

# OPERATION & MAINTENANCE MANUAL

## Water Quality Planter

Manual prepared: November 2018

DFI No. D00587, D00588, D00589, D00590



Figure 1: DFI D00587, looking south

## 1. Identification

Drainage Facility ID (DFI): D00587  
Facility Type: Water Quality Planter  
Construction Drawings: (V-File Numbers) 45V-038  
Location: District: 2B  
Highway No.: 123  
Mile Post: 12.91-12.92, right side

Drainage Facility ID (DFI): D00588  
Facility Type: Water Quality Planter  
Construction Drawings: (V-File Numbers) 45V-038  
Location: District: 2B  
Highway No.: 123  
Mile Post: 12.95-12.96, right side

Drainage Facility ID (DFI): D00589  
Facility Type: Water Quality Planter  
Construction Drawings: (V-File Numbers) 45V-038  
Location: District: 2B  
Highway No.: 123  
Mile Post: 12.99-13.00, right side

Drainage Facility ID (DFI): D00590  
Facility Type: Water Quality Planter  
Construction Drawings: (V-File Numbers) 45V-038  
Location: District: 2B  
Highway No.: 123  
Mile Post: 13.02-13.03, right side

## 2. Manual Purpose

The purpose of this manual is to outline inspection needs and summarize maintenance actions for water quality planters.

## 3. Facility Location

The location map below details the facility location. The highway, mile posts, side streets, access location, and stormwater flow directions are noted on the map.

Facility location type: In Sidewalk

Flow direction: East



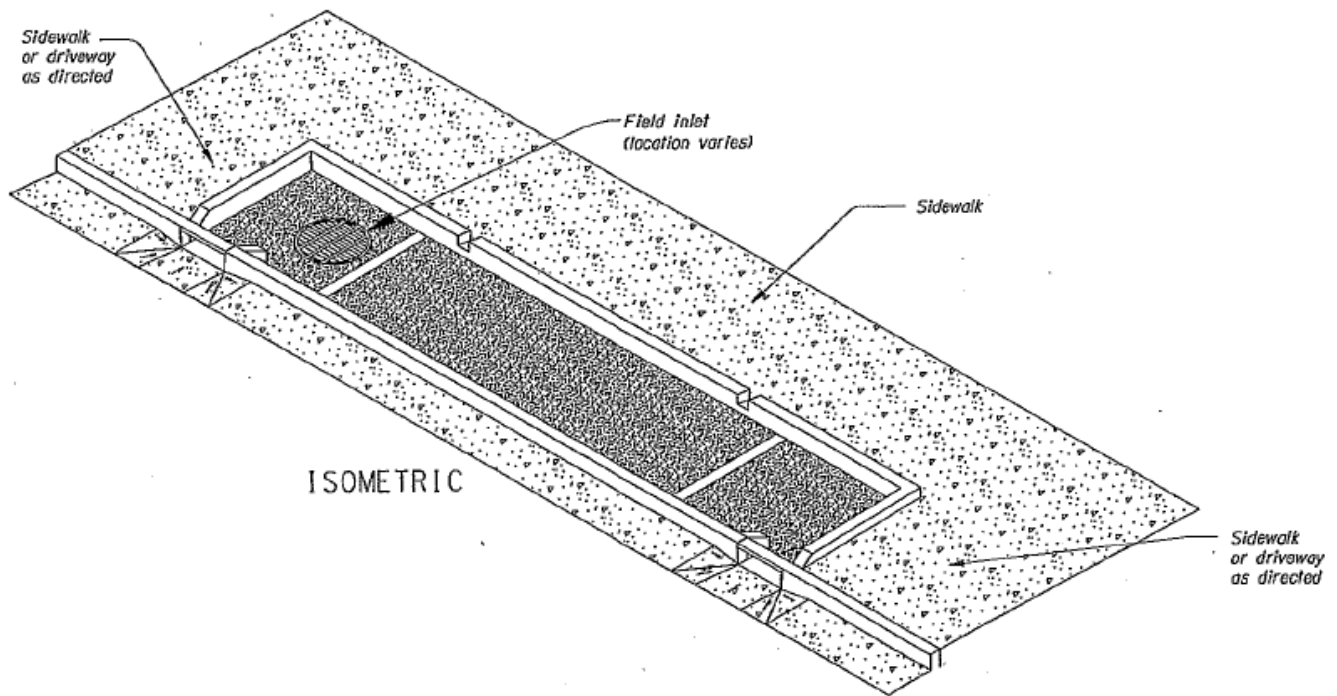
Figure 2: Facility Location Map

#### 4. Facility Summary

The length and width of the WQ Planter is based on the dimensions of the inside of the treatment cell.

The length and width of the WQ Planters are:

Facility DFI	Length (Feet)	Width (Feet)
D00587	44	3.5
D00588	50	3.5
D00589	37	3.5
D00590	68	3.5



**Site Specific Information:** The planters have blended compost and topsoil mixture. There are also three types of grasses in the planters and two curb inlets. There are no bypass inlets on the planters.



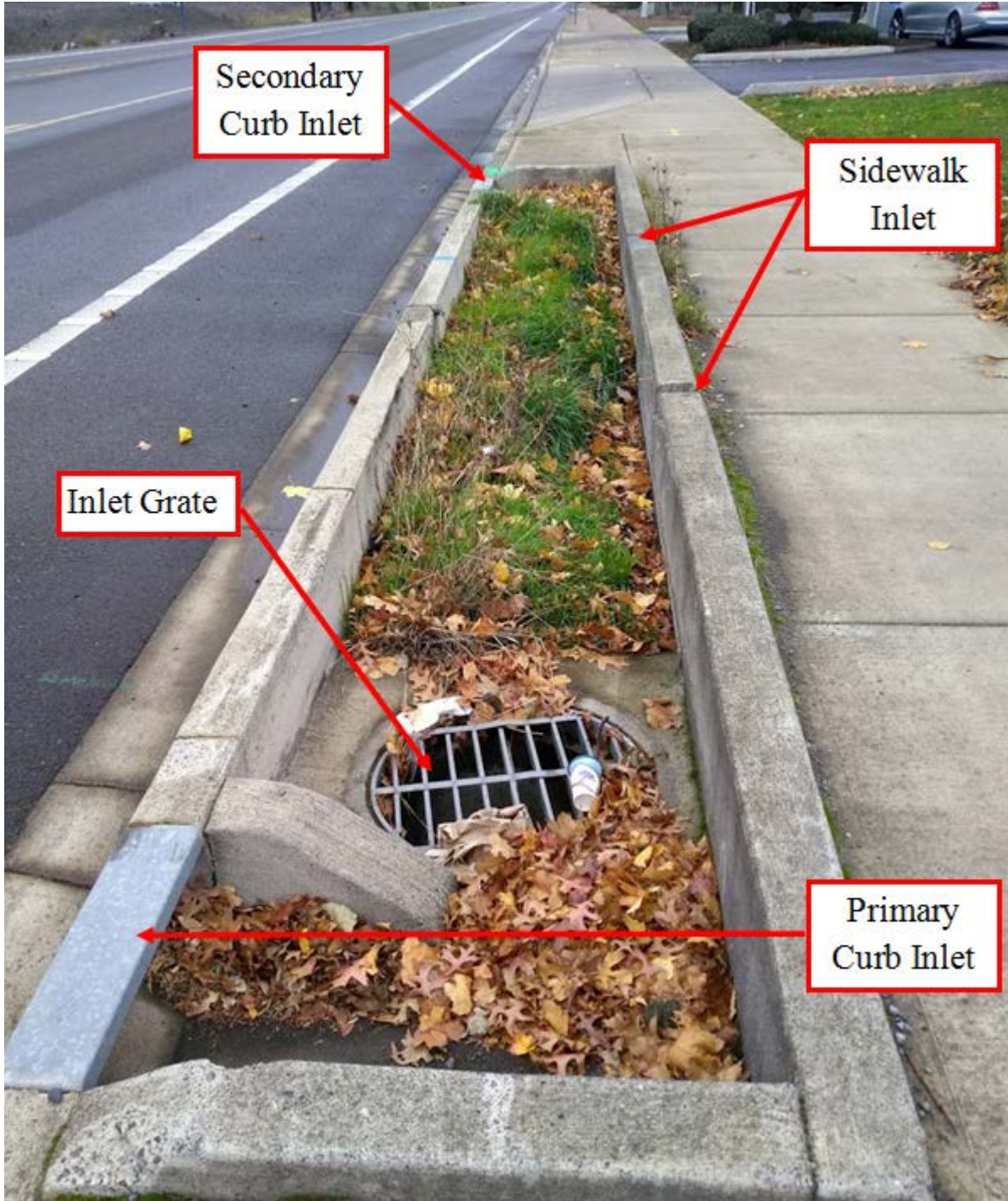


Figure 4: Facility Components



**Figure 5: Facility Components**

## 5. Facility Access

Maintenance access to the facility: Curb and gutter (travel lane)

**Lane Closure Needed**

Water quality planters do not typically have access roads/access pads, nor are they gated, as they are located in urban areas alongside sidewalks and curbs. Use caution when accessing these facilities as there may be pedestrians or cyclists in the vicinity.

## 6. Operational Components / Maintenance Items

### Classification and Standard Operational (Op) Plan:

This facility is classified as a:

<input type="checkbox"/> <b>Filterra (Op Plan A)</b>	<input checked="" type="checkbox"/> <b>WQ Planter (Op Plan B)</b>	<input type="checkbox"/> <b>MWS (Op Plan C)</b>
<p>A Filterra is a single chamber treatment cell that utilizes filter media, a plant, and a perforated underdrain.</p>	<p>A WQ Planter is a single chamber treatment cell that utilizes plants, filter media, and a perforated underdrain. The auxiliary outlet is located inside of the treatment cell.</p>	<p>A <u>Modular Wetland System</u> is a three chamber treatment cell that utilizes plants, filter media, filter media cartridges, and a perforated underdrain network.</p>
<p><b>A standard operational plan illustrates the general facility footprint configuration and explains the purpose of each facility component. Operational plans (A and B) are provided in the Standard Operation Manual.</b></p>		

See Appendix A for the site specific operational plan.

### Operational Components

The facility components table (**Table 1**) has been provided to highlight the applicable components for this facility. The component is in use when the box contains an “x” (e.g.  ).

The Standard Operation Manual for Water Quality Planters (implemented April 2018) outlines facility operation, typical footprint configuration, and component definitions and details. A link to the manual is attached to the feature marker in TransGIS.

<https://gis.odot.state.or.us/TransGIS/>



## 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: Facility Components		ID #
<b>Facility Inlet</b>		
Inlet Grate	<input type="checkbox"/>	P1
Curb Inlet	<input checked="" type="checkbox"/>	P2
Sidewalk Chute	<input type="checkbox"/>	P3
Bypass Inlet	<input type="checkbox"/>	P4
<b>Treatment</b>		
Plants (Tree or Shrub)	<input type="checkbox"/>	P5
Grass	<input checked="" type="checkbox"/>	P6
Filter Media	<input type="checkbox"/>	P7
Filter Media Cartridge	<input type="checkbox"/>	P8
<b>Planter Components</b>		
Perforated Pipe	<input checked="" type="checkbox"/>	P9
Outlet Grate	<input checked="" type="checkbox"/>	P10
<b>Outfall Type</b>		
Waterbody (Creek/Lake/Ocean)	<input type="checkbox"/>	P11
Ditch	<input type="checkbox"/>	P12
Storm Drain System	<input checked="" type="checkbox"/>	P13

## 7. Maintenance

### Maintenance Frequency/Maintain Records

- a. Full inspection 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 these water quality planters:



- Table 1 (General Maintenance): Contains general maintenance and inspection guidelines that are applicable to all ODOT water quality facilities. Maintenance of inlets, outlets, trash removal and noxious weeds is recommended seasonally.
- Table 3 (Maintenance of Water Quality or Biofiltration Swales): Contains maintenance information for swales. The planted area of these planters should be maintained as described for the bottom and sides of swales, by using equipment other than mowers to control plant height. Replant if needed with plants from the original plans, or as recommended by ODOT landscaping and stormwater staff.

The *Blue Book* can be viewed at the following website:

[http://www.oregon.gov/ODOT/Maintenance/Documents/blue\\_book.pdf](http://www.oregon.gov/ODOT/Maintenance/Documents/blue_book.pdf)

## 8. Limitations

Vactors may be used at the inlet, outlet, and grated areas. No heavy equipment may be used in the planted areas.

## 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

## **A Appendix A – Site Specific Operational Plan**

### **Contents:**

**Operational Plan: DFI D00587, D00588, D00589, D00590**

UNION PACIFIC RAILROAD COMPANY

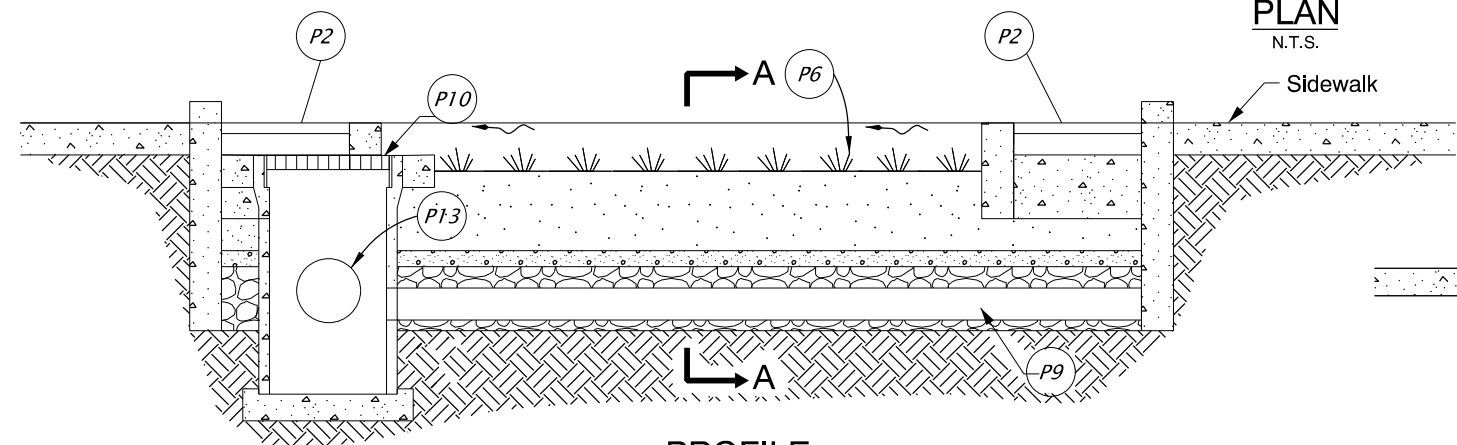
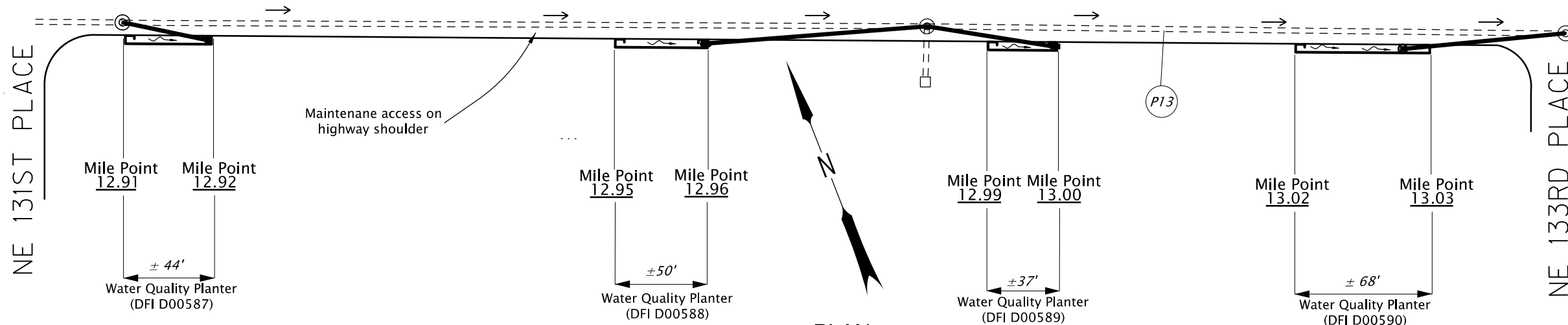
**Legend**

- ⊙ Standard Manhole
- ◻ Inlet
- Storm Pipe (Facility)
- Conveyance Direction
- ~ Water Flow Direction
- ⇐ Traffic Flow Direction

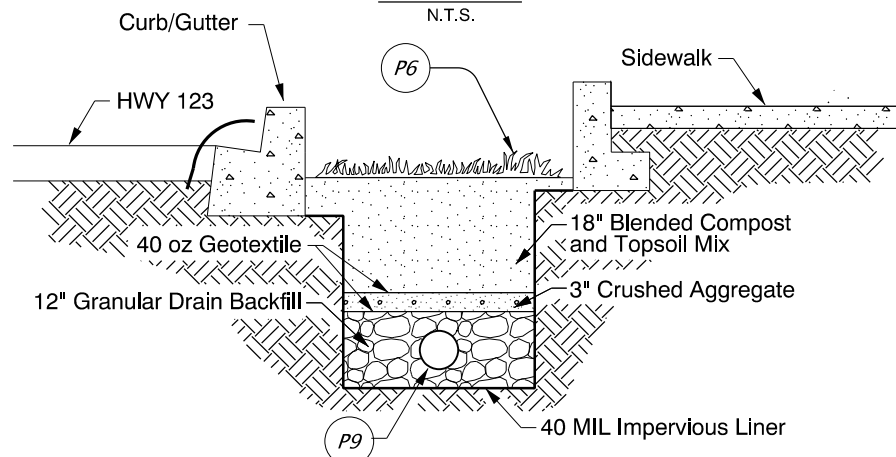
US 30 BYPASS (NE SANDY BLVD)

Westbound lanes ⇐

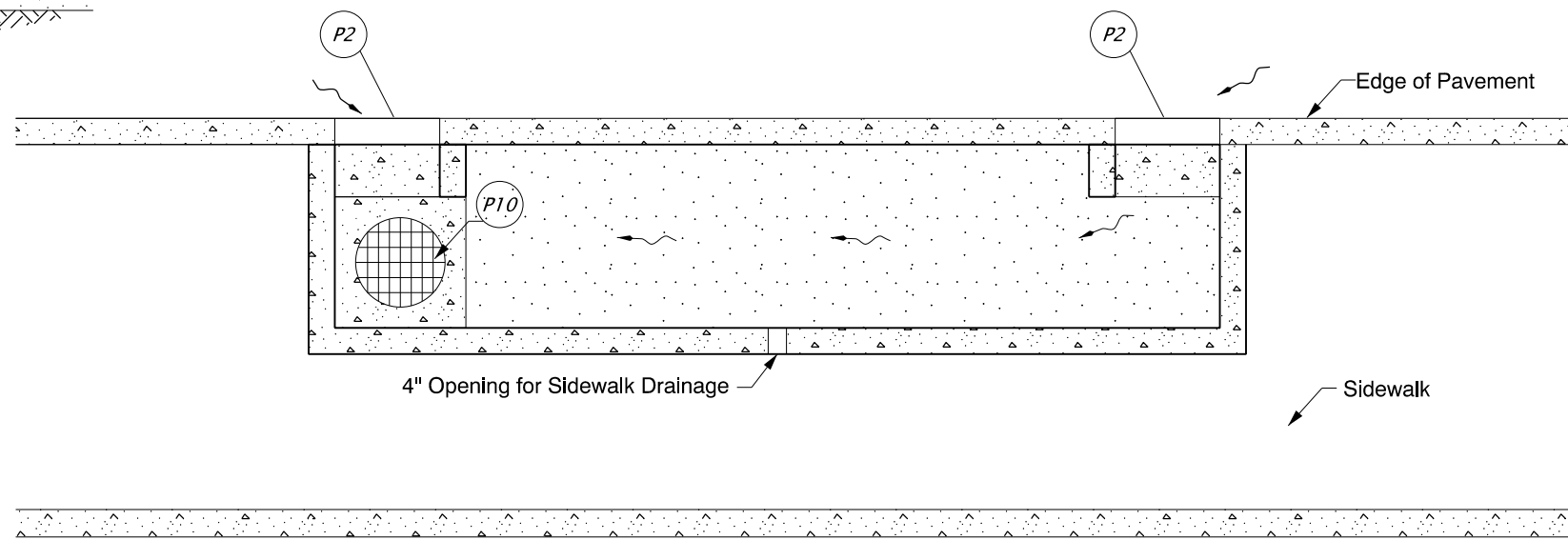
Eastbound lanes ⇒



**PROFILE**  
N.T.S.



**SECTION A-A**  
N.T.S.



**PLAN**  
N.T.S.

Sht. 01 of 01

Prepared By:  
Katrina Sepulveda

Drafted By:  
Katrina Sepulveda



OREGON DEPARTMENT OF TRANSPORTATION

**DFI D00587, D00588, D00589, D00590**  
**MAINTENANCE DISTRICT 2B HWY 123**  
**Water Quality Planter**  
 NE PORTLAND HIGHWAY MP 12.91-13.03  
 Multnomah County

## **B Appendix B – Project Contract Plans**

### **Contents:**

**Site Specific Subset of Project Contract Plan 45V-038**



STATE OF OREGON  
DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED PROJECT  
GRADING, DRAINAGE, PAVING, PAVEMENT MARKERS, SIGNING,  
SIGNALS & ROADSIDE DEVELOPMENT

**US 30 BYPASS: NE 122ND - M.P. 13.54 SEC.**  
NORTHEAST PORTLAND HIGHWAY

MULTNOMAH COUNTY  
MAY 2012

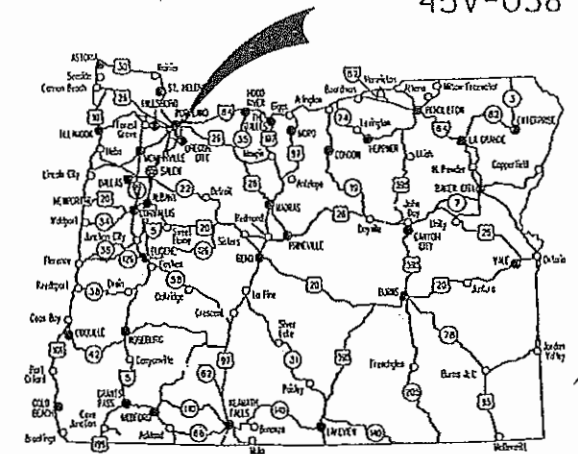
INDEX OF SHEETS	
SHEET NO.	DESCRIPTION
1	Title Sheet
1A	Index Of Sheets Cont'd. & Std. Drg. Nos.

**BEGINNING OF PROJECT &  
CONTRACT PROJECT  
HSIP-STP-S123(016)**

STA. "RW" 112+79.00 (M.P. 12.45)

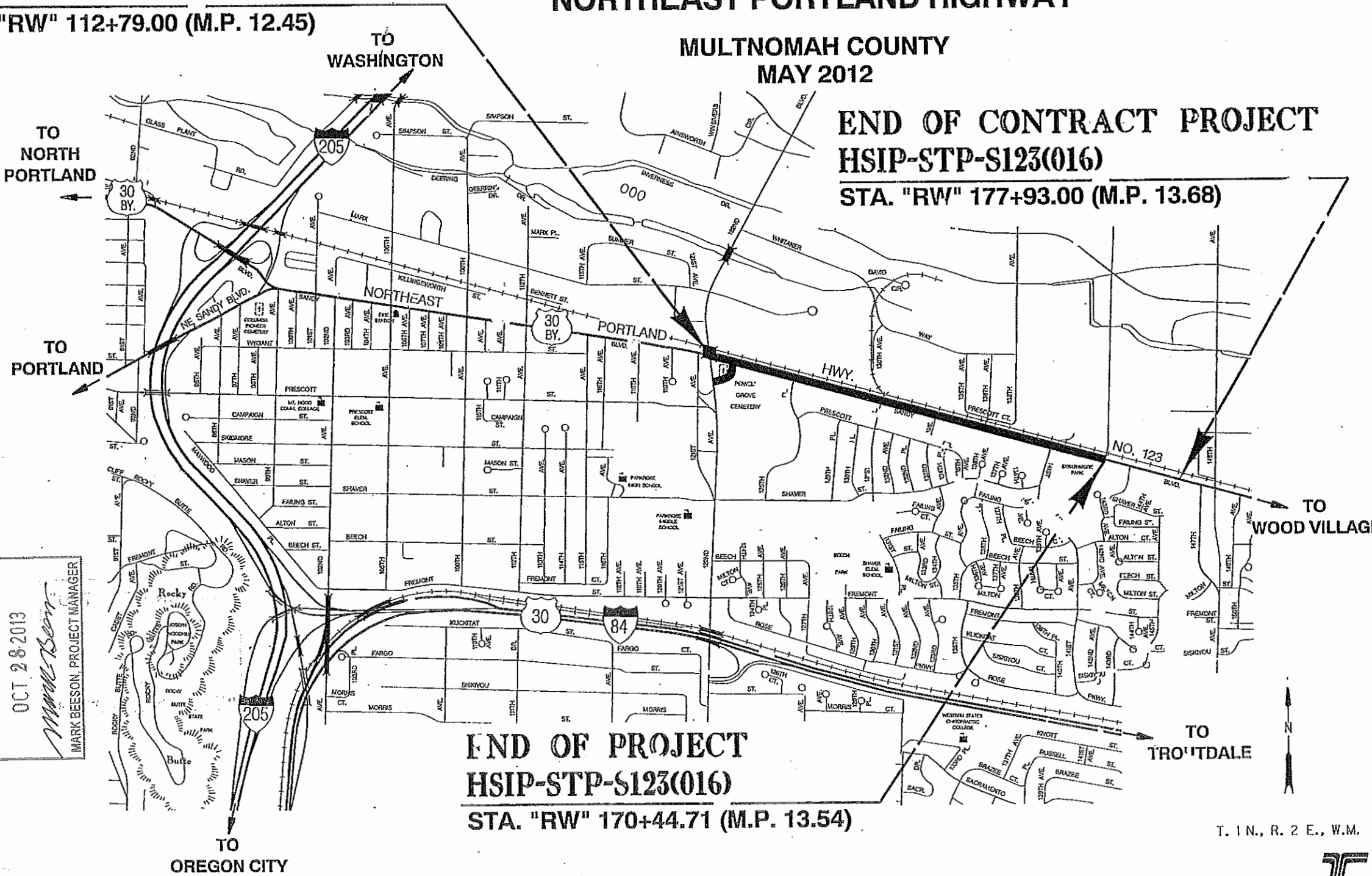
**END OF CONTRACT PROJECT  
HSIP-STP-S123(016)**

STA. "RW" 177+93.00 (M.P. 13.68)



Overall Length Of Project - 1.09 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.)



"AS CONSTRUCTED"  
OCT 28 2013  
Mark Beeson  
MARK BEESON, PROJECT MANAGER

**END OF PROJECT  
HSIP-STP-S123(016)**  
STA. "RW" 170+44.71 (M.P. 13.54)

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

OREGON TRANSPORTATION COMMISSION

- Pat Egan CHAIR
- Mary F. Olson COMMISSIONER
- David Lohman COMMISSIONER
- Mark Frohnmayer COMMISSIONER
- Tommy Boney 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: *Naveen G. Chandra*  
Naveen G. Chandra, P.E.  
Project Delivery Manager, Region 1

*J.M. Hill*  
Concurrence by ODOT Chief Engineer

US 30 BYPASS: NE 122ND - M.P. 13.54 SEC.  
NORTHEAST PORTLAND HIGHWAY  
MULTNOMAH COUNTY

FEDERAL HIGHWAY ADMINISTRATION	PROJECT NUMBER	SHEET NO.
OREGON DIVISION	HSIP-STP-S123(016)	1



INDEX OF SHEETS, CONT'D.	
SHEET NO.	DESCRIPTION
2, 2A, 2A-2 thru 2A-5	Typical Sections
2B, 2B-2 thru 2B-8	Details
2C, 2C-2 Thru 2C-5	Traffic Control Plans
2D	Pipe Data Sheet
3	General Construction
3A & 3A-2	Drainage & Utilities
3B	Profile
4	General Construction
4A & 4A-2	Drainage & Utilities
4B	Profile
5	General Construction
5A & 5A-2	Drainage & Utilities
5B	Profile
6	General Construction
6A & 6A-2	Drainage & Utilities
7	General Construction
7A & 7A-2	Drainage & Utilities
7B	Profile
8	General Construction
8A	Drainage & Utilities
GEO/HYDRO	
GA, GA-2 Thru GA-10	Erosion Control
GB & GB-2	Geotechnical Data
GM	Mandatory Disposal Site
ROADSIDE DEVELOPMENT	
GN, GN-2 & GN-3	Details
GN-4 Thru GN-8	Roadside Development Plans
PERMANENT PAVEMENT MARKINGS	
ST, ST-2 Thru ST-5 Incl.	Striping Plans
PERMANENT SIGNING	
S-13094 Thru S-13104	Permanent Signing

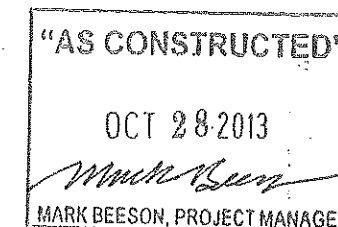
INDEX OF SHEETS, CONT'D.	
SHEET NO.	DESCRIPTION
TRAFFIC SIGNALS	
16463	Legend
16464	Removal Plan
16465	Signal Plan
16466	Detector Plan
16467	Existing Utilities
16468	Removal Plan
16469	Signal Plan
16470	Detector Plan
16471	Existing Utilities
16472	Interconnect Plan
16473	Flashing Beacon Plan
16474	Existing Utilities
16475	Details
16476	Details
16494	Details
16495	Details

Standard Drg. Nos.

- RD140 - Roadway Cross Slopes Superelevated Sections
- RD150 - Slope Rounding
- RD300 - Trench Backfill, Bedding, Pipe Zone And Mult. Installations
- RD302 - Street Cut
- RD312 - Subsurface Drain
- RD336, RD338, RD342 - Manholes
- RD344, RD346 - Manhole Cover & Frames
- RD356 - Manhole Frame Adjustment
- RD360 - Sanitary Cleanout
- RD362 - Concrete Inlets
- RD370 - Pipe Fill Height Tables
- RD380, RD386, RD388 - Stormwater Treatment and Storage Facility Field Markers
- RD390
- RD399
- RD400, RD405, RD410, RD415, RD420, RD425, RD430, RD435, RD440, RD445, RD450, RD470 - Guardrail
- RD610 - Asphalt Pavement Details
- RD700, RD701 - Curbs
- RD705 - Islands
- RD710 - Accessible Route Islands
- RD715 - Approaches And Non-Sidewalk Driveways
- RD720 - Sidewalks
- RD725 - Separated Sidewalk Driveways or Alleys
- RD735 - Curb Line Sidewalk Driveways or Alleys
- RD755 - Sidewalk Ramp Details
- RD759 - Truncated Dome Detectable Warning Surface Details And Locations

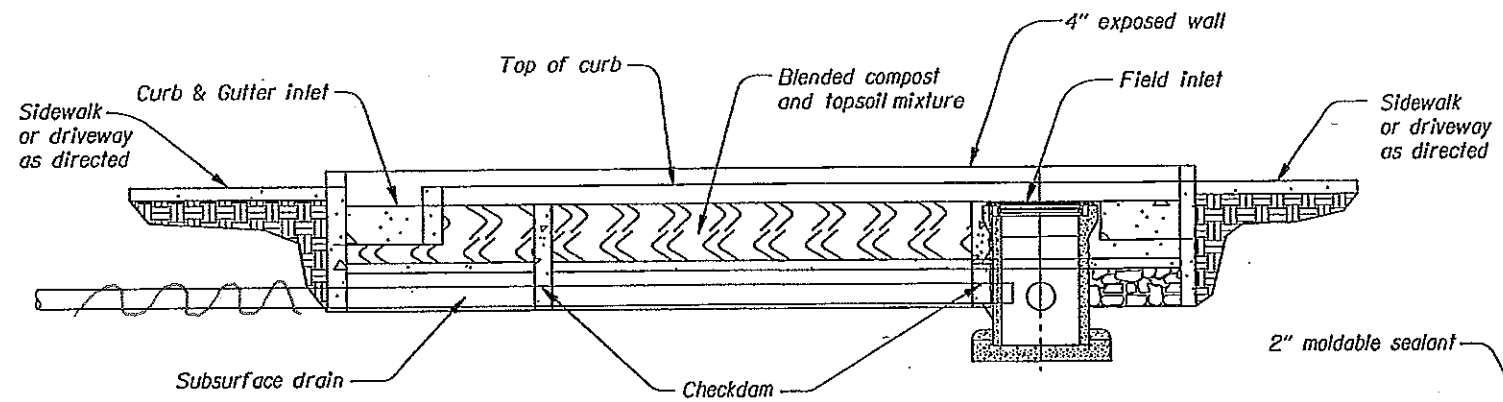
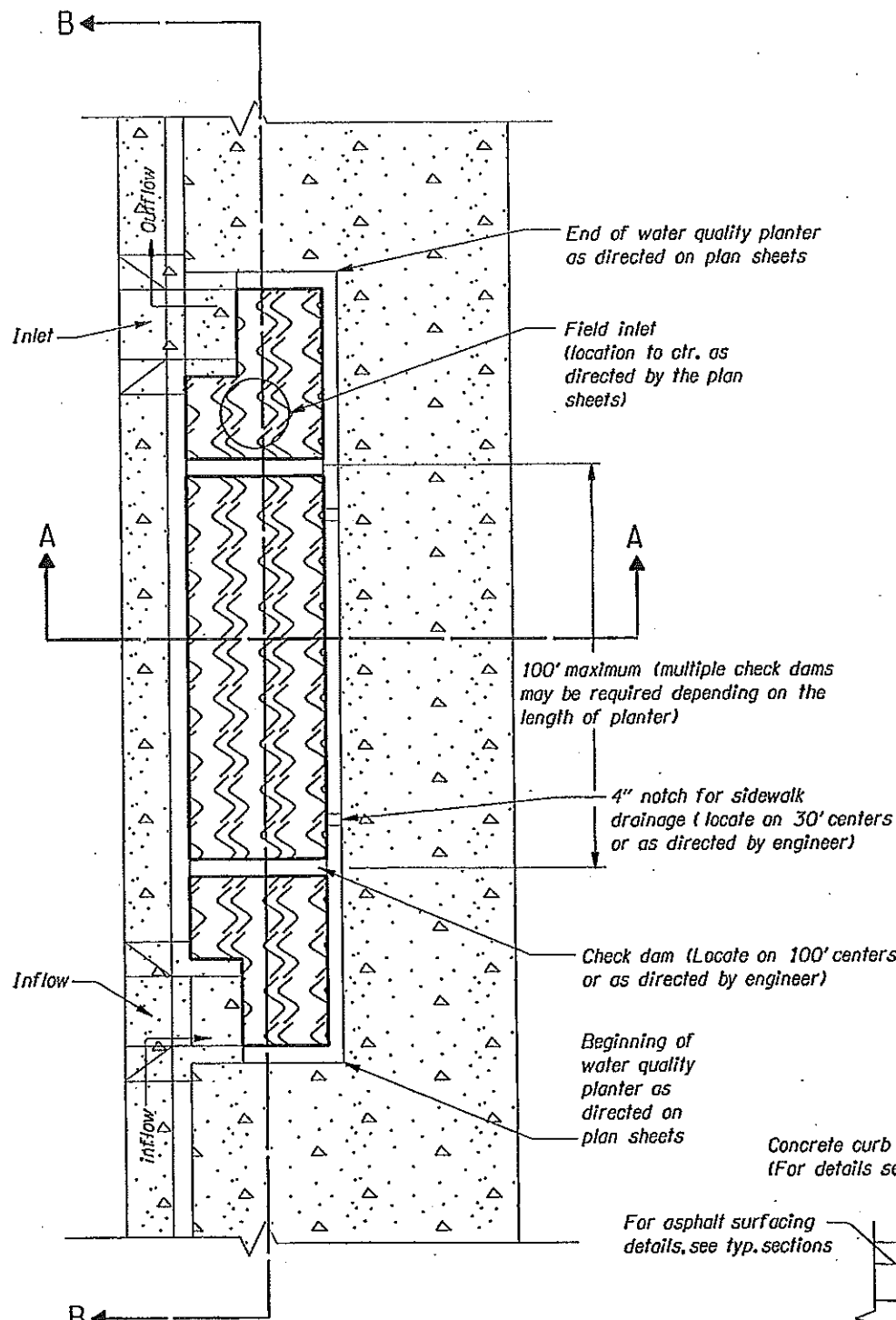
- RD1000 - Construction Entrances
- RD1015 - Inlet Protection
- RD1040 - Sediment Fence
- BR270 - Rail Transition From Flex Beam Rail To Curb & Parapet Rail
- TM204 - Details
- TM211 - Sign Bracing Detail
- TM457 - Vehicle, Ped. Signal & Push Button Mounting Details
- TM458 - Pedestrian Ramp Placement Details
- TM462 - Adjustable Signal Head Mounting Details
- TM465 - Overhead Sign, Fire Preemption & Photoelectronic Details
- TM500, TM501, TM503 - Pavement Marking Standard Details
- TM505 - Rail Crossing Pavement Markings
- TM520, TM521 - Durable Pavement Markings
- TM525 - Turn Arrow Marking Details
- TM530 - Intersection Pavement Markings
- TM539 - Median And Left Turn Channelization Details
- TM560, TM561 - Alignment Layout
- TM570 - Traffic Delineators
- TM571 - Traffic Delineators Steel Post Details
- TM576 - Traffic Delineator Installation
- TM670 - Wood Post Sign Supports
- TM671 - 3 Second Gust Wind Speed Isotach
- TM677 - Sign Mounts
- TM681, TM687, TM688 - Square Tube Sign Supports
- TM800 - Tables, Abrupt Edge And PCMS Details
- TM810 - Temporary Reflective Pavement Markers
- TM820 - Temporary Barricades
- TM821 - Temporary Sign Supports
- TM840, TM841, TM842 - Closure Details
- TM844 - Temporary Pedestrian Access Routing
- TM850 - 2-Lane, 2 Way Roadways
- TM851 - Non-Freeway Multi-Lane Sections

R/W Map No. 11B-05-0025

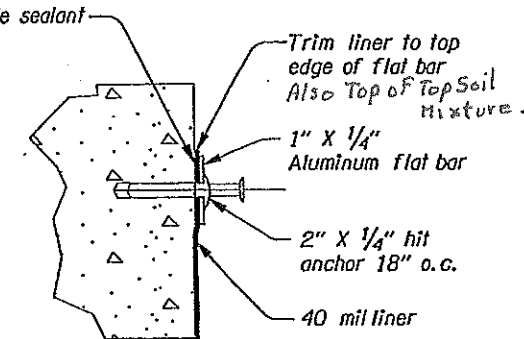


US 30 BYPASS: NE 122ND - M.P. 13.54 SEC. NORTHEAST PORTLAND HIGHWAY MULTNOMAH COUNTY		
FEDERAL HIGHWAY ADMINISTRATION	PROJECT NUMBER	SHEET NO.
OREGON DIVISION	HSIP-STP-S123(016)	1A

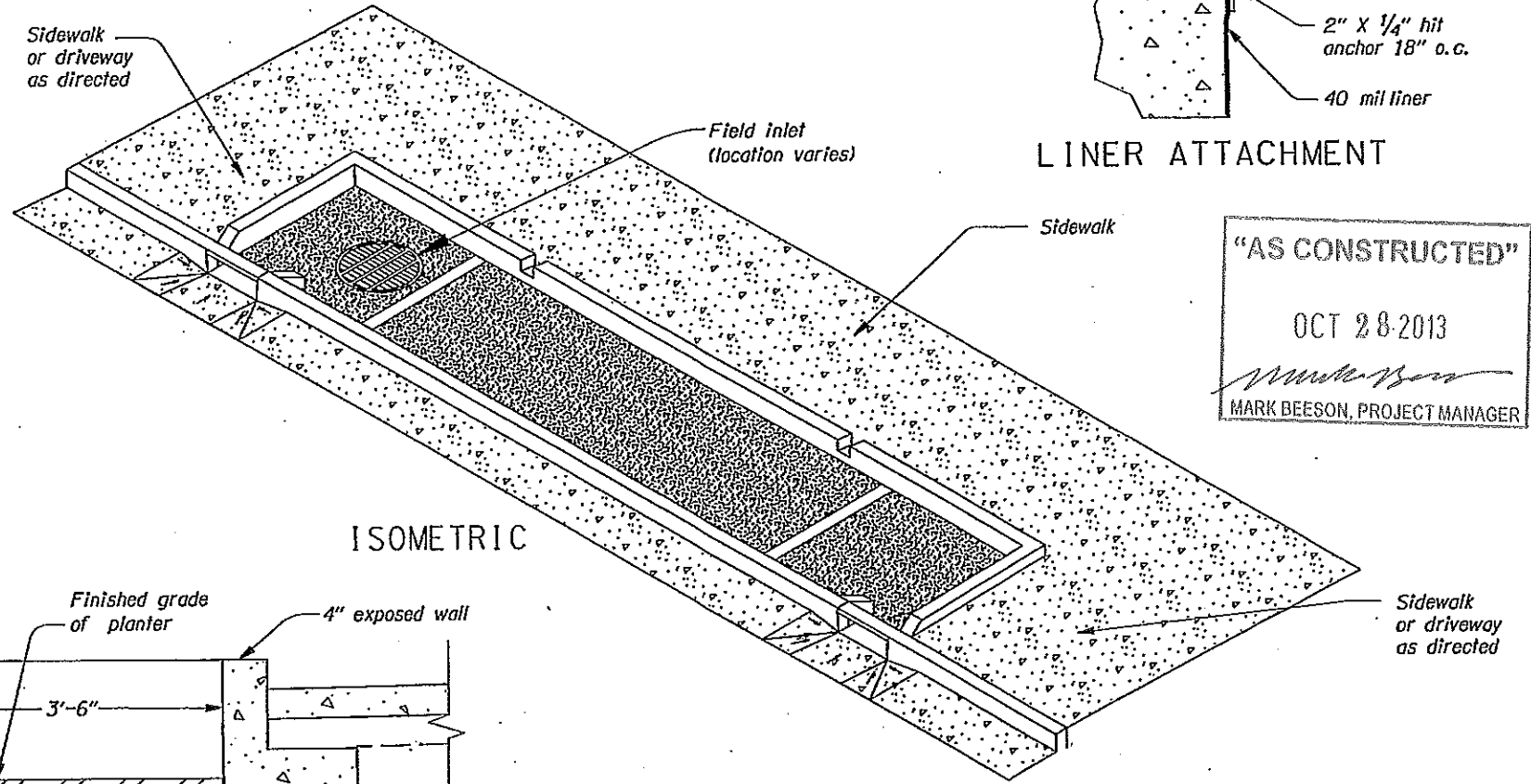
Standard Drawings located on the web at:  
[http://www.oregon.gov/ODOT/HWY/ENGSERVICES/standard\\_drawings\\_home.shtml](http://www.oregon.gov/ODOT/HWY/ENGSERVICES/standard_drawings_home.shtml)



SECTION B-B  
STORM WATER PLANTER



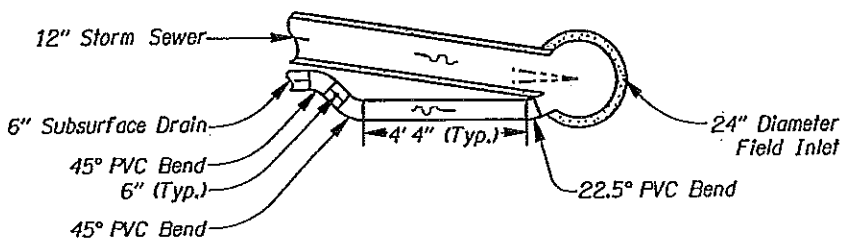
LINER ATTACHMENT



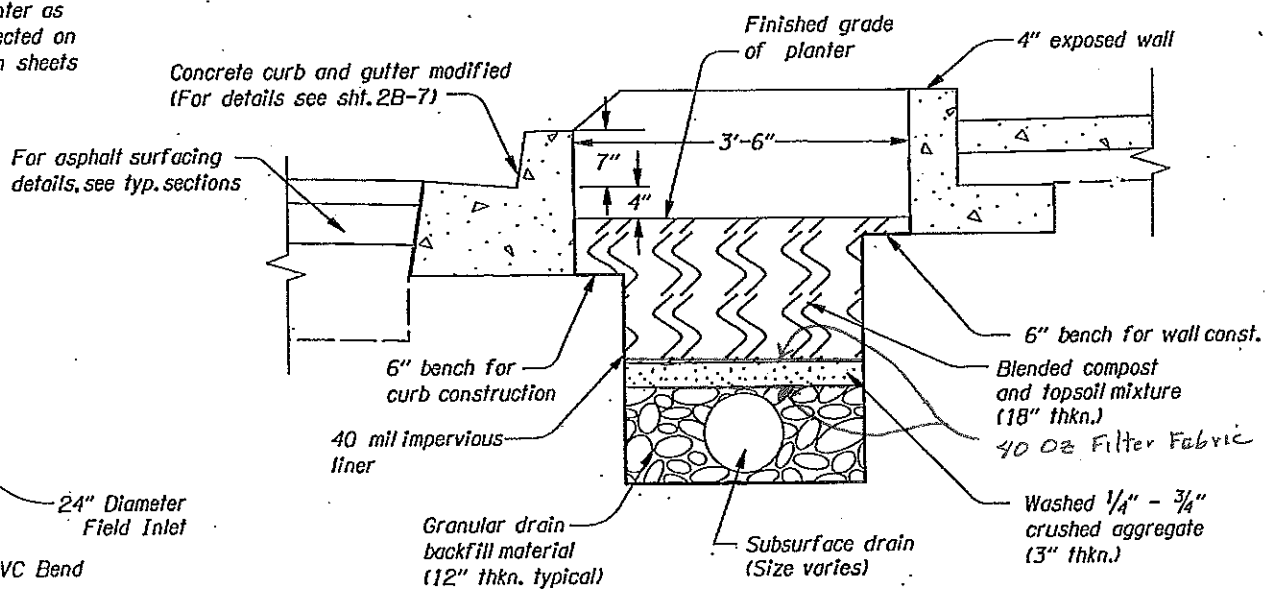
ISOMETRIC

"AS CONSTRUCTED"  
OCT 28 2013  
MARK BEESON, PROJECT MANAGER

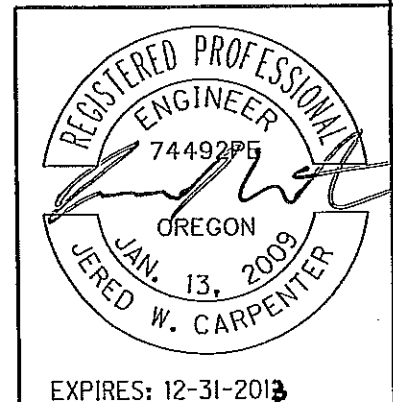
STORM WATER PLANTER DETAIL



ACUTE ANGLE PIPE CONNECTION DETAIL  
(As Required)

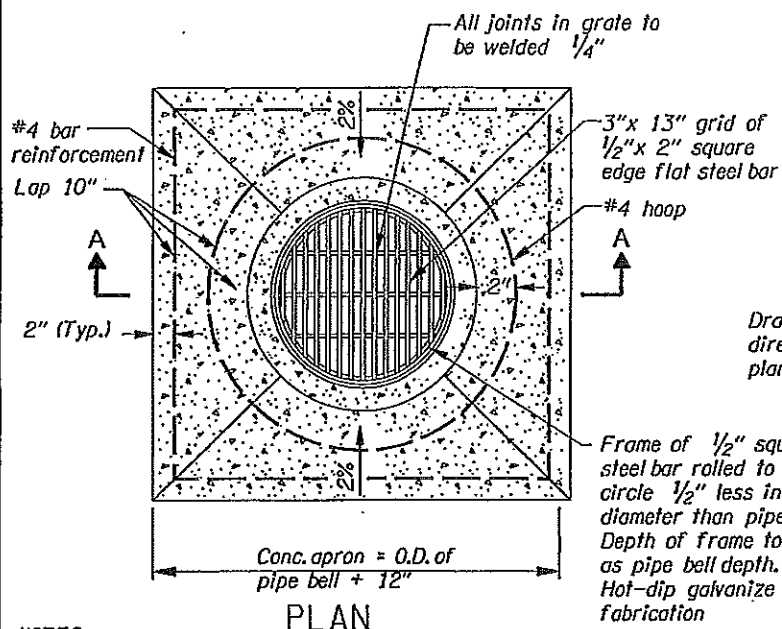


SECTION A-A  
STORM WATER PLANTER



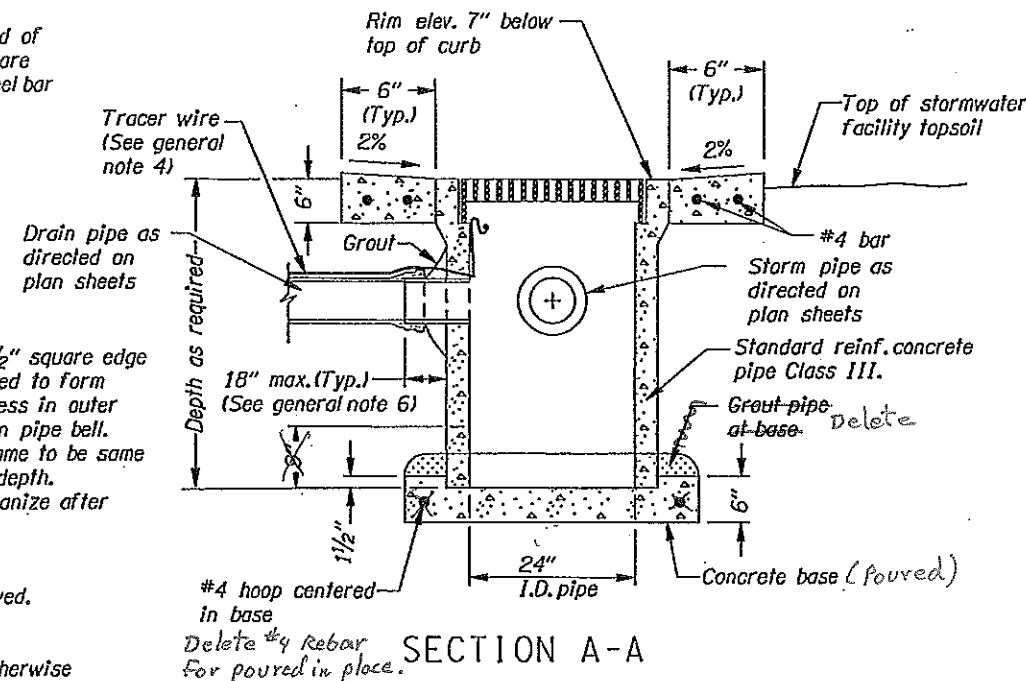
<b>OREGON DEPARTMENT OF TRANSPORTATION</b>	
<b>REGION 1 - GEO/HYDRO/HAZMAT UNIT</b>	
<b>US 30 BYPASS: NE 122ND - M.P. 13.54 SEC.</b> NORTHEAST PORTLAND HIGHWAY MULTNOMAH COUNTY	
Reviewed By - Ed Foltyn Designed By - Jered Carpenter Drafted By - Billy Shafer	
<b>DETAILS</b>	SHEET NO. <b>2B</b>



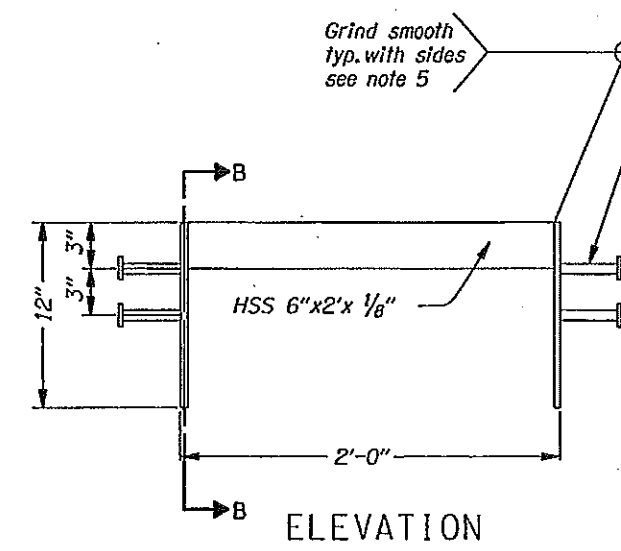


PLAN

- NOTES**
1. Grates shall be constructed for bicycle safety.
  2. Precast concrete catch basins may be used when specified or approved.
  3. Anchor vertical leg of inlet pipe if not a glued joint.
  4. See Std. Drg. RD336 for tracer wire details.
  5. All reinforcement shall be 2" clear of nearest face of conc., unless otherwise shown.
  6. All connecting pipes shall have a flexible, gasketed, and unrestrained joint within 18" of vertical 24" I.D. pipe.

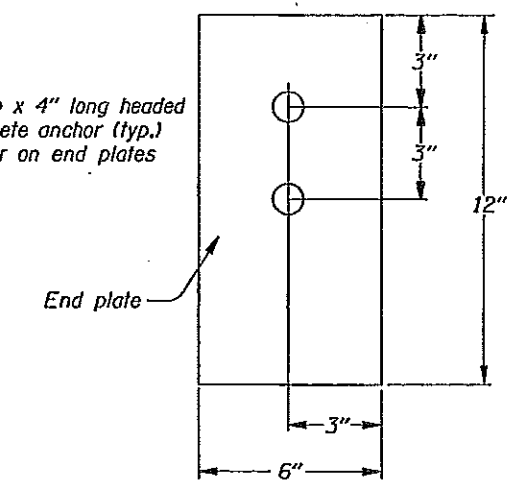


SECTION A-A  
FIELD INLET

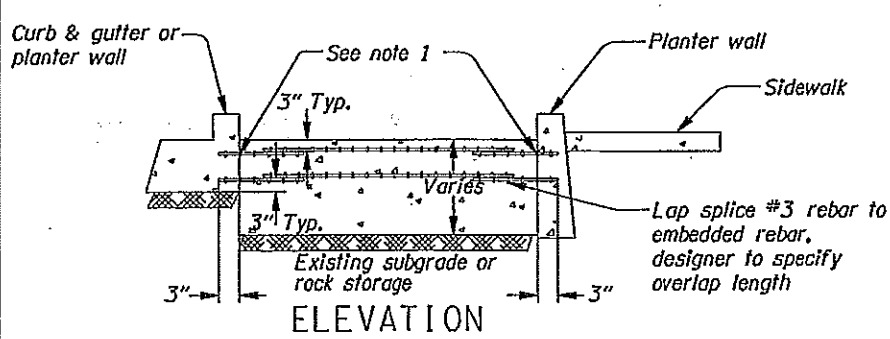


ELEVATION

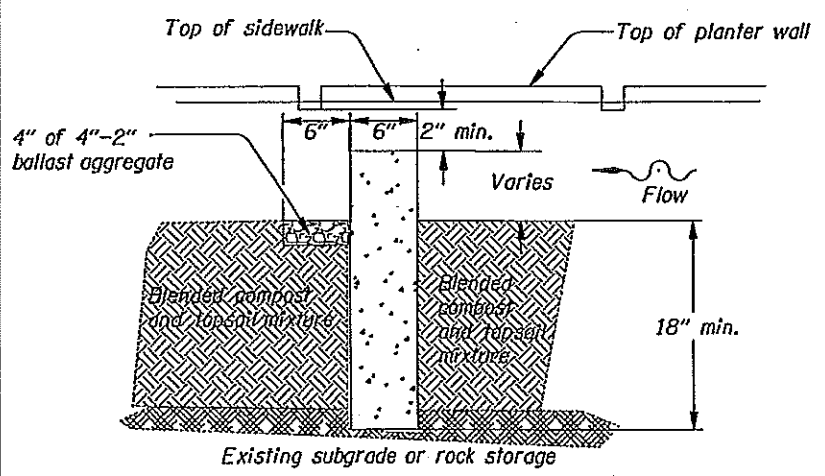
"AS CONSTRUCTED"  
OCT 28 2013  
MARK BEESON, PROJECT MANAGER



SECTION B-B

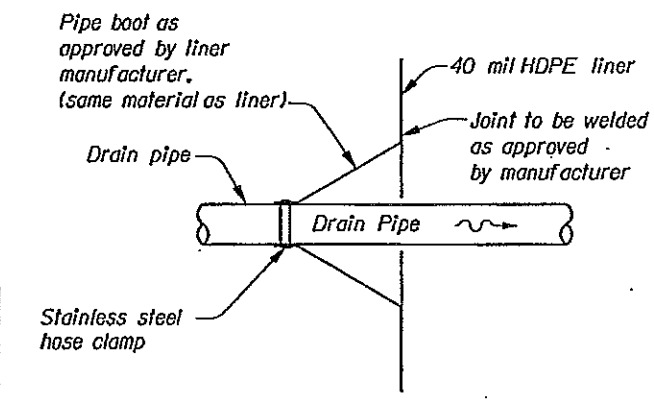


ELEVATION



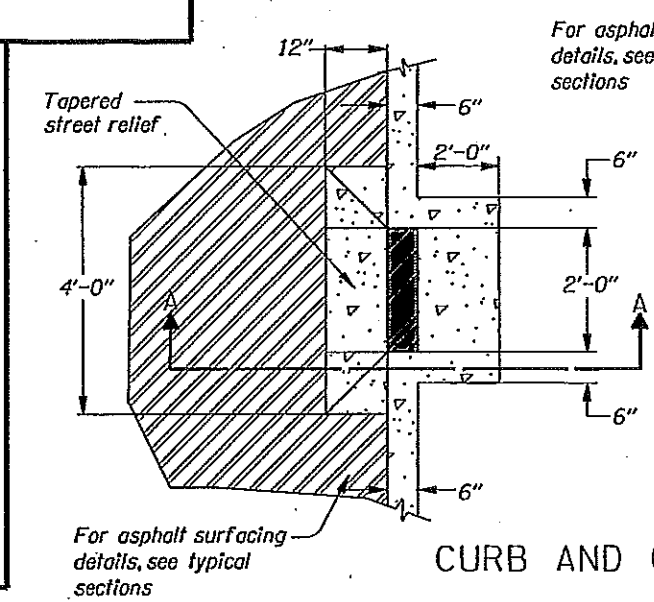
SECTION  
CONCRETE CHECK DAM

- NOTES:**
1. Embed #3 rebar 3" into curb and planter wall.

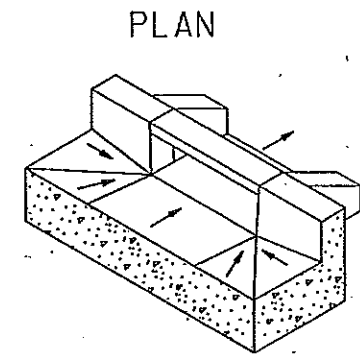


STORM FACILITY LINER BOOT  
FOR STORMWATER PIPE

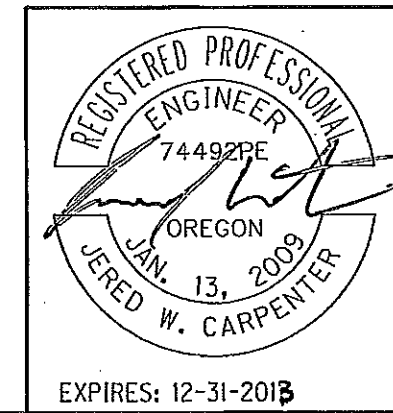
- Notes:**
1. Headed concrete anchors shall meet the requirements of ASTM A-10B.
  2. HSS 6" X 2" X 1/8" shall meet the requirements of ASTM A-500 Grade B.
  3. End plates shall meet the requirements of ASTM A-36.
  4. Entire assembly shall be hot dip galvanized in accordance with ASTM A-123.
  5. Single Bevel groove weld.



CURB AND GUTTER INLET (METAL)



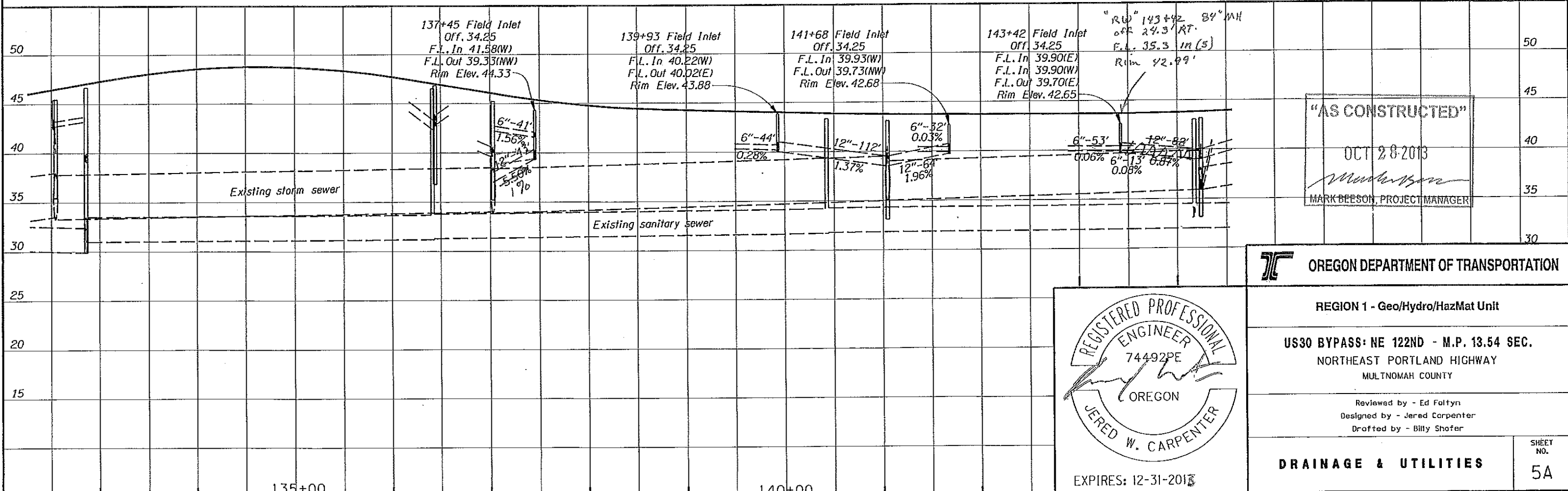
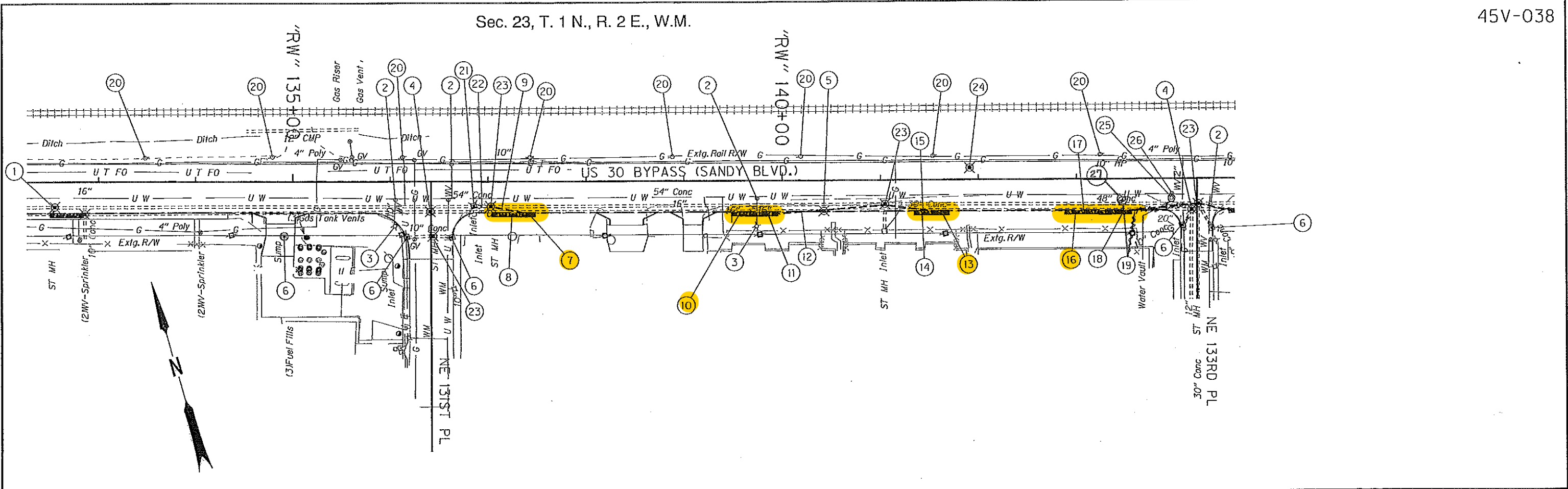
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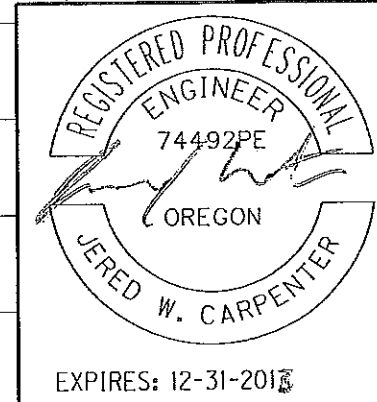
<p>OREGON DEPARTMENT OF TRANSPORTATION</p>	
<p>REGION 1 - GEO/HYDRO/HAZMAT UNIT</p>	
<p>US 30 BYPASS: NE 122ND - M.P. 13.54 SEC. NORTHEAST PORTLAND HIGHWAY MULTNOMAH COUNTY</p>	
<p>Reviewed By - Ed Foltyn Designed By - Jared Carpenter Drafted By - Billy Shafer</p>	
<p><b>DETAILS</b></p>	<p>SHEET NO. 2B-2</p>



Sec. 23, T. 1 N., R. 2 E., W.M.



"AS CONSTRUCTED"  
 OCT 28 2013  
 Mark Beeson  
 MARK BEESON, PROJECT MANAGER



**OREGON DEPARTMENT OF TRANSPORTATION**

REGION 1 - Geo/Hydro/HazMat Unit

US30 BYPASS: NE 122ND - M.P. 13.54 SEC.  
 NORTHEAST PORTLAND HIGHWAY  
 MULTNOMAH COUNTY

Reviewed by - Ed Foltyn  
 Designed by - Jered Carpenter  
 Drafted by - Billy Shofer

**DRAINAGE & UTILITIES**

SHEET NO. 5A

① See sht. 4A, notes 3, 18, 19 & 20

② Adjust water valve box - 4  
(By others)

③ Relocate hydrant - 2  
(By others)

④ Minor adjust manhole - 2  
(By others)

⑤ Relocate sanitary manhole  
(By others)

⑥ Adjust Inlet - 5

⑦ Sta. "RW" 137+04.20, Rt. to  
Sta. "RW" 137+47.70, Rt. 50.7 22.7  
Const. water quality planter strip - 21.5 sq. yds.  
(Drainage facility ID# D00587)  
(For details, see shts. 2B & 2B-1)

⑧ Sta. "RW" 137+04.71, 34.25', Rt. to  
Sta. "RW" 137+45.45, 34.25', Rt.  
Inst. 6" drain pipe - 41'  
(For details, see shts. 2B & 2B-2)

⑨ Sta. "RW" 137+45.45, 34.25', Rt. to  
Sta. "RW" 137+02.97, 34.25', Rt.  
Inst. 12" sewer pipe - 43'  
10' depth  
Connect to extg. manhole

⑩ Sta. "RW" 139+48.00, Rt. to  
Sta. "RW" 139+95.32, Rt. 97.32 24.5  
Const. water quality planter strip - 23.7 sq. yds.  
(Drainage facility ID# D00588)  
(For details, see shts. 2B & 2B-2)

⑪ Sta. "RW" 139+49.32, 34.25', Rt. to  
Sta. "RW" 139+93.07, 34.25', Rt. 95.44  
Inst. 6" drain pipe - 44'  
(For details, see shts. 2B & 2B-2)

⑫ Sta. "RW" 139+93.07, 34.25', Rt. to  
Sta. "RW" 141+04.65, 24.71' Rt.  
Inst. 12" sewer pipe - 112'  
5' depth  
Connect to extg. manhole

⑬ Sta. "RW" 141+34.94, Rt. to  
Sta. "RW" 141+69.84, Rt.  
Const. water quality planter strip - 15.5 sq. yds.  
(Drainage facility ID# D00589).  
(For details, see shts. 2B & 2B-2)

⑭ Sta. "RW" 141+35.44, 34.25', Rt. to  
Sta. "RW" 141+67.59, 34.25', Rt. 69.9  
Inst. 6" drain pipe - 32'  
(For details, see shts. 2B & 2B-2)

⑮ Sta. "RW" 141+67.59, 34.25', Rt. to  
Sta. "RW" 141+04.65, 24.71' Rt.  
Inst. 12" sewer pipe - 64'  
5' depth  
Connect to extg. manhole

⑯ Sta. "RW" 142+88.57, Rt. to  
Sta. "RW" 143+55.97, Rt.  
Const. water quality planter strip - 30.0 sq. yds.  
(Drainage facility ID# D00590)  
(For details, see shts. 2B & 2B-2)

⑰ Sta. "RW" 142+89.07, 34.25', Rt. to  
Sta. "RW" 143+42.25, 34.25', Rt.  
Inst. 6" drain pipe - 53'  
(For details, see shts. 2B & 2B-2)

⑱ Sta. "RW" 143+42.25, 34.25', Rt. to  
Sta. "RW" 143+55.47, 34.25', Rt.  
Inst. 6" drain pipe - 13'  
(For details, see shts. 2B & 2B-2)

⑲ Sta. "RW" 143+55.47, 34.25', Rt. to  
Sta. "RW" 144+23.47, 25.87' Rt. 42 24.31  
Inst. 12" sewer pipe - 82' 9.9'  
5' depth  
Connect to extg. manhole  
84"

⑳ Relocate utility poles - 8  
(By others)

㉑ Remove inlet

㉒ Abandon pipe - 17'

㉓ Minor adjust manhole - 4

㉔ Minor adjust communications manhole

㉕ Remove waterline access vault  
(By others)

㉖ Relocate water valve  
(By others)

㉗ Sta. "RW" 143+42, 24.3' Rt  
Const. 84" Manhole over  
existing 48" sewer.

Water Quality Feature Location Table			
Ctr. Station	Offset (Rt.)	Feature Type	Notes
"RW" 137+05.70	32.00	Curb & Gutter Inl	**
"RW" 137+45.45	34.25	Field Inlet	*
"RW" 139+50.32	32.00	Curb & Gutter Inl	**
"RW" 139+93.07	34.25	Field Inlet	*
"RW" 141+36.44	32.00	Curb & Gutter Inl	**
"RW" 141+67.59	34.25	Field Inlet	*
"RW" 142+90.07	32.00	Curb & Gutter Inl	**
"RW" 143+42.25	34.25	Field Inlet	*
"RW" 143+54.47	32.00	Curb & Gutter Inl	**

General Notes:

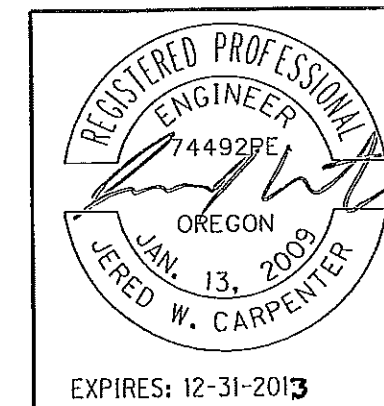
See Sht. 2B-1 for details of curb & gutter inlet, flow spreader, and field inlet referenced in the table above.

- \* Offset shown is to ctr of feature
- \*\* Offset shown is to top face of curb

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OCT 28 2013

*Mark Beeson*  
MARK BEESON, PROJECT MANAGER



**OREGON DEPARTMENT OF TRANSPORTATION**

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REGION 1 - Geo/Hydro/HazMat Unit

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US30 BYPASS: NE 122ND - M.P. 13.54 SEC.  
NORTHEAST PORTLAND HIGHWAY  
MULTNOMAH COUNTY

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Reviewed by - Ed Foltyn  
Designed by - Jared Carpenter  
Drafted by - Billy Shafer

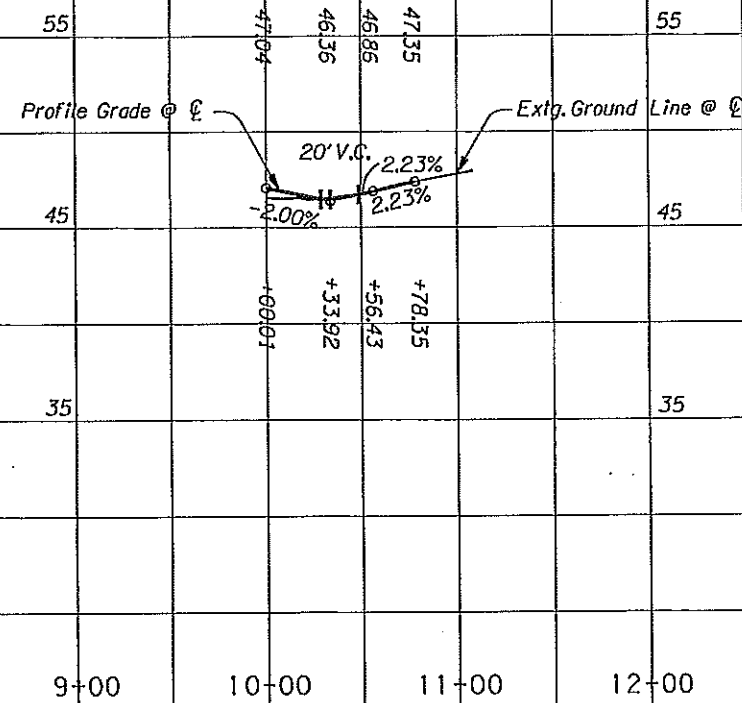
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**DRAINAGE & UTILITIES**

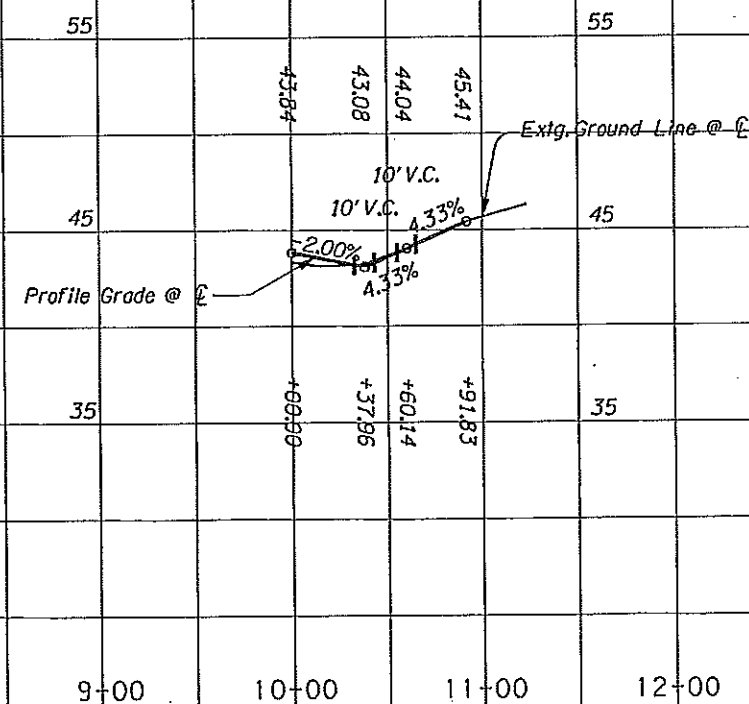
SHEET NO.  
**5A-2**

"131ST" LINE

45V-038



"133RD" LINE



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*Mark Beeson*  
 MARK BEESON, PROJECT MANAGER

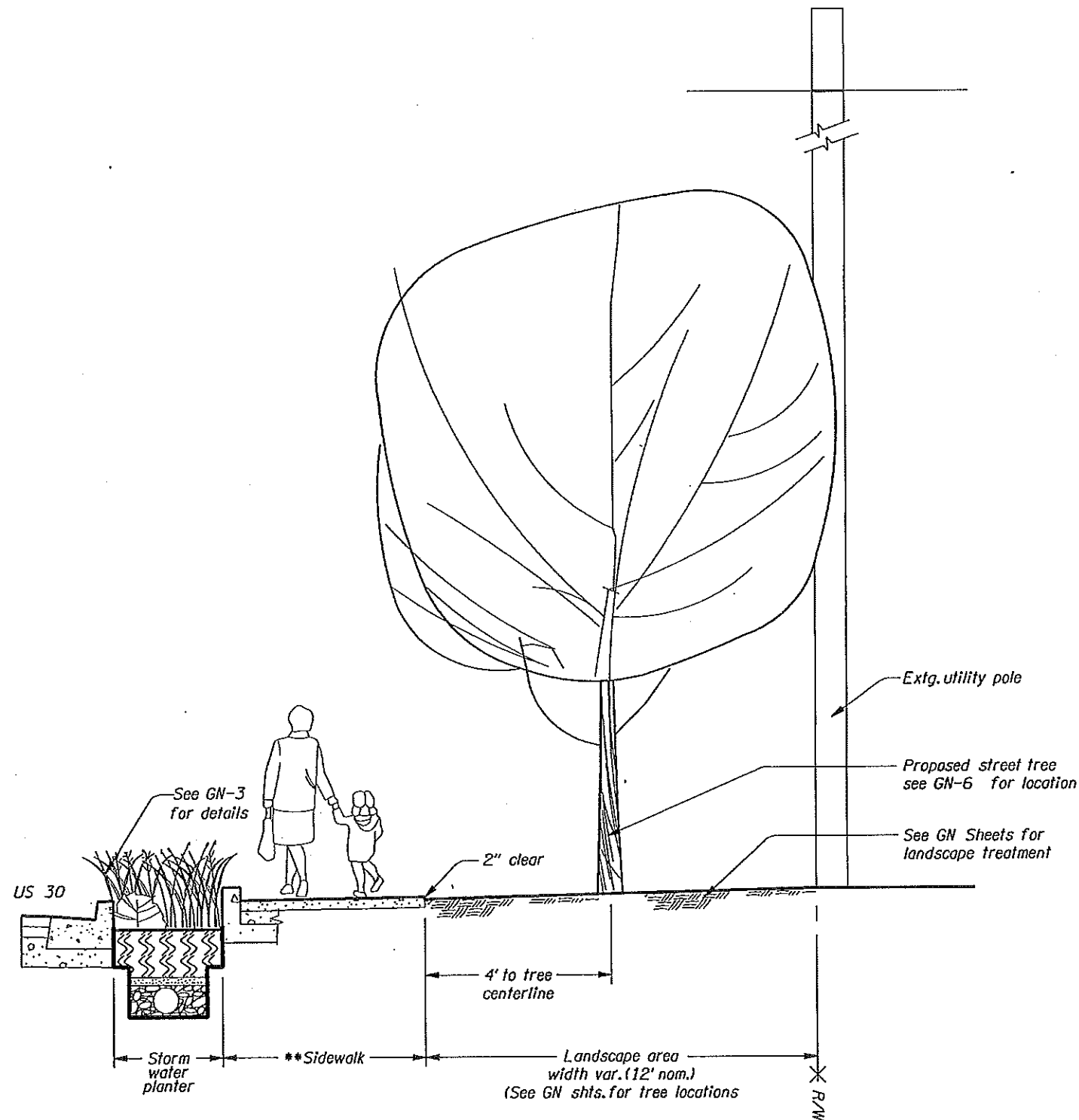
**OREGON DEPARTMENT OF TRANSPORTATION**  
**REGION 1 ROADWAY ENGINEERING SECTION**  
 US 30 BYPASS: NE 122ND - M.P. 13.54 SEC.  
 NORTHEAST PORTLAND HIGHWAY  
 MULTNOMAH COUNTY

Design Team Leader - John P. Wolf  
 Designed By - Jason Grassman, P.E.  
 Drafted By - Marco Singer

**PROFILE**

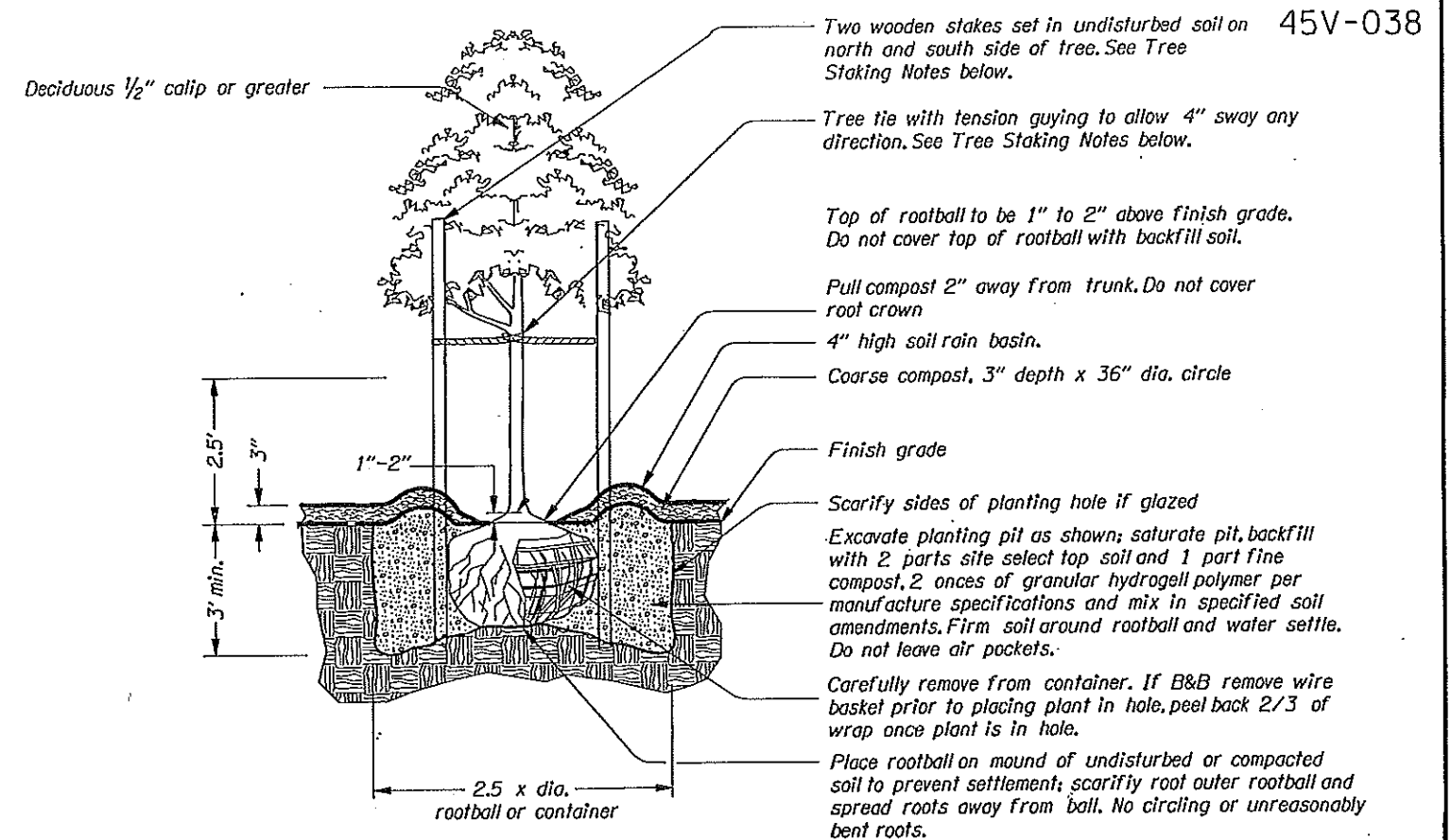
SHEET NO. 5B

REGISTERED PROFESSIONAL ENGINEER  
 56,138 PE  
*Jason M. Grassman*  
 OREGON  
 JULY 9, 2002  
 JASON M. GRASSMAN  
 RENEWAL DATE: 6-30-2013



1 STORM WATER PLANTER AND TREE PLANTING SECTION

Not to scale



TREE STAKING NOTES:

1) Tree ties to be either:

Rigid guy system as manufactured by Alpine Nursery, Boring Oregon. Galvanized wire to be approx. 1/8" thickness and 24" length. There is a plastic sleeve over portion that goes around tree. The wire tie is to go thru the wood stake and be securely fastened.

Plastic chain type, approx. 1" width by 1/8" depth where two stakes are required. Cross ties between stakes and wrap tie around tree. Fasten securely to stake.

2) Furnish tree stakes on all tree plantings. Stakes to be construction grade, rough sawn or finished Douglas Fir or Pine. Stain with approved green penetrating oil. Stake size is to be 1 1/2" x 1 1/2" by following lengths:  
Trees 36" and shorter - Use one - 6' (approx.) stake  
Trees taller than 36" - Use one - 8' (approx.) stake  
Drive stakes vertically and at least 24" into undisturbed soil. Do not drive stakes thru root ball. Locate stakes to best resist prevailing winds.

2 STREET TREE PLANTING AND STAKING

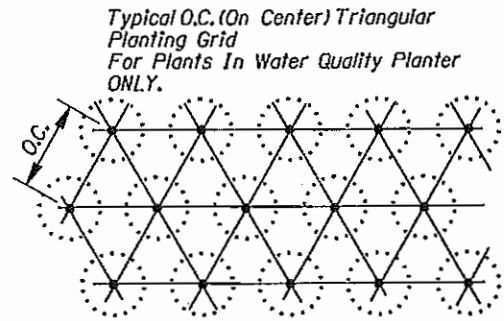
Not to scale

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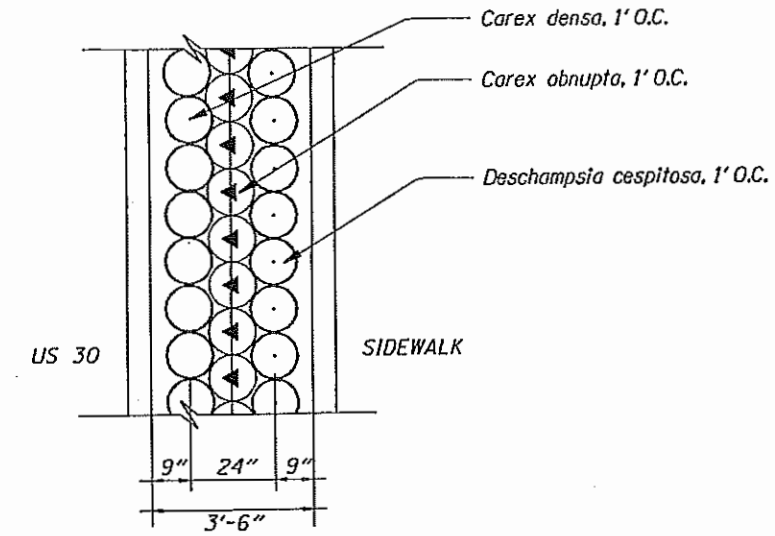
REGISTERED  
424  
Magnus U. Bernhardt  
OREGON  
04/14/99  
LANDSCAPE ARCHITECT

OREGON DEPARTMENT OF TRANSPORTATION	
REGION 1 ROADWAY ENGINEERING SECTION	
US 30 BYPASS: NE 122ND - M.P. 13.54 SEC. NORTHEAST PORTLAND HIGHWAY MULTNOMAH COUNTY	
Design Team Leader - Magnus Bernhardt Designed By - Magnus Bernhardt Drafted By - Marco Singer	
DETAILS	SHEET NO. GN-2

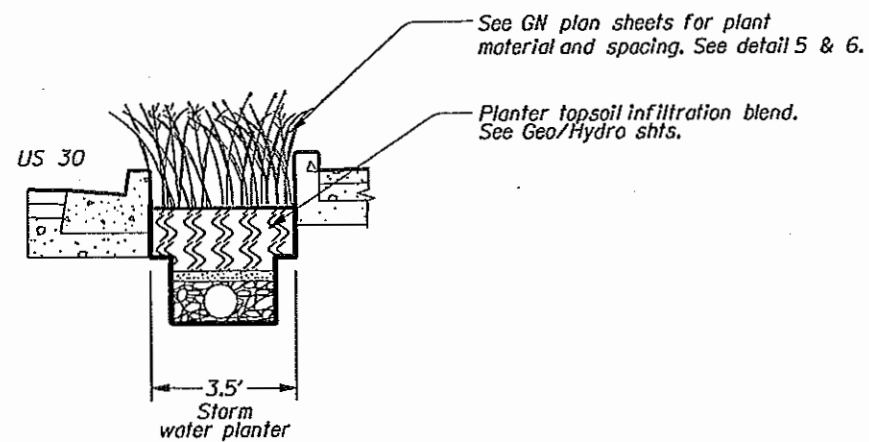




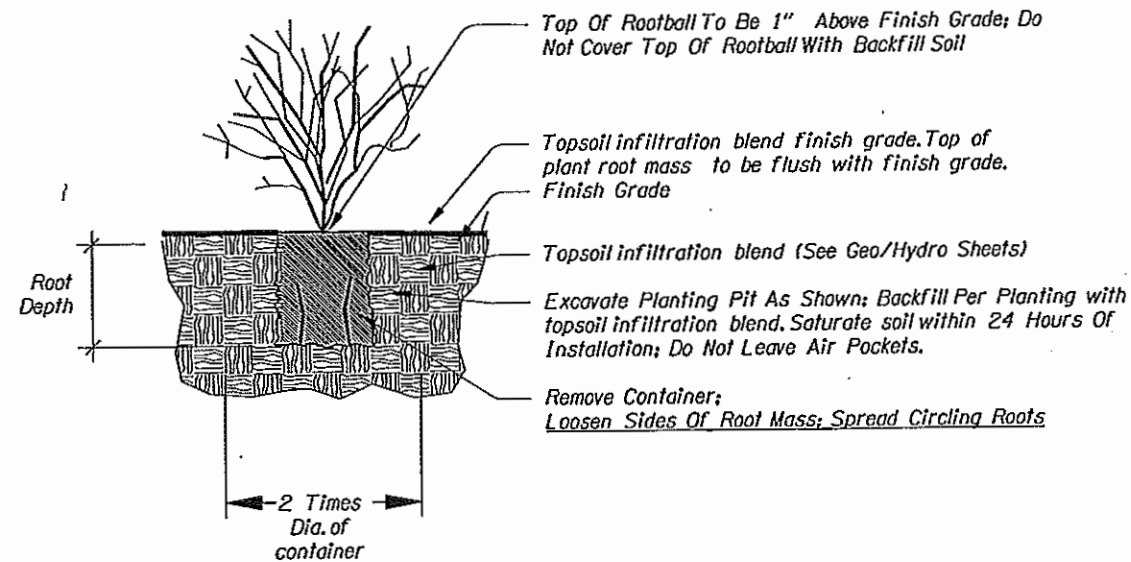
**3** STORM WATER PLANT SPACING  
*Not to scale*



**5** STORM WATER PLANTER PLANTING LAYOUT DETAIL  
*Plan layout Not to scale*

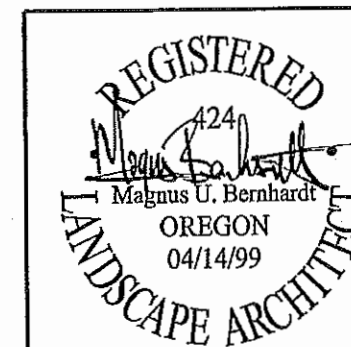


**4** STORM WATER PLANTER PLANTING DETAIL  
*SECTION Not to scale*



**6** CONTAINER SHRUB PLANTING  
*Water Quality Planter Planting Not To Scale*

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OCT 28 2013  
*Mark Beeson*  
MARK BEESON, PROJECT MANAGER



OREGON DEPARTMENT OF TRANSPORTATION	
REGION 1 ROADWAY ENGINEERING SECTION	
US 30 BYPASS: NE 122ND - M.P. 13.54 SEC. NORTHEAST PORTLAND HIGHWAY MULTNOMAH COUNTY	
Design Team Leader - Magnus Bernhardt Designed By - Magnus Bernhardt Drafted By - Marco Singer	
DETAILS	SHEET NO. GN-3