



# **Building Sanitary Sewer Lateral Construction Guidelines**

**Civic Center Wastewater Treatment Facility  
Phase II**

## **Section 1**

### **Introduction and General Policies**

#### **Purpose**

The purpose of these guidelines is to establish requirements for property owners to connect with the Civic Center Wastewater Treatment Facility. A building sanitary Sewer Lateral that is properly installed and maintained will reduce the risk of sanitary sewer overflows and sewer backup by minimizing inflow and infiltration into the sewer system and minimizing blockages due to pipe failure or root intrusion. Sanitary sewer overflows pollute surface and groundwater, threaten public health, adversely affect aquatic life, and impair the recreational use and aesthetic enjoyment of surface waters. Overflows can lead to beach closures and polluted water bodies. Sanitary sewer overflows can lead to penalties and fines to the City of Malibu from governmental agencies and nongovernmental organizations. The intent of these guidelines is in the best interest of the health and welfare of the citizens of Malibu.

#### **Definitions**

- A. “APWA” means American Public Works Association.
- B. “ASTM” means American Society for Testing and Materials.
- C. “Building sanitary sewer lateral” means the section of sewer pipe that carries sewage and liquid waste from a point two feet outside the building or structure served, up to and including the connection to the Civic Center wastewater treatment facility sewer lateral service connection at the property line.
- D. “City” means the city of Malibu.
- E. “Cleanout” means a segment of pipe connected to a building sanitary sewer which rises vertically to the ground surface and provides access to the building sewer for purposes of routine inspection, flushing, and servicing in order that the building sanitary sewer remain free-flowing.
- F. “Code” means Chapter 13.30 of the Malibu Municipal Code.
- G. “Compliance certificate” means certificate issued by director demonstrating that an installed building sanitary sewer lateral complies with the requirements set forth this chapter.
- H. “Director” means the director of environmental sustainability department/building official for the city of Malibu and any authorized representatives.
- I. “Fog” means any fats, oils, grease, waxes or similar or related constituents. FOG may be of vegetable or animal origin. FOG may also be of mineral origin.
- J. “Infiltration” means the seepage of groundwater into the sanitary sewer system.

- K. "Inflow" means water discharged into the sanitary sewer system, including sewer laterals, from such sources as, but not limited to, roof leaders, basements, yard and area drains, foundation back drains, cooling water discharges, drains from groundwater sources, breaches around manhole covers or through holes in the covers, cross connection from stormwater systems, catch basins, surface runoff, street wash waters or drainage.
- L. "Leak test" means testing standards developed by the director to verify the installation of the building sanitary sewer lateral is watertight along its entire length.
- M. "Notice of violation" means written notice from the city specifying that a building sewer lateral is not in compliance with this code.
- N. "Plumbing Code" means the latest adopted edition of the Malibu Plumbing Code.
- O. "Repair" means, for purposes of this chapter, a spot mending of an existing building sanitary sewer lateral to address a specific section of pipe that is not in compliance with this chapter.
- P. "Replacement" means, for purposes of this chapter, that entirely new underground pipes, fittings, joint connections, clean-outs, caps, and other required components of the building sanitary sewer lateral are installed and constructed in conformance with this chapter. Complete lining of an existing building sanitary sewer lateral in conformance with this chapter shall also be considered a replacement.
- Q. "Sanitary sewer system" means entire wastewater collection and conveyance system for the Civic Center wastewater treatment facility and appurtenant facilities, public sewers and building sanitary sewer laterals.
- R. "Sewer lateral" means the pipe that carries wastewater from a building or structure to the public sanitary sewer main that is typically located in the street.
- S. "Sewer main" means sanitary sewer main lines to which the lateral services lines are connected for the conveyance of wastewater to the Civic Center wastewater treatment facility.
- T. "Stormwater" means naturally occurring water created by the weather, underground springs, and surface or subsurface drainage of said water.
- U. "Verification test" means specific onsite testing of the building sanitary sewer lateral using methods established by the director to assure compliance with this chapter.
- V. "Waste drainage piping" means the sanitary drainage piping within or beneath a structure.
- W. "Wastewater" means all sewage and other waste and waters, whether treated or untreated, discharged into or permitted to enter the sanitary sewer system.

## **Scope**

The design and construction of a Sewer Lateral on private property shall comply with these guidelines herein called, “Building Sanitary Sewer Lateral Construction Guidelines” (Guidelines) and the permitting requirements for the City. A Registered Civil Engineer, Registered Mechanical Engineer, or approved licensed contractor shall be authorized to design the Sewer Lateral and submit plans to the City. All submitted plans shall be signed by the authorized engineer or contractor and all work shall be in accordance with good engineering practices. These Guidelines set forth the procedure for designing and preparing plans, and specifications for the connection of Phase II private properties to the Civic Center Wastewater Treatment Facility through a Sewer Lateral. Wherever there are differences between these Guidelines and other regulations, the most stringent requirement shall apply.

## **Applicable Codes and Policies**

- Malibu Municipal Code Chapter 13.30 – Building Sanitary Sewer Lateral for Connection to the Civic Center Wastewater Treatment Facility
- The Malibu Building Code<sup>1</sup>
- The Malibu Plumbing Code<sup>2</sup>

## **Policies and Procedures**

These Guidelines establish uniform policies and procedures for the design and construction of the private Sewer Lateral serving to connect Phase II properties to the Civic Center Wastewater Treatment Facility. These Guidelines are not intended to be a substitute for engineering knowledge, judgement, or experience. Any proposed deviation to these Guidelines shall be submitted in writing to the Building Official prior to any consideration or approval.

## **Jurisdiction**

The Environmental Sustainability Department is responsible for the permitting and inspection of a Sewer Lateral on private property. Any cost for the design, permitting, and installation of the Sewer Lateral is the responsibility of the property owner. It shall be the responsibility of the property owner for any repair or replacement of a Sewer Lateral, obtaining the appropriate approvals and permits for such work, and paying any required fees to do the work.

## **Maintenance Responsibility**

The property owner is responsible for maintaining the Sewer Lateral from a building or structure to the public sanitary sewer main or nearby easement. Maintenance includes removal of debris such as roots or grease in order to keep the Sewer Lateral line free-flowing.

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<sup>1</sup> 2019 California Building Code as amended by Los Angeles County as amended and adopted by City of Malibu

<sup>2</sup> 2019 California Plumbing Code as amended by Los Angeles County as amended and adopted by City of Malibu

## **Section 2 Design Criteria**

### **Hydraulic and Sizing**

Sewer Laterals shall be designed to accommodate potential future tributary flows in addition to those from current or future development. Sewer Lateral lines shall be designed to flow at a mean velocity not less than two (2) feet per second at half full. The Building Official may approve an alternative gradient which builds a velocity of less than two (2) feet per second in certain circumstances with sound reason when requested in writing.

The minimum diameter of a Sewer Lateral shall be four (4) inches for residential and six (6) inches for commercial.

### **Separation of Sewer Laterals and Water Mains and Service Laterals**

- Parallel Construction – The horizontal distance between pressure water mains and Sewer Laterals shall be at least ten (10) feet.
- Perpendicular Construction – Pressure water mains shall be at least one (1) foot above the Sewer Lateral where these lines cross.
- Common Trench – Water mains and laterals and Sewer Laterals must not be installed in the same trench. Where this requirement is not feasible or where adequate separation cannot be obtained, other methods of protection must be designed and accepted by the Building Official.

During the installation of Sewer Laterals, measures must be taken to prevent or minimize disturbing existing water lines or other public or private sewer conveyance lines as well as all other utilities.

### **Slopes of Sewer Laterals**

Minimum slope requirements assure scouring and self-cleaning velocities in order to avoid odors, corrosive compounds and blockages from occurring. A two percent (2%) slope is required unless otherwise approved by the Building Official.

### **Depth of Sewer Laterals**

Depth of cover is measured as the distance from the finished grade surface to the top of the pipe over the Sewer Lateral centerline. Sewer Laterals shall be installed at a depth that provide suitable service to the property and allow subsequent installation of water lines.

### **Clearances of Sewer Laterals**

No building sewer shall be located in a lot other than the site of the building or structure served by such sewer, nor shall a building sewer be located at a point having less than the minimum distances referenced in the Plumbing Code.

### Standard Depth of Cover:

- Paved Traffic Areas – five (5) feet, or per pipe manufacturers specifications
- Un-Paved Areas – three (3) feet, or per pipe manufacturers specifications

## **Backflow Prevention**

It is the designer's responsibility to recognize the possibility of reverse flow in a Sewer Lateral serving lots or buildings with plumbing fixtures below the nearest upstream sewer manhole rim. In such instances, a suitable backflow or overflow device shall be provided.

## **Structural Requirements**

### Under Roads:

All structures and pipes placed under roads, driveways and approaches shall be of sufficient strength to safely support the backfill, road surfacing and H-20 loading per AASHTO Standard Specifications.

### Other Pipes and Structures:

Sewer Laterals designed to cross under or over other pipes or structures shall be constructed to be protected from damage and to prevent endangering the other pipe or structure. Plans submitted for review and permitting shall demonstrate the design has met these requirements through specific details.

## **Lift Stations**

All sewage shall reach the municipal sewer by gravity flow in a fresh (non-septic) condition susceptible to conventional sewage treatment processes. Where a property cannot be properly served through the use of gravity Sewer Laterals, a sewage pump station (lift station) may be considered. The installation of the lift station, pump electrical work, and holding tank shall comply with all applicable codes, and appropriate permits for each element must be obtained.

### Lift Station Design:

Lift stations, where permitted, shall be of the dry pit type incorporating the following features:

1. All equipment shall be standard manufactured items specific for sewage use, and labeled and listed for such.
2. The system shall be of the duplex type (2 pumps) and have duplex controls that will automatically alternate the pumps, and will energize both pumps and an alarm during high liquid level.
3. Pumps shall be the heavy-duty, non-clog centrifugal type with mechanical seals and cast-iron construction. Each pump shall have a minimum 60 gpm capacity when pumping against a total dynamic head of 20 feet. The impeller shall have a 2-inch solids handling capacity. The motors shall be completely oil-filled and fully submersible.
4. Capacity shall be designed to accommodate ultimate peak flow.
5. Holding capacity in the wet well shall be equivalent to a 24-hour accumulation of sewage from the area contributing to the lift station.
6. The bottom of the wet well shall slope into the pumps.
7. The discharge lines shall be arranged such that there is gravity flow into the municipal sewer from the property line.

## **Backwater Valves**

All Sewer Laterals must have a backwater valve.

## **Adaptors**

Existing non High Density Polyethylene (HDPE) Sewer Laterals consisting of materials acceptable to the City may be connected to the municipal sewer or to HDPE located on the private property through the use of Adaptors. Adaptors shall be specifically designed to join the materials of an existing or proposed Sewer Lateral. Adaptors shall not employ banded couplings or other compression-type fittings and shall be factory assembled and listed for the specific use.

## **Section 3 Materials**

### **General Requirements**

This section establishes the material requirement for pipe products, backfill and sampling ports. All material used shall be selected for their strength, durability, resistance to corrosion and ease of maintenance. All manufactured materials shall be new and unused.

### **Piping**

All Sewer Lateral piping shall be HDPE manufactured to meet the requirements of ASTM D3035, ASTM F714, AWWA C901 or AWWA C906. The HDPE manufactured product and technical information, and installation Guidelines shall be submitted with each proposal to the City for approval. Other materials may be considered where they can be shown to have the same physical strength, durability and chemical resistance equal to or exceeding those of HDPE.

All pipes shall be clearly marked as follows at intervals of five (5) feet or less:

- Manufacturers name or trademark
- Nominal pipe size
- Classification of material
- ASTM standard
- Color identifier - either stripped by co-extruded longitudinal identifiable color markings or solid green to identify a Sanitary Sewer Lateral

All piping shall be joined by butt fusion, socket fusion, sidewall fusion, mechanical fittings or electrofusion. When using fittings manufactured by a separate company, the manufacturer's installation instructions must be provided to the City for review and acceptance. When approved, these instructions must be carefully followed.

### **Fittings and Connectors**

All HDPE pipe and fittings shall be listed fittings from a single manufacturer. All fittings shall be installed using butt-fused fittings, thermos-fused couplings, or flanged adapters, and must be approved by the Building Official.

### **Other Pipe Materials**

Other pipe materials may be approved by the Building Official on existing building sites only.

### **Pipe Trench Materials**

All HDPE piping shall be installed utilizing open trench construction and shall follow the recommendations of the pipe manufacturer. All Sewer Lateral installations and backfill shall be in conformance with these Guidelines and the HDPE pipe manufacturer's recommendations.

### **Sampling Ports and Manholes**

All new construction and existing commercial properties shall install a sampling port on the Sewer Lateral at the point of connection to the municipal sewer on the private side of the connection. The property owner shall be responsible for the installation, expense, maintenance and liability of the sampling port and ensure it to be safe and accessible at all times. Sufficient room shall be provided as to allow sampling equipment and personnel to collect wastewater samples and/or flow information.

Sampling ports shall be designed as follows:

1. Minimum dimensions shall be 24 inches in diameter and three (3) feet in depth.
2. The sampling manhole shall utilize a gas-tight manhole cover and frame. Where located in areas subject to traffic, its rating shall have an H-20 rating minimum.
3. The Sewer Lateral line shall be of sufficient length as to allow for representative wastewater sampling to occur within the sampling manhole.
4. The sampling manhole may serve as a clean out.
5. Sampling manholes shall be constructed out of premanufactured materials made of concrete, PVC or other acceptable materials, and be listed for use as a manhole with an appropriate rating.
6. See Sampling Port Design (Attachment A).

## **Section 4 Requirements for the Preparation of Plans**

### **General**

Plans for Sewer Laterals on sites with only new construction shall be prepared by a licensed Civil Engineer, Mechanical Engineer, or licensed contractor at the discretion of the Building Official. The same is recommended for Sewer Lateral plans for properties with existing commercial development, but may be prepared by an A licensed Civil Engineering Contractor or a C36 licensed Plumbing Contractor when the contractor will also perform the installation.

Plans shall be drawn on sheets with an overall dimension of 24 inches by 36 inches.

### General Notes:

1. Before commencing installation of the Sewer Lateral, Dig Alert must be notified within 24 hours of the start of excavations. The location of existing utilities shall be the responsibility of the contractor.
2. The installing contractor must obtain a Plumbing Permit for the installation of the Sewer Lateral from the Environmental Sustainability Department and pay all plan check and permit fees.

3. The contractor shall request all inspections by applying online at [malibucity.org/inspection](http://malibucity.org/inspection), with a minimum of 24 hours advanced notice.
4. Vertical trenching shall conform to CalOSHA standards at all times.
5. Final connection to the municipal sewer shall not be allowed until such time as the Sewer Lateral is approved by the City.
6. The installation of the Sewer Lateral shall comply with all applicable City Guidelines and the current edition of the Malibu Plumbing Code.
7. See Sampling Port Design (Attachment A).

## **Section 5 Fees and Permits**

### **Plan Check Fee**

Plan Check fees shall be paid at the time of original submittal. The minimum fee shall be for a one (1) hour plan check for simple Sewer Lateral connections, and two (2) hours for complex Sewer Lateral connections. A simple Sewer Lateral shall be defined as the connection of a single building on a parcel with no grease interceptor or other similar devices. A complex Sewer Lateral shall be defined as the connection of two (2) or more buildings on a single parcel. Plan check fees may be increased due to the complexities of a specific project.

### **Plans**

Two (2) sets of plans shall be submitted for the proposed Sewer Lateral connection. Submittals shall be completed in accordance with these Guidelines, the Malibu Municipal Code and the Malibu Plumbing Code. An analysis of the tributary sewer area on the subject parcel, and the criteria and calculations used in determining the size of the Sewer Lateral and appurtenant features are required at the time of plan review submittal. At a minimum, all plans must include a scaled site drawing showing the location of existing and proposed buildings, pipelines, specified materials, critical elevations, pipe diameters and slope. Existing Onsite Wastewater Treatment System (OWTS) components to be abandoned or repurposed shall be indicated on the plans.

Sewer Lateral designers must contact the Public Works Department for the location and elevation of the existing municipal Sewer Lateral. The specific location and elevation must be detailed on the submittal plans

### **Permits**

Upon Plan Check approval of Sewer Lateral plans, a Plumbing Permit may be issued. The fee for the Sewer Lateral Plumbing Permit shall be for a one (1) hour inspection for a simple Sewer Lateral connection, and a two (2) hour inspection for a complex connection, both as defined above. Inspection requests must be received by at least 4:00 PM on the business day preceding the requested inspection date by applying online at [malibucity.org/inspection](http://malibucity.org/inspection).

No portion of any Sewer Lateral shall be covered without obtaining a written approval of its installation from a City Inspector. Any Sewer Lateral covered without approval shall be uncovered and all piping revealed. Any such work shall be the responsibility of the property owner at their expense.

## **Section 6 Construction**

### **General Requirements**

#### Quality of Material:

Materials and equipment which are to be incorporated in construction shall be new and unused, and shall be of the highest quality.

#### Substitution:

Where materials are specified on the Sewer Lateral plans by brand or trade name, the use of alternate materials must first be approved by the Building Official and the system designer. A request for the approval shall be submitted in writing, accompanied by supporting data demonstrating the alternate materials are equal to or superior to those specified and approved from the original system designer.

#### Quality of Workmanship:

All work shall be done by persons experienced in the specific work, under competent supervision and to the City's satisfaction.

#### Defective Work:

Any defective materials or workmanship that become evident during installation or in the future shall be replaced immediately at the property owner's expense.

#### Inspection and Field Acceptance:

The City is responsible for the inspection of all excavations, pipe laying and trench backfill. All work shall be available for inspection at all times. Prior to the commencement of work, there shall be a scheduled pre-construction meeting between interested parties and a City Inspector. Pre-construction meetings can be requested at [malibucity.org/inspections](http://malibucity.org/inspections). The installing contractor has the responsibility to provide a minimum 72 hours advanced notice of commencing work to the City so that the meeting can be scheduled in a timely fashion.

Field acceptance of the piping is made by the City Inspector. Connection to the municipal sewer will require approval of the Public Works Department.

### **Excavation and Trenching**

#### General:

Trench excavation shall consist of all excavation involved in the grading and construction of the Sewer Lateral line as shown on the plans. The contractor shall perform all excavations of every description and of whatever substances encountered to depths indicated on the drawings or otherwise specified or required. During excavation, material suitable for backfilling shall be stockpiled neatly and a sufficient distance from the banks of the trench as to avoid overloading and to prevent slides or cave-ins. All excavated materials not required or suitable for backfill shall be removed from the site. Grading shall be done to prevent surface water from flowing into the trenches or other excavations, and any water from any source accumulating therein shall be removed by pumping or other approved method. Sheet piling and other shoring shall be done for the protection of the work and for the safety of personnel.

Excavation:

Excavation for Sewer Laterals shall be made only after pipe and other necessary materials are delivered on the work site. After delivery, trench excavations, pipe installation, and trench backfilling shall proceed without delay.

Trench Width and Grade:

In general, the width of the trench will be eight (8) inches. The width of the trench above the level of the Sewer Lateral piping may be as wide as necessary for sheeting and bracing and the proper performance of the work. The bottom of the trenches shall be accurately graded as to provide uniform bearing and support for each section of pipe on the bedding material prescribed in the plans or by appropriate details on the plates.

Shoring:

All shoring for open excavations shall conform to the State of California, Department of Industrial Relations, Division of Industrial Safety "Construction Safety Orders."

The contractor shall be responsible for excavations being adequately shored and braced so that the earth will not slide, move, or settle, and all existing improvements will be fully protected from damage.

Once installed, no shoring shall be removed until the trench has been approved for backfill operations. Removal of shoring shall only be accomplished during backfill operations and in such a manner as to prevent any movement of the ground and damage to the pipe or other structures.

Cleanouts:

Cleanouts shall be brought to finish grade in smooth turns and have the same internal diameter as the Sewer Lateral they serve. Cast iron frames and covers with clear openings shall be at least equal to the internal pipe diameter and be independently supported over the cleanout opening in accordance with the appropriate plate. Cleanouts shall be provided every 100 feet of Sewer Lateral run. Cleanout covers located in traffic area shall be traffic rated with a minimum H20 rating.

Pipe Alignment and Bends:

Sewer Lateral lines shall be laid at a uniform slope and in a straight alignment from the serviced building drain to the municipal sewer. Changes in horizontal and vertical alignment shall be avoided. Changes in horizontal and/or vertical alignment shall only be made with proper fittings and shall not exceed 45 degrees. Any change of direction exceeding 45 degrees shall be made with multiple bends with a minimum of two (2) feet of pipe placed between the bends and a cleanout installed at the location.

## **Section 7 Testing**

### **Sewer Laterals**

All Sewer Laterals must be tested to prove the installation is water-tight and not subject to infiltration or exfiltration. All required tests are the responsibility of the property owner/contractor. Testing must be performed when the piping is in its final position in the trench and prior to covering the pipe. All tests must be performed in the presence of the City Inspector prior to field acceptance of the work and connection to the municipal sewer. All noted defects must be corrected by the contractor. Additional testing may be required after backfilling if there exists concern with the manner the piping was backfilled in the trench. Additional testing shall be at the discretion of the Building Official.

### **Water Test (Recommended)**

A water test shall be performed for all sections of piping and the sampling port at or near the connection to the municipal sewer for watertightness utilizing an approved test fitting and plug. A standing head of five (5) feet shall be required for all water tests. The test shall be deemed passed if there is no leakage for 15 minutes. All portions of the system must be tested and may be conducted in sections where feasible.

### **Air Test**

Air shall be admitted to the tested section of piping to an inlet pressure of five (5) psi from a source regulated by an adjustable pressure control valve and measured by a sensitive pressure gauge calibrated from zero (0) to no more than 10 psi. When the internal pressure has reached five (5) psi under stabilized temperature conditions, the air supply shall be cut off. If the pressure remains at five (5) psi after five (5) minutes, the section will be deemed as having passed the air test. Any significant drop (as determined by the Inspector) in pressure during the five (5) minute test period shall be cause for failure of the pipe section or of the plugs isolating it. After checking the plugs, a retest will be done under the same testing requirement. When performing an air test, the pipe manufacturer must authorize such method of testing either in writing or in their installation manual provided to the City.

## **Section 8 Abandonment of Existing Building Sanitary Sewer Laterals**

### **General**

All existing components of an existing Onsite Wastewater Treatment System (OWTS) must be properly abandoned or permitted for an alternative use satisfactory to the City and not in violation of the State Regulations established by the State Water Resources Control Board's Septic System Discharge Prohibition. Any component of the existing OWTS dispersal area must be made unusable, without exception, to the satisfaction of the City. An abandonment permit for all components of the OWTS to be removed must be obtained from the City prior to commencing any abandonment work. All elements of the existing OWTS to be abandoned shall be clearly shown on the plan submitted for the installation of the private Sewer Lateral. All portions of the OWTS that have been abandoned shall be transferred to an appropriate location approved for such materials. This obligation shall be the responsibility of the property owner and their contractor.

### **Existing Sewer Lines**

All existing Sewer Lateral lines shall be indicated on the plan drawings submitted for review. All existing Sewer Lateral lines not comprised of HDPE shall either be removed or be entirely filled by pumping a two (2) sack concrete slurry mix or other approved material.

## **Section 9**

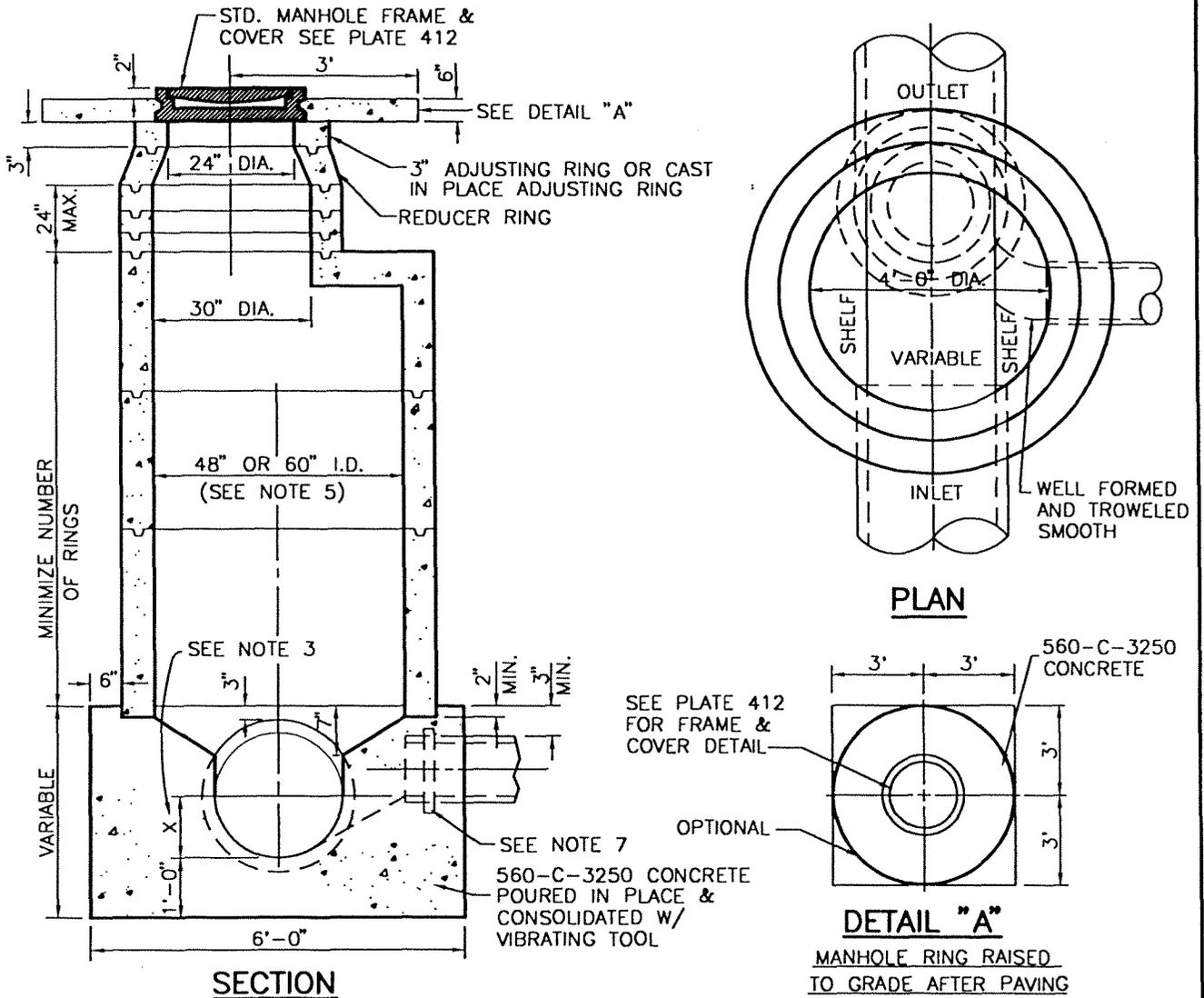
### **Existing Building Drains – Testing and Acceptance**

#### **General**

Building drains are those portions of the sanitary drainage system that are beneath the building or structure they service and feed into the private Sewer Lateral. All building drains that are a component of the connection to the municipal sewer and Civic Center Wastewater Treatment Facility must be of an approved material and shall be water-tight, without exception.

#### **Testing**

All portions of any existing building drainage system shall be tested for water-tightness. Testing shall be a water or gas test in conformance with the Malibu Plumbing Code Section 712.0 Testing. The City may accept a video survey of the building drain when testing by other means is not feasible. Request for the use of a video shall be submitted in writing to the City and shall be approved prior to performing the video investigation. The written request shall identify the licensed contractor or appropriate City Registered OWTS Practitioner performing the video investigation of the building drain. The video shall be submitted to the City for review with a statement from the party performing the investigation that the building drain has been determined to be water-tight and no signs of water intrusion or leakage were observed. If the investigation reveals the building sewer is not water-tight, repairs shall be made to the building drain. A Plumbing Permit shall first be obtained prior to the commencement of any repair. The acceptance of any existing building drain shall be at the discretion of the City.



**NOTES:**

1. MANHOLE SHAFT SHALL BE LINED WITH DURAPLATE A-LOK OR APPROVED EQUAL. POURED IN PLACE BASE AND ALL OTHER UNLINED CONCRETE SURFACES SHALL HAVE A PROTECTIVE COATING PER SHEET 2.
2. SHAFT THICKNESS=6" MIN. FOR NON-REINFORCED SECTIONS, 5" MIN. FOR REINFORCED SECTIONS.
3. WHEN MAIN SEWER IS 15" DIA. OR LARGER AND LATERAL SEWER IS 10" DIA. OR LESS, X=1/2 DIA. OF THE LARGER.
4. JOINTS SHALL BE TONGUE AND GROOVE TYPE, SIMILAR OR EQUAL TO THAT MANUFACTURED BY PRE-CON PRODUCTS, LTD. OR QUIKSET UTILITY VAULTS, INC., MASTIC SEALANT SHALL BE USED AT ALL JOINTS.
5. USE 48" I.D. M.H. FOR SEWERS UP TO AND INCLUDING, 30" I.D., ALL OTHERS USE 60" I.D.
6. STRAIGHT SIDE SHALL BE PLACED ON OPPOSITE SIDE OF LARGEST INLET.
7. A TIGHT FITTING RUBBER RING IS REQUIRED ON ALL PLASTIC PIPES.
8. SEE PLATE 408 FOR SHALLOW MANHOLES 3' OR LESS IN DEPTH.
9. MANHOLE CYLINDER CONES AND GRADE-RINGS SHALL CONTAIN IPANEX CONCRETE ADMIXTURE FOR WATERPROOFING OR BE CAST WITH TYPE V CEMENT.
10. FORM BOTTOM USING SANDBAGS OR WOOD FORMS.



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**DEEP SAMPLING MANHOLE**  
**SHEET 1 OF 2**

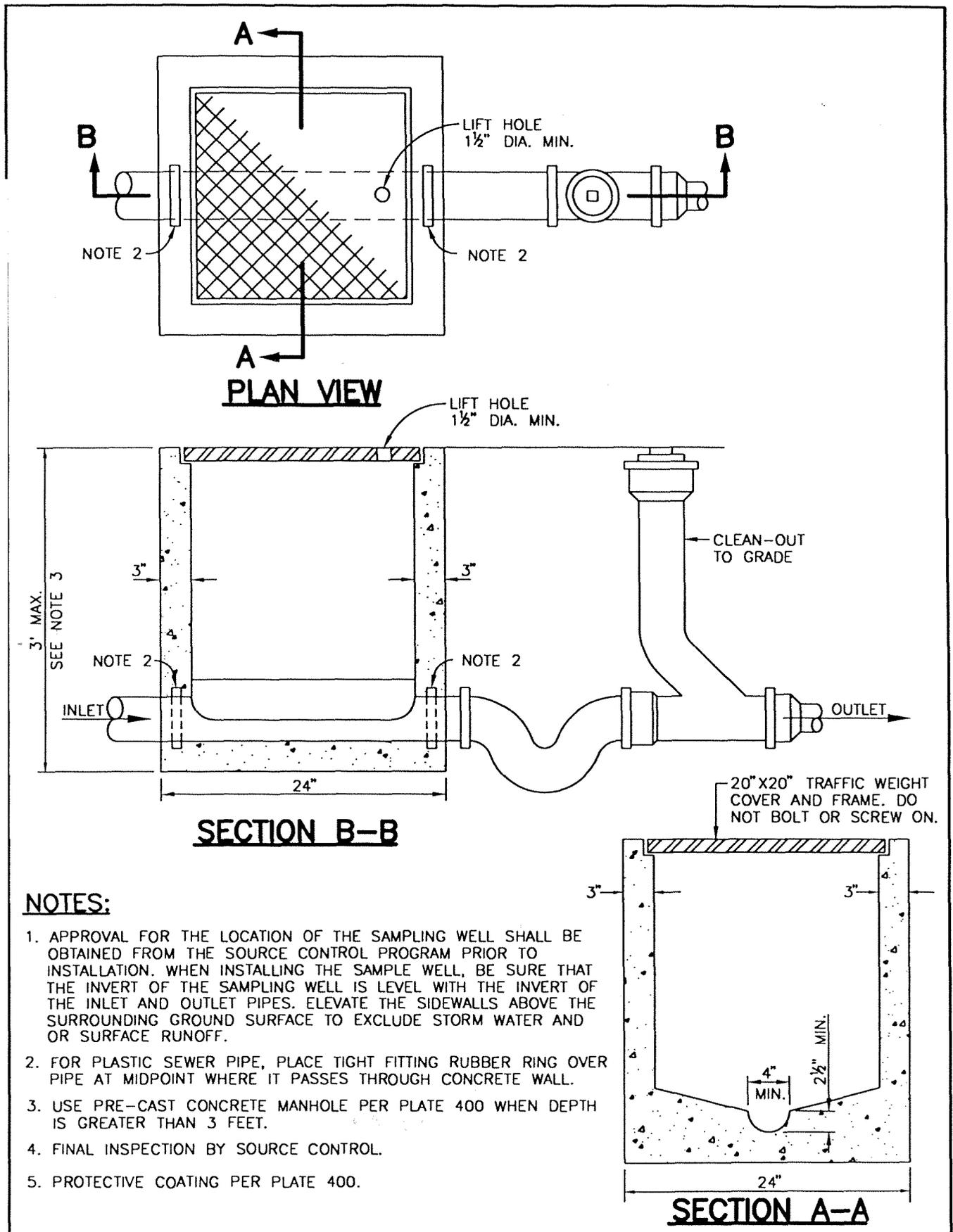
## PROTECTIVE COATING FOR SEWER STRUCTURES

1. DRY SANDBLAST ALL CONCRETE AND MORTAR SURFACES THAT HAVE CURED FOR AT LEAST SEVEN DAYS. THIS SHALL BE THE ONLY METHOD ALLOWED FOR SURFACE PREPARATION.
2. SACK ALL CONCRETE AND MORTAR SURFACES WITH 1:1 MORTAR TO REMOVE ALL SURFACE INDENTATIONS AND IMPERFECTIONS. WHEN MORTAR HAS CURED FOR TWO DAYS, REMOVE EXCESS DUST AND MORTAR WITH A STIFF NON-METALLIC BRUSH.
3. ALL INTERIOR SURFACES OF MANHOLE SHALL BE COATED WITH SANCON 100, SANCON 144, ZEBRON URETHANE COATING, OR SPRAYROQ "SPRAYWALL" POLY-URETHANE (OR APPROVED EQUAL) IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS TO A 125 MIL ( $\frac{1}{8}$ " ) CURED THICKNESS (MIN.).
4. MANHOLE INTERIORS SHALL NOT BE EXPOSED TO TEST LIQUIDS OR SEWAGE UNTIL THE COATING HAS CURED FOR 7 DAYS.



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DEEP SAMPLING MANHOLE  
SHEET 2 OF 2



**NOTES:**

1. APPROVAL FOR THE LOCATION OF THE SAMPLING WELL SHALL BE OBTAINED FROM THE SOURCE CONTROL PROGRAM PRIOR TO INSTALLATION. WHEN INSTALLING THE SAMPLE WELL, BE SURE THAT THE INVERT OF THE SAMPLING WELL IS LEVEL WITH THE INVERT OF THE INLET AND OUTLET PIPES. ELEVATE THE SIDEWALLS ABOVE THE SURROUNDING GROUND SURFACE TO EXCLUDE STORM WATER AND OR SURFACE RUNOFF.
2. FOR PLASTIC SEWER PIPE, PLACE TIGHT FITTING RUBBER RING OVER PIPE AT MIDPOINT WHERE IT PASSES THROUGH CONCRETE WALL.
3. USE PRE-CAST CONCRETE MANHOLE PER PLATE 400 WHEN DEPTH IS GREATER THAN 3 FEET.
4. FINAL INSPECTION BY SOURCE CONTROL.
5. PROTECTIVE COATING PER PLATE 400.



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SHALLOW SAMPLING MANHOLE  
SHEET 1 OF 1