY WITH SIDEWALK 5' OR GREATER



SEE ALSO WSDOT STANDARD PLAN F-4

ID-116

SECTION SEVEN TABLE OF CONTENTS

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INTRODUCTION:

The City of Chelan has found that future storm water drainage problems may be reduced or avoided if future developers, both private and public, provide for storm and surface water drainage of their respective properties. Storm Drainage Standards and Guidelines are set forth to protect life and property from loss and damage by flooding and to protect streams, creeks, and lakes from pollution and excessive flows.

Any material, design procedure, standard or testing not specifically addressed within this document shall be in conformance with the City's current master drainage plan as now exists or as may hereafter be amended as may be directed by the City engineer. Analysis and improvements shall conform to the guidelines contained in the *Stormwater Management Manual for Eastern Washington* by the Washington State Department of Ecology.

PURPOSE:

The following storm drainage standards and guidelines are intended to reduce and prevent adverse storm drainage impacts. They represent the minimum design standards for the construction of storm drainage facilities and stream channel improvements within Chelan. Compliance with these standards does not relieve the designer, owner, or developer of the responsibility to apply conservative and sound professional judgment to protect the health, safety and welfare of the general public. Special site conditions and environmental constraints and considerations may require a greater level of protection than would normally be required under these standards.

WHEN A DRAINAGE PLAN OR DRAINAGE REVIEW IS REQUIRED:

- A. Plans for permanent drainage and storm water detention facilities shall be provided on property improvements within Chelan in accordance with the Standards for the following types of improvements.
 - 1. All plats (including short plats) where required by the SEPA document.
 - 2. All developments, including remodeling, reconstruction, and new construction adding five thousand (5000) square feet or more of new impervious surfaces, including gravel surfaces.
 - 3. Developments entailing construction which would change the point of discharge of surface waters, discharge surface waters at a higher velocity and/or quantity than that of the pre-development discharge rate, or, tend to add to pollution of surface waters.
 - 4. Any proposed development adjacent to the 100 year flood plain of any stream or lake.

WHEN PLANS ARE EXEMPT:

The plan requirement established in the previous section shall not apply when Public

Works determines that the proposal meets all of conditions A, B and C.

- A. Will not seriously and adversely impact the water quality conditions of any affected receiving bodies of water.
- B. Will not substantially alter the drainage pattern or increase the peak discharge.
- C. Will not cause run-off exceeding the available capacity of the existing drainage system where such system was designed to serve the proposed development area.

A single family residence development with less than 5,000 square feet of impervious surfaces is exempt from plan requirements. However, all buildings with down spouts or other point sources shall provide a drainage plan.

GENERAL REQUIREMENTS:

All persons proposing land development and/or approvals as outlined above shall provide a drainage plan for surface water flows entering, flowing within and leaving the subject property. The plan is to conform to the following standards and requirements:

- A. When required, plans for storm water management shall be prepared by a registered Civil Engineer currently licensed by the State of Washington and qualified by experience and education in the field of hydraulics, hydrology, or a closely related field. Storm drainage plans or revisions to any approved plan shall be reviewed and approved by Public Works prior to any construction.
- B. On-site storm drainage improvements must be sufficient to mitigate impacts on runoff, erosion, sedimentation and pollution.
- C. All drainage system elements must be designed to allow for adequate maintenance and accessibility at all times.
- D. Developer shall meet all applicable laws for water quality prior to discharge to any wetland, stream, or lake.
- E. In no case shall storm sewers be allowed to connect to sanitary sewers.
- F. Storm sewer systems shall generally conform to sanitary sewer design standards. City engineer may specify ductile iron pipe in special circumstances.
- G. No drainage originating inside of a building or structure shall be connected to the storm drainage of surface water systems, with the exception of parking

garages.

- H. Drainage systems shall be designed to meet applicable State and Federal requirements for water quality prior to discharge to any wetland, stream, or lake. The developer shall be responsible for obtaining any Local, State, Or Federal construction or discharge approvals or permits.

BASIC REQUIREMENTS:

- A. Discharge at Natural Location: All surface and storm water runoff from a proposed development that would construct new or modify existing drainage facilities should be discharged at the natural location. Diversions may be allowed if it corrects an existing problem.
- B. Tributary Area Analysis: Proposed developments should identify the upstream tributary drainage area and provide an analysis of the pre-existing drainage volume and quality and an analysis of the impact of the proposal on the drainage system. The post development peak rate runoff shall not exceed the pre-development peak rates for the site. The methods of peak rate runoff control may include detention, retention and/or infiltration. On site bio-filtration in combination with infiltration systems is the preferred method for management of on-site storm water and shall be considered before transporting storm water off-site.
- C. Existing System Assessment: For all proposed development requiring a drainage conveyance system, the conveyance system must be analyzed, designed and constructed to handle existing off-site tributary flows and on-site storm drainage flows caused by development of the project.
- D. Erosion & Sediment Control: Developments involving clearing and grading and which require new or modification of existing drainage facilities must include an erosion/sedimentation control plan meeting DOE requirements and providing suitable measures to prevent sediment-laden runoff from leaving the site during construction.
- E. Maintenance and Operation: The long-term maintenance & operation of the proposed drainage facilities must be addressed in the plan (who, when & how).
- F. Adequate easements shall be provided for operation and maintenance of all drainage facilities located on private property.

DRAFTING STANDARDS AND CONTENTS:

Construction plans for drainage systems shall be prepared in conformance with the City of Chelan's adopted construction plan standards.

DESIGN CRITERIA:**1. Runoff Control**

- A. Developments shall be designed and constructed to provide control of the quality and quantity of storm water runoff both during and after construction. Erosion and sedimentation control plans shall be submitted and approved by the City of Chelan prior to the beginning of any construction. Please note that a permit from the DOE is required if 5 or more acres are disturbed. Peak discharge control and detention facilities shall be provided in accordance with the Development Standards.
- B. Maximum allowable release rates from storm water detention systems shall be based upon the pre-development runoff from the development site as described in section below. The allowable release rate shall be determined as specified, and may be modified on a case-by-case basis due to constraints in the drainage system downstream of the point of discharge. Storm precipitation distribution and runoff modeling will conform to the Soil Conservation Service Technical Report 55 or other acceptable method. The "Rational method" used by licensed professional engineers may be used for runoff modeling on parcels under 2 acres, not subject to upstream runoff. T_c minimum shall be 0.1 hours.

Allowable Release Rate:

- 1. For sites with tributary basins greater than 5 acres or sites less than 5 acres in area which are deemed by Public Works to have significant impacts due to runoff quantity, the discharge shall be limited to the capacity of the receiving conveyance system. Peak runoff rate shall be computed using the Soil Conservation Service TR-55 method, modified Santa Barbara Urban Hydrograph Method or other appropriate models.
 - 2. Should the proponent desire to discharge at higher flowrates than provided above, then he shall provide for improvements of the downstream conveyance system.
- C. The on-site drainage system including conveyance, flow restriction, detention, pollution control, and emergency overflow elements must be properly designed and sized to handle runoff from the site and conveyance through the site. The design should be carefully analyzed for potential problems, flow impediments, construction or maintenance difficulties, and potential erosion or other property damage. Catch basins shall be required at every intersection and shall be spaced a maximum of :

<u>SPACING (ft)</u>	<u>GRADE (S)</u>
150	$S < 1.5\%$ or $S > 12.0\%$
200	$S = 1.5\%$ to 3.0% or $S = 8.0\%$ to 12.0%
300	$3\% < S < 8\%$

- D. Impoundment structures shall be designed to the 100 year (3.0"/24hrs.) event. Conveyance structures shall be designed to the 25 year (2.5"/24 hrs.) event.

2. Water Quality Protection

All storm water discharge shall be treated prior to release using best management practices. The applicant should consider the use of vegetative or other natural filtration means. Effluent discharges from any oil removal treatment device to the storm sewer or surface water system shall be in compliance with State Department of Ecology regulations for discharge to storm drains or surface waters. Whenever paved parking is provided for more than 10 vehicles, or for any paved parking or access roadway draining to an open waterway or stream, a City approved oil/grease separation device shall be installed by the Owner. It shall be located at a point where it can be easily maintained and where it will intercept floating contaminants flowing off road rights of way, parking lots, and other sources of pollutants. Selection and sizing of oil separation device type shall be subject to approval of Public Works.

- A. The property owner assumes full responsibility and liability for proper maintenance and operation of the oil separator, unless the separator is a part of a publicly operated drainage system. This statement must appear on the recorded drawings for the development.
- B. Access to the separator shall be maintained.

3. Detention Facilities

- A. Detention facilities will be required when the downstream capacity is inadequate to convey the runoff. All storm water runoff originating from and/or draining from any proposed development shall be controlled and/or conveyed in accordance with all City standards and policies and as described in these Standards.
- B. Storm water detention systems should be designed to maximize reliability,

ease of maintenance, and water quality of runoff and should minimize hazards to persons or property (both on-site and off-site), nuisance values, and risk of failure.

- C. Sufficient detention storage capacity shall be provided to store the excess runoff from the developed site for all storm events up to a "100-year storm".
- D. Sizing: In calculating the storage volume provided, "dead storage" in wet ponds shall be excluded, i.e. that volume of water which must be assumed to be present in the detention system at the commencement of the design storm. Any volume at a level below that of the outfall invert must be presumed to be dead storage, e.g. catchments.
- E. Controlled Overflow Requirements: All detention storage facilities should include a provision for control of overflows, and suitable data shall be provided to support the design. Under no circumstances should the overflow discharge overland or over private property unless drainage easements are acquired.
- F. Site, Soil and Infiltration Data Requirements for Calculating Effective Infiltration Rates to Reduce Storage Requirements.

General Data Requirements:

- a. The proposed site should have favorable topography to preclude high runoff rates. Engineering calculations shall be included with any submittal to show that there will be no adverse impacts due to the reduced storage. Such adverse impacts may include but not be limited to, increased frequency of overflows.
- b. A log of the soils and infiltration test data should be submitted to reveal site soil conditions and infiltration rates.
- c. An adequate number of test holes should be located over the proposed site to substantiate representative conditions for the final layout of the development, and as a minimum condition, test holes shall be located in each area and at the elevation proposed for infiltration.
- d. Groundwater depth, location, flow and general characteristics shall be considered.
- e. The designer shall demonstrate the adequacy of the depth to the impervious layer below the bottom of the proposed infiltration trench or basin.

f. **Soil Data Requirement:**

A soil log may be required to describe soil type and depth along with a site map showing the location of each test hole. Classification may be in general terms such as loose sand, sandy silt, clay hardpan, rock, etc. or classification may be in specific terms as described by the U.S. Department of Agriculture (Soil Conservation Service). The soil log should include the depth to ground water table, if less than twelve (12) feet in depth. A falling head permeability test or similar method must be used to demonstrate the infiltration capacity of the least pervious soil layer.

REVIEW AND APPROVAL OF THE PLAN:

The drainage plan and supporting calculations will be reviewed by Public Works Department's construction plan review procedures in coordination with all other City land development and/or permit review procedures. The City's review and approval of storm drainage control plan shall not relieve the applicant, owner and/or designer of liability for errors or omissions in the design of storm drainage facilities.

All storm drainage plans prepared shall be submitted for review and approval to the Public Works Department.

Any applicant or property owner proposing an action that may require a storm drainage plan may request a preliminary review of the proposal by the City Engineer and a determination of the need for a drainage plan.

FEES:

Storm drainage plan review and inspection fees are calculated as per Appendix B-2.

BONDS AND LIABILITY INSURANCE:

The Department of Public Works shall require persons constructing storm drainage facilities to comply with the Section on "Bonding and Liability Insurance."

STANDARD DRAINAGE SYSTEM MAINTENANCE:

Maintenance of storm drainage facilities on private property shall be the responsibility of the owner(s), unless otherwise provided for in these standards. This responsibility and the provision for maintenance shall be clearly stated on subdivision and short plat plans, property conveyance documents, and/or drainage improvement plans. In the event the owner(s) does not provide proper maintenance and the City engineer determines the storm drainage facility represents a public safety threat the City engineer will give 30-day notice to the owner(s) to correct the deficiencies. If the deficiencies are not corrected within 30-days the City may enter upon the property to perform the necessary maintenance at the owner(s) expense. This provision for access will be included as a provision of plat or plan

approval.

ACCESS DRAINAGE

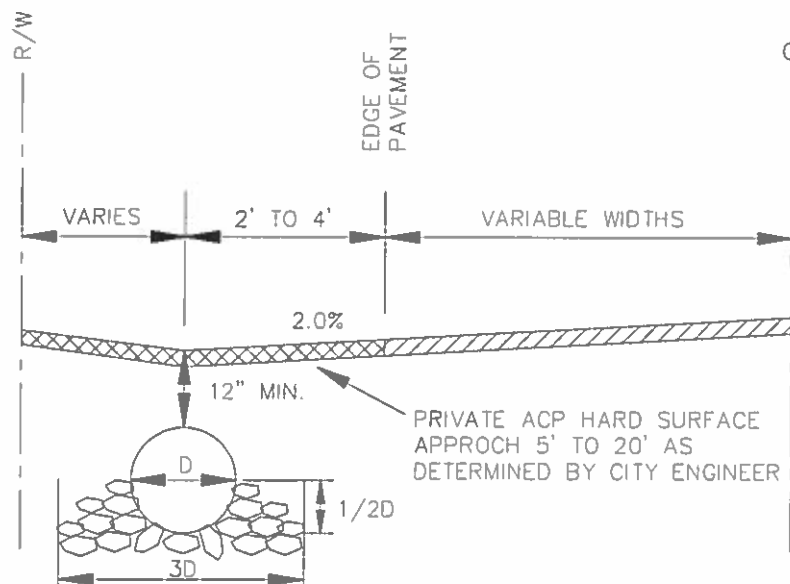
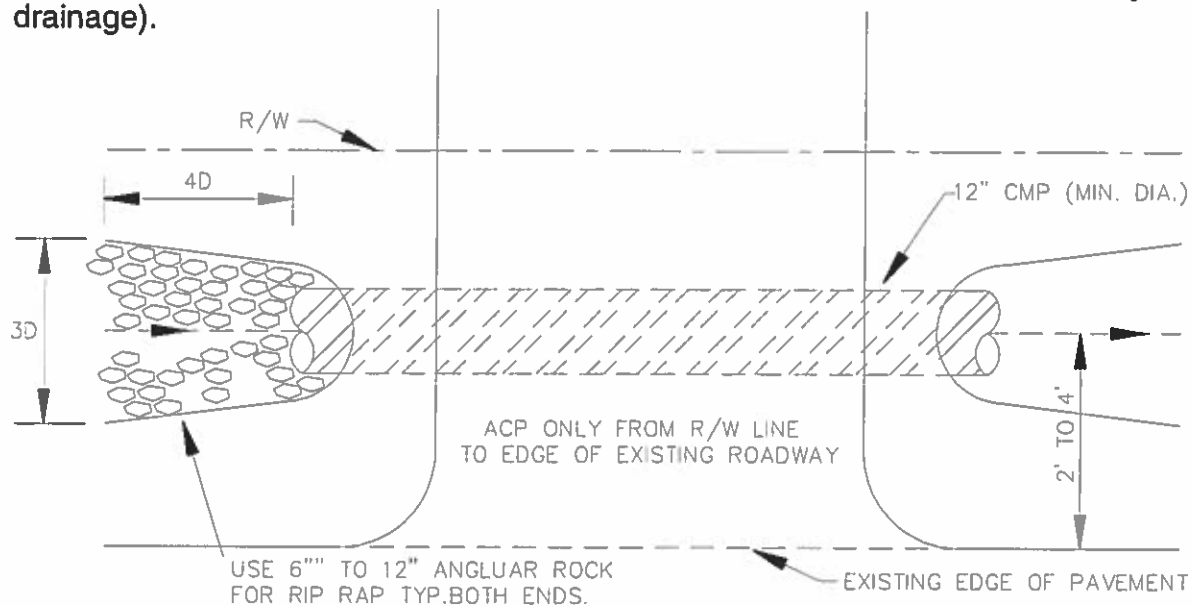
The right to lay a culvert within the street is reserved expressly to the City. A person desiring the installation of a culvert within a street under a driveway or along property frontage shall apply to the City, stating the length, location, and purpose of the culvert. The City engineer, or his authorized representative, shall determine the necessity of a culvert pipe under the driveway approach. In general, a pipe will be required where the approach crossed the roadway ditch, or where a roadside drainage problem exists., or where one will be created by the construction of the road approach. Where a pipe is specified, it shall meet the following requirements:

- a. Inside diameter - 12"
- b. Material - concrete, corrugated steel, or corrugated aluminum, culvert pipe specifications. (Reference WSDOT 1994 standard specifications.) Concrete drain pipe shall meet the requirements of ASTM C118. Zinc coated galvanized steel drain pipe shall meet the requirements of ASSHTO M 36, pipe thickness shall be 0.064 inches. Corrugated aluminum alloy drain pipe shall meet requirements of AASHTO M 196, without perforations. Though generally not allowed for driveway culvert applications, corrugated polyethylene pipe (CPEP) with smooth bore interior is allowed for tight-line storm piping. Piping shall be Hancor Blue Seal, or ADS N-12, with water tight seals, or approved equivalent.
- c. Installation - the flow line of the pipe shall be at the same elevation and alignment as the flow line of the roadway ditch or drainage ditch. Concrete pipe joints may be ungrouted. The pipe shall extend a sufficient distance past the toe of the approach fill to prevent sloughing into the pipe ends.

MINIMUM CULVERT SIZES

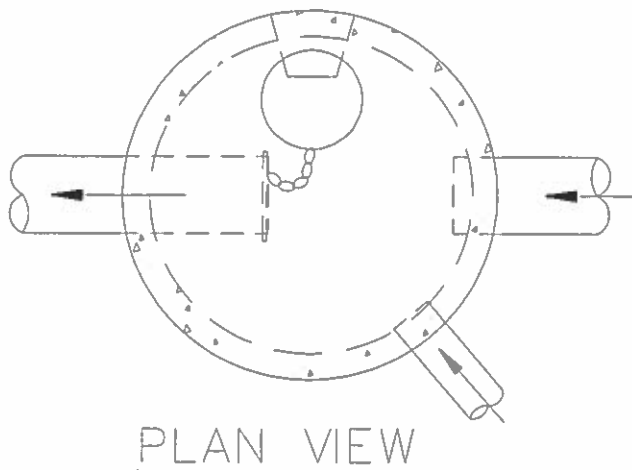
The minimum diameter of culvert pipes under City streets shall be 18." Culvert pipes from grated inlets or catch basins under roadway may have a minimum diameter of 12." Culvert pipes under driveway approaches shall have a minimum diameter of 12."

Culvert pipe shall be CMP or concrete as approved by the City engineer. Culvert outlets shall be constructed to provide erosion control. (See Section 7-8, Driveway access drainage).

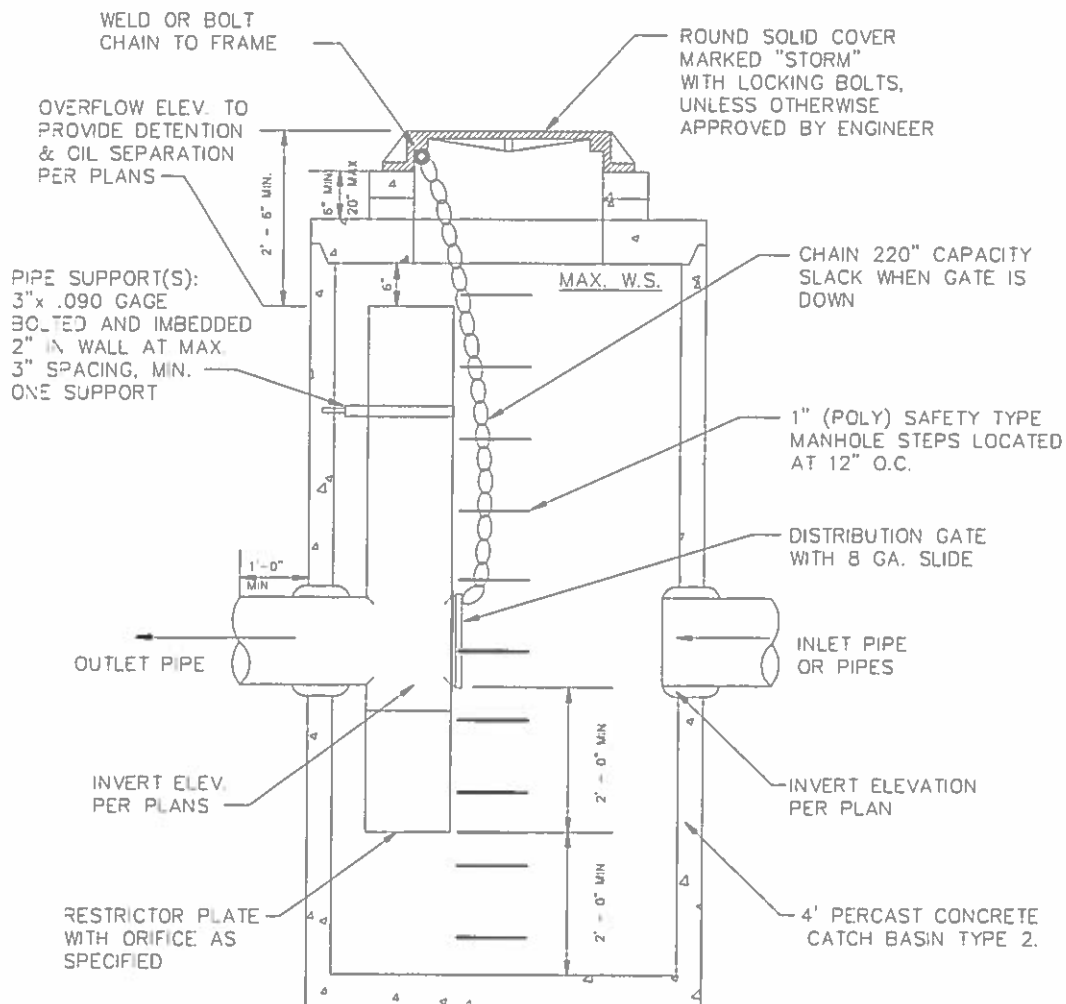


NOTE: 4' SHOULDER REQUIRED FROM EXISTING PAVEMENT ON UNIMPROVED ASPHALT ROADS.

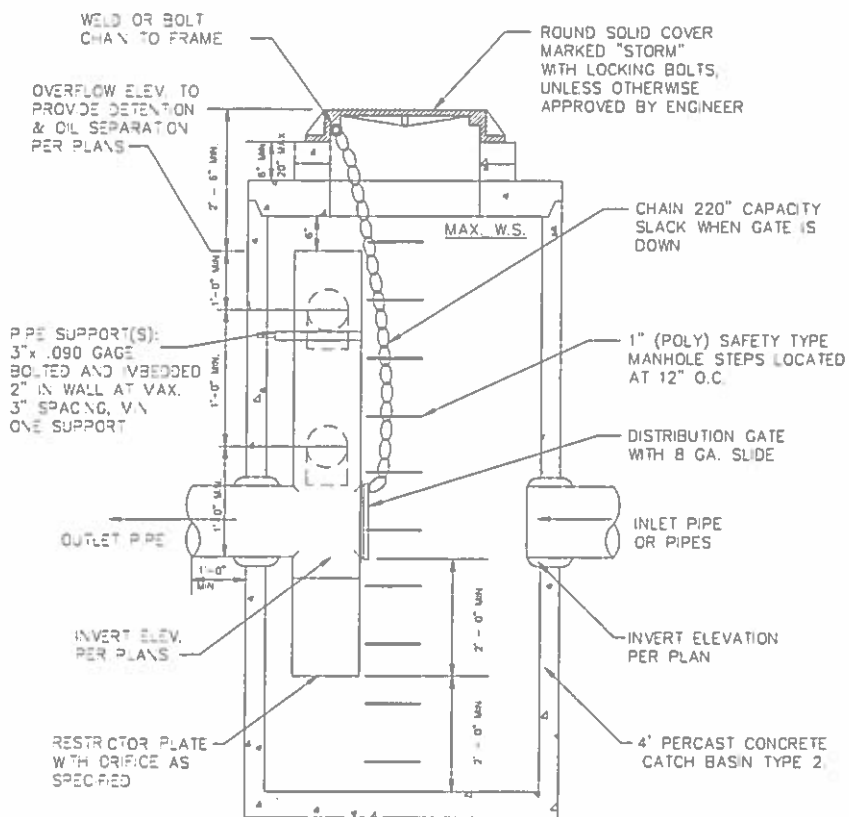
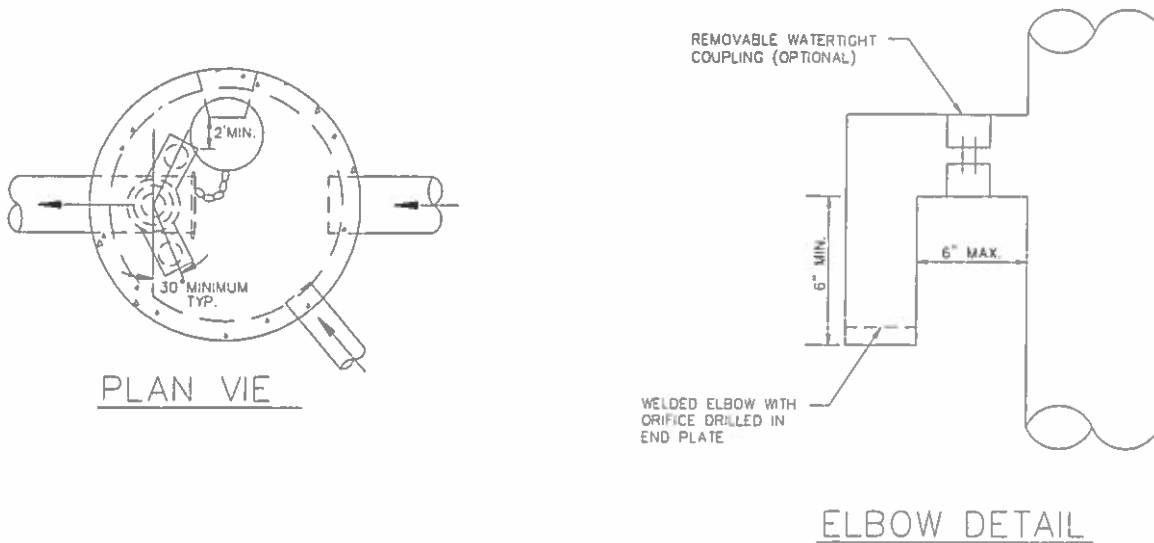
ID-110

FLOW RESTRICTOR (Catch Basin Type 2)NOTES:

1. PIPE SIZES AND SLOPES: PER PLANS.
2. OUTLET CAPACITY: NOT LESS THAN COMBINED INLETS.
3. METAL PARTS: CORROSION RESISTANT. GALVANIZED PIPE PARTS TO HAVE ASPHALT TREATMENT 1.
4. FRAME AND LADDER OR STEPS OFFSET SO:
 - A. CLEANOUT GATE IS VISIBLE FROM TOP.
 - B. CLIMB-DOWN SPACE IS CLEAR OF RISER AND CLEANOUT GATE.
 - C. FRAME IS CLEAR OF CURB.
5. IF METAL OUTLET PIPE CONNECTS TO CEMENT CONCRETE PIPE, OUTLET PIPE TO HAVE SMOOTH O.D. EQUAL TO CONCRETE PIPE I.D. LESS 1/4".



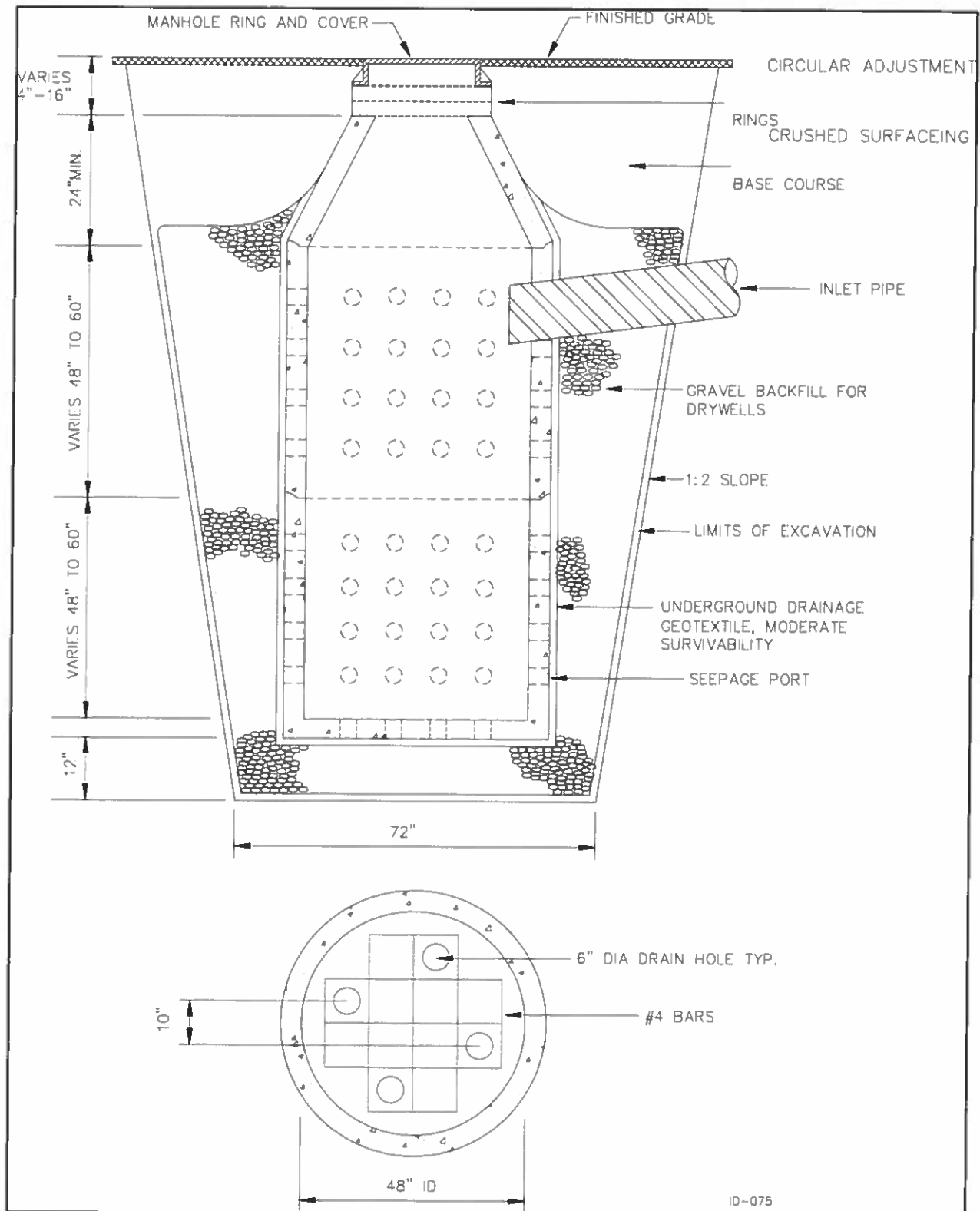
ID-012

MULTI-ORIFICE FLOW RESTRICTOR (Catch Basin type 2)**NOTES:**

1. PIPE SIZES AND SLOPES: PER PLANS
2. OUTLET CAPACITY: NOT LESS THAN COMBINED INLETS.
3. METAL PARTS: CORROSION RESISTANT. GALVANIZED PIPE PARTS TO HAVE ASPHALT TREATMENT 1.
4. FRAME AND LADDER OR STEPS OFFSET SO:
 - A. CLEANOUT GATE IS VISIBLE FROM TOP.
 - B. CLIMB-DOWN SPACE IS CLEAR OF RISER AND CLEANOUT GATE.
 - C. FRAME IS CLEAR OF CURB.
5. IF METAL OUTLET PIPE CONNECTS TO CEMENT CONCRETE PIPE, OUTLET PIPE TO HAVE SMOOTH O.D. EQUAL TO CONCRETE PIPE I.D. LESS 1/4".

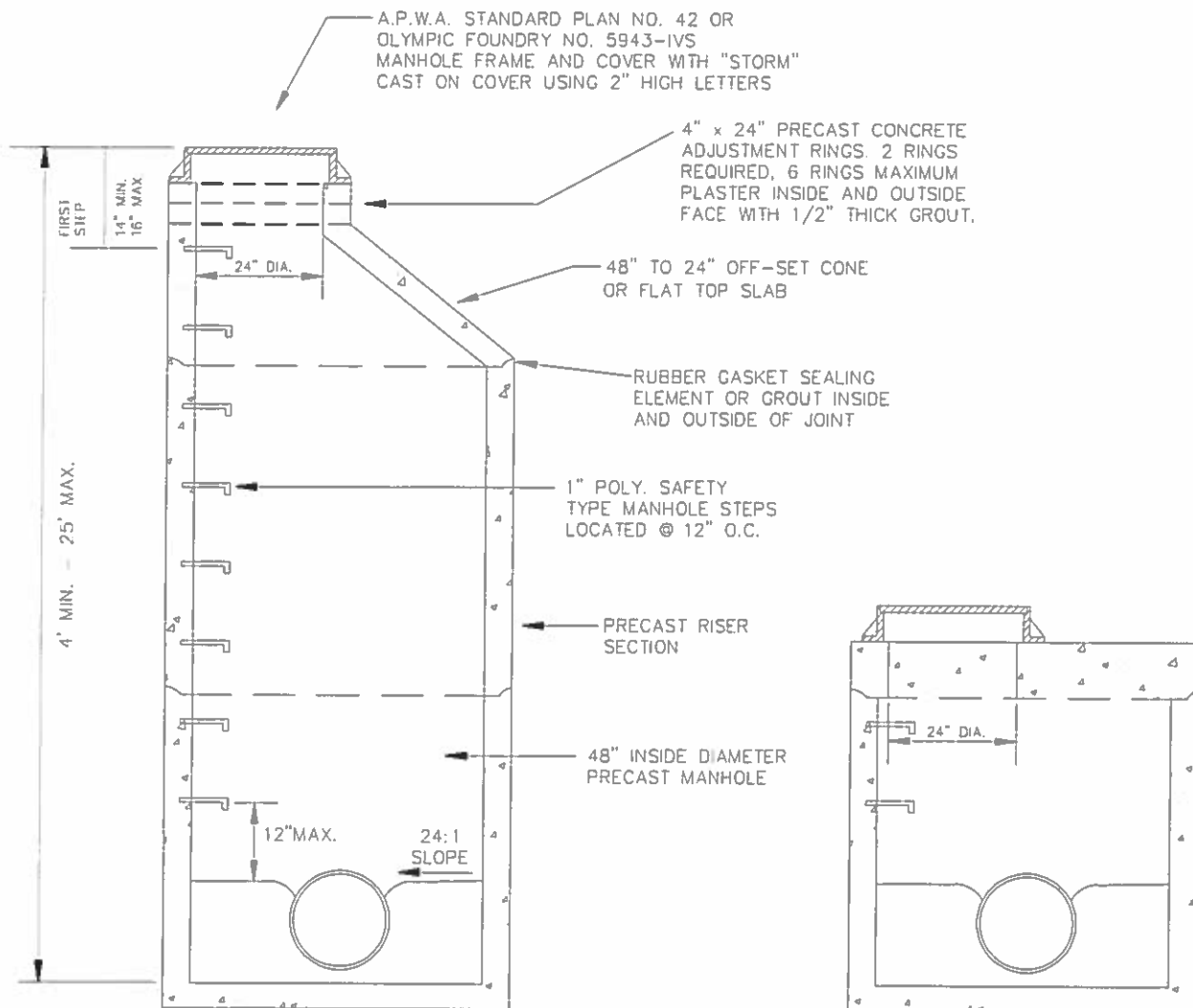
ID-045

PRECAST CONCRETE DRYWELL



MANHOLE TYPE 1

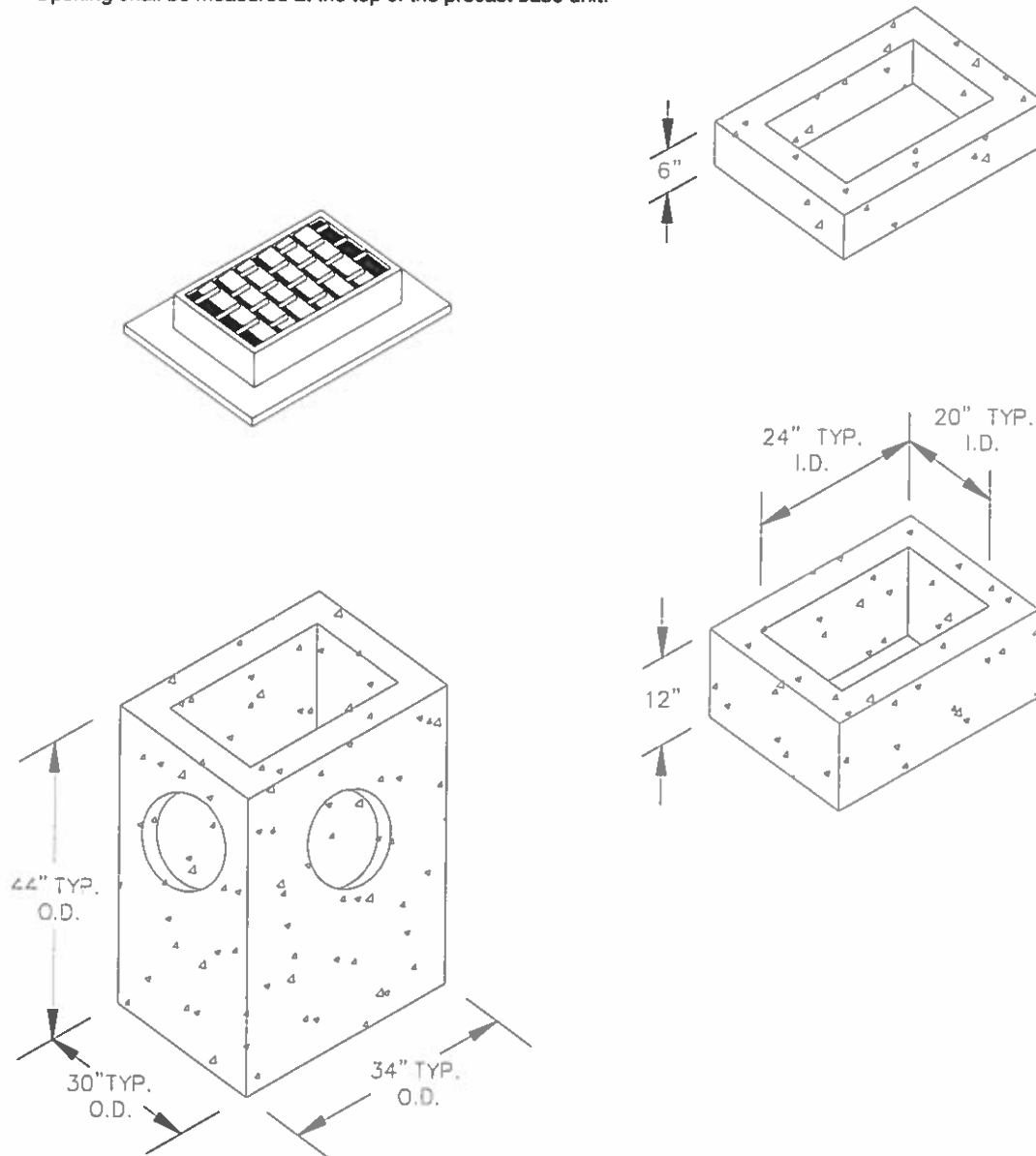
Note: Design shall provide a one-tenth drop from invert inlet to outlet.



ID-074

CATCH BASIN TYPE 1**Notes:**

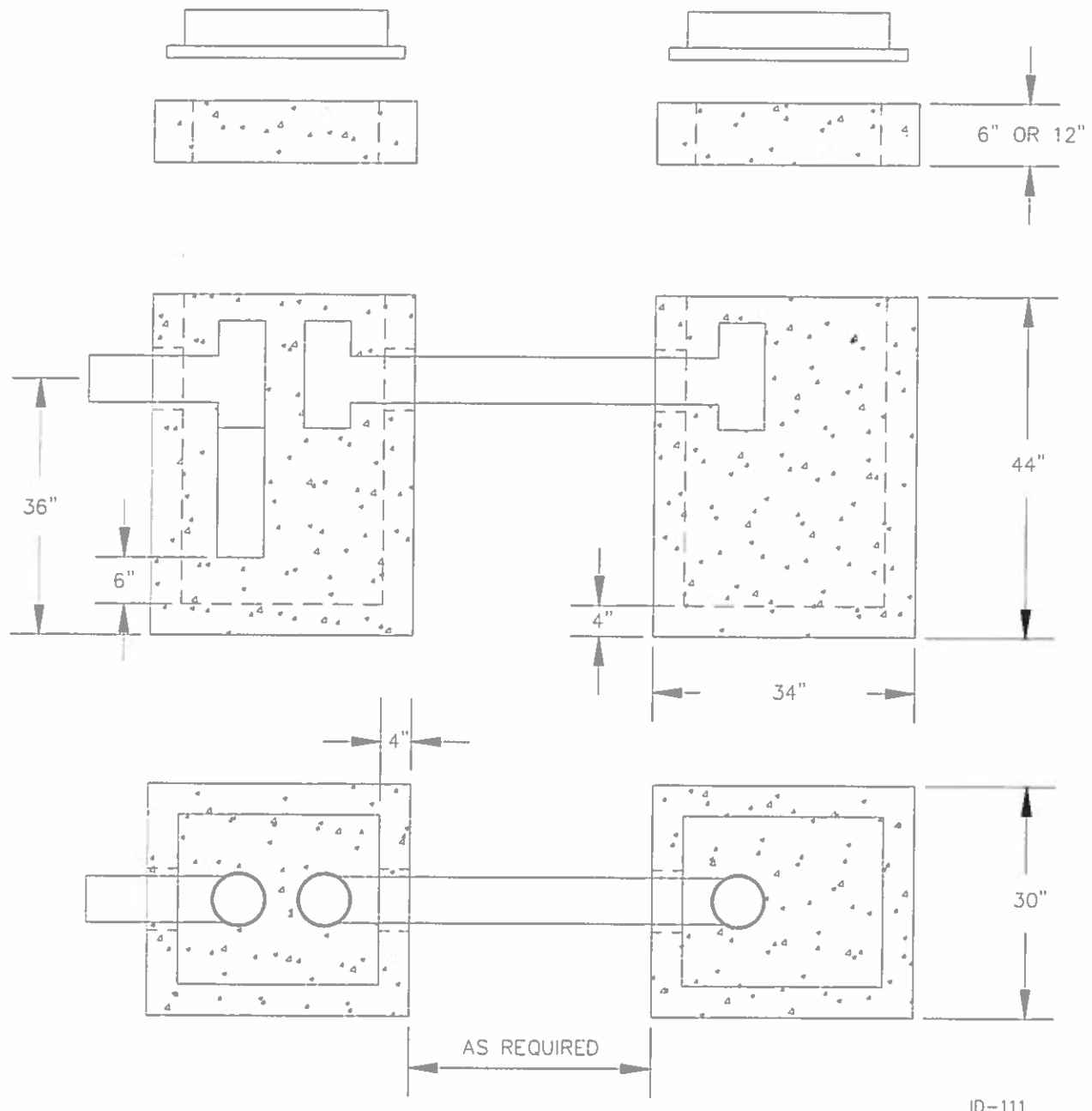
1. As an acceptable alternate to rebar, wire mesh having a minimum area of 0.12 square inches per foot may be used. Wire mesh shall not be placed in knockouts.
2. The knockout diameter shall not be greater than 20". Knockouts shall have a wall thickness of 2" minimum to 2-1/2" maximum.
3. The maximum depth from the finished grade to the pipe invert shall be 5'.
4. Frame and grate may be installed with flange down or cast into adjustment section.
5. The precast base section may have a rounded floor and the walls may be sloped at a rate of 1:24 or steeper.
6. Opening shall be measured at the top of the precast base unit.



10-076

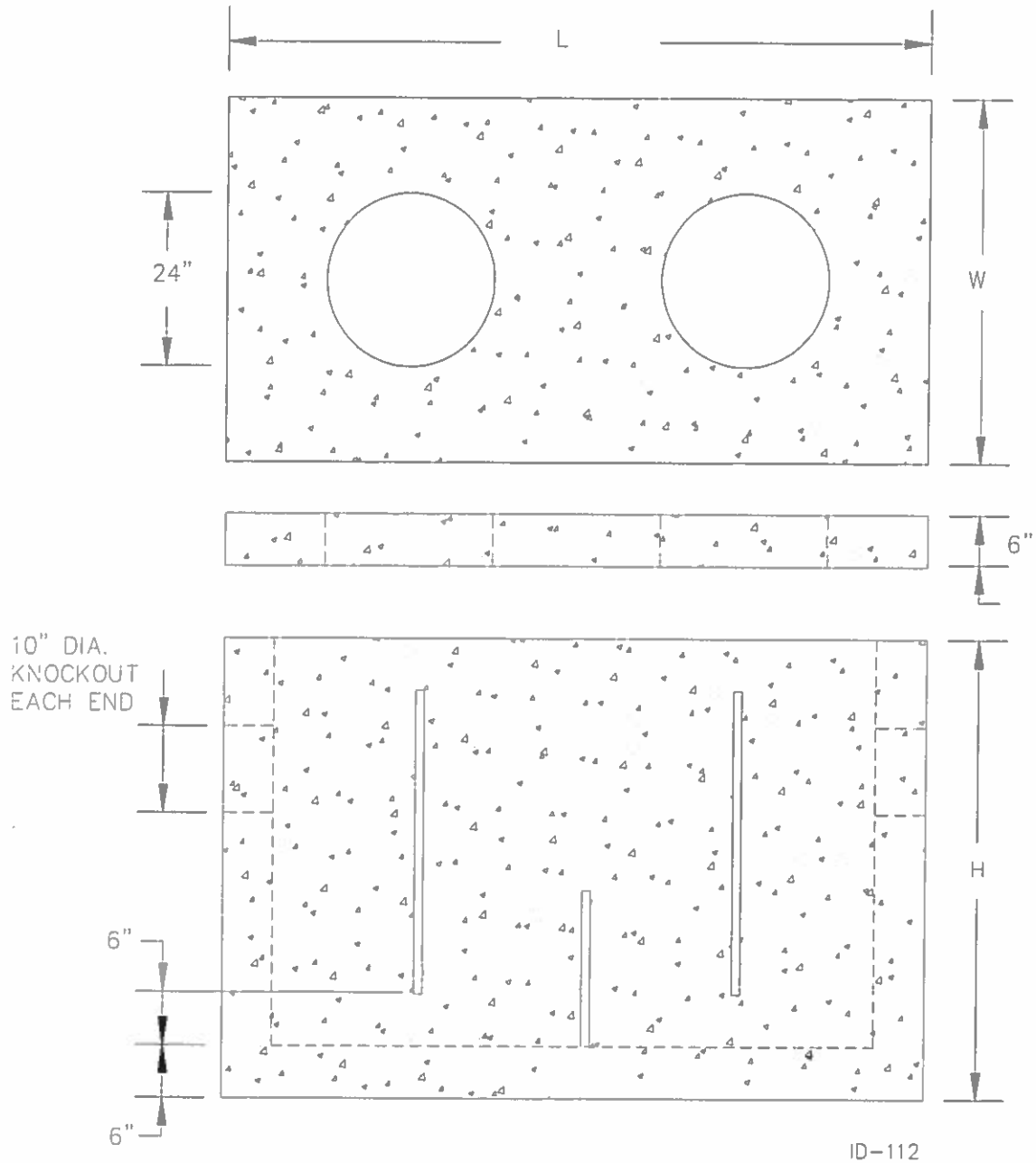
CATCH BASIN TYPE II (Oil Separator)

H2 PRE-CAST BIGO OIL SEPARATOR BASE NO. CB1 RISER NOS. SU6 AND SU12 FRAME AND GRATE NOS. FGR AND FGS OR EQUAL. PIPE AND FITTINGS 6" THROUGH 12"DIA. PVC SCH. 40

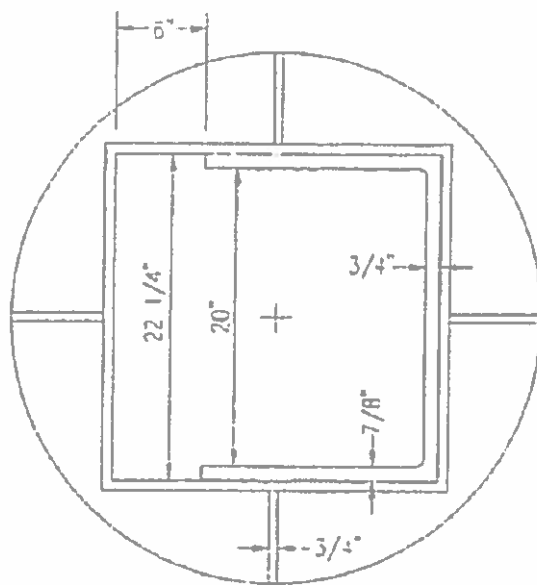


CATCH BASIN TYPE III (Oil Separator)

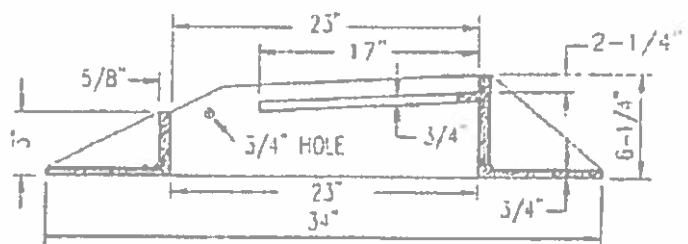
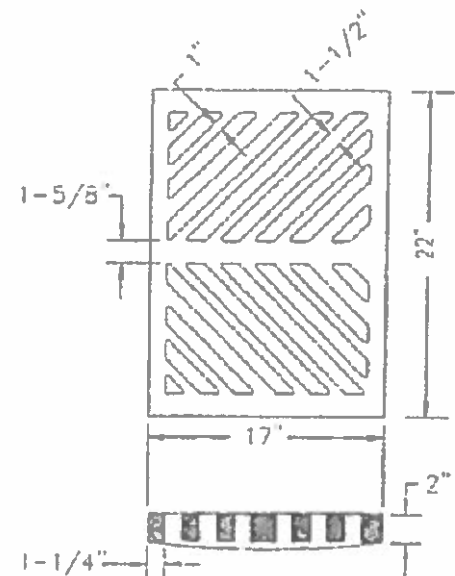
OIL SEPARATOR WITH BAFFLE AND WEIR
 SIZE AS PER ENGR ANALYSIS
 H2 PRECAST MFG OR APPROVED EQUAL



CATCH BASIN FRAME AND GRATE

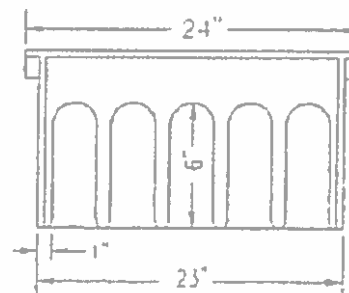
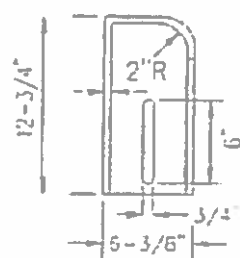


TYPE "A" FRAME

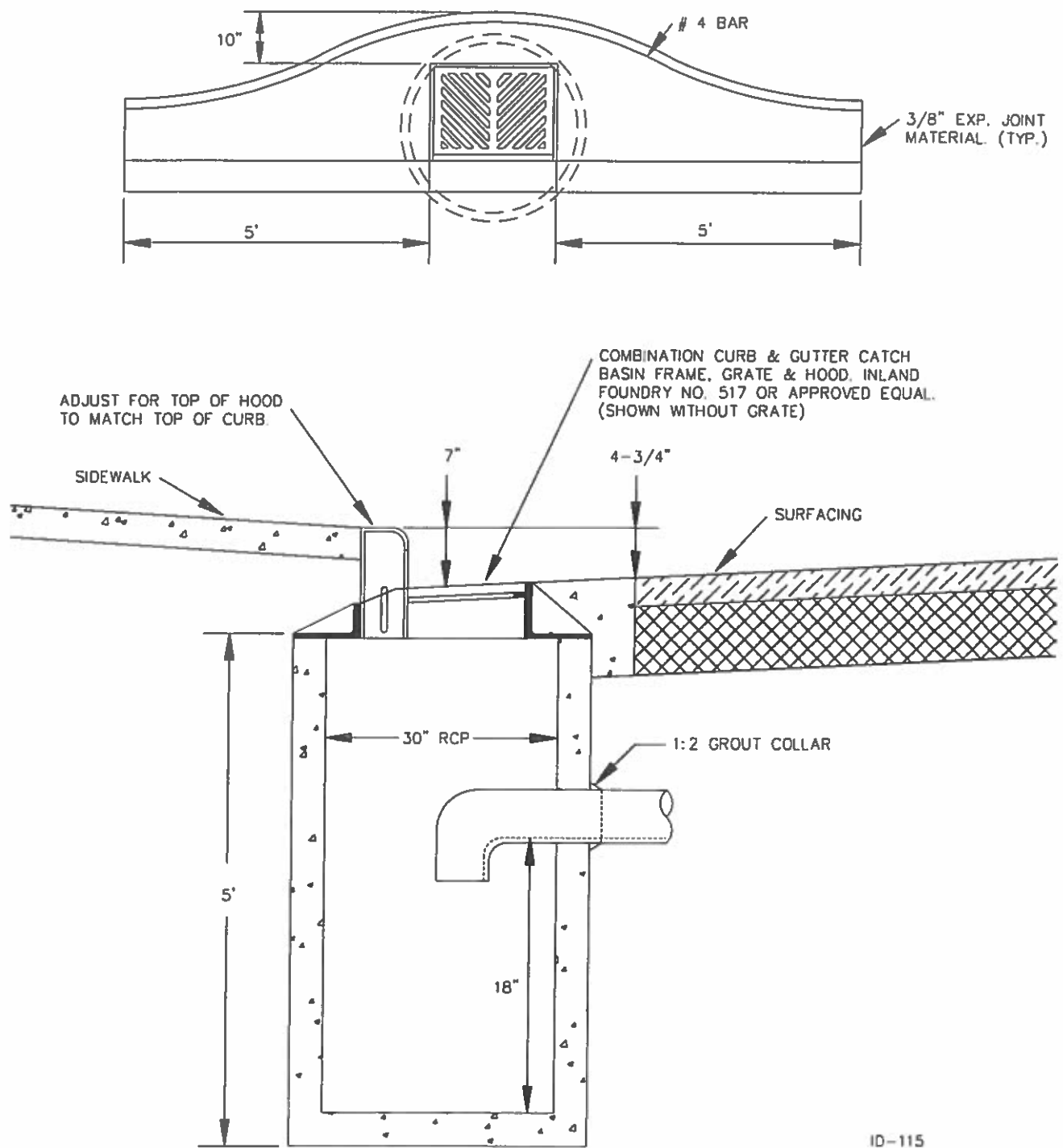


TYPE "A" FRAME

NOTE: THE FRAME, GRATE AND HOOD SHALL BE INLAND FOUNDRY CO NO 517 OR APPROVED EQUAL.



15-114



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(Plan, Profile and Cross Section Information Required)	8-3

GENERAL

1. All final plans shall be prepared on standard double-matte mylar sheets. The standard sheet size is 24 inches x 36 inches x 3 mil thick. All sheets shall be original or archival quality, Dayrex Dx11 copy or equal.
2. The Professional Engineer's seal, signature, address and phone number shall be placed in the title block area, along the bottom of the page.
3. The drawing shall be in ink on approved mylar. No "sticky-back" or pasted pieces shall be allowed.
4. Use of Chelan County approved datum (NGVD 29) for survey reference is required.
5. All existing and proposed improvements shall be located and dimensioned to the Government Land Office monument system, State Plane Coordinates, or Chelan County survey monuments, or a monumentation system approved by Public Works. Proposed improvements should be referenced to the monument lines and street centerlines. Dimensioning must be done by stationing and offset from these control lines.
6. Scales: The Scale shall be a standard engineering ratio.
7. Draw the plan so the North Arrow points to the left or to the top of the sheet.
8. The minimum lettering size is 1/10th inch. This is to ensure the plan is legible after microfilming or reduction.
9. Use the standard Washington State Chapter of the American Public Works Association symbols.
10. Match lines with matched sheet number shall be provided where plan is drawn on two or more sheets. Where plan is shown on three or more sheets, include a total site plan key map at scale 1" = 100' or 1" = 200' to cross reference portions of the project with their corresponding plan sheet location.
11. All division or phase lines shall be indicated showing proposed limits of construction.
12. Existing and proposed topography contours shall cover the entire site and a minimum of 30' beyond the site boundary. Topography contours should be shown at 2 foot intervals (5 foot intervals for slopes greater than 15%, 10 foot intervals for slopes greater than 40%). Elevation labeling shall be shown at 10 foot intervals maximum for 2 foot contour intervals, maximum 25 feet for 5 foot contour intervals.
13. Show and clearly label property lines (with distances and bearings), right-of-way lines, sensitive areas and set backs and all existing and proposed easements with their recording numbers. Show existing and proposed building footprints.

14. Label all streets by City of Chelan names.
15. Plans shall include a key for abbreviations and a legend for symbols where such are used.
16. All final plats and construction as-builts to be in electronic form, on CD media in a format readable by AutoCAD (.dwg or .dxf).
17. Preliminaries should be submitted on a standard size paper. We will not accept anything larger than 36 x 24.
18. When both plan and profile views are necessary, they will be on the same page with the plan view for a particular segment appearing just above the profile of that segment.

In addition to the drafting standards listed above, the following information should be included within the utility and transportation plans as appropriate:

DRAFTING STANDARDS (Plan, Profile and Cross Section Information Required):

1. Each submittal shall contain the following project information on the cover sheet or first sheet:
 - a. Title: Project name (add explanatory note if project name has changed).
 - b. Table of Contents (if more than 3 sheets).
 - c. Vicinity Map (Scale sufficient to cover project limits on one sheet or 1" = 200' whichever is greater).
 - d. General description of site, including Quarter Section, Township and Range.
 - e. Name and phone number of architect/engineering firm preparing plans.
2. Existing Improvements and Topography: Show all existing underground and surface improvements and topography in proximity to the project. The information must be shown for the full width of the right of way or the easement and for a sufficient distance on either side of the right of way or easement to show possible impacts on adjacent properties and/or the relationship to related facilities. Information on existing surface and underground City of Chelan facilities may be obtained from the Public Works offices. For information regarding the location of underground utilities, call 1-800-424-5555. Other utility information may be obtained from the respective utility owners (i.e. Chelan Public Utility District, U.S. West, Cascade Natural Gas, etc.).
3. Sewer, Water and Drainage Improvements: Provide profiles of all proposed sewer, water and drain lines. Show existing underground improvements within ten (10) feet of where they cross or connect to the new improvements. Show the storm water drainage discharge point to a public system or natural water course. Provide drainage system details whether or not detention of storm water is required, including biofiltration swales.

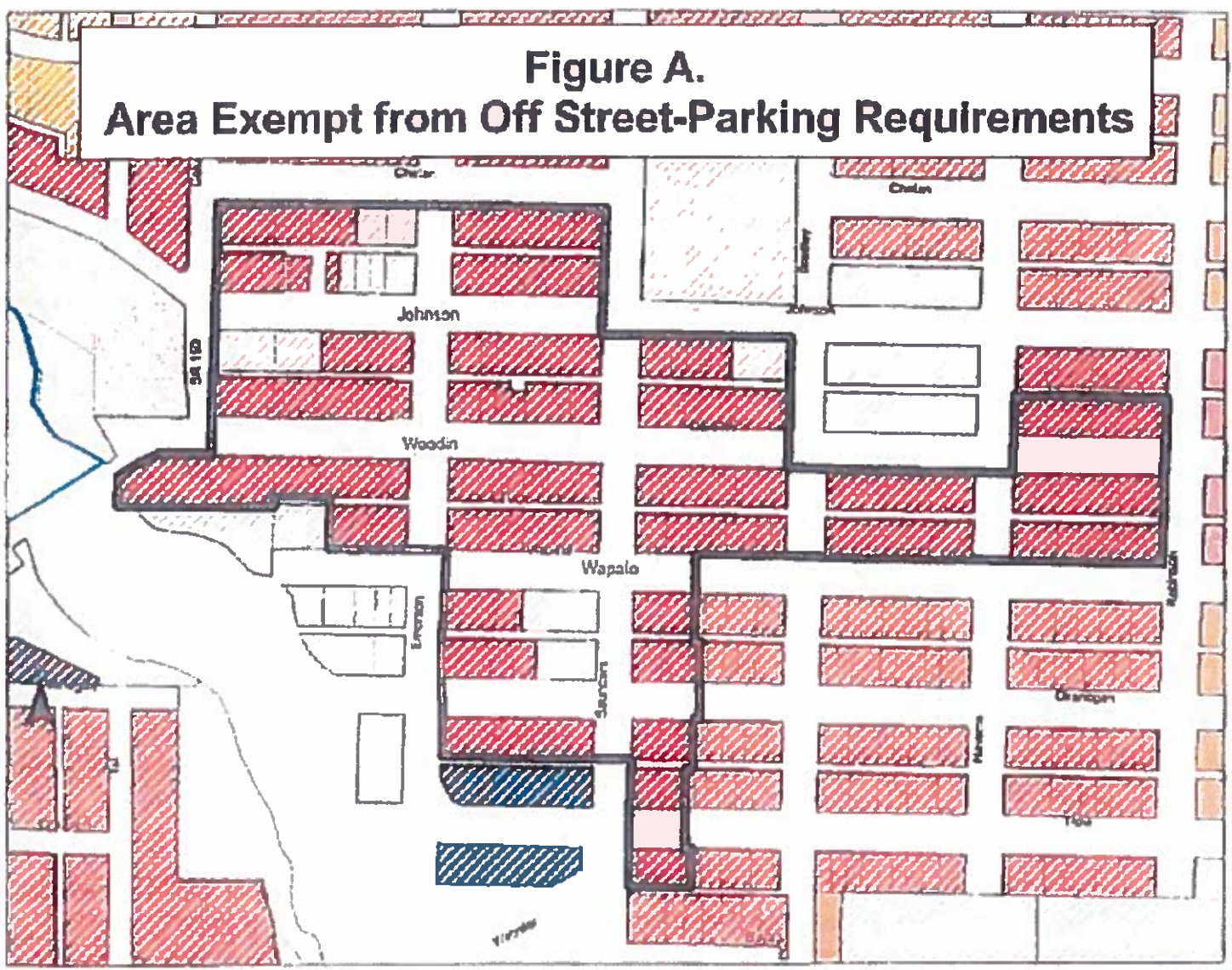
4. Grades: All profiles and cross sections will show the proposed and the existing grade.
5. Infrastructure not within street right of way shall be within easements granted to the City or the appropriate utility.
6. Easements shall be shown on plan sheets.
7. Label all manholes, clean outs and catch basins in sequential number. Label rim and invert elevations and catch basin and manhole size and type.
8. Include flow direction arrows on all gravity lines.
9. Label pipe size, length, material and slope.
10. Include datum and benchmark information on each plan and/or profile sheet.
11. Show spot elevations of pavement in parking lots, and run off flow direction arrows.
12. Show roof leaders and footing drains connecting into conveyance system.
13. Show all stub-out locations for future connections.
14. Include section details for rockeries in grading/paving plans.
15. Show the following for all storm water facilities:
 - a. Show and label at least two cross-sections through detention pond. One cross-section shall show the control structure.
 - b. Show location and detail of emergency overflows and spillways.
 - c. Provide invert elevations of all pipes, inlets, tanks, vaults and spot elevations of the pond bottom. Call out pond volume and dimensions, and design surface elevation.
 - d. Provide plan and section views and details of all rock protection and energy dissipaters.
 - e. Section and plan view on restrictor/control structure must be shown and adequately detailed, including size and elevation of orifices, overflow weirs, etc.
 - f. Show length, width, and bottom width dimensions for all biofiltration and water quality swales and storm water conveyance swales. Include sectional view, showing side slopes and design depth of flow.
 - g. Include seeding material information.
16. The Erosion and Sedimentation Control Plan (ESCP) should provide all necessary details to illustrate how the plan is to be implemented.

SECTION NINE TABLE OF CONTENTS

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PARKING STANDARDS**Off-Street Parking - General Requirements**

The provisions of this chapter shall not apply to the boundary depicted in Figure A. Area Exempt from Off-Street Parking Requirements unless otherwise stated herein. Every building hereafter constructed, reconstructed, expanded or occupied, or use of property hereafter established or modified shall be provided with off-street parking as provided in this chapter, and such parking areas shall be made permanently available and maintained for parking purposes. No building permit shall be issued until plans showing provisions for the required off-street parking have been submitted and approved as conforming to the standards of this chapter.



Required Stalls Location

All parking stalls required to be on-site shall be independently maneuverable, shall not be double stacked, and shall not back out onto a public right of way except as provided herein.

Variance to these Standards

An application for a variance to the number of parking spaces required shall follow the procedures outlined in Chapter 17.64 of the Chelan Municipal Code, as the same exists now or may hereafter be amended.

Reduction in Required On-site Parking

In return for improvement of on-street parking, in accordance with present City standards, credit shall be given for one parking space per each ten feet of street frontage when angle parking is used, and one space for each twenty feet of street frontage when parallel parking is used. Street frontage improvement means curb, gutter, sidewalk, and catch basins if needed. Credit given shall be limited to 50% of total on-site parking spaces required.

Changes in Occupancy

Whenever the occupancy classification of a building is changed, the minimum standards for off street parking for the new occupancy classification shall be applicable; provided, that if the existing occupancy had established a legal nonconforming status with respect to off-street parking requirements, no additional off street parking shall be required for the new occupancy unless said new occupancy is in a classification requiring more parking than that which would have been required for the existing occupancy if it had been subject to the provisions of this chapter. If strict application of this section is not feasible due to existing site conditions such as building or parking size, shape or layout, a variance may be granted by the hearing examiner in accordance with Chapter 17.64 of the Chelan Municipal Code, as the same exists now or may hereafter be amended.

Site Plan Required

A site plan for every new or enlarged off street parking lot or motor vehicle sales area shall be approved by the planning department prior to construction. The site plan shall be drawn utilizing a common engineering scale (e.g. 1"=20', 1"=30', 1"=40') and will show the proposed/existing development, locations, size, shape, and design of the parking spaces, curb cuts, lighting, landscaping, irrigation, parking lot circulation, drainage and other features of the proposed parking lot including all easements.

Improvement of Parking Spaces in all Districts

Any parking facility for ten or more vehicles shall be improved in accordance with the following requirements:

- A. Off-street parking requirements shall not apply to the boundary depicted in Figure A except for the following uses which are auto dependant:
 - 1. Hotels,
 - 2. Mortuaries,
 - 3. Gasoline Service Station,
 - 4. Any conditional use where the minimum requirements state that off-street parking shall be required.
 - 5. Mixed-Use Residential/Commercial Buildings between Johnson Avenue/Wapato Avenue and Columbia/Saunders
- B. Off-street parking facilities shall be hard-surfaced, shall be graded and drained so as to dispose of surface water to the satisfaction of the City engineer, and shall be maintained in good condition free of weeds, dust, trash and debris.
- C. The director of public works shall have authority to fix the location, width and manner of approach of vehicular ingress and/or egress from a building or parking area to a public street and to alter existing ingress and egress as may be required to control traffic in the interest of the public safety and general welfare. The City may require ingress and egress (curb cuts) to be located between parcels and constructed as joint ingress and egress when required to control traffic in the interest of the public safety and general welfare.
- D. Any lighting used to illuminate any off-street parking facility shall be so arranged as to reflect light away from any adjoining residential premises. Night lighting must be provided where stairs, curbs, ramps, or other abrupt changes occur in walk direction. Lighting shall be arranged so as to reflect light away from any adjoining residential premises.

Any parking facility for less than 10 vehicles shall be graveled or have such other surface as approved by the Public Works Director.

Standards and Requirements

The minimum required parking spaces for the respective uses shall be as follows. Where square feet are specified, the area measured shall be the total gross floor area of the entire use, structure, or area.

- 1. Adult Entertainment Facilities: one space per one hundred square feet.
- 2. Bakery: one space per two hundred fifty square feet of floor area.

3. Banks, businesses or professional offices: one space for three hundred square feet of floor area.
4. Personal Services: one space per two hundred fifty square feet of floor area.
5. Bowling alleys: one space per three hundred square feet of floor area.
6. Businesses that provide services outside of their primary location shall provide one parking space per employee.
7. Church, mortuary, funeral home, auditorium, gymnasium, club, lodge hall: one space per four seats or eight feet of bench length in the chapel.
8. Drive-in eating or drinking establishment with outside customer seating only: no less than fifteen parking spaces on site; or if no outside seating: two spaces.
9. Eating and drinking establishments serving both within and without the building: one space for each one hundred square feet of floor area including outside seating area, with not less than fifteen spaces.
10. Eating and drinking establishments with no service outside the building: one space for each one hundred square feet of floor area.
11. Emergency/Transitional Housing: In addition to any parking required for the primary use, one off-street parking space, plus one off-street parking space per non-resident service provider (including non-resident volunteers), plus one off-street parking space for every six transitional adults permitted, is required.
12. Gasoline stations with a convenience store: one space per one hundred fifty square feet.
13. Hospitals: one space per three beds plus one space per each shift doctor and one space per three employees.
14. Malls including business and commercial centers that have multiple spaces available for a variety of tenant uses shall provide one parking space per two hundred fifty square feet.
15. Manufacturing/Assembly, Industrial : one space per employee.
16. Marinas: 1.5 spaces per boat moorage stall; provided, that 0.5 spaces per boat moorage stall shall be sufficient where no boat launching facilities are provided, except for boat launching facilities provided and used solely for the private use of a marina operator and to which the public has no access.
17. Medical or dental office: one space per two hundred square feet of floor

area.

18. Mixed occupancies: in the case of mixed uses, the total requirements for off-street parking facilities shall be the sum of the requirements for the various uses computed separately. Off-street parking facilities for one use shall not be considered as providing required facilities for any other use except as hereinafter specified for a joint use.
19. Motel or hotel: 1.2 spaces for each room or suite plus required spaces for accessory uses and one space per boat moorage stall.
20. Multi-family building, condominiums, timeshares, and apartments: 1.5 per one and two bedroom and two spaces per three or more bedrooms. Developments within the Tourist Accommodation Zoning District shall provide 120% of the required parking to accommodate boats and trailers.
21. Newspaper publication, TV and Radio Studios: one space per five hundred square feet.
22. Open air market used car lot: one space per fifteen hundred square feet of land.
23. Places of Public Assembly:
 1. Library, museum, art gallery, private athletic club, government buildings: one space per four hundred square feet of floor area.
 2. Preschool, nursery, day nursery, kindergarten: two spaces per teacher or adult supervisor.
 3. Elementary or junior high school: three spaces per classroom.
 4. High school or college: eight spaces per classroom.
 5. Parks, playgrounds, golf courses, ball fields, outdoor recreation amenities: one space per five thousand square feet of area including structures.
24. Public swimming pools, including private community pools: one space per fifty square feet of enclosed/fenced pool area.
25. Retail store (exclusive of those listed below): one space per two hundred square feet of floor area.
26. Retail store exclusively handling bulky merchandise such as furniture or appliances: one space per six hundred square feet of floor area.
27. Service or repair shop: one space per six hundred square feet of floor area. Each actual vehicle repair bay area space located inside or outside of a building may be counted as a parking space to attain compliance with this requirement.

28. Single family residence: one space minimum.
29. Unspecified uses: in the case of a use not specifically mentioned, the requirements for off-street parking facilities shall be the same as the above-mentioned use which is most similar.
30. Veterinary hospitals and clinics: one space per four hundred square feet of floor area, provided that a minimum of five spaces shall be required.

Conditions for Joint Use

A. Joint use of parking facilities - Spaces required. For joint use of parking facilities, the minimum total number of required parking spaces may be reduced by up to twenty percent and the minimum number of required parking spaces may be further reduced by the following amounts in the following circumstances:

1. Up to fifty percent of the parking spaces required for a theater, bowling alley, tavern, restaurant, or other enterprise which is primarily a nighttime or Sunday use may be supplied by the off-street parking spaces allocable to other types of uses which are not primarily nighttime or Sunday uses.
2. Up to fifty percent of the parking spaces required for a bank, business office, retail store, personal service shop, household equipment or furniture shop or other enterprise which is primarily a daytime and non-Sunday use may be supplied by the off-street parking space allocable to other types of uses which are primarily nighttime or Sunday uses.
3. The City engineer may authorize a greater percentage of joint use parking spaces subject to approval of a parking demand study prepared by a professional demonstrating hours of demand for applicable uses.

B. The building or use for which application is being made to utilize the off-street parking facilities provided by another building or use shall be located within 500 feet of such parking facilities and, in addition:

1. The off-site parking facilities must be on the same side of the street as the business that is requesting the joint use parking facilities;
2. The applicant shall show that there is no substantial conflict in the principal operating hours of the two buildings or uses for which joint use of off-street parking facilities is proposed;
3. Parties concerned in the joint use of off street parking facilities shall submit a proper legal instrument defining the conditions of the joint use for review and approval of the Community Development Director and the City Attorney; and
4. In the event of a change in ownership or use, the joint use instrument may

be terminated upon mutual agreement by all parties if reviewed and approved by the Community Development Director. The existing and/or new uses shall comply with all parking and other requirements of this section for said uses.

Minimum Required Parking Spaces - Fractions

In the event the minimum required parking spaces results in the requirement of any fraction of a parking space, an entire additional parking space shall be required.

Location of Parking Spaces

Required off-street parking spaces shall be located as follows:

- A. Dwelling: on the same lot with the building to be served but not in any required front yard or side yard setback abutting upon a street.
- B. For any other use except one served by an approved joint use parking facility: the parking lot shall be not more than one hundred fifty feet from the building or use to be served and on the same lot.
- C. Parking Setbacks.
 - 1. This subsection shall not apply to the following structures:
 - a. Structures located in the R-1 Single Family Residential District zone; and
 - b. Residential structures containing three or fewer dwelling units and located in the R-M Multi-Family Residential District zone.
 - 2. Required parking may occur within a required front yard upon compliance with the following:
 - a. A minimum landscaped buffer of at least ten feet in width is located between the front property line and the parking area.
 - b. An agreement in a form acceptable to the City guaranteeing the property owner will maintain the landscaped buffer is executed by the property owner and filed with the City.
 - c. The landscaped buffer shall be designed so as not to impair site distance requirements and other traffic safety concerns of the City.
 - d. A detailed landscaping plan shall be submitted to the City engineer for review and approval prior to the issuance of a building permit. At the discretion of the City engineer, surety may be required to ensure construction of the landscaped buffer in accordance with approved plans.

Loading Areas

On the same premises with every building, structure, or part thereof, erected and occupied for manufacturing, storage, warehouse, goods display, department store, wholesale store, market, hotel, hospital, or for any use that requires a delivery of merchandise, materials or supplies by truck there shall be provided truck loading/unloading berths. The space shall be situated so that no part of a truck or delivery van using the loading berth will project into any public right-of-way. Each loading berth shall measure not less than 10 feet wide by 30 feet long with a 14 foot height clearance, and shall be made permanently available for such purposes, and shall be of impermeable surface, and maintained. Required loading berths shall be provided in accordance with the following table:

<u>Total Gross Floor Area</u>	<u>Number of Berths</u>
10,000-20,000 sq. ft.	1
20,001-50,000 sq. ft.	2
50,001-100,000 sq. ft.	3

Greater than 100,001 sq. ft. 1 berth for each additional 50,000 sq. ft.

Exception or waiver to the requirements listed in this section: For businesses within the C-H High Density Commercial District zone, if a business is located immediately adjacent to an alley, the alley may serve as a loading/unloading berth.

One temporary loading space (ten by twenty feet) for emergency or transitional housing residences that accommodate more than six transitional adults is required. Legal curbside on-street parking spaces adjacent to the residence may be applied toward this requirement.

Drive Through Stacking Lanes

Any facility or business that provides a drive through lane or drive up window shall provide outside of the public right-of-way a stacking lane that shall accommodate seven parking spaces for each side of each structure with drive-up window(s) in addition to the onsite parking requirements. A stacking lane shall be at least 9 feet wide and each stacking space shall be at least 12 feet in length. A stacking lane must be delineated clearly and shall not be located within any required driveway, internal circulation drive, parking aisle, or parking stall.

Trash Receptacles - Area for Truck Maneuverability

If the parking lot is the location for trash receptacles, trash receptacles shall not impede parking areas or travel lanes.

Handrails

The Community Development Director may require handrails in parking areas where more than three risers exist for pedestrian traffic, and such handrails are warranted for safety reasons.

Barrier Free Parking

Included in the number of required parking spaces outlined in this section, parking shall be provided and designed in accordance with the Washington State Barrier Free Design Regulations, as the same exist now or may hereafter be amended.

Compact Parking Spaces

- A. Compact parking spaces may comprise up to forty percent of the required minimum number of off-street parking spaces for commercial property uses and for multi-family property uses consisting of greater than four dwelling units.
- B. Every compact parking space shall be clearly identified as such by painting the word "COMPACT" in upper case block letters, using white paint, on the pavement within the space.
- C. Each individual compact parking space shall be at least eight feet by sixteen feet in size.

Angled or "Head-In" Parking on Public Right of Way

- A. All parking shall be 0°, 60° or 90° parking.
- B. Any angled or "head-in" parking on the public right of way shall be located so that the minimum distance from the center line of the street to the property line shall be 50 feet. The front of each parking space shall be a minimum of 40 feet from the center line of the street for angled or "head-in" parking.
- C. For those streets that do not have 100 feet of width, property owners may dedicate additional width to the City or create an unrestricted parking easement in favor of the City to allow the necessary width.

Parking Delineation

Hard-surfaced parking areas shall use paint or other similar devices to delineate parking stalls and directional arrows.

Wheel Stops

Wheel stops shall be installed as per drawing 9-10 where designed parking will likely cause vehicles to overhang and encroach on adjoining private or public right-of-way, land, or alleys.

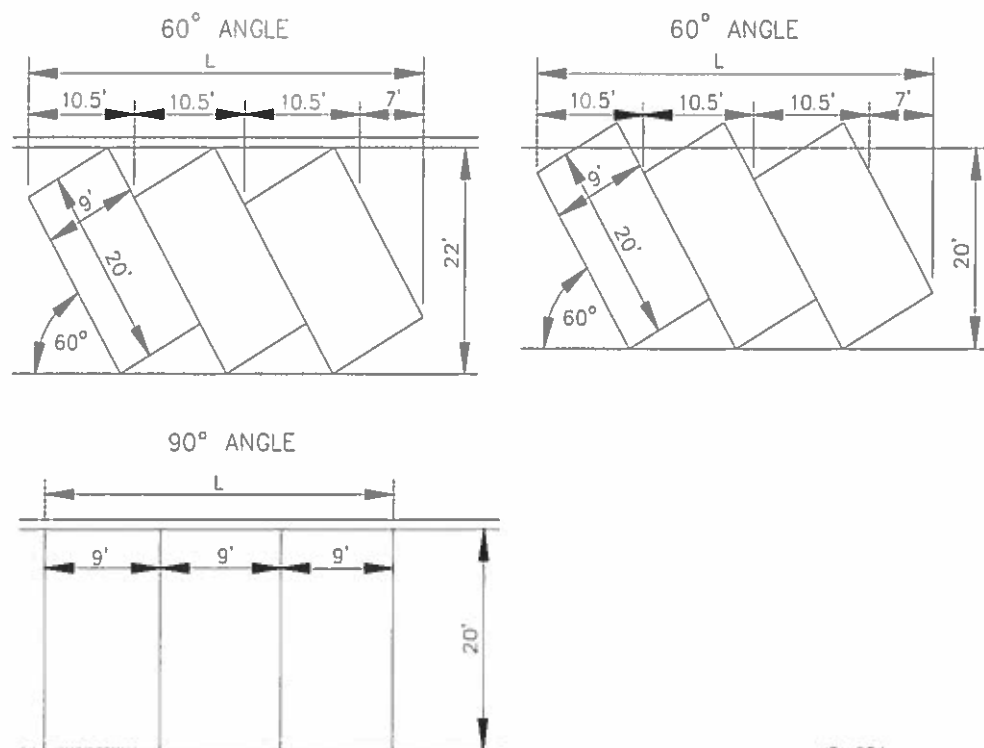
PARKING DESIGN DETAIL

A	B	C	D	E	F	B'	C'
0°	30'	9'	12'	24'	9'		
90°	58'	20'	18'	9'	9'		
60°	59'	22'	15'	10.5	9'	55'	20'

ONE WAY TRAFFIC

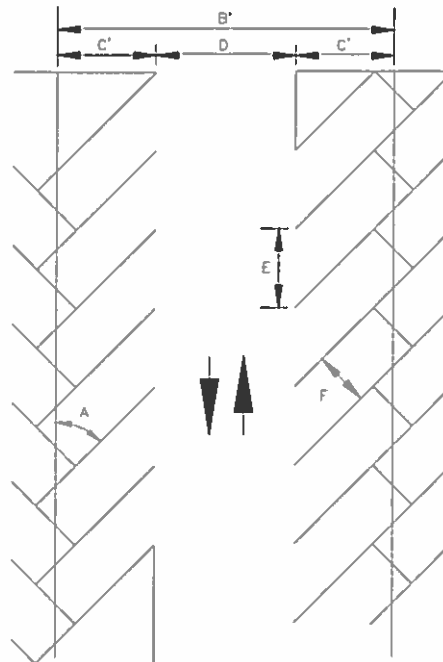
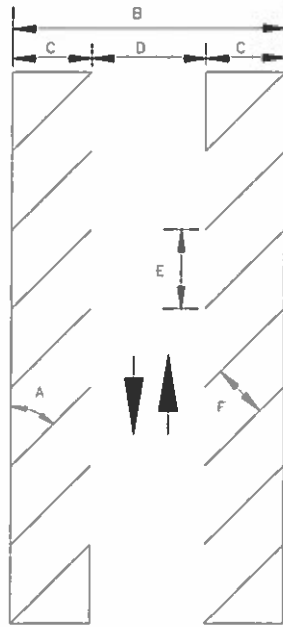
0°	38'	9'	20'	24'	9'		
90°	64'	20'	24'	9'	9'		
60°	64'	22'	20'	10.5	9'	60'	20'

TWO WAY TRAFFIC

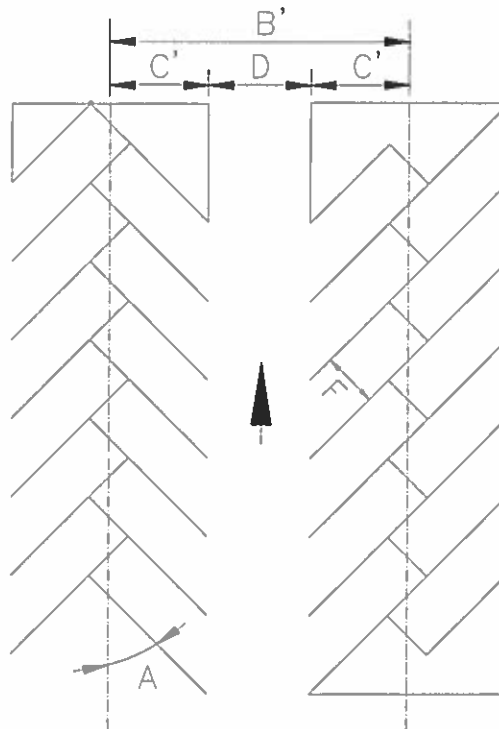
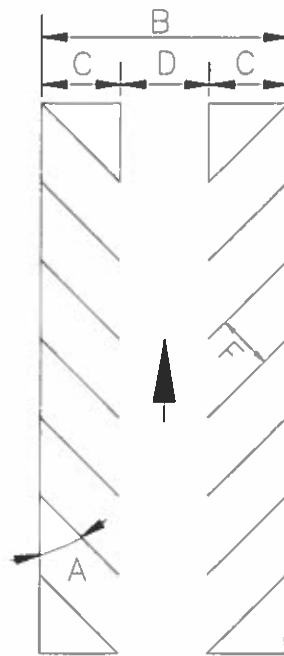


ID-054

NOTE: Capacity is approximated by the total lot area (ft²) divided by 320.

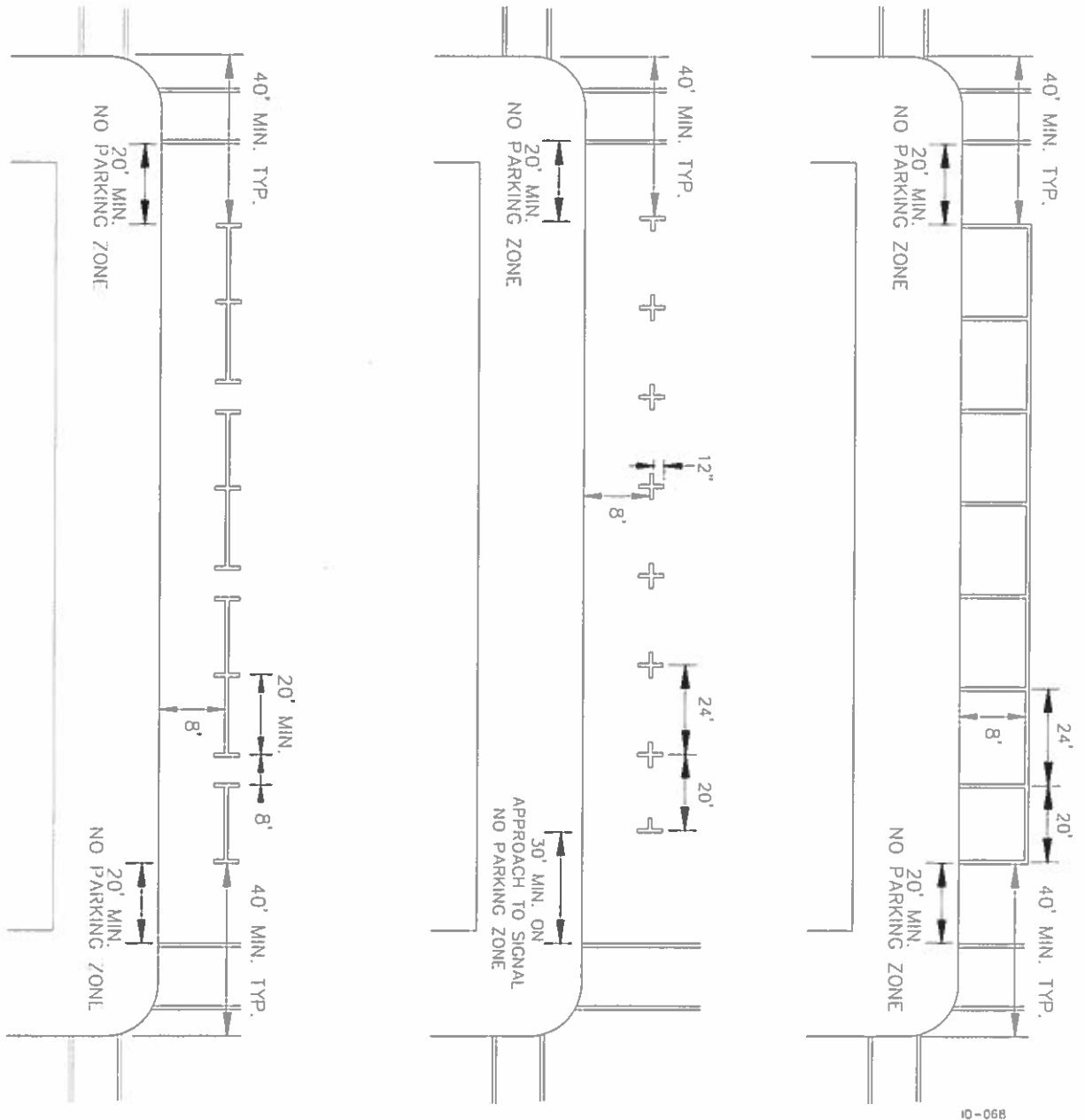


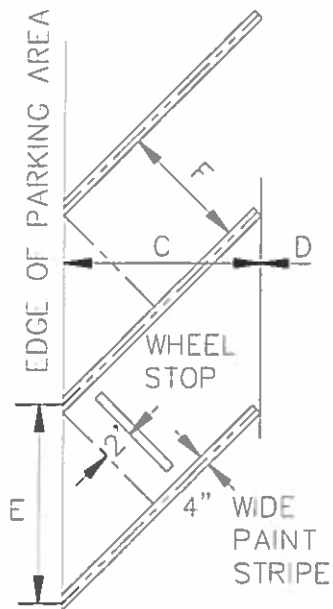
ID-067



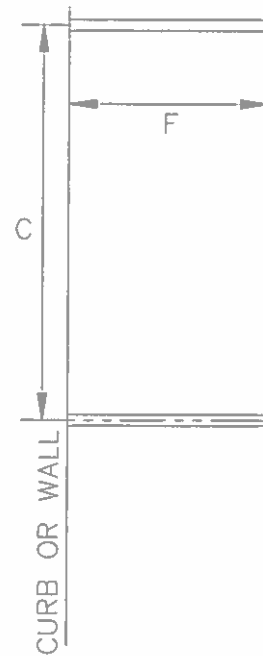
ID-066

PARALLEL CURB PARKING SPACING

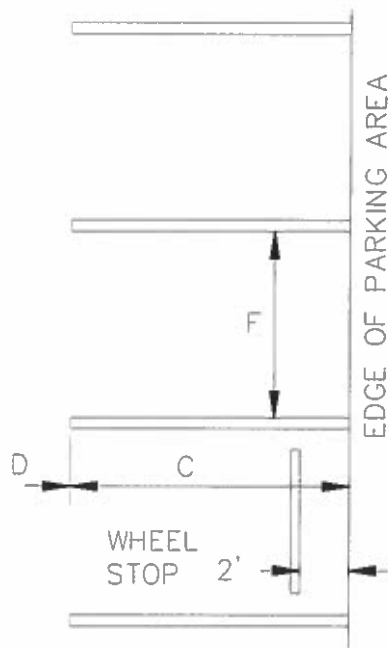


PARKING STALL DESIGN

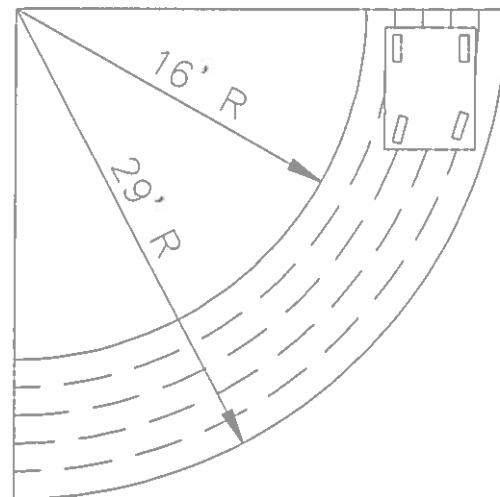
ANGLE



PARALLEL



PERPENDICULAR

TURNING
CLEARANCE

ID-065

SECTION TEN TABLE OF CONTENTS

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GENERAL CONDITIONS

Construction shall be in accordance with the current City development standards and APWA/WSDOT Standard Specifications; except as specifically superseded by the approved plans or special condition of the permit. The following conditions or restrictions must be followed:

Should any damage be done to the roads during the time of construction and installation or in the maintenance and/or operations of said facilities, the road(s) shall be restored by the permittee(s), their successors or assigns, to as good a condition as it was before such damage occurred. Should the grade, width or location of the road(s) be changed or altered in any way so as to require the removal of said facilities, the permittee(s), their successors or assigns, shall forthwith move and relocate said facilities without any redress against the City.

The permittee shall indemnify, defend and hold harmless the City, its officers, agents and employees, from and against any and all claims, losses or liability, including attorneys fees, arising from injury or death to persons or damage to property occasioned by the construction, installation, operation, location, maintenance, or any other cause related to the improvement for which this permit is granted. With respect to this permit and to claims against the City, its officers, agents and employees, the permittee expressly waives its immunity under Title 51 of the Revised Code of Washington, the Industrial Insurance, Act, for injuries to any employee the permittee may have, and agrees that the obligation to indemnify, defend and hold harmless provided for in this paragraph extends to any claim brought by or on behalf of any employee of the permittee. This waiver has been mutually negotiated by the parties as part of the permitting process and is given, as is the indemnification agreement contained within this paragraph, as consideration for issuance of a right-of-way use permit by the City. This paragraph shall not apply to any damage or injury resulting from the sole negligence of the City, its agents or employees. The extent any of the damages or injuries referenced by this paragraph were caused by or resulted from the concurrent negligence of the City, its agents or employees, this obligation to indemnify, defend and hold harmless is valid and enforceable only to the extent of the negligence of the permittee, its officers, agents or employees, if any.

The acceptance of the conditions upon which this permit is granted shall be evidenced by the beginning of the installation of said facilities as set forth herein.

CONSTRUCTION REQUIREMENTS AND GENERAL SPECIFICATIONS

1. No open cut crossing of City roads or streets shall be made without the approval of the City engineer (notice of five working days required). Depending on location, boring may be required.
2. Signing, flagging and traffic control shall be in accordance with the Manual of Uniform Traffic Control Devices. One lane of traffic shall remain open at all times. Roadway shall be open for two-way traffic at the end of each day, with temporary

surfacing as approved by the City Engineer. Should a total road closure appear necessary, application for a road closure permit must be filed with the Public Works office at least five (5) working days prior to the anticipated closure. Application must be accompanied with dust control plan, detour plans, hours of closure, and signing/traffic control plans.

3. Asphalt shall be cut in a solid straight line. After excavating trench and installing utility, all backfill material must be free draining granular material, free of debris and clay. This material to be compacted by a mechanical compactor (approved by the City engineer) to 95% of maximum density (modified proctor) in six inch lifts followed by placement of six (6) inches in 5/8" minus crushed stone top course. After placing a tack coat on the edges of the existing pavement, three (3) inches of class B shall be placed and compacted to match the existing surface. Pavement sections are subject to a two year workmanship warranty; to be replaced if excessive settling or mechanical breakdown develops.
4. When the excavation is located in a graveled shoulder, backfill shall be placed and compacted as specified in paragraph 4 above, and surfaced with a minimum of six (6) inches of compacted 5/8" minus crushed stone surfacing.
5. When multiple open cut utility crossings are proposed at intervals of 200 feet or less, between adjacent crossing, a full width asphalt resurfacing of the roadway pavement section will be required for the entire length of roadway between crossing extending to ten (10) feet either side of crossings. Existing crossing will be considered when establishing overlay requirements in addition to work contemplated under current utility permit application.
6. Existing drainage ditches, culverts, etc. shall be kept clean at all times. Temporary diversion of any drainage system will not be permitted without the consent of the City engineer. Any drainage culvert tile, catch basins, manholes, etc., disturbed by excavation shall be replaced with new material or repaired as directed by the City engineer. Temporary erosion/sedimentation control measures shall be employed to protect adjacent property and storm drain facilities.
7. If in the opinion of the City engineer, weather conditions are so bad as to make the traveled roadways unsafe for the traveling public or detrimental to the restoration of the roads, excavation shall cease immediately and clean up shall be promptly accomplished.
8. Maximum amount of open trench on streets shall be 200 lineal feet unless authorized otherwise by the City engineer. At the end of each day, all ditches must be backfilled or covered with steel plates and barricaded with flashing warning lights to prevent people or animals from falling into the trench.
9. All pipe or other material strung along City right-of-way must be placed a safe distance from the traveled roadway in such a manner as to avoid rolling onto the roadway, or creating a traffic hazard.

10. Final cleanup including complete restoration of shoulders, cleaning of ditches, culverts and catch basins, and removal of loose material from back slopes of ditches shall not exceed 500 lineal feet behind excavating operations. Street surfaces shall be kept cleaned at all times with the use of a power broom or other approved means.
11. No excess material or unsuitable material shall be wasted on City right-of-way without the express written consent of the City engineer.
12. The Developer shall use special care to protect existing survey monuments or control points and it is the obligation of the Developer to notify the City engineer of the possibility of them being disturbed by his work.

If any of the markers and/or reference points are disturbed or damaged, the Developer shall have them reset by a registered Land Surveyor. The surveyor shall record or file all required documents with the County or the State Department of Natural Resources as may be appropriate, at the Developer's cost.

Standard cast iron monument cases will be required for all GPS and brass cap monuments and will be furnished by the Developer at no cost to the City. The Developer shall bear the cost of installation, by his surveyor, of such cases in a manner satisfactory to the City engineer.

13. Yard improvements within the right-of-way shall be restored to as close to original condition as feasible. This includes but is not limited to features such as landscaping, rockeries, lamp post, mailboxes and fences. This permit does not authorize or regulate work on private property, private easements or vacated and "ancient" rights-of-way without public easements. Any private property damages or liability incurred are the sole responsibility of the Contractor.
14. Notify the City engineer immediately prior to starting work and upon completion, the applicant shall call the City engineer for an inspection of work at (509) 682-8030. All items noted during the inspection shall be corrected to meet with the City engineer's approval.
15. No equipment, except equipment with rubber tires, shall be permitted to operate on any road. Damage to any road will be repaired by the Developer, at his expense, to restore the road to the original condition.
16. Completion of construction of a facility within City road right-of-way by permit or franchise obligates the Developer, successors, and assigns to perpetually maintain said facility or utility for its full period of existence and to cause to be repaired any subsidence, settlement or other condition of damage or hazard to the City road resulting therefrom.

LAND DIVISION**LOTS**

Access: Every new lot shall be provided with satisfactory access to a street and shall be platted so as to provide acceptable driveway grades of less than 18%. A maximum of 18% grade shall be allowed for a continuous length of up to 100 feet.

Width and Depth: All lots shall have a minimum width and depth sufficient to meet the Chelan zoning ordinance width and depth requirements for the particular zone in which the property is located.

Slope: As slope increases, lot sizes shall increase to partially or completely avoid the problems of drainage, siltation, flood control, potential land slides and accessibility which frequently are attributable to over development of slope areas. Slope shall be calculated based on the average topography of individual lots. The following slope chart shall be used as a guide to determine minimum lot size and frontage.

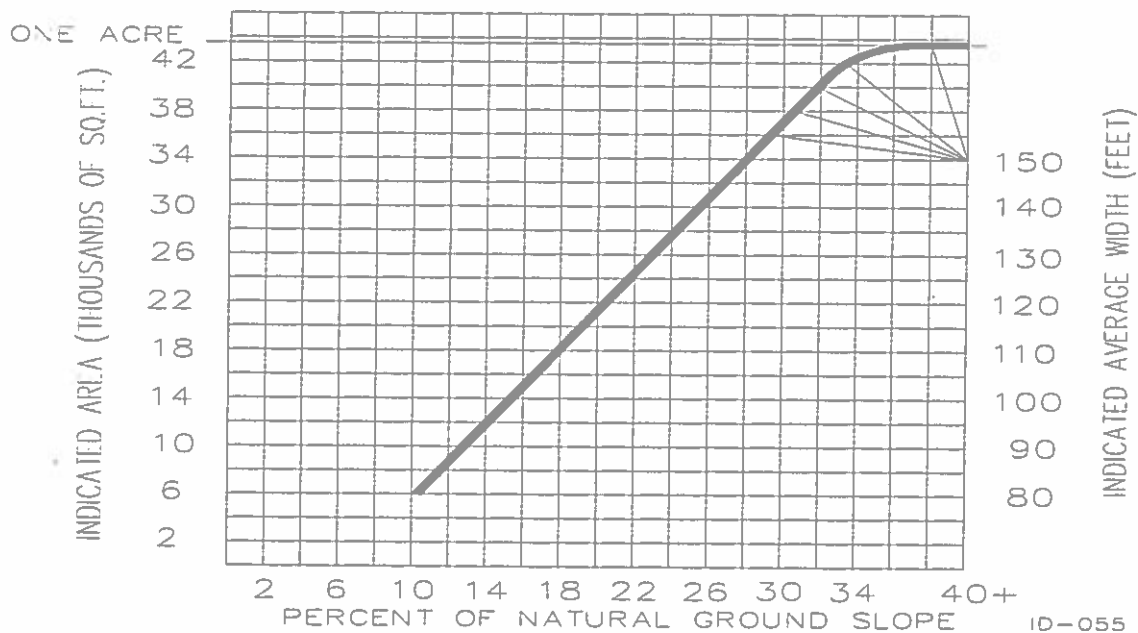


Chart Example: For a lot whose natural ground slope is 23%, the indicated area is 26,000 square feet and the indicated average width is 130 feet. Relief from slope requirements may be obtained only if adequate provisions are made for parking, health regulations, building siting, soil stabilization and utility easements.

A slope analysis shall be submitted showing an access plan to any individual lot not meeting the criteria of the slope chart.

Corners At Street Intersections: At street intersections in residential areas, lot corners shall be rounded by an arc. Radii shall be per the Street Standards Section.

Line Angles: Side lot lines shall be straight lines running within twenty degrees of perpendicular to the road upon which the lots front. Side lot lines on curved roads should run at or near radially to the curve.

Reverse Frontage: No residential lots shall have street frontage along two opposite boundaries unless topographical features or the need to provide separation of the lots from arterials, railways, commercial activities or industrial activities justify the designing of reverse frontage lots.

BLOCKS

In general, blocks shall be as long as is reasonable and consistent with the topography and the needs for convenient access, circulation, control and safety of street traffic and the type of land use proposed. For residential subdivision, the block length ordinarily shall not exceed one thousand three hundred twenty feet or be less than four hundred feet.

Except for reverse-frontage parcels, the width of blocks shall ordinarily be sufficient to allow for two tiers of lots of depths consistent with the type of land use proposed. This width should not be less than two hundred feet for the sum of two lot depths.

In residential subdivisions, a through pedestrian walk right-of-way not less than ten feet wide shall be provided at the midpoint of any block exceeding six hundred feet in length where such a walk is deemed essential to provide circulation or pedestrian access to schools, parks, shopping centers and other community facilities.

SURVEY MONUMENTATION

Survey shall comply with RCW 58.20, City Municipal Code Title 16, and this Section. For each 500,000 square feet of new development state plane coordinates shall be calculated for at least one monument. Developments of four or more lots shall establish or tie to at least one such monument. The intent of this requirement is to facilitate entry of plat and development data into Public Works data base. The state plane coordinates are not intended to be a legally binding representation of property locations.

EASEMENT PREPARATION STANDARDS

1. **SUMMARY:** This procedure establishes a uniform method for the preparation of all City easements.
2. **SCOPE:** This procedure applies to all easements to be granted to the City.
3. **GENERAL:** When City utilities are to be constructed on private property, an easement must be granted to the City. The City Public Works Department will generally process, record, and file all City easements. Easements prepared by applicant consultants must be reviewed and approved by the City before recording and filing by the applicant. The Standard City easement format is in Appendix B, Exhibit 4.

1. **EASEMENT PREPARATION.** All easements not shown on a plat must be prepared by a licensed land surveyor or licensed engineer. The descriptions contained in the easement document shall be prepared by a Washington licensed land surveyor or licensed engineer who shall seal or affix their name to the legal description. Legal descriptions must contain the full legal description of the real property upon which the easement is located as recorded in the Chelan County Auditor's records. In addition, the Chelan County Assessor's parcel number must be provided.

All easements must be prepared on 8½" x 11" paper. Every easement shall include an easement number in the lower right corner of each page. This number will be assigned by the City Public Works Department.

An easement drawing will be attached to each easement. The easement drawing shall include: (1) the name of the grantors, (2) the easement number provided by the City Public Works Department, and (3) the general purpose of the easement, (i.e., all City utility purposes, water, sewer, drainage, well protection, access, etc.) The drawing shall be to a suitable scale on size 8½" x 11" paper. The drawing must show the entire parcel and shall contain enough information to clearly identify both the parcel and easement. The easement must be tied to a platted corner or a section corner. Easement areas shall be delineated by cross-hatching. Each drawing shall be sealed and signed by the submitting licensed land surveyor or licensed engineer.

2. **RETRIEVAL.** Original easements will be on file with the City clerk and copies will be on file in the City Public Works Department. To obtain copies of easements, please contact the City Public Works Department. Easements are filed numerically by section, township, and range so the legal description of the real property involved is necessary for a prompt retrieval of any easement.

UTILITIES EASEMENTS

Easements for all facilities such as high voltage electric transmission lines, drainage canals, pondage areas, etc., shall be of such width as is adequate for the purpose. Minimum linear easement width shall be 20 feet unless directed otherwise by the City engineer. Easement for utilities at greater depths than 7 feet may require greater width.

UTILITIES

Undergrounding: Utility lines, including but not limited to those for electricity, communications and street lighting, serving and located within the subdivision, shall be placed underground.

Public: Where alleys are not provided, easements for public utilities shall be provided along rear lot lines and side lot lines where necessary including any necessary access easement. Where easements are necessary, they shall be a minimum of twenty feet in width, unless directed otherwise by the City Engineer. For safety concerns, where possible, the width of rear and side lot line easements shall be equally shared by abutting lots and shall be continuous and aligned from block to block within the subdivision and with adjoining subdivisions. Additional width will be required where multiple utilities or depth and separation so require.

UTILITY SERVICES

1. All utility lines including electric, telephone, fire alarm and television cables shall be placed underground prior to paving.
2. Easements for maintenance of all utilities, both on and off site, shall be provided to the City, to the satisfaction of the City Engineer prior to final plat approval.

COMMON UTILITY TRENCHES

Common Utility trenches shall generally not be allowed with water, sewer, and storm lines. Utility lines shall generally be located as per drawing 10-11. Common trenches may be allowed for phone, electric, cable TV, gas, and other non-City utilities if approved by each individual utility. Water and sewer lines shall be separated as required by the Department of Ecology and the Department of Health.

Under extreme unusual conditions, common trenches may be necessary and allowed as approved by the City engineer. Crossings and connections with existing lines may also require individual evaluation for variation approval by the City engineer.

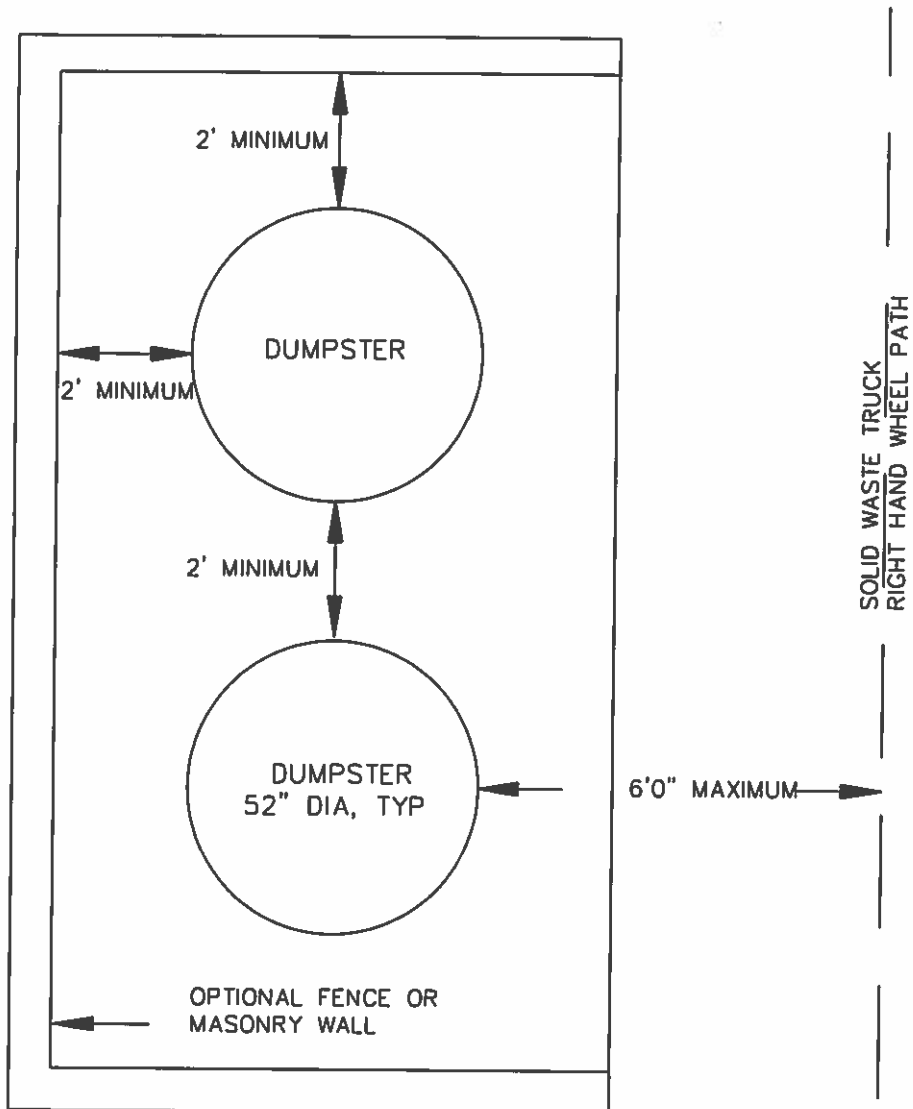
PROJECT REVIEW AND INSPECTION

Whenever the City Engineer and/or the Public Works Director determine that the magnitude and/or complexity of any public improvement being constructed by a private developer, as a condition of a land use permit or approval, requires full or part-time on-site inspection, the City Engineer and/or the Public Works Director shall have the authority to provide or contract with a duly qualified inspector to provide inspection services for the City in connection with such construction. All costs of such inspection services incurred by the City shall be paid by the developer. The fee must be deposited in advance with the City prior to issuance of a construction permit.

City personnel shall strive to assist developers with such information as is readily available or easily obtained. Costs for investigative research or project review requiring more than two man hours, or which will require an outside consultant (such as City attorney, or City consulting engineer) shall be borne by the requesting developer. Prior to performing such research or review, the City may require the developer to execute a reimbursement agreement.

SOLID WASTE REQUIREMENTS

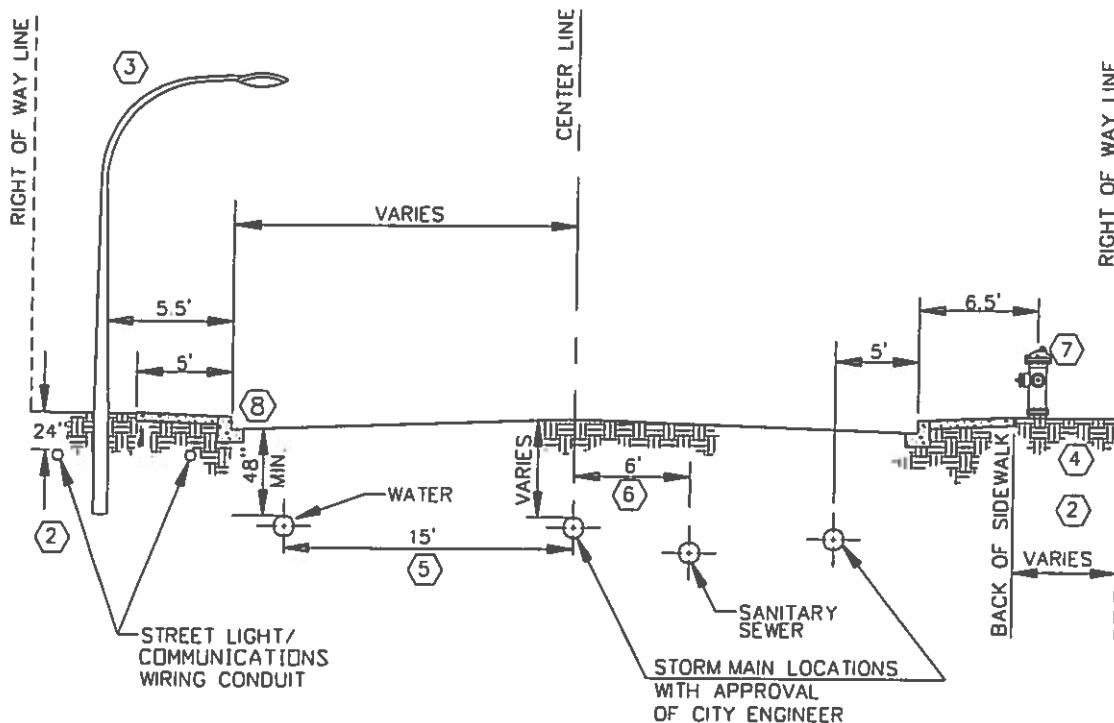
1. All multi-family and commercial development must provide recycling facilities.
2. Multifamily housing shall be served by commercial solid waste containers (dumpsters) at a ratio not less than 0.15 CY per ERU per living unit.
3. Commercial solid waste containers or Commercial Accounts with four or more 30-gallon cans must be placed on a concrete slab (fenced if required by City Engineer) easily accessible to the solid waste packer truck. The location shall provide side drive-by and side loading, no back-in locations will be allowed. See City of Chelan Standard Detail "Dumpster Pad and Enclosure" for typical construction details.

DUMPSTER PAD AND ENCLOSURE

ID-056

- NOTES:
1. SOLID WASTE TRUCK REQUIRES:
 - a) NO BACKING UP
 - b) 45' CLEAR RADIUS TO TURN
 2. ONE PAD PER BUILDING UNLESS OTHERWISE APPROVED BY CITY ENGR
 3. PAD MUST MATCH EXISTING PAVEMENT/LOT GRADE
 4. PAD MAY BE CONCRETE OR ASPHALT
 5. ENCLOSURE IS OPTIONAL
 6. NO OBSTRUCTIONS OVERHEAD OF THE PAD ARE ALLOWED
 7. ALTERNATE GEOMETRY MAY BE APPROVED IF OWNER PROVIDES DUMPSTER DOLLIES AND IF OWNER IS RESPONSIBLE FOR POSITIONING DUMPSTERS BEFORE AND AFTER PICKUP.

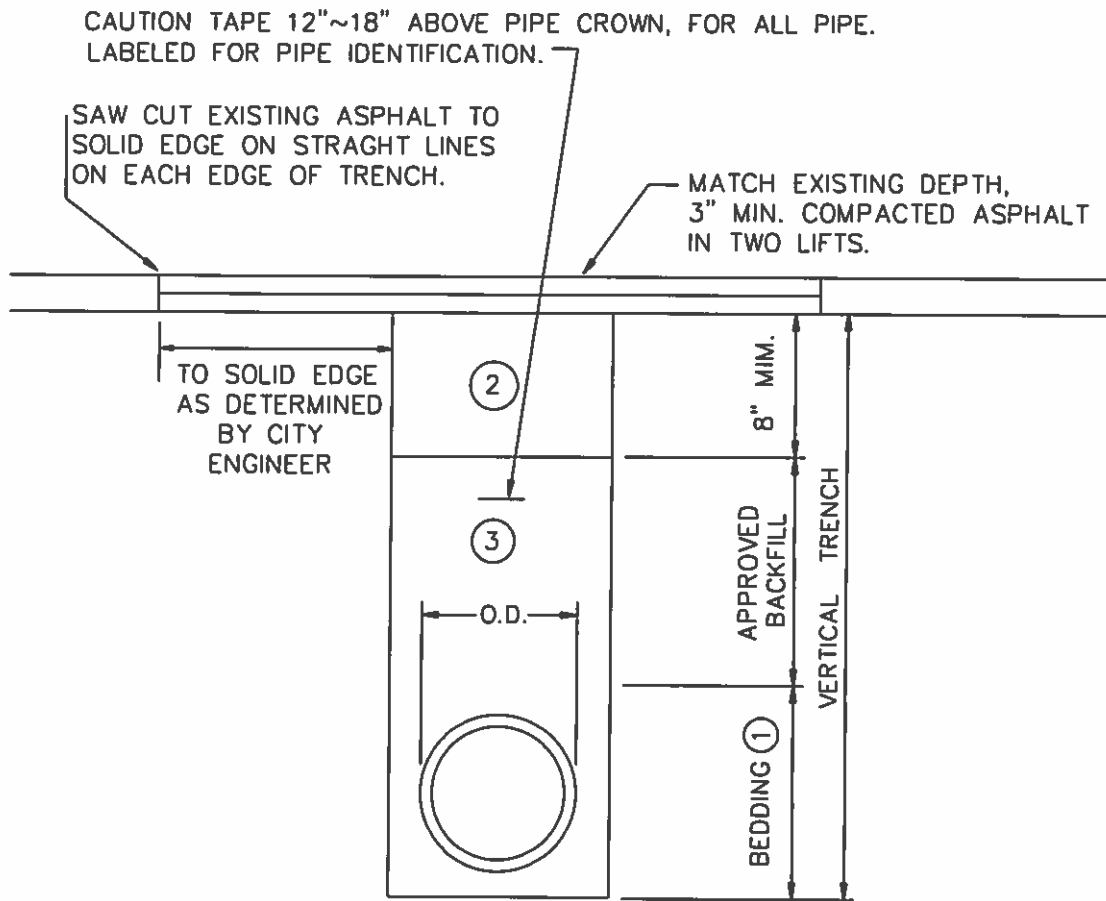
TYPICAL CITY UTILITY LOCATION FOR NEW STREET CONSTRUCTION



ID-101

Notes:

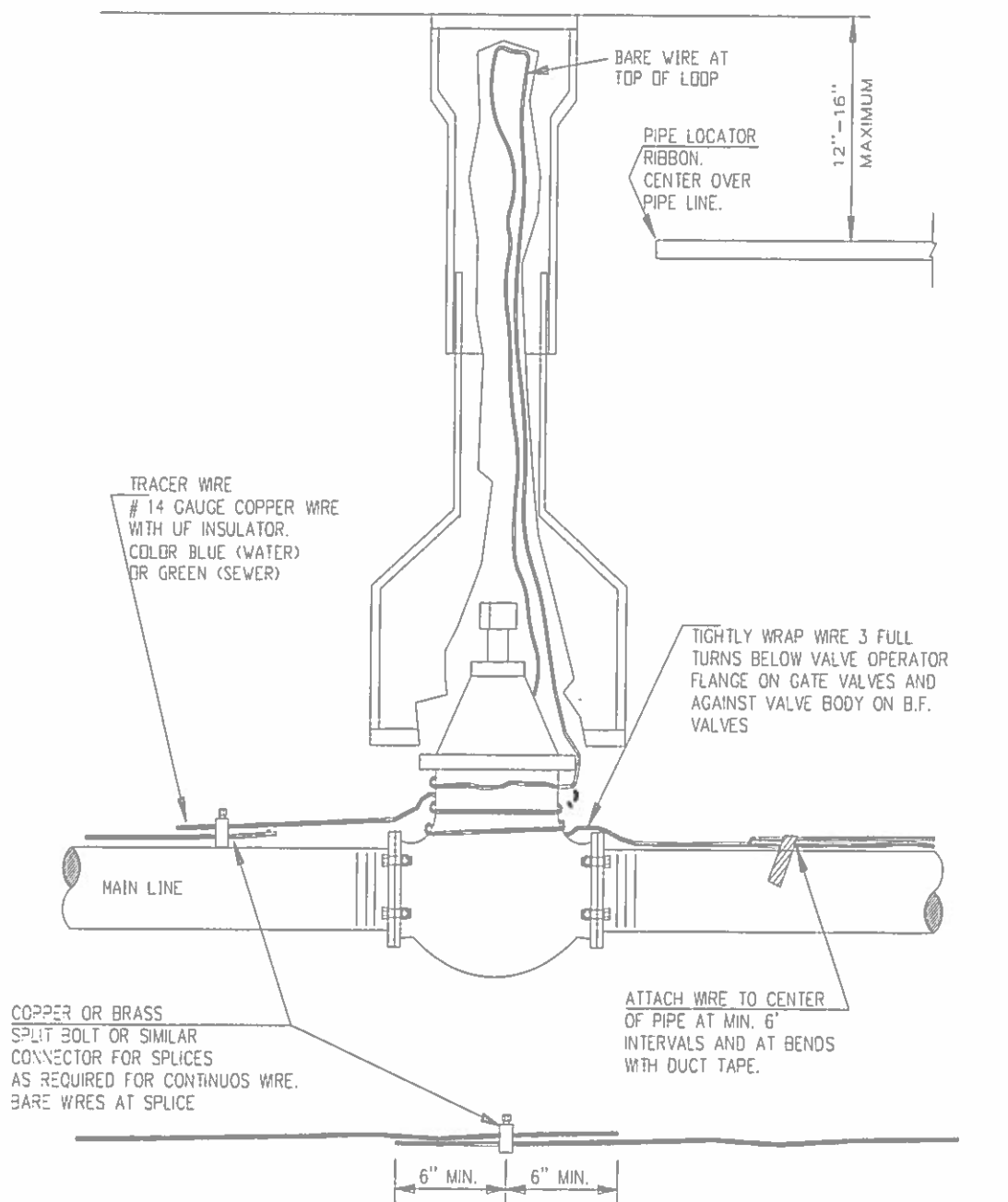
- Developer or contractor is required to call Utility Locate at (800) 424-5555 a minimum of 48 hours prior to digging within the limits of City right-of-way for the location marking of all underground utilities.
- Typical locations for other proposed public utilities shall be in greenway behind sidewalk, City engineer may approve exceptions. A minimum horizontal separation of 3 feet shall be maintained from City water mains and a minimum 5 foot horizontal separation shall be maintained from City sewer and storm sewer mains.
- Street light poles typically will be installed on alternating sides of the street and spaced as indicated on detail page 11-9.
- Water meter boxes will be installed at the back of new or existing sidewalks.
- Potable water lines typically shall be installed 15 feet from and parallel to the centerline of the right-of-way on the north or east side.
- Sanitary sewer line typically shall be installed 6 feet from and parallel to the centerline of the right-of-way on the south or west side.
- Fire hydrants typically will be installed on alternating sides of the street and spaced per requirements of Section 1 of these standards.
- If conflicts require alternate water or sewer main locations, approval shall be obtained from the City Engineer for the location. A minimum 3 foot separation from the face of curb is required.

UTILITY TRENCH REPAIR STANDARD

ID-113

- NOTES:
1. BEDDING FOR FLEXIBLE PIPE SHALL BE A MINIMUM THICKNESS OF 4" UNDER THE PIPE AND 6" OVER THE CROWN.
 2. COMPACTED CRUSHED SURFACING TOP COURSE.
 3. SELECT BACKFILL SHALL BE 5/8-0 CRUSHED ROCK. *CONTROLLED DENSITY FILL (CDF) MAY BE REQUIRED BY THE CITY ENGINEER AS NEEDED.
 4. BACKFILL MECHANICALLY COMPACTED TO 95% MAX. DENSITY IN 6" LIFTS..
 5. 4' MIN. COVER ON ALL WATER AND SEWER MAINS.
 6. TRENCH EXCAVATION SAFTY SYSTEM PER WASHINGTON INDUSTRIAL SAFETY AND HEALTH ACT.
- * CDF SHALL CONSIST OF:
- 1.5 SACK CEMENT
 - 1750 LBS. PEAGRAVEL
 - 1750 LBS. SAND
 - 6 OZ./100 WEIGHT WATER REDUCING AGENT
 - 4" TO 5" SLUMP
- CDF SHALL BE APPROVED BY THE CITY ENGINEER FOR SPECIFICATIONS AND USE.

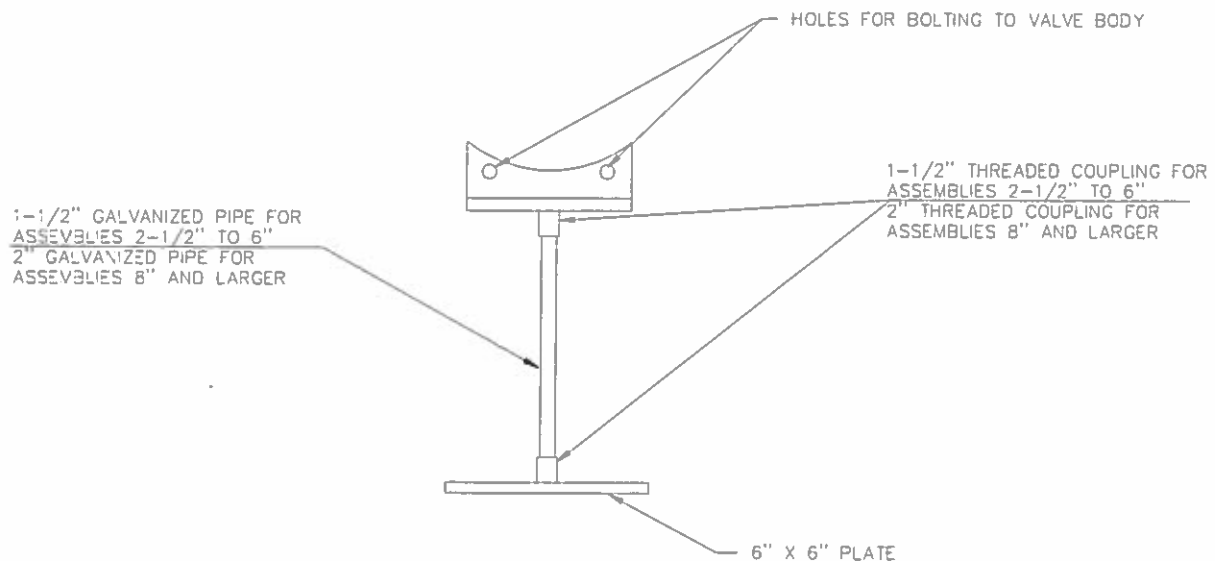
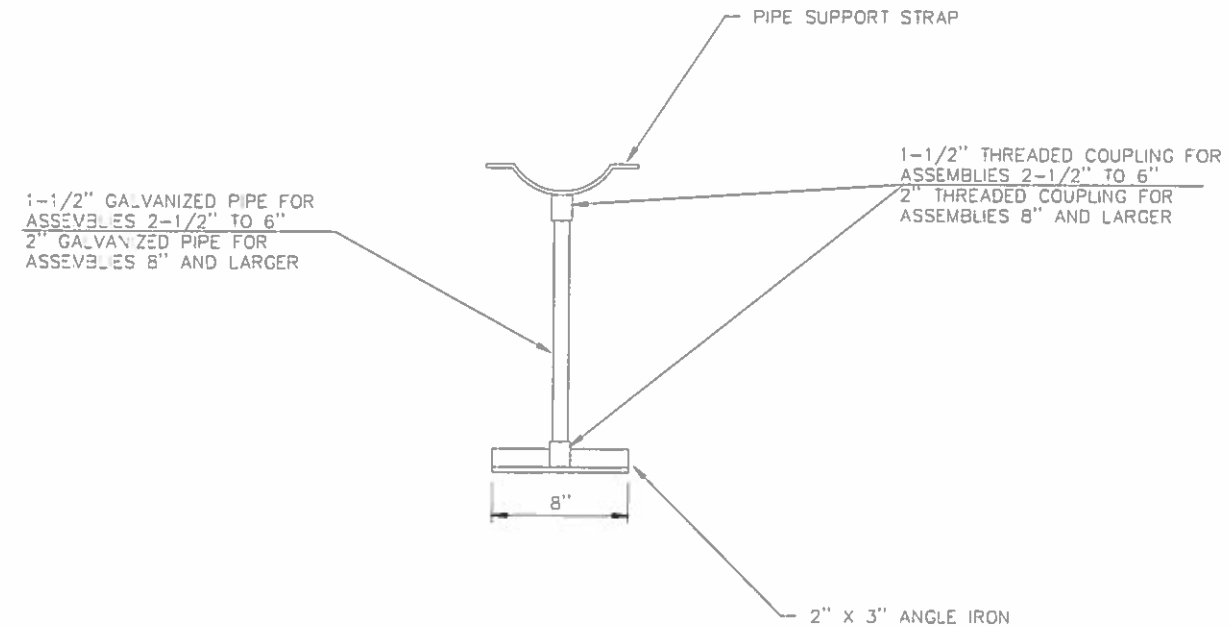
TRACER WIRE INSTALLATION



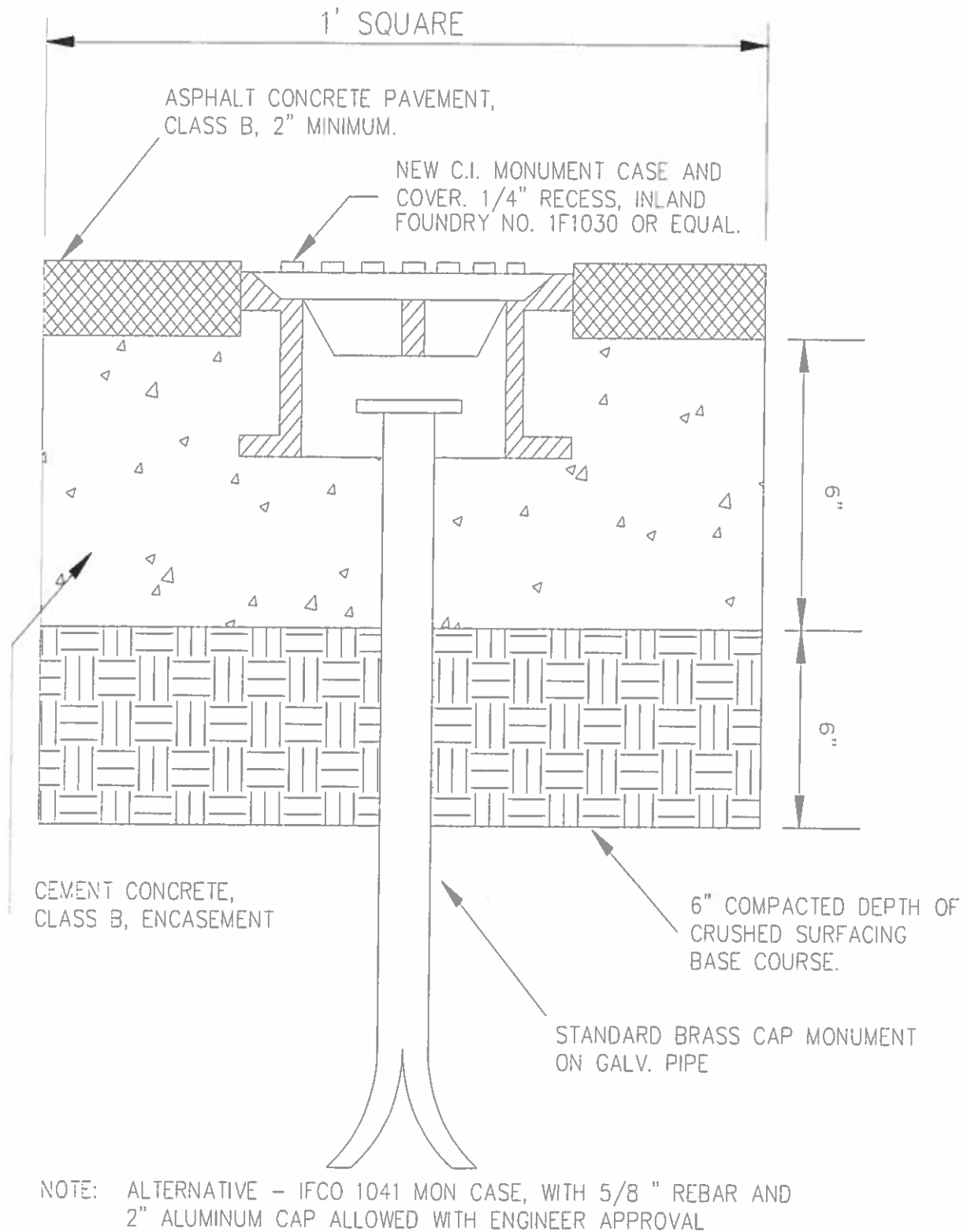
TRACER WIRE SHALL BE INSTALLED ON **ALL** MAIN LINES INSTALLED IN A NON-LINEAR ALIGNMENT.
 TRACER WIRE IS REQUIRED ON BOTH METALLIC AND PLASTIC PIPE.
 WIRE LOOP SHALL BE BROUGHT TO SURFACE AT EACH ACCESS POINT SUCH AS WATER VALVE BOX, SEWER FLUSH PORT, ETC

ID-105

PIPE SUPPORTS

PIPE SUPPORTS

ID-078

TYPICAL MONUMENT CASE (NEW)

ID-044

SECTION ELEVEN TABLE OF CONTENTS

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STREET ILLUMINATION

All new commercial or residential subdivisions, short plats, building site plans shall provide street lights in accordance with the standards for such improvements of the City, unless exempted from this requirement by the City Engineer, in which case underground improvements shall be installed for future lighting. Street illumination shall be owned and operated by the City.

A street lighting plan submitted by the applicant and approved by the Public Works Director shall be required for all street light installations. Type of installation shall be as set forth in the current edition of the WSDOT/APWA Standard Specifications and as directed by the City except where noted herein.

All public street light designs shall be prepared by an engineering firm capable of performing such work. The engineer shall be licensed by the State of Washington. All developments shall submit the lighting plan on a separate sheet. After the system is completed and approved, a set of "as built" mylars shall be submitted to the City as a permanent record.

All street intersections shall have provisions for lighting, so as to provide minimum illumination as set forth in WSDOT Publication M51-02 (Traffic Manual).

All developments shall include conduit installed so as to provide adequate capacity for future installation of complete street lighting as set forth in these standards and in WSDOT Publication M51-02. Positioning of conduit shall be determined by the City engineer. All conduit installed solely to comply with future street lighting upgrade requirements shall have at least a single ground conductor (minimum #10AWG copper stranded type) installed.

All street light electrical installations including wiring conduit and power connections shall be located underground.

The General Notes below need to be included on any plans dealing with street design.

General Notes (Street Light Construction)

1. All workmanship, materials and testing shall be in accordance with the current edition of the WSDOT/APWA, MUTCD, National Electrical Code (NEC) or City of Chelan Development Guidelines unless otherwise specified below. In cases of conflict, the most stringent guideline shall apply.
2. Electrical permits and inspections are required for all street lighting installations within the City of Chelan. The contractor is responsible for obtaining said permits prior to any type of actual construction. These permits are available from the State Department of Electrical Inspections (L & I),

Chelan County PUD, and the Department of Planning and Community Development at City Hall.

3. A clearly marked service disconnect shall be provided for every lighting circuit. The location and installation of the disconnect shall conform to NEC and City of Chelan standards, whichever is more stringent. The photo cell window shall face north unless otherwise directed by the City. The service disconnect shall not be mounted on the luminaire pole. (See drawing pg. 11-7) The service panel shall be supplied with PUD approved meter base, galvanized steel NEMA 3R enclosure. The photo electric cell shall be utility grade Intermatic series K4100 or equivalent, installed in a vandal/tamper resistant manner. Enclosure shall have provisions for locking with a City supplied padlock. Test switch shall be commercial grade 120/277 VAC rating Hubbell CS115 or equivalent. GFCI duplex receptacle shall be within main enclosure and be Hubbell 5352-IS or equivalent. Contactor shall be Square D model 8903 type L or equivalent.
4. All lighting wire shall be stranded copper with a minimum size of #10 AWG. All wire shall be suitable for wet locations. All wire shall be installed in schedule 40 PVC conduit with a minimum diameter of 1-1/4 inches. A bushing or bell-end shall be used at the end of a conduit that terminates at a junction box or luminaire pole. Conductor/circuit identification shall be used throughout the system. Equipment grounding conductor shall be a minimum of #8 AWG copper. All splices or taps in pull boxes or made below finish grade shall be made by approved methods utilizing epoxy kits rated at 600 volts (3M Scotch cast 82-A series resin splicing kits or equivalent). All splices shall be made with pressure type connectors (wire nuts will not be allowed). Direct buried wire will not be allowed. All other installation shall conform to NEC, WSDOT/APWA and MUTCD standards.
5. Each luminaire pole shall have an in-line, water tight fuse on each conduit above ground potential located at the base of the pole. Access to these fuses shall be through the hand-hole on the pole. The hand-hole shall be facing away from on-coming traffic. Additional conductor length shall be left inside the pole and pull or junction box equal to a loop having a diameter of one foot. Load side of in-line fuse to luminaire head shall be a minimum of #10 copper, and shall be supported at the end of the luminaire arm by an approved means. Fuse size and grounding in pole shall conform to NEC standards. All junction boxes shall meet or exceed WSDOT and NEC standards. (See drawings pg. 11-14 & 11-15)
6. Approved pull boxes or junction boxes shall be installed when conduit runs are more than 200 feet. In addition, a pull box or junction box shall be located within 10 feet of each luminaire pole and at every road crossing. The luminaire base, where adequate space is available and accessible, may be considered adequate as a pull or junction box. Boxes shall be clearly and

permanently marked as lighting boxes by the legend "L.T." or "LIGHTING". See WSDOT standard plan J-11a.

7. All lighting poles shall have tapered round shafts with a linear taper of between 0.125 and 0.14 inches per foot. All poles shall be Hapco 50700-005 or 50700-006 for single arm and Hapco 50701-010 for twin arm or approved equal. In existing developed areas, the City may approve/require use of other poles to establish consistency within the developed area.
8. Mounting heights, arm length, power source, luminaire, and bolt patterns shall be as indicated on drawings pages 11-9, 11-10, 11-11.
9. Any modification to approved plans shall be reviewed and approved by the City engineer prior to installation.

Staking

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

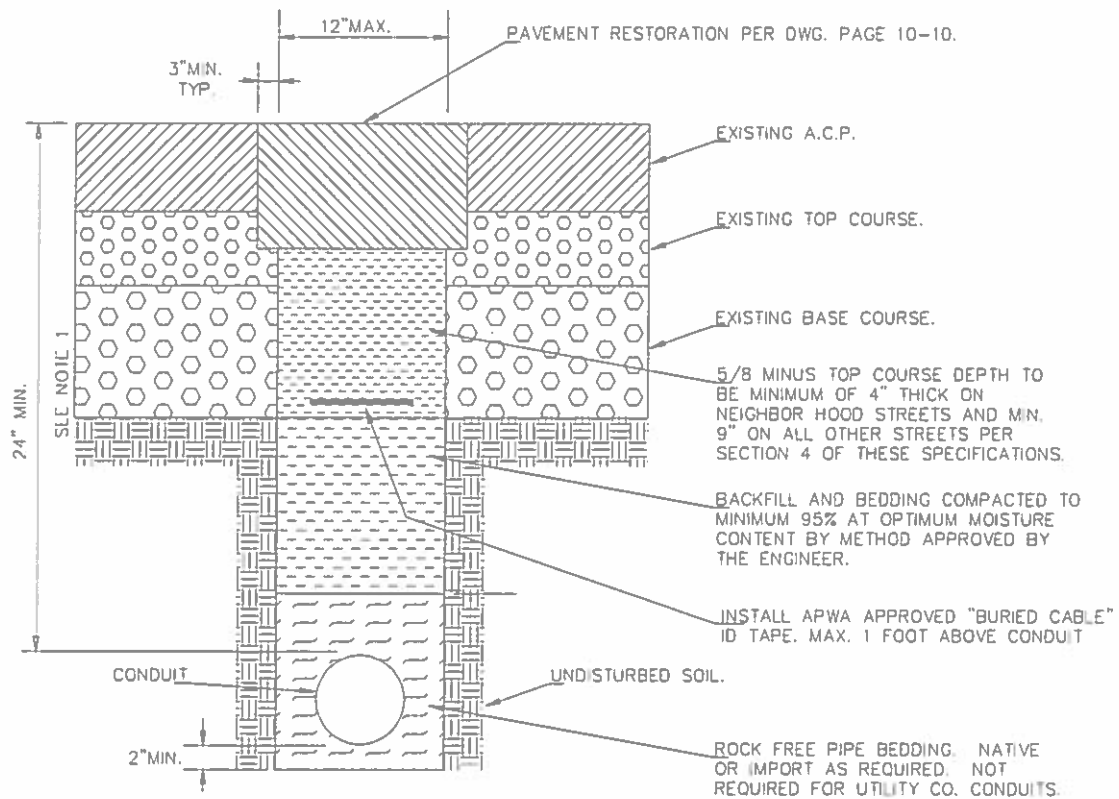
A preconstruction meeting shall be held with the City prior to commencing staking. All construction staking shall be inspected by the City prior to construction.

The minimum staking of luminaires shall be as follows:

- A. Location and elevation to the center of every pole base;
- B. Location and elevation of each service disconnect.

Testing

All luminaires shall be subject to an electrical inspection. Lamp, photocell and fixture shall be warranted for a period of two years.

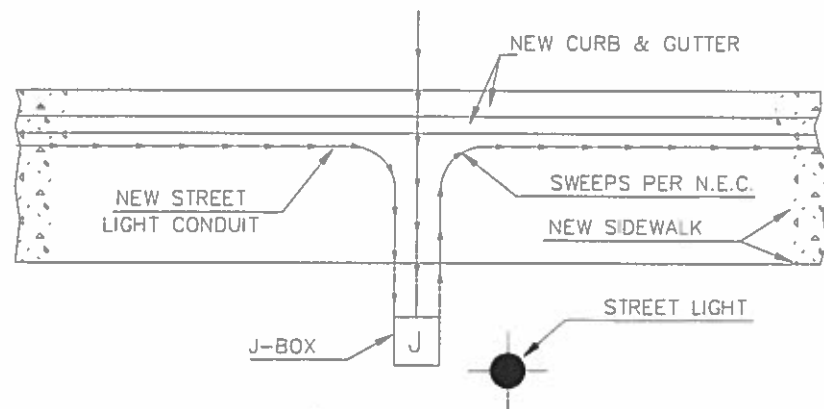
CONDUIT TRENCHING**NOTES:**

- 1) TRENCH DEPTH SHALL PROVIDE A MINIMUM COVER OF 24" OVER TOP OF CONDUIT. G.T.E. AND P.U.D. TO BE MIN. 30" AT NON CURBED STREET CROSSINGS OR AS REQUIRED BY THE PERMIT.
- 2) MINIMUM ONE-WAY TRAFFIC TO BE MAINTAINED.
- 3) ALL ROADWAY APPURTENANCES TO BE PROTECTED AND ROAD SIGNS LEFT AS FOUND.
- 4) PAVEMENT REPAIR TO BE MADE WITHIN 24 HOURS OF TRENCH BACKFILL.
- 5) PERMIT REQUIRED ON ALL PROJECTS NOT CONTRACT ADMINISTERED BY THE CITY ENGINEER DEPT.

STREET CUT AND PATCH DETAIL FOR
 TYPICAL TRAFFIC SIGNAL,
 STREET LIGHTING AND
 UTILITY CO. CONDUITS

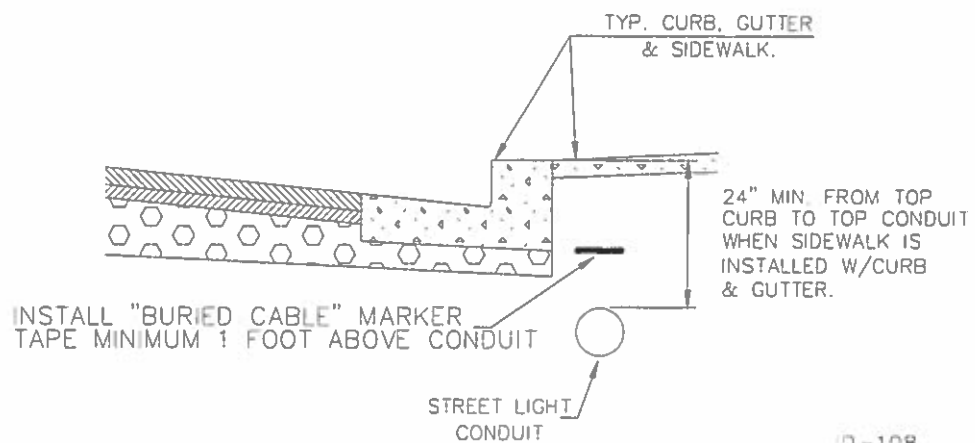
ID-099

STREET LIGHT CONDUIT LOCATION



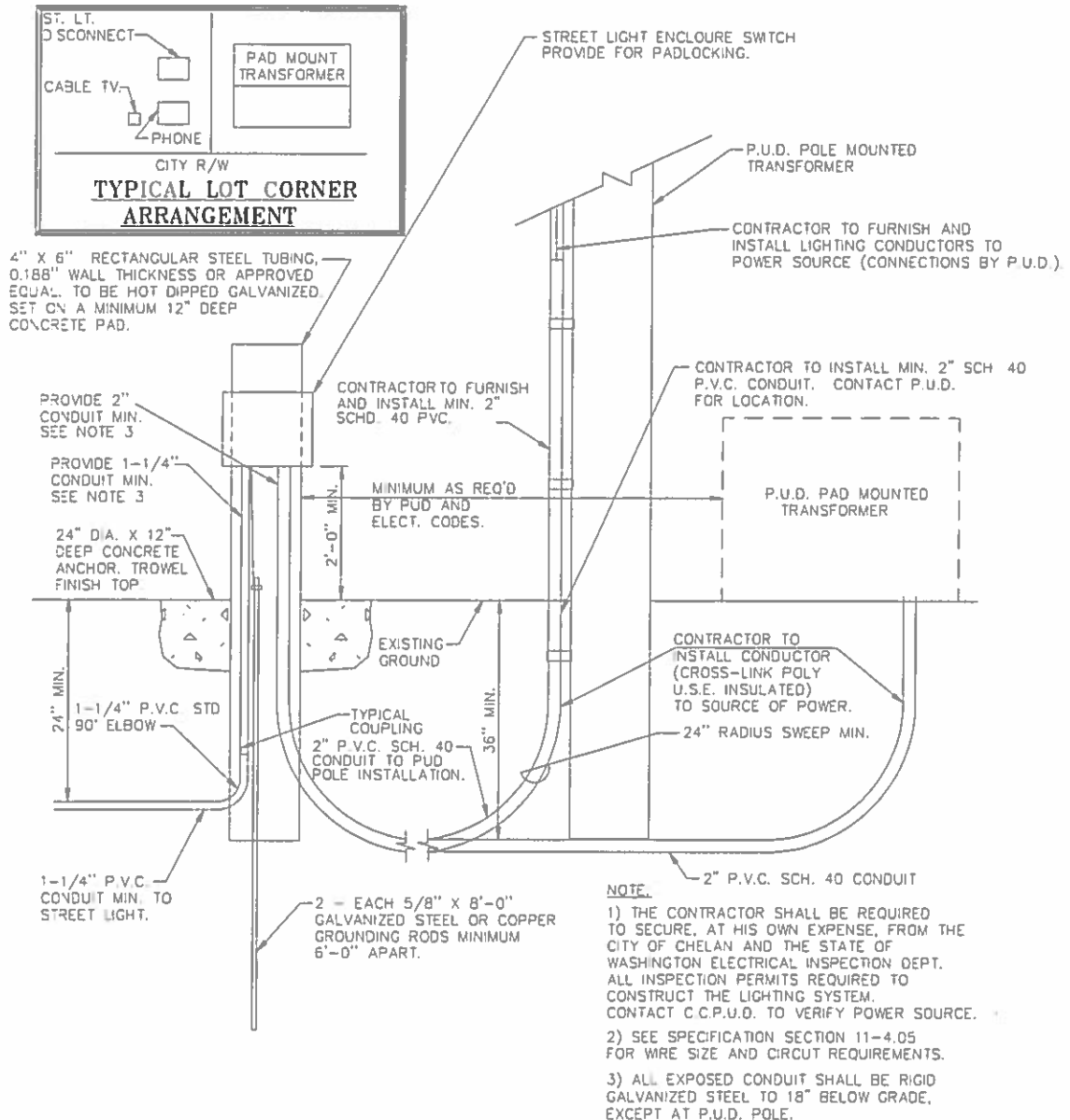
NOTE:

A TOTAL OF FOUR 90° BENDS, OR AN EQUIVALENT OF 360° MAXIMUM IS PERMITTED IN A CONDUIT RUN PER NEC SECTION 347-14. SINCE EACH "J" BOX REQUIRES ONE 90° BEND TO ENTER THE BOTTOM OF THE BOX, A MAXIMUM OF TWO ADDITIONAL 90° BENDS CAN BE INSTALLED BETWEEN BOXES OR NO MORE THAN 180°



D-108

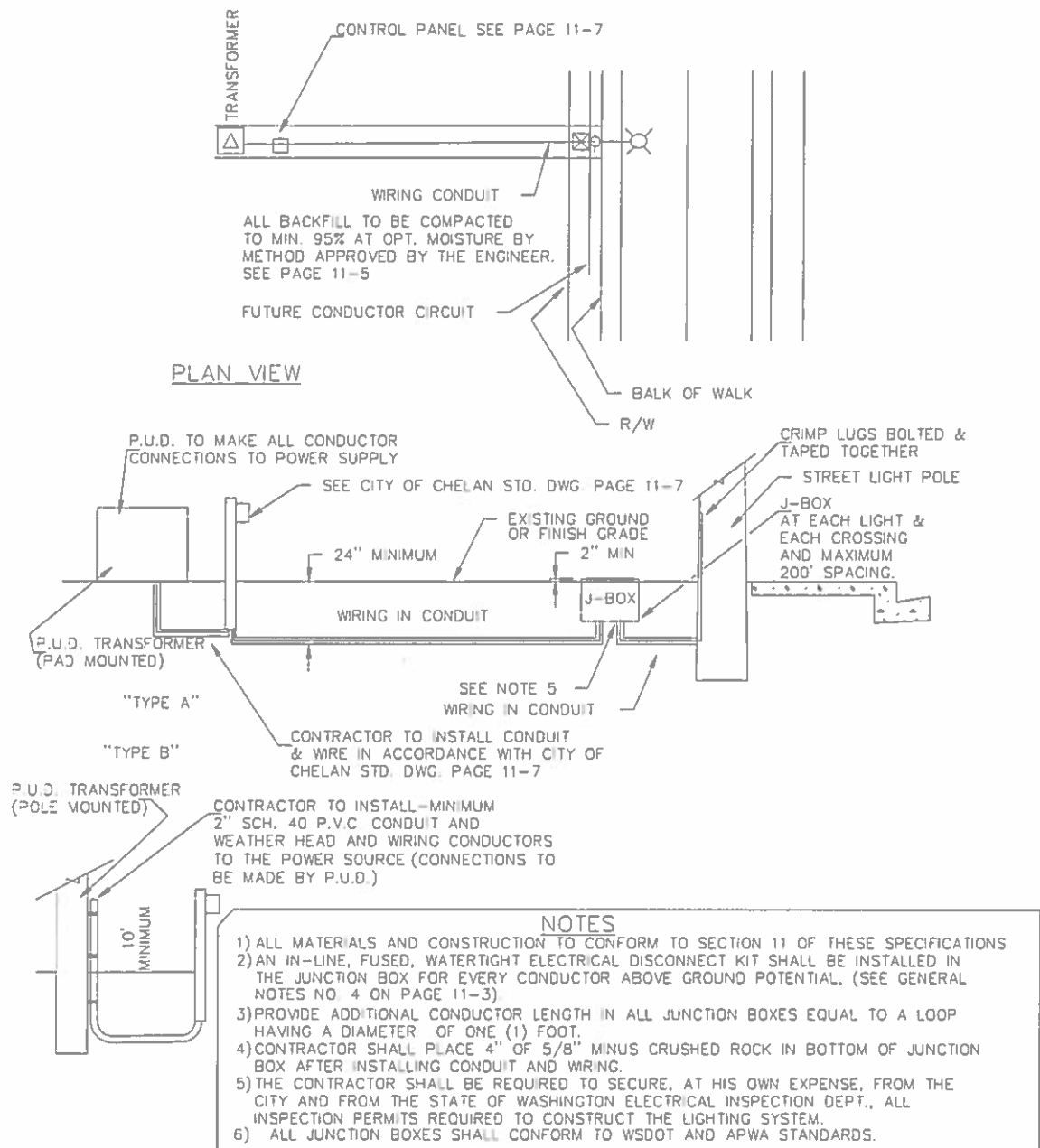
TYPICAL LIGHTING CONTROL PANEL



10-097

TYPICAL LIGHT CIRCUIT

SINGLE LIGHT CIRCUIT



ID-096

HIGH PRESSURE SODIUM LUMINAIRE

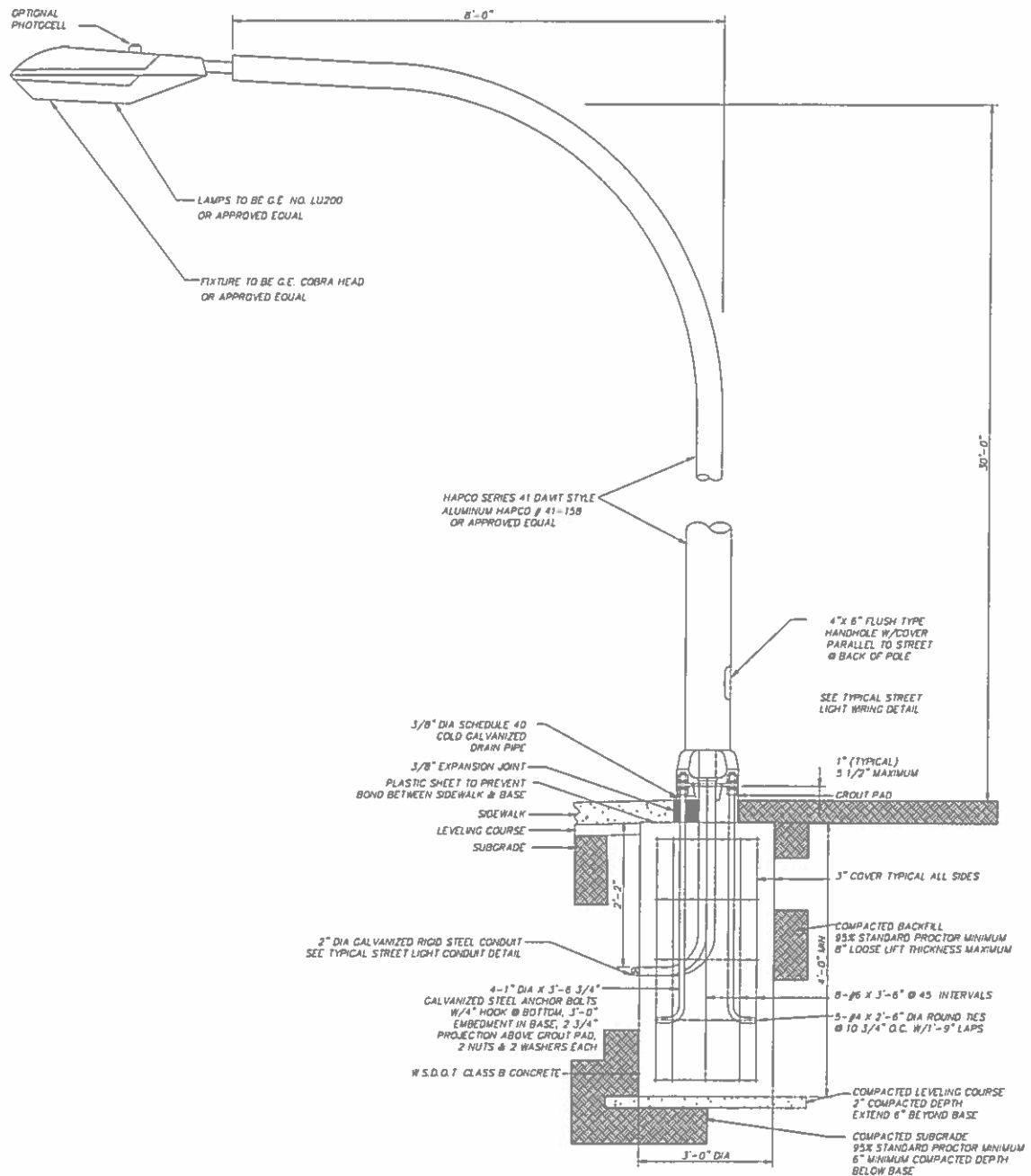
- NOTES:**
- 1) LUMINAIRE SHALL BE COBRA-HEAD CONFIGURATION WITH BALLAST IN HEAD MEETING I.E.S., TYPE III, LIGHT DISTRIBUTION PATTERN WITH CUT OFF OPTICS AND POWER DOOR.
 - 2) LUMINAIRE BALLAST SHALL BE MAGNETIC REGULATOR TYPE AND PROVIDE FOR A $\pm 10\%$ INPUT VOLTAGE. PLUG-IN LEADS, PLUG-IN STARTER BOARD.
 - 3) POWER VOLTAGE TO LUMINAIRE SHALL BE VERIFIED WITH CHELAN COUNTY P.U.D. PRIOR TO ORDERING LUMINAIRE. ALL LUMINAIRES SHALL BE 240V IF AVAILABLE.
 - 4) SEE CITY OF CHELAN STANDARD DWG. PAGE 11-10 FOR POLE AND MAST ARM REQUIREMENTS.
 - 5) LUMINAIRE SHALL BE G.E. OR CROUS HEINZ.
 - 6) LUMINAIRE REQUIREMENTS :

STREET WIDTH *	LUMINAIRE MOUNTING HEIGHT	GENERAL STREET CLASSIFICATION	NOTE-3 LAMP WATTAGE	AVERAGE INITIAL LUMENS	MAXIMUM POLE SPACING **
40' MIN.	35.0'	COMMERCIAL	400	50,000	125'
32'	30.0'	MAJOR, MINOR COLLECTORS LOCAL, PRIVATE, RESIDENTIAL	250****	9,500 16,000****	300'

- * MEASURED FROM FACE OF CURB TO FACE OF CURB.
 ** SPACING TO BE STAGGERED OPPOSITE SIDE OF STREET INTERVALS, EXCEPT ON CURVES WHERE SPACING SHALL BE DETERMINED USING GUIDELINES SET FORTH IN WSDOT PUB. M51-02
 *** SEE CITY OF CHELAN STANDARD DRAWING 11-11 FOR LAMP REQUIREMENTS.
 **** USE TO BE DETERMINED BY CITY ENGINEER.

ID-094

STREET LIGHT STANDARD



STREET LIGHT STANDARD

10-093

HIGH PRESSURE SODIUM VAPOR LAMP

See City of Chelan Standard drawing page 11-9 for luminaire housing requirements.

General

These lamps shall be used in the luminaires specified on City of Chelan Standards drawing page 11-9.

Marking

Manufacturer's name or symbol, catalog number, and wattage rating shall be printed on each lamp.

Packaging

Lamps shall be packaged in containers which will prevent shipping and handling breakage.

Each container shall be marked with the manufacturer's name, name of item, wattage, and catalog number.

Failed Lamps

Lamps in service for less than one year are under warranty and shall be returned for replacement.

Manufacturer and Catalog Numbers

100 Watt OSRAM Sylvania #LU100 S54*

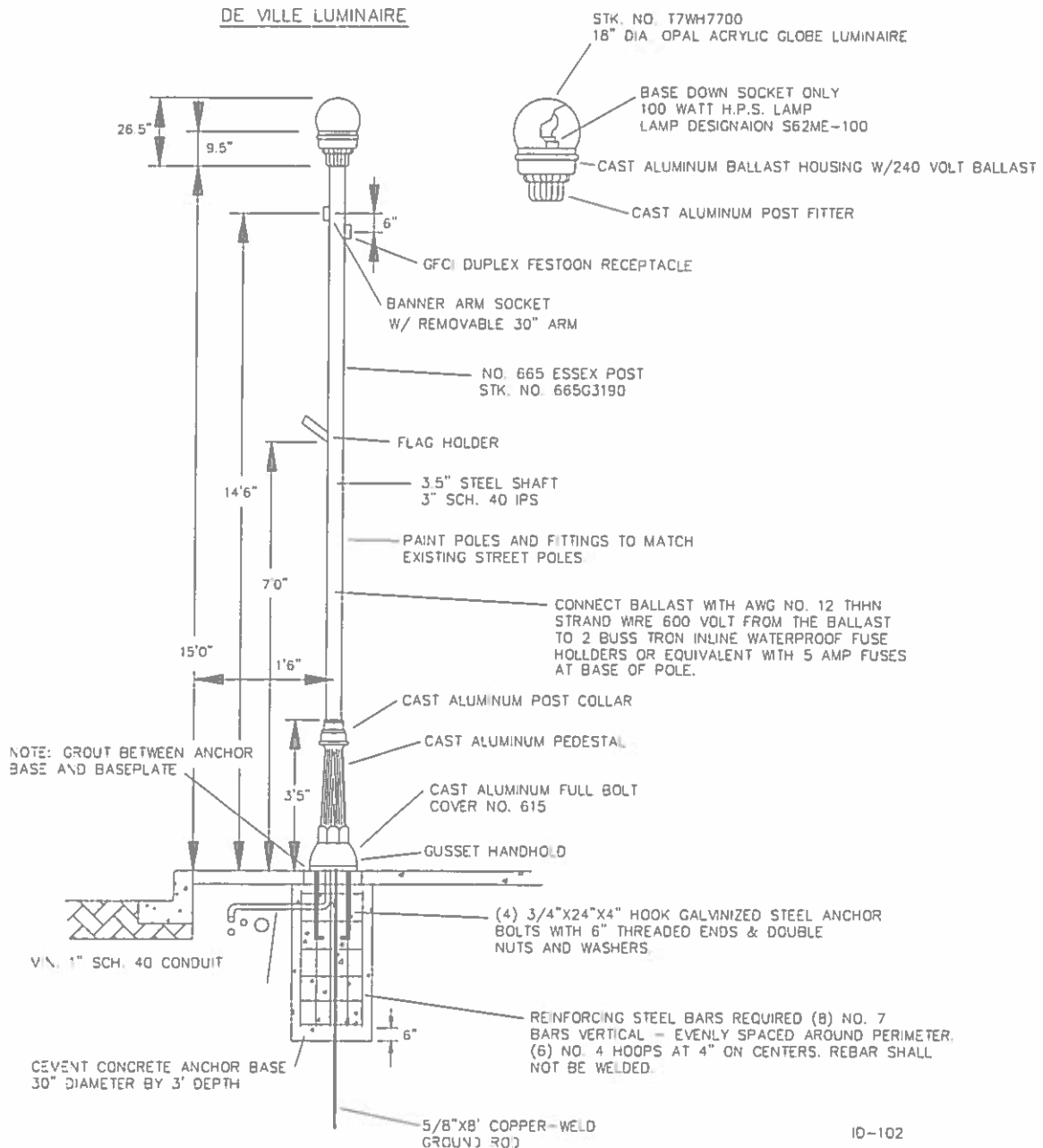
200 Watt OSRAM Sylvania #LU200 S66*
Philips #C200 S66

400 Watt OSRAM Sylvania #LU400 S51*
Philips #C400 S51

* ANSI Ballast Reference

PEDESTRIAN LIGHTING

Pedestrian light luminaires shall be 18" round globe, 100 watt high pressure sodium vapor with constant wattage ballast, rated 240v when available.. The luminaires shall be as manufactured by Welsback Lighting, Inc., Deville Model T7WH7700 with cast aluminum ballast housing and cast aluminum post fitter, or approved equal. Ballast housing and post fitter to be painted with Benjamin Moore Color PV-61 Blue or approved equal via EP-S system.



JUNCTION BOX DETAILS

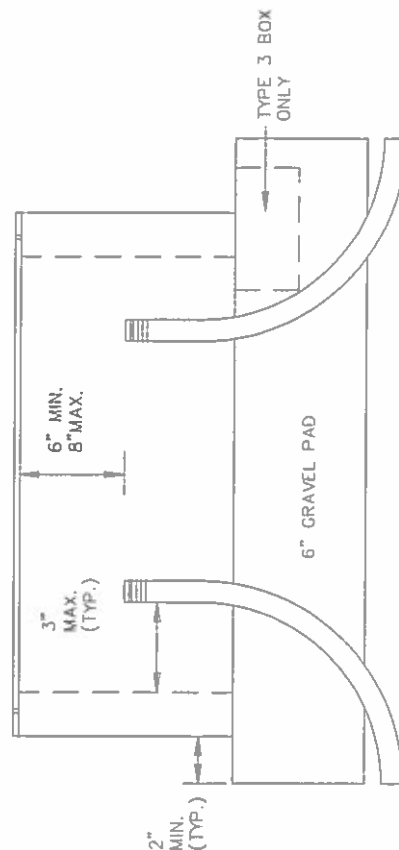
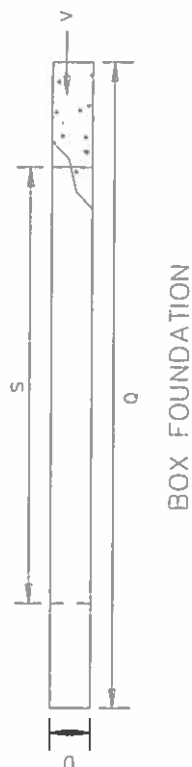
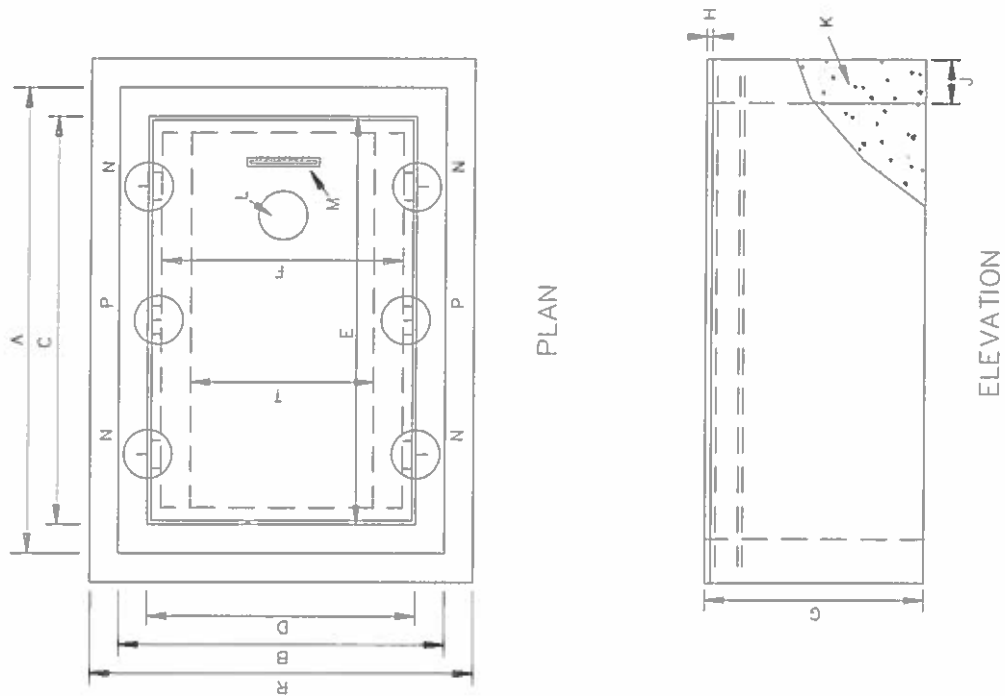
Junction Box Dimension Table

M A R K	ITEM	BOX TYPE			
		TYPE 1		TYPE 2	TYPE 3
		ALTERNATIVE 1	ALTERNATIVE 2		
A	Box outside length	22"	22"	33"	42"
B	Box outside width	17"	17"	22-1/2"	30"
C	Box inside length	18"	18"	28"	36"
D	Box inside width	13"	14"	17"	24"
E	Lid length	18"	18"	26-1/2"	38"
F	Lid width	13"	13"	17"	26"
G	Box depth	12"	12"	12"	12"
H	Lid and frame depth	5/16"	5/16"	5/16"	1/2"
J	Wall thickness (Minimum)	1-1/2"	1-1/2"	1-1/2"	3"
K	Wire reinforcement	W-3	W-2.5	W-2.5	W-5
L	Legend	See Detail	See Detail	See Detail	See Detail
M	Handle	N/A	N/A	N/A	See Detail
N	Frame slot mark	N/A	N/A	N/A	See Detail
P	Lid hook mark	N/A	N/A	N/A	See Detail
Q	Foundation outside length	N/A	N/A	N/A	48"
R	Foundation outside width	N/A	N/A	N/A	36"
S	Foundation inside length	N/A	N/A	N/A	36"
T	Foundation inside width	N/A	N/A	N/A	20"
U	Foundation depth (Minimum)	N/A	N/A	N/A	3"
V	Foundation reinforcement	N/A	N/A	N/A	2-W-5
Capacity - Conduit Diameter		6"	6"	12"	24"
Note: a 1% tolerance is allowed.					

Notes:

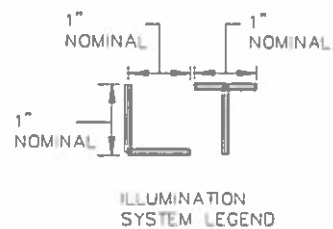
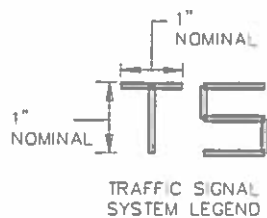
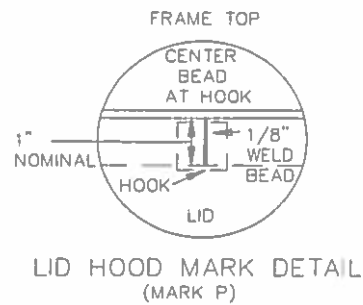
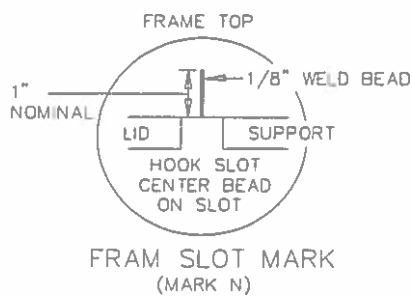
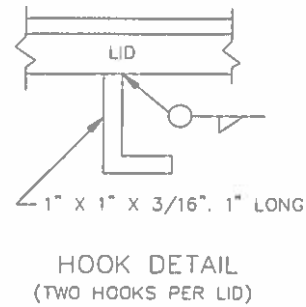
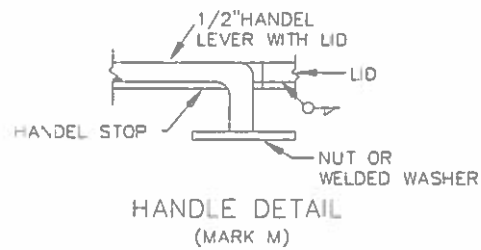
1. All box dimensions are minimum. Exact configurations vary among different manufacturers.
2. The noted lid thicknesses are overall minimums. The diamond pattern for Type 1 or Type 2 boxes shall be 28% minimum of overall thickness. The diamond pattern for Type 3 boxes shall be 3/32" minimum thick.
3. Lid support members shall be welded to the frame.
4. When noted in the contract, Type 2 and Type 3 boxes shall be provided with 12" deep extension boxes.
5. When noted in the contract, Type 2 boxes shall be provided with a 10" x 27-1/2", 10 gage divider plate complete with fasteners.
6. Non-concrete boxes may be submitted for approval. Evaluation will include an H-20 load test.

JUNCTION BOX DETAILS, Cont.



ID-103

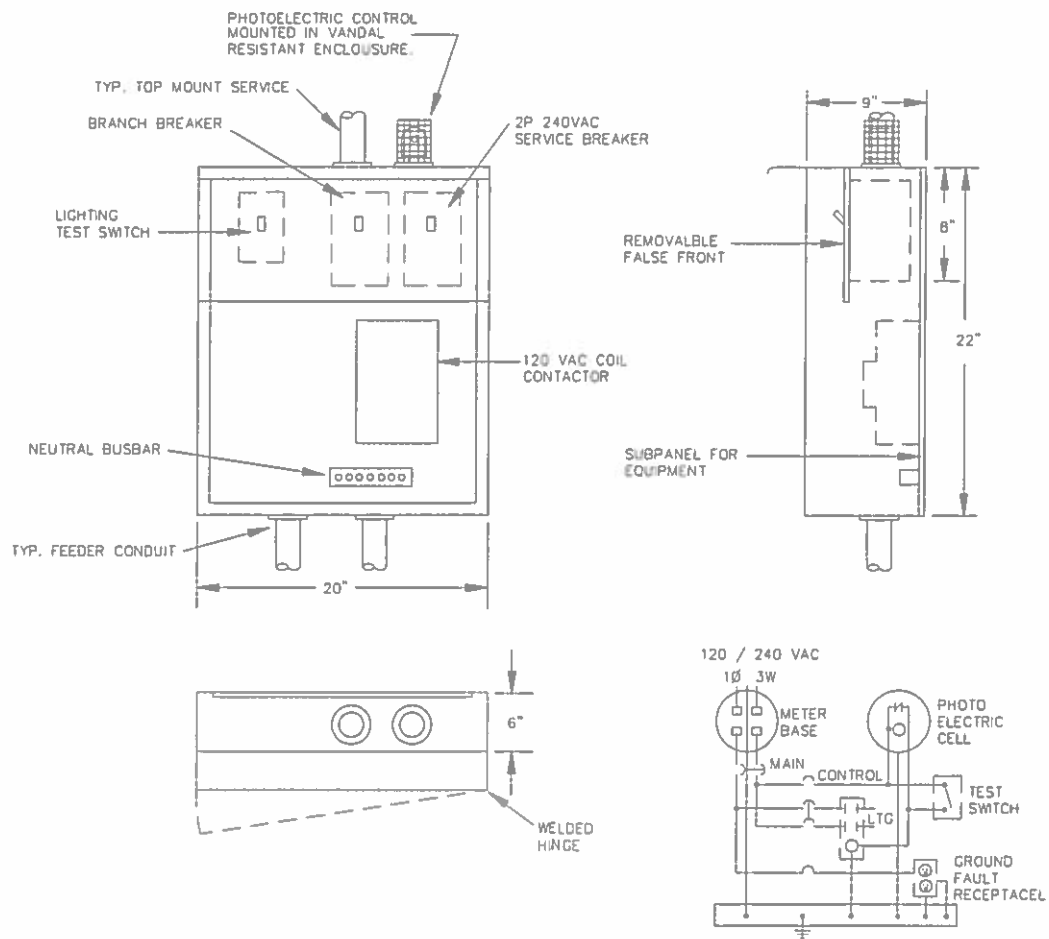
JUNCTION BOX DETAILS, Cont.



LEGEND DETAIL
FORM LETTERS WITH 1/8" WELD BEAD
GRIND OFF DIAMOND PATTERN
BEFORE FORMING LETTERS

ID-104

TYPICAL SERVICE LIGHTING DETAILS



ID-117

Notes:

1. The contractor shall verify the requirements of the utility prior to installing the service equipment.
2. All service pole conduit shall be secured to the pole with conduit strap at minimum 5' centers.
3. All risers and service equipment shall be installed on side of pole that is away from traffic.
4. Where required by the serving utility, service breakers shall be installed above the meter socket in a separate rain tight enclosure.
5. Attach all conduit to pole within 1' of enclosure. See drawing page 11-7
6. For service wiring diagram, use Standard Plan, page 11-7.
7. Submit breaker schedule in contract for breaker and contactor sizes.
8. All exposed conduit to be rigid galvanized steel to 18" below grade.

SECTION TWELVE - ADMINISTRATIVE PROVISION CITY OF CHELAN

Reserved for future augmentation

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BONDING AND LIABILITY INSURANCE

Developers constructing infrastructure facilities shall provide performance and payment bonds and maintenance bonds, subject to the requirements specified herein, in the form of a surety bond, cash bond, or certified check deposited with the City in a sufficient amount as verified by the City Engineer, to assure construction of required improvements, correction of project deficiencies and/or elimination of hazards relating to the project, payment of subcontractors and material men, maintenance of such improvements and protection of public property. Subject to the bond amount requirements set forth herein, contracts for public improvements or work entered into by the City shall comply with RCW 39.08, as now exists or as may be hereafter amended.

Performance and Payment bond:

A performance and payment bond shall be provided to the City in the amount of 150% of the estimated completion cost of the improvement. (See Appendix B, Exhibit 2 for calculation of completion costs.) Prior to commencing construction, the developer constructing the facility shall post a performance and payment bond executed by a security company authorized to transact business in the state in a substantially similar form as that set forth in Appendix B, Exhibit 6, or in a form approved by the City Engineer; or, in lieu of a surety bond, the applicant may establish other legal performance assurance in the form of a cash account with the City Finance Director in the amount specified above. The instructions to the City shall provide that after ten days prior written notice to the developer and the developer's failure to correct project deficiencies and/or eliminate existing or potential hazardous conditions in a timely manner, the City shall be authorized without any further notice to the developer and without any further consent of the developer to disburse the necessary funds to the City for the purpose of completing, correcting and/or eliminating such conditions as specified in the City notice.

After determination by the City Engineer that all infrastructure facilities are constructed in compliance with the approved plans, and all suppliers, laborers and subcontractors have been paid, and that the maintenance bond provided for herein has been posted, the performance and payment bond shall be released.

In the event the developer fails to complete all improvements in accordance with the Chelan Municipal Code and the City completes the same, the City shall call upon the performance and payment bond as required herein, for reimbursement or shall appropriate from any cash deposit, funds for reimbursement. In the event the amount of security bond or cash deposit shall exceed all costs and expenses incurred by the City, it shall release the remainder of such bond or deposit, and if the amount of the security bond or deposit is less than the cost of expense incurred by the City, the developer shall be liable to the City and shall immediately pay for such difference upon notice from the City.

Maintenance Bond:

Prior to release of the performance and payment bond required herein, developers and contractors for public works projects shall provide a maintenance bond for a guarantee of all materials, construction and workmanship in an amount equal to 20% of the estimated cost of the improvements (see Appendix B, Exhibit 2) as verified by the City Engineer, for a period of two years after the date of acceptance of all infrastructure facilities by the City. Such maintenance bond shall be in the form substantially similar to Appendix B, Exhibit 7 or in a form approved by the City Engineer and shall be executed by a security company authorized to transact business in the state of Washington. Release of the maintenance bond will occur two years from the date of City acceptance if all maintenance has been accepted by the City.

In lieu of a maintenance bond, the developer or contractor on a public works project may deposit with the City Finance Director in the form of a cash deposit the amount set forth herein.

In the event the Developer and/or contractor fails to maintain the improvement in accordance with the provisions of this section and the terms of the maintenance bond, the City shall have the right to maintain the same, and shall call upon the security for reimbursement or shall appropriate, from any cash deposit, funds for reimbursement. In the event the security bond or cash deposit shall exceed all costs and expenses incurred by the City, it shall release the remainder of such maintenance bond or cash deposit, and if the amount of the security bond or cash deposit is less than the cost of expense incurred by the City, the applicant shall be liable to the City and shall immediately pay for such difference upon notice from the City.

Indemnification and Hold Harmless:

The Developer shall execute an agreement providing the Developer shall defend, indemnify and hold the City, its officers, officials, employees and volunteers harmless from any and all claims, injuries, damages, losses or suits including, without limitation, attorney fees, costs, and expenses arising out of or in connection with the construction of the facility, except for injuries and damages caused by the sole negligence of the City, or arising out of Developer's non-observance or non-performance of any law, ordinance, or regulation applicable to the property.

Should a court of competent jurisdiction determine that this Agreement is subject to RCW 4.24.115, then, in the event of liability for damages arising out of bodily injury to persons or damages to property caused by or resulting from the concurrent negligence of the Developer and the City, its officers, officials, employees, and volunteers, the Developer's liability hereunder shall be only to the extent of the Developer's negligence.

It is further specifically and expressly understood that the indemnification provided

herein constitutes the Developer's waiver of immunity under Industrial Insurance, Title 51 RCW, solely for the purposes of this indemnification. THIS WAIVER HAS BEEN MUTUALLY NEGOTIATED BY THE PARTIES. THE PROVISIONS OF THIS SECTION SHALL SURVIVE THE EXPIRATION OR TERMINATION OF THIS AGREEMENT.

APPENDIX A

DEFINITIONS

APWA - American Public Works Association

AWWA - American Water Works Association

As-Built Drawing - A neat and legibly marked set of full size construction drawings accurately showing the final location along with changes made during construction and the final location of buried or concealed items. Said drawings shall be to scale.

Alley - A public thoroughfare abutting the rear property lines of adjacent parcels and having a width of twenty feet, for the use of vehicles, bicycles, and/or pedestrians. An alley may afford either primary or secondary access to abutting property and may also accommodate utilities and service vehicles.

Bedding Materials - Sand applied as per standard trench detail and good construction practice providing support and strength to pipe lines laid.

Best Management Practices - The most effective method, technique or product available which is generally accepted in the field, and which is demonstrated to be reliable and effective.

City - City of Chelan

Cul-de-sac - A short dead-end street or court not exceeding 600 feet and having one end open to traffic and the other temporarily or permanently terminated by a vehicle turnaround.

Developer(s) - Any person or other entity who undertakes any activity regulated by these standards.

Development - The formation of a lot, subdivision, plat or short plat with potential for construction; and/or construction that requires infrastructure improvements or a building permit. (Building permits for "development" shall exclude remodels other than reconstruction that directly affects specific elements of these standards, which element will be considered development only as it applies to the specific category.) Remodels exceeding 50% of the assessed evaluation shall require that development standards apply.

Development Permit - A permit issued by the city to perform any work regulated by these standards.

Development Standards - Design, construction methods, and materials adopted by ordinance as required for infrastructure installation.

Driveway - A private access to one, two, or three single-family residences.

Impervious Surfaces - Hard surfaces made of portland concrete or asphaltic concrete as per City standards.

Improved Street - Street section constructed to City standards including sidewalks, curb, gutter and storm drainage.

Infrastructure Facilities and Improvements - Any improvement required by a development permit except for improvements estimated to cost less than \$5,000 in the reasonable estimation of the City engineer.

Maintenance Bond - A bond posted with the City for the guarantee of the public works improvements in a specified amount of the estimated cost of the improvements for a period of two years after the completed job is accepted by the City.

Path - a surfaced facility designed for pedestrians. Paths shall be a minimum of five feet in width with at least one and one-half feet of clearance to obstructions on both sides and a 10 feet vertical clearance. Paths shall be designed and located to avoid drainage and erosion problems.

Performance Bond - A bond posted with the City assuring construction in a specified amount.

Private Road - A privately owned and maintained access provided for by a tract, easement or other legal means.

Public Street - A publically-owned facility providing access, including the roadway and all other improvements inside the right-of-way.

Public Works - means the Public Works Director or his/her designee.

Right-of-Way - land dedicated to the City for purposes of public circulation and/or utilities.

Sewerage Collection System - The collection of sewer mains and sewer service lines required to provide sewer service to each customer in a development.

Sewer Main - An 8" or larger pipe designed to collect sewerage from more than two users to properties over 150 feet from an existing sewer main.

Sewer Service Line - 4" to 6" pipe, valves, and necessary accessories designed to convey sewerage from each lot to the sewer main, unless said lot is over 150 feet from the sewer main.

Sewer System User - Any persons, firm, or corporation having a right to sewer service within the City. This also includes the holders of title or evidence of title to land to which sewer service is furnished.

Street - A public thoroughfare which provides the principal means of access to abutting properties, but not including an alley.

Unimproved Street - A street not built to complete City standards, i.e. no curb, gutter, sidewalk, or storm drainage.

Water Distribution System - The collection of water mains and water service lines required to provide water service to each customer in a development.

Water Main - A pipe designed to convey water to two or more users or to two or more properties over 150 feet from an existing water main.

Water Service Line - The pipe, valves, and necessary accessories designed to convey water from the water main to each lot.

Water User - Any person, firm or corporation having a right to water service within the water service area; this also includes the holders of title or evidence of title to land to which water service is furnished.

WSDOT - Washington State Department of Transportation.

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EXHIBIT 1

AGREEMENT FOR EXTENSION OF CHELAN INFRASTRUCTURE

This AGREEMENT is executed _____, 20__ by the City of Chelan (herein "City") and _____ (herein "Developer").

WHEREAS, the Developer desires to develop certain real property situated in the County of Chelan, State of Washington, particularly described as:

and to install a system of streets, pipes and appurtenances for the above described property to enable the delivery of domestic water, wastewater, or transportation from the City's existing service;

WHEREAS, the City will approve the proposed facilities and furnish said connections upon the Developer's facilities upon the Developers full compliance with the terms, conditions and covenants of this agreement;

NOW, THEREFORE, it is mutually agreed as follows:

1. DEVELOPER TO FURNISH DESCRIPTION: Developer shall furnish to the City a legal description of the real property which he plans to develop. A copy of the legal description is attached to this Agreement as "Exhibit A".

2. DEVELOPER TO FURNISH DEVELOPMENT PLAN: Developer shall also furnish to the City a copy of his plan to develop or subdivide the "Exhibit A" real property.

3. PREPARATION OF INFRASTRUCTURE PLAN: Upon receipt of the Developer's plans, the City shall provide basic information as needed by the Developer to prepare an infrastructure plan. Developer will be responsible for the cost of preparation of the plan. The plan shall be prepared by a professional engineer licensed in the State of Washington. The plan shall include the following:

- a. The location of connection to the City's existing systems for the purpose of supplying service to the proposed development.
- b. A plan/profile of all transportation and pipe system facilities to be installed to serve the development and its components.
- c. The pipe sizes and specifications of all mains and laterals.

- d. All fittings, equipment and material to be installed in connection with the mains and laterals in order to transport water from the City's system to the point of utilization.
 - e. Standards and methods of construction as adopted herein shall be in full force for this agreement.
 - f. Any other information which the City determines is required by the particular circumstances involved.
4. DEVELOPER TO PROVIDE PROOF OF INSURANCE: Developer shall have system installed by a licensed and bonded contractor. The contractor shall furnish proof of license, bond and insurance. The Developer may elect to install the infrastructure system with his own forces. The City will require that the Developer have public liability and property damage insurance coverage as outlined in Section 13 "Bonding" of Chelan City Standards.
5. CONSTRUCTION OF SYSTEM: Developer will construct or cause to be constructed a completed system, in full conformity with the infrastructure plan, as prepared by the Developer's Engineer. The City's standards, conditions and specifications shall be followed in the construction of the Water Plan.
6. AS-BUILT PLAN: Developer will provide a certified mylar copy of the as-built plan showing final relations to the property lines and other physical features. Electronic file is required. Bond will not be released until asbuilts are completed and approved.
7. EASEMENT DESCRIPTIONS: Easements for all the infrastructure shall be a minimum of 20 feet wide. Easement legal descriptions shall be prepared by a surveyor or engineer licensed to practice in the State of Washington. Easement legal descriptions shall be reviewed and approved by the City engineer prior to acceptance and recording.
8. CITY'S INSPECTION AND DIRECTION: The City, by its agents, servants and employees, shall have the right to enter upon the Developer's property, at any time prior to the completion of the construction, installation, inspection and testing of the system to inspect the construction of the water system and/or to direct the Developer, his contractor, agents, or employees, to take any action necessary to fully comply with the infrastructure plan. Developer shall take, or cause to be taken, any action directed by the City and shall cause such system to be constructed in all respects in full conformity with the plan. The Developer shall reimburse the City for the inspection services at the current inspection rate as calculated in these standards, Appendix B-2.
- If the scope of the project requires such, the City will require the design-engineering firm to provide inspection of the construction work. The Developer shall be responsible for the charges from the engineering firm. The City and the engineering firm shall coordinate the inspections and resolve any disputes regarding plan or specification interpretation.
9. INSTALLATION OF STREETS, MAIN TAPS AND VALVES: All connections to existing City facilities, necessary to serve such water and wastewater systems, shall be installed by the Developer, at the expense of the Developer. All costs shall be paid in full prior to acceptance of the system by the City.

10. INSPECTION AND TESTING OF COMPLETED SYSTEM: When the Developer believes that the system has been completed in full conformity with the Infrastructure Plan, he shall notify the City. The City shall inspect the system and be present during tests to the system as the City shall specify. Such testing shall be at the expense of the developer. Following such testing, the City shall notify the Developer in writing of its approval of the system, or of any additions, changes or modifications required prior to such approval.

11. ACCEPTANCE OF SYSTEM: Upon approval of the construction and conveyance of the water system by the City, and the deposit of cash or a bond by the Developer as hereinafter provided, the City shall notify the Developer of its acceptance of the system. The system shall then become a part of the City's system. Thereafter, the Developer and his assigns shall be entitled to receive services from the City in the same manner, and upon the same terms as other users within the City.

12. REPAIRS TO AND REPLACEMENT OF SYSTEM: Following the acceptance of the said system by the City, the responsibility for repairs and replacements thereto shall be as follows:

a. For the first twenty-four months following such acceptance, the obligation and expense of any repairs or replacements to the system which are required by the City shall be that of the Developer. Any such repairs or replacement shall be done by the City. The cost shall be paid by the Developer, as computed by the City. The Developer shall deposit with the City either cash or a performance bond with a surety acceptable to the City in the sum of 20 percent of construction costs. In the event the Developer fails or neglects to pay the costs of any such repairs or replacements during the twenty-four month period, the costs may be assessed against the surety bond. After the Developer's responsibility for repair or replacement has terminated, any balance of the cash deposit will be refunded to the Developer.

b. Twenty-four months after the acceptance of the water system, the responsibility for the repair and replacement of that portion of the system conveyed by the Developer to the City shall become the responsibility of the City.

13. CITY RULES AND REGULATIONS: The Developer, his successors and assigns shall be subject to existing or as amended ordinances, rules and regulations of the City at the time of development.

14. BINDING AGREEMENT: The terms, conditions and covenant hereof shall extend to and be binding upon the heirs, successors, and assigns of the parties to this agreement.

15. INDEMNIFICATION The permittee shall indemnify, defend and hold harmless the City, its officers, agents and employees, from and against any and all claims, losses or liability, including attorney fees, arising from injury or death to persons or damage to property occasioned by the construction, installation, operation, location, maintenance, or any other cause related to the improvement for which this agreement is granted. With respect to this agreement and to claims against the City, its officers, agents and employees, the permittee expressly waives its immunity under Title 51 of the Revised Code of Washington, the Industrial Insurance Act, for injuries to any employee the permittee may have, and agrees that the obligation to indemnify, defend and hold

harmless provided for in this paragraph extends to any claim brought by or on behalf of any employee of the developer. This waiver has been mutually negotiated by the parties as part of the agreement process and is given, as is the indemnification agreement contained within this paragraph, as consideration for the City allowing development. This paragraph shall not apply to any damage or injury resulting from the sole negligence of the City, its agents or employees. The extent any of the damages or injuries referenced by this paragraph were caused by or resulted from the concurrent negligence of the City, its agents or employees, this obligation to indemnify, defend and hold harmless is valid and enforceable only to the extent of the negligence of the developer, its officers, agents or employees, if any.

16. ADDITIONAL COVENANTS AND TERMS: (If any)

IN WITNESS WHEREOF the parties have caused this instrument to be executed the day and year first written.

Developer

Developer

CITY OF CHELAN

Mayor

City Administrator

EXHIBIT 2**IMPROVEMENT EVALUATION PACKET**

The Improvement Evaluation Packet is used by the City of Chelan Public Works Department to evaluate the dollar inspection and bond value of the improvements being installed on development construction projects. The applicant filling out the packet is asked to provide the material quantities and to compute the value of the improvements using the dollar amounts as verified by the Public Works Department. The following are answers to commonly asked questions about the packet:

1. All development projects must complete the packet.
2. The amounts generated are used to establish bond amounts and review and inspection fees for Public Works.
3. Public work is considered to be any improvement installed in the right-of-way. The break occurs at the property line for all developments. However, maintenance for sewer laterals remains the responsibility of the property owner to the sewer main.
4. Private work is considered to be any of the listed improvements occurring on private property. Private work will be covered within the authority of the building permit.
5. After completion of the packet, the Public Works Department will check the quantities, establish the bond and fee amounts and sign off.
6. The Public Works Department will not issue permits for the project until the packet is completed.

If you have any further questions about the packet, please call the Public Works Department at (509) 682-8030.

IMPROVEMENT EVALUATION

This form must be completed by the developer (or representative), and include all work required by the project. Quantity take-offs shall be from documents approved by the City of Chelan.

PUBLIC WORK, except for sewer laterals, will be owned and maintained by the City after the appropriate maintenance period and will be subject to review bond and inspection fees.

PRIVATE WORK will be owned and maintained by the property owner(s), and is not subject to the above fees. All private work shall conform to the respective building permit. Planned Unit Development's (PUD) infrastructure within designated right-of-way shall fall under the definition of Public Work as it applies to meeting the required City standard specification.

CONSTRUCTION STORM DRAINAGE - PUBLIC WORK

<i>Item</i>	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price</i>	<i>Amount</i>
Silt fence, Installed	LF			
Grading for drainage swales	LF			
Sod for drainage swales	SY			
Hydroseeding	SF			
Construction entrance	EA			
OTHER				
OTHER				
Construction Storm Drainage Total				

EXCAVATION IN RIGHT-OF-WAY AND CUT & FILL - PUBLIC WORK

<i>Item</i>	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price</i>	<i>Amount</i>
Paved wide area	LF			
Right-of-way - Unpaved	LF			
Total yardage				
Bond requirement				
Excavation in Right-of-way and Cut & Fill Total				

SANITARY SEWER - PUBLIC WORK

<i>Item</i>	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price</i>	<i>Amount</i>
6" PVC pipe	LF			
8" PVC pipe	LF			
Unsuitable Ex. (2' over & ballast)	CY			
Extra Depth Ex. (over 12' deep)	FT/LF			
Manhole, 48"	EA			
Extra Depth MH, (per ft over 12")	FT			
Sewer Connection	ERU			
OTHER				
Sanitary Sewer Total				

STORM SEWER - PUBLIC WORK

<i>Item</i>	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price</i>	<i>Amount</i>
8" Pipe	LF			
12" Pipe	LF			
18" Pipe	LF			
24" Pipe	LF			
30" Pipe	LF			
36" Pipe	LF			

48" Pipe	LF
Detention Pipe	LF
Unsuitable Ex. (2' over & ballast)	CY
Extra Depth Ex. (over 12' deep)	FT/LF
Curb Inlet	EA
Type I Catch Basin	EA
Type II Catch Basin - 48"	EA
Type II Catch Basin - 54"	EA
Connection to existing Catch Basin	EA
Extra Depth MH, (per ft over 12")	FT
Restrictor/Pollution Control - 8"	EA
Restrictor/Pollution Control - 12"	EA
OTHER	
OTHER	
Storm Sewer Total	

PAVING - PUBLIC WORK

<i>Item</i>	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price</i>	<i>Amount</i>
AC pavement patching	SY			
Crushed rock; 1¼" minus	CY			
Crushed rock; 5/8" minus	CY			
Asphalt pavement	CY			
Saw cut AC pavement	LF			
Cold Planing (Grinding)	SY			
OTHER				
OTHER				
Paving Total				

CURB AND GUTTER - PUBLIC WORK

<i>Item</i>	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price</i>	<i>Amount</i>
Concrete extruded curb	LF			
Asphalt extruded curb	LF			
Conc. curb & gutter, Type A	LF			
OTHER				
OTHER				
Curb and Gutter Total				

SIDEWALKS - PUBLIC WORK

<i>Item</i>	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price</i>	<i>Amount</i>
5' Concrete sidewalk	LF			
6' Concrete sidewalk	LF			
5' Concrete driveway	LF			
Asphalt walkways, Class B	SY			
Wheel chair ramps	EA			
OTHER				
Sidewalks Total				

LANDSCAPING - PUBLIC WORK

<i>Item</i>	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price</i>	<i>Amount</i>
Street trees	EA			
Sod	SY			
Rockery wall	SY			
OTHER				
Landscaping Total				

WATER - PUBLIC WORKS

<i>Item</i>	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price</i>	<i>Amount</i>
Pipe				
Valves				
Other				
Other				
Other				
Water Total				

MISCELLANEOUS - PUBLIC WORKS

<i>Item</i>	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price</i>	<i>Amount</i>
Monuments	EA			
Street signs	EA			
Pavement marking	LF			
Adjust existing utilities	EA			
OTHER				
OTHER				
Miscellaneous Total				

Items Required		Value of Public Infrastructure
1.	Construction Drainage	
2.	ROW Excavation/C&F	
3.	Sanitary Sewer	
4.	Storm Sewer	
5.	Paving	
6.	Curb & Gutter	
7.	Sidewalks	
8.	Landscaping	
9.	Water	
10.	Miscellaneous	
11.	Other	
TOTAL		

PUBLIC WORKS DEPARTMENT IMPROVEMENT EVALUATION SUMMARY

TYPE OF PROJECT:

() Subdivision
() Access Permit

() Utility Excavation Permit

PROJECT NAME: _____

PROJECT LOCATION: _____

DEVELOPER: _____

CONTACT PERSON: _____ TELEPHONE: _____

I hereby certify the above to be a true and accurate representation of the required construction for the above mentioned project.

Agent/Owner:

Date:

All projects within City right-of-way require insurance and bonding. Projects under \$5,000 in value may request waiver with justification of no significant effect.

- | | | | | |
|----|--|--------|---------------|---------------|
| 1. | Total Value Public Project Infrastructure: | | | |
| 2. | Insurance Amount (See Section 13): | | | |
| 3. | Inspection Fee Deposit
(1/2% of #1, \$25.00 min):
Final Fee will be actual City Cost | Amount | Date Received | Date Released |
| 4. | Performance Bond (See Section 13)
(150% of #1) | Amount | Date Received | Date Released |
| 5. | Maintenance Bond (See Section 13)
(20% of #1) | Amount | Date Received | Date Released |

Deposit and Bonding Release Authorization: _____
City Engineer Date

This application, for all improvements that are performed on right-of-way, are hereby approved subject to completion of construction in conformance with City Standard Plans and Conditions and any special requirements as stated below:

EXHIBIT 3

PUBLIC WORKS EXCAVATION PERMIT (CMC 12.20)

PERMIT #: _____ DATE: _____ EXPIRES: _____

PROJECT ADDRESS _____	
OWNER _____	PHONE _____
Address _____	
<input type="checkbox"/> Plans Attached <input type="checkbox"/> Improvement Evaluation Summary Sheet Attached	
CONTRACTOR _____	PHONE _____
Address _____	
State Registration # _____	Expires _____ City Business License _____
"Additional Insured" Endorsement: Yes _____ No _____ Expires _____	
Project Start: _____	Project Complete: _____

RIGHT-OF-WAY PERMIT	
<input type="checkbox"/> Sidewalk <input type="checkbox"/> Street/Curb Cut, Driveway <input type="checkbox"/> Water – Main <input type="checkbox"/> Water – Service <input type="checkbox"/> Water - Fire Line	<input type="checkbox"/> Sewer - Main <input type="checkbox"/> Sewer - Service <input type="checkbox"/> Storm <input type="checkbox"/> Dry Utility, (Specify) _____ <input type="checkbox"/>

REQUEST FOR INSPECTION – (509) 682-8030

24 hour notice required. Failure to call for inspection prior to performing backfilling, pouring or other inspection obstructions will result in required removal of the improvement.

72 HOUR NOTICE REQUIRED TO UTILITIES NOTIFICATION CENT: (800) 424-5555

The contractor agrees, at his expense, to barricade, compact, backfill and replace street base, surfacing, and/or curb and sidewalk, according to City of the Chelan Standards. Applicant hereby certifies that the information given herein is true and accurate and further agrees to perform work authorized by the permit in accordance with all applicable ordinances and statutes. Any deviation from this original application causes the permit to become null and void. Applicant and contractor shall defend, indemnify, and hold the City, its officers, officials, employees and volunteers harmless from any and all claims, injuries, damages, losses or suits including attorney fees, arising out of or in connection with activities or operations performed by the Applicant or on the Applicant's behalf out of issuance of this Permit. Applicant also agrees to comply with all federal, state, and local regulations in the performance of the Permitted work, as identified in City Municipal Code, Title 12, Streets and Sidewalks, and Title 25, City Development Standards **AND AS NOTED ON REVERSE SIDE OF THIS FORM.**

Contractor _____ Date _____

Owner _____

Traffic Control Plan Approved? Y N NA	Dust Control Plan Approved? Y N NA
*Bond Required: _____ (Evaluation Summary Sheet B-13)	*Inspection Fee: _____
Application Approved By _____	Date _____
Inspection By _____	Date/Comment _____

*These fees are for inspection and bonding only. They do not include connection/service fees.

1. Site Controls

a. Permittee is responsible for providing a safe work environment for its employees in accordance with OSHA/WISHA Standards. Additionally, permittee is responsible for safety of general public and vehicular and pedestrian traffic transiting the work zone and safeguarding of attractive nuisances both during work hours and after hours.

b. All traffic control plans, actions, and construction signage shall comply with current Manual on Uniform Traffic control Devices (MUTCD). Work zone flaggers shall possess a current Traffic Control Flagger card issued by Washington State or a recognized reciprocal state.

c. Permittee is responsible for protection of existing utilities, adjacent foundations, and other improvements, both public and private, and for repair of same if damaged during the work.

2. Insurance and Bonding

a. Permittee's insurance carrier shall provide certificate of insurance naming City of Chelan as additional insured. Minimum coverage shall be \$1,000,000 combined single limit coverage per occurrence and \$2,000,000 general aggregate. Bonding shall be as per Title 25, CMC.

3. Asphalt Restoration

a. Asphalt patching shall be performed by a contractor specializing in such work. Unless authorized by City Engineer, general contractors or excavation contractors shall not perform asphalt patching within the public right-of-way.

4. Notifications

a. Permittee is responsible for notifying adjacent property owners of proposed work. Notification shall be a minimum of 72 hours prior to proposed start.

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EXHIBIT #5 - SEWER CONNECTION INSPECTION REPORT

Date: _____ Account No. _____

Name of Person Connecting: _____

Address: _____

Location of Tap: _____

Size of Tap: _____ Depth: _____

Service Line Size: _____

Owner of Collection System: _____

Remarks: _____

Approved and Inspected by: _____

**Appendix B
Exhibit 6**

PERFORMANCE AND PAYMENT BOND

Project Name: _____
 Project Address: _____
 Developer/Contractor: _____
 City of Chelan File Name and
 Permit No. _____

WHEREAS, _____, hereinafter referred to as "the Principal", has applied to the City of Chelan, hereinafter referred to as "the City", for _____ to construct the project known as _____ on a site located at _____, within the City of Chelan, and

WHEREAS, the City approved the requested action on _____, 200____, and

WHEREAS, the approval granted by the City and the provisions of the Chelan Municipal Code require certain improvements to be made in connection with construction of the project and the improvements are shown on the approved site plan and other required plans and further defined by the conditions identified in the City file,

NOW THEREFORE, the undersigned Principal and _____, a corporation authorized to transact surety business in the State of Washington, hereinafter referred to as "the Surety", agree and jointly and severally bind themselves, their heirs, executors, administrators and assigns, unto the City, in the sum of _____ (\$_____), lawful money of the United States, according to the following terms and conditions:

1) If the Principal does not complete all improvements required by the above referenced conditions, plans, and file by _____, 200____, and/or fails to pay any laborers, mechanics and subcontractors and materialmen, taxing authorities, and all persons who supply such person or persons or subcontractors with material, equipment and supplies for such work, then the Surety shall, upon the written demand of the City, remit to the City within ten (10) days of receipt of said demand the amount of this bond or such lesser amount as may be specified in the demand.

2) In the event the Principal fails to complete all of the above referenced improvements within the time period specified by the City, its employees and agents shall have the right at their sole election to enter onto said property described above for the purpose of completing the improvements. This provision shall not be construed as creating an obligation on the part of the City or its representatives to complete such improvements.

3) In the event any lawsuit is instituted by the City, the principal or the surety to enforce the terms of this bond or to determine the rights of any party hereunder, the substantially prevailing party shall be entitled to recover its costs, including reasonable attorneys' fees, incurred as a result of such lawsuit.

4) This obligation shall be governed by the laws of the state of Washington and venue shall be in Chelan County, Washington.

5) This bond shall remain in full force and effect until the obligations secured hereby have been fully performed and a bond guaranteeing maintenance of all improvements for a period of 2 years from acceptance has been submitted to the City in an amount of not less than _____ percent (___%) of specified in paragraph 1 above.

DATED this _____ day of _____, 200 ____.

Surety

Principal

Title

Surety Address

Accepted: _____
City of Chelan

Attached hereto is an Authorization or a Power of Attorney to execute this Bond.

Surety

Note:

If attorney-in-fact signs for surety, a certified copy of the power of attorney must be attached.

SURETY ACKNOWLEDGEMENT

STATE OF WASHINGTON)
)ss.
County of Chelan)

On this _____ day of _____, 20____, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared _____, to me known to be the _____ of _____, the corporation that executed the foregoing instrument, and acknowledged the said instrument to be the free and voluntary act mentioned, and on oath stated that _____ was authorized to execute said instrument.

DATED this _____ day of _____, 20__

(Printed Name)
NOTARY PUBLIC, State of Washington
My appointment expires _____

PRINCIPAL ACKNOWLEDGEMENT

STATE OF WASHINGTON)
)ss.
County of Chelan)

I certify that I know or have satisfactory evidence that _____ is the person who appeared before me, and said person acknowledged that he/she signed this instrument, on oath stated that he/she was authorized to execute the instrument and acknowledged it to be his/her free and voluntary act for the uses and purposes mentioned in the instrument.

DATED this _____ day of _____, 20__.

(Printed Name)
NOTARY PUBLIC, State of Washington
My appointment expires _____

**Appendix B
Exhibit 7
MAINTENANCE BOND**

DATE POSTED: _____
DATE EXPIRES: _____

RE: Chelan Subdivision/Permit No.: _____
Owner/Developer/Contractor: _____
Project Address: _____

KNOW ALL MEN BY THESE PRESENTS:

WHEREAS, the City of Chelan, Washington (hereinafter "City") has approved an application by _____ (hereinafter "Developer") for the construction of an extension to the City's infrastructure to serve the _____ (hereinafter "Development"), in accordance with the City ordinances governing street, storm sewer, sanitary sewer, and water, which are incorporated into this agreement by reference, and which require the Developer to furnish a bond for the faithful maintenance of the work, including replacement or repair, for a period of _____ (_____) months from the final and written acceptance by the City.

NOW, THEREFORE, Developer and _____ (hereinafter "Surety"), are held and firmly bound to the City in the amount of _____ dollars (\$_____) for the payment of which Developer and Surety do jointly and severally bind themselves, their heirs, personal representatives, successors and assigns.

1. The work shall remain free of defects in material, workmanship and installation for a period of month(s) from the final and written acceptance by the City; and in the case of landscaping, shall survive for a period of _____ month(s) from the date of final and written acceptance by the City. Maintenance is defined as acts carried out to prevent a decline, lapse or cessation of the state of project as accepted by the City during the month period following final and written acceptance, and includes but is not limited to repair or replacement of defective workmanship, materials or installations.

These improvements include, but are not limited to:

2. The Developer and Surety agree that in the event that any of the improvements or restoration work installed or completed by the Developer or Surety pursuant to the above referenced permit, plans, conditions and file, fail to remain free from defects in materials, workmanship or installation, for a period of _____ (____) month(s) from the date of acceptance of the work by the City, the Developer shall repair and/or replace the same within ten (10) days of demand by the City, and if the Developer should fail to do so, then the Surety shall, within twenty (20) days of demand by the City, make a written commitment to the City that it will either:
 - A. remedy the defect(s) itself with reasonable diligence pursuant to a time schedule acceptable to the City, or
 - B. tender to the City within an additional ten (10) days, the amount necessary as determined by the City, for the City to remedy the defect(s), up to the total bond amount.

The Surety shall then fulfill its obligation under this bond, according to the requirement selected by the Surety under either paragraph 2.A or 2.B above.

If the Surety elects to fulfill its obligation under paragraph 2.B above, then upon completion of the remedy, the City shall notify the Surety of the actual cost of the remedy. The City shall return, without interest, any overpayment made by the Surety, and the Surety shall pay to the City any actual cost which exceeded the City's estimate, limited to the bond amount.

3. This bond shall remain in full force and effect until the obligations secured hereby have been fully performed and until released in writing by the City at the request of the Surety or Developer.
4. Any corrections required shall be commenced within seven (7) days of notification by the City and completed within thirty (30) days of the date of notification. If the work is not performed in a timely manner, the City shall have the right, without recourse to legal action, to have said work performed, at the expense of the Developer.
5. No change, extension of time, alteration or addition to the work to be performed by the Developer shall affect the obligation of the Developer or Surety on this bond, and the Surety waives notice of any such change, extension, alteration or addition thereunder.
6. It is hereby specifically agreed by and between the parties that in the event any legal action must be taken to enforce the provisions of this bond or to collect said bond, the substantially prevailing party shall be entitled to collect its costs and reasonable attorney fees as a part of the reasonable costs of securing the obligation hereunder. In the event of settlement or resolution of these issues prior to the filing of any suit, the actual costs incurred by the City, including reasonable attorney fees, shall be considered a part of the obligation hereunder secured. Said costs and reasonable legal fees shall be recoverable by the prevailing party, not only from the proceeds of this bond, but also over and above said bond as a part of any recovery in any judicial proceeding, in addition to recovery on the bond.

IN WITNESS WHEREOF, the Developer and Surety have caused this bond to be signed by their duly authorized officers or representatives this ____ day of _____, 20__.

Developer

By:_____

Title:_____

Surety

By:_____

Attorney in Fact Title:

Business Name

Business Address

City/State/Zip Code

Business Telephone Number

Business Address

City/State/Zip Code

Business Telephone Number

Accepted by the City of Chelan:

Name/Title

Date

SURETY ACKNOWLEDGEMENT

STATE OF WASHINGTON)
)ss.
County of Chelan)

On this _____ day of _____, 20____, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared _____, to me known to be the _____ of _____, the corporation that executed the foregoing instrument, and acknowledged the said instrument to be the free and voluntary act mentioned, and on oath stated that _____ was authorized to execute said instrument.

DATED this _____ day of _____, 20____

(Printed Name)
NOTARY PUBLIC, State of Washington
My appointment expires _____

DEVELOPER ACKNOWLEDGEMENT

STATE OF WASHINGTON)
)ss.
County of Chelan)

I certify that I know or have satisfactory evidence that _____ is the person who appeared before me, and said person acknowledged that he/she signed this instrument, on oath stated that he/she was authorized to execute the instrument and acknowledged it to be his/her free and voluntary act for the uses and purposes mentioned in the instrument.

DATED this _____ day of _____, 200 .

(Printed Name)
NOTARY PUBLIC, State of Washington
My appointment expires _____

ORDINANCE NO. 99- 1161

AN ORDINANCE OF THE CITY OF CHELAN, WASHINGTON AMENDING THE COMPILATION ENTITLED CITY OF CHELAN DEVELOPMENT STANDARDS MANUAL ADOPTED BY REFERENCE UNDER SECTION 25.05.010 OF THE CHELAN MUNICIPAL CODE AND ESTABLISHING AN EFFECTIVE DATE.

WHEREAS, the City Council adopted Title 25 pursuant to Ordinance 98-1109 which incorporated by reference a compilation entitled City of Chelan Development Standards Manual; and

WHEREAS, the City Council desires to amend such Development Standards; now, therefore,

THE CITY COUNCIL OF THE CITY OF CHELAN, WASHINGTON, DO ORDAIN
AS FOLLOWS:

Section 1. The compilation adopted by Ordinance 98-1109 and Section 25.05.010 of the Chelan Municipal Code is hereby amended as set forth in Exhibit "A" which is attached hereto and incorporated herein by this reference as if fully set forth.

Section 2. This Ordinance shall take effect and be in full force thirty (30) days after this ordinance or a summary thereof consisting of the title is published.

APPROVED:


MAYOR RON SLOAN

ATTEST/AUTHENTICATED:

Linda Allison-Liles
CITY CLERK, LINDA ALLISON-LILES

APPROVED AS TO FORM:
OFFICE OF THE CITY ATTORNEY

BY Dean M. Wiggan

FILED WITH THE CITY CLERK: 12/15/99
PASSED BY THE CITY COUNCIL: 12/23/99
PUBLISHED: 1/12/00
EFFECTIVE DATE: 2/11/00
ORDINANCE NO. 99-1161

SUMMARY OF ORDINANCE NO. 99- 1161

of the City of Chelan, Washington

On the 23RD day of December, 1999, the City Council of the City of Chelan, Washington, passed Ordinance No. 99- 1161. A summary of the content of said ordinance, consisting of the title, provides as follows:

AN ORDINANCE OF THE CITY OF CHELAN, WASHINGTON AMENDING THE COMPILATION ENTITLED CITY OF CHELAN DEVELOPMENT STANDARDS MANUAL ADOPTED BY REFERENCE UNDER SECTION 25.05.010 OF THE CHELAN MUNICIPAL CODE AND ESTABLISHING AN EFFECTIVE DATE.

The full text of this Ordinance will be mailed upon request.

DATED this 4TH day of January, ²⁰⁰⁰1999.

Linda Allison-Liles
CITY CLERK, LINDA ALLISON-LILES

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TRAFFIC IMPACT ANALYSIS GUIDELINES**A. PURPOSE**

It is the policy of the City of Chelan that review of proposed development with respect to potential significant traffic impacts should be utilized to promote development consistent with transportation infrastructure needs and provide a predictable and consistent development review process. A Traffic Impact Analysis (TIA) is a specialized study of the impacts that development will have on the surrounding transportation system. The TIA is an integral part of the development impact review process. It is specifically concerned with the generation, distribution, and assignment of traffic from the "new development".

The purpose of a TIA is:

- to determine the impacts of new development traffic on the existing and proposed street network;
- to determine the layout and design of the proposed roadway system;
- to determine if the new development can meet the concurrency aspects of the Growth Management Act; and
- to determine the appropriate traffic mitigation for the project.

New development is defined as a "site action that triggers SEPA requirements". This may include previous development on a site with consideration to cumulative impacts for the purpose of making a SEPA threshold decision. In the case of redevelopment, the City will evaluate whether the incremental increase in volume due to site redevelopment meets the criteria included in Section B requiring a TIA be conducted. Redevelopment shall include expanded or increased development, or use or occupancy of a building or site that has been dormant for a period of more than five years. "New development" shall not include individual one or two-family residential lots within plats.

These guidelines have been prepared to establish the requirements for a Traffic Impact Analysis. The City of Chelan Public Works and Planning Departments are responsible under SEPA and City codes for determining the need for a Traffic Impact Analysis. The City of Chelan Public Works Department will approve the scope of work, review the Traffic Impact Analysis, and make recommendations to the Planning Department as part of the SEPA and land use process.

All reports shall be submitted in a professional format that can be interpreted by all departments. Exhibits shall include a border with a title block identifying the project and a description with legible text clearly identifying all items. Exhibits shall be constructed with AutoCAD or equivalent software.

B. WHEN REQUIRED

To adequately assess traffic impacts on the transportation system and traffic level of service, the City may require a Traffic Impact Analysis (TIA). A full or partial TIA may be required if any of the following conditions are met:

1. The "new development" will generate more than 20 PM Peak Hour Trips.
2. The project requires a SEPA review.
3. The "new development" is within an existing or proposed transportation benefit area. This may include Latecomer Agreements, Transportation Benefit Districts (TBD), Local Improvement Districts (LID), or local/state transportation improvement areas programmed for development reimbursements.
4. The "new development" will generate more than 50 Peak Hour trips at a time other than PM Peak Hour.
5. The Public Works Department is unable to determine the traffic generation characteristics of the development.
6. The Developer feels further traffic analysis may clarify questions about the identified traffic facilities charge for the project.
7. The "new development" access to the roadway network may create an impact as determined by the Public Works Department.
8. The "new development" impacts an area identified by the Public Works Department that cannot meet the concurrency requirements of the Growth Management Act.
9. The "new development" may potentially affect the implementation of the street system outlined in the Transportation element of the Comprehensive Plan, the Transportation Improvement Program, or any other documented transportation project.
10. Modifications are required to the original TIA that is more than two years old, or where the increase in traffic volume as measured by ADT, peak hour, or peak hour of the critical movement is more than 10%.
11. A rezone of the subject property is being proposed.
12. Current traffic problems exist in the local area as identified by the City or a previous traffic study, such as a high-accident location, poor roadway alignment, or capacity deficiency.
13. The current or projected level of service of the roadway system in the vicinity of the development is perceived to be significantly affected, or is expected to exceed City adopted level of service standards.

C. QUALIFICATIONS FOR PREPARING TIA DOCUMENTS

The Traffic Scoping or the Transportation Impact Analysis shall be prepared and stamped by an engineer licensed to practice in the State of Washington with special training and experience in traffic engineering.

D. SCOPING REPORT

If a Traffic Impact Analysis is required, the applicant or engineer shall submit a Traffic Scoping Information Worksheet providing the information listed below. The Traffic Scoping Information Worksheet is provided at the end of this section.

- ☐ Applicant name, address and phone
- ☐ Name of project
- ☐ Parcel Number(s)
- ☐ Project size in square feet and acres
- ☐ Proposed uses, including square footage of each use
- ☐ Existing use, including square footage of each use

Once the City has reviewed the Traffic Scoping Information Worksheet, the City will identify the land use code(s) from the current ITE manual to be used in the scoping report and provide information on trip distribution for the project.

The engineer shall then submit 4 copies of a Scoping Report to the Public Works Department to assist the City of Chelan in the development of the scope of work for the TIA. The Scoping Report shall include all items listed below:

- ☐ Project Size in Square Feet and Acres
- ☐ Project Location
- ☐ Proposed Use
- ☐ Phasing Plan
- ☐ Daily Trips
- ☐ Year of Occupancy (Horizon year of project)
- ☐ Number of Lots or Units
- ☐ Trip Generation
- ☐ PM Peak Hour Trips
- ☐ Land Use Code from the latest edition of the Trip Generation Manual by the Institute of Transportation Engineers (ITE) as provided by the City of Chelan Public Works Department.
- ☐ A reduced copy of the "site plan" showing the type of development, street system, right-of-way limits, proposed access points and other features of significance of the Development. The site plan shall also include pertinent off-site information such as dimensioning to all existing intersections and driveways with the existing channelization, land use descriptions, street right-of-way limits with respect to the existing roadway and other features of significance. Figure B illustrates an example site plan.
- ☐ A graphical distribution map showing site generated PM peak hour traffic. Generally, traffic should be distributed to one PM peak hour trip within the study area. This map shall clearly identify all traffic movements and the percentage of site traffic. Figure D is an example of an acceptable trip

- distribution map.
- ☐ Name, address and phone number of project developer and traffic consultant.
- ☐ Intersections impacted by 10 or more project trips entering primary intersections (typically arterials and collectors).
- ☐ If streets or intersections affected are within Chelan County or Washington State Department of Transportation jurisdiction, identify issues that may impact those jurisdictions.

The Scoping Report will be used to develop the scope of work for the Traffic Impact Analysis.

**CITY OF CHELAN
TRAFFIC SCOPING INFORMATION WORKSHEET**

**Please submit the information requested below to the City of Chelan Public Works Department with a copy of the site plan.
Do not submit trip generation or distribution at this time.**

Applicant: _____ Phone: _____

Mailing Address: _____

Parcel Number(s) _____

Parcel Size: _____ square feet _____ acres

Existing Use: _____

Proposed Use: _____

Land Use	# of units or sq ft	For Agency Use Only			
		Land Use Code	Basic Rate PM Peak Trips/Unit	New Trips %	New Trip Rate

	For Agency Use Only
Project Trips to be Distributed as Follows:	

E. TRAFFIC IMPACT ANALYSIS

The level of detail and scope of work of a TIA may vary with the size, complexity and location of the "new development". A TIA shall be a thorough review of the immediate and long-range effects of the "new development" on the transportation system.

1. Prospectus

- A. Provide a vicinity map of the project area showing the transportation system to be impacted by the development. Figure A is an example of an acceptable vicinity map.
- B. Provide a reduced copy of the site plan showing the type of development, street system, right-of-way limits, proposed access points, and other features of significance in the "new development". The site plan shall also include pertinent off-site information such as dimensioning to all existing intersections and driveways with the existing channelization, land use descriptions, and street right-of-way limits with respect to the existing roadway and other features of significance. Figure B is an example of a site plan.
- C. Discuss specific development characteristics such as type of development proposed (single-family, multi-family, retail, industrial, etc.), internal street network, proposed access locations, parking requirements, zoning, and other pertinent factors attributable to the "new development".
- D. Discuss project completion, phasing plan and occupancy schedule for the "new development". Identify horizon years for traffic analysis purposes.

2. Existing Conditions

- A. Discuss street characteristics including functional classification, number of travel lanes, lane width, shoulder treatment, bicycle path corridors, pedestrian facilities, transit routes, transit accessibility and traffic control at study intersections. A Figure may be used to illustrate existing transportation facilities.
- B. Identify approved nearby land development planned or under construction (pipeline projects) and associated traffic.
- C. Identify safety and access issues including sight distance restrictions, traffic control, crash potential and pedestrian conflicts.
- D. Obtain all available traffic data from City of Chelan and surrounding jurisdictions if applicable. If data is unavailable, the individual or firm preparing the TIA shall collect the necessary data to support the discussions and analysis in the TIA.
- E. For traffic analysis, the PM peak hour conditions shall be used. The PM peak hour is defined as the 60-minute period between 4:00 p.m. and 6:00 p.m. with the greatest sum of traffic volumes on a roadway segment or

passing through the area of the project. Reversed flow at intersections from morning to afternoon, and other unusual conditions, shall require analysis for both AM and PM peak hour conditions as required by the City. The baseline traffic condition will be reflective of July/August summer traffic flows. Traffic counts performed outside of this timeline will be adjusted back to the summer peak flow.

- F. Conduct manual peak hour turning movement counts at study intersections if traffic volume data is more than 2 years old unless otherwise directed by the Public Works Department. A copy of the data shall be attached to the TIA when submitted to the Public Works Department for review.
- G. A Figure shall be prepared showing existing average daily traffic (ADT) and peak hour traffic volumes on the adjacent streets and intersections in the study area. This Figure shall represent the baseline traffic volumes for analysis purposes. Complete turning movement volumes shall be illustrated as shown on Figure C.

3. Development Traffic

This element of the TIA shall be conducted initially to identify the limits of the study area. The threshold requirement of development traffic exceeding 10 PM hour trips shall apply. Through the scoping process, the City will provide a list of intersections to be analyzed in the TIA.

4. Trip Generation

The methodology and procedures used in preparing the trip generation and trip distribution elements of the TIA are as follows:

Site-generated traffic of the "new development" shall be estimated using the the peak hour trip rate identified in the latest edition of the Trip Generation Manual as published by the Institute of Transportation Engineers (ITE). The City will provide a list of ITE land uses to be utilized. Variations of trip rates will require the approval of the Public Works Department. Average trip rates shall be used for all land use categories where applicable. Trip rate equations will be allowed for those land uses without average rates. Table formats for trip generation shall not be interpolated. Generally, the consultant shall use individual rates for mixed-use developments.

Variations from the trip rates will be considered in the scoping process. The consultant shall submit a letter explaining the reason for the variation and all supporting documentation. Trip generation studies shall follow standard ITE guidelines and be statistically valid for approval by the Public Works Department.

Site traffic shall be generated for daily and P.M. peak hour periods. For certain types of developments, the Public Works Department may also require site traffic estimates for the AM peak period. A "pass-by" traffic volume discount for applicable commercial development shall be calculated based on data identified in the Trip Generation Handbook, most current edition, published by the Institute of Transportation Engineers (ITE). If a comparable use is not identified in the ITE Trip

Generation Handbook, an independent study of a minimum three comparable uses shall be used. The comparable sites must be approved by the City.

Land uses not identified in the ITE Trip Generation Handbook will typically have a "pass-by" rate between 0% and 25% maximum and shall be consistent with similar land uses approved by the City. If a minimum three comparable uses cannot be identified, the developer may use rates previously approved by the City for similar uses if available. "Pass-by" discounts will not be permitted for residential or office developments.

For multi-use and/or phased projects, a trip generation table shall be prepared showing proposed land use, trip rates, and vehicle trips for daily and peak hour periods and appropriate traffic volume discounts if applicable.

5. Trip Distribution

The directional distribution of traffic to and from the project shall be based on historical traffic counts and land use projections provided by the City, if available. The Public Works Department shall approve the trip distribution for a "new development" during the formal scoping process.

A graphical distribution map prepared using AutoCAD or equivalent graphical software shall be submitted showing site-generated PM peak hour traffic. Generally, traffic shall be distributed to one PM peak trip within the study area. This map shall clearly identify all traffic movements and the percentage of site traffic. Figure D is an example of a trip distribution map.

6. Future Traffic Conditions

Future traffic volumes shall be estimated by including the following elements:

- A minimum 2.5% annual growth rate shall be applied to the baseline traffic volumes. The growth rate used in the TIA will be approved during the scoping process.
- All traffic generated by anticipated nearby land development (pipeline projects with an approved traffic scope) shall be included when forecasting future traffic volumes. A pipeline project is defined as a development that is either under construction, approved for construction, or in the permitting process.

The future traffic volumes shall be representative of the year the project development shall be completed (horizon year).

The site-generated traffic shall be assigned to the street network in the study area based on the approved trip distribution. The site traffic shall be combined with the forecasted traffic volumes to show the total traffic conditions estimated at development completion. A Figure will be required showing daily and peak period turning movement volumes for each traffic study intersection. The following Figures shall be prepared:

- Site-generated Traffic Volumes (Figure D)
- Pipeline Development Traffic (Figure E)
- Projected Volumes Without Project (Figure F)
- Projected Volumes With Project (Figure G)

7. Traffic Operations

Level of Service (LOS) is a qualitative term describing operating conditions a driver will experience while traveling on a particular street or highway during a specific time interval. It ranges from A (very little delay) to F (long delays and congestion).

Level of service calculations for intersections determine the amount of "control delay" (in seconds) that drivers will experience while proceeding through an intersection. Control delay includes all deceleration delay, stopped delay, and acceleration delay caused by the traffic control device. The level of service is directly related to the amount of delay experienced.

The Level of Service (LOS) and capacity analysis shall be conducted for each pertinent intersection in the study area as determined by the Public Works Department. The methodology and procedures for conducting the capacity analysis shall follow the guidelines specified in the most recent edition of the Highway Capacity Manual-Special Report 209. The individual or firm preparing the TIA shall calculate the intersection LOS and present the data in a table format for each of the following conditions:

- A. Existing traffic volumes
- B. Future traffic volumes not including site traffic
- C. Future traffic volumes including site traffic

The Level of Service table shall include LOS results for key peak periods as applicable, generally the PM peak hour. The table shall show LOS conditions with corresponding vehicle delays for signalized intersections. The LOS conditions and average vehicle delay shall be provided for each approach and the intersection as a whole. For all unsignalized intersections, the table shall show the weighted intersection average in delay and level of service, including the LOS for the minor street movements.

If the "new development" is scheduled to be completed in phases, the TIA shall conduct a LOS analysis for each separate development phase. The incremental increases in site traffic from each phase shall be included in the LOS analysis for each succeeding year of development completion. A "Figure" will be required for each horizon year of phased development.

The TIA must include a discussion of every intersection and its potential impact to the intersection operation. The TIA shall also identify programmed improvements that are planned by others (i.e., development projects, City CFP and/or WSDOT improvements).

The capacity analysis shall be conducted using computer software compatible with the Public Works Department's software package. The individual or firm preparing the TIA shall use Synchro for capacity analysis of signalized intersections and unsignalized intersections. SIDRA software shall be used for analyzing modern roundabout intersections. Other computer software packages used for capacity analysis applications will not be accepted. A copy of the capacity analyses worksheets and digital CD shall be submitted concurrently with the TIA document.

If the "new development" impacts a traffic signal coordination system currently in operation, the Public Works Department may require the TIA to include operational analysis of the system. Timing plans and proposed modifications to the coordination system may be required.

8. Access Management

Requests for site access shall be addressed in the Traffic Impact Analysis. Recommendations shall include site access and transportation improvements needed to maintain traffic flow to, from, within, and past the site at an acceptable and safe level of service.

Areas to address include:

- Separate conflict areas. Reduce the number of access points or increase their spacing so conflict areas or maneuver areas do not overlap.
- Limit the type of conflict areas by preventing certain maneuvers.
- Remove turning vehicles or queues from through lanes.
- Safety of a proposed access (sight distance both horizontally and vertically), including pedestrian features.
- Reduce the speed differential in through lanes between through vehicles and turning vehicles.
- Consider the impact of access points on adjacent or nearby properties on both sides of the roadway.

Improvements include such things as: relocation, restriction, or elimination of access point, roadway widening, turning lanes, traffic signals, modern roundabouts, and pedestrian facilities.

9. Sight Distance

As noted in Section 8 above, sight distance restrictions shall be addressed in the TIA. Sight distance is the length of roadway visible to the driver. Specified areas along intersection approach legs and across their included corners should be clear of obstructions that might block a driver's view of potentially conflicting vehicles. These specified areas are known as clear sight triangles. The dimensions of the legs of the sight triangles depend on the design speeds of the intersecting roadways and the type of traffic control used at the intersection. Intersection sight distance calculations shall be based on the most recent edition of the AASHTO Manual.

10. Alternate Modes of Transportation

The TIA shall identify other transportation modes that may be applicable, such as

transit use, bicycle and pedestrian facilities. New developments are encouraged to implement Transportation Demand Management practices.

11. Safe Walking Conditions

The TIA must consider pedestrian connections and provision of safe walking routes for school children. It shall consider sidewalks and other planning features to assure safe walking conditions for students who walk to and from school.

12. Road Adequacy

The TIA shall include detailed discussion and analysis of the adequacy of roads serving the site and within the project. Pavement condition, width of travel lanes, turning lanes, pedestrian and bicycle facilities, sidewalks, shoulders, etc. are to be evaluated, not the capacity of the roadway to accommodate project traffic. Recommendations for needed upgrades to local roadways shall be included in the TIA.

13. On-Site Planning and Parking Principles

The number of vehicle access points should be minimized by sharing driveways and linking parking lots between adjacent uses. Commercial developments shall provide coordinated internal circulation and connected parking facilities. Well-defined walkways must be designed into all parking lots, with interconnections between walkways to create safe walking conditions.

14. Safety Analysis

Accident records (minimum of three years of collision history) are to be analyzed to determine whether patterns of accidents are forming at the pertinent intersections within the study area and what alternative treatments should be considered to correct the problem. Examples of recurring accidents include:

- Right-angle collisions at an intersection
- Rear-end collisions at an intersection
- High frequency of vehicles leaving the roadway

15. Traffic Calming

Internal traffic calming shall be incorporated into all developments to control cut-through traffic and reduce speed within the development. The Traffic Impact Analysis shall identify and propose specific traffic calming measures and locations to be incorporated in the development. Traffic calming shall be aesthetically pleasing. Public transportation shall also be evaluated. The traffic-calming plan shall include an overall drawing of the development and identify specific locations and features to be included in the development. The proponent's traffic engineer shall work with the Public Works Department to develop a traffic-calming plan for the development.

16. Concurrency Management

The concurrency management evaluation shall be prepared by the Public Works Department and shall follow the procedure outlined below. Each "new

development" subject to this procedure shall be analyzed in the order the completed project application is received by the Department. Concurrency traffic evaluations will be completed sequentially in the order of project application. The most recent concurrency management evaluation will be the beginning point for each succeeding concurrency management analysis.

In performing the concurrency evaluation, the Department shall determine the impact of the traffic generated by the proposed "new development" on the City's road system. The evaluation shall be based on data generated by the City, by professional associations, by the applicant, and if needed, by independent analysis. The City shall examine the data to verify that:

- A. The density assumptions for the "new development" are consistent with the underlying zoning.
- B. Existing and projected trip generation is consistent with the latest edition of the Trip Generation Manual as published by the Institute of Transportation Engineers (ITE).
- C. Level of service calculations for all affected intersections are accurate and based upon horizon year conditions with and without the "new development". The City shall determine if the capacity on the City's road facilities, plus the capacity that is or shall be generated by all existing and approved development can be provided while meeting the LOS standards adopted by the City.
- D. For concurrency purposes, the LOS standards and policies identified in the Transportation Element of the City's Comprehensive Plan will apply.

17. Mitigation

The TIA shall clearly identify potential impacts to streets, intersections, pedestrian facilities, etc. that will require traffic mitigation. Based on the results of the TIA, the City will identify the appropriate mitigation for the "new development". The following guidelines shall be used to determine appropriate mitigating measures of traffic impacts generated by new developments.

- A. To maintain the adopted Level of Service Standard, the "new development" shall provide a financial guarantee or construct improvements to maintain the level of service at or above the adopted standard. This improvement must be consistent with the City's Transportation Comprehensive Plan goals and policies.
- B. On transportation facilities where the need to construct improvements by the horizon year of the "new development", the cost for the mitigation will be entirely borne by the "new development". However, in the event the Public Works Department identifies more than one development under simultaneous review, accumulative impacts and distribution of mitigation costs may be considered. A latecomers agreement could be formulated by

the "new development" for reimbursement of mitigation costs.

- C. On transportation facilities programmed for new improvements as part of a City project, the adverse traffic impacts of the "new development" will be considered mitigated by payment of a transportation facility charge in effect for the current Six-Year Transportation Improvement Program.
- D. On transportation facilities where the existing Level of Service is less than the adopted concurrency standard, and where no improvements are programmed to improve capacity and traffic operations, the "new development" shall mitigate the intersection back to pre-development conditions to ensure the operational performance of the intersection is not exacerbated.
- E. Unsignalized intersections that currently operate at less than the adopted Level of Service area shall be analyzed for traffic signal and intersection improvements. If two or more traffic signal warrants are satisfied, signal and intersection improvements may be required by the City.
- F. On signalized intersections in the city where the projected Level of Service condition is acceptable but where one or more of the approaches falls below the adopted concurrency standard, mitigating measures may be required to improve the capacity and traffic operations at the intersection. The City reserves the right to review all adverse traffic impacts at these intersections and to determine appropriate mitigating measures.

18. TIA Submittal

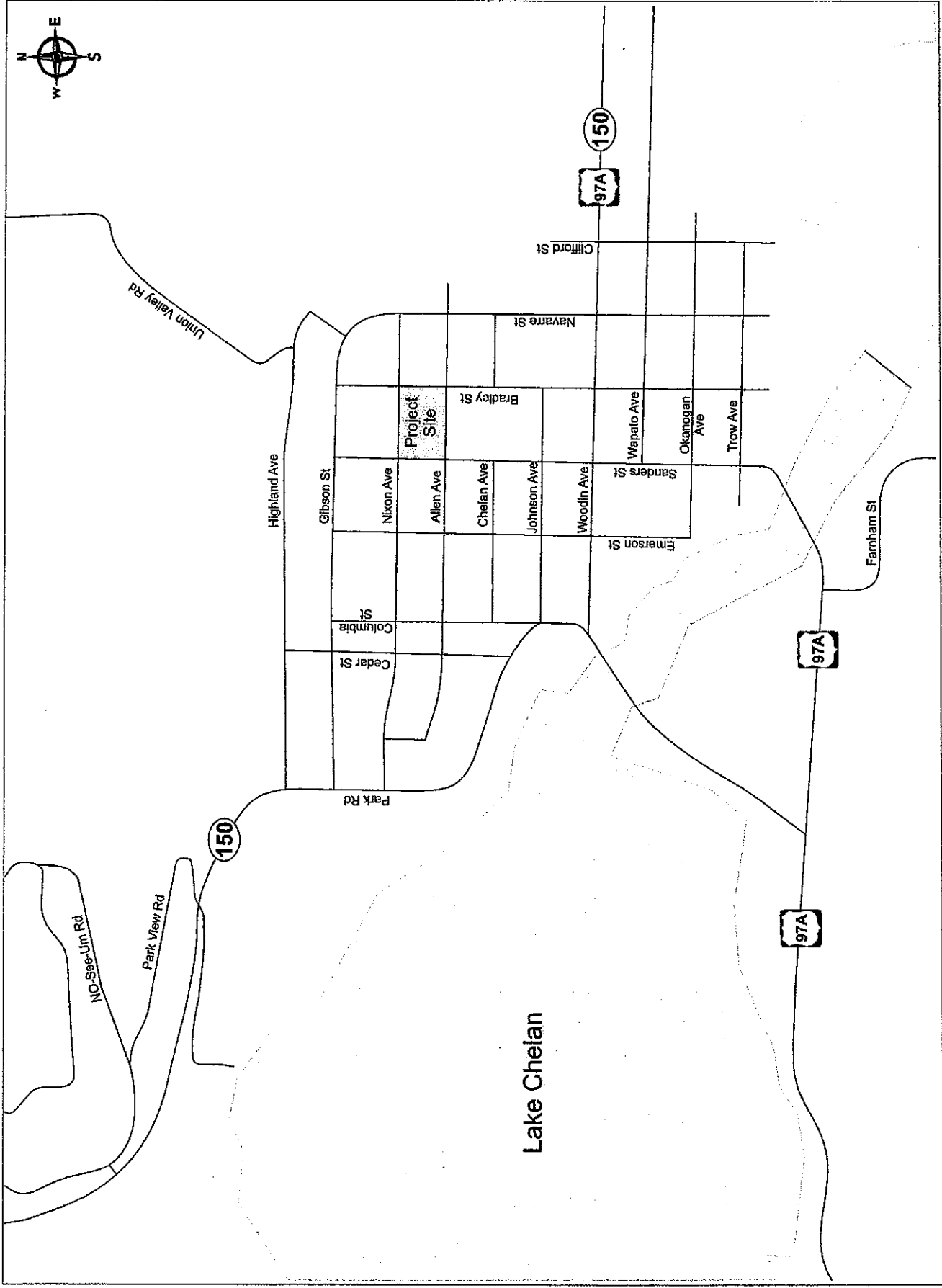
The Traffic Impact Analysis shall be submitted to the Public Works Department in the following format:

- One hard copy of TIA and all documentation
- Copy of TIA, including appendices, in PDF format
- Electronic copy of Synchro output and data files
- Electronic copy of SIDRA output and data files for roundabout analysis.

19. Communication Between City and Applicant

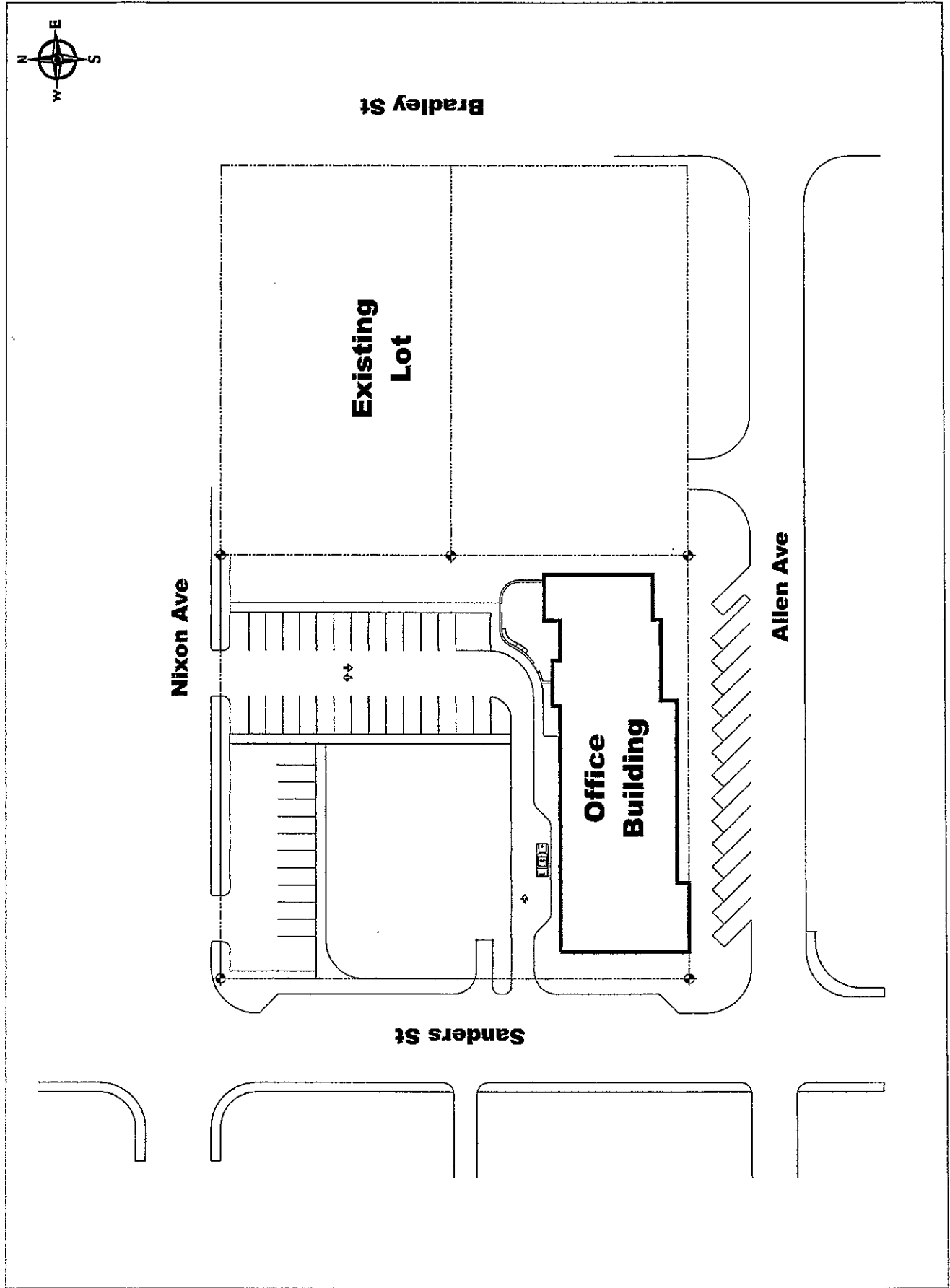
Scoping reports and TIAs are to be submitted to the City of Chelan Public Works Department.

- Scoping meetings shall be arranged through the Public Works Department and all questions with regard to scoping shall be directed to the Public Works Department.
- All specific questions or requests for information must be directed to the Public Works Department in writing (e-mail is acceptable.)



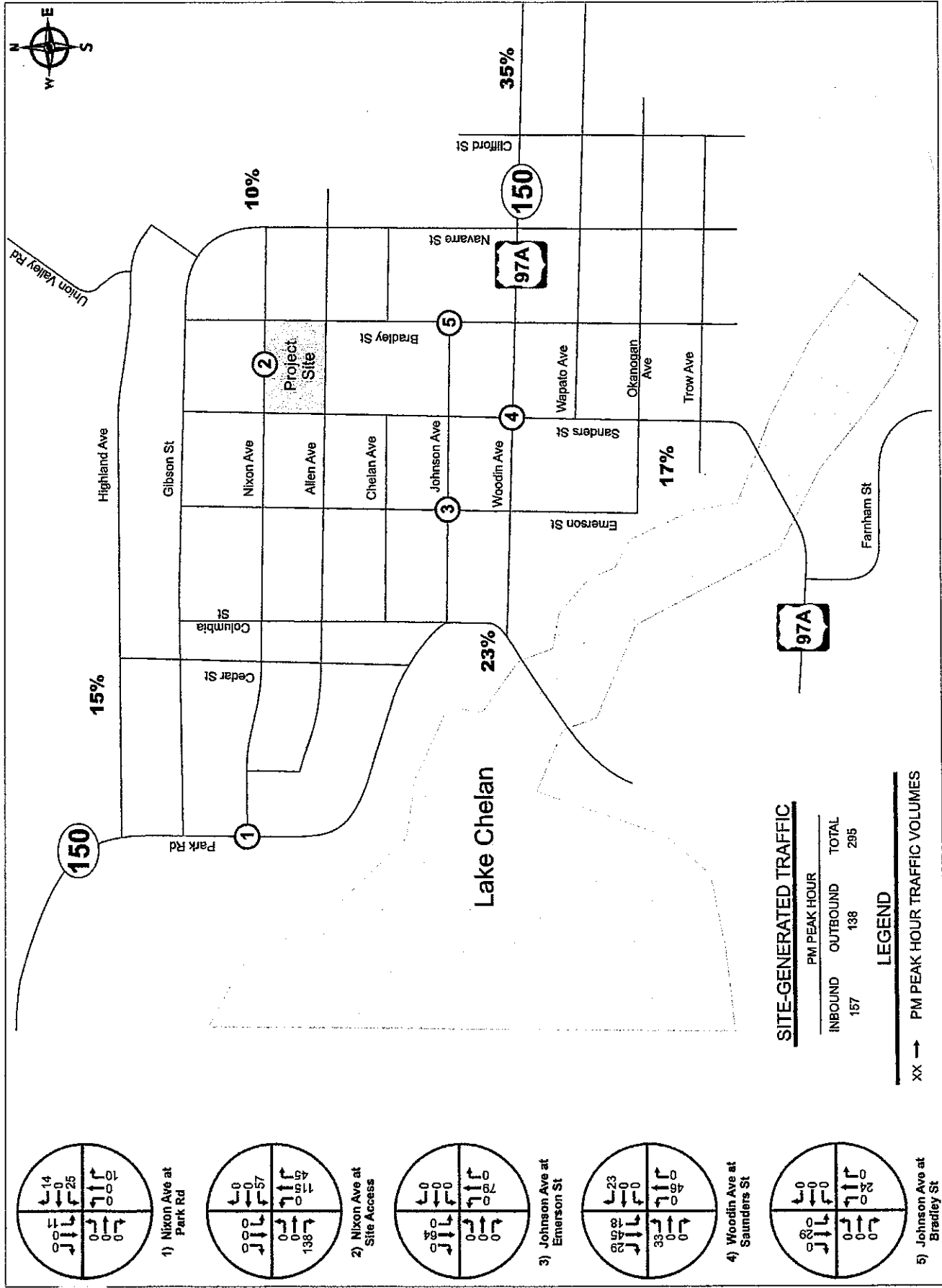
Vicinity Map
Sample
Traffic Impact Analysis

Figure A



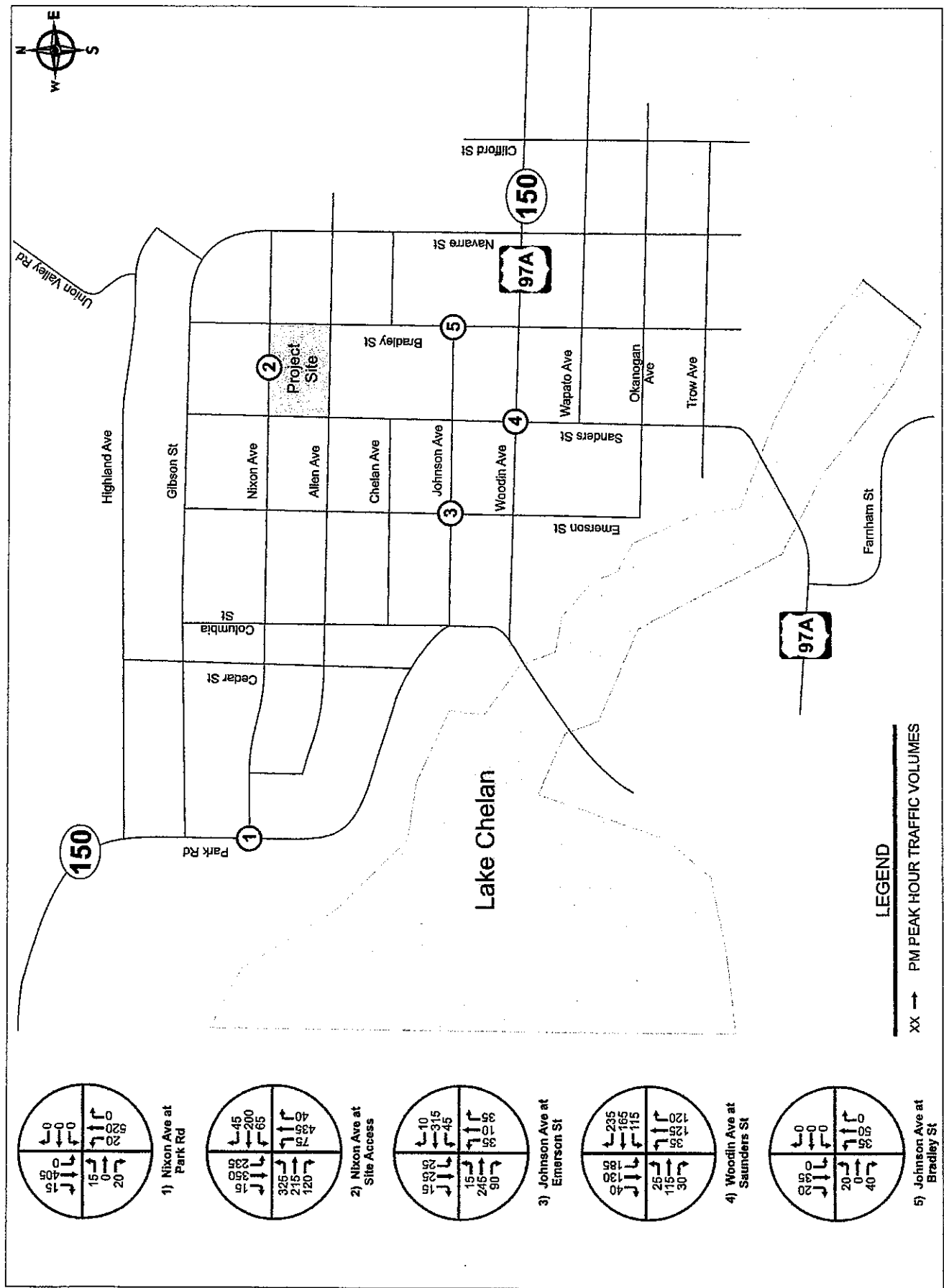
Preliminary Site Plan
Sample
Traffic Impact Analysis

Figure B

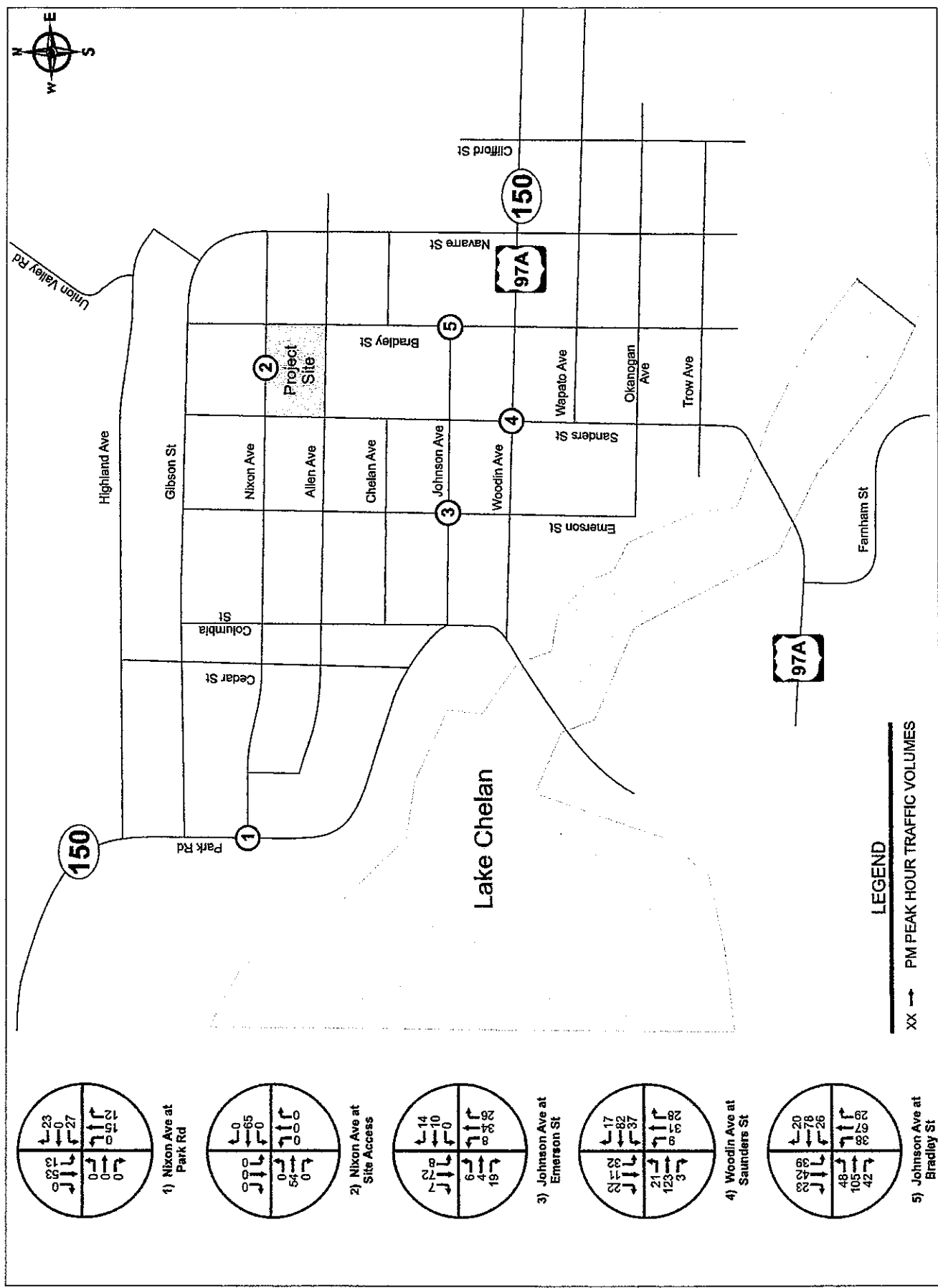


Site-Generated PM Peak Hour Traffic Volumes
Sample
Traffic Impact Analysis

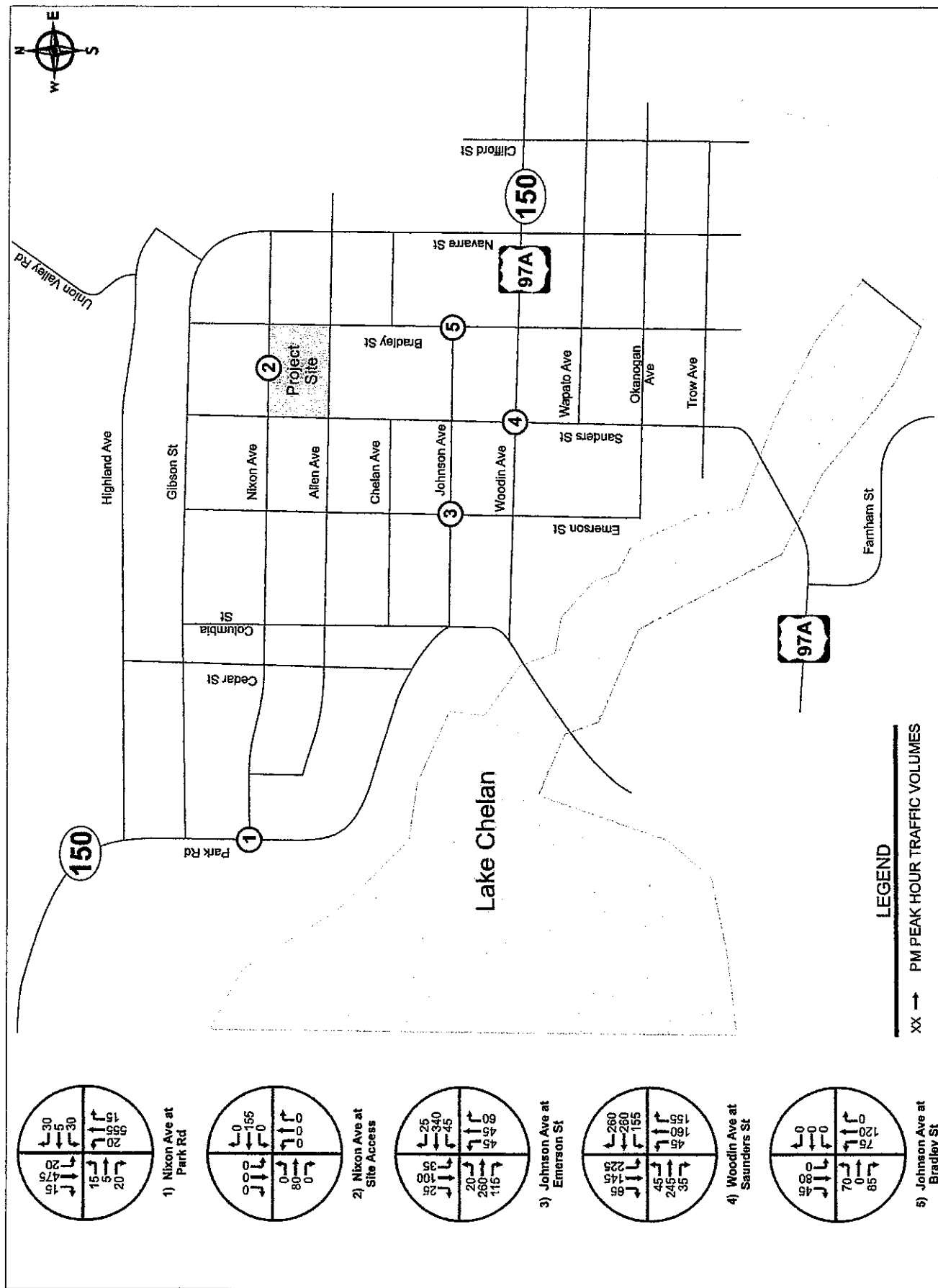
Figure C



Existing 2008 PM Peak Hour Traffic Volumes
Sample
Traffic Impact Analysis



Pipeline Development PM Peak Hour Traffic Volumes
Sample
Traffic Impact Analysis



Projected 2010 PM Peak Hour Traffic Volumes Without Project
Sample
Traffic Impact Analysis

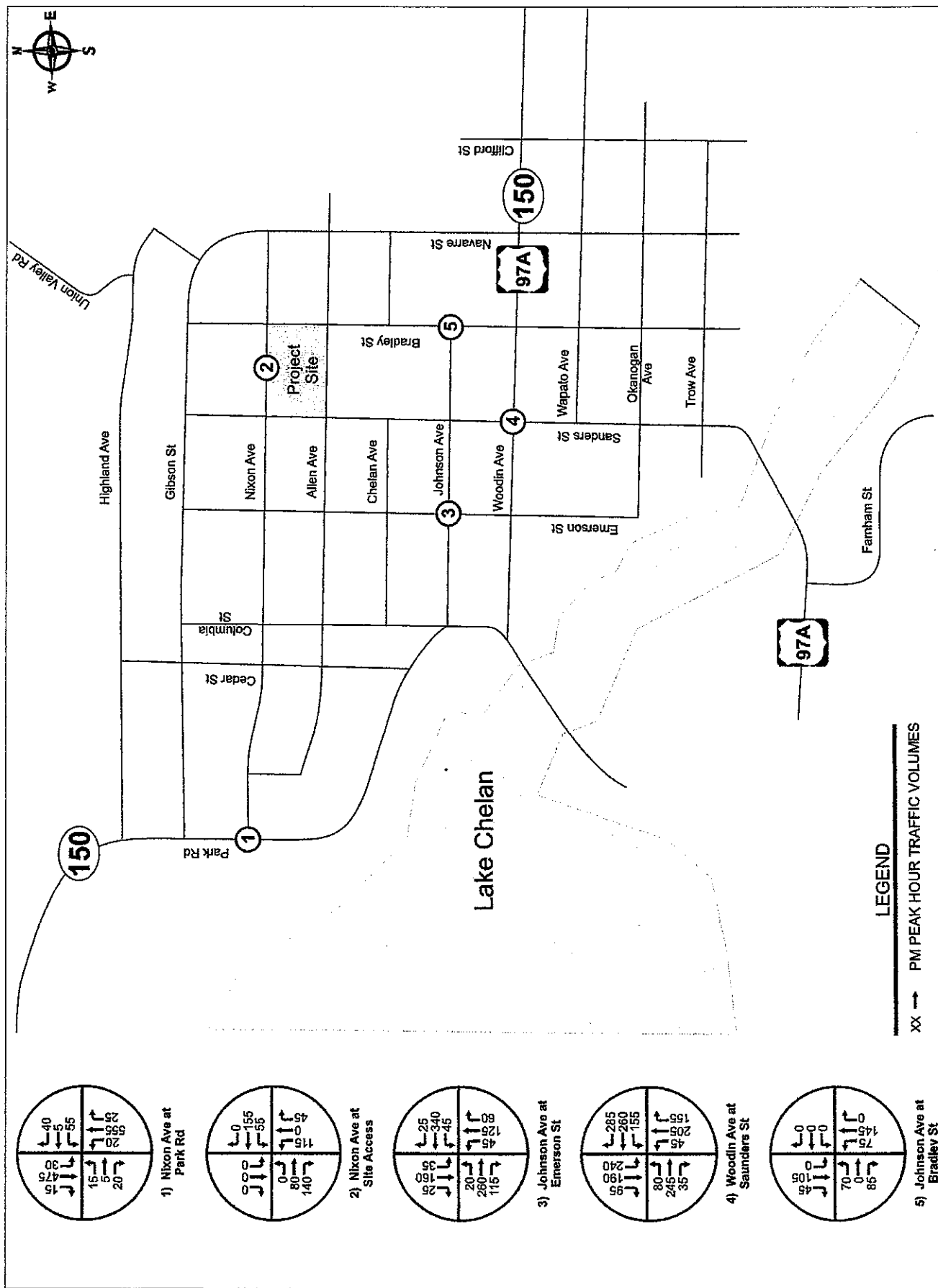
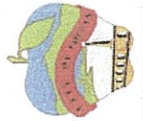


Figure G



City of Chelan Transportation Plan

Functional Classification System

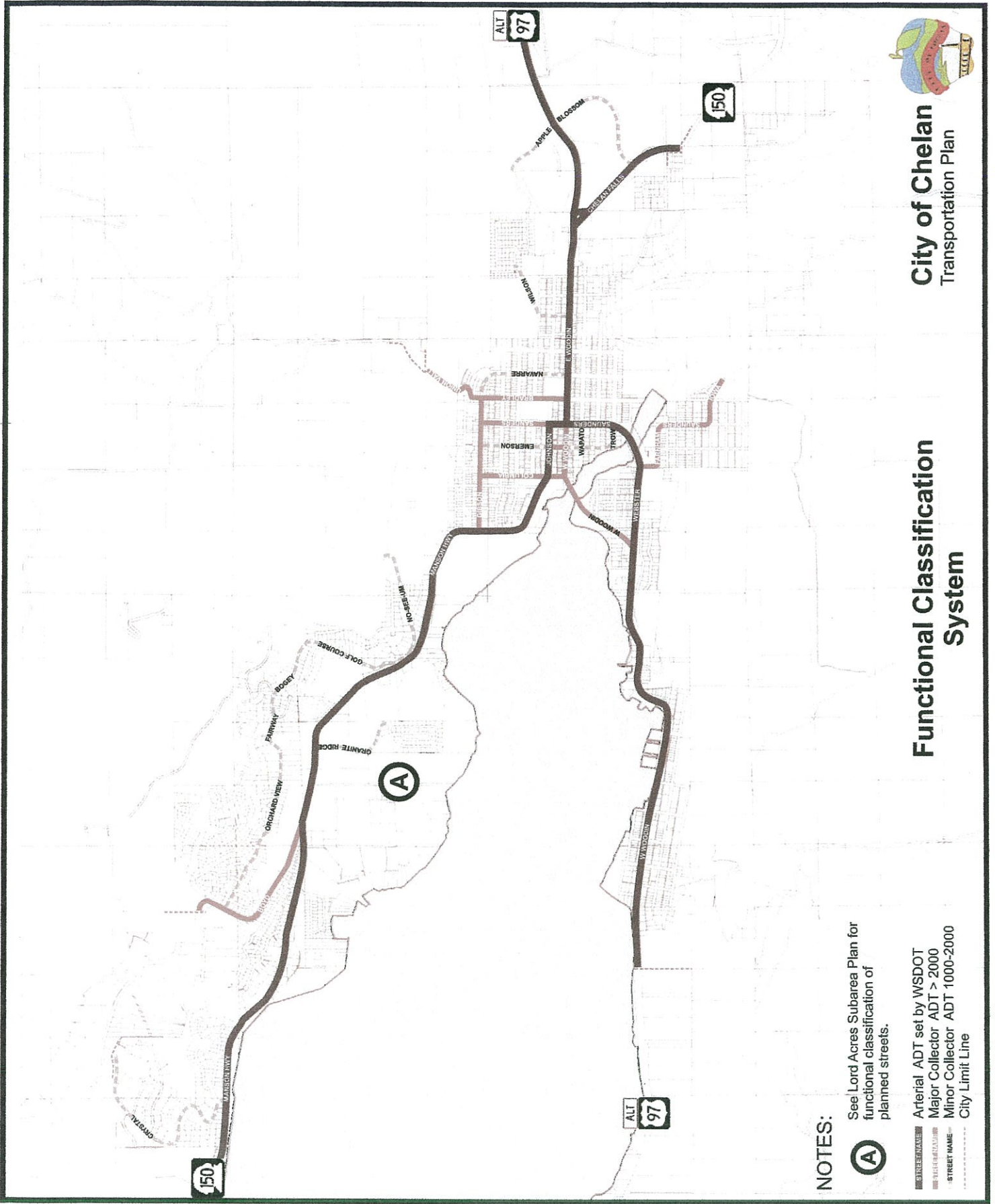
NOTES:

See Lord Acres Subarea Plan for functional classification of planned streets.



Arterial ADT set by WSDOT
Major Collector ADT > 2000
Minor Collector ADT 1000-2000
City Limit Line

STREET NAME
TRAIL NAME
STREET NAME



APPENDIX E
PLAN CHECKLIST

PLAN CHECKLIST

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

GENERAL STANDARDS

Applicant Use *		Staff Use Only *
[]	Vicinity Map (Scale sufficient to cover project limits on one sheet or 1"=200' – whichever is greater)	[]
[]	Legend (APWA Standard Symbols)	[]
[]	North Arrow (draw plan so North Arrow points to left or to top of sheet)	[]
[]	Datum-Bench Mark Designation, Elevation, and Location (on all sheets where elevations are referenced). Show existing and proposed topography contours for entire site and minimum 30' beyond site boundary. Contours should be shown at 2 foot intervals (5 foot intervals for slopes greater than 15%, 10 foot intervals for slopes greater than 40%). Elevation labeling shall be at 10-foot intervals maximum for 2-foot contour intervals, maximum 25 feet for 5-foot contour intervals.	[]
[]	Datum-Use of Chelan County approved datum (NGVD 29) for survey reference is required.	[]
[]	Minimum lettering size 1/10 th inch.	[]
[]	Scale Bar – scale shall be a standard engineering ratio	[]
[]	Title Block: <ul style="list-style-type: none"> o Title: (add explanatory note if project name has changed) o Design by: o Drawn By: o Date: o Checked by: o Signature Approval Block: o Sheet Number of Total Sheets: o Professional Engineer's seal, signature, address and phone number. 	[]
[]	Quarter Section, Township, Range (on all sheets)	[]
[]	Utility System Map (showing all proposed utilities on one drawing)	[]
[]	Revision Block	[]
[]	Division or phase lanes showing proposed limits of construction.	[]
[]	Property lines (with distances and bearings), right-of-way lines, sensitive areas and setbacks and all existing and proposed easements with their recording numbers.	[]
[]	City of Chelan street names.	[]
[]	Each utility on separate sheet (storm and roadway and/or water and sewer may be combined).	[]
[]	Match lines with matched sheet number (where plan is drawn on two or more sheets). Where plan is shown on three or more sheets, include a total site plan key map at scale 1"-100.	[]

Applicant Use *		Staff Use Only *
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PLAN PORTION STANDARD ITEMS

<input type="checkbox"/>	Centerline and stations	<input type="checkbox"/>
<input type="checkbox"/>	Edge of pavement and width	<input type="checkbox"/>
<input type="checkbox"/>	Right-of-way and width	<input type="checkbox"/>
<input type="checkbox"/>	Proposed survey monumentation locations and details	<input type="checkbox"/>
<input type="checkbox"/>	Sidewalk and Width	<input type="checkbox"/>
<input type="checkbox"/>	Planter strip and width	<input type="checkbox"/>
<input type="checkbox"/>	Roadway sections	<input type="checkbox"/>
<input type="checkbox"/>	Existing utilities (Show all existing underground and surface improvements for the full width of the right-of-way or easement and sufficient distance on either side to show possible impacts on adjacent properties and/or relationship to related facilities.)	<input type="checkbox"/>
<input type="checkbox"/>	Existing (active and inactive) and proposed wells	<input type="checkbox"/>
<input type="checkbox"/>	Adjacent property lines, ownership, parcel number, and street address	<input type="checkbox"/>
<input type="checkbox"/>	Identify street names, right-of-way, lots	<input type="checkbox"/>
<input type="checkbox"/>	Identify match existing sheet numbers and stations	<input type="checkbox"/>
<input type="checkbox"/>	Easements, width and type	<input type="checkbox"/>
<input type="checkbox"/>	Define survey baseline	<input type="checkbox"/>
<input type="checkbox"/>	Stations for structures	<input type="checkbox"/>
<input type="checkbox"/>	Pipe size, length, material and slope	<input type="checkbox"/>
<input type="checkbox"/>	Flow direction arrows on all gravity lines.	<input type="checkbox"/>
<input type="checkbox"/>	Special features such as gas tanks, gas mains, etc.	<input type="checkbox"/>

PROFILE PORTION STANDARD ITEMS

<input type="checkbox"/>	Profile grades (decimal Ft./Ft.) Proposed and existing.	<input type="checkbox"/>
<input type="checkbox"/>	Existing and proposed ground	<input type="checkbox"/>
<input type="checkbox"/>	Scale (horizontal and vertical)	<input type="checkbox"/>
<input type="checkbox"/>	Stationing	<input type="checkbox"/>
<input type="checkbox"/>	Pipe size, length, material and slope	<input type="checkbox"/>
<input type="checkbox"/>	Vertical elevation increments	<input type="checkbox"/>
<input type="checkbox"/>	Existing utilities	<input type="checkbox"/>
<input type="checkbox"/>	Utility crossings	<input type="checkbox"/>
<input type="checkbox"/>	Miscellaneous: o Detail Sheet o General Notes	<input type="checkbox"/>

SANITARY SEWER

Plan View:		
<input type="checkbox"/>	No smaller than 40 scale unless approved by the City	<input type="checkbox"/>
<input type="checkbox"/>	System Map (1"=300') showing tie-in to existing system, including line size and valves. Show existing improvements within ten feet of where they cross or connect to new improvements.	<input type="checkbox"/>
<input type="checkbox"/>	Located on the south and west side of the roadway as shown on the roadway details, where practical and/or possible.	<input type="checkbox"/>
<input type="checkbox"/>	Manholes o Station and offset shown at each manhole/cleanout o Manholes and clean outs numbered in sequential number o Rim and invert elevations	<input type="checkbox"/>

Applicant Use *		Staff Use Only *
	<ul style="list-style-type: none"> Manhole size and type Flow direction (with arrow on pipe) Distance from water lines 	
[]	Depth at property line and distance from downhill manhole for side sewer	[]
[]	Service to each lot. Show all stub-out locations for future connections. Note if service is gravity or low pressure sewer with grinder pump.	[]
[]	Bearing/Distance (or station, offset and angle) of each pipe run when not parallel to centerline	[]
[]	Existing septic tanks/drainfields (with note to abandon if necessary)	[]
[]	Station, offset and size of tees, crossed, elbows, adapters, and valves	[]
Profile View		
[]	Manholes, clean outs and catch basins numbered	[]
[]	Invert elevation showing direction, in and out	[]
[]	Rim elevation	[]
[]	Grades shown (decimal form Ft./Ft.) (minimum slopes)	[]
[]	Type of pipe	[]
[]	Size of pipe	[]
[]	Length of pipe (in L.F.)	[]
[]	Existing utilities and crossings	[]
[]	Show fixtures (tees, crosses, valves, couplers)	[]
[]	Cover over pipe	[]
[]	<i>Miscellaneous</i> <ul style="list-style-type: none"> Detail sheet Sewer general notes 	[]

WATER

Plan View:		
[]	No smaller than 40 scale unless otherwise approved by City	[]
[]	System Map (1'=300') showing existing and proposed mains with line size, at least 2 existing valves – one on both sides of the project, and existing hydrants	[]
[]	Located on the north and east side of the roadway as shown on the roadway details, where practical and/or possible	[]
[]	Existing underground improvements within 10 feet of where they cross or connect to the new improvements	[]
[]	Existing utility conflicts	[]
[]	Fixtures (need horizontal and vertical control) <ul style="list-style-type: none"> Fire hydrants (check with Chelan Fire District #7 for locations and spacing) Blow-off (at end of line if no hydrant) Vacuum and air release valves when required 	[]
[]	Station, offset and size of tees, crosses, elbows, adapters and valves	[]
[]	Valves	[]
[]	Fire Department connection	[]
[]	All dedicated fire lines shall be approved by separate permit	[]
[]	Backflow prevention devices	[]
[]	Thrust blocking required at all fittings	[]

Applicant Use *		Staff Use Only *
<input type="checkbox"/>	Distance from sewer	<input type="checkbox"/>
<input type="checkbox"/>	Bearing and distance of each pipe run when not parallel to centerline	<input type="checkbox"/>
<input type="checkbox"/>	Service to each lot (include open tracts)	<input type="checkbox"/>
<input type="checkbox"/>	Sample station (call Public Works for location)	<input type="checkbox"/>
<input type="checkbox"/>	Domestic meter with station, size and offset	<input type="checkbox"/>
<input type="checkbox"/>	Power source and type of service for irrigation system	<input type="checkbox"/>
Profile View		
<input type="checkbox"/>	Existing and proposed utility crossings	<input type="checkbox"/>
<input type="checkbox"/>	Show fixtures (tees, crosses, hydrants)	<input type="checkbox"/>
<input type="checkbox"/>	Pipe size, length, material and slope	<input type="checkbox"/>
<input type="checkbox"/>	Show valves and couplers	<input type="checkbox"/>
<input type="checkbox"/>	Size of water main	<input type="checkbox"/>
<input type="checkbox"/>	Length of water main in L.F.	<input type="checkbox"/>
<input type="checkbox"/>	Cover over pipe	<input type="checkbox"/>
<input type="checkbox"/>	Grades (Engineered Design Grade to Flow Line)	<input type="checkbox"/>
<input type="checkbox"/>	<i>Miscellaneous</i> <ul style="list-style-type: none"> o Detail Sheet o Water General Notes 	<input type="checkbox"/>

STORM SEWER

<input type="checkbox"/>	No smaller than 40 scale unless otherwise approved by the City	<input type="checkbox"/>
<input type="checkbox"/>	Drainage Plan Report <ul style="list-style-type: none"> o Prepared by registered civil engineer licensed in State of Washington o Runoff control o Water quality protection o Detention facilities o Soil logs 	<input type="checkbox"/>
<input type="checkbox"/>	Erosion and Sedimentation Control Plan Report <ul style="list-style-type: none"> o Construction sequence and procedure o Trapping sediment o Permanent erosion control and site restoration o Geotechnical analysis and report o Inspection sequence 	<input type="checkbox"/>
<input type="checkbox"/>	Maintenance Report <ul style="list-style-type: none"> o Required type and frequency of long-term maintenance o Identification of responsible maintenance organization o Frequency of sediment removal o Cleaning of catch basins o Vegetation control o Annual cost estimate of maintenance 	<input type="checkbox"/>
<input type="checkbox"/>	Drawings and Specification <ul style="list-style-type: none"> o Vicinity map o Project boundaries o Sub-basin boundaries o Off-site area tributary to project o Existing and proposed contours at maximum 2-foot intervals o Flow path 	<input type="checkbox"/>

Applicant Use *		Staff Use Only *
	<ul style="list-style-type: none"> ○ Spot elevations of pavement in parking lots, and runoff flow direction arrows. ○ Roof leaders and footing drains connecting into conveyance system ○ Label at least two cross-sections through detention pond. One cross—section shall show the control sequence. ○ Location and detail of emergency overflows and spillways. ○ Invert elevations of all pipes, inlets, tanks, vaults and spot elevations of pond bottom. Call out pond volume and dimensions and design surface elevation. ○ Section and plan views and details of all rock protection and energy dissipaters. ○ Section and plan view on restrictor/control structure, including size and elevation of orifices, overflow weirs, etc. ○ Length, width, and bottom width dimensions for all biofiltration and water quality swales and storm water conveyance swales. Include sectional view, showing side slopes and design depth of flow. ○ Seeding material information 	
[]	<p>Site map</p> <ul style="list-style-type: none"> ○ Existing topography at least 50 feet beyond site boundaries ○ Finished grades ○ Existing structures within 100 feet of project boundary ○ Utilities ○ Easements, existing and proposed ○ Environmentally sensitive areas ○ 100-year flood plain boundary ○ Existing and proposed wells within 1,200 feet of proposed retention facility ○ 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 ○ Lot dimensions and areas ○ Proposed drainage facilities ○ Wellhead protection areas 	[]
[]	<p>Plan View – Conveyance System</p> <ul style="list-style-type: none"> ○ Station, offset, and number at each manhole/catch basin ○ Manhole/catch basin type and size ○ Manhole/catch basin rim elevation ○ Flow direction with arrow on pipe/channel ○ Type and size of pipe ○ Length of pipe in lineal feet 	[]
[]	<p>Profile View – Conveyance System (for private and public systems</p> <ul style="list-style-type: none"> ○ Station, offset, and number at each manhole/catch basin ○ Rim elevation ○ Insert in and out ○ Length of pipe in lineal feet ○ Grades (Ft./Ft.) 	[]

Applicant Use *		Staff Use Only *
	<ul style="list-style-type: none"> Minimum cover 	
[]	Erosion control drawing: <ul style="list-style-type: none"> Soil types Location of soil pits and infiltration tests Construction entrance detail Silt fences and traps Mulching and vegetation plan Clearing and grubbing limits Existing and finished grade Details and locations of all BMPs recommended Location and details of temporary sediment ponds 	[]
[]	Construction inspection report	[]
[]	<i>Miscellaneous:</i> <ul style="list-style-type: none"> Detail sheet Storm General Notes 	[]

STREET

Plan View		
[]	No smaller than 20 scale unless otherwise approved by the City	[]
[]	Street alignment in stations of 100-foot intervals	[]
[]	Review sight distance and clear sight triangle at intersections	[]
[]	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	[]
[]	Station PC, PT, PI and intersections	[]
[]	Curve information delta, radius, length and tangent on all horizontal curves, 50' stations minimum	[]
[]	BCR and ECR (begin curb radius, end curb radius)	[]
[]	Identify all field design situations	[]
[]	Edge of pavement and right-of-way (EP & R/W) for proposed streets	[]
[]	Signing – temporary and proposed permanent	[]
[]	Channelization, striping, and existing signing	[]
[]	Mailbox locations (existing and proposed)	[]
[]	Location of school bus and/or public bus shelter/pad	[]
[]	Typical sections of proposed streets	[]
[]	Pavement marking details with station and offset	[]
[]	Sidewalks <ul style="list-style-type: none"> Driveway entrances <ul style="list-style-type: none"> Elevations Station (centerline) Width, material (AC, PCC, other) Driveway type Handicap ramps – detail and type 	[]
[]	Landscaping plan and accent lighting	[]
[]	Bearings on street centerline (construction drawings only)	[]
[]	Topography within the right-of-way limits, including utilities	[]
[]	Label all streets and adjoining subdivisions	[]

Applicant Use *		Staff Use Only *
<input type="checkbox"/>	Existing and proposed drainage structures indicating direction of flows	<input type="checkbox"/>
Profile View		
<input type="checkbox"/>	Vertical information VPI, BVC, CVC, AP, low point, high point	<input type="checkbox"/>
<input type="checkbox"/>	Show grades with (+ or - slope)	<input type="checkbox"/>
<input type="checkbox"/>	Review sight distance and clear sight triangle at intersections	<input type="checkbox"/>
<input type="checkbox"/>	Super elevated roadways <ul style="list-style-type: none"> Detail - show transitions Special detail showing gutter flowing adequately 	<input type="checkbox"/>
<input type="checkbox"/>	Original ground line; control elevation on border of sheet	<input type="checkbox"/>
<input type="checkbox"/>	Stationing in intervals of 100 feet	<input type="checkbox"/>
<input type="checkbox"/>	Grade line showing grade percents and vertical curves	<input type="checkbox"/>
Miscellaneous		
<input type="checkbox"/>	Detail sheet	<input type="checkbox"/>
<input type="checkbox"/>	Street general notes	<input type="checkbox"/>
<input type="checkbox"/>	AASHTO street design worksheet, with soils report, if applicable	<input type="checkbox"/>

ILLUMINATION AND SIGNALS

<input type="checkbox"/>	No smaller than 20 scale unless otherwise approved by the City	<input type="checkbox"/>
Lighting		
<input type="checkbox"/>	Design calculations (for roads with curves and roads that do not meet current roadway standards)	<input type="checkbox"/>
<input type="checkbox"/>	Station and offset to fixtures	<input type="checkbox"/>
<input type="checkbox"/>	Pole type, including manufacturer and model number	<input type="checkbox"/>
<input type="checkbox"/>	Mounting height, arm length, anchor bolt size and pattern	<input type="checkbox"/>
<input type="checkbox"/>	Power source <ul style="list-style-type: none"> Wire size, type, conduit Line loss calculations 	<input type="checkbox"/>
<input type="checkbox"/>	Luminaire type, lamp wattage	<input type="checkbox"/>
<input type="checkbox"/>	Location of service disconnects (5% maximum voltage drop from source to farthest luminaire)	<input type="checkbox"/>
<input type="checkbox"/>	J-box location and station	<input type="checkbox"/>
<input type="checkbox"/>	200 scale map with luminaire locations shown	<input type="checkbox"/>
Signals (Follow WSDOT specifications unless otherwise required by City)		
<input type="checkbox"/>	Station and offset to signal base, cabinets, ped. lead loops, etc.	<input type="checkbox"/>
<input type="checkbox"/>	Pole type, including manufacturer and model number	<input type="checkbox"/>
<input type="checkbox"/>	Wiring schedule <ul style="list-style-type: none"> Signal heads and mounting assembly Detection loops Opticom Control cabinet, size and layout Power source Conduit Wire size and type 	<input type="checkbox"/>
<input type="checkbox"/>	Phasing schedule	<input type="checkbox"/>
<input type="checkbox"/>	Construction notes	<input type="checkbox"/>
<input type="checkbox"/>	J-box schedule	<input type="checkbox"/>
<input type="checkbox"/>	Pedestrian signal type with push button	<input type="checkbox"/>
<input type="checkbox"/>	Controller type, configuration, and wiring schematic	<input type="checkbox"/>

Applicant Use *		Staff Use Only *
Miscellaneous		
<input type="checkbox"/>	Detail sheet	<input type="checkbox"/>
<input type="checkbox"/>	General Notes (Street Light Construction)	<input type="checkbox"/>
<input type="checkbox"/>	Line Loss Calculations	<input type="checkbox"/>

MISCELLANEOUS

<input type="checkbox"/>	Easements and/or dedication deeds	<input type="checkbox"/>
<input type="checkbox"/>	Detailed engineer's estimate or contractor's bid for Public Works improvements	<input type="checkbox"/>
<input type="checkbox"/>	Engineer's estimate or contractor's bid for the entire project, summarized	<input type="checkbox"/>
<input type="checkbox"/>	Contract documents/specifications	<input type="checkbox"/>
Additional Items		
<input type="checkbox"/>	Sheet index (on title sheet if required)	<input type="checkbox"/>
<input type="checkbox"/>	Field verify note on drawing – expose connection points and verify fittings 48 hours prior to distributing shut-down notices	<input type="checkbox"/>
<input type="checkbox"/>	Call Before You Dig note (on each applicable sheet)	<input type="checkbox"/>

***N/A = Not Applicable**

C = Complete

I = Incomplete