

# Administrative Rules for Monitoring Access Structures

ENB – 4.35

July 2019



ENVIRONMENTAL SERVICES  
CITY OF PORTLAND

working for clean rivers

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*These are administrative rules for the Bureau of Environmental Services (BES) Pollution Prevention Services (PPS) Group. For background information and additional guidance regarding this rule, see the Appendices.*

### 1. Applicability

These rules apply to new and existing users that introduce, or are expected to introduce upon commencement of operations, pollutants into the public sewer from any non-domestic source.

### 2. Purpose

The purpose of these rules is to define the structural, functional, operational, and location requirements for required monitoring access structures that must be installed and maintained by certain users. The intent is to ensure that a user who is required to construct a monitoring access structure does so in a manner that guarantees access by City personnel for the safe and discreet collection of representative samples.

### 3. Definitions

These rules use the definitions below. If a definition is not listed below, the definitions of Portland City Code (“PCC”) chapters 17.04, 17.34, 17.36, and 17.39, Sewer and Drainage System User Charges Administrative Rules (ENB-4.09), Sanitary Discharge and Pretreatment Program Administrative Rules (ENB – 4.03), BES Enforcement Program Administrative Rules (ENB – 4.15), Extra Strength Charge Administrative Rules (ENB – 4.25), Fats, Oils, and Grease Removal Program Administrative Rules (ENB – 4.26), and the Source Control Manual (ENB – 4.34) apply.

- A. **“Facial Challenge”** means a challenge to a requirement that is based on an argument that the requirement cannot be applied fairly or reasonably in any situation. By contrast, an as-applied challenge is one based on an argument that a requirement should not be applied to the challenger’s particular situation because of factors that, in the challenger’s view, distinguish it from similar situations.
- B. **“Flow-Proportional Composite Sampling”** means a sample collection method in which sample aliquots are collected at a frequency that is proportional to the flow volume during the compositing period.
- C. **“Furnishing Zone”** means the area of the Sidewalk Corridor between the Curb Zone and the Through Pedestrian Zone, as defined in Portland Policy Document TRN-8.08.

- D. “Monitoring Access Structure”** means a privately-owned and secure sampling structure that provides City staff with safe access to sample a user’s discharge into the public sewer system.
- E. “Raw Wastewater”** means industrial wastewater that has not undergone pretreatment.
- F. “Representative Sample”** means a sample that is collected in accordance with the sampling protocols in 40 CFR Part 136 for the sampling of discharges and that can be expected to exhibit the properties of the discharge with respect to the governing regulatory or billing program.
- G. “Regulated Processes”** means industrial processes that generate a waste stream regulated by categorical pretreatment standards promulgated by the U.S. Environmental Protection Agency in accordance with sub-sections 307(b) and (c) of the Clean Water Act. Facilities with regulated processes are considered to be Categorical Industrial Users.
- H. “Sampling Equipment Enclosure”** means a sturdy enclosure constructed of wood, steel, concrete, or other material approved by the City in writing that safeguards and provides access to sampling equipment.
- I. “Sampling Location”** means the approved location where a representative sample of a discharge is collected for regulatory or billing purposes. For industrial wastewater discharge permittees, it is referred to as the Point of Compliance (POC).
- J. “Sampling Manhole”** means a monitoring access structure that consists of round, stackable precast concrete sections and has a round, removable steel cover.
- K. “Sampling Tee”** means a monitoring access structure that consists of a vertical riser from the sewer with no overhanging obstructions and that is constructed of approved material per the Oregon Plumbing Specialty Code (OPSC).
- L. “Sampling Vault”** means a monitoring access structure that consists of rectangular precast concrete, with either a hinged, rectangular one- or two-piece cover, or an at-grade manhole lid.
- M. “Sewer Cleanout”** means a sewer access point required by the OPSC for the purpose of maintenance and inspection.
- N. “Significant Industrial User (SIU)”** means an industrial sewer user as defined in PCC Chapter 17.34, Sanitary Discharges.
- O. “Time-Proportional Composite Sampling”** means a sample collection method in which the sample is comprised of a varying number of discrete samples collected at equal time intervals during the compositing period.

#### **4. Regulatory Authority**

The regulatory authority for this rule is provided by the following PCC sections and associated Administrative Rules:

- PCC Section 3.13.040.A
- PCC Sections 17.34.050.D and 17.34.080.C
- PCC Section 17.39.080.B
- Administrative rule ENB-4.13
- Administrative rule ENB-4.25

## **5. Triggers for the Requirement to Install a Monitoring Access Structure**

A user is subject to this rule and required to install a monitoring access structure at the user's expense if any of the following conditions are true:

- A.** The user operates an existing facility that discharges, or the user is responsible for a facility in development that is expected to discharge, industrial or other non-domestic wastes to the public sewer for which the levels of pollutants (including, but not limited to, biochemical oxygen demand (BOD), total suspended solids (TSS), pH, and fats, oils and grease) are expected to exceed the surcharge threshold or pollutant limit for any parameter as established in PCC Chapter 17.34 and associated administrative rules or published in the City's annual rate ordinance.
- B.** The user operates an existing facility that is a member of, or the user is responsible for a facility in development that is expected to be a member of, a business type listed in Appendix B of Administrative Rule ENB-4.25 with raw wastewater pollutant levels of concern that are expected to exceed 1200 mg/L for BOD or 500 mg/L for TSS and that discharges, or is expected to discharge upon commencement of operations, wastewater at an average daily flow rate to the sanitary or combined sewer that is greater than 800 cubic feet per day.
  - 1.** The City may require the user to install a flow meter at the user's expense to quantify the user's water usage or discharge volume for reasons that include, but are not limited to, the existence of shared water sources or accounts that supply multiple tenants in the user's building. The flow meter must be available to the City upon inspection.
- C.** The City can show through documented historical data or information that problems such as line blockages, backups, overflows, corrosion, high fats, oils, grease, or solids tend to exist at the part of the collection system to be used by the user.
- D.** The user operates an existing facility, or the user is responsible for a facility in development that is expected to operate, under a City stormwater or City-administered National Pollutant Discharge Elimination System (NPDES) permit and the user discharges, or is expected to discharge upon commencement of operations, into the public storm sewer system.
- E.** The user operates an existing facility, or the user is responsible for a facility in development that is expected to operate, under a wastewater discharge permit and discharges, or is expected to discharge upon commencement of operations, into the public sanitary or combined sewer system.
- F.** The user operates an existing facility that discharges, or the user is responsible for a facility in development that is expected to discharge, to the sanitary or combined sewer an average daily flow greater than or equal to 10,000 gallons per day.

## 6. Monitoring Access Structure Minimum Requirements

Monitoring access structures required by this rule must meet the following minimum requirements to be approved by BES. Any variance from these requirements must be approved in writing by the PPS Evaluation Team or the BES Environmental Compliance Officer, as provided in this rule.

- A. Types of Allowable Monitoring Access Structures.** A monitoring access structure must consist of either: a sampling manhole that is designed and installed per standard detail figure P-164 in Appendix B; a sampling vault that may be designed and installed as shown in typical detail figures 01A, 01B, 02A, 02B, or 03 in Appendix B; a sampling tee that may be designed and installed as shown in typical detail figures 01A, 01B, and 03 in Appendix B; or an alternative monitoring access structure approved in writing by BES. For all monitoring access structures, including approved alternative monitoring access structures, all precast concrete sections of the structure must conform to the requirements of City manufacturing standards for precast concrete (<http://www.portlandoregon.gov/bes/43428>). In addition, all monitoring access structures must be constructed in a manner that prevents stormwater and groundwater from entering or discharging through the structure to the sanitary or combined sewer system unless otherwise authorized by permit or other legal agreement, and that also prevents the inflow of stormwater and the infiltration of groundwater from entering or discharging through the structure to the public sewer system. A sewer cleanout is not an acceptable permanent sampling location.

### 1. Sampling Vaults.

- a. *Sampling vaults, generally.* All sampling vaults must provide a minimum of 3 feet x 3 feet x 3 feet internal unobstructed clearance or be a minimum of 3 feet in diameter to accommodate sampling equipment. A sampling vault's access hatch must have handles and be water-tight, tamperproof, constructed from material that is approved by the OPSC with a non-slip surface per ASTM C1028, and rated for H-20 loading if located in an area exposed to vehicular traffic.
- b. *Above-grade sampling vaults.* An above-grade (aboveground) installation may have bollards installed around it to protect the monitoring access structure from vehicle traffic.
- c. *Below-grade sampling vaults.* A below-grade (underground) sampling vault, if approved to be placed in a ROW, must be included on the Structural Engineer's pre-approved vault list or approved by the City's Structural Engineer in writing in accordance with TRN – 10.19, Utility Permits in the ROW Rules. Further, a below-grade installation that exceeds 6 feet in depth must have a mechanism (e.g., a sampler platform or other apparatus) that supports sampling equipment and allows the sampler to rest in a stable, upright position, out of the flow, and above any potential surcharge levels.

### 2. Sampling Tees.

- a. A sampling tee must be used in conjunction with a sampling equipment enclosure that meets the requirements of this Section that apply to sampling vaults and sampling equipment enclosures.

- b. The sampling tee and riser must each be a minimum of 8 inches in diameter.
- c. Sampling tees must meet OPSC requirements.

**3. Alternative Monitoring Access Structures.** A user must obtain written approval from BES using the variance process provided under Section 11 of this rule to use a monitoring access structure other than a sampling manhole, sampling vault, or sampling tee to comply with this rule. To be approved by BES, an alternative monitoring access structure must comply with subsections B through E of this Section as appropriate to the maximum extent practicable. In addition, to gain approval, an alternative monitoring access structure must allow for a sample to be taken in free flowing water or wastewater (i.e., not pooled water). The alternative must meet OPSC requirements.

**B. Safety.** A user must provide a monitoring access structure that allows for safe access to, and safe use of, the monitoring access structure by City personnel. The structure may not contain any stored materials, debris, trash, or other items that could compromise the personal safety of City personnel, and the structure's entrance for City personnel must be clear of industrial or commercial machinery, overhead hazards, and vehicle traffic. A user must also take all reasonable measures to provide City personnel with a safe route of access from a public right-of-way or other public property to the user's monitoring access structure.

**C. Location.** Except as otherwise provided in this rule, a user must install any required monitoring access structure, sampling equipment, or flow meter in a location that is on the user's property in a freely accessible, unrestricted area outside of the user's buildings in which industrial or commercial processes occur, and that allows for unannounced and safe access by City personnel.

1. Where no suitable location exists outside of the facility, an indoor location may be used as an alternative upon written approval by BES. If an indoor location is approved, the monitoring access structure must be located away from production areas that are regulated by any public health organization or that present a hazard to City employees. The indoor location must allow for the installation and management of appropriate sampling equipment by City personnel with no potential to adversely affect quality control of any commercial or industrial processes.
2. If a suitable location exists outside of the facility and a user wishes to install a monitoring access structure indoors, an indoor location may be used as an alternative upon written approval by BES through the variance process. If an indoor location is approved, the monitoring access structure must be located away from production areas that are regulated by any public health organization or that present a hazard to City employees. The indoor location must allow for the installation and management of appropriate sampling equipment by City personnel with no potential to adversely affect quality control of any commercial or industrial processes.

3. If there is no suitable location on the property, a user may locate the monitoring access structure in the furnishing zone of the public ROW upon written approval by both BES, through the variance process provided under Section 11 of this rule, and the Portland Bureau of Transportation (PBOT). A user must obtain BES written approval prior to seeking approval from PBOT. BES may grant approval only after it evaluates feasible alternative monitoring access structure locations such as those proposed by the user seeking a variance. Examples of cases where variance requests may be granted include, but are not limited to: existing lot-line-to-lot-line development on the user's property; unsuitable monitoring access structure locations on the user's property; and properties on which efforts to avoid food manufacturing, processing, or production areas of the facility are required by another regulatory agency but could not be performed if an indoor monitoring access structure were installed.

#### **D. Representative Sampling.**

1. A user subject to this rule must provide a monitoring access structure that allows for collection of a representative sample of the user's discharge to the public sewer system. BES will consider site-specific factors such as daily discharge rate, volume, frequency, and duration, automated versus manually-controlled flow regimes, building plumbing design, and potential effects of unregulated, domestic, cooling or diluting flows when determining whether or not a monitoring access structure will provide a representative sample.
2. Where a user's flow is not typical and the user's discharge occurs in controlled, manually-released batch discharges, the user must coordinate with BES personnel to facilitate representative sampling by BES through effective communication and reasonable accommodation of the City's sampling schedule.
3. An SIU subject to this rule must install and maintain inside the user's monitoring access structure equipment that will allow City personnel to conduct flow-proportional composite sampling, unless BES determines that time-proportional composite sampling or grab sampling is sufficient to achieve a representative sample. Where equipment allowing flow-proportional composite sampling is required to achieve a representative sample, the user must install and maintain a discharge flow meter and may also be required to install and maintain an automatic sampler in the user's monitoring access structure. Flow meters must be totalizing, provide readings in units of cubic feet, and provide data output compatible with the automatic sampler to allow for flow-proportional composite sampling.

#### **E. Sample and Equipment Security.** A monitoring access structure must itself be, or must incorporate, a sampling equipment enclosure reasonably capable of securing sampling equipment, flow meters, and other equipment required by this rule from potential contamination, tampering, vandalism, and theft.

1. **Storage location of required equipment.** If a monitoring access structure is a sampling manhole or a sampling vault that complies with this rule, then required equipment must be stored inside the monitoring access structure, except as otherwise

provided in this subsection E, and the monitoring access structure itself must meet the requirements of this subsection. If a monitoring access structure will not accommodate the storage of required equipment, then required equipment must be stored in a separate above-grade sampling equipment enclosure that complies with this subsection.

- 2. Sampling Equipment Enclosure Design Requirements.** A sampling equipment enclosure must itself be a sampling manhole, or it must be a sampling vault or some other enclosure that has a 3-foot x 3-foot x 3-foot minimum internal unobstructed clearance, a lid, and a feature or mechanism that allows City personnel to ensure that sampling equipment is only accessible to City personnel during sampling events (e.g., a padlock hasp that can accommodate a City lock). See, for example, typical detail figures “Top Hinge” and “Side Hinge” in Appendix B.
- 3. Waiver of Sample and Equipment Security Requirements.** For users where only grab samples will be collected, BES may waive in writing the Sample and Equipment Security minimum requirements of this rule upon written request.

## **7. Maintenance of Monitoring Access Structure and Equipment**

It is the responsibility of any user subject to this rule to maintain, at the user’s expense, the monitoring access structure and user-owned required sampling equipment and flow meters so that all minimum or special requirements are met on a continuing basis.

- A.** The user must maintain landscaping and vegetation so that access to the monitoring access structure is not restricted and does not present a safety hazard to City personnel.
- B.** The user must maintain and regularly calibrate any required flow meters.
- C.** The user must maintain any required sampling equipment in good working condition, and the user must store on site spare pump tubing necessary for maintenance. For a monitoring access structure that potentially accumulates solids in the sump, the user must maintain the sump so that solids cannot be sampled. However, failure of the user to maintain the sump will not in itself invalidate a collected sample.

## **8. Special Requirements**

- A. Storage Tanks.** This subsection applies to users who discharge into the public sewer from storage tanks that are equipped with a sampling spigot.
  - 1.** BES will generally deem a sampling spigot to be appropriate for the collection of grab samples only. Composite sample collection at a sampling spigot will not be an appropriate means of sampling unless specifically reviewed and approved by the PPS Evaluation Team in writing through the variance process.
  - 2.** To be deemed by BES to be appropriate for the collection of grab samples, a sampling spigot must be subject to gravity flow only, must have a flow pressure of



less than ten pounds per square inch (10psi\*), and may not be located along pressurized lines.

\*10psi is roughly equivalent to 23 vertical feet of head.

**B. Categorical Industrial Users.** Federal regulations require sampling of Categorical Industrial Users (CIUs) to occur at the end of the regulated process(es) and prior to commingling with non-categorical waste streams. This may require certain industries to have multiple points of compliance depending on the number of categorical processes present in the facility. BES will review and evaluate CIU point-of-compliance determinations on a case-by-case basis.

**C. Grease Interceptor Sample Access.** Fats, Oils, and Grease Removal Program Administrative Rules, ENB-4.26, Section 5.D.3 require a sampling access downstream of all grease interceptors with a cumulative capacity of 500 gallons or more in facilities subject to the requirements of ENB-4.26. That access must meet the requirements of Section 6 of this rule and provide for visual observation of the waste stream by City personnel.

**D. Stormwater sampling.** A user operating under, or expected to operate under, a City stormwater permit or a City-administered NPDES permit and whose samples are only collected using the grab sample-collection method is not required to obtain approval from BES using the variance process provided under Section 11 of this rule to use a monitoring access structure other than a sampling manhole, sampling vault, or sampling tee to comply with this rule. The alternative monitoring access structure must comply with subsections B through E of Section 6 of this rule as appropriate to the maximum extent practicable.

## **9. Requirements to Upgrade Monitoring Access Structures at Existing Regulated Facilities**

This Section provides upgrade requirements for regulated facilities in operation on the effective date of these rules. These rules do not exempt a user from the requirements of other laws to obtain the proper City permits and obtain a BES plan review, inspection, and approval of proposed improvements required by these rules.

### **A. Facilities that Rely on Sewer Cleanouts.**

1. As of the effective date of these rules, a sewer cleanout is no longer an acceptable sampling location and does not constitute a monitoring access structure under this rule.
2. Users currently regulated under a program implemented by the BES Environmental Compliance Division and that rely on sewer cleanouts as sampling locations will have 1 year from the effective date of these rules to install an approved monitoring access structure. If physical constraints exist that make installation of a sampling manhole, vault, or tee impractical, the user must provide an alternative monitoring access

structure that meets all of the criteria listed in Sections 6 through 8 of this rule to the extent practicable and that has been evaluated and approved in writing by the PPS Evaluation Team.

3. BES may use existing sewer cleanouts to evaluate the appropriateness of extra-strength billing and to identify regulatory compliance issues under its jurisdiction until a user installs an approved monitoring access structure. Once a user has installed an approved monitoring access structure and it is in working order, BES will use the user's monitoring access structure for all monitoring and sampling of a user's discharges to the sewer system.

#### **B. Sumps Known to Accumulate Solids.**

1. Within six months of the effective date of this rule, a user with an existing monitoring structure that consists of a sump known to accumulate solids but that otherwise meets the requirements of this rule for an acceptable monitoring access structure must make the following modification: The user must install a section of pipe with perforations no smaller than 3/8 of an inch within the sump so that the pipe keeps the sample intake tubing above the accumulated solids but below the water surface, and the pipe must be located to provide representative sampling of the water discharging from the sump. Refer to typical detail figures 04 and 05 in Appendix B.
2. A user relying on sampling sumps to comply with this rule must still install and maintain a sampling equipment enclosure that complies with Section 6.E of this rule.

#### **C. Other Monitoring Access Structure Upgrades.**

1. Except as provided in subsections A and B of this Section and elsewhere in this subsection, a user with a monitoring access structure that does not meet the requirements described in Sections 6 through 8 of this rule must install an approved monitoring access structure within 2 years of the effective date of this rule.
2. BES may require the following facilities to upgrade by a specified date that is sooner than 2 years after the effective date of this rule: Regulated industrial and commercial facilities that operate and discharge under the requirements of a discharge permit; and facilities that BES identifies as having a more urgent need to upgrade, as described in paragraph 3 of this subsection, compared to other facilities identified as needing to upgrade to come into compliance with this rule.
3. BES may review commercial and industrial monitoring access structures on an ongoing basis and identify and prioritize those to which the user must make modifications on an expedited timeline. Facilities designated by BES as having a higher priority need to upgrade may include, but are not limited to, those without monitoring access structures and those with monitoring access structures that exhibit any of the following characteristics:

- a. The monitoring access structure configuration prevents the City from reliably collecting a representative sample;
- b. The monitoring access structure is located in an area that does not allow unrestricted access to City personnel to conduct sampling;
- c. The monitoring access structure and its immediate surrounding areas, including the access path from the sampling vehicle to the monitoring access structure, present unreasonable safety risks to City personnel;
- d. The monitoring access structure is not reasonably secure during sampling events;  
or
- e. The monitoring access structure presents a potential public health risk or liability risk to the City or the user through adverse impacts to quality control of the commercial or industrial process.

## **10. Requirements Triggered by Development, Redevelopment, or Tenant Improvements**

A user subject to this rule who has a facility undergoing development, redevelopment, or tenant improvements on or after the effective date of this rule but do not have a monitoring access structure that meets the requirements of this rule must propose during the plan review and permitting process, and thereafter install, a monitoring access structure that complies with this rule.

Improvements that disturb kitchen, production, manufacturing, processing, or storm or sanitary systems must meet the requirements of this rule. All new and existing industrial and commercial facilities are required to obtain the proper City permits and obtain a BES plan review, inspection, and approval of the proposed improvements required by these rules. All installations must meet the Oregon Plumbing Specialty Code.

## **11. Variance Requests**

A facility owner or operator who believes they cannot meet the requirements for an acceptable monitoring access structure set forth in this rule must submit a written request for a variance to the PPS Evaluation Team.

The PPS Evaluation Team will evaluate and make a decision on any request for variance from the minimum monitoring access structure, maintenance, special, upgrade, development or other requirements of this rule. In cases where consensus is not reached among the PPS Evaluation Team, the BES Environmental Compliance Officer will determine a user's monitoring access structure requirements in accordance with these rules.

**A. Submission of Variance Request.** A facility owner or operator seeking approval of a variance must submit a Variance Application to BES. All variance requests must:

- 1. Be complete and in writing;

2. Clearly articulate why the requirements in this rule cannot be met; and
3. Fully demonstrate how the proposed alternative would meet the intent of these rules.

**B. Variance Request Decisions.** After a complete Variance Application is received, BES will render a decision and send a written determination to the requestor within 10 business days.

## **12. Administrative Review and Appeal**

A person may request reconsideration of a BES decision through administrative review as described in this Section. Administrative review and appeal of an enforcement action is also governed by BES Enforcement Program Administrative Rules, ENB-4.15. After the requestor has exhausted all BES administrative reviews, the requestor may file for an appeal of a decision with the Code Hearings Officer (CHO) per PCC Title 22. A person may only appeal a decision that is subject to administrative review by BES.

- A. Administrative Review Requests.** A person to whom a notice was addressed will have 20 business days from the date the notice was issued to submit a written request for administrative review of a decision described in the notice. The requestor must provide all information known to the requestor that supports an assertion made in the written request for administrative review. The requestor must provide such information via graphic, written, or recorded communication, or in person at the administrative review meeting. BES will hold an administrative review meeting within 15 business days of receipt of the written request for administrative review unless BES determines in its reasonable discretion that a delay is justified. The requestor may provide detailed information in writing in lieu of attending the administrative review meeting.
- B. Non-Reviewable Items.** A BES decision made under these rules is subject to administrative review except that BES will not grant administrative review for the following:
1. A Facial Challenge—as that term is defined in these rules—to a requirement in these rules or associated City Code, or to any technical standard; and
  2. A decision made under individual program administrative rules that are associated with PCC Chapters 17.34, 17.36, and 17.39 and that make that decision *not* subject to administrative review.
- C. BES Evaluation.** The BES Pollution Prevention Services Group Manager or their designee will use these Monitoring Access Structures Rules, associated program-specific codes and rules, City records, general criteria found in the BES Enforcement Rules (ENB-4.15), and the testimony and documentation provided by the requestor to make a final determination on the issue that is the subject of the administrative review.
- D. Final Determination.** BES will issue to the requestor a written final determination within 15 business days of the administrative review meeting unless BES determines that extenuating circumstances justify a reasonably longer period of evaluation. The written final determination will provide information about the process for filing an appeal to the CHO.

## **APPENDIX A — Background Information**

The federal Clean Water Act requires the City to regulate pollutant discharges into the public sewer system from certain users. Routine sampling and control of non-domestic discharges ensures that pollutant concentrations in those discharges do not harm the public sewer system or environment; endanger the life and health of the public or workers in the sewer or at the plant; or violate state water quality standards.

At the time that the Monitoring Access Structure (MAS) Rules were adopted in September 2016, BES had authority under the Portland City Code to require certain users to install a MAS. However, the code did not clearly define which users were required to install a MAS or the particular design and location standards for a MAS. The overarching goal of the MAS Rules is to increase clarity on these points and thereby reduce surprises for users and eliminate or reduce costs associated with retrofitting unsafe or inaccessible structures. Monitoring access structures that meet the requirements of the MAS Rules provide for the safe collection by City personnel of representative samples of a user's industrial discharge to the City sewer system.

## **APPENDIX B — Standard and Typical Details**

Standard Detail No. P-164, Sampling Manhole

Typical Detail Figures:

01A – Sampling Vault with a Tee Flush with the Bottom of the Vault

01B – Sampling Vault with a Tee Flush with the Bottom of the Vault

02A – Sampling Vault with Channelized Flow

02B – Sampling Vault with Channelized Flow

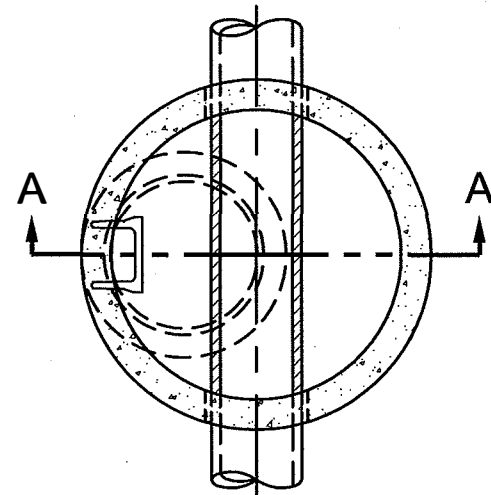
03 – Sampling Vault and Sampling Tees

04 – Stand Pipe in Sump with Outlet

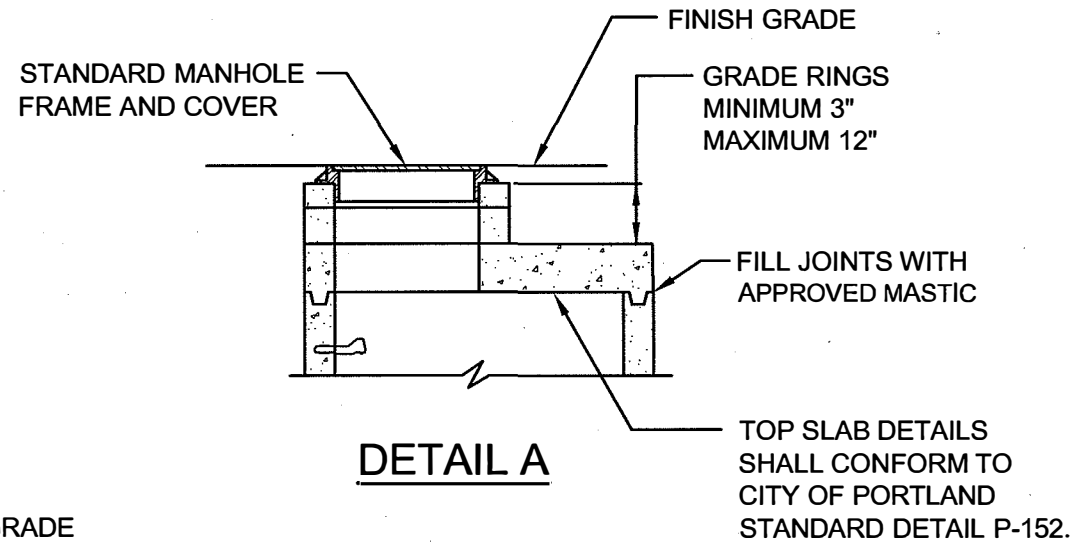
05 – Stand Pipe in Sump with Outlet

Top Hinge – Monitoring Access Structure Enclosure

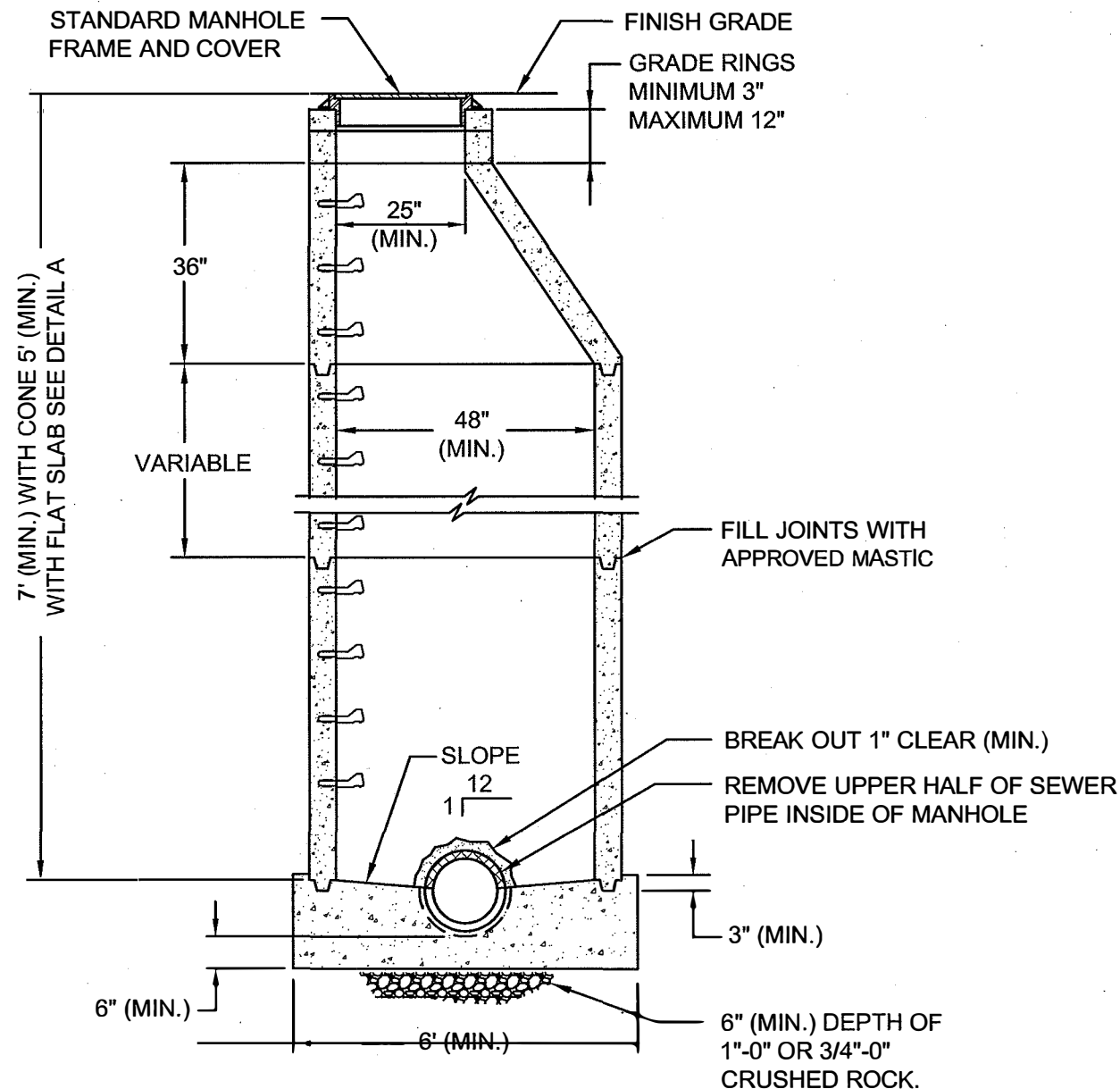
Side Hinge – Monitoring Access Structure Enclosure



**PLAN**



**DETAIL A**

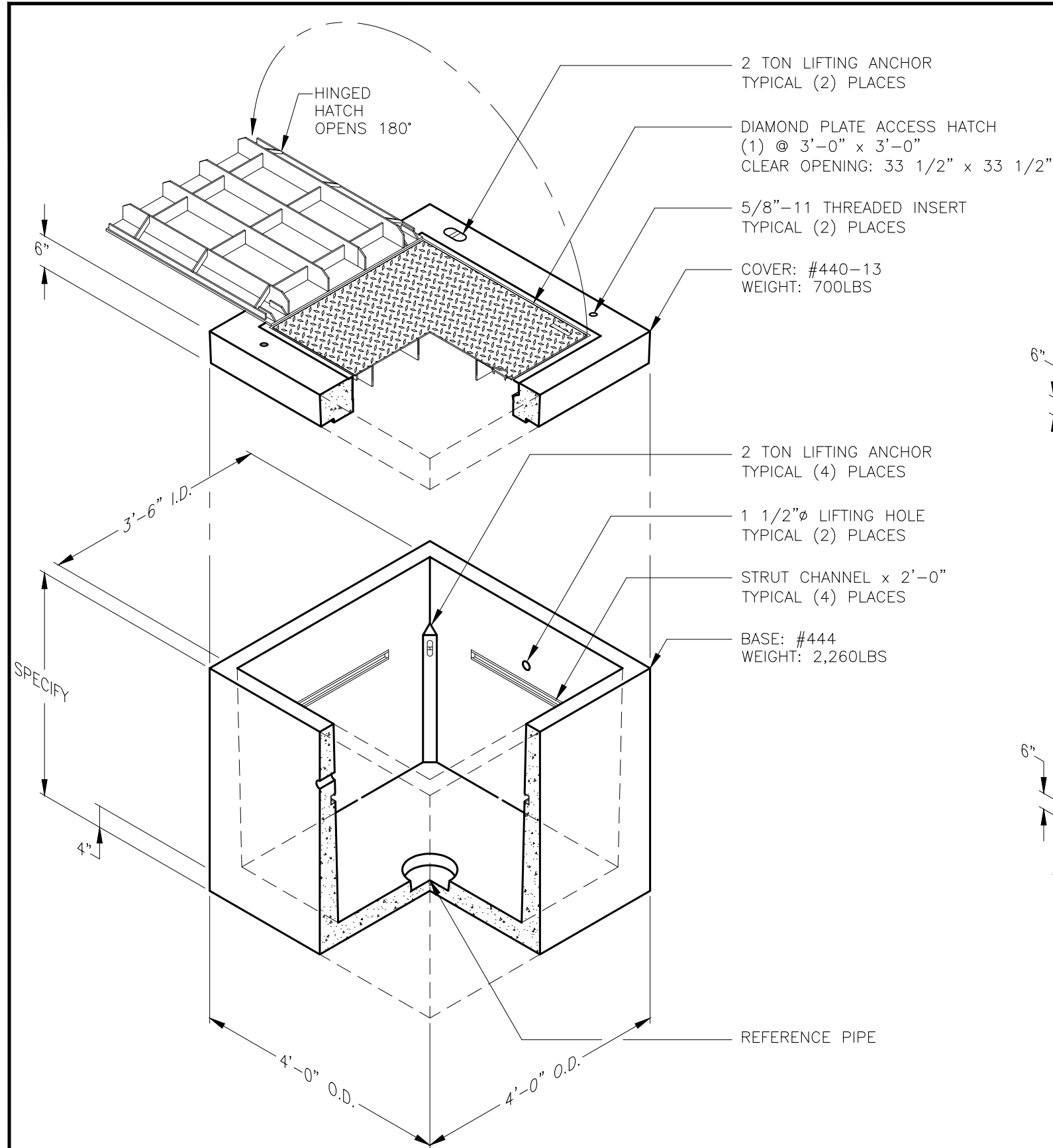


**SECTION A-A**

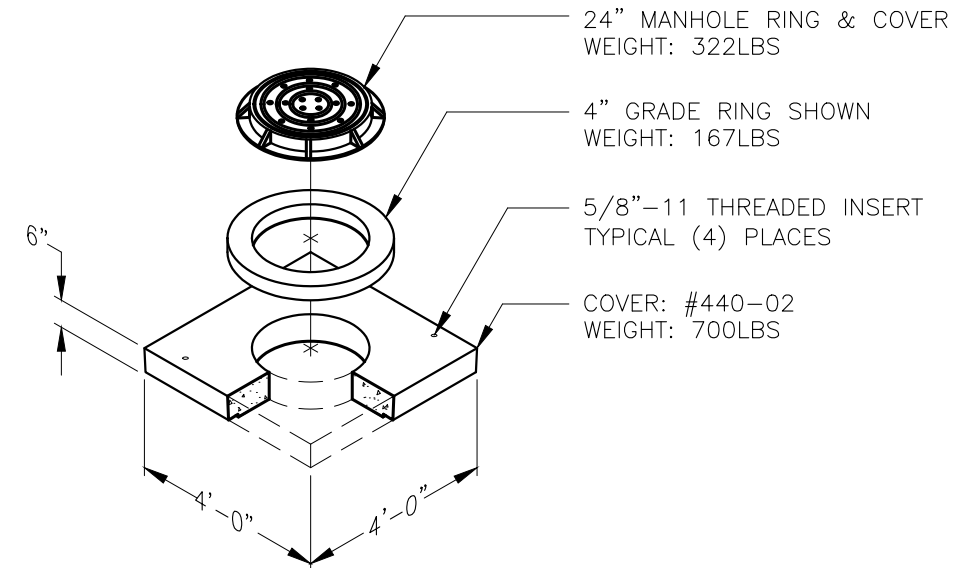
**NOTES:**

1. ALL PRECAST SECTIONS SHALL CONFORM TO THE REQUIREMENTS OF THE CITY OF PORTLAND MANUFACTURING STANDARDS FOR PRECAST CONCRETE PRODUCTS (MSPCP), AS REVISED.
2. MANHOLE STEPS – REFER TO THE STANDARD DETAIL P-168.
3. PROVIDE A FLEXIBLE JOINT FOR ALL CONNECTED PIPES:
  - RIGID PIPE < 36 INCHES – 18 INCHES (MAX.) FROM OUTSIDE WALL
  - FLEXIBLE PIPE – 18 INCHES (MAX.) FROM THE OUTSIDE WALL UNLESS A FLEXIBLE JOINT FITTING IS INSTALLED AND ACCEPTED.

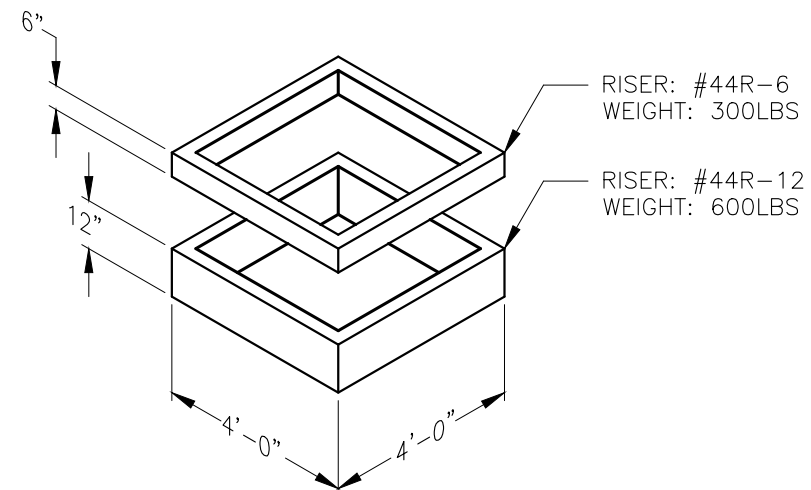
<p>The selection and use of this Standard Detail, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user.</p>	<p>Bureau of Environmental Services CITY OF PORTLAND, OREGON</p> <p><i>Walter Fly</i> Chief Engineer</p>	
	<p>Standard Detail Title</p> <p><b>Sampling Manhole</b></p>	
<p>Note: All material and workmanship shall be in accordance with the City of Portland Standard Construction Specifications.</p>	Effective Date: 01-01-09	<p>Standard Detail No.</p> <p><b>P-164</b></p>
	Calc. Book No.: N/A	
	Baseline Report Date: N/A	



## OUTDOOR INSTALL COVERS



## OPTIONAL RISERS



### NOTES:

- Vault material can be made of any material approved by Oregon Plumbing Specialty Code.
- Use on private property only. Not for use in the public right-of-way.
- When electing to use concrete, all precast sections shall conform to the requirements of the City of Portland manufacturing standards for precast concrete products (MSPCP), as revised.
- When electing to use concrete, it can be cast-in-place or precast.
- Vault must provide a minimum 3' x 3' x 3' internal clearance to accommodate sampling equipment.
- For above-grade installations, optional protective bollards may be installed.
- Surface water shall not drain into the vault.
- If the vault is to be deeper than 6', then a platform may be required to be installed to support the sampling equipment.
- Indoor installation:
  - Airtight & slip resistant lid/access hatch per ASTM C1028
  - Vault lids or equivalent required (no manhole lids)
  - Located outside of process areas, as much as feasible
  - Recommended clearance around the unit of 3' horizontal and 6' vertical
  - If trafficked area is inside, then a traffic rated lid for H-20 loading and slip resistance lid is needed

### Outdoor installation:

- Traffic rated lid for H-20 loading, and slip resistance
- Airtight & slip resistant lid/access hatch per ASTM C1028
- Located outside of high traffic areas
- Maximum 24" diameter manhole lid
- Recommended clearance around the unit of 3' horizontal and 6' vertical

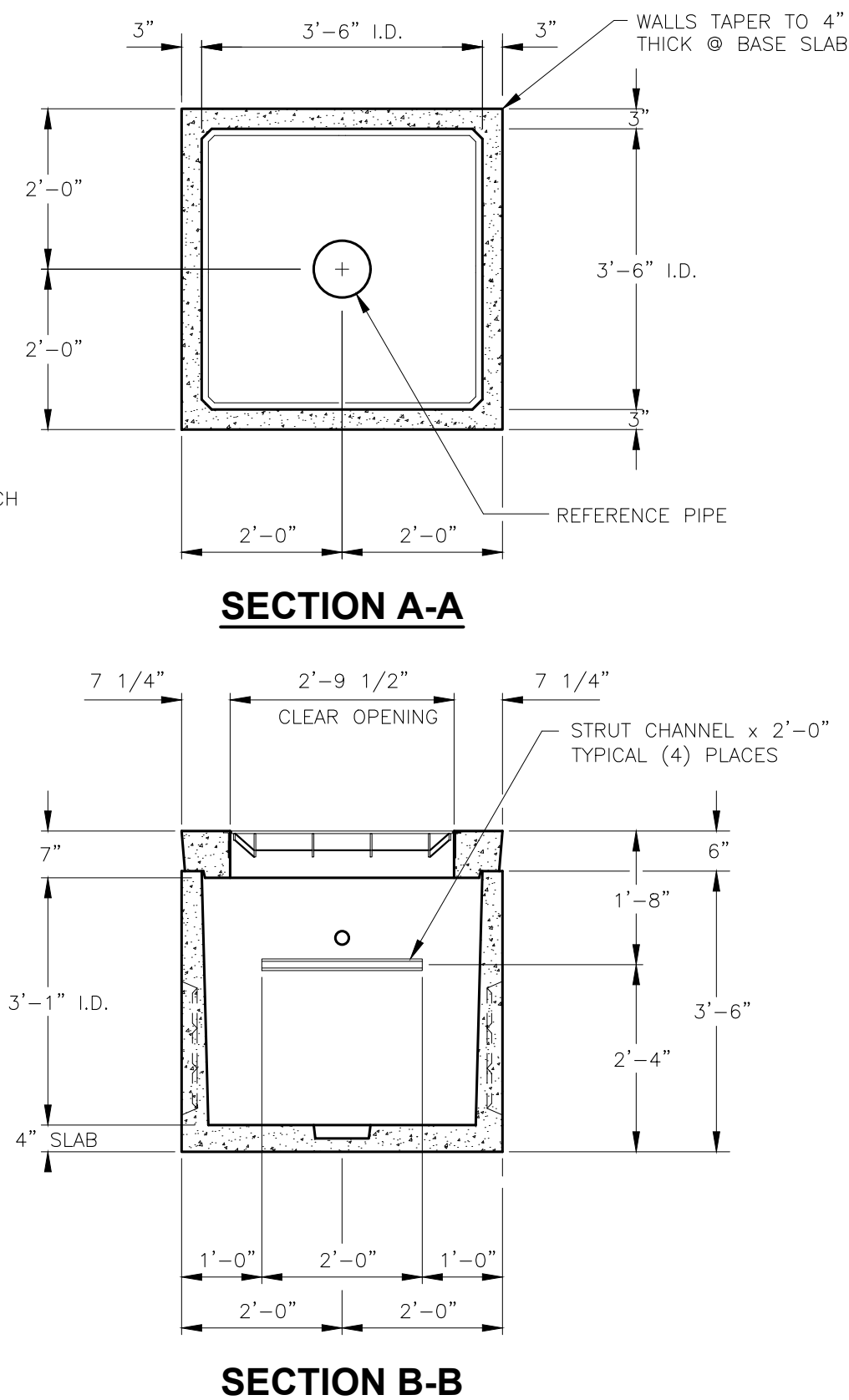
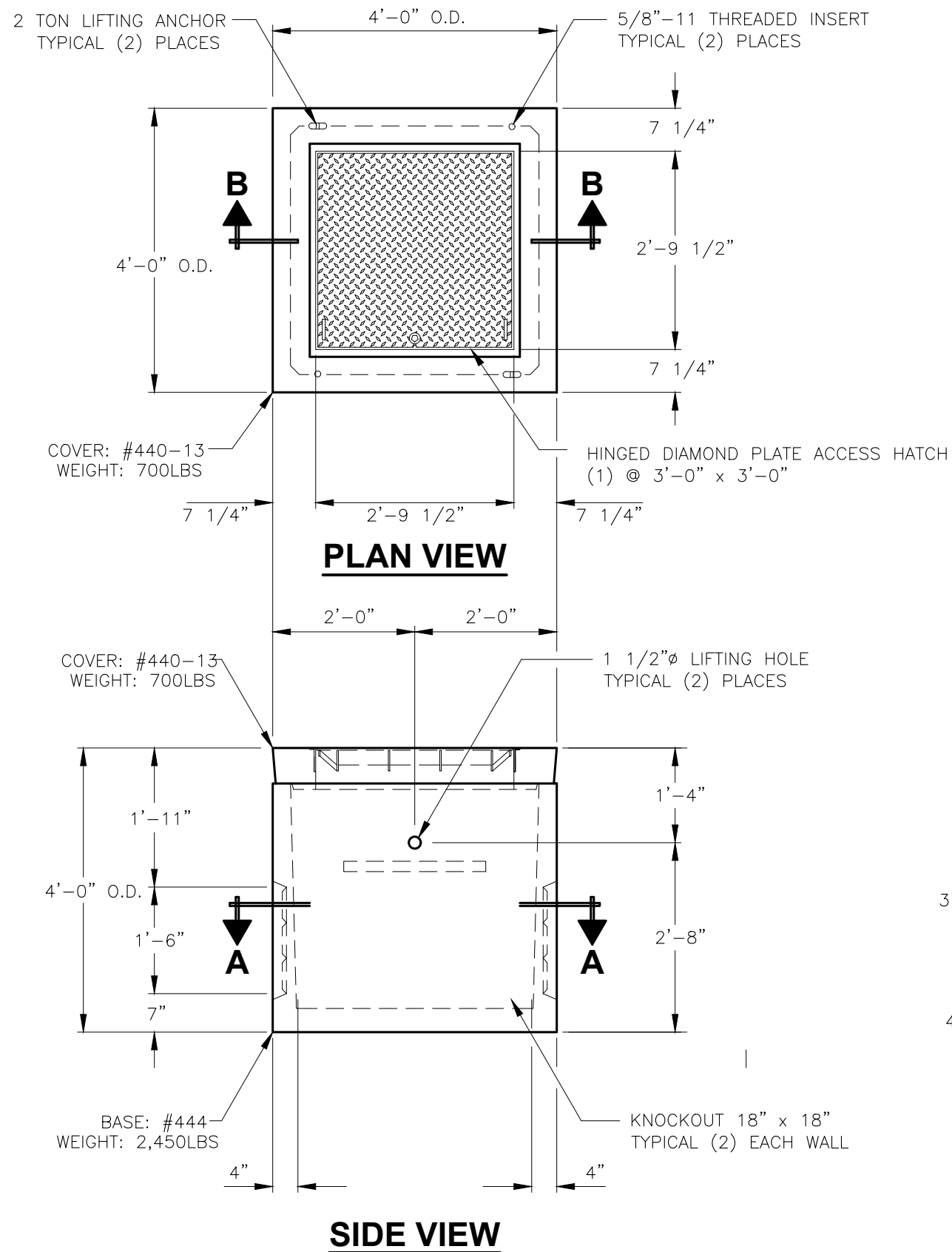
**Sampling Vault with a Tee flush with the Bottom of the Vault**

TYPICAL DETAIL

01A

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#### NOTES:

- Vault material can be made of any material approved by Oregon Plumbing Specialty Code.
- Use on private property only. Not for use in the public right-of-way.
- When electing to use concrete, all precast sections shall conform to the requirements of the City of Portland manufacturing standards for precast concrete products (MSPCP), as revised.
- When electing to use concrete, it can be cast-in-place or precast.
- Vault must provide a minimum 3' x 3' x 3' internal clearance to accommodate sampling equipment.
- For above-grade installations, optional protective bollards may be installed.
- Surface water shall not drain into the vault.
- If the vault is to be deeper than 6', then a platform may be required to be installed to support the sampling equipment.
- Indoor installation:
  - Airtight & slip resistant lid/access hatch per ASTM C1028
  - Vault lids or equivalent required (no manhole lids)
  - Located outside of process areas, as much as feasible
  - Recommended clearance around the unit of 3' horizontal and 6' vertical
  - If trafficked area is inside then a traffic rated lid for H-20 loading and slip resistance lid is needed

#### Outdoor installation:

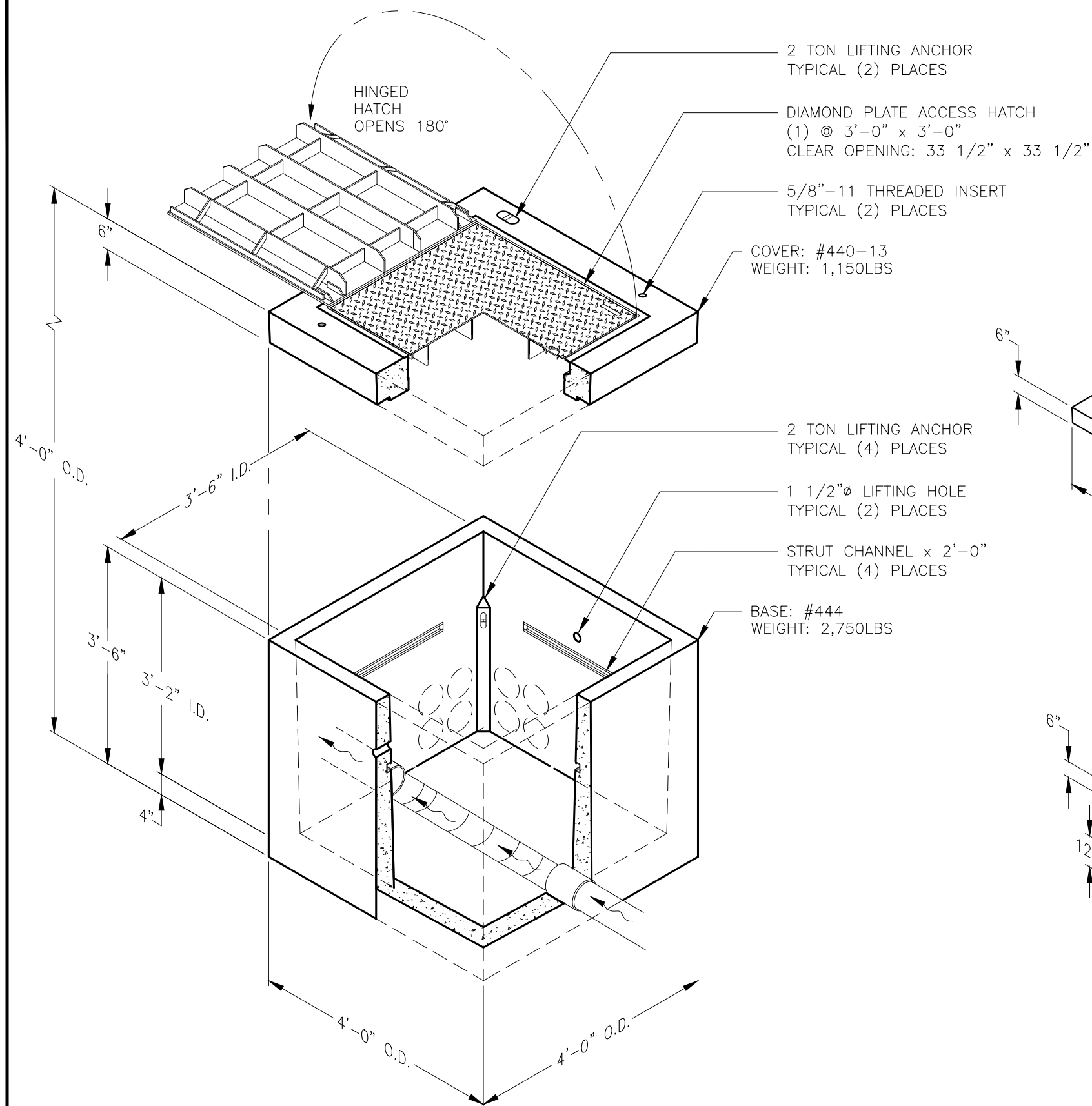
- Traffic rated lid for H-20 loading, and slip resistance
- Airtight & slip resistant lid/access hatch per ASTM C1028
- Located outside of highly trafficked areas
- Maximum 24" diameter manhole lid
- Recommended clearance around the unit of 3' horizontal and 6' vertical

## Sampling Vault with Tee flush with the Bottom of the Vault

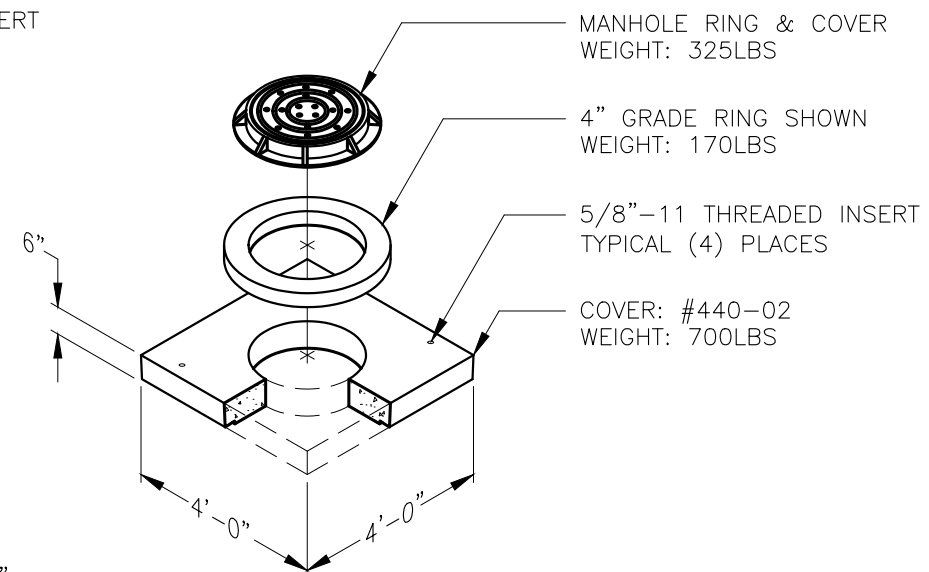
TYPICAL DETAIL

01B

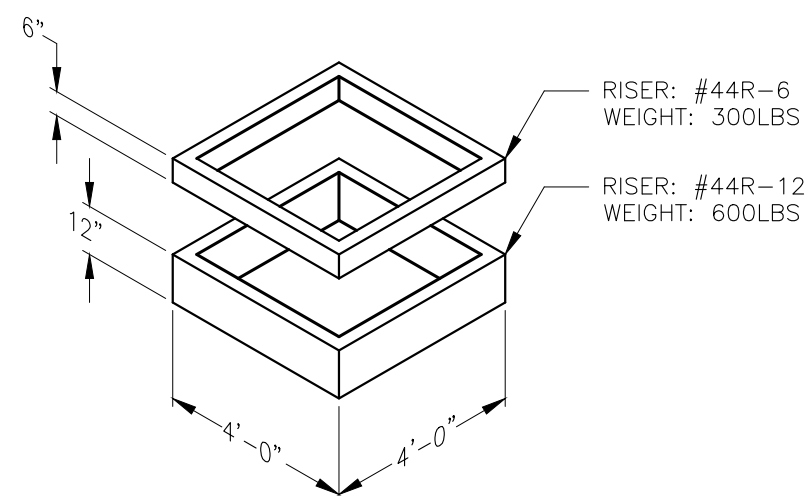
REVISED: 06/16/16 14:34



## OUTDOOR INSTALL COVERS



## OPTIONAL RISERS



### NOTES:

- Vault material can be made of any material approved by Oregon Plumbing Specialty Code.
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- For above-grade installations, optional protective bollards may be installed.
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- Indoor installation:
  - Airtight & slip resistant lid/access hatch per ASTM C1028
  - Vault lids or equivalent required (no manhole lids)
  - Located outside of process areas, as much as feasible
  - Recommended clearance around the unit of 3' horizontal and 6' vertical
  - If trafficked area is inside then a traffic rated lid for H-20 loading and slip resistance lid is needed

### Outdoor installation:

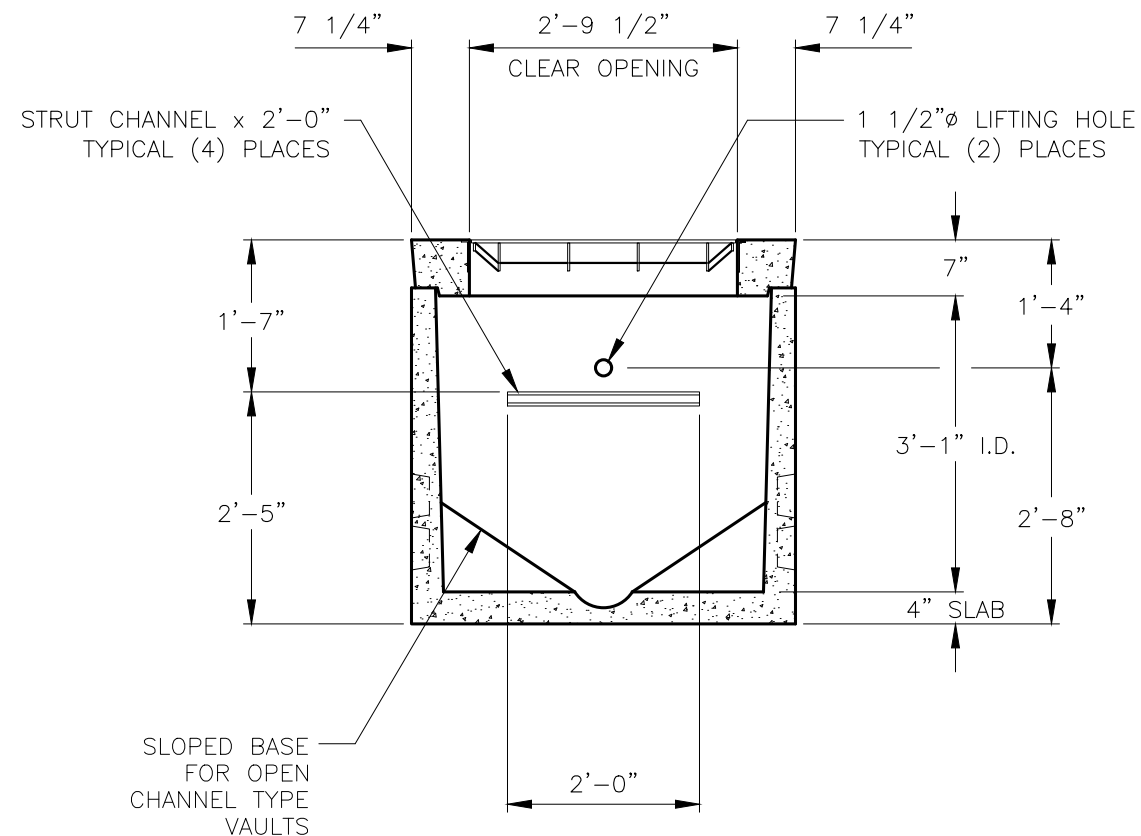
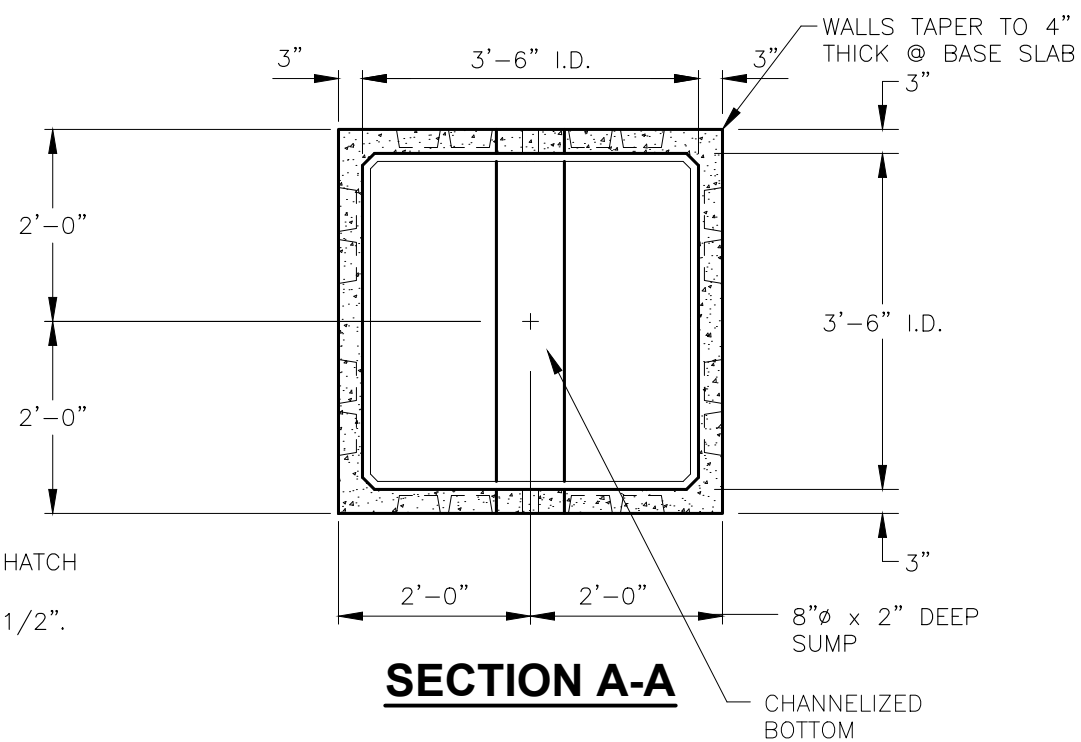
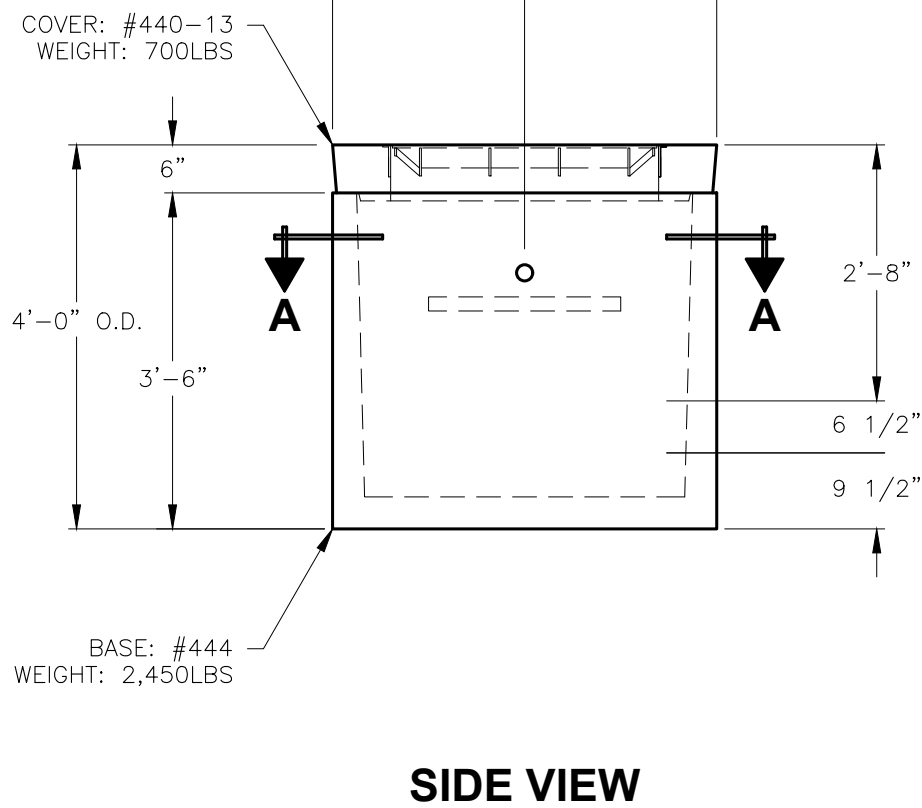
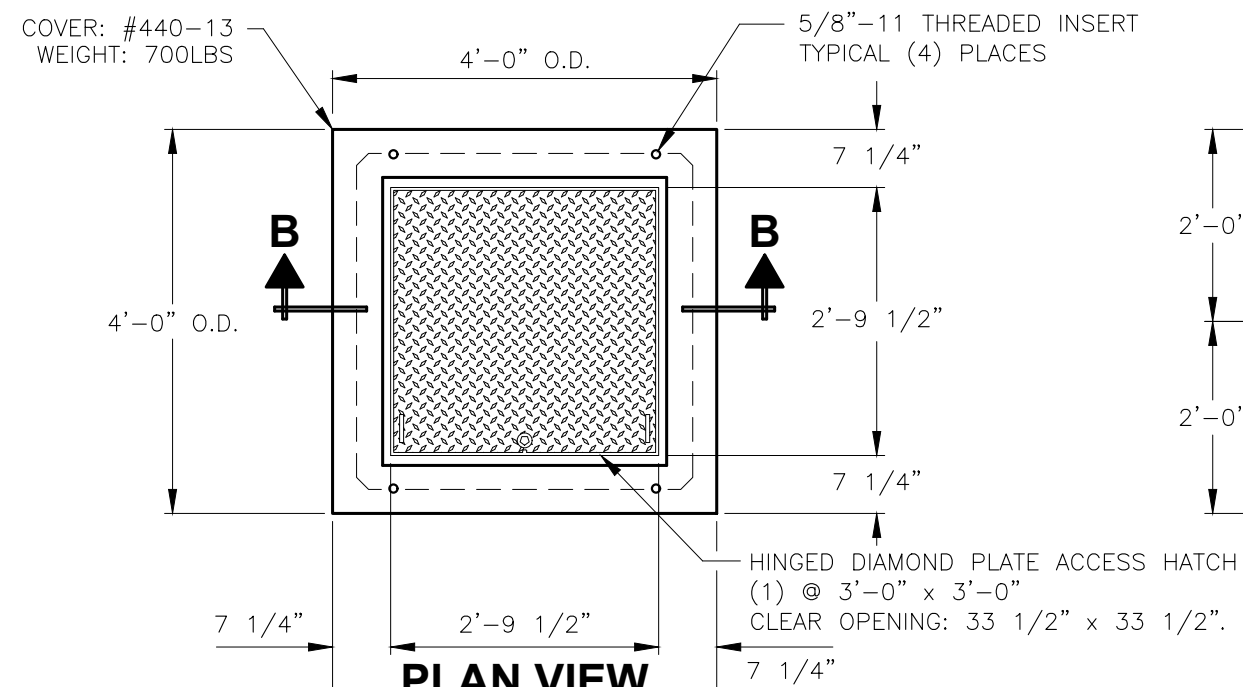
- Traffic rated lid for H-20 loading, and slip resistance
- Airtight & slip resistant lid/access hatch per ASTM C1028
- Located outside of highly trafficked areas
- Maximum 24" diameter manhole lid
- Recommended clearance around the unit of 3' horizontal and 6' vertical

Sampling Vault with Channelized Flow

TYPICAL DETAIL

02A

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#### NOTES:

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- Use on private property only. Not for use in the public right-of-way.
- When electing to use concrete, all precast sections shall conform to the requirements of the City of Portland manufacturing standards for precast concrete products (MSPCP), as revised.
- When electing to use concrete, it can be cast-in-place or precast.
- Vault must provide a minimum 3' x 3' x 3' internal clearance to accommodate sampling equipment.
- For above-grade installations, optional protective bollards may be installed.
- Surface water shall not drain into the vault.
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- Indoor installation:
  - Airtight & slip resistant lid/access hatch per ASTM C1028
  - Vault lids or equivalent required (no manhole lids)
  - Located outside of process areas, as much as feasible
  - Recommended clearance around the unit of 3' horizontal and 6' vertical
  - If trafficked area is inside then a traffic rated lid for H-20 loading and slip resistance lid is needed

#### Outdoor installation:

- Traffic rated lid for H-20 loading, and slip resistance
- Airtight & slip resistant lid/access hatch per ASTM C1028
- Located outside of highly trafficked areas
- Maximum 24" diameter manhole lid
- Recommended clearance around the unit of 3' horizontal and 6' vertical

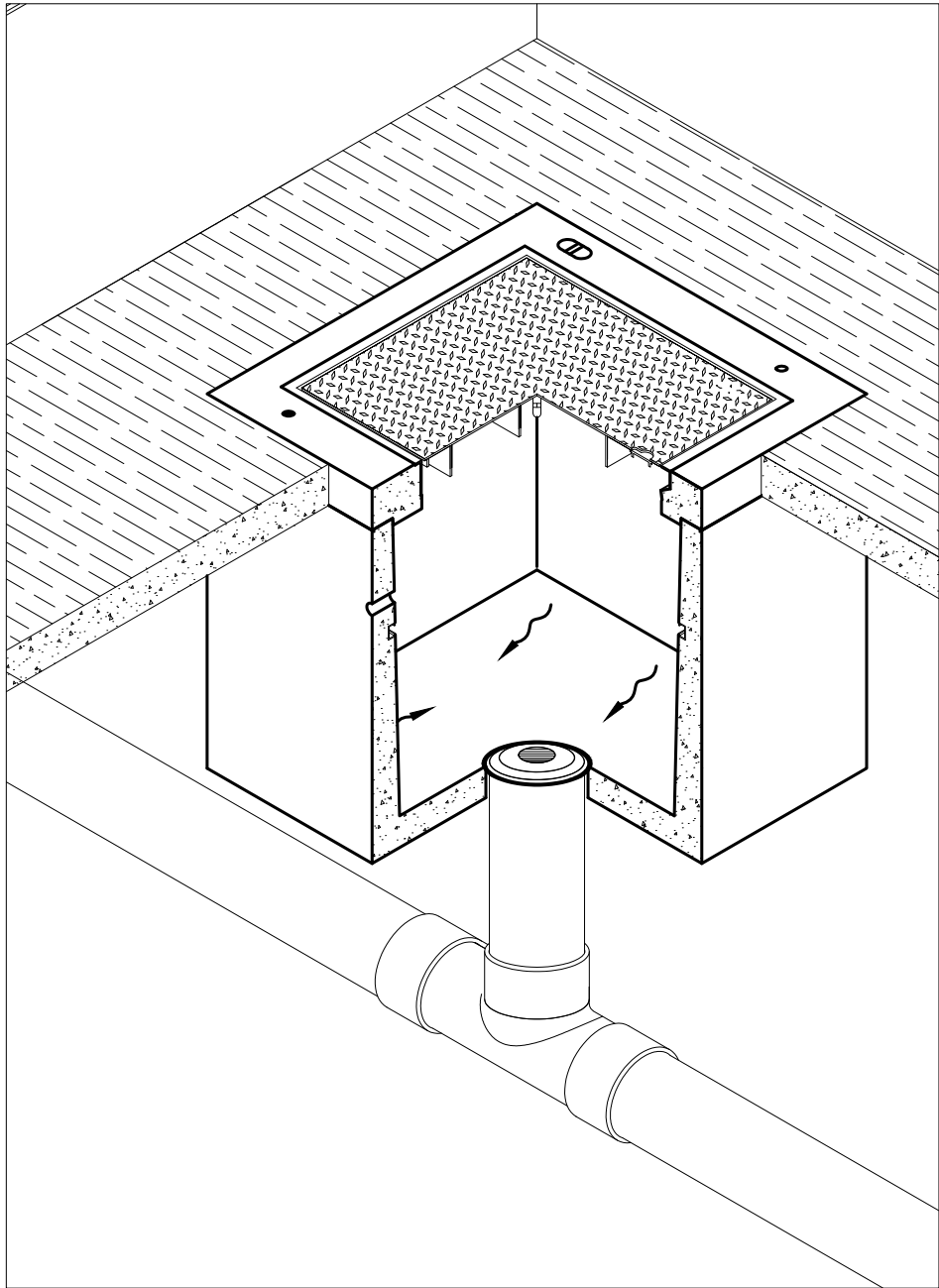
TYPICAL DETAIL

02B

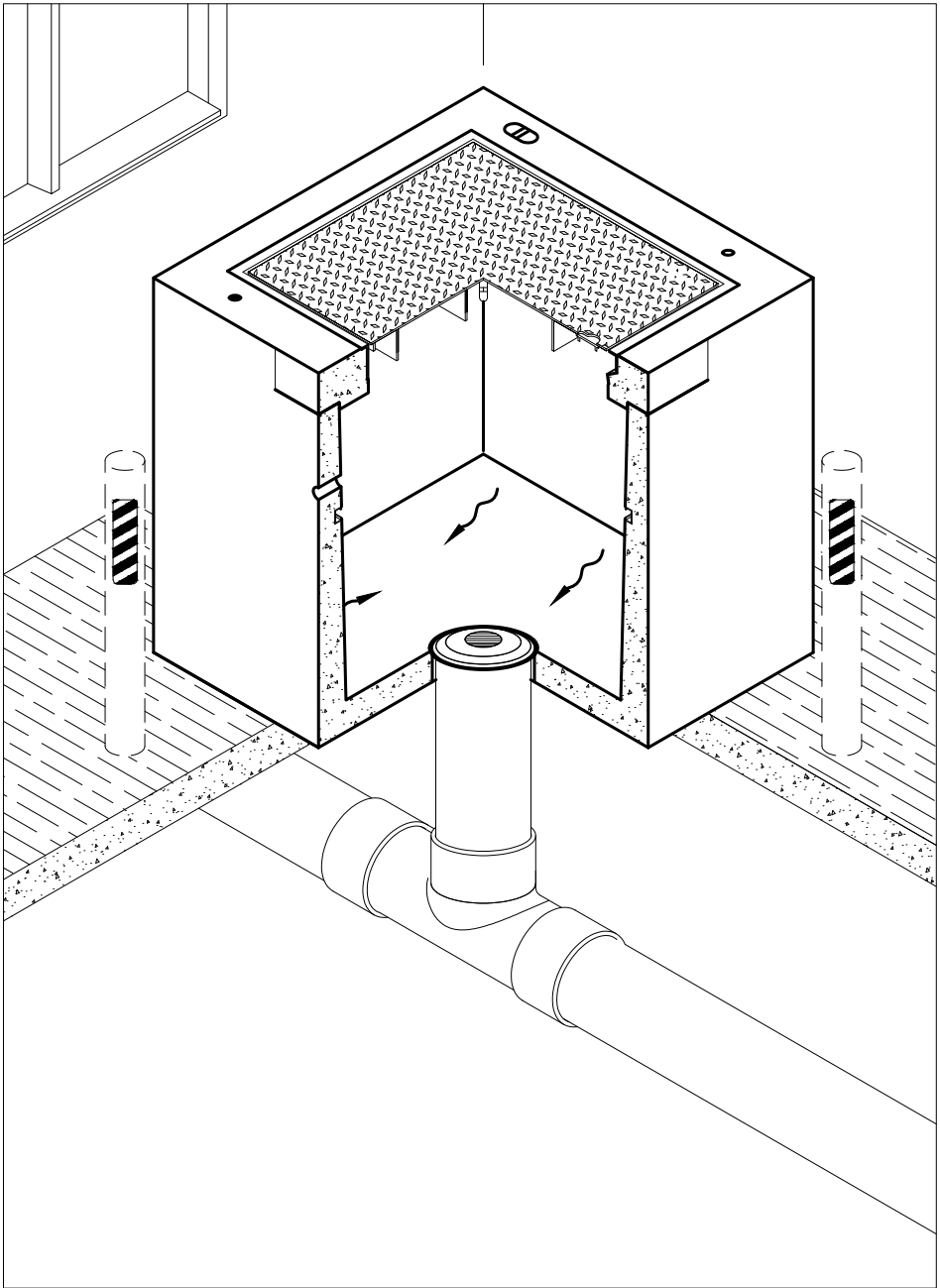
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Sampling Vault with Channelized Flow

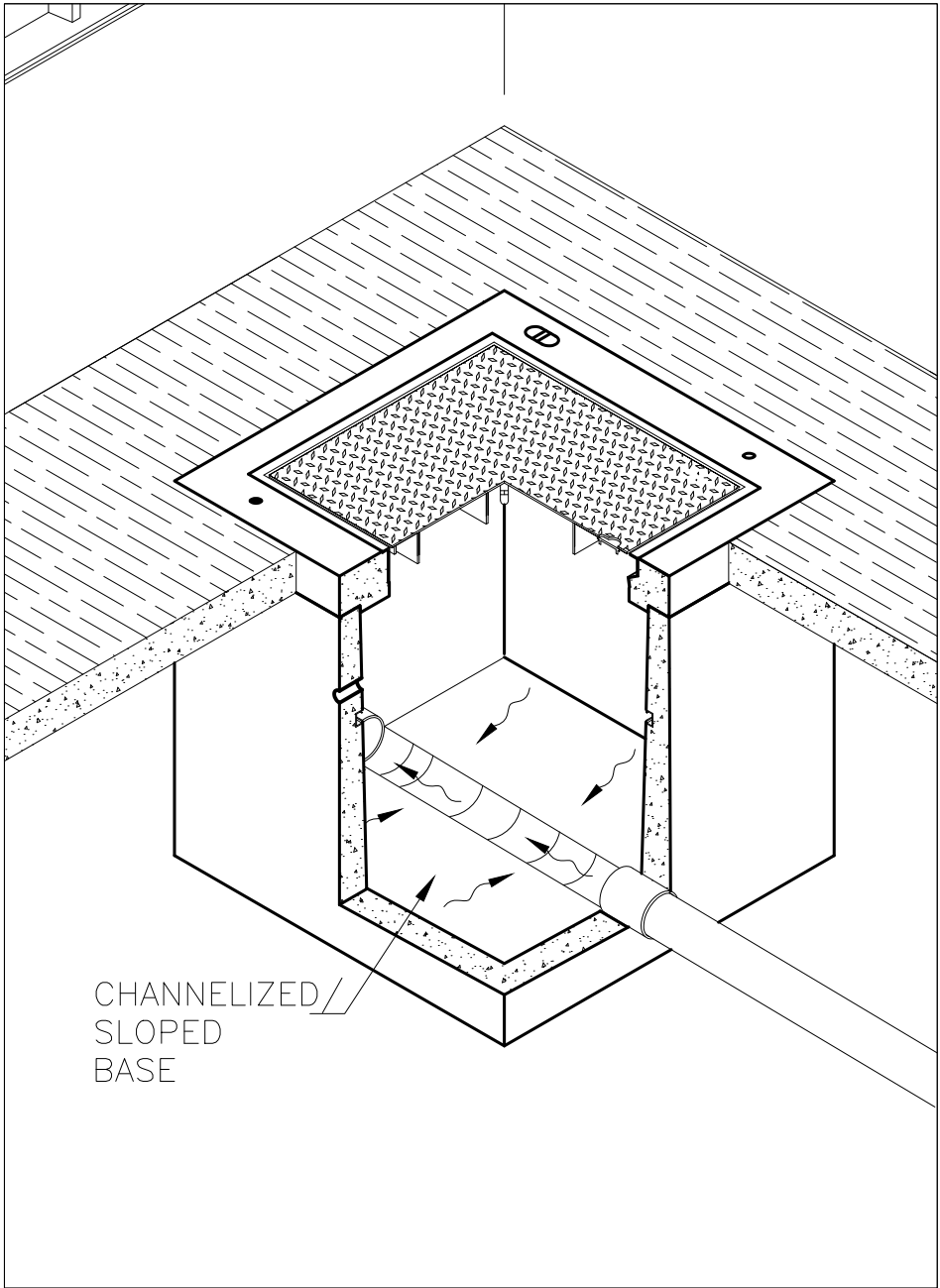
FOR 8" OR LARGER DIAMETER DISCHARGE PIPES



TYPICAL DETAIL 1 SHEETS 01A-01B



FOR SMALLER/SHALLOW DISCHARGE PIPES



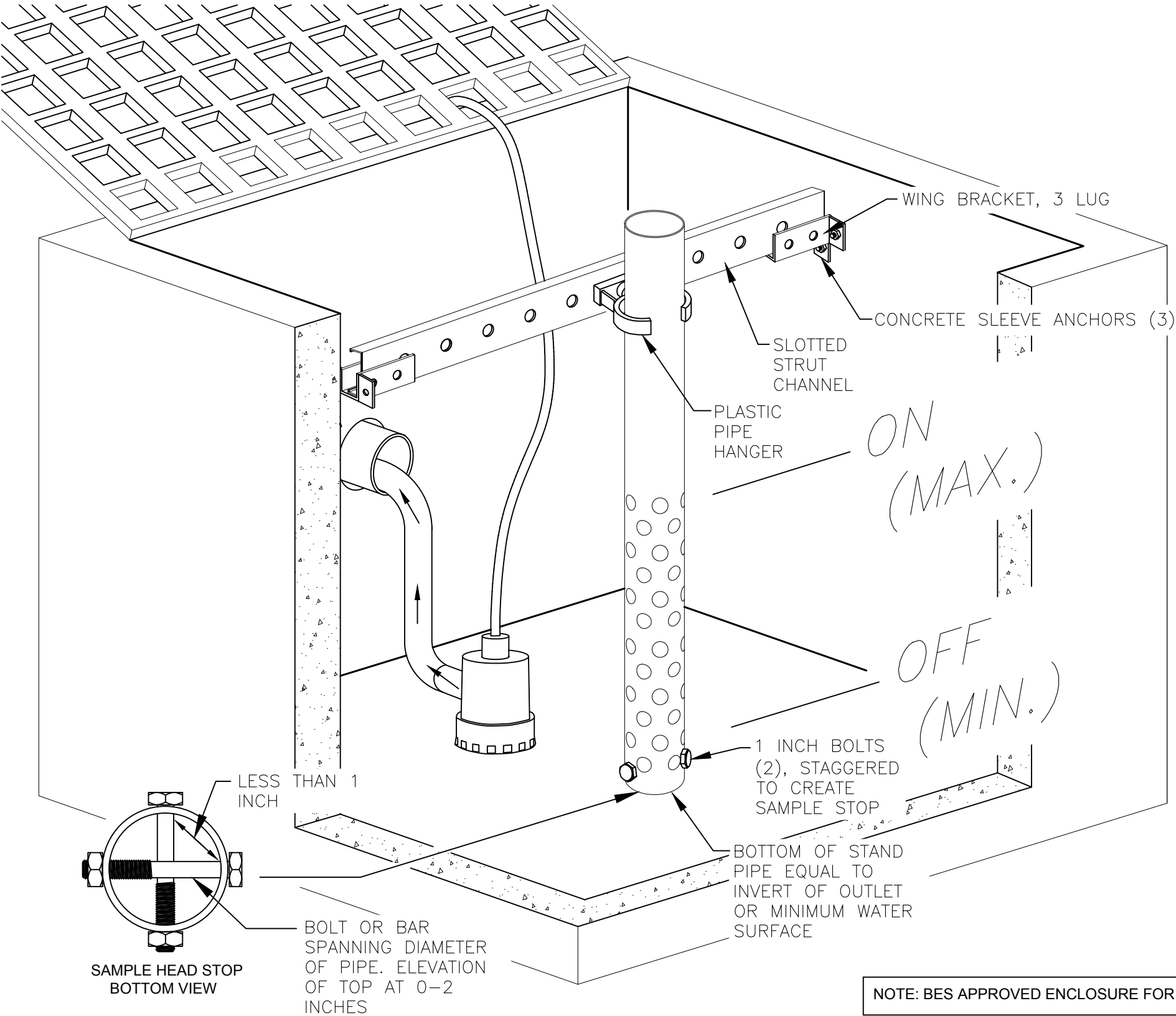
TYPICAL DETAIL 2, SHEETS 02A-02B

RECOMMENDATIONS: Build such that...

1. Sump may be cleaned (vacuumed, pressure washed, scrubbed) without interference by standpipe/brace.
2. Standpipe may be removed for cleaning if necessary.
3. Standpipe may be cleaned in place, safely and easily, without damage or modification to components.
4. Materials to not interfere with representative sampling. Consider PVC/ABS/Steel/Galvanized/Copper/other based on wastewater characteristics.
5. Sump can be made of any material approved by Oregon Plumbing Speciality Code.

Assembly Notes:

1. Standpipe height  $\leq$  top of sump width/diameter  $\geq$  1.25" inches.
2. Bar/Brace/Unistrut (suspends standpipe in sump).
3. Standpipe perforation zone equal to minimum of 3" above/below water level.
4. Bottom of standpipe equal to invert of outlet/min water level.
5. Bottom of standpipe affixed with two 1" bolts, staggered, to provide for sampling head stop.
6. Pipe perforations in the standpipe to be between 0.5 inches and 1.0 inch in diameter.



Stand Pipe in Sump with Outlet

TYPICAL DETAIL

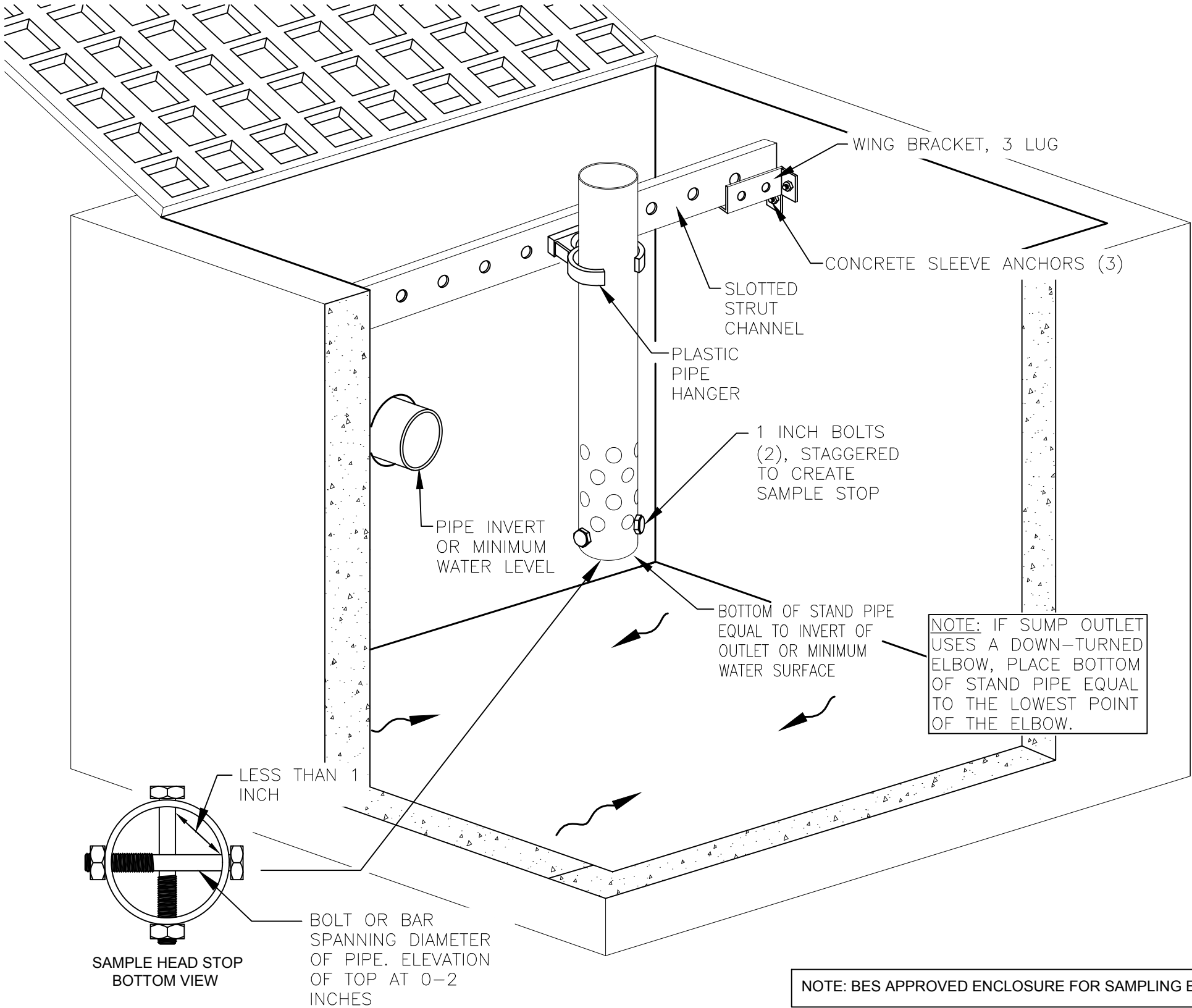
04

RECOMMENDATIONS: Build such that...

1. Sump may be cleaned (vacuumed, pressure washed, scrubbed) without interference by standpipe/brace.
2. Standpipe may be removed for cleaning if necessary.
3. Standpipe may be cleaned in place, safely and easily, without damage or modification to components.
4. Materials to not interfere with representative sampling. Consider PVC/ABS/Steel/Galvanized/Copper/other based on wastewater characteristics.
5. Sump can be made of any material approved by Oregon Plumbing Speciality Code.

Assembly Notes:

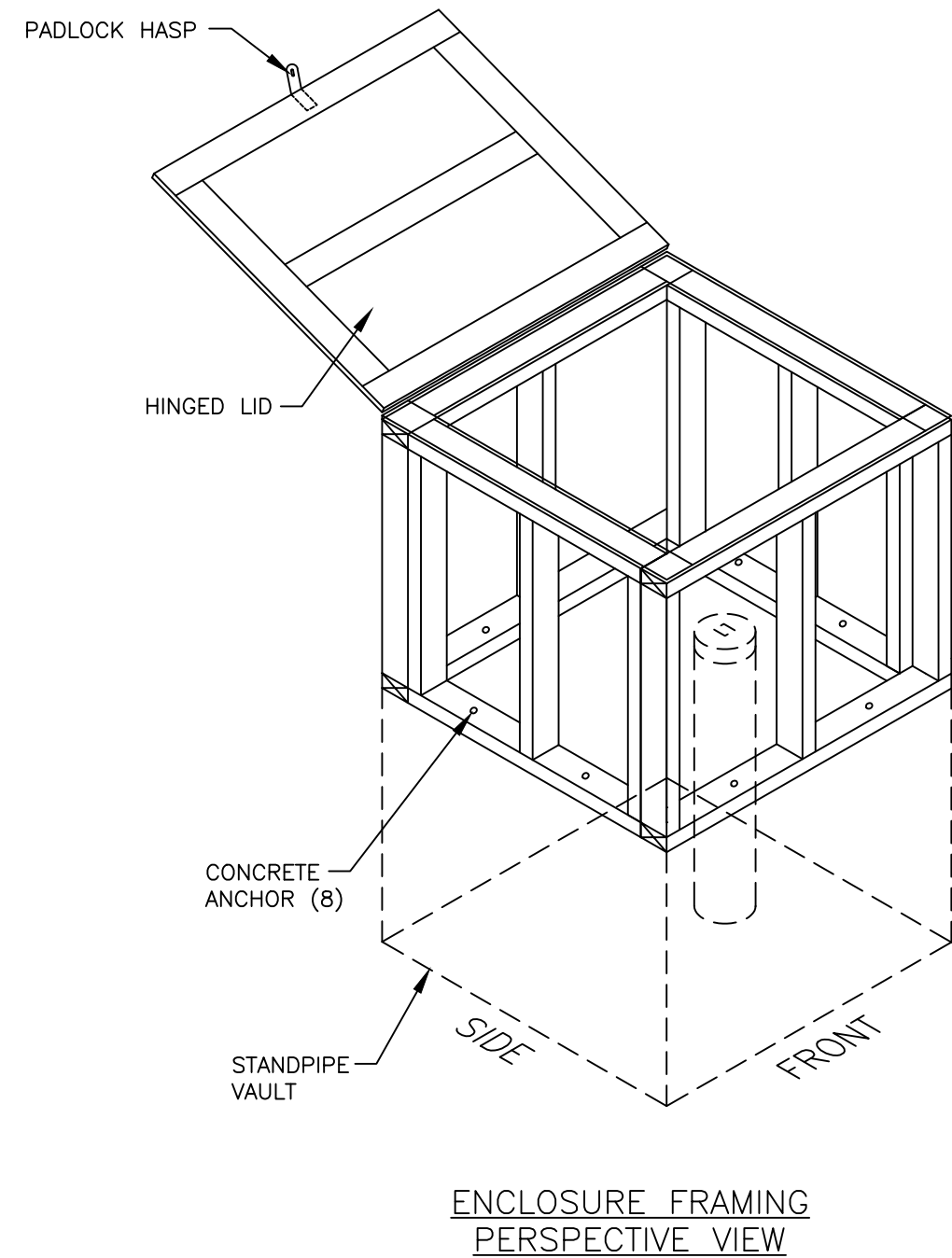
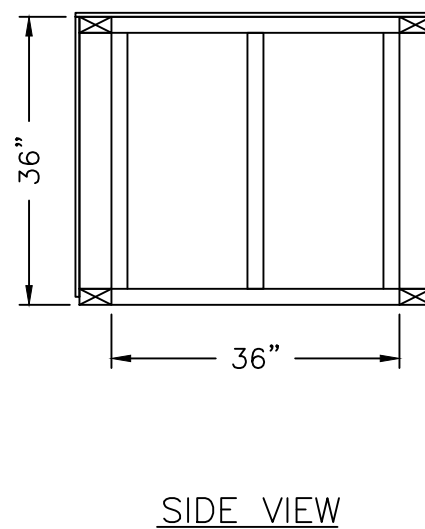
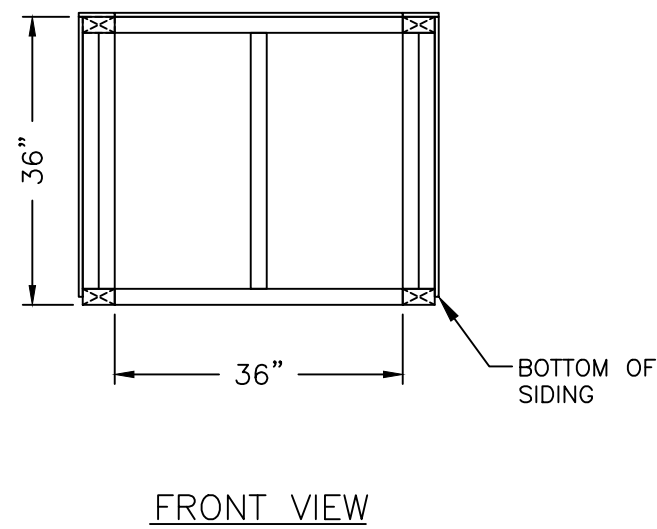
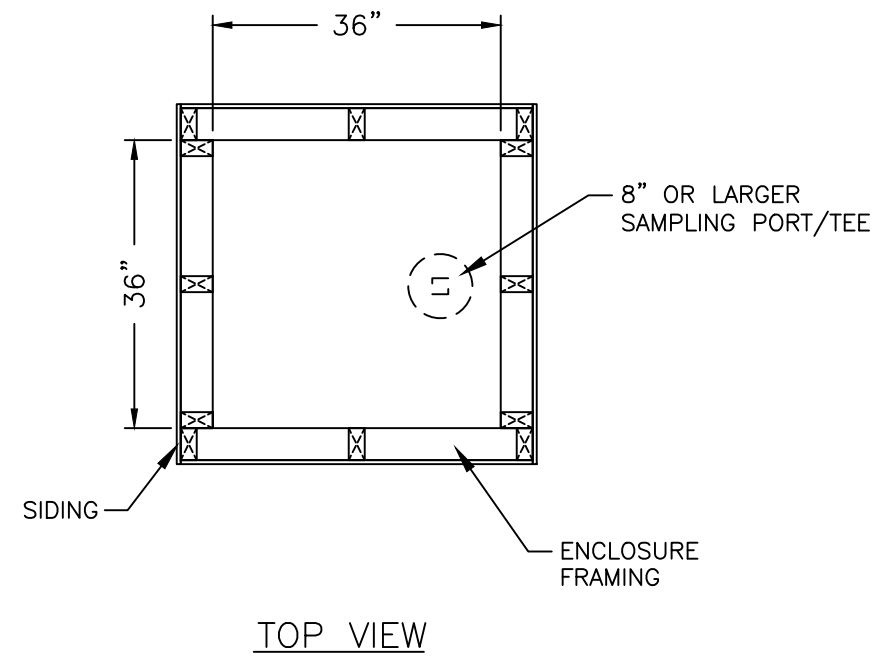
1. Standpipe height  $\leq$  top of sump width/diameter  $\geq$  1.25" inches.
2. Bar/Brace/Unistrut (suspends standpipe in sump).
3. Standpipe perforation zone equal to minimum of 3" above/below water level.
4. Bottom of standpipe equal to invert of outlet/min water level.
5. Bottom of standpipe affixed with two 1" bolts, staggered, to provide for sampling head stop.
6. Pipe perforations in the standpipe to be between 0.5 inches and 1.0 inch in diameter.



Stand Pipe in Sump with Outlet

TYPICAL DETAIL

05



- NOTES:**
1. MATERIALS CAN BE CONCRETE, METAL, PLASTIC, OR WOOD
  2. WOOD CONSTRUCTION IS SHOWN AS AN EXAMPLE
  3. ENCLOSURE SIDING NOT SHOWN FOR CLARITY

# MONITORING ACCESS STRUCTURE ENCLOSURE

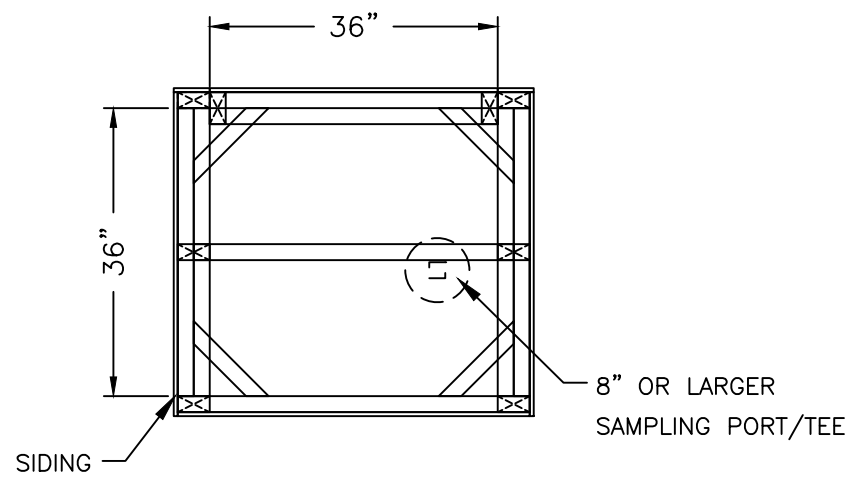
TYPICAL DETAIL

TOP HINGE

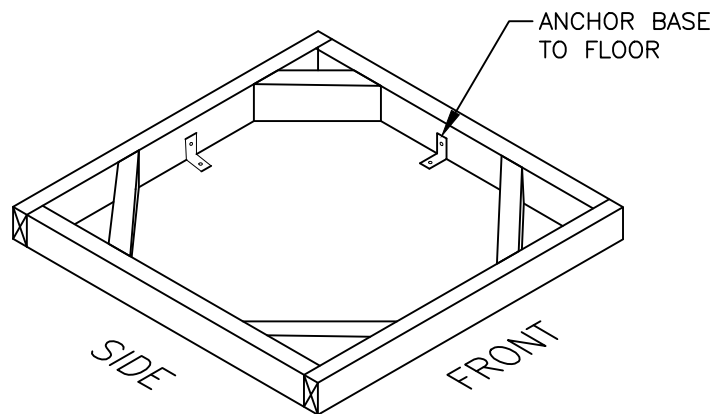
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NOTES:

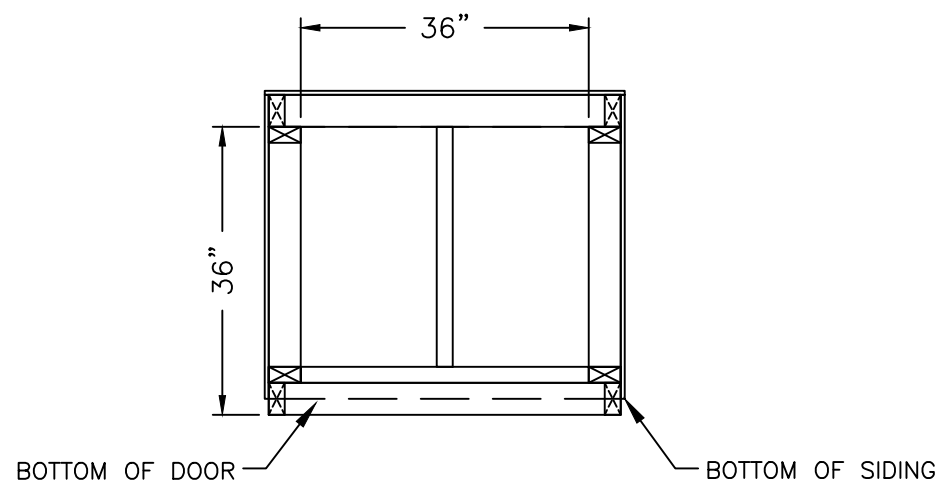
1. MATERIALS CAN BE CONCRETE, METAL, PLASTIC, OR WOOD
2. WOOD CONSTRUCTION IS SHOWN AS AN EXAMPLE
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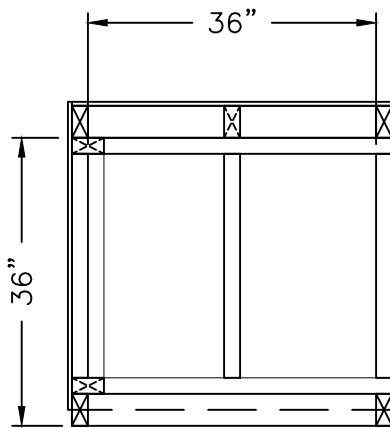
TOP VIEW



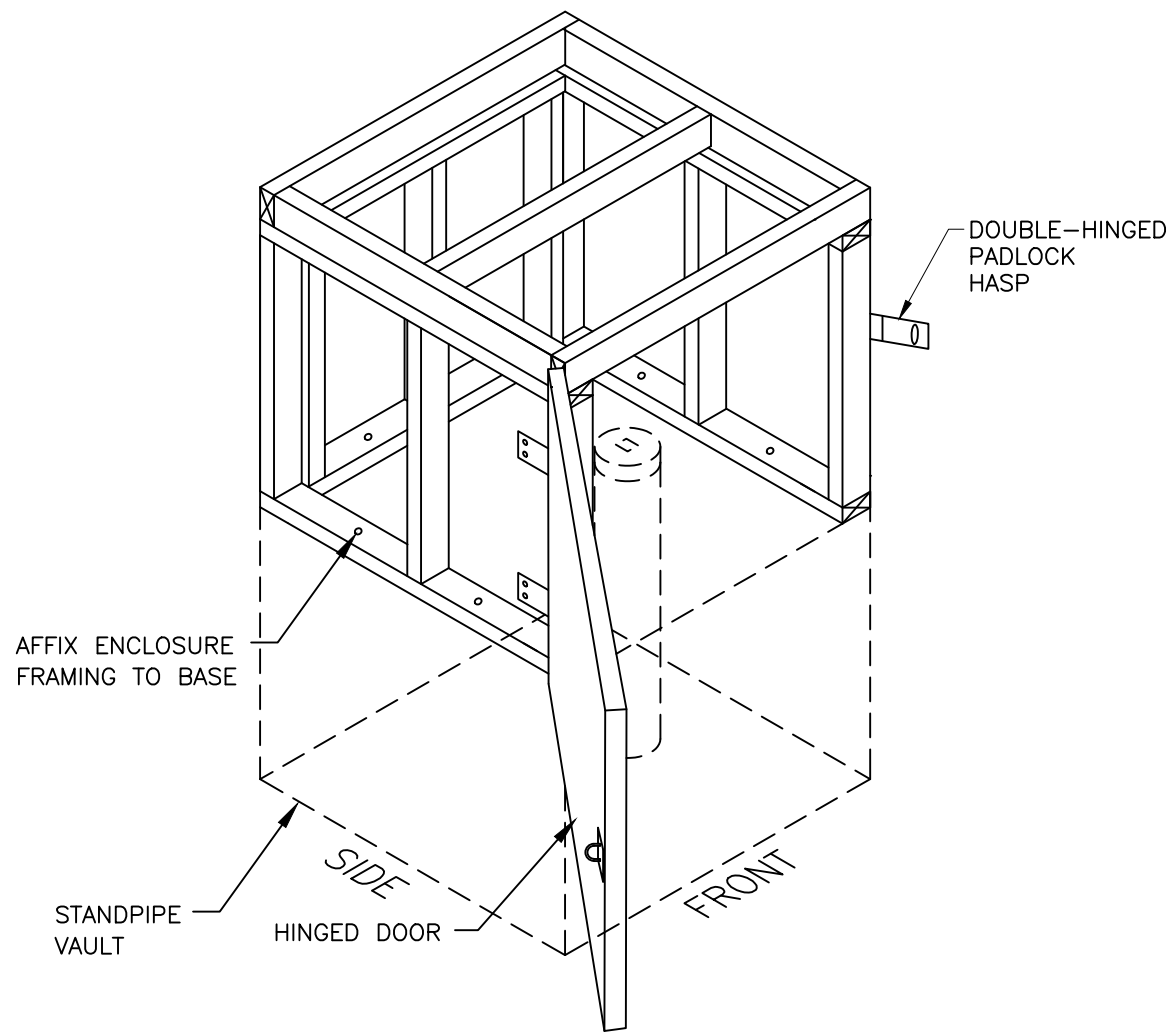
ENCLOSURE BASE FRAMING  
PERSPECTIVE VIEW



FRONT VIEW



SIDE VIEW



ENCLOSURE FRAMING  
PERSPECTIVE VIEW

MONITORING ACCESS STRUCTURE ENCLOSURE

TYPICAL DETAIL

SIDE HINGE

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