South Transfer Station Phase II Project (STSII)

Interim Action Work Plan

February 2015

Interim Action Work Plan

AGENDA

Current Site Status

- Purpose and Objectives
- Site Background
- Interim Action Work Plan
  - Capping Control Elements
  - LFG Control Technologies
- Existing LFG Control Systems and Conditions

Proposed Interim Action Approach

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Current Site Status

Purpose and Objectives

SPU proposes to re-purpose the 11 acre site

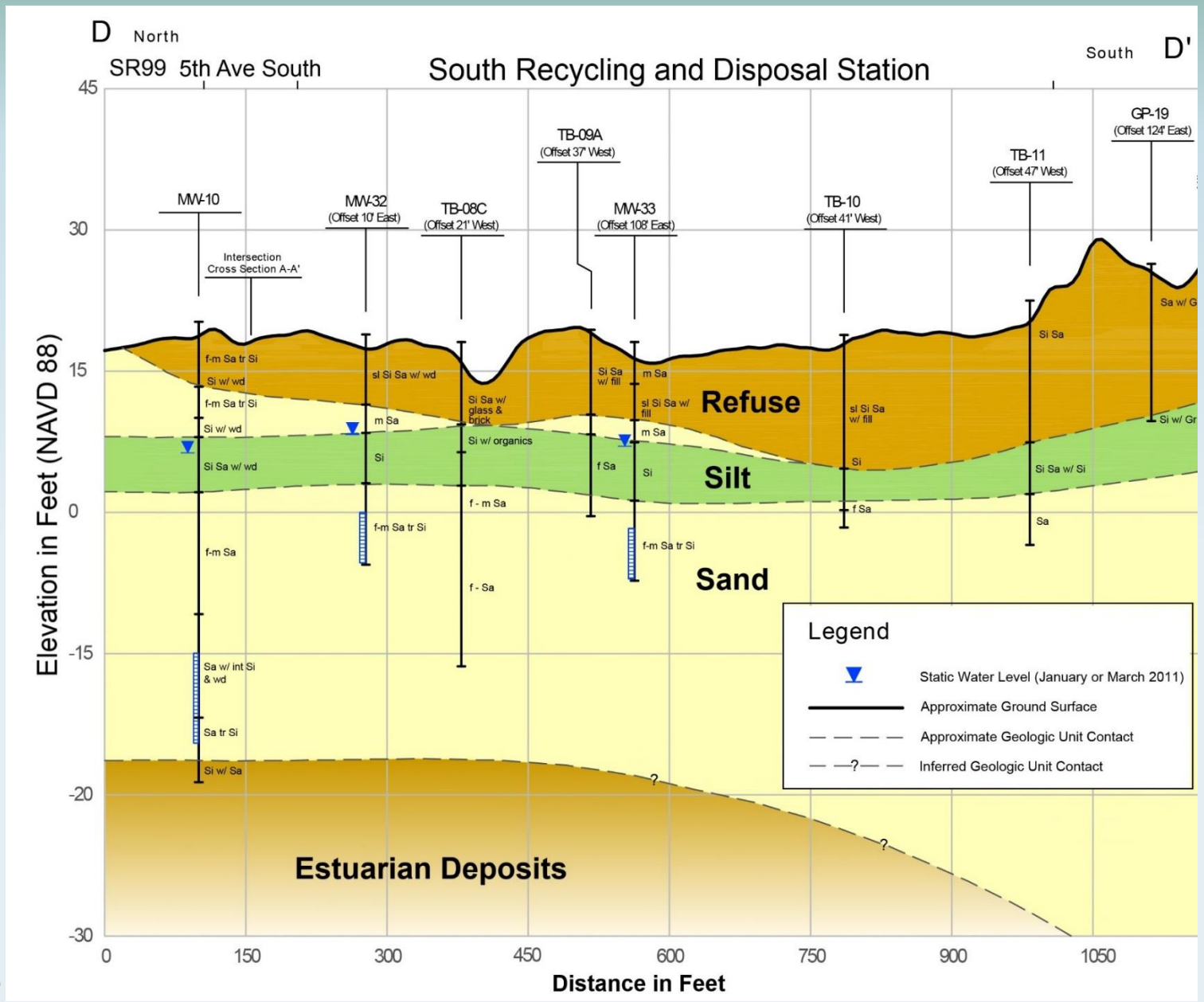
- Demolish existing structures and pavement
- Cover system elements
- LFG controls
- Future use to accommodate several SPU services and functions.


S KENYON ST
SR 509
Kenyon Industrial Park
SR 99 (W MARGINAL WAY S)
5TH AVE S
South Recycling and Disposal Station
OCCIDENTAL AVE S
South Park Property Development, LLC
Parcel No. 3224049005
19.4 acres
5TH AVE S
Legend
Approximate Landfill Boundary (as shown in Work Plan)
Tax Parcel

Section D-D’

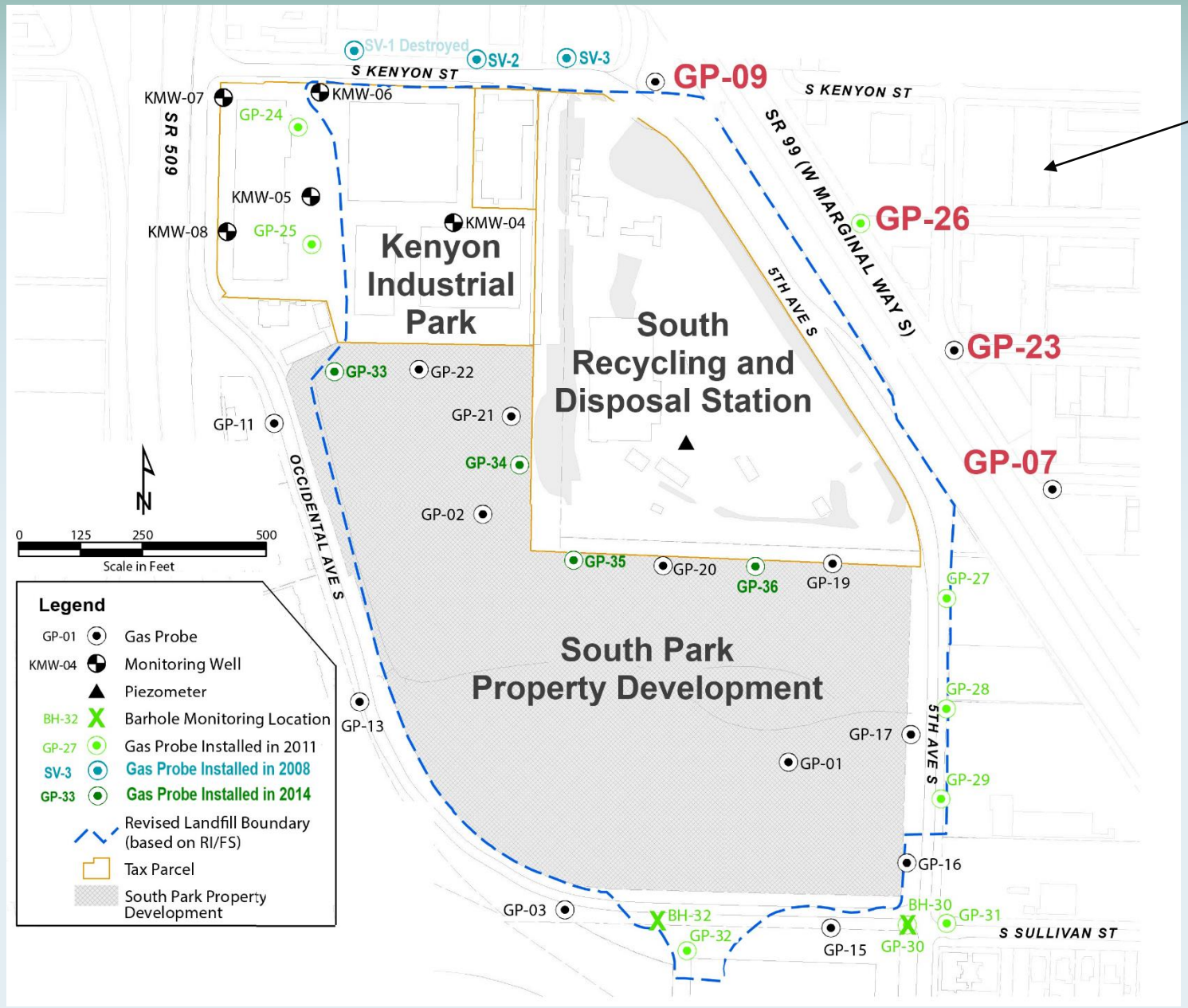

D
MW-25
MW-10
S KENYON ST
SR 509
SR 99 (W MARGINAL WAY S)
MW-32
TB-08C
Kenyon Industrial Park
TB-09A
MW-33
South Recycling and Disposal Station
5TH AVE S
TB-10
FB-13
TB-11
RMW-06
OCCIDENTAL AVE S
South Park Property Development
S SULLIVAN ST
5TH AVE S
MW-06
S CLOVERDALE ST
D'

Site Cross Section



Refuse thickness approx. 15 feet thick

Perimeter Probes



Methane in easterly probes has not been detected (since 1999)

Interim Action Work Plan

- Cap to mitigate exposure, infiltration, and LFG migration
- LFG Control System to mitigate lateral (offsite) and vertical migration
- Integrate with SPPD, KIP, and adjacent control systems
- Separate occupied building control systems
- Mitigate preferential pathways (utilities)

Potential Capping Systems

- Warning/Identifier layer and soil cover
- Geomembrane and Soil cover
- Asphalt/Concrete barriers
- Geotextiles with spray on barriers
- Buildings Foundations/slabs
- Landscape areas allowing venting

LFG Control

- Active – blower vacuum control
- Passive – atmospheric venting
- Combined
  - Passive System
  - Sized for active vacuum flows
  - Manifolded for zone control
  - Valved to easily allow passive-to-active conversion

Typical LFG Collection

Wells	Trenches
Localized extraction/venting control (limited ROI)	Continuous extraction/venting control
Can fully penetrate refuse	Can be installed with and without liners
Can add, as needed	Not affected by groundwater table
More effective in landfills with deeper refuse	No specialized certification for contractor installation
Commonly used with <u>active</u> collection systems	**Used for <u>active</u> and <u>passive</u> perimeter control and interior collection**

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Typical LFG Treatment

- Direct venting
- Dispersion
- Bioberm (odor control and degradation)
- GAC (odor control)
- Flare (>20% methane – utility or enclosed flares) – Not applicable at this site

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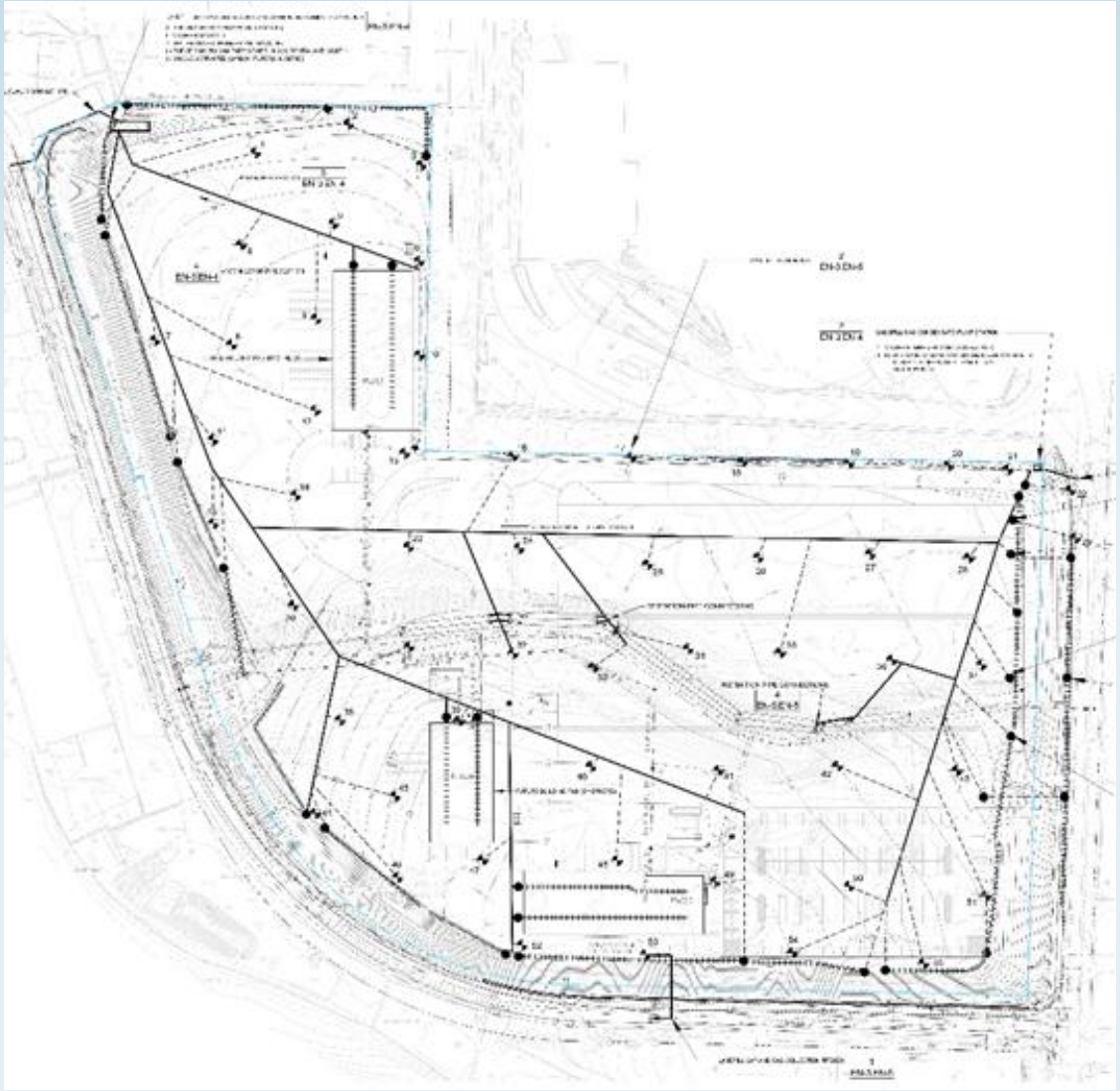
Existing Systems (SPPD and KIP)

- High flow active system on SPPD
- KIP has had ACP cover since approx. 1968

SPPD – High Flow Active Collection



- Gridded well system
- Perimeter wells
- Shallow collector trenches
- Buildings connected to site system

Proposed Interim Action Approach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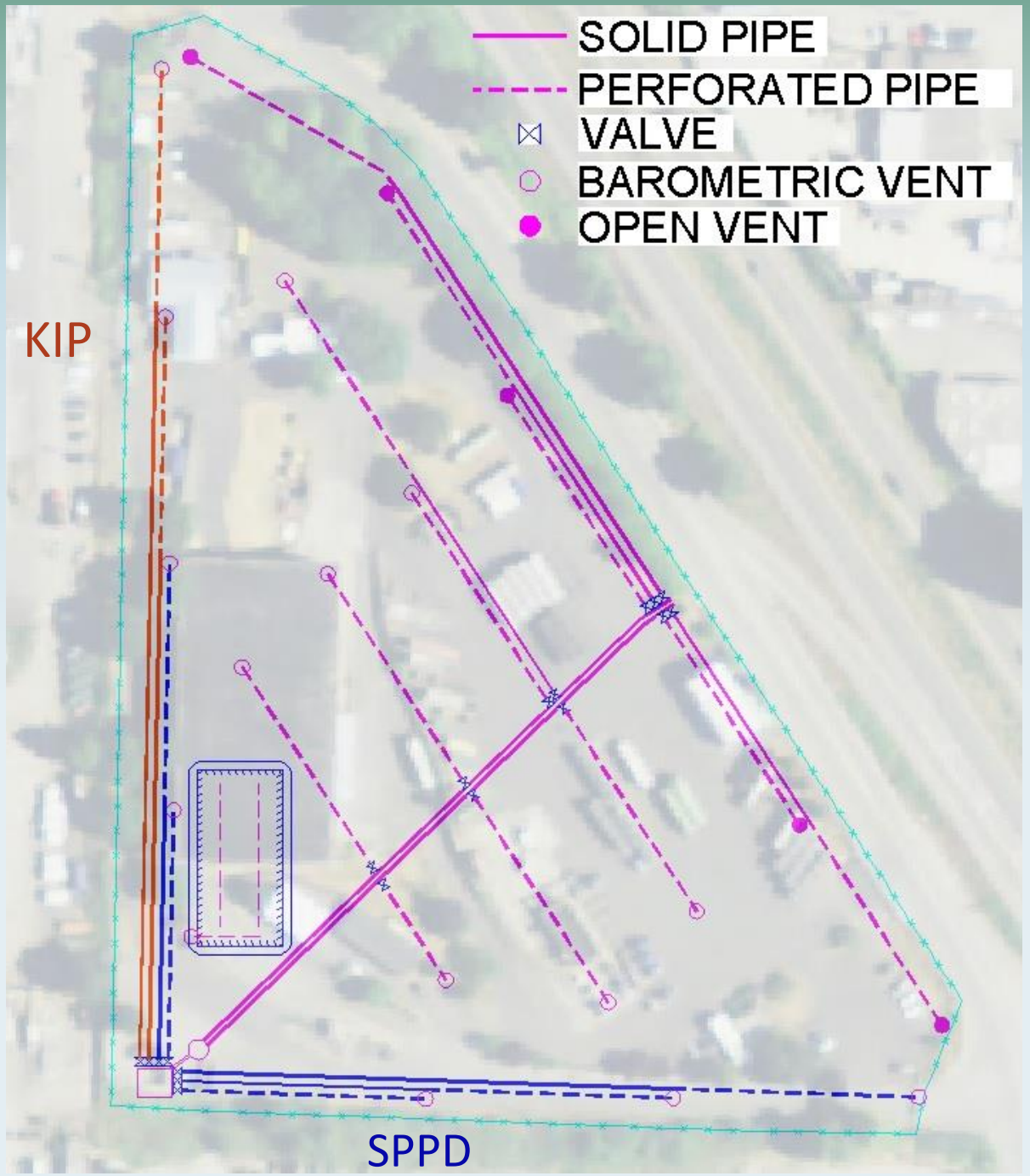
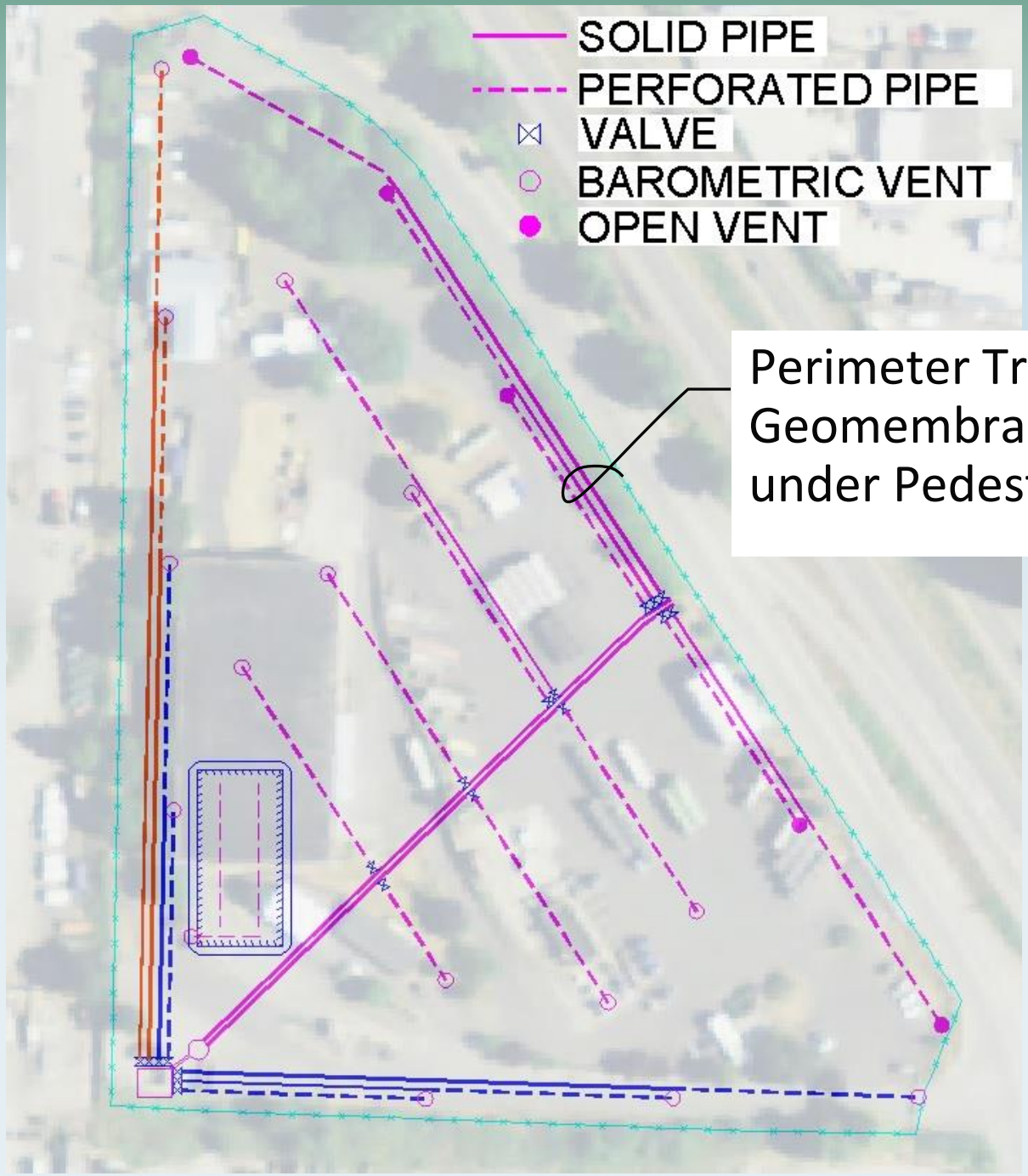

SOLID PIPE
PERFORATED PIPE
VALVE
BAROMETRIC VENT
OPEN VENT
KIP
SPPD



Perimeter Trench with Geomembrane Flap under Pedestrian Path

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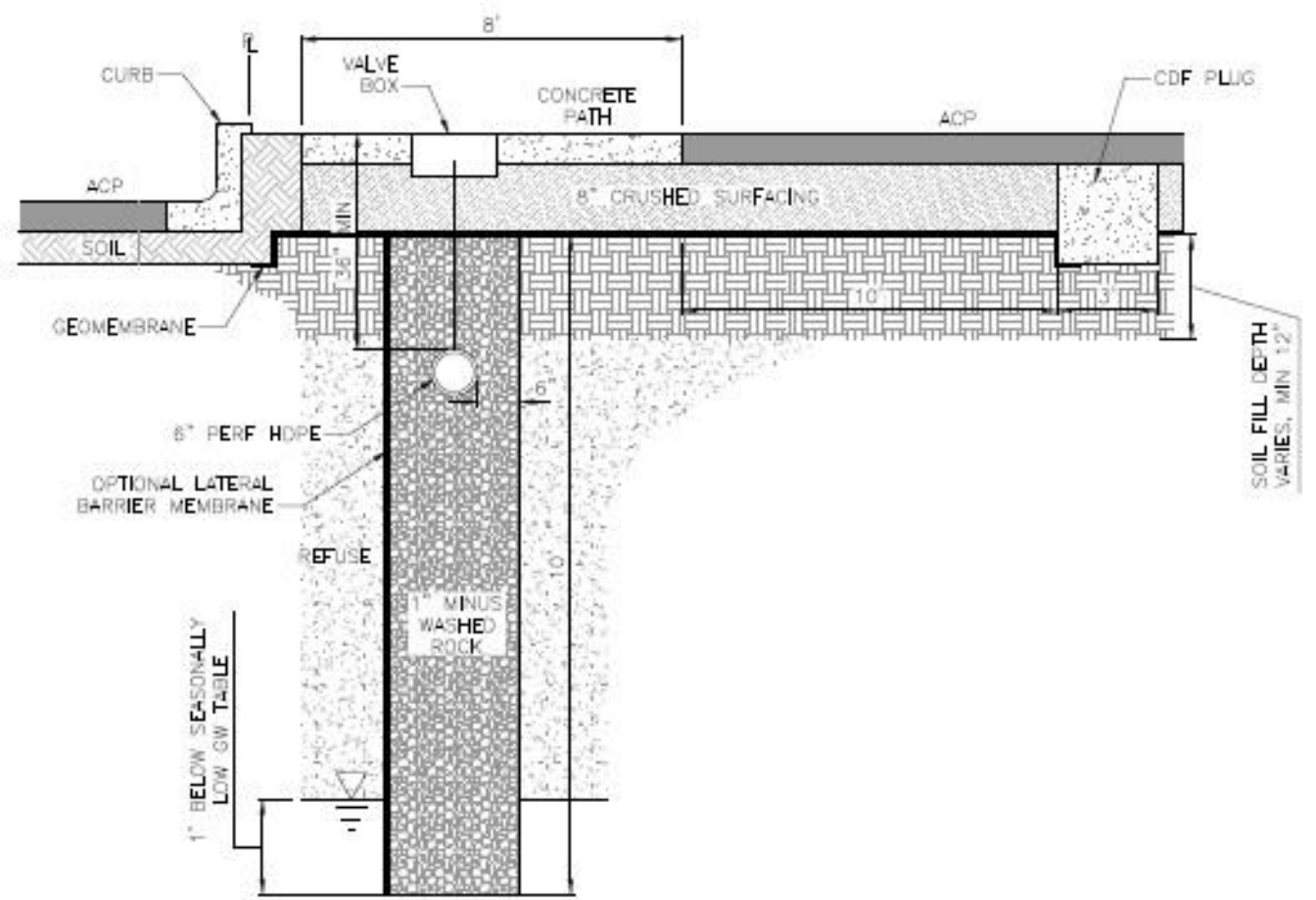
Perimeter Trench with Membrane Flap



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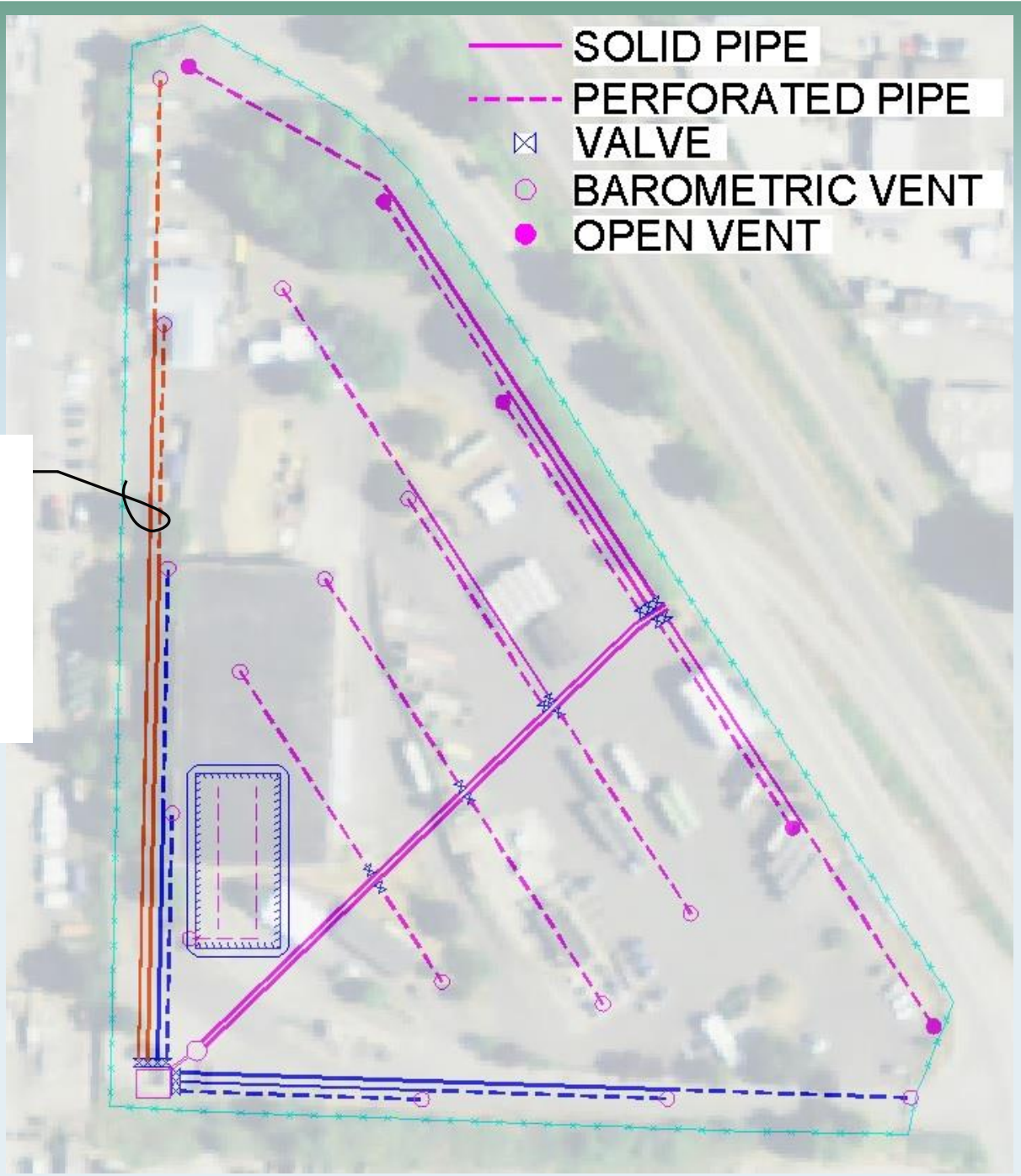
Example Liner Construction

- Pedestrian Trail – West Seattle



Perimeter Trench with Asphalt Cover

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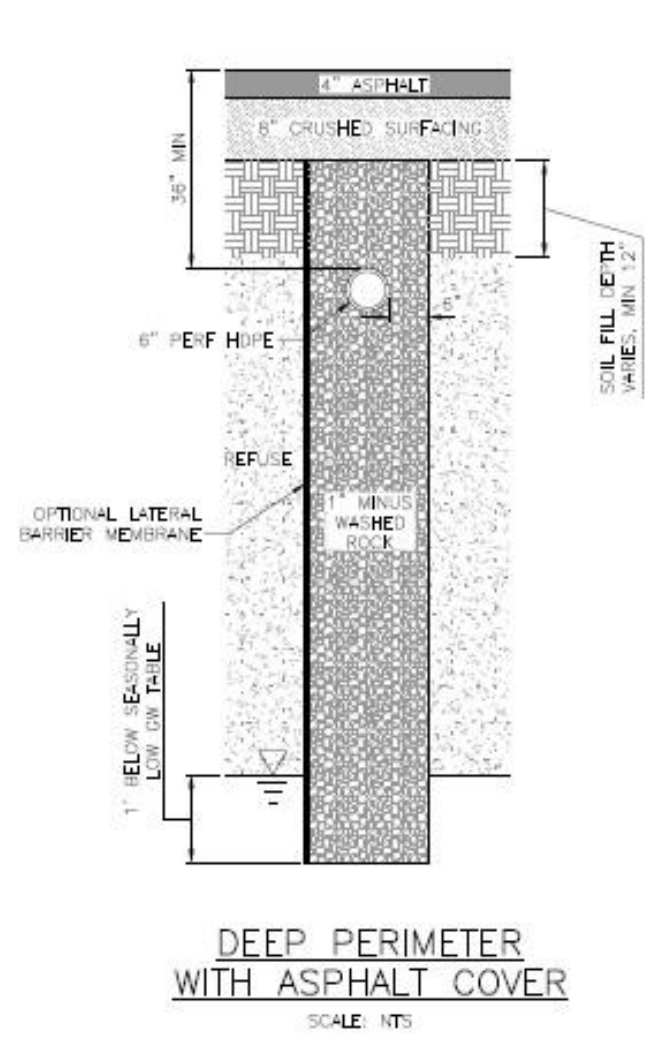
Perimeter Trench with Asphalt Cover



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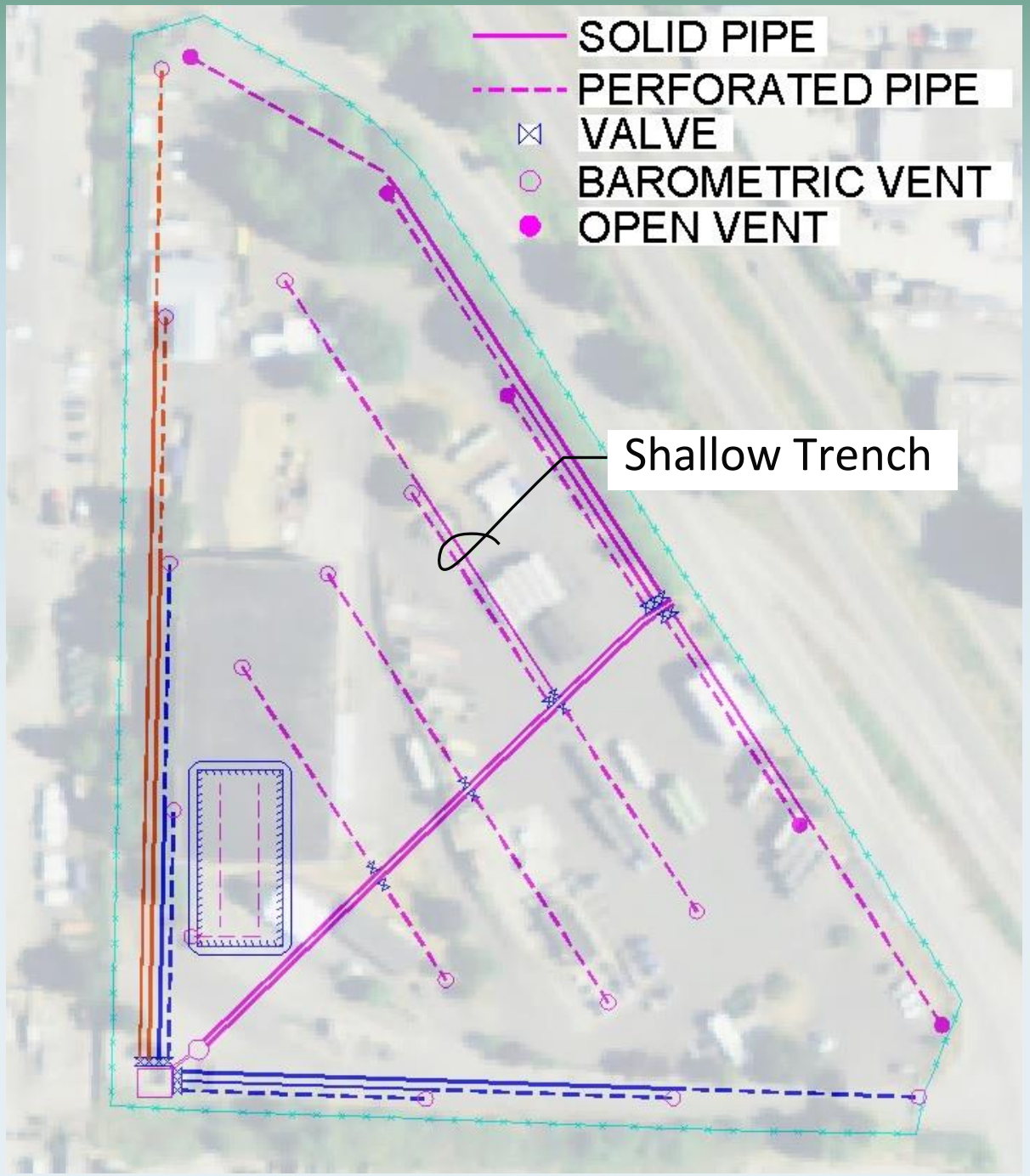
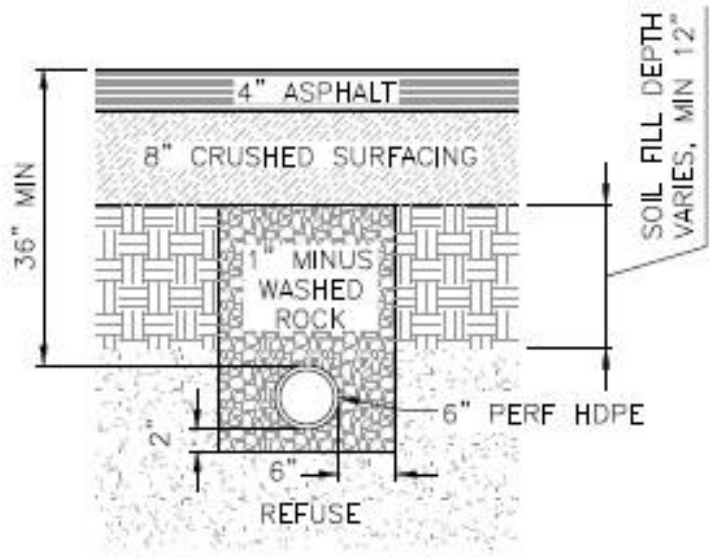
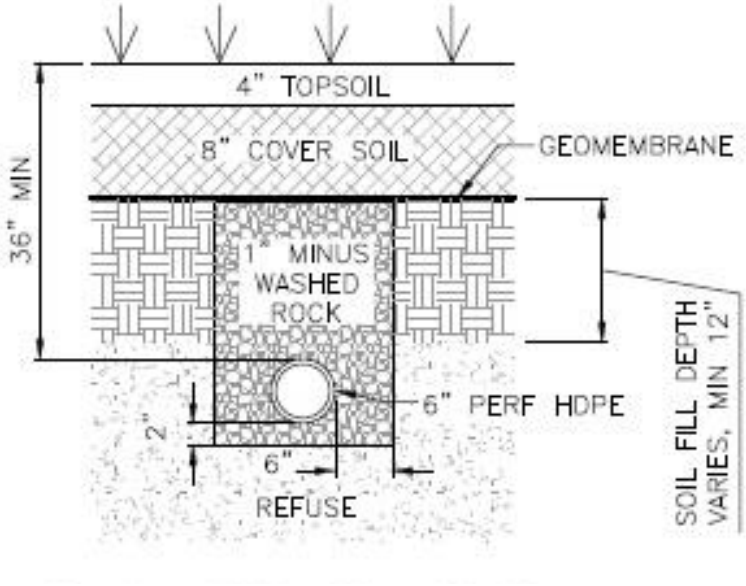

SOLID PIPE
PERFORATED PIPE
VALVE
BAROMETRIC VENT
OPEN VENT
Shallow Trench

Shallow Trench



With Asphalt Cover



With Membrane

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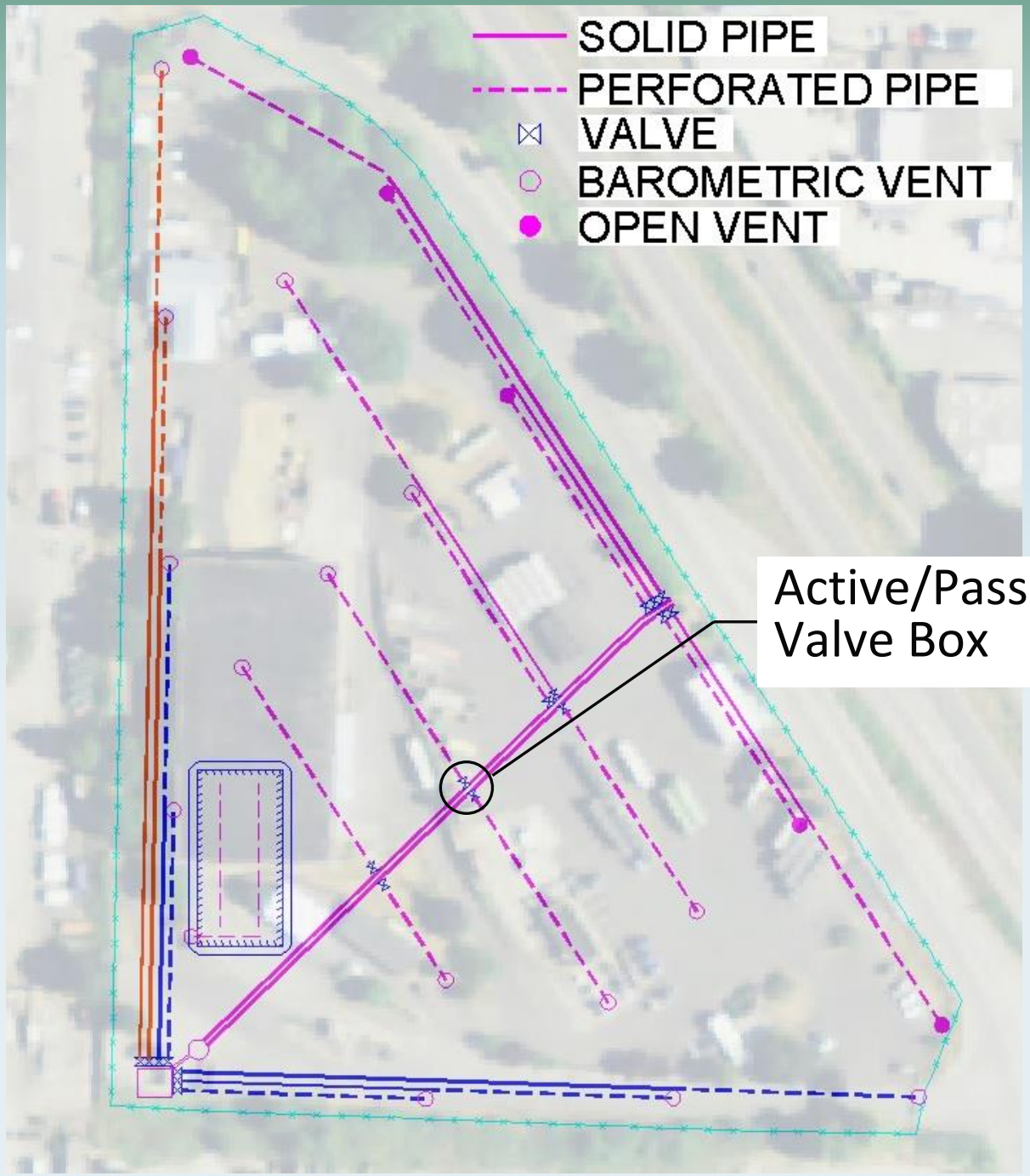
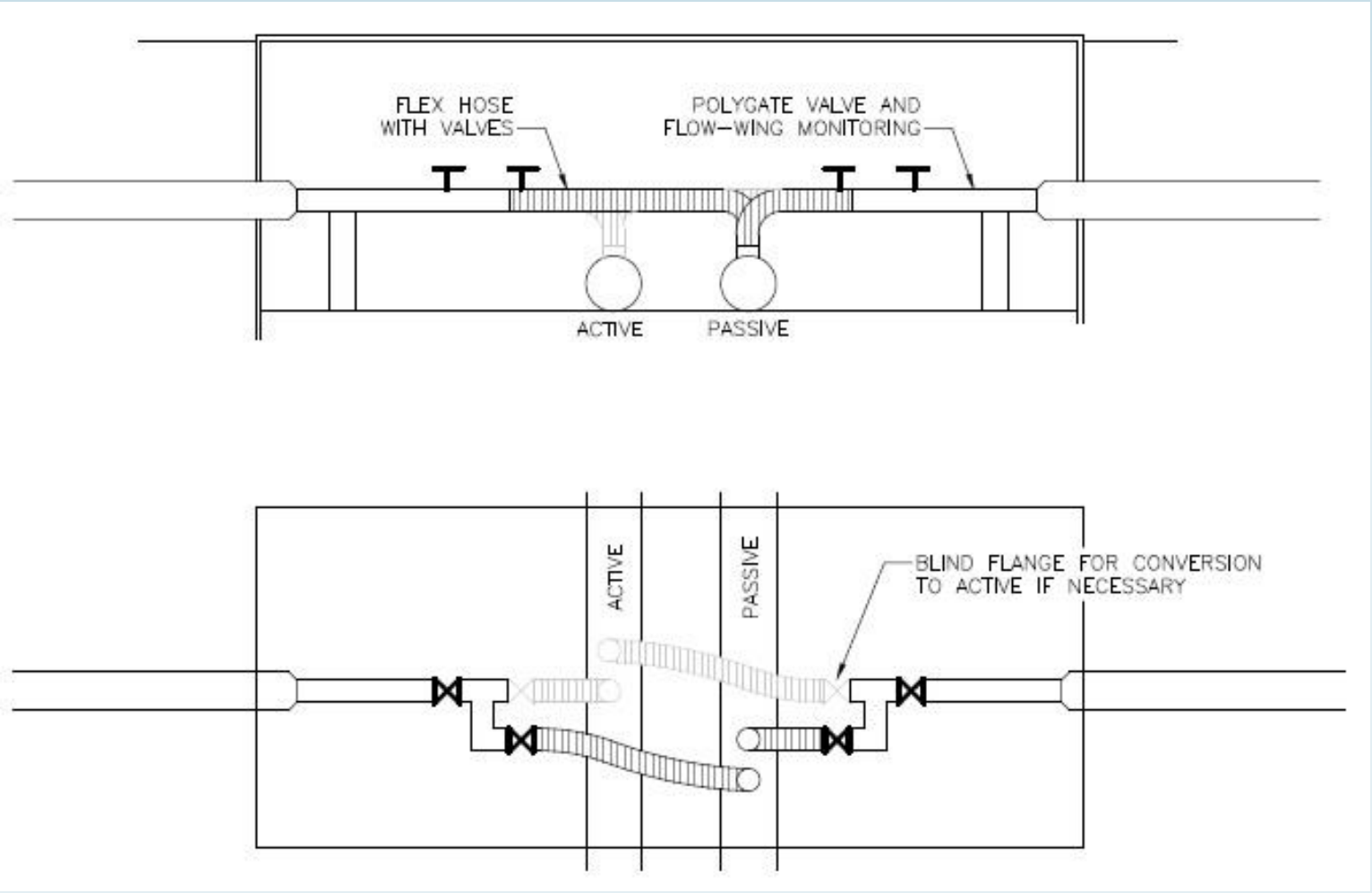

SOLID PIPE
PERFORATED PIPE
VALVE
BAROMETRIC VENT
OPEN VENT
Active/Passive
Valve Box

Active/Passive Valve Box



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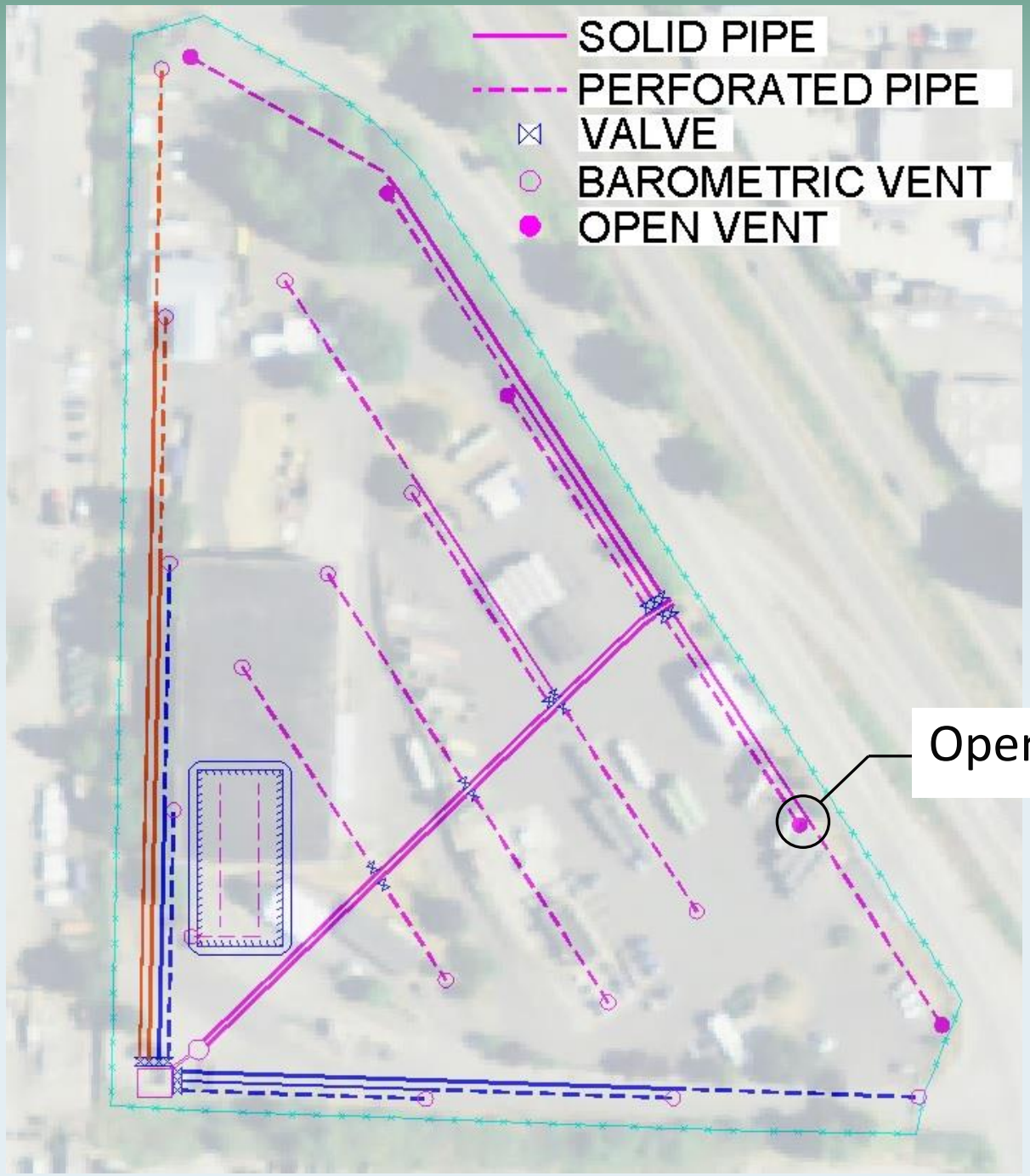
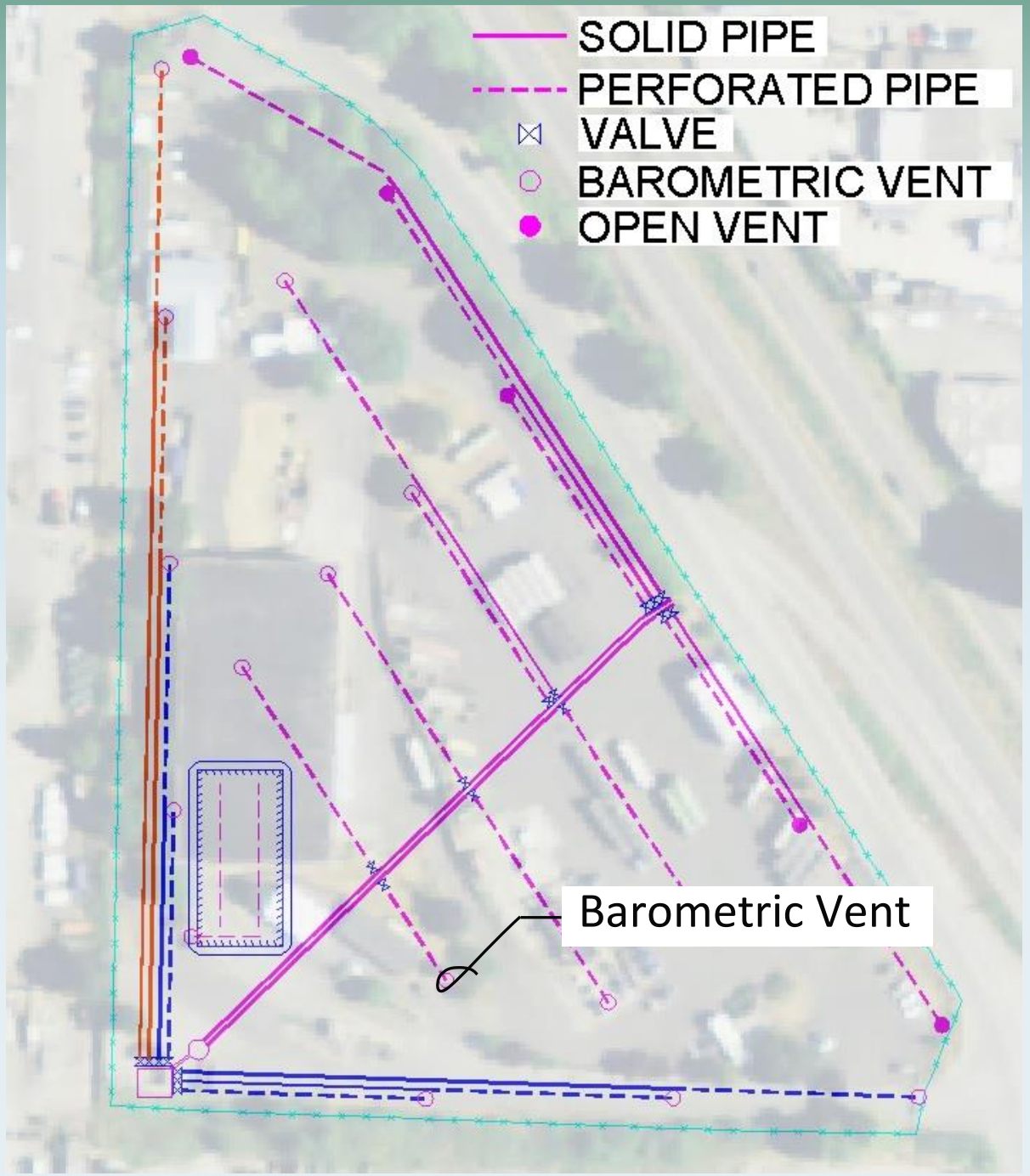
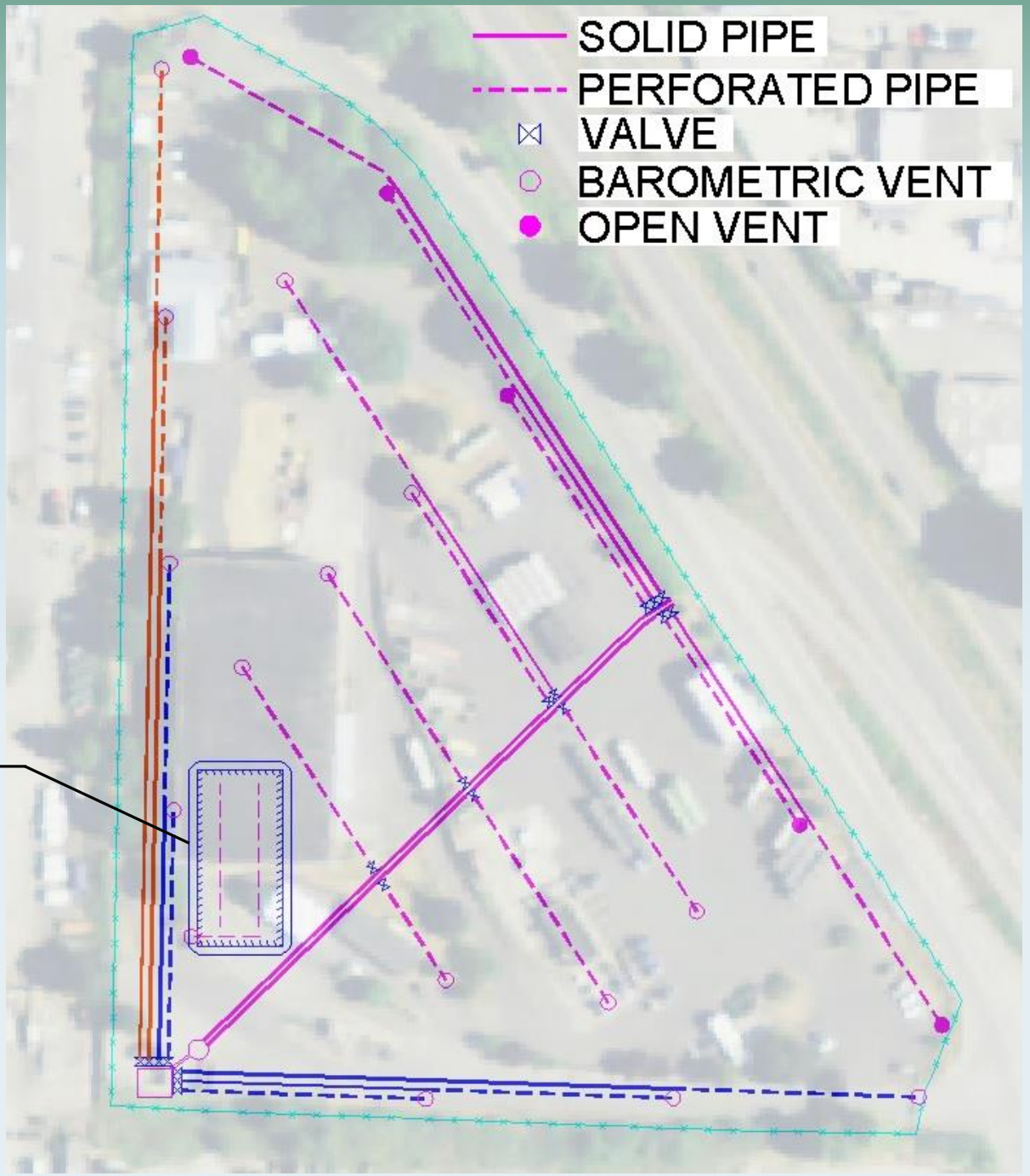

SOLID PIPE
PERFORATED PIPE
VALVE
BAROMETRIC VENT
OPEN VENT
Open Vent

Open Vent


SOLID PIPE
PERFORATED PIPE
VALVE
BAROMETRIC VENT
OPEN VENT
Barometric Vent

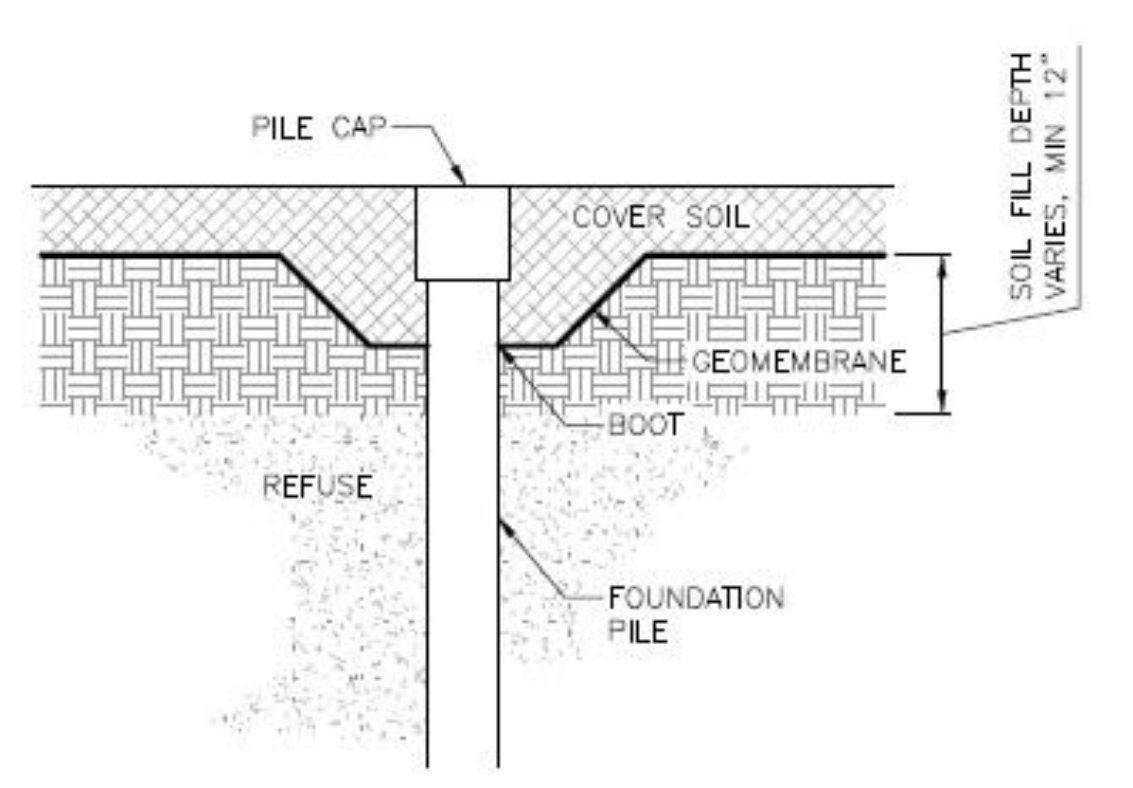
Barometric Vent


SOLID PIPE
PERFORATED PIPE
VALVE
BAROMETRIC VENT
OPEN VENT
Example Building

Building – Under Slab Collection Piping and Liners

Building - Under Slab Collection Piping

Building – Liner Under Pile Caps



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Building - Membrane

- Liquid Boot, PVC, HDPE

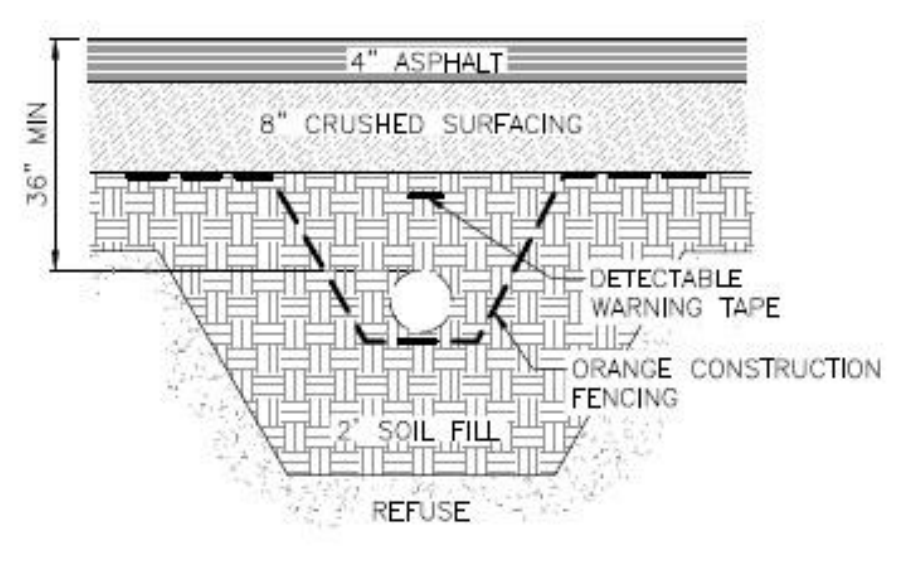
Building – Example Methane Detector and Alarms

Building – Example Methane Detectors

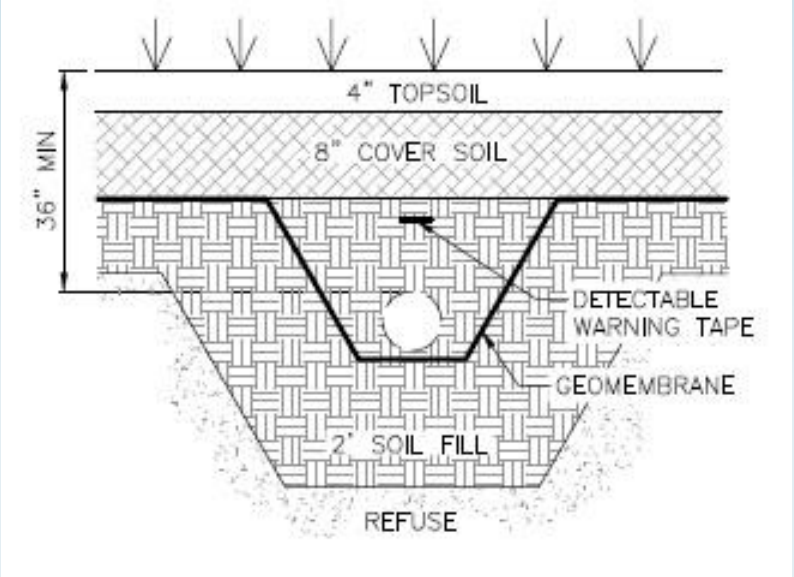
Utilities

- Utilities to be constructed in pre-excavated corridors to allow future maintenance without exposure.
- Identifier layer in trenches for cover system separation
- Trench plugs to mitigate migration
- Conduit seal-offs
- Utility pipe flex-Joints

Utility Corridor



WITH ASPHALT COVER



WITH SOIL COVER

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Utility Trench Seal