



SIDE SEWER SPECIFICATIONS

1. GENERAL

These specifications are intended to provide information for installation of side sewers on private property when connecting to the District's sanitary sewer system. For connections relating to work in the public right-of-way, please contact the District for project specific requirements.

The property owner ("Owner") of the connecting parcel shall be responsible for the completion of all forms and applications, payment of all charges and fees and shall comply with all District standards, details, requirements and permit conditions.

A side sewer schematic is included in the appendix of this document which provides a general overview and visual guide for a typical side sewer installation.

2. APPLICATION, FORMS AND FEE REQUIREMENTS

2.1. APPLICATION

All sewer work being performed shall require completion of the District's Application for Side Sewer Permit. This form itemizes the conditions under which the District allows connection to its system.

The Contractor, acting as an agent of the Owner, shall complete and provide the following information to the District prior to commencing any work or receiving any permits:

- Certificate of Insurance (naming the District as an additional insured)
- Contractor's Application (if not already on file)

Contractors performing the work must be licensed, qualified and competent to provide such work including incidental work and work related to restoration of the site. Contractors who are unlicensed shall not be permitted to perform the installation of any sanitary sewer facility connecting to the District's collection system.



2.2. CONNECTION CHARGES AND FEES

All properties requesting new service shall complete the District's application and pay the District's current connection charges and fees at the time service is requested. Sewer service billing as established in the District's current rate resolution will commence once the side sewer is connected to the structure and has been approved by the District regardless of the status of water service.

2.3. SITE PLAN

A site plan shall be submitted with the application. The site plan shall indicate the proposed structure in relation to the property in a 1"=20' scale or a scale as approved by the District and be drawn in a clear and concise manner. Dimensions of the property and all sides or edges of the structure must be clearly shown. Also, the scale and north arrow must be indicated on the plan. Plan may be provided on 8 ½" x 11" or 8 ½" x 14" paper size. Refer to Sample Site Plan in the Appendix for additional information.

2.4. KING COUNTY SEWER USE CERTIFICATION FORM

All properties connecting to the sanitary sewer system for the first time are required to complete this document. The completed form is forwarded to King County which assesses a Sewage Treatment Capacity Charge against the property. This charge represents a share of the costs for the construction of King County's wastewater collection and treatment systems. King County bills the connecting property directly. For more information, please contact the King County Capacity Charge Program at (206) 296-1450.

2.5. OWNER HOLD HARMLESS AND LICENSE AGREEMENT FOR SIDE SEWER INSTALLATION

This document is a requirement for allowing the Owner to excavate and/or install their own side sewer line. The Owner will agree to hold the District harmless from loss or injuries suffered as a result of installing or making the side sewer connection.

2.6. RESTORATION AND RELEASE

When work occurs on adjacent property other than the Owners, a written release from the adjacent property Owner is required. The release states that the work was performed and the area was restored to his/her satisfaction.



3. EASEMENTS

Sanitary sewer lines that cross a property other than the one they serve are required to have easements. The easement form is provided by the District and shall be completed and signed by the burdened property owner(s) prior to the application being accepted by the District. The District will determine easement requirements during initial review of the application.

If a side sewer is to serve more than one property, a shared private side sewer easement is required insuring that all properties involved shall have perpetual use of and provisions for maintenance and access to the side sewer.

4. INSPECTION

All work performed by the Contractor shall be inspected by a District representative. It shall be the responsibility of the Contractor to schedule the inspection by calling the number on the side sewer permit. A minimum of 24 hours notice is required to schedule an inspection. No side sewer trench shall be backfilled or sewer pipe covered until the work has been inspected, tested and approved by the District.

The District will inspect the work. However, nothing contained herein or elsewhere in these specifications shall be construed as requiring the District to direct the method or manner or safety of performing any work by the Contractor under these specifications. The District may reject all work and materials that, in the opinion of the District, do not conform to these specifications.

It is understood and agreed, by and between the parties hereto, that the work included in these specifications is to be done under the general observation and to the complete satisfaction of the District. The decision of the District as to the true interpretation and meaning of these specifications and as to all questions arising as to proper performance of the work shall be final.

District observers shall be present on the work site to observe the progress of the work and the manner in which it is being accomplished. Failure of the observer to call to the attention of the Contractor faulty work or deviations from the specifications shall not constitute acceptance of the work.

All work performed, and all materials and equipment furnished, and the manufacture and preparation thereof, shall be subject to review by the District. For the purpose of inspection, the District shall at all times have access to all parts of the work. The Contractor shall, at all times, maintain proper facilities and provide safe access for such review. The District may reject or accept material and equipment to be incorporated in the work. However, the failure of the District to reject defective material, or any other work involving deviations, will not constitute acceptance of such



work. The presence or absence of an observer on the job shall not relieve the Contractor of its obligation to furnish satisfactory materials and workmanship. Should any work be backfilled without approval or consent of the District it must be **uncovered** for examination at the Contractor's expense.

The Contractor shall regard and obey the directions and instructions of the District with reference to correcting any defective work or replacing any materials found to be not in accordance with the specifications and plans and, in case of dispute, the Contractor may appeal to the District whose decision shall be final; but, pending such decision, the instructions shall be followed and the Contractor shall make no claims on this account.

5. MATERIALS

The Contractor shall furnish all materials for the completion of work to be performed in conformance with these specifications and shall be fully responsible for all materials until the completed project is installed, inspected and approved by the District.

Contractor shall protect materials against damage from careless handling, exposure to weather, mixture with foreign matter and all other causes. The District will reject and refuse to test materials improperly handled or stored.

All materials furnished shall be warranted by the Contractor as new and in accordance with the specifications and as suitable for the intended purpose. The type and class of materials to be used shall be in accordance with the specifications referenced herein. All materials shall be new and undamaged of a known brand, with replacement parts readily available from the general Seattle area.

5.1. PIPE BEDDING

Bedding material shall consist of clean, granular, manufactured pea gravel conforming to the following gradation:

U. S. Standard Sieve Size	% Passing by Weight
1/2"	100
3/8"	85 – 95
No. 4	5 – 15
No. 8	0 – 2

5.2. TRENCH BACKFILL

Native material may be used on private property and easements if 90% compaction can be attained. If directed by the District, import backfill material may be required at locations where the side sewer is installed under driveways, within paved access tracts or where 95% compaction is required. No wood debris, large rocks or other unsuitable debris will be allowed in the backfill material.

5.3. SEWER PIPE AND FITTINGS

Sewer pipe material shall be PVC unless special conditions (beneath rockeries, streams, wetlands, steep slopes, shallow or deep installations, unstable soil, etc.) require the use of ductile iron pipe.

A. PVC SEWER PIPE AND FITTINGS

All PVC pipe and fittings shall be integral wall bell and spigot, rubber gasket joint, unplasticized polyvinyl chloride (PVC) pipe in conformance with ASTM D3034 and shall have a maximum Standard Dimension Ratio (SDR) of 35. PVC pipe shall have a minimum "pipe stiffness" of 46 psi at 5 percent deflection when tested in accordance with ASTM Designation D2412 and a minimum impact strength of 210 foot-pounds based upon ASTM D3034.

All pipes shall be clearly marked with the manufactures identification, year, and class of pipe.

All fittings and accessories shall be manufactured and furnished by the pipe supplier, or shall be District approved equal.

Pipe joints shall use flexible elastomeric gaskets conforming to ASTM D3212.

B. DUCTILE IRON SEWER PIPE AND FITTINGS

Ductile iron pipe shall be new, Class 52, cement-lined, conforming to AWWA C151.

Ductile iron pipe shall be push-on joint. Pipe shall be furnished with a single rubber ring gasket lubricated to effect the seal. Each length of pipe shall be clearly marked with the manufactures identification, year, thickness, class of pipe and weight.

Restrained joint pipe (if required) shall be push-on joint pipe with U.S. Pipe "TR Flex" or U.S. Pipe "Field Lok" gaskets, or equal.

Each length of pipe shall be clearly marked with the manufactures identification, year, thickness, class of pipe and weight.



Ductile iron fittings shall be short body with a 350 psi pressure rating for mechanical joint fittings and 250 psi for flanged fittings. All fittings shall be cement lined and shall be in conformance with AWWA C153.

5.4. MANHOLES

Manholes shall be of the offset type, shall be precast concrete sections with a precast base, and shall be made from 3,000 psi structural concrete. All manhole joints shall be watertight and shall be confined O-ring type. All new manholes shall be installed with a prefabricated manhole base liner made of polypropylene (PP) and/or fiberglass reinforced plastic (FRP). The base liner shall be integrally cast and anchored inside the new precast concrete manhole base section at the manhole suppliers manufacturing facility. Base liners shall be manufactured and supplied by Predl Systems North America of Burnaby, B.C. Manholes shall be constructed in full compliance with the Standard Details and Specifications.

6. INSTALLATION

Side sewer installation shall be in accordance with adopted standards and details of Northshore Utility District, the manufacturer's recommendation and these side sewer specifications. Refer to Side Sewer Schematic in the Appendix for additional information.

6.1. PROTECTION AND MAINTENANCE OF PRIVATE PROPERTY

The Contractor shall protect and maintain all underground and above-ground utilities and structures affected by the work and all lawns, shrubs, fences, rockeries, etc. on private property. It shall be the responsibility of the Contractor to call for utility locates prior to construction. Any damage shall be repaired and restored by the Contractor to the satisfaction of the District and property Owner.

The Contractor shall protect and maintain any natural watercourse that exists prior to construction in accordance with any permits issued for the project.

Construction work on easements shall be confined to the limits of the easements and accomplished so as to cause the least amount of disturbance and a minimum amount of damage.

It is expressly understood that the Contractor shall in particular restore all easements to a condition equal to its original condition, or superior, and in a condition satisfactory to the District and property Owner.

Where the work is done within easements, the Contractor shall obtain a written statement of satisfactory restoration (Restoration Release Form, provided by the District) from each property owner involved and furnish a copy of the signed form



to the District. The signed Restoration Release Form shall be required before the work will be accepted by the District.

6.2. SAFETY STANDARDS

In accordance with generally accepted construction practices, the Contractor will be solely and completely responsible for conditions of the job site during performance of the work, including safety of all persons and property. This requirement will apply continuously and not be limited to normal working hours.

The Contractor shall adhere to the requirements of the Occupational Safety and Health Act (OSHA), Washington Industrial Safety and Health Act, and all other Federal, State, and local safety and health statutes, which may apply.

Contractor shall provide and install trench safety systems such as shoring or trench boxes or shall employ construction techniques such as back-sloping that meet the applicable Federal, State and Local safety regulations.

6.3. PIPE BEDDING AND TRENCH BACKFILL

Pipe bedding material shall be carefully placed and firmly compacted to provide a firm, uniform cradle for the full length of pipe being installed. The minimum thickness of the layer of bedding material required beneath the pipe shall be four (4) inches. After the pipe laying operation, additional bedding material shall be placed over the pipe to a minimum height of six (6) inches above the pipe.

Trench backfill shall be placed only after the sewer pipe has been inspected, tested and approved by the District. In backfilling the trench, the Contractor shall take all necessary precautions to protect the pipe from any damage or shifting of the pipe.

6.4. SEWER PIPE INSTALLATION

All connections shall be made to the side sewer stub assigned to that property and no stub belonging to another property shall be used unless approved by the District. Connecting properties are to have individual, single side sewers four (4) inches in diameter. Side sewers on easements shall be a minimum of six (6) inches in diameter.

The District may allow additional properties connected to a single side sewer stub only if approved by the District. If additional properties are allowed, the common line portion of the side sewer is to be six (6) inches in diameter. Other requirements such as manholes, cleanouts, point of connection, etc. will be



determined during the application review and as required for site specific conditions.

Commercial establishments, schools, or any building other than single family residences shall be six (6) inches in diameter. Only one commercial building will be allowed to connect to a 6-inch line. A minimum length of five (5) feet of six (6) inch diameter pipe must be used where the side sewer connects to the main line.

A 10-foot horizontal separation and 18-inch vertical separation is to be maintained between all proposed sewer lines and water lines. If the 10-foot horizontal separation cannot be achieved due to unusual conditions or site specific restrictions, the District may allow the separation to be reduced to 5 feet, provided that the lines are laid in a separate trench and 18 inches of vertical separation is maintained. The minimum separation between other utilities (gas, power, phone, cable, storm, etc.) shall be three (3) feet.

When it is necessary for sewer and water lines to cross each other, the crossing shall be made as closely to a 90° angle as possible and the sewer line shall be located three or more feet below the water line.

Side sewers shall have a minimum depth of six (6) feet below final ground elevation at the property line and a minimum depth of eighteen (18) inches of cover over the pipe once inside the property.

The maximum bend permissible for a side sewer at any one fitting shall not exceed 45°. Bends exceeding 45° with any combination of two fittings shall have a straight section of pipe not less than four (4) feet in length installed between the fittings, unless one fitting is a wye branch with a cleanout provided on the straight leg.

Unless otherwise approved by the District, the sewer pipe shall be installed upgrade from point of connection on the existing sewer or from a designated starting point. The sewer pipe shall be installed with the bell end forward or upgrade. When pipe laying is not in progress, the forward end of the pipe shall be kept tightly closed with an approved temporary plug. All side sewers shall be laid at a minimum two (2) percent and maximum forty-five (45) percent slope. The District may, at its own discretion, allow installation of side sewers to be less than two percent under certain circumstances upon the owner's signing a Release of Liability and Hold Harmless Agreement.

Pipe joints shall be installed in strict compliance with the manufacturer's recommendations. Care shall be taken to properly clean and lubricate the spigot, gasket and socket of the pipe before joining. The pipe spigot shall be forced into the socket until the reference mark on the spigot is flush with the bell end. Forcing the pipes together beyond this point prevents proper contraction and expansion at the joints.



Pipe or pipe fittings that are damaged will be rejected and required to be replaced. Ductile iron pipe that has damage to the interior cement lining will also be rejected. At the District's discretion, ductile iron pipe may be required when minimum cover cannot be achieved or when surface loading precludes the use of PVC pipe. If ductile iron pipe is to be connected to PVC pipe, a PVC to ductile iron Romac transition coupling is required. Romac couplings will also be required when connecting other dissimilar pipe types with the exception to the plumbing connection where a Fernco is allowed. Side sewers installed on steep slopes, in unstable material, within steel casings or in sensitive areas will require the use of restrained joint ductile iron pipe.

3" wide, green metallic side sewer detector tape shall be laid 12" above the pipe for the entire length of the pipe installed. Identification on the tape shall include the words "Sanitary Sewer".

If gravity flow is not available, and the District has determined that there are no other alternative methods for gravity service, a sanitary sewer grinder pump station may be allowed. All pumping equipment and accessories shall be standard manufactured items specifically for sewage use in accordance with the Standard Details. The Contractor shall submit to the District a plan showing the location of the station, shop drawings, details and pump performance curve data prior to installation. As a condition for allowing a grinder pump station, the District will require that a Pump Agreement be signed by the Owner and recorded against the property.

6.5. CLEANOUTS

For single-family residences, cleanouts shall be required at a minimum of every 100 feet. For commercial properties, cleanouts shall be installed at locations designated by the District, but in no case, shall they exceed 100 feet. Additional cleanouts may be required at bends as determined by the District. Cleanouts shall be installed in accordance with the Standard Details.

6.6. STEEL CASINGS

Any side sewer installed under rockeries or walls or as directed by the District must be installed within a steel casing in accordance with the Standard Details.

6.7. GREASE INTERCEPTORS AND OIL/WATER SEPARATORS

No grease, oil, sand, contaminated liquid or other harmful material will be allowed into the District's sewer system without the installation of a grease interceptor or



oil/water separator. The interceptor or separator is to be designed to accommodate the anticipated flows. Sizing calculations, layout plan and the location of the connection point to the sewer is required to be submitted to the District for review and be in accordance with the District's approved policy on Fats, Oils and Grease (F.O.G.) program. Interceptors or separators shall be maintained by the property owner and shall be in continuous operation at all times and be accessible for routine inspection.

7. TESTING

The entire side sewer line being installed from the existing sewer stub to the proposed structure(s) shall be under the District's observation.

Before sewer lines are accepted, all lines shall be tested and corrections of any deficiencies shall be made at the expense of the Contractor. The Contractor shall test the entire length of sewer pipe installed using one of the following test methods:

7.1. WATER TEST

A 6"x 4" reducer and 4" test tee shall be installed at the end of the 6" stub and an approved plug installed in the test tee. A 4" wye shall be installed approximately 3' from the proposed structure at the upper end of the side sewer. Backfill shall only be placed to secure the pipe at the upstream and downstream of the pipe segment being tested. The side sewer shall be filled with water at the upper end until the entire pipe system is full and the upper end wye will not accept any additional water. The side sewer will be visually inspected by the District to determine if leakage occurs. Once the pipe system has been filled, the water test will commence for 10 minutes. The Contractor shall repair all defective work. If there is no evidence of leakage, the Contractor may then backfill the pipe and the test will be considered acceptable.

7.2. LOW PRESSURE AIR TEST

The low pressure air test shall be in accordance with Section 7-17.3(2)F, *Low Pressure Air Test for Sanitary Sewers Constructed of Non Air-Permeable Materials*, of the 2010 Standard Specifications for Road, Bridge and Municipal Construction of the Washington State Department of Transportation. The Contractor shall furnish all equipment and personnel for conducting the air test under the supervision of the District. The Contractor 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.

All wyes, tees or the end of the side sewer shall be plugged with flexible joint caps or acceptable alternative, securely fastened to withstand the internal test pressures.



Air shall be slowly supplied to the plugged pipe installation until the internal air pressure reaches 4.0 pounds per square inch. At least two minutes shall be allowed for temperature stabilization before proceeding further.

The requirements of this specification shall be considered satisfied if the time required in seconds for the pressure to decrease from 3.5 to 2.5 lbs. per square inch is not less than the listed values shown in the following table:

Allowable Time for Low Pressure Air Test

Diameter (inches)	Min. Test Times for Length of Main (seconds)				
	50'	100'	150'	200'	250'
4	36	72	108	144	178
6	80	160	240	320	400

Note: All test times in the above table are rounded up to the nearest even number.

The use of air pressure for testing sewer lines creates hazards that must be recognized. The Contractor shall be certain that all plugs are securely blocked to prevent blowouts. The air testing apparatus shall be equipped with a pressure release device such as a rupture disc or a pressure relief valve designed to relieve pressure in the pipe if it exceeds the required test pressure.

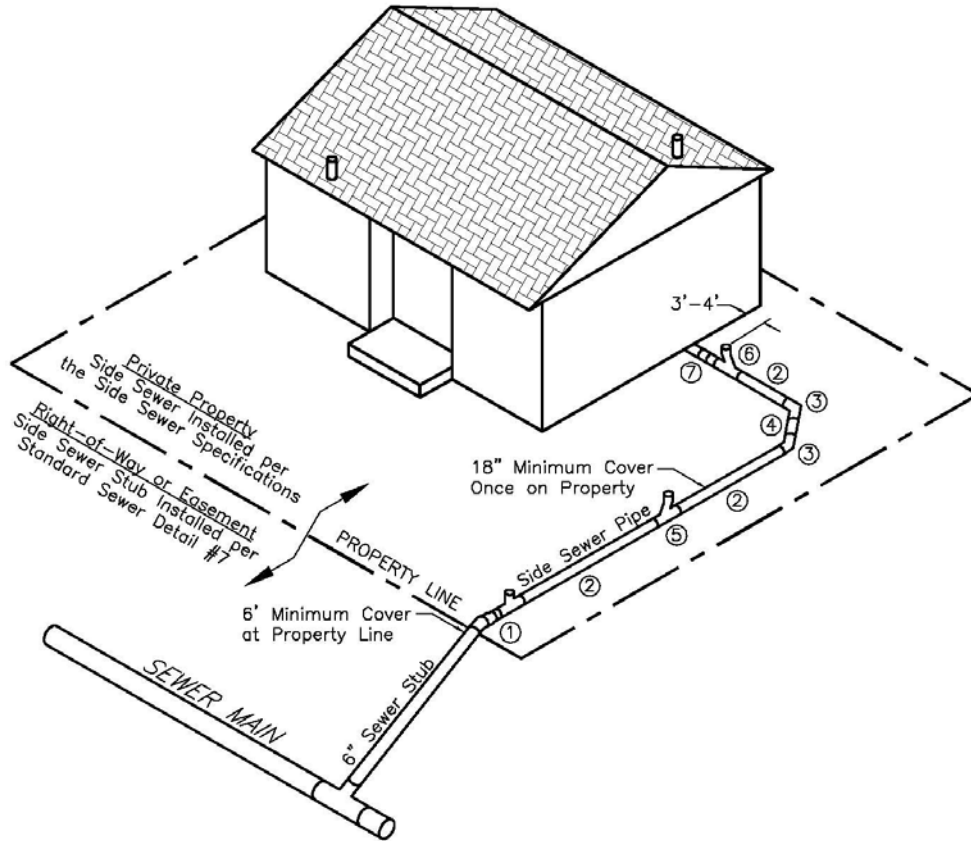
Precautions shall be taken to prevent any damage caused by testing. Any damage resulting shall be repaired by the Contractor at his own expense.

7.3. ILLEGAL CONNECTIONS

It shall be unlawful to disconnect, remove or install any portion of the sewer piping without securing a permit and obtaining prior approval from the District. Any line to be disconnected shall be approved by the District and will require the line to be plugged at the location as determined by the District.



APPENDICES



- ① CONNECT TO EXISTING 6" SEWER STUB. INSTALL 6"x4" REDUCER AND TEST TEE.
- ② 4" SIDE SEWER PIPE AT 2% MINIMUM SLOPE (6" MINIMUM FOR NON-RESIDENTIAL AND WITHIN EASEMENTS). PIPE SHALL BE PVC ASTM D3034, BEDDED IN PEA GRAVEL.
- ③ 45° MAXIMUM BEND.
- ④ 4' MINIMUM LENGTH OF PIPE BETWEEN BENDS.
- ⑤ CLEANOUT EVERY 100' OR AS DIRECTED BY THE DISTRICT.
- ⑥ CLEANOUT AS REQUIRED FOR NON-RESIDENTIAL.
- ⑦ APPROVED ADAPTER AT PLUMBING CONNECTION (FERNCO OR EQUAL).

NOTE
REFER TO NORTHSORE UTILITY DISTRICT'S SIDE SEWER SPECIFICATIONS FOR ADDITIONAL INFORMATION.

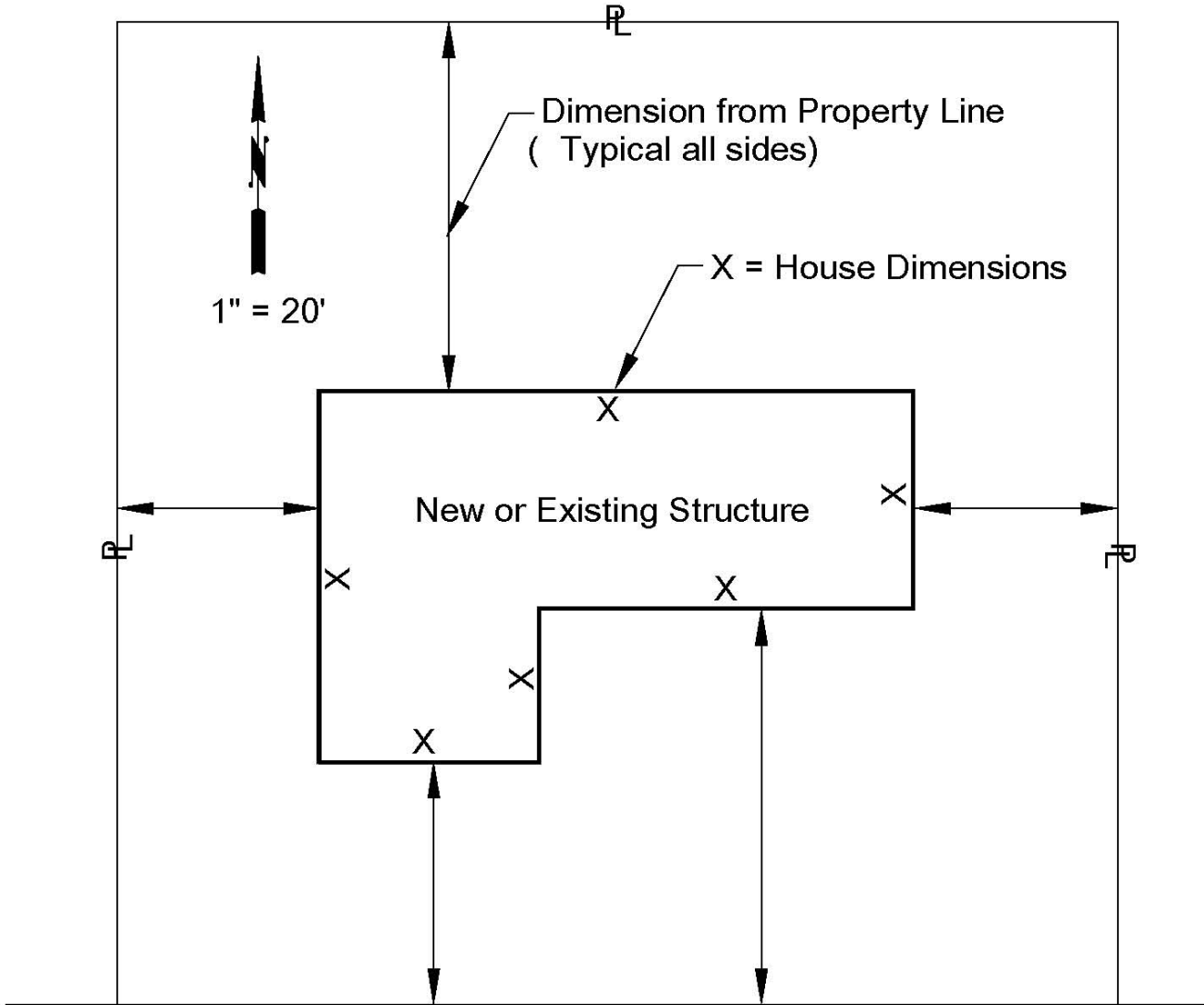
SIDE SEWER SCHEMATIC

NOT TO SCALE

Property Address _____

Tax ID Number _____

Legal Description _____



SAMPLE SITE PLAN