OPERATION & MAINTENANCE MANUAL

DFI No. D00553
Facility Type: Filter Strip

FEBRUARY 2012

INDEX

1. IDENTIFICATION 1
2. FACILITY CONTACT INFORMATION 1
3. CONSTRUCTION 1
4. STORM DRAIN SYSTEM AND FACILITY OVERVIEW 1
5. FACILITY HAZ MAT SPILL FEATURE(S) 3
6. AUXILIARY OUTLET (HIGH FLOW BYPASS) 3
7. MAINTENANCE 5
8. LIMITATIONS 5
9. WASTE MATERIAL HANDLING 6

APPENDIX A: ODOT Project Plan Sheets

APPENDIX B: Operational Plan

1. Identification

Drainage Facility ID (DFI):	**D00553**
Facility Type:	Filter Strip
Construction Drawings:	(V-File Numbers) 45V-20
Location:	District: 5
	Highway No.: 091
	Mile Post: 112.77 to 112.95
	Description: This facility is located downstream of the shoulder of Highway 99, northbound (west side of road) just south of the intersection of Milliron Road.

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:	KPFF Consulting Engineers Curt Vanderzanden, (503) 227-3251
Facility construction:	2012
Contractor:	JE Dunn Construction

4. Storm Drain System and Facility Overview

Filter strips are compacted roadside embankment surface areas of planted vegetation placed between pavement and a downstream conveyance system. Filter strips will be used along ODOT right of way to treat drainage

originating from Highway 99. The roadway rock shoulder will serve as a flow spreader to assist in evenly distributing drainage from the asphalt to a vegetated 6-inch layer of selected topsoil. The transverse slope of the filter strip is 1%.

When the flows exceed the water quality flows, the drainage will simply flow over the strip and into the conveyance system for routing offsite. No high flow bypass is necessary.

This facility is located on the east side of the northbound travel lanes of Highway 99 (Hwy 091), just south of the SE intersection of Milliron Road. **Photo 1** shows the general location of the facility prior to construction. Access to the facility can be obtained from Highway 99 through unrestricted access to the roadway shoulder and right of way.

A. Maintenance equipment access:

   This facility is located on the east side of the northbound travel lanes of Highway 99 (Hwy 091), just south of the SE intersection of Milliron Road. **Photo 1** shows the general location of the facility prior to construction. Access to the facility can be obtained from Highway 99 through unrestricted access to the roadway shoulder and right of way.

B. Heavy equipment access into facility:

   ☐ Allowed (no limitations)

   ☒ Allowed (with limitations)
   Heavy equipment is allowed around the perimeter of the facility. When the ground is saturated from rainfall, heavy equipment will cause rutting in the topsoil of the facility and should be avoided. Assess the condition of the facility prior to entering with heavy equipment.

   ☐ Not allowed

C. Special Features:

   ☒ Selected Topsoil
   ☐ Porous Pavers
   ☐ Liners
   ☐ Underdrains

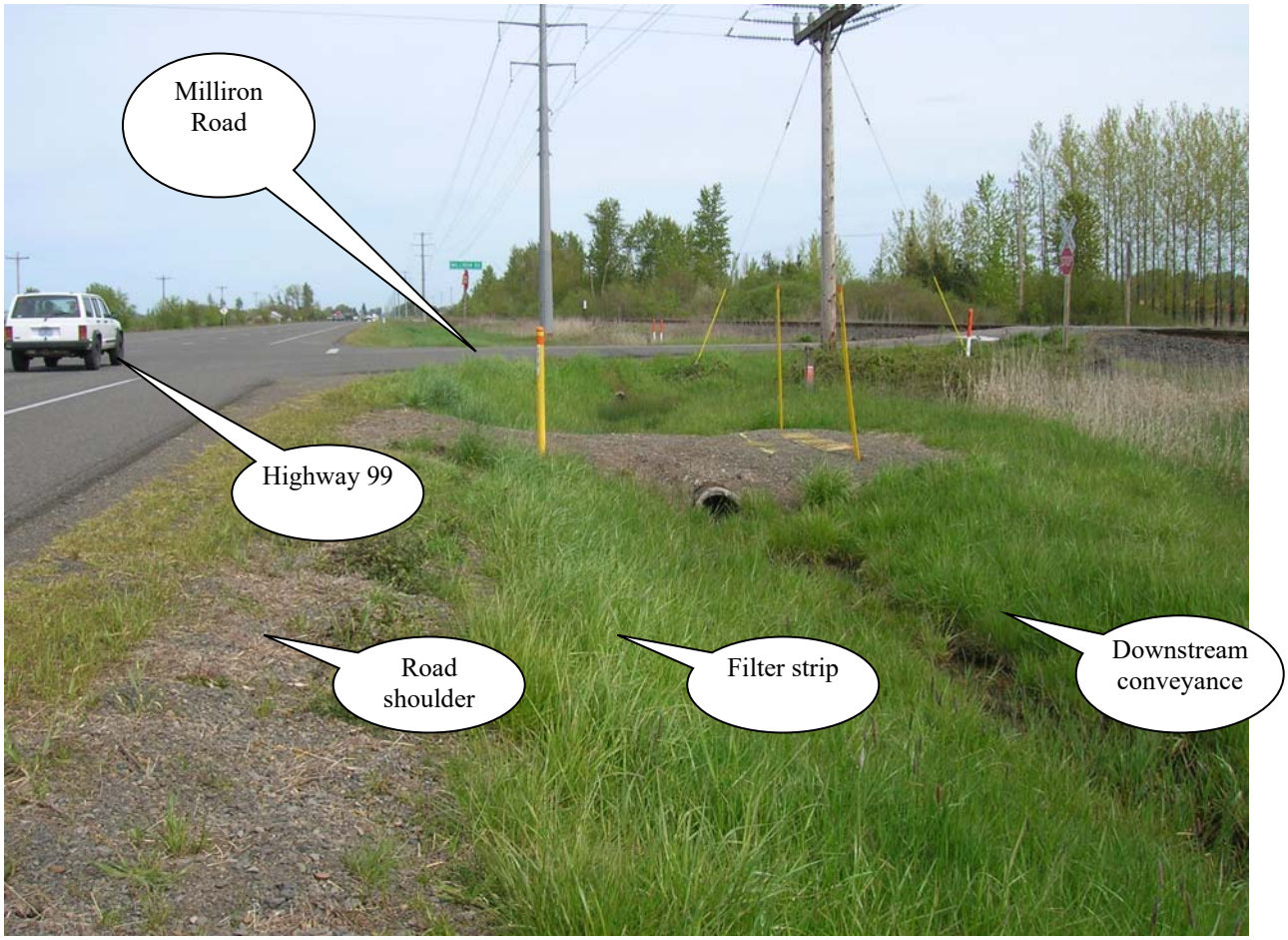


Photo 1: This photo shows the location of the filter strip along the northbound side of Highway 99.

5. Facility Haz Mat Spill Feature(s)

The filter strip cannot be used to store hazardous spills.

6. Auxiliary Outlet (High Flow Bypass)

☐ Designed into facility:

☒ Other, as noted below:

The filter strip is a roadside shoulder feature and does not have a mechanism, or need for, high flow bypass.

Maintenance Items

Operational components marked in Table 1 should be inspected and maintained according to Section 7. Each facility component is defined and detailed in the Standard Operation Manual using the associated ID number indicated below.

Table 1: Bioslope/Filter Strip Components		ID #
Facility Inlet		
Pavement Sheet Flow	☒	**B1**
Shoulder Aggregate	☒	**B2**
Ground Cover		
Vegetated Slope	☒	**B3**
Aggregate Media Slope	☐	**B4**
Underground Components		
Water Quality Mix	☒	**B5**
Ecology Mix	☐	**B6**
Granular Drain Backfill Material	☐	**B7**
Geotextile Fabric	☐	**B8**
Geocell Grid	☐	**B9**
Structures		
Curb/Berm	☐	**B10**
Check Dam	☐	**B11**
Cleanout	☐	**B12**
Facility Outlet		
Perforated Drain Pipe	☐	**B13**
Open Slope Outlet	☐	**B14**
Open Channel Outlet	☐	**B15**
Storm Drain Outlet Pipe	☐	**B16**
Outfall Type		
Waterbody (**C**reek/**L**ake/**O**cean)	☐ **C** ☐ **L**	**B17**
Outfall Channel	☐	**B18**
Storm Drain System	☐	**B19**
Outfall Components		
Pervious Berm	☐	**B20**
Riprap Pad	☐	**B21**

7. Maintenance

Maintenance Frequency/Maintain Records

a. Inspect annually. Preferably prior to the rainy season.
b. Clean and maintain as necessary. Refer to Activity 125 for conditions when maintenance is needed.
c. Keep a record of inspections, maintenance, and repairs.

Maintenance Guide/Maintenance Actions

The ODOT Routine Road Maintenance Water Quality and Habitat Guide (the *Blue Book*) outlines the standard maintenance actions for water quality facilities under Activity 125.

There are standard maintenance tables for standard ODOT designs. The maintenance tables describe the maintenance component, the defect or problem, the condition when maintenance is needed, and the recommended maintenance to correct the problem. Use the following tables to maintain ODOT filter strips and bioslopes:

- Table 1 (General Maintenance): Contains general maintenance and inspection guidelines that are applicable to all ODOT water quality facilities
- Table 4 (Water Quality Filter Strips)
- Table 5 (Water Quality Bioslopes)

The ODOT Maintenance Guide can be viewed at the following website: http://www.oregon.gov/ODOT/HWY/OOM/pages/mguide.aspx

The *Blue Book* can be viewed at the following website: http://www.oregon.gov/ODOT/Maintenance/Documents/blue_book.pdf

8. Limitations

Filter strips and bioslopes are NOT designed to allow the use of heavy equipment. Vehicles entering the facility can create depressions (tire ruts), damage vegetation, and damage structural components (e.g. flow spreaders). These conditions may result in poor treatment and drainage performance.

9. Waste Material Handling

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

http://www.oregon.gov/ODOT/HWY/OOM/pages/ems.aspx

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) 667-7442
ODOT Region 1 Hazmat Coordinator	(503) 731-8290
ODOT Region 2 Hazmat Coordinator	(503) 986-2647
ODOT Region 3 Hazmat Coordinator	(541) 957-3594
ODOT Region 4 Hazmat Coordinator	(541) 388-6186
ODOT Region 5 Hazmat Coordinator	(541) 963-1590
ODEQ Northwest Region Office	(503) 229-5263

Appendix A

Content:

- **ODOT Project Plan Sheets**
  - ***Cover/Title Sheet***
  - ***Plan Sheets***
  - ***Sections***

INDEX OF SHEETS	
SHEET NO.	DESCRIPTION
1	Title Sheet
1A	Index Of Sheets Cont'd. & Std. Drg. Nos.
1A-2	Symbols & Abbreviations
1B	Layout Sheet

STATE OF OREGON

DEPARTMENT OF CORRECTIONS

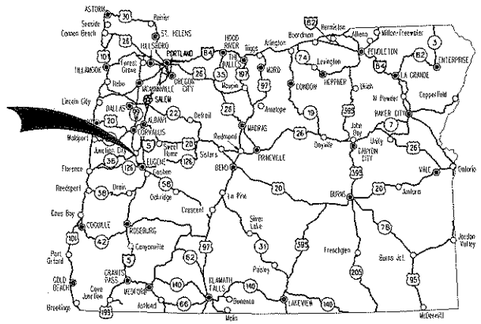
PLANS FOR PROPOSED PROJECT

GRADING, DRAINAGE, STRUCTURES, PAVING, SIGNING, ILLUMINATION, SIGNALS, & ROADSIDE DEVELOPMENT

OR99: MILLIRON RD IMPROVEMENTS (STATE HOSPITAL/PRISON)

PACIFIC HIGHWAY WEST

LANE COUNTY
MAY 2012



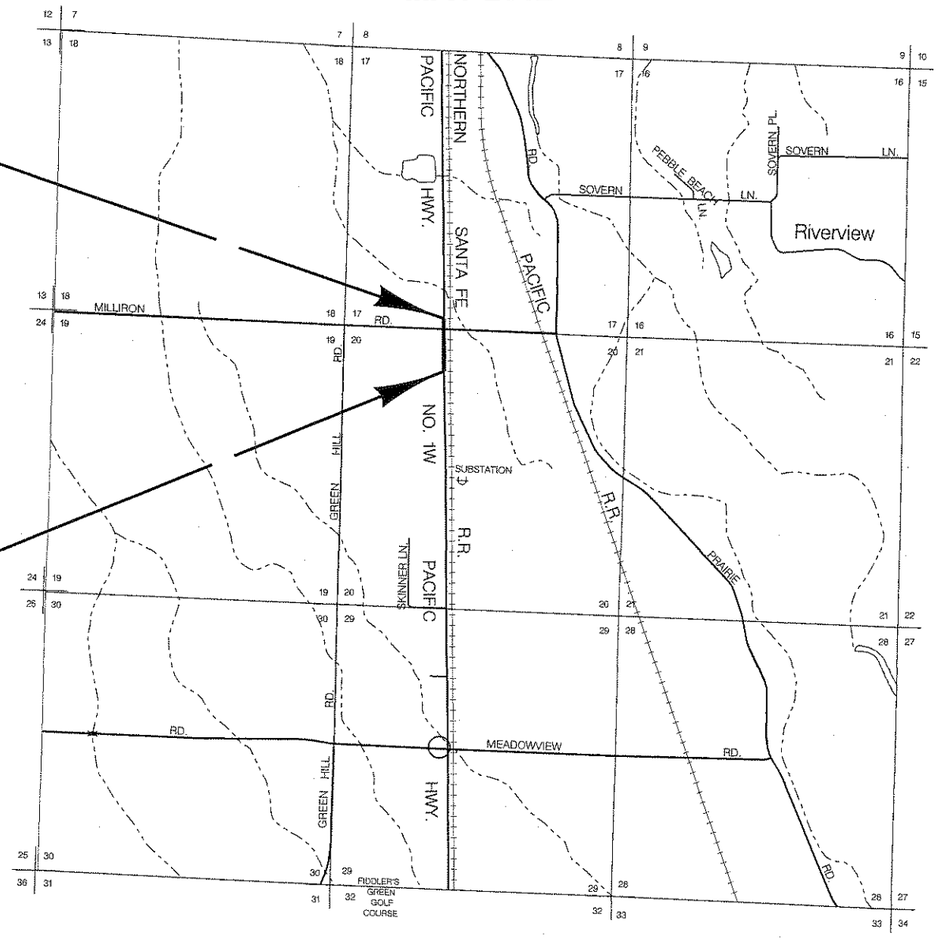
Overall Length Of Project - 0.23 Miles

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.)

LET'S ALL WORK TOGETHER TO MAKE THIS JOB SAFE

BEGINNING OF PROJECT
STA. "LN" 172+92 =
HWY 99 M.P. 112.74

END OF PROJECT
STA. "LN" 185+00 =
HWY 99 M.P. 112.97

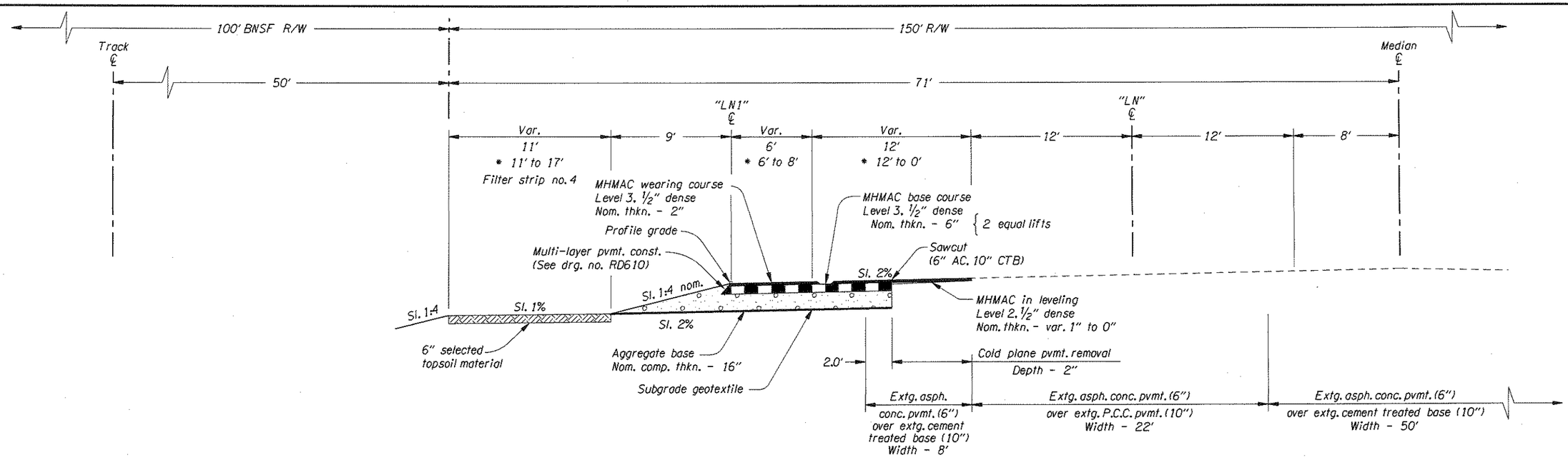


N

T. 16S., R. 4W., W.M.

K M D
KMD ARCHITECTS AND PLANNERS, P.C.
ARCHITECTURE
421 SW SIXTH AVENUE
PORTLAND
(503) 221-1474
PLANNING
SUITE 1300
OREGON 97204
FAX (503) 227-0762

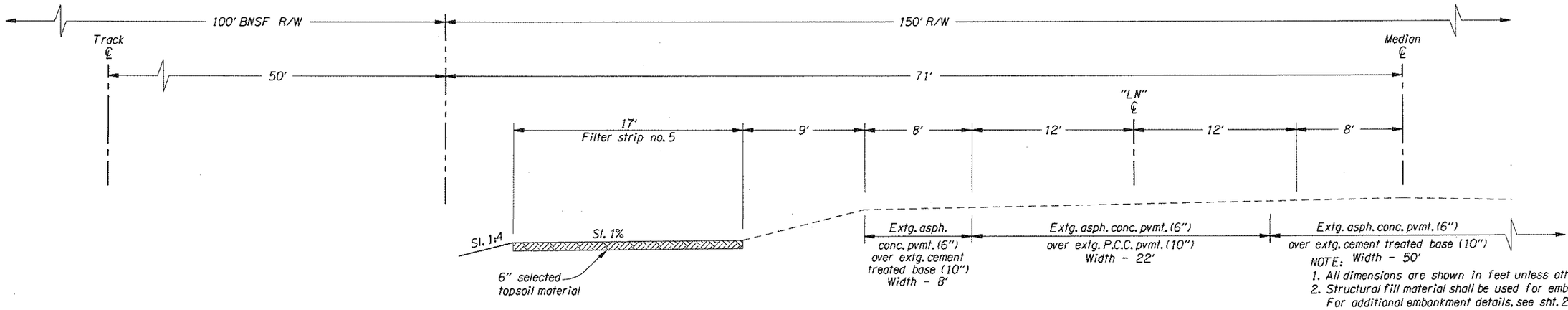
OR99: MILLIRON RD IMPROVEMENTS (STATE HOSPITAL/PRISON) PACIFIC HIGHWAY WEST LANE COUNTY	SHEET NO. 1



ROADWAY WIDENING

STA. "LN" 175+50 To STA. "LN" 178+49

* STA. "LN" 178+49 To STA. "LN" 180+03 (Taper section)



NOTE:

1. All dimensions are shown in feet unless otherwise noted.
2. Structural fill material shall be used for embankment. For additional embankment details, see sht. 2B-5.

STA. "LN" 180+03 To STA. "LN" 183+00

REGISTERED PROFESSIONAL ENGINEER
67079PE
OREGON
JULY 15, 2005
CURTIS C. VANDERZANDEN
RENEWS: 06-30-2012

kpff Consulting Engineers
111 SW 5th Avenue
Suite 2500
Portland, Oregon 97204
503-227-3251

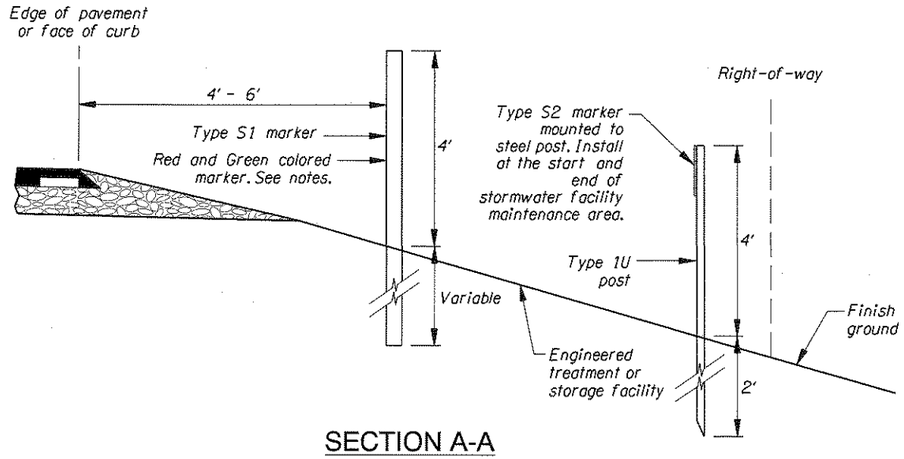
OR99: MILLIRON RD IMPROVEMENTS
(STATE HOSPITAL/PRISON)
PACIFIC HIGHWAY WEST
LANE COUNTY

Design Team Leader - F. Maddox
Designed By - N. McMurtrey
Drafted By - R. Caduo

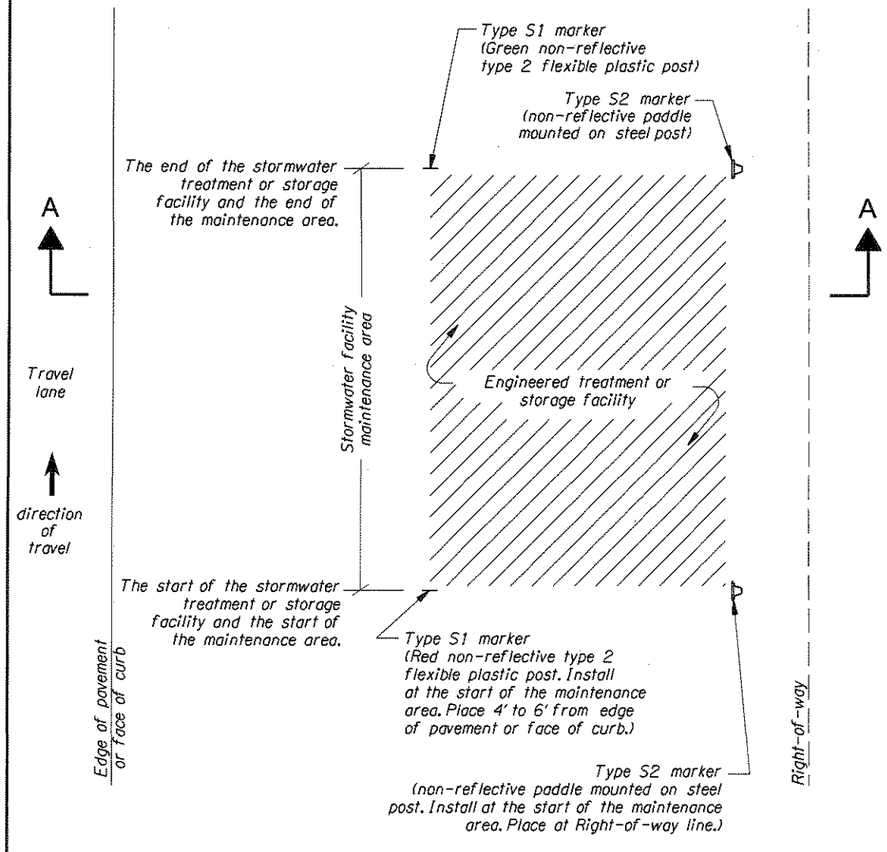
TYPICAL SECTIONS

SHEET NO. 2A

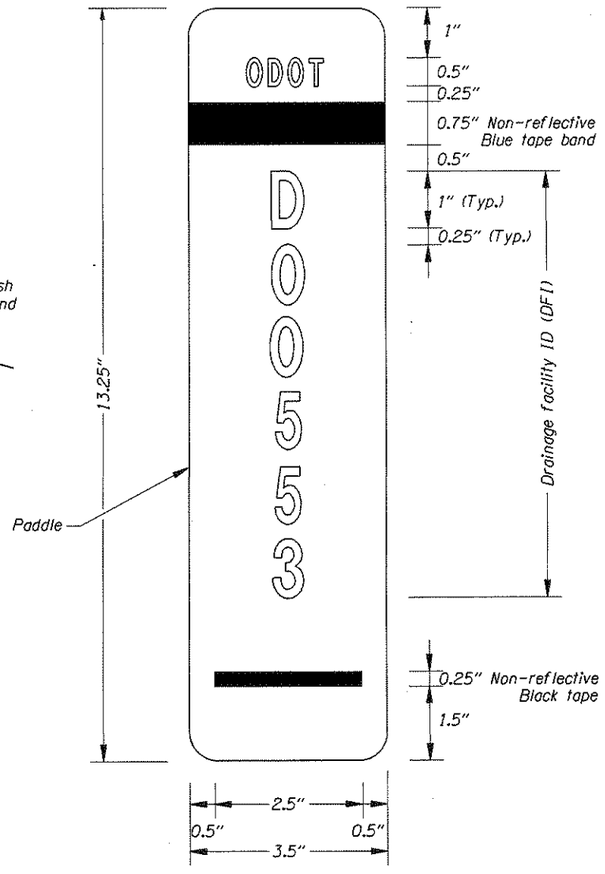
Stormwater Treatment and Storage Facility Field Markers



SECTION A-A



TYPE S1 & S2 MARKERS INSTALLATION DETAIL



TYPE S2 MARKER

(AGENCY FURNISHED MATERIAL)

MARKER TABLE

FACILITY LOCATION		DFI #	TYPE S2 MARKER LOCATION		TYPE S1 MARKER	
STATION	MP		BEGIN	END	RED	GREEN
"LN" 183+00	112.93	D00553	✓		✓	
"LN" 175+59	112.79	D00553		✓		✓

✓ Check where appropriate
Red = Beginning of facility
Green = End of facility

Notes:

Stormwater Facility Field Marker Type S1:
1. *See Standard Drawing TM570 for Type 2 flexible plastic post dimensions. Do not mount reflective sheeting to flexible plastic post.*
2. *A red Type S1 marker is used to mark the start of a stormwater facility maintenance area. A green Type S1 marker is used to mark the end of a stormwater facility maintenance area.*
3. *Place 4 to 6 feet from edge of pavement or face of curb.*
4. *See marker table for installation locations.*

Stormwater Facility Field Marker Type S2:
1. *Paddle:*
   - *Aluminum sheet, nominal thickness 0.050"*
   - *White non-reflective background*
   - *Mount paddle to one (1) Type 1U steel post using 3/16 " diameter aluminum blind rivets and washers. See Standard Drawing TM570 detail labeled "Steel Posts" for mounting a traffic target. Install paddle onto Type 1U steel post using the same hole pattern.*
   - *Text and numbers are Type C font in non-reflectorized black*
   - *Band is non-reflective blue tape*
   - *Do not mount paddle to other highway signing posts*
   - *Install paddle parallel to travel lane*
   - *Prepare paddle for each "DFI" noted in the marker table*
2. *Steel Posts:*
   - *See Standard Drawing TM571 for Type 1U steel post dimensions*

REGISTERED PROFESSIONAL ENGINEER
67079PE
OREGON
JULY 15, 2005
CURTIS C. VANDERZANDEN
RENEWS: 06-30-2012

kpff Consulting Engineers
111 SW 5th Avenue
Suite 2500
Portland, Oregon 97204
503-227-3251

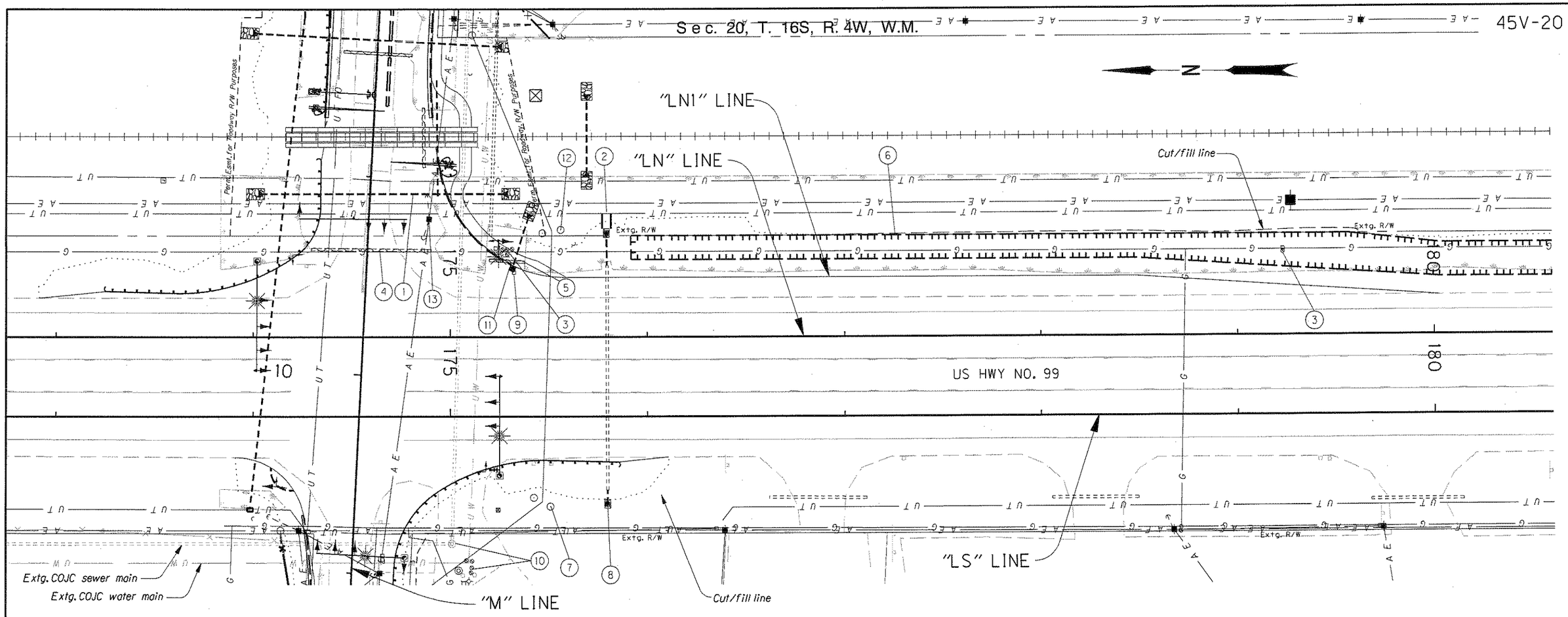
OR99: MILLIRON RD IMPROVEMENTS (STATE HOSPITAL/PRISON)
PACIFIC HIGHWAY WEST
LANE COUNTY

Design Team Leader - F. Maddox
Designed By - N. McMurtrey
Drafted By - R. Caduo

DETAILS

SHEET NO. 2B-10

Sec. 20, T. 16S, R. 4W, W.M.



(1) *See sht. 5A, note 3*

(2) *Extend extg. 18" culvert - 14'*
Const. paved end slope
Install drainage ID markers
Const. filter strip treatment at culvert
(For details, see sht. 2B-4 & 2B-11)
(See drg. nos. RD300, RD317, RD320 & RD326)

(3) *Extg. gas valve - 5*
To be adjusted prior to construction (By others)

(4) *Remove extg. 24" pipe - 61'*

(5) *Remove extg. 20" pipe - 18'*

(6) *Const. filter strip no. 4*
Install stormwater treatment field markers
(For details, see sht. 2A & 2B-10)

(7) *See sht. 4A, note 17*

(8) *Extend extg. 18" culvert - 5'*
Const. paved end slope
Install drainage ID markers
(For details, see sht. 2B-11)
(See drg. nos. RD300, RD317, RD320 & RD326)

(9) *Extg. gas marker*
To be relocated prior to construction (By others)

(10) *See sht. 4A, notes 4 & 13*

(11) *Const. type "CG-1" inlet*
Inst. 12" storm sew. pipe - 26'
Const. paved end slope
(See drg. nos. RD300, RD317, RD320 & RD366)

(12) *See sht. 5A, note 27*

(13) *See sht. 5A, note 14*

NOTE:
1. *All dimensions are shown in feet unless otherwise noted.*
2. *All conduit pipe shown on this plan is in addition to those shown on the signal and illumination plan.*
3. *When conduit or pipe is shown as "ABC' (DX)" it shall mean to install ABC lineal feet of conduit in a duct bank containing D pipes in parallel. The total installed length would then be ABC lineal feet multiplied by D.*
4. *Prior to construction, contractor shall provide engineer drainage and comm. structure coordinates for review and approval of placement.*

REGISTERED PROFESSIONAL ENGINEER
67079PE
OREGON
JULY 15, 2005
CURTIS C. VANDERZANDEN
RENEWS: 06-30-2012

kpff Consulting Engineers
111 SW 5th Avenue
Suite 2500
Portland, Oregon 97204
503-227-3251

OR99: MILLIRON RD IMPROVEMENTS
(STATE HOSPITAL/PRISON)
PACIFIC HIGHWAY WEST
LANE COUNTY

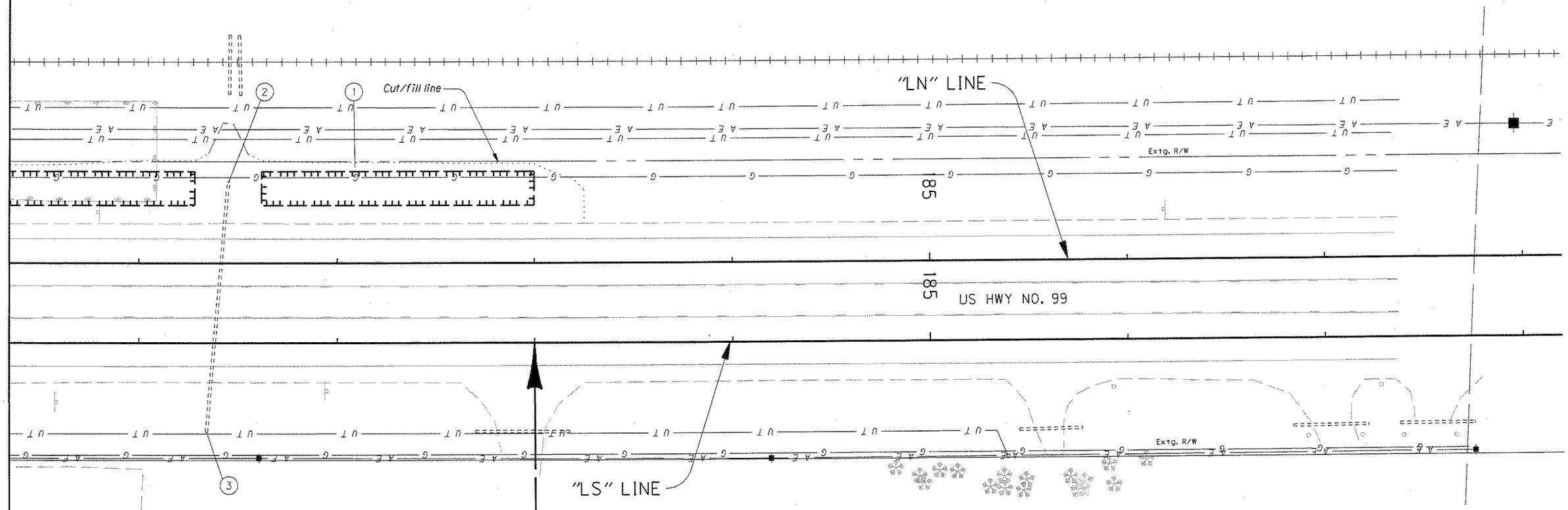
Design Team Leader - F. Maddox
Designed By - N. McMurtrey
Drafted By - R. Caduo

DRAINAGE & UTILITIES

SHEET NO. 3A-2

Sec. 20, T. 16S, R. 4W, W.M.

N



(1) Const. filter strip no. 5
(For details, see sht. 2A & 2B-10)

(2) Protect extg. 36" culvert
Install drainage ID markers
Const. filter strip treatment at culvert
(For details, see sht. 2B-4 & 2B-11)

(3) Install drainage ID markers
(For detail, see sht. 2B-11)

NOTE:
1. All dimensions are shown in feet unless otherwise noted.
2. All conduit pipe shown on this plan is in addition to those shown on the signal and illumination plan.
3. When conduit or pipe is shown as "ABC' (DX)" it shall mean to install ABC lineal feet of conduit in a duct bank containing D pipes in parallel. The total installed length would then be ABC lineal feet multiplied by D.
4. Prior to construction, contractor shall provide engineer drainage and comm. structure coordinates for review and approval of placement.

REGISTERED PROFESSIONAL ENGINEER
CURTIS C. VANDERZANDEN
OREGON
JULY 15, 2003
RENEWS: 06-30-2012

kpff Consulting Engineers
111 SW 5th Avenue
Suite 2500
Portland, Oregon 97204
503-227-3251

OR99: MILLIRON RD IMPROVEMENTS
(STATE HOSPITAL/PRISON)
PACIFIC HIGHWAY WEST
LANE COUNTY

Design Team Leader - F. Maddox
Designed By - N. McMurtrey
Drafted By - R. Caduo

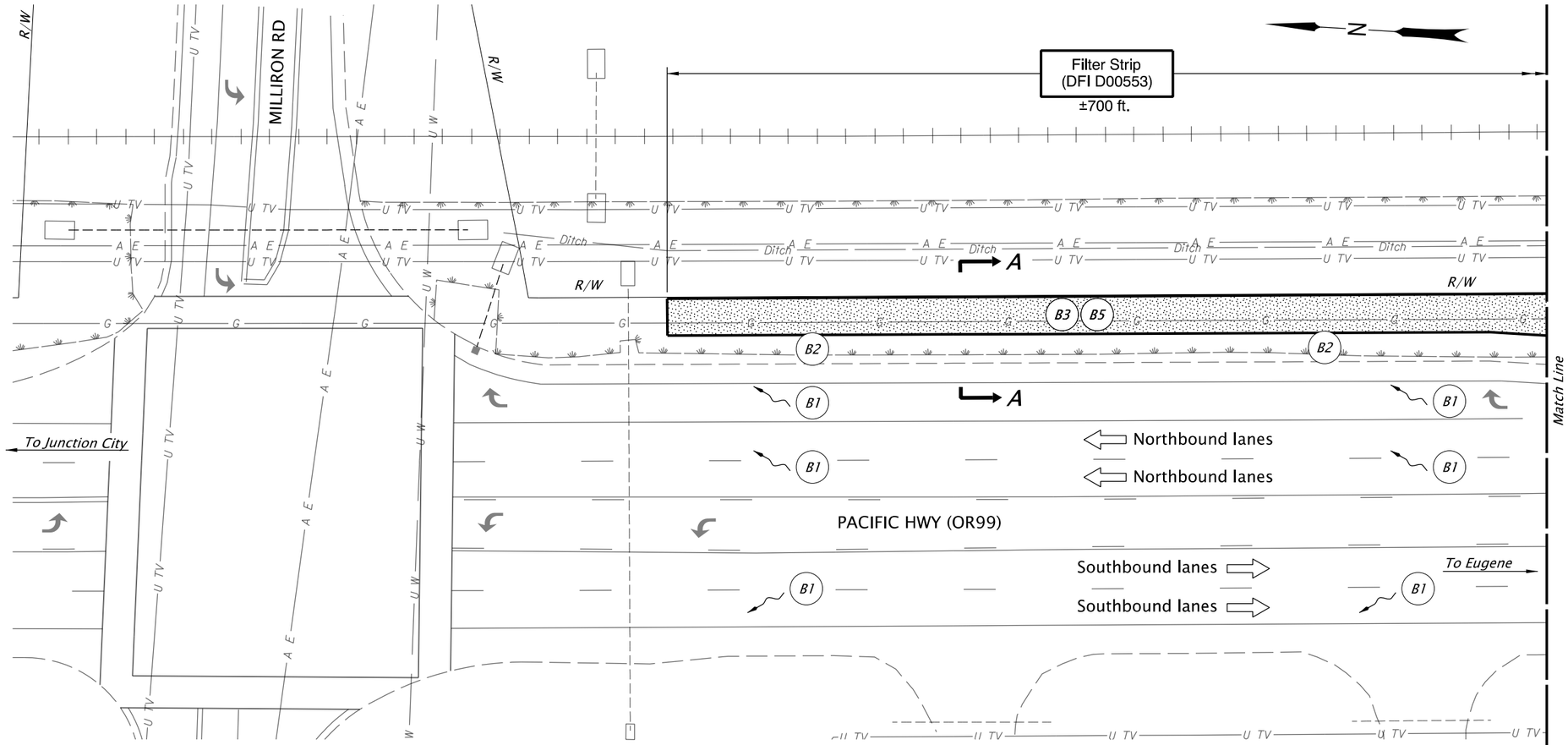
DRAINAGE & UTILITIES

SHEET NO. 3A-4

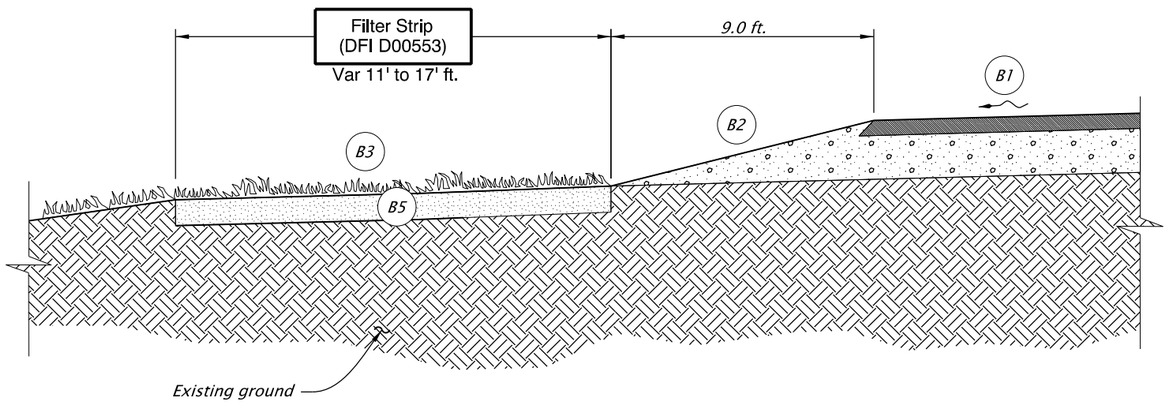
Appendix B

Content:

- **Operational Plan**



PLAN
N.T.S.



SECTION A-A
N.T.S.

LEGEND:

- *Facility Component (see table 1 in O&M Manual)*
- *Manhole*
- *Inlet*
- *Storm Pipe (Facility)*
- *Storm Pipe*
- *Ditch Line*
- *Filter Strip Boundary*
- *Conveyance Direction*
- *Pavement / Facility Flow Path*
- *Traffic Flow Direction*

Sht. 1 of 2

OREGON DEPARTMENT OF TRANSPORTATION

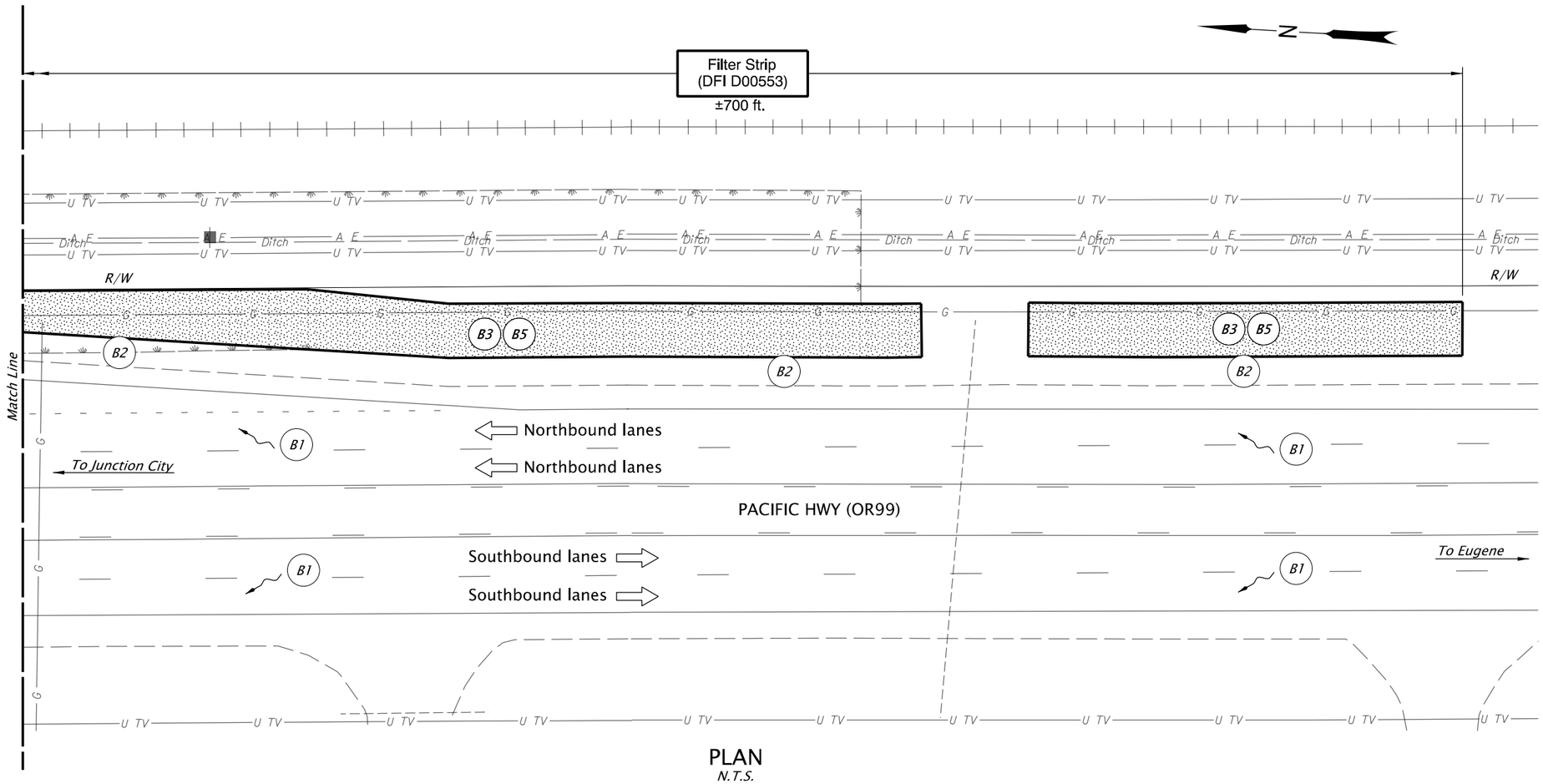
Prepared By: Jason Stroud

Drafted By: Jeff Coon

DFI D00553
MAINTENANCE DISTRICT 5 HWY 91
WATER QUALITY FILTER STRIP
PACIFIC HIGHWAY (OR99) MP 112.77
LANE COUNTY

D00553_a.dgn :: Default-Sheet 5/9/2019 9:15:06 AM hwyr64u

Rotation: 0° Scale: 1"=40'



PLAN
N.T.S.

Sht. 2 of 2

OREGON DEPARTMENT OF TRANSPORTATION

Prepared By: Jason Stroud

Drafted By: Jeff Coon

DFI D00553
MAINTENANCE DISTRICT 5 HWY 91
WATER QUALITY FILTER STRIP
PACIFIC HIGHWAY (OR99) MP 112.77
LANE COUNTY

D00553_b.dgn :: Default-Sheet 5/9/2019 9:15:07 AM hwyr64u

Rotation: 0° Scale: 1"=40'