

# **OPERATION & MAINTENANCE MANUAL**

**DFI No. : D01178**

**Facility Type: Drywell**

**September 2018**

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## 1. Identification

Drainage Facility ID (DFI): **D01178**

Facility Type: Drywell

Construction Drawings: (V-File Number) 52V-005

Location: District: 2B

Highway No.: 026

Mile Post: 7.81 (beg./end)

Description: This facility is located along the north side of SE Powell Boulevard in the northwest corner of the intersection with 134<sup>th</sup> Avenue.

## 2. Facility Contact Information

Contact the Engineer of Record, Region Technical Center, or Geo-Environmental's Senior Hydraulics Engineer for:

- Operational clarification
- Maintenance clarification
- Repair or restoration assistance

### Engineering Contacts:

Region Technical Center Hydro Unit Manager

Or

Geo-Environmental Senior Hydraulics Engineer (503) 986-3365.

## 3. Construction

Engineer of Record:

ODOT Designer – Region 1 Hydraulics, Bruce Council, PE, (503) 731-8319

Consultant Designer – HDR, Christine Higgins, PE, (503) 423-3700

Facility construction: 2019

Contractor: To be Determined

#### 4. Storm Drain System and Facility Overview

Drywells are structural subsurface facilities with perforated sides or bottom used to dispose/infiltrate stormwater into the ground. Drywells are usually configured with an upstream sedimentation manhole as a form of pretreatment. Drywells have been designed to fully store and infiltrate the volume of runoff from the 25-year, 24-hour rainfall event.

This facility is located along the north side of SE Powell Boulevard in the northwest corner of the intersection with 134<sup>th</sup> Avenue behind the sidewalk. This facility's access manhole lid is flush with the adjacent ground, with 4.5 feet of drain rock surrounding the precast perforated drywell sections.

The drywell is the end point for the stormwater conveyance system. Runoff is collected with a curb inlet conveyed to a sedimentation manhole, and then discharged into the drywell where the water is infiltrated into the groundwater.

A. Maintenance equipment access:

The facility can be accessed from SE Powell Boulevard.

B. Heavy equipment access into facility:

- Allowed (no limitations)
- Allowed (with limitations)
- Not allowed

C. Special Features:

- Amended Soils
- Porous Pavers
- Liners
- Underdrains

#### 5. Maintenance Requirements

Routine maintenance table for non-proprietary stormwater treatment and storage/detention facilities have been incorporated into ODOT's Maintenance Guide. These tables summarize the maintenance requirements for ponds, swales, filter strips, bioslopes, and detention tanks and vaults. Special maintenance requirements in addition to the routine requirements are noted below when applicable.

The ODOT Maintenance Guide can be viewed at the following website:

<https://www.oregon.gov/ODOT/GeoEnvironmental/Pages/Stormwater.aspx>

The stormwater facility maintenance table (See ODOT Maintenance Guide) should be used to maintain the facility outlined in this Operation and Maintenance Manual:

Mark as Required and always include Table 1:

- Table 1 (general maintenance)
- Table 2 (stormwater ponds)
- Table 3 (water quality biofiltration swales)
- Table 4 (water quality filter strips)
- Table 5 (water quality bioslopes)
- Table 6 (detention tank)
- Table 7 (detention vault)
- Appendix C (proprietary structure)

## 6. Waste Material Handling

Material removed from the facility is defined as waste by DEQ. Refer to the Roadwaste section of the ODOT Maintenance Yard Environmental Management System (EMS) Policy and Procedures Manual for disposal options:

[https://www.oregon.gov/ODOT/Maintenance/Documents/ems\\_manual.pdf](https://www.oregon.gov/ODOT/Maintenance/Documents/ems_manual.pdf)

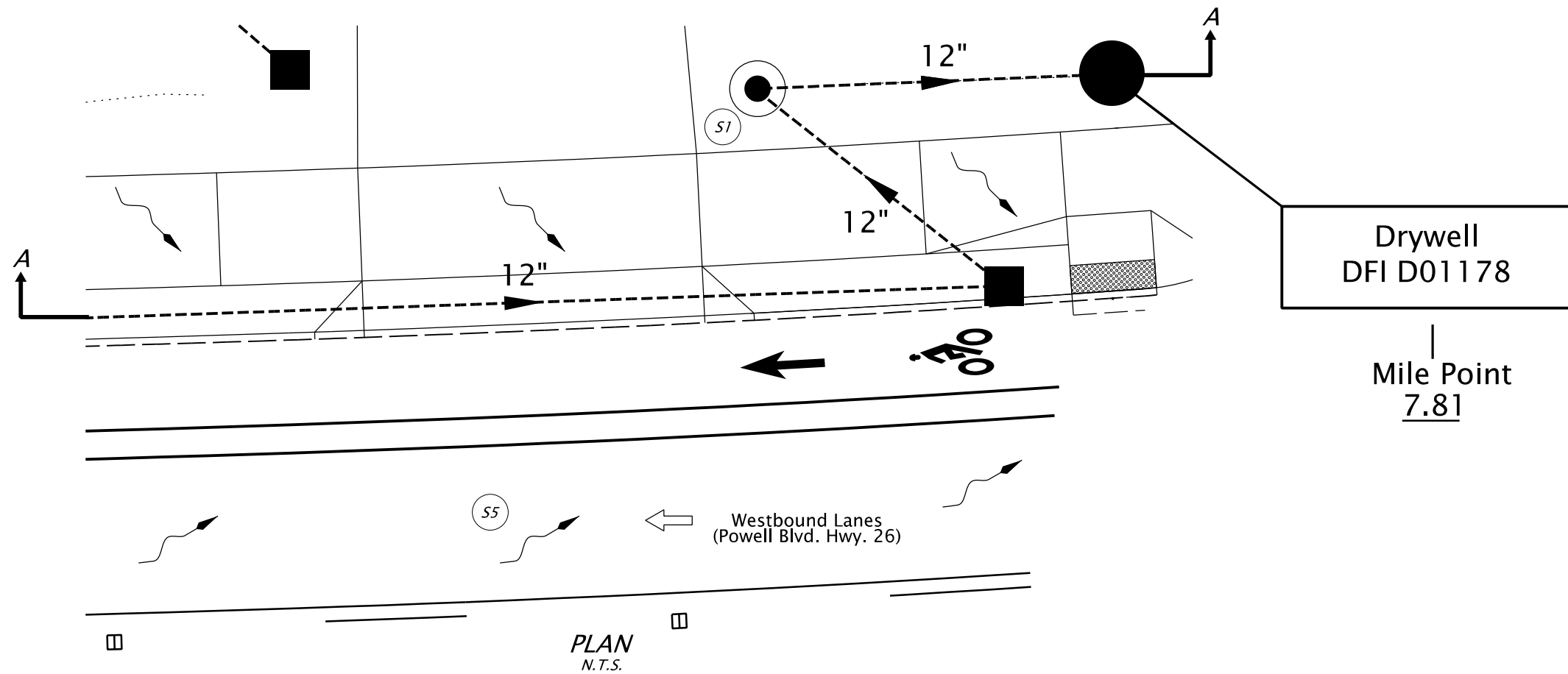
Contact any of the following for more detailed information about management of waste materials found on site:

ODOT Clean Water Unit	(503) 986-3008
ODOT Statewide Hazmat Coordinator	(503) 229-5129
ODOT Region 1 Hazmat Coordinator	(503) 731-8290
ODEQ Northwest Region Office	(503) 229-5263

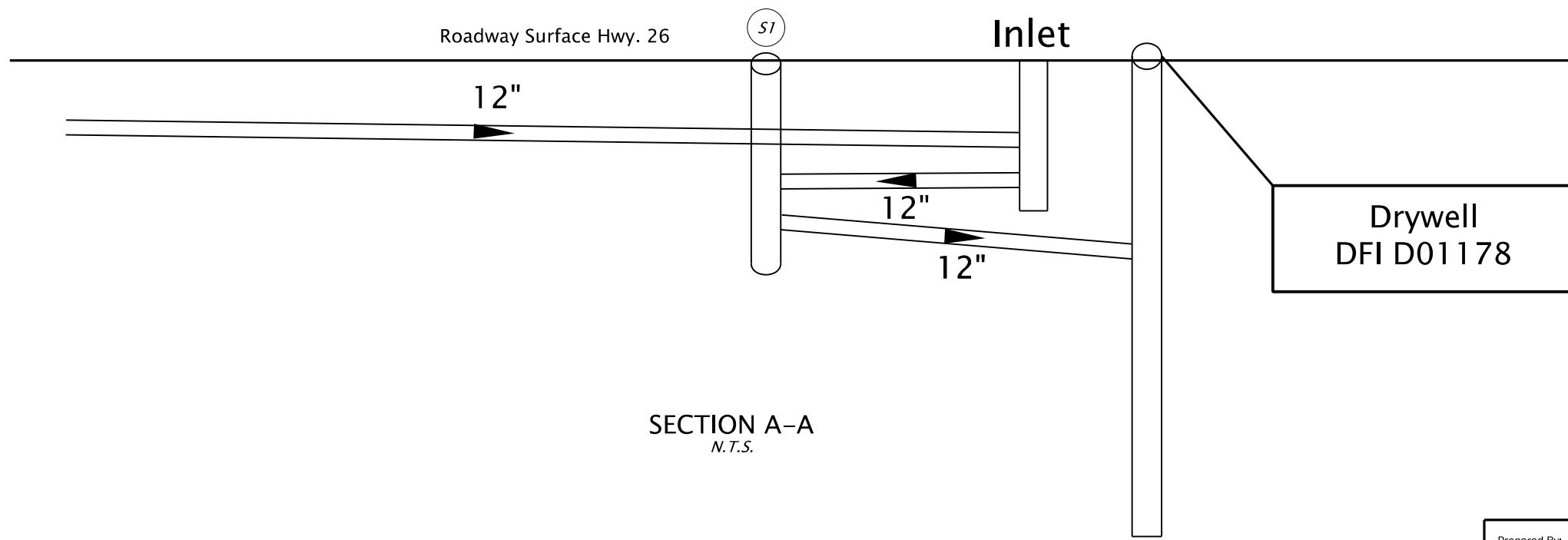
# Appendix A

## Content:

- **Operational Plan and Profile Drawing(s)**



PLAN  
N.T.S.



SECTION A-A  
N.T.S.

- LEGEND:
- (S1) Pretreatment Manhole
  - (S5) Pavement Sheet Flow
  - and □ Inlet
  - and ○ Manhole
  - and ○ Drywell
  - - - Storm Pipe
  - Conveyance Direction
  - ~ Pavement / Facility Flow Path
  - ← Traffic Flow Direction



OREGON DEPARTMENT  
OF TRANSPORTATION

Prepared By:  
\_\_\_\_\_ CMG \_\_\_\_\_

Drafted By:  
\_\_\_\_\_ CMG \_\_\_\_\_

**DFI D01178**  
**MAINTENANCE DISTRICT 2B HWY 026**  
**DRYWELL**  
HIGHWAY MP 7.81  
MULTNOMAH COUNTY

# Appendix B

## Content:

- **ODOT Project Plan Sheets**
  - *Cover/Title Sheet*
  - *Water Quality/Detention Plan Sheets*
  - *Other Details*



STATE OF OREGON  
DEPARTMENT OF TRANSPORTATION

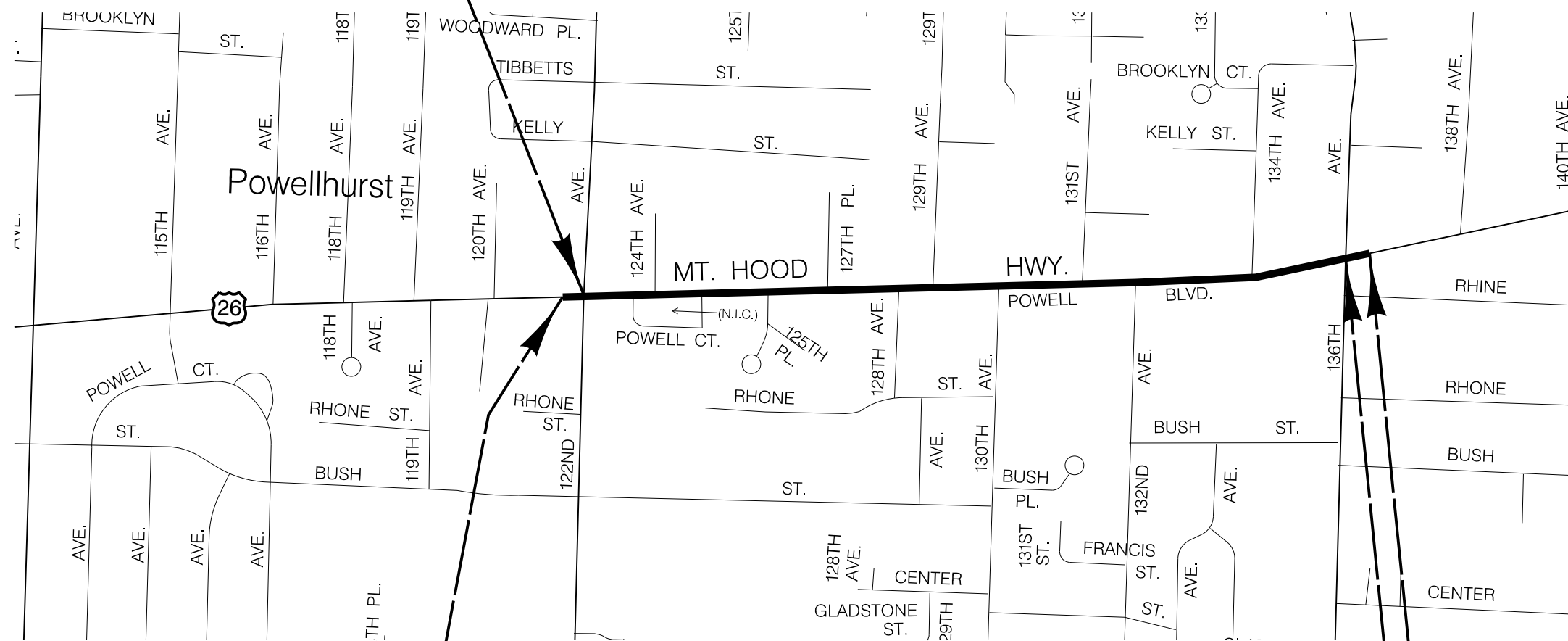
PLANS FOR PROPOSED PROJECT  
GRADING, PAVING, DRAINAGE, SIGNING,  
ILLUMINATION, SIGNALS, AND ROADSIDE DEVELOPMENT

**US26 (POWELL BLVD):  
SE 122ND AVE - SE 136TH AVE SEC.**

**MT. HOOD HIGHWAY  
MULTNOMAH COUNTY  
DECEMBER 2018**

**BEGINNING OF PROJECT**

**STA. "P" 1106+29.96 (M.P. 7.21)**



**BEGINNING OF PAVING**

**STA. "P" 1103+68.00 (M.P. 7.16)**

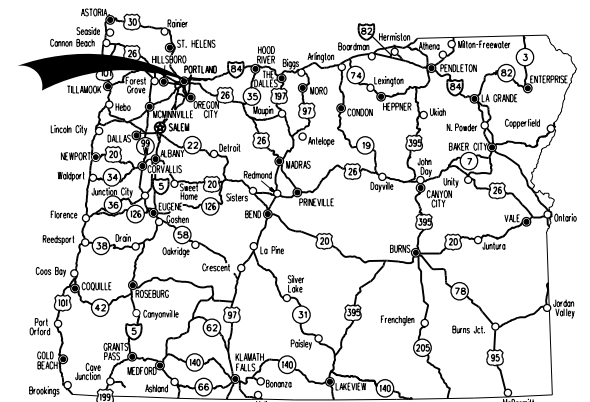
**END OF PROJECT**

**STA. "P" 1142+67.74 (M.P. 7.90)**

**END OF PAVING**

**STA. "P" 1145+25.00 (M.P. 7.95)**

T. 1 S., R. 2 E., W.M.



Overall Length Of Project - 0.93 Miles

**ATTENTION:**  
Oregon Law Requires You To Follow Rules Adopted By The Oregon Utility Notification Center. Those Rules Are Set Forth In OAR 952-001-0010 Through OAR 952-001-0090. You May Obtain Copies Of The Rules By Calling The Center. (Note: The Telephone Number For The Oregon Utility Center Is (503) 232-1987.)



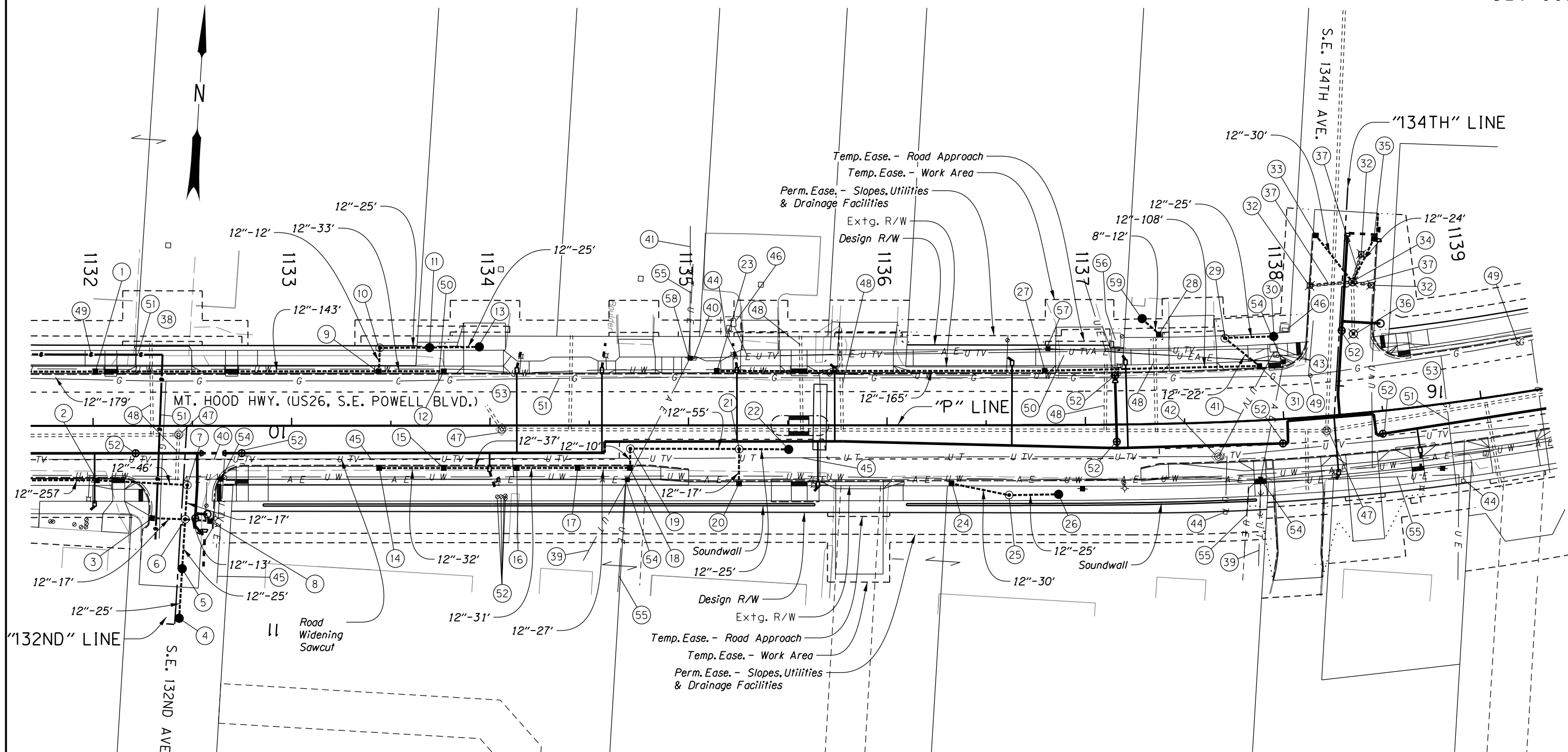
**OREGON TRANSPORTATION COMMISSION**  
Tammy Boney CHAIR  
David Lohman COMMISSIONER  
Paula Brown COMMISSIONER  
Alando Simpson COMMISSIONER  
Sean O'Hollaren COMMISSIONER  
Matthew L. Garrett DIRECTOR OF TRANSPORTATION

These plans were developed using ODOT design standards. Exceptions to these standards, if any, have been submitted and approved by the ODOT Chief Engineer or their delegated authority.

Approving Authority: \_\_\_\_\_  
Signature & date  
\_\_\_\_\_  
Print name and title  
\_\_\_\_\_  
Concurrence by ODOT Chief Engineer

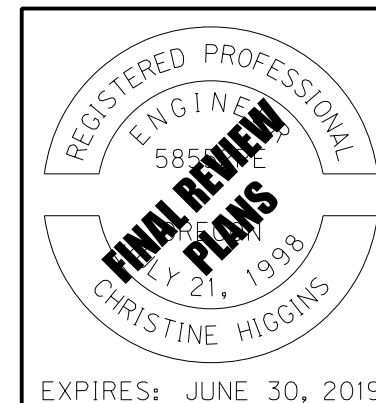
**US26 (POWELL BLVD):  
SE 122ND AVE - SE 136TH AVE SEC.  
MT. HOOD HIGHWAY  
MULTNOMAH COUNTY**

FEDERAL HIGHWAY ADMINISTRATION	PROJECT NUMBER	SHEET NO.
OREGON DIVISION	HSIP-S026(126)	A01



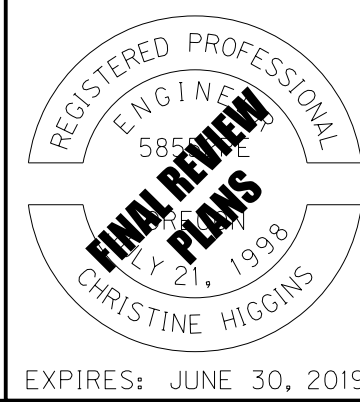
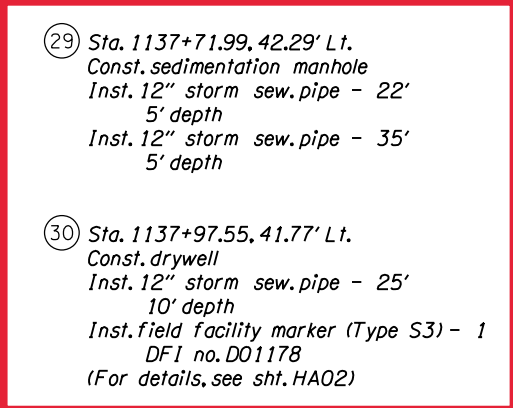
**General Notes:**


See sheets RA01 to RA14 for the relocation of the PWB water system.  
 PWB will install the water meter in the water meter box installed by the Contractor.  
 The road widening sawcut line does not reflect the sawcutting for trench resurfacing.



	HDR ENGINEERING, INC 1001 SW 5TH AVENUE, SUITE 1800 PORTLAND, OR 97204-1134 503.423.3700	
	<b>US26 (POWELL BLVD):                  SE 122ND AVE - SE 136TH AVE SEC.</b> MT. HOOD HIGHWAY MULTNOMAH COUNTY	
Designer: Cory Gieseke Drafter: Cory Gieseke	Reviewer: Christine Higgins Checker: Kyle Donovan	SHEET NO. C06C
<b>DRAINAGE AND UTILITIES - PLANS</b>		

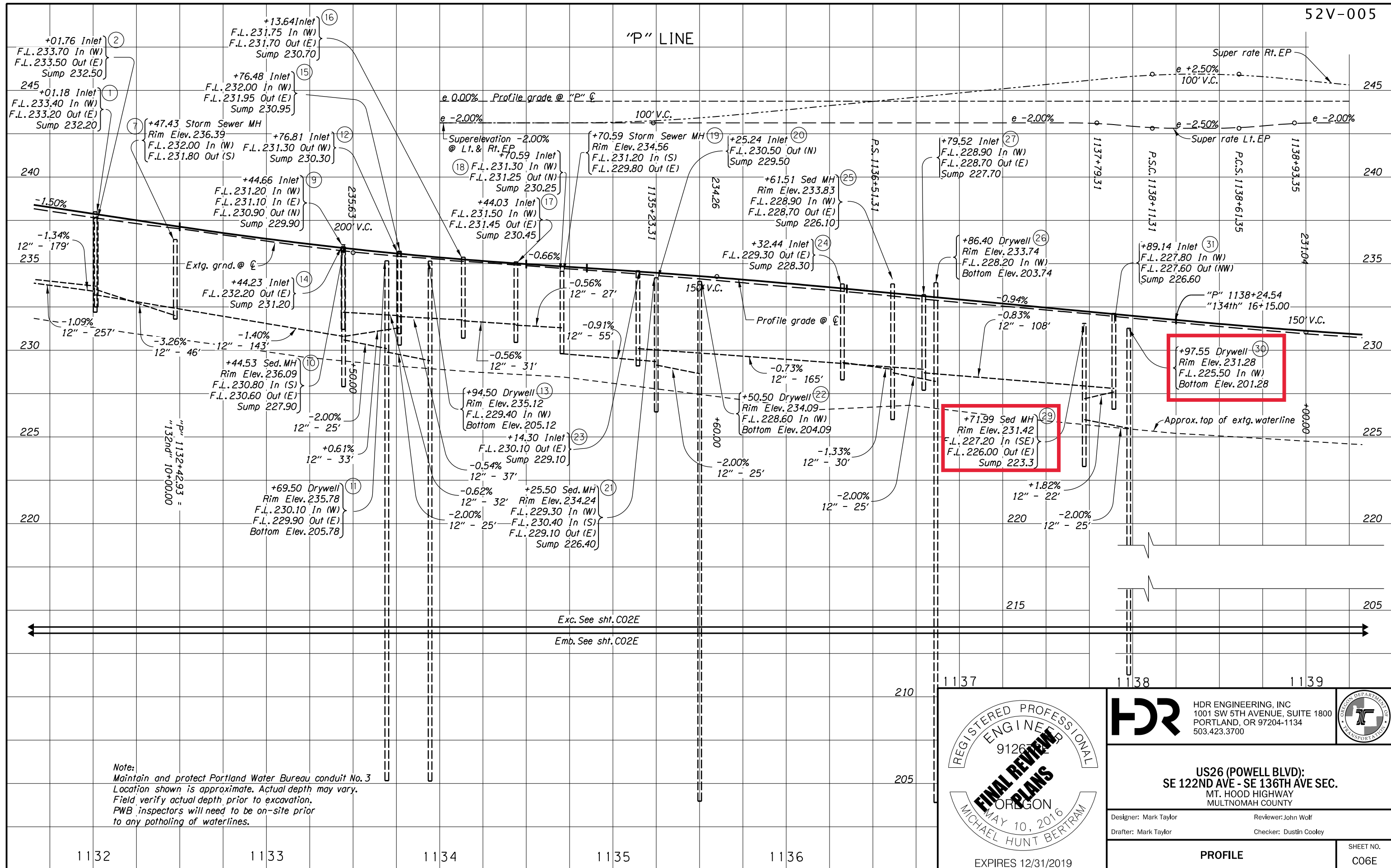
- ① Sta. 1132+01.18, Lt.  
Const. type "CG-3" inlet with sump  
Inst. 12" storm sew. pipe - 179'  
5' depth
- ② Sta. 1132+01.76, Rt.  
Const. type "CG-3" inlet with sump  
Inst. 12" storm sew. pipe - 257'  
5' depth
- ③ Sta. "132ND" 10+47.17, Rt.  
Const. type "CG-2" inlet with sump
- ④ Sta. "132ND" 10+96.94, 2.06' Lt.  
Const. drywell  
Inst. 12" storm sew. pipe - 25'  
10' depth  
Trench resurfacing - 16 sq. yd.  
(For details, see sht. HA02)
- ⑤ Sta. "132ND" 10+71.74, 2.02' Lt.  
Const. drywell  
Inst. 12" storm sew. pipe - 25'  
10' depth  
(For details, see sht. HA02)
- ⑥ Sta. "132ND" 10+46.86, 2.06' Lt.  
Const. sedimentation manhole  
Inst. 12" storm sew. pipe - 13', S=0.77%  
5' depth  
Inst. 12" storm sew. pipe - 17'  
5' depth  
Inst. 12" storm sew. pipe - 17', S=-0.59%  
5' depth  
(For details, see sht. HA01)
- ⑦ Sta. 1132+47.43, 29.91' Rt.  
Const. storm sewer manhole  
Inst. 12" storm sew. pipe - 46'  
5' depth
- ⑧ Sta. "132ND" 10+46.65, Lt.  
Const. type "CG-2" inlet with sump
- ⑨ Sta. 1133+44.66, Lt.  
Const. type "CG-3" inlet with sump  
Inst. 12" storm sew. pipe - 33'  
5' depth  
Inst. 12" storm sew. pipe - 143'  
5' depth
- ⑩ Sta. 1133+44.53, 39.21' Lt.  
Const. sedimentation manhole  
Inst. 12" storm sew. pipe - 12', S=-0.83%  
5' depth  
(For details, see sht. HA01)
- ⑪ Sta. 1133+69.50, 39.33' Lt.  
Const. drywell  
Inst. 12" storm sew. pipe - 25'  
10' depth  
Inst. field facility marker (Type S3) - 1  
DFI no. D01174  
(For details, see sht. HA02)
- ⑫ Sta. 1133+76.81, Lt.  
Const. type "CG-3" inlet with sump
- ⑬ Sta. 1133+94.50, 39.65' Lt.  
Const. drywell  
Inst. 12" storm sew. pipe - 25'  
10' depth  
Inst. field facility marker (Type S3) - 1  
DFI no. D01175  
(For details, see sht. HA02)
- ⑭ Sta. 1133+44.23, Rt.  
Const. type "CG-3" inlet with sump
- ⑮ Sta. 1133+76.48, Rt.  
Const. type "CG-3" inlet with sump  
Inst. 12" storm sew. pipe - 32'  
5' depth
- ⑯ Sta. 1134+13.64, Rt.  
Const. type "CG-3" inlet with sump  
Inst. 12" storm sew. pipe - 37'  
5' depth
- ⑰ Sta. 1134+44.03, Rt.  
Const. type "CG-3" inlet with sump  
Inst. 12" storm sew. pipe - 31'  
5' depth
- ⑱ Sta. 1134+70.59, Rt.  
Const. type "CG-3" inlet with sump  
Inst. 12" storm sew. pipe - 27'  
5' depth
- ⑲ Sta. 1134+70.59, 12.99' Rt.  
Const. storm sewer manhole  
Inst. 12" storm sew. pipe - 10', S=-0.50%  
10' depth
- ⑳ Sta. 1135+25.24, Rt.  
Const. type "CG-3" inlet with sump
- ㉑ Sta. 1135+25.50, 11.72' Rt.  
Const. sedimentation manhole  
Inst. 12" storm sew. pipe - 17', S=-0.59%  
5' depth  
Inst. 12" storm sew. pipe - 55'  
5' depth  
(For details, see sht. HA01)
- ㉒ Sta. 1135+50.50, 12.08' Rt.  
Const. drywell  
Inst. 12" storm sew. pipe - 25'  
10' depth  
Inst. field facility marker (Type S3) - 1  
DFI no. D01176  
(For details, see sht. HA02)
- ㉓ Sta. 1135+14.30, Lt.  
Const. type "CG-3" inlet with sump
- ㉔ Sta. 1136+32.44, Rt.  
Const. type "CG-3" inlet with sump
- ㉕ Sta. 1136+61.51, 35.31' Rt.  
Const. sedimentation manhole  
Inst. 12" storm sew. pipe - 30'  
5' depth  
(For details, see sht. HA01)
- ㉖ Sta. 1136+86.40, 34.93' Rt.  
Const. drywell  
Inst. 12" storm sew. pipe - 25'  
10' depth  
Inst. field facility marker (Type S3) - 1  
DFI no. D01177  
(For details, see sht. HA-02)
- ㉗ Sta. 1136+79.52, Lt.  
Const. type "CG-3" inlet with sump  
Inst. 12" storm sew. pipe - 160'  
5' depth
- ㉘ Sta. 1137+38.00, 45.00' Lt.  
Const. area drain  
Rim Elev. 231.40
- ㉙ Sta. 1137+71.99, 42.29' Lt.  
Const. sedimentation manhole  
Inst. 12" storm sew. pipe - 22'  
5' depth  
Inst. 12" storm sew. pipe - 35'  
5' depth
- ㉚ Sta. 1137+97.55, 41.77' Lt.  
Const. drywell  
Inst. 12" storm sew. pipe - 25'  
10' depth  
Inst. field facility marker (Type S3) - 1  
DFI no. D01178  
(For details, see sht. HA02)
- ㉛ Sta. 1137+89.14, Lt.  
Const. type "CG-3" inlet with sump  
Inst. 12" storm sew. pipe - 108'  
5' depth
- ㉜ Remove inlet - 3
- ㉝ Sta. "134TH" 15+25.00, Rt.  
Const. type "CG-2" inlet with sump
- ㉞ Sta. "134TH" 15+47.38, 5.21' Lt.  
Minor adjust manhole  
Method "B"  
Inst. 12" storm sew. pipe - 24'  
5' depth  
Inst. 12" storm sew. pipe - 30'  
5' depth  
Connect to extg. manhole - 2
- ㉟ Sta. "134TH" 15+25.00, Lt.  
Const. type "CG-2" inlet with sump
- ㊱ Sta. "134TH" 15+73.39, 7.16' Lt.  
Minor adjust manhole  
Method "B"
- ㊲ Remove pipe - 45'
- ㊳ Maintain and protect PWB Conduit No. 3  
Water pipes over 12-inch in diameter are  
not shown for confidentiality. Contact  
Portland Water Bureau for locations.
- ㊴ Relocate Comcast underground communications  
line (by others)
- ㊵ Relocate Comcast riser (by others)
- ㊶ Relocate CTL underground communication  
line (by others)
- ㊷ Adjust CTL communications manhole to finish grade  
Minor Adjust Manhole - 1  
Use non-slip cover. Box-out frame in PCCP.
- ㊸ Relocate CTL communications box (by others)
- ㊹ Relocate CTL communications riser (by others)
- ㊺ Maintain and protect extg. CTL underground  
communication line
- ㊻ Maintain and protect CTL cabinet
- ㊼ Adjust BES sanitary manhole to finish grade  
Minor Adjust Manhole - 3  
Method "B"
- ㊽ Maintain and protect BES sanitary line
- ㊾ Adjust NWN gas test lead to finish grade (by others)
- ㊿ Locate buried NWN gas valve box and adjust to  
finish grade - 1
- ① Maintain and protect NWN gas line
- ② Adjust PWB water valve box to finish grade - 12
- ③ Pothole buried PWB manhole - 2
- ④ Relocate PGE pole (by others)
- ⑤ Relocate PGE electric line (by others)
- ⑥ Maintain and protect Fire Department Connection  
(FDC) vault and stand pipe nozzle
- ⑦ Remove wood pole streetlight in permanent  
easement
- ⑧ Relocate CTL pole (by others)
- ⑨ Sta. 1137+29.44, 53.00' Lt.  
Const. private drywell  
Top Elev. 229.00  
Bottom Elev. 209.00  
Inst. 8" storm sew. pipe - 12', S=-1.00%  
5' depth  
(For details, see sht. HA05)



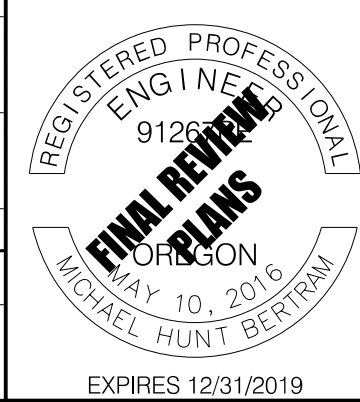
HDR	HDR ENGINEERING, INC 1001 SW 5TH AVENUE, SUITE 1800 PORTLAND, OR 97204-1134 503.423.3700	
	<b>US26 (POWELL BLVD): SE 122ND AVE - SE 136TH AVE SEC.</b> MT. HOOD HIGHWAY MULTNOMAH COUNTY	

Designer: Cory Gieseke      Reviewer: Christine Higgins Drafter: Cory Gieseke      Checker: Kyle Donovan	
DRAINAGE AND UTILITIES - NOTES	SHEET NO. CO6D

"P" LINE



Note:  
 Maintain and protect Portland Water Bureau conduit No. 3  
 Location shown is approximate. Actual depth may vary.  
 Field verify actual depth, prior to excavation.  
 PWB inspectors will need to be on-site prior  
 to any potholing of waterlines.

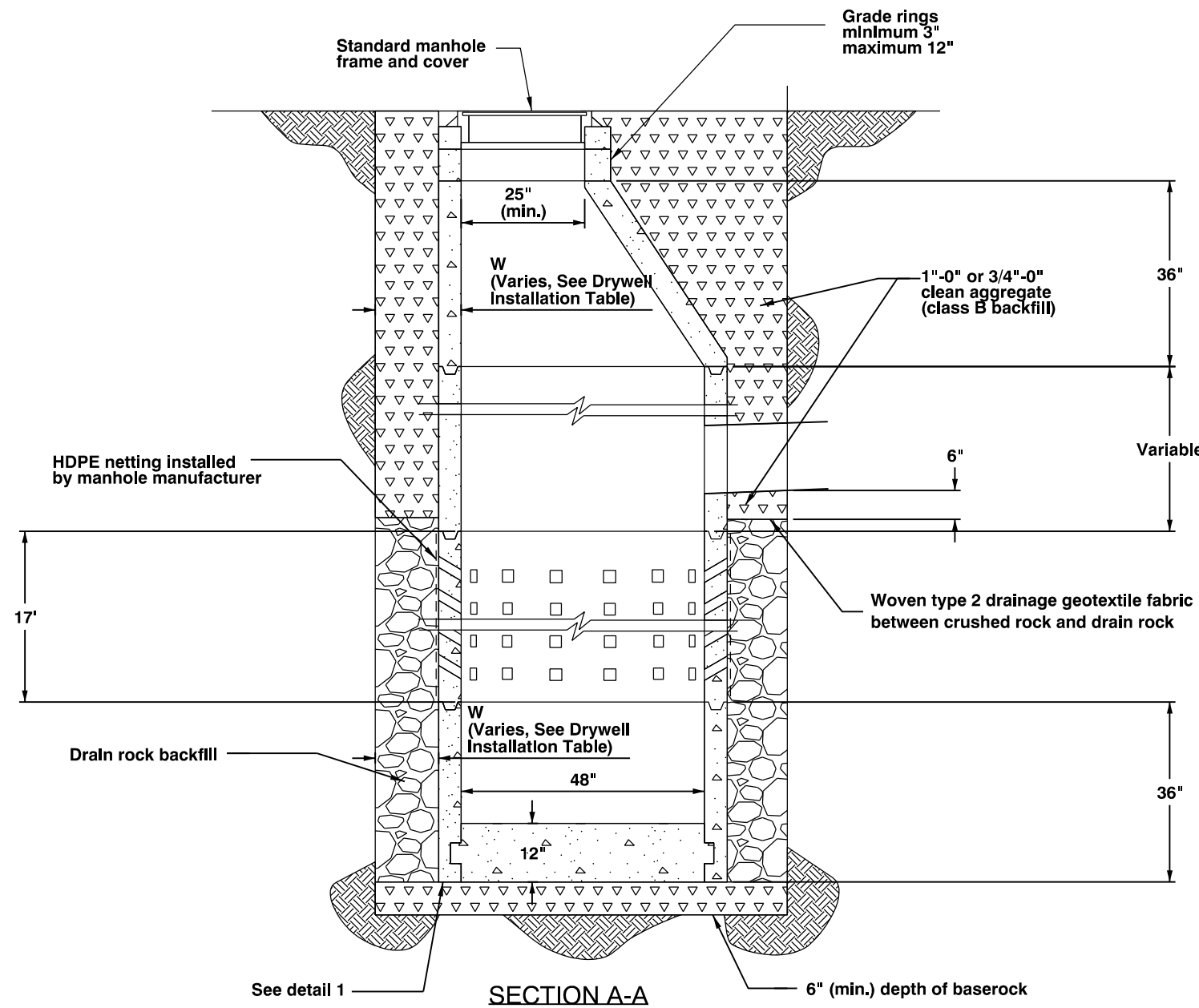
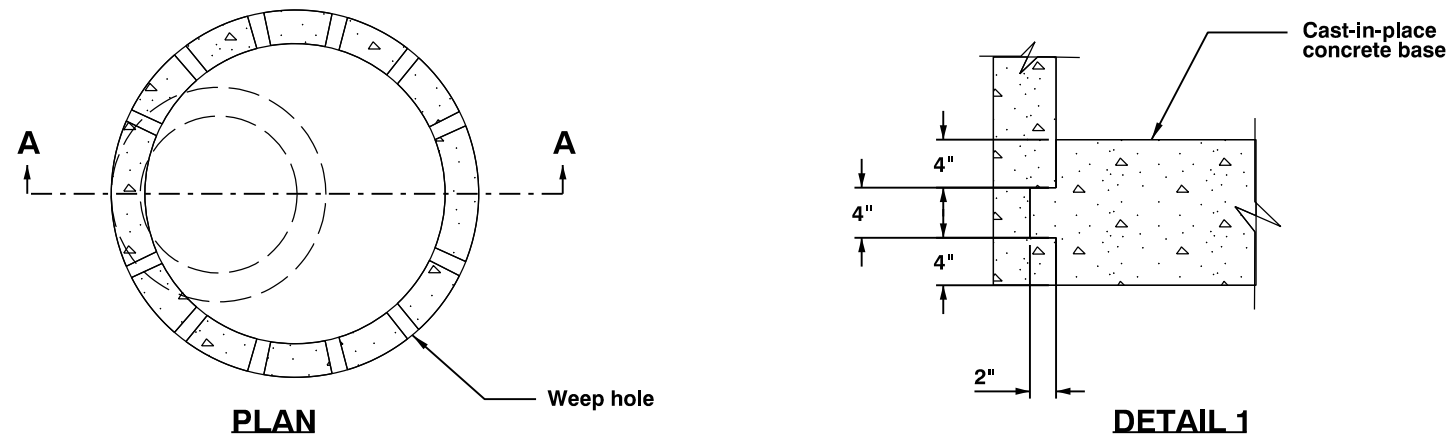


**HDR** HDR ENGINEERING, INC  
 1001 SW 5TH AVENUE, SUITE 1800  
 PORTLAND, OR 97204-1134  
 503.423.3700

**US26 (POWELL BLVD):  
 SE 122ND AVE - SE 136TH AVE SEC.**  
 MT. HOOD HIGHWAY  
 MULTNOMAH COUNTY

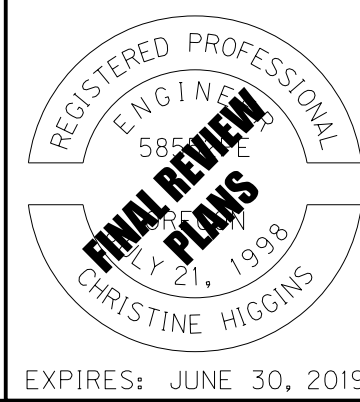
Designer: Mark Taylor      Reviewer: John Wolf  
 Drafter: Mark Taylor      Checker: Dustin Cooley

**PROFILE** SHEET NO. CO6E



DRYWELL INSTALLATION TABLE						
DRAWING REFERENCE	STATIONING	OFFSET	DFI no.	W (FT)	DEPTH (FT)	MIN. INFILTRATION CAPACITY REQUIRED
C02C	Sta. 1105+22.92	51.89' Lt.	D01165	3.00	30.00	90 GPM
C02C	Sta. "122ND" 8+50.45	34.99' Rt.	N/A	4.00	30.00	110 GPM
C02C	Sta. "123RD" 15+66.59	5.51' Lt.	N/A	3.00	30.00	90 GPM
C03C	Sta. "124TH" 5+90.88	8.11' Lt.	N/A	3.00	30.00	90 GPM
C03C	Sta. 1111+36.53	26.96' Rt.	D01168	3.00	30.00	90 GPM
C03C	Sta. "125TH" 26+06.80	9.40' Lt.	N/A	3.00	30.00	90 GPM
C04C	Sta. "127TH" 7+49.75	6.69' Rt.	N/A	4.50	30.00	120 GPM
C04C	Sta. "127TH" 7+24.75	6.65' Rt.	N/A	4.50	30.00	120 GPM
C04C	Sta. 1118+85.31	13.18' Rt.	D01170	3.00	30.00	90 GPM
C04C	Sta. "128TH" 5+69.93	3.92' Rt.	N/A	3.00	30.00	90 GPM
C04C	Sta. "129TH" 10+70.21	4.91' Lt.	N/A	4.00	30.00	110 GPM
C05C	Sta. "130TH" 30+72.83	6.64' Rt.	N/A	4.00	30.00	110 GPM
C05C	Sta. "131ST" 5+43.36	6.32' Lt.	N/A	4.50	30.00	120 GPM
C06C	Sta. "132ND" 10+71.74	6.31' Lt.	N/A	3.00	30.00	90 GPM
C06C	Sta. "132ND" 10+96.94	6.30' Lt.	N/A	3.00	30.00	90 GPM
C06C	Sta. 1133+69.50	39.33' Lt.	D01174	3.00	30.00	90 GPM
C06C	Sta. 1133+94.50	39.65' Lt.	D01175	3.00	30.00	90 GPM
C06C	Sta. 1135+50.50	12.08' Rt.	D01176	3.00	30.00	90 GPM
C06C	Sta. 1136+86.40	34.93' Rt.	D01177	3.00	30.00	90 GPM
C06C	Sta. 1137+97.55	41.77' Lt.	D01178	4.50	30.00	120 GPM
C07C	Sta. 1140+78.84	42.65' Lt.	D01180	3.00	30.00	90 GPM
C07C	Sta. 1141+03.92	42.67' Lt.	D01181	3.00	30.00	90 GPM
C07C	Sta. 1144+04.38	42.38' Rt.	D01183	3.00	30.00	90 GPM

- NOTES:
1. All precast products shall conform to requirements of ASTM C478.
  2. See Std. Drg. RD336 for manhole steps details.
  3. Provide a flexible joint for all connected pipes:
    - Rigid pipe Δ 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.
  4. Provide 12 inches (min.) of separation between a section joint and the outer edge of any opening.



**HDR** HDR ENGINEERING, INC  
 1001 SW 5TH AVENUE, SUITE 1800  
 PORTLAND, OR 97204-1134  
 503.423.3700

**US26 (POWELL BLVD):**  
**SE 122ND AVE - SE 136TH AVE SEC.**  
 MT. HOOD HIGHWAY  
 MULTNOMAH COUNTY

Designer: Cory Gieseke Review: Christine Higgins  
 Drafter: Ryan Sheehan Checker: Kyle Donovan

**DRAINAGE DETAILS** SHEET NO. HAO2