

# OPERATION & MAINTENANCE MANUAL

**DFI No.: D00912**

**Facility Type: Water Quality Biofiltration  
Swale**



**JULY, 2015**



## 1. Identification

Drainage Facility ID (DFI): **D00912**  
Facility Type: Water Quality Biofiltration Swale  
Construction Drawings: (V-File Number) 48V-090  
Location: Region: 2  
District: 4  
Highway No.: 009  
Mile Post: 137.720/137.750(beg./end)  
Description: This facility is located on the western side of the US 101 (Hwy 009) at the south corner of the Agate Beach Wayside parking lot. Access can be obtained from the Wayside.

## 2. Facility Contact Information

Contact the City of Newport Public Works Department for:

- Operational clarification
- Maintenance clarification
- Repair or restoration assistance

### Engineering Contacts:

City of Newport City Engineer: 541-574-3369

## 3. Construction

Engineer of Record: Otak, Inc. – Ken Ackerman, 503-415-2378

Facility construction: 2015  
Contractor: To Be Determined

## 4. Storm Drain System and Facility Overview

A water quality swale is a flat-bottomed open channel designed to treat stormwater runoff from highway pavement areas. This type of facility is lined with grass. Treatment by trapping sedimentation occurs when stormwater runoff flows through the grass.

Runoff is collected from the wayside via curb-cut openings at the northern end and along the curb (See the Operational Plan in Appendix A). Water

flows through the length of the swale and undergoes treatment. The treated stormwater is collected through an underdrain and modified catchbasin (Type 3) and exits the swale through a 12-inch storm sewer which directs the water into the existing stormwater conveyance system.

A. Maintenance equipment access:

Maintenance access to the facility can either be obtained along the Wayside

B. Heavy equipment access into facility:

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

C. Special Features:

- Amended Soils
- Porous Pavers
- Liners
- Underdrains

## 5. Facility Haz Mat Spill Feature(s)

The swale can be used to store a volume of liquid by blocking the 12-inch-diameter outlet pipe located at the outlet of the swale. This pipe is noted as Point B in the Operational Plan in Appendix A.

## 6. Auxiliary Outlet (High Flow Bypass)

Auxiliary Outlets are provided if the primary outlet control structure cannot safely pass the projected high flows. Broad-crested spillway weirs and over flow risers are the two most common auxiliary outlets used in stormwater treatment facility design. The auxiliary outlet feature is either a part of the facility or an additional storm drain feature/structure.

The auxiliary outlet feature for this facility is:

- Designed into facility – the modified catchbasin (Type 3) functions as an overflow riser.
- Other, as noted below

## 7. 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:

<http://www.oregon.gov/ODOT/HWY/OOM/MGuide.shtml>

Maintenance requirements for proprietary structures, such as underground water quality manholes and/or vaults with filter media are noted in Appendix C when applicable.

The following stormwater facility maintenance table (See ODOT Maintenance Guide) should be used to maintain the facility outlined in this Operation and Maintenance Manual or follow the Maintenance requirements outlined in Appendix C when proprietary structure is selected below:

- 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)
- Special Maintenance requirements: N/A

Note: Special maintenance Requirements Require Concurrence from ODOT SR Hydraulics Engineer.

## 8. 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: <http://egov.oregon.gov/ODOT/HWY/OOM/EMS.shtml>

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 Hazmat Coordinator	(503) 986-2647
ODEQ Northwest Region Office	(503) 229-5263

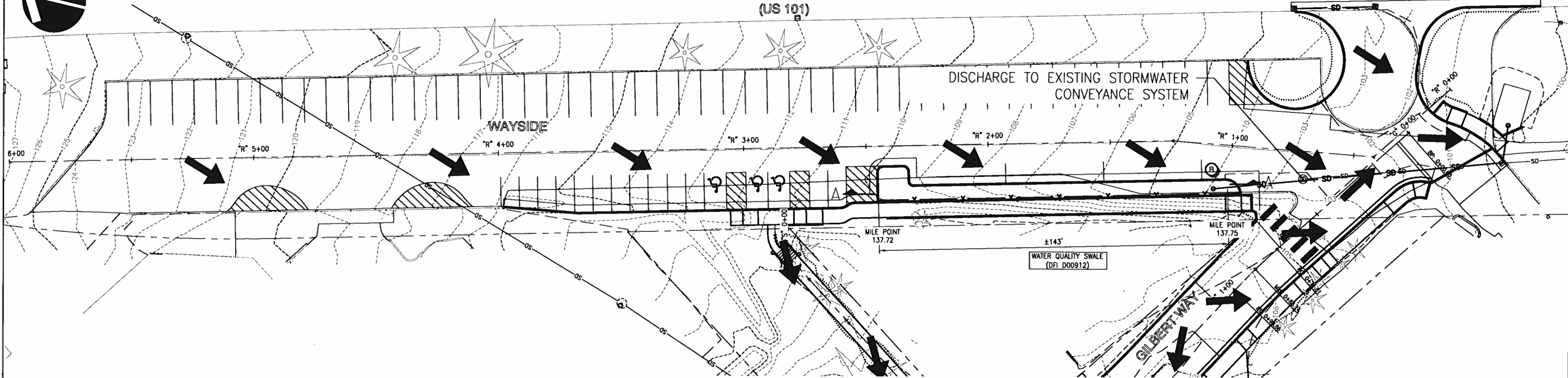
# Appendix A

## Content:

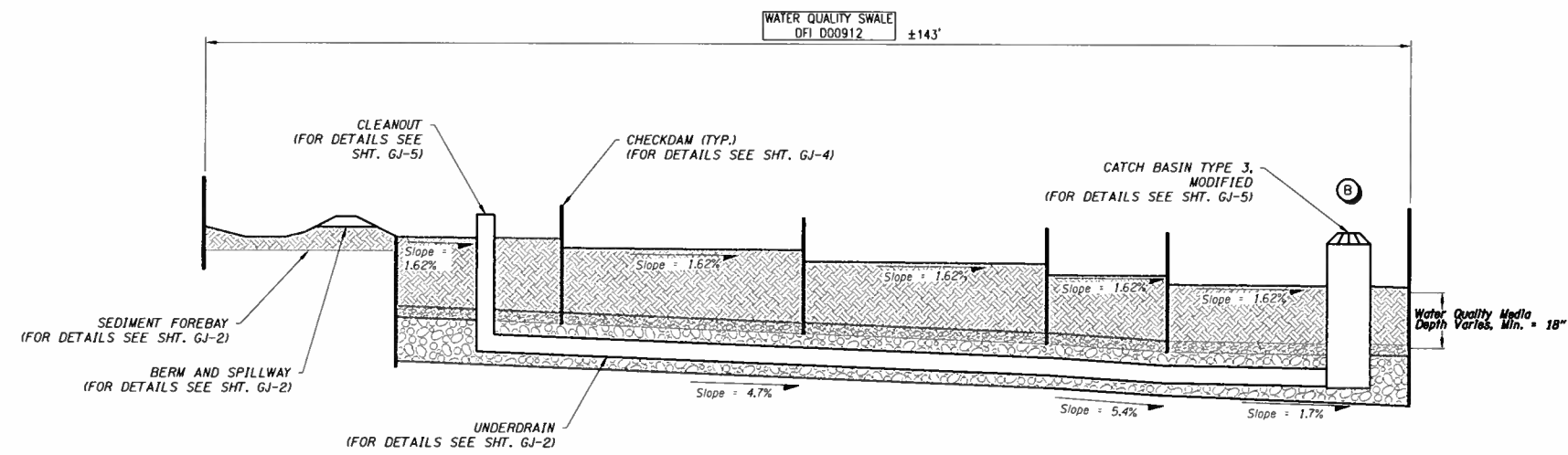
- **Operational Plan and Profile Drawing(s)**



OREGON COAST HIGHWAY  
(US 101)



PLAN  
N.T.S



SECTION A-A  
N.T.S

LEGEND

- ALIGNMENT
- R/W LINE
- CURB
- CONTOUR (MINOR)
- FLOW DIRECTION
- EXISTING IMPERVIOUS AREA
- WATER QUALITY FACILITY



OREGON DEPARTMENT OF TRANSPORTATION  
 otak NanmiOcean Partner  
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 www.otak.com

Prepared By:  
Melanie McCandless

Drafted By:  
Melanie McCandless

**DFI D00912**  
**MAINTENANCE DISTRICT 4 HWY 009**  
**WATER QUALITY BIOFILTRATION SWALE**  
 HIGHWAY MP 137.72-137.75  
 LINCOLN COUNTY

## **Appendix B**

### **Content:**

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



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

STATE OF OREGON  
DEPARTMENT OF TRANSPORTATION

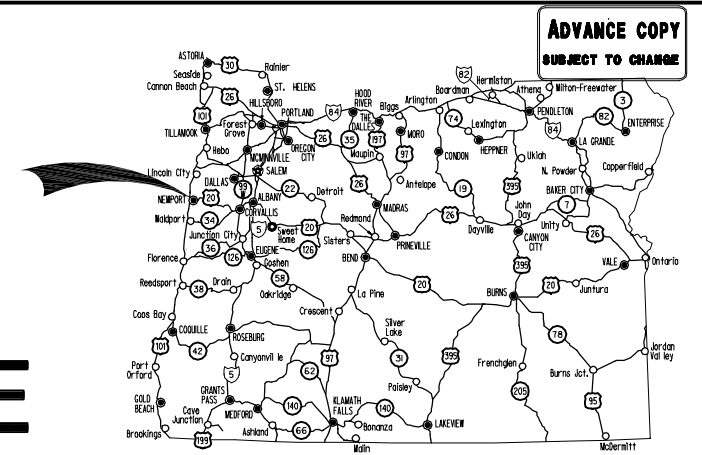
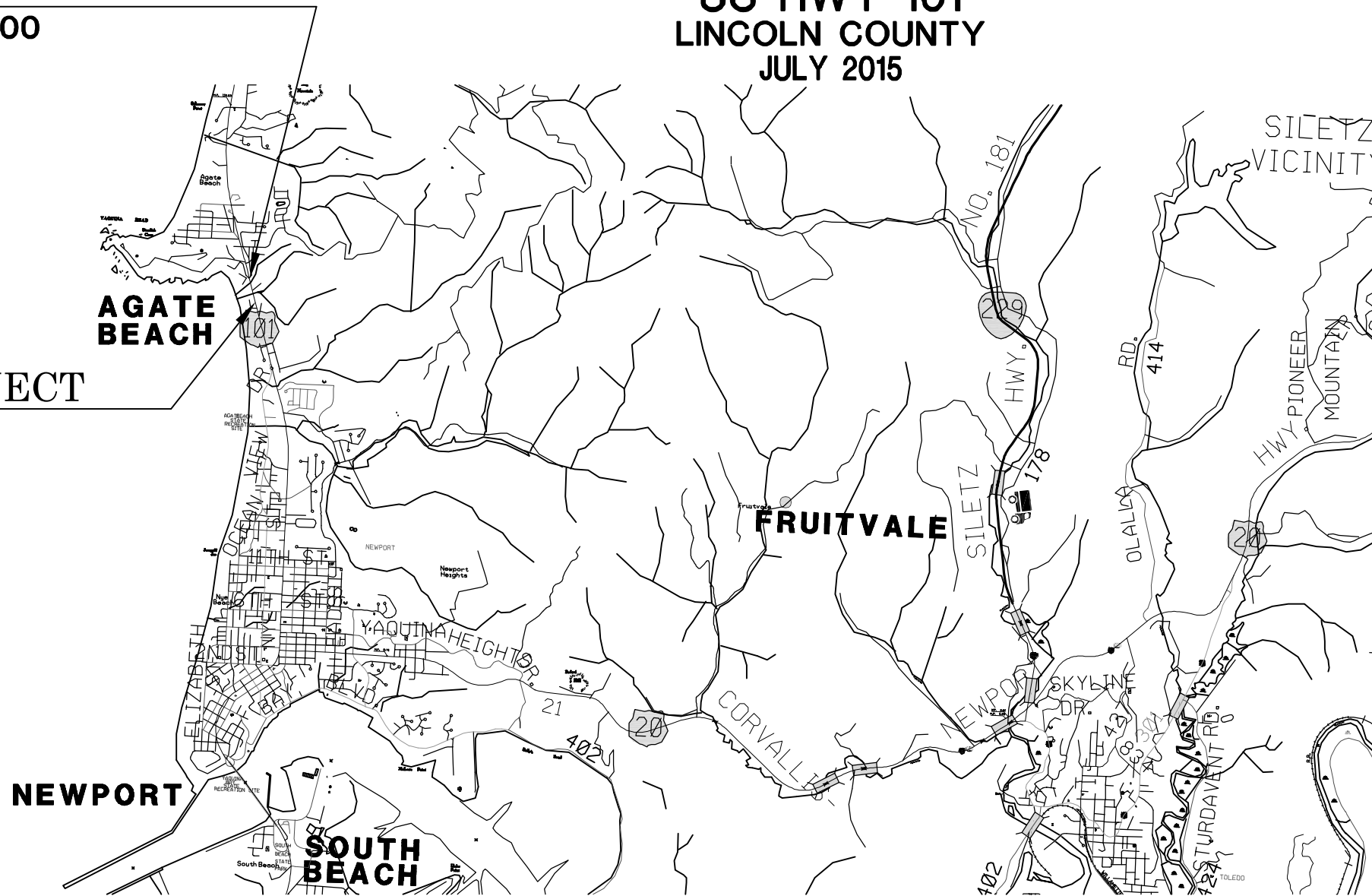
PLANS FOR PROPOSED PROJECT  
GRADING, DRAINAGE, PAVING, SIGNING,  
ROADSIDE DEVELOPMENT AND BUILDINGS

CITY OF NEWPORT  
PACIFIC COAST NSB: AGATE BEACH WAYSIDE  
(NEWPORT)

US HWY 101  
LINCOLN COUNTY  
JULY 2015

BEGINNING OF PROJECT  
STA. 'P' 10+00

END OF PROJECT  
STA. 'P' 16+45



Overall Length Of Project - 0.12 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.)



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808 SW 3rd Ave., Ste. 300  
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Fax: (503) 415-2304  
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OREGON TRANSPORTATION COMMISSION

- |                    |                            |
|--------------------|----------------------------|
| Tammy Baney        | CHAIR                      |
| David Lohman       | COMMISSIONER               |
| Susan Morgan       | COMMISSIONER               |
| Alando Simpson     | COMMISSIONER               |
| Matthew L. Garrett | DIRECTOR OF TRANSPORTATION |

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

Approving Authority: \_\_\_\_\_  
Signature & date

Concurrence by ODOT Chief Engineer

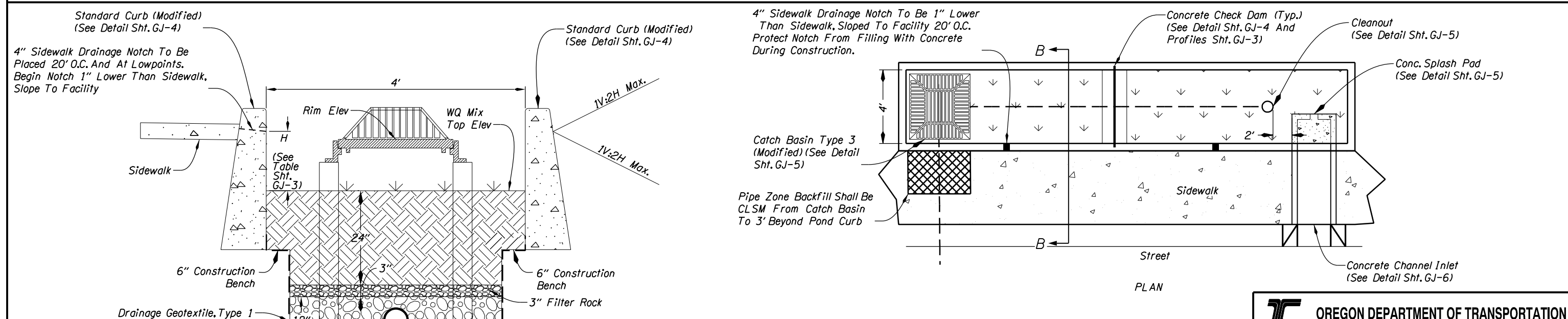
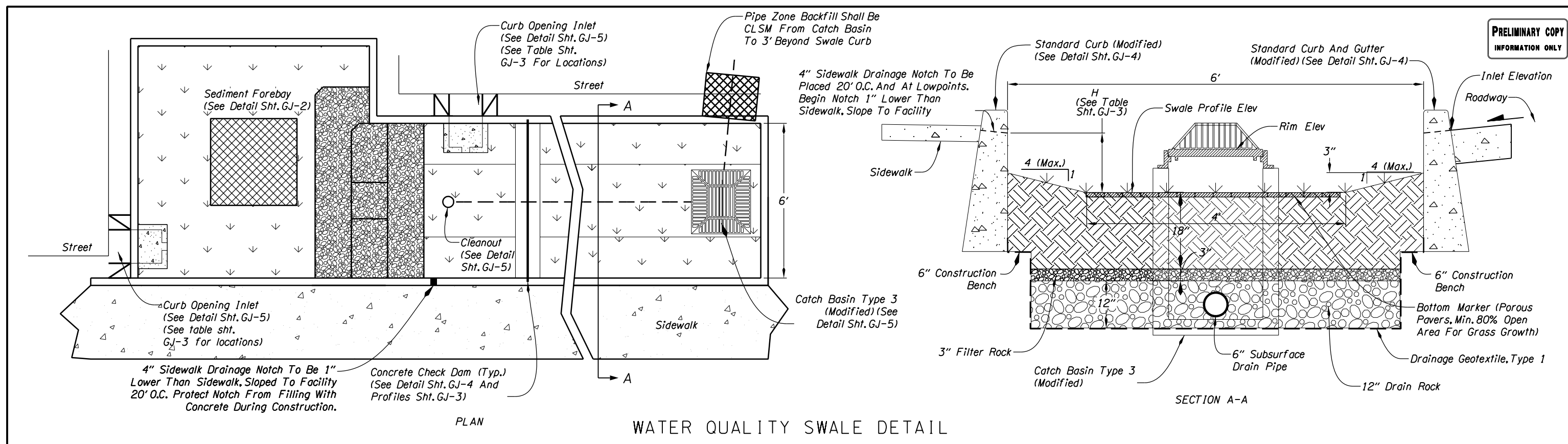
**PACIFIC COAST NSB: AGATE BEACH WAYSIDE  
(NEWPORT)**  
US HWY 101  
LINCOLN COUNTY

FEDERAL HIGHWAY ADMINISTRATION	PROJECT NUMBER	SHEET NO.
OREGON DIVISION	SB-5245(011)	1

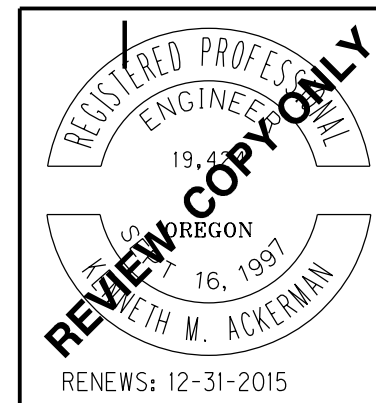
T. 10 S., R. 11 W., W.M.



PRELIMINARY COPY  
INFORMATION ONLY



- GENERAL NOTES FOR ALL DETAILS:**
1. Slope Drain Rock and Filter Rock layers to match bottom slope
  2. Slope perforated pipe towards outlet
  3. Install Drain Rock splash pad downstream of check dam, see details sheet GJ-4



**OREGON DEPARTMENT OF TRANSPORTATION**

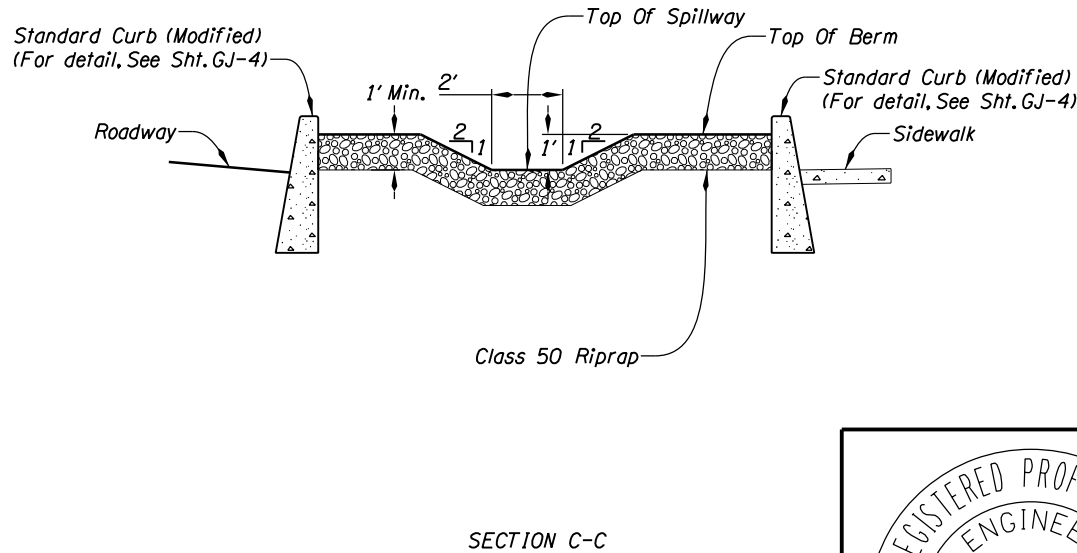
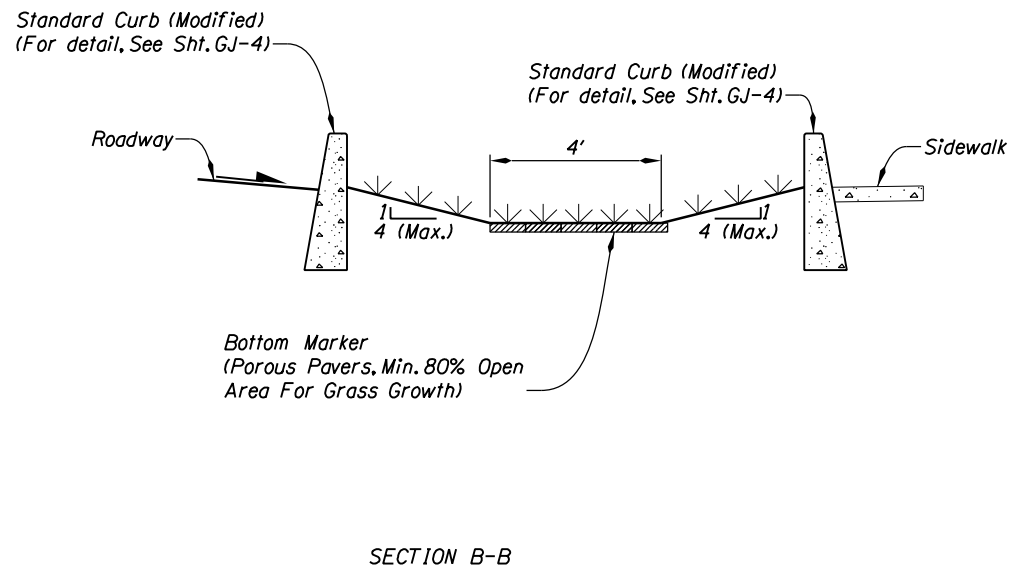
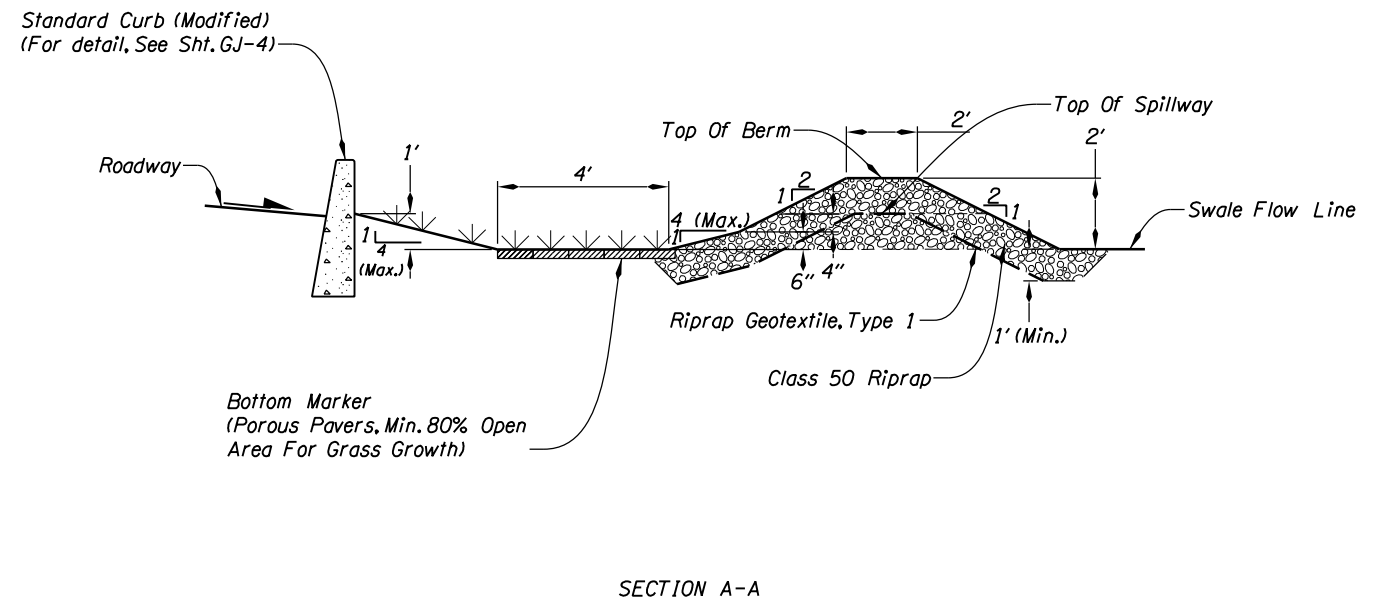
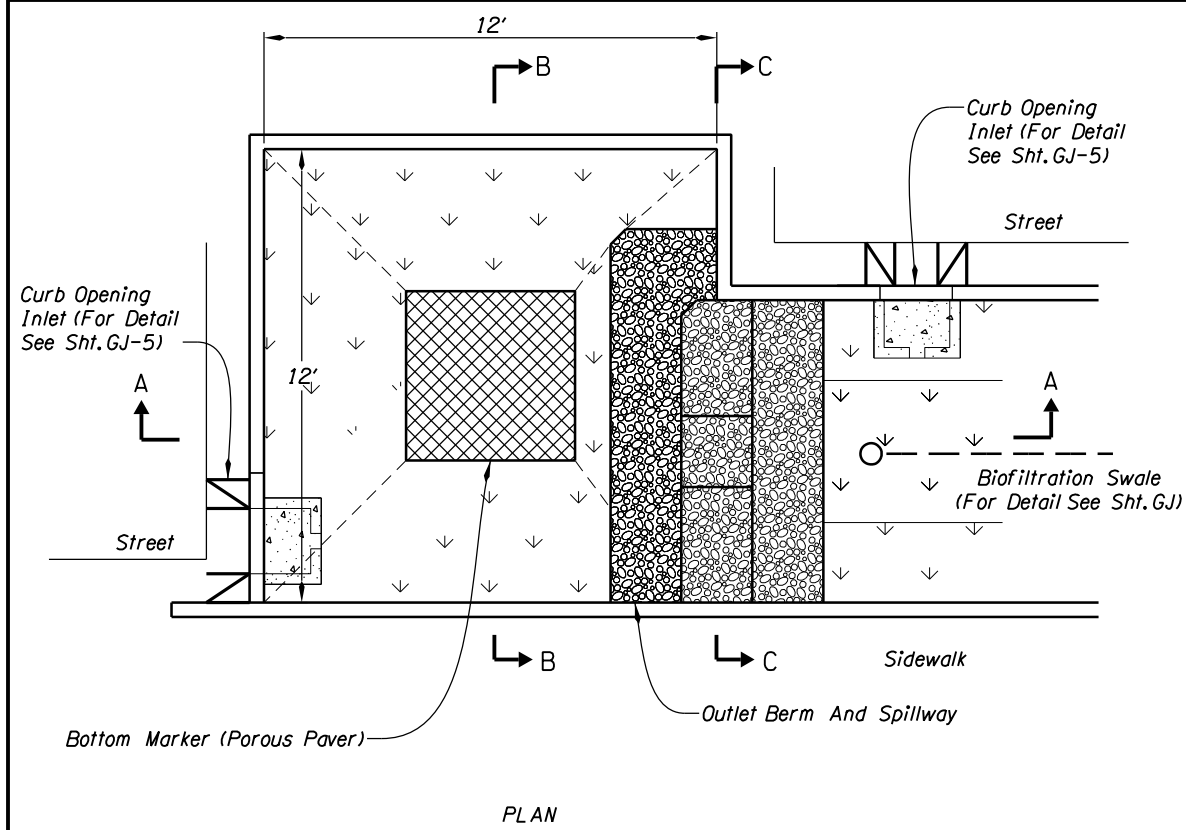
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Portland, OR 97204  
Phone: 503.287.6825 Fax: 503.415.2304

**PACIFIC COAST NSB: AGATE BEACH WAYSIDE (NEWPORT)**  
US HWY 101  
LINCOLN COUNTY

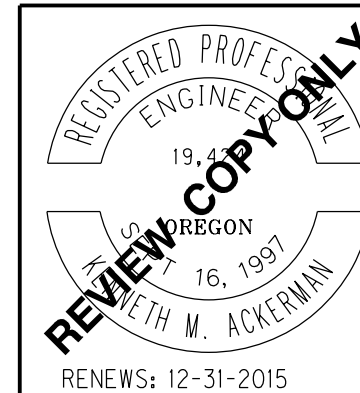
Reviewed By - T Connolly  
Designed By - M McCandless  
Drafted By - M McCandless

**WATER QUALITY DETAILS**

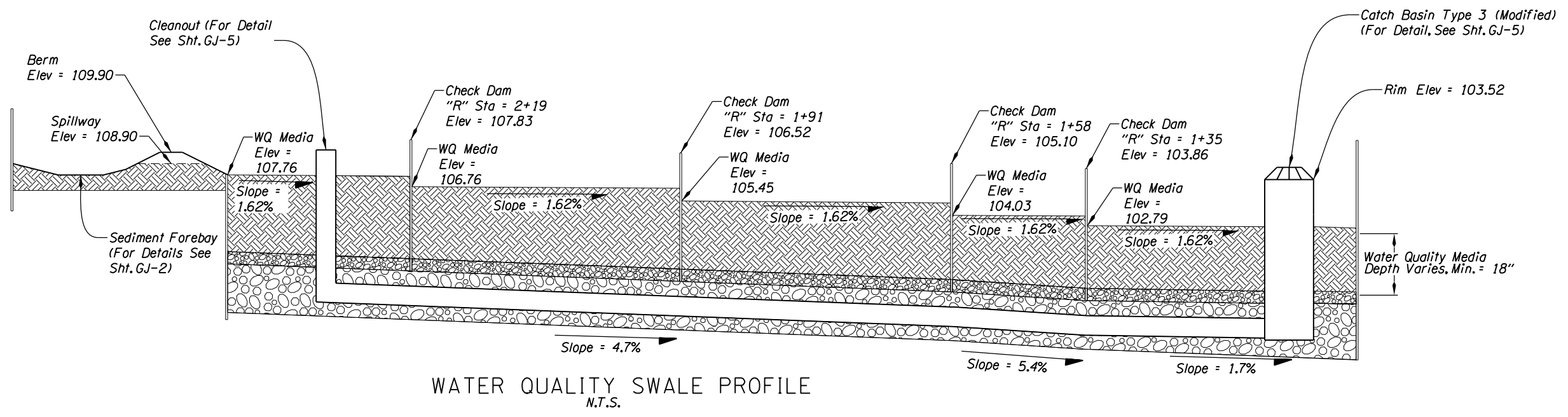
SHEET NO. GJ



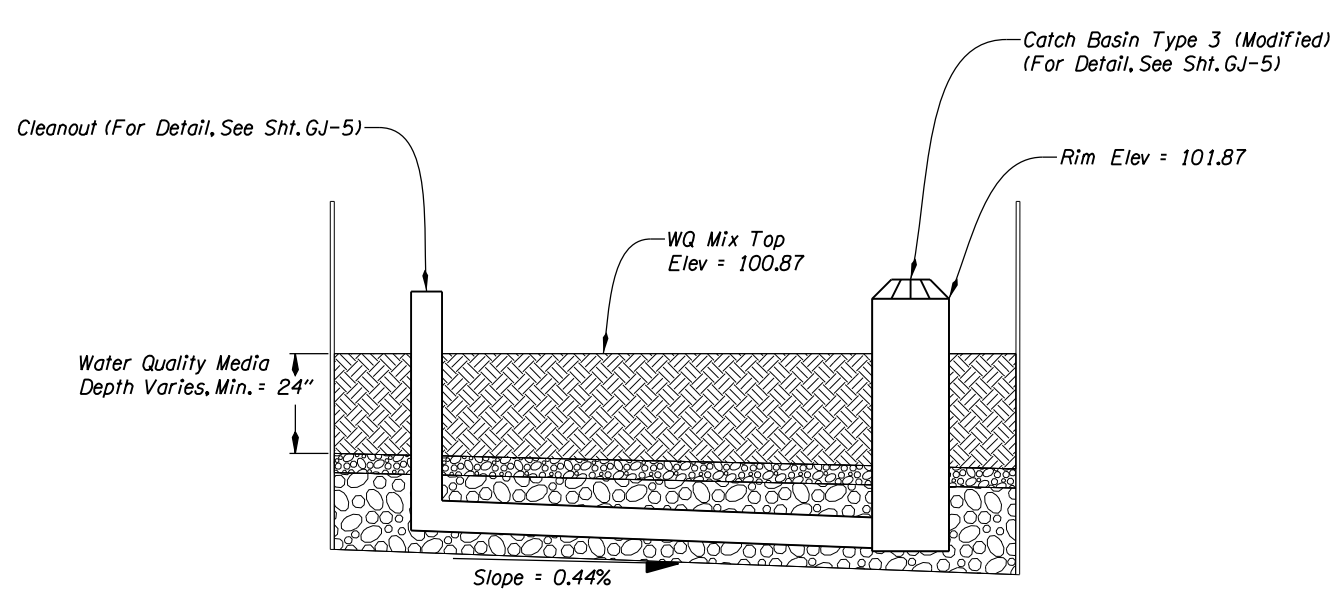
SEDIMENT FOREBAY  
Not To Scale



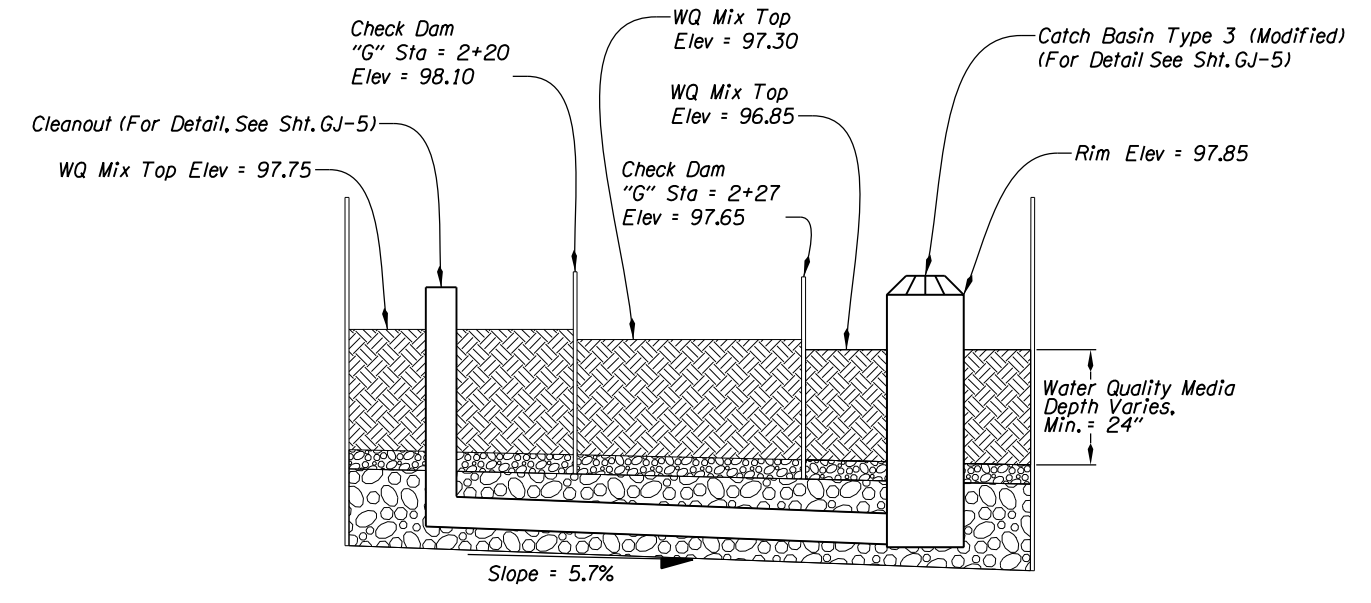
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<p>Otak Inc. Hanmi Global Partner</p>	<p>808 SW 3rd Ave, Ste. 300 Portland, OR 97204 Phone: 503.287.6825 Fax: 503.415.2304</p>
<p><b>PACIFIC COAST NSB: AGATE BEACH WAYSIDE (NEWPORT)</b> US HWY 101 LINCOLN COUNTY</p>	
<p>Reviewed By - T Connolly Designed By - M McCandless Drafted By - M McCandless</p>	
<p><b>WATER QUALITY DETAILS</b></p>	<p>SHEET NO. GJ-2</p>



WATER QUALITY SWALE PROFILE  
N.T.S.

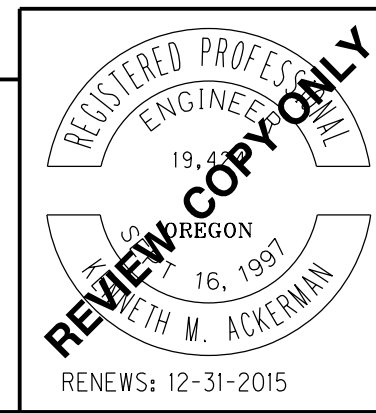


BIORETENTION POND A PROFILE  
N.T.S.



BIORETENTION POND B PROFILE  
N.T.S.

WATER QUALITY FACILITY	BEGIN STA.	END STA.	CURB OPENING INLET STATIONS	H (FT)
Swale	"S" 1+00	"S" 2+45	"S" 2+45, 2+25, 2+05, 1+85, 1+65, 1+50, 1+30, 1+15, 1+00	Varies, 1.5 Min. 2.25 Max.
Pond A	"G" 0+31	"G" 0+41	"G" 0+41, 0+31	2.25
Pond B	"G" 2+17	"G" 2+34	"G" 2+17, 2+28, 2+34	2.25



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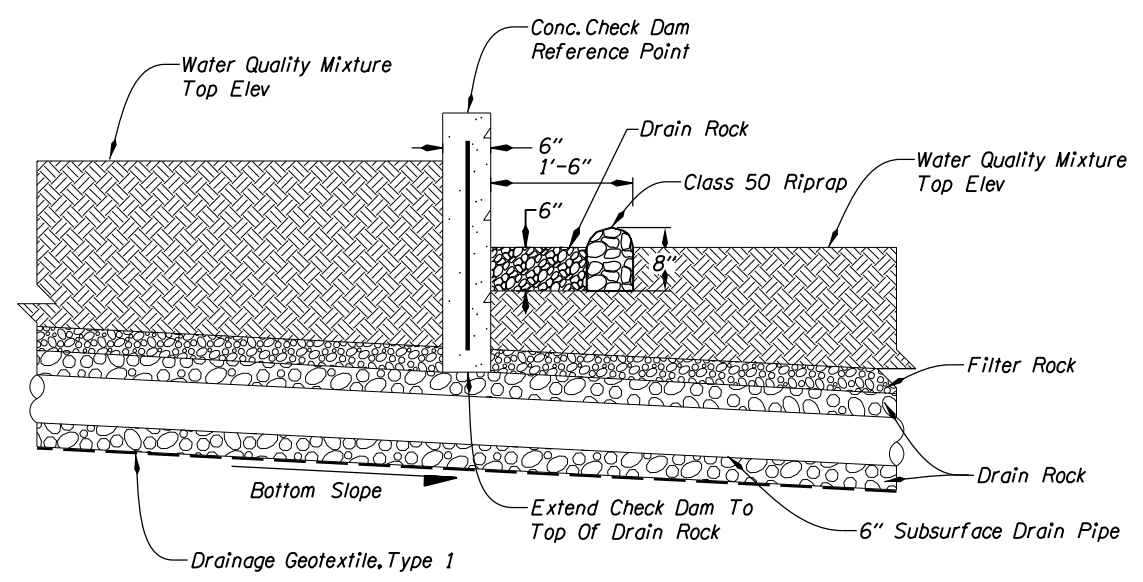
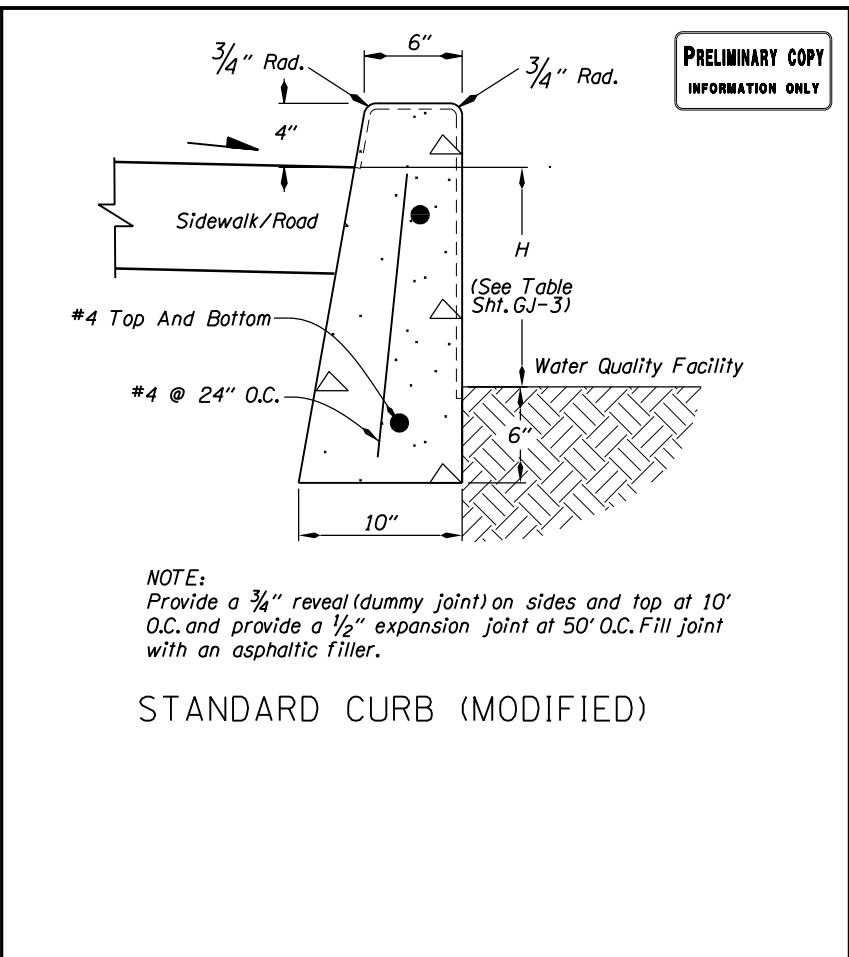
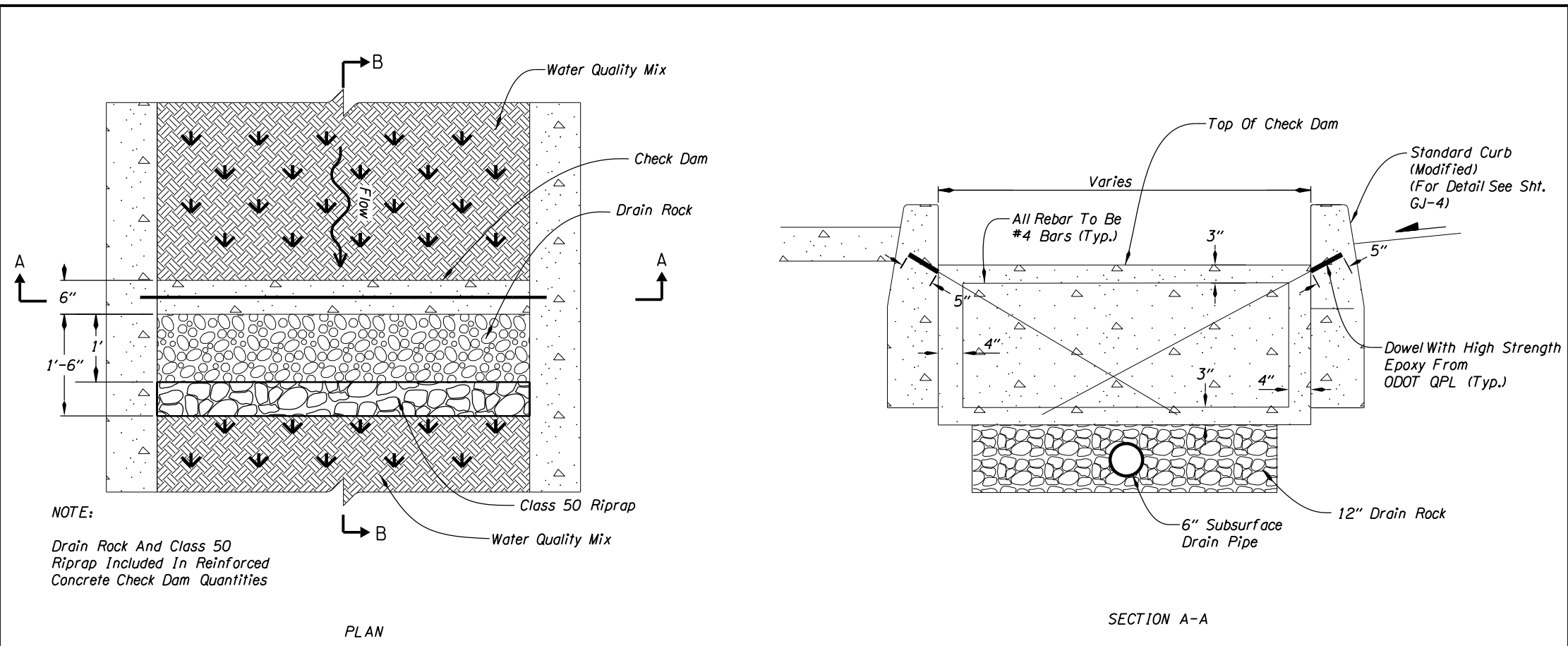
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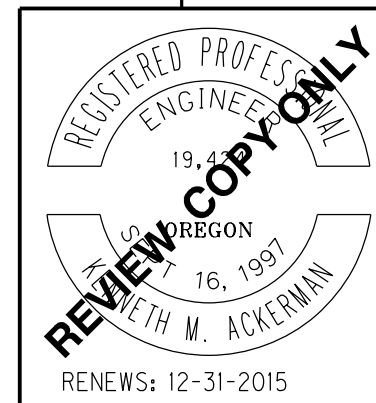
**WATER QUALITY DETAILS**

SHEET NO. GJ-3



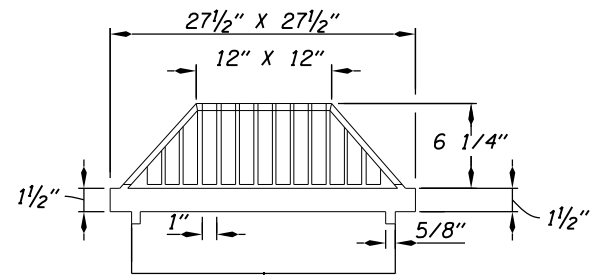
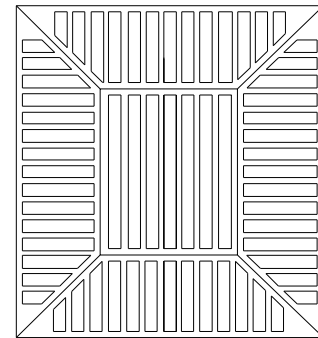
**REINFORCED CONCRETE CHECK DAM**  
Not To Scale

- GENERAL NOTES FOR ALL DETAILS:**
1. Provide all reinforcing steel according to ASTM A706 or AASHTO M31 (ASTM A615) Grade 60
  2. Provide Class 3300 - 1 1/2", 1", or 3/4" concrete unless noted otherwise.



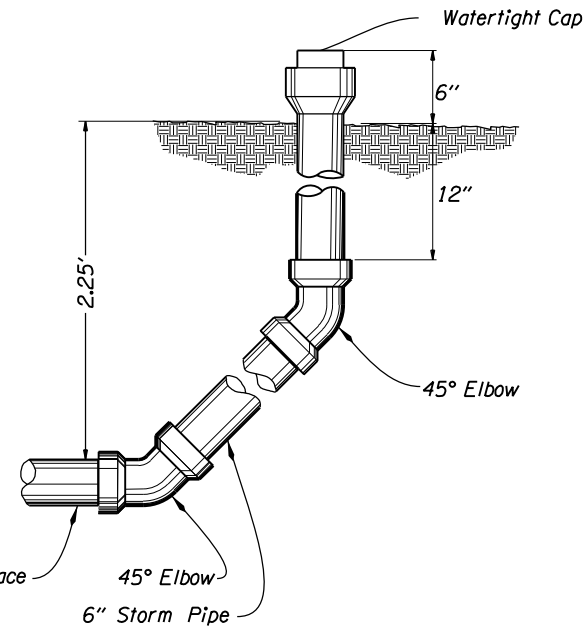
<p><b>OREGON DEPARTMENT OF TRANSPORTATION</b></p>	
<p><b>Otak Inc.</b> Hanmi Global Partner</p>	<p>808 SW 3rd Ave, Ste. 300 Portland, OR 97204 Phone: 503.287.6825 Fax: 503.415.2304</p>
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<p>Reviewed By - T Connolly Designed By - M McCandless Drafted By - M McCandless</p>	
<p><b>WATER QUALITY DETAILS</b></p>	
<p>SHEET NO. GJ-4</p>	

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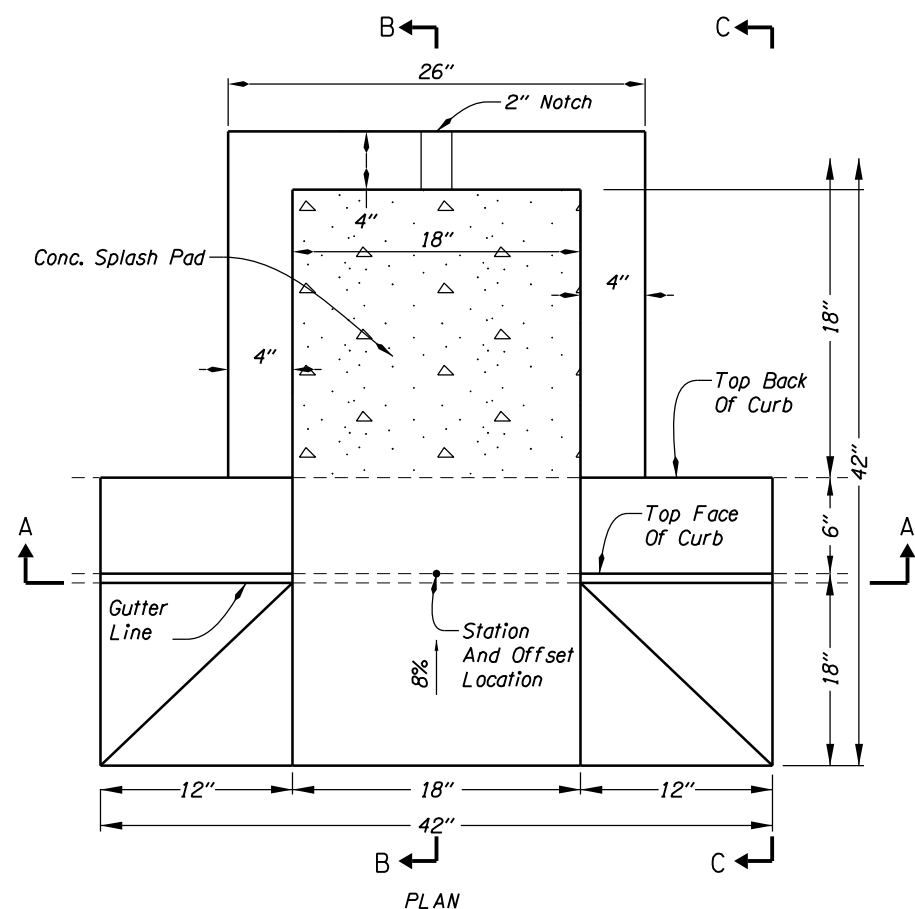


1. Beehive grate shall be model R-4347 or approved equal.
2. See Std. Drg. RD378 for inlet base and frame details.

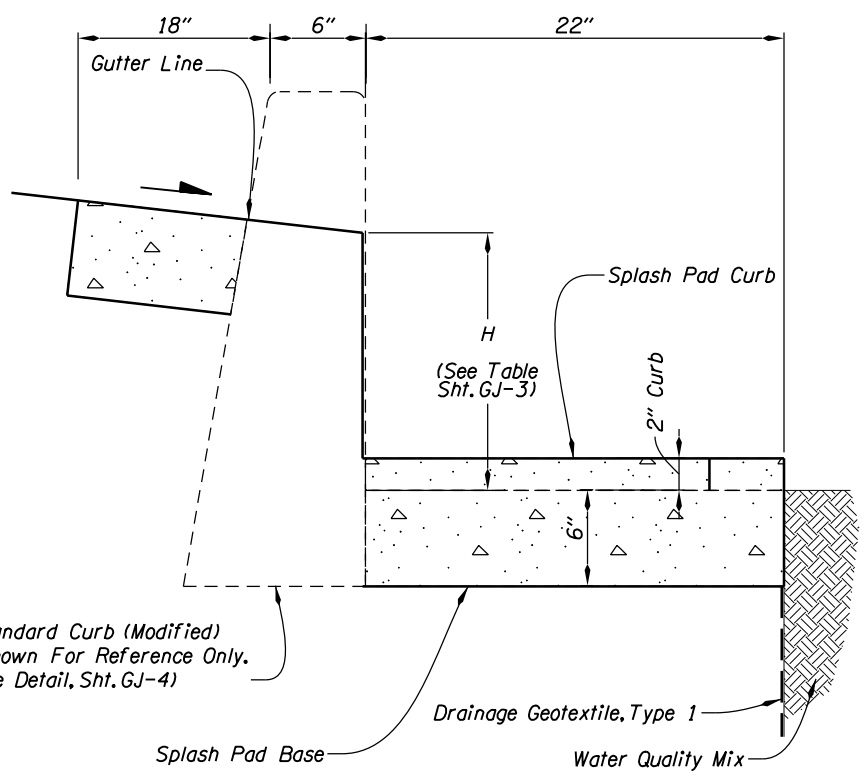
CATCH BASIN TYPE 3 (MODIFIED)



CLEANOUT

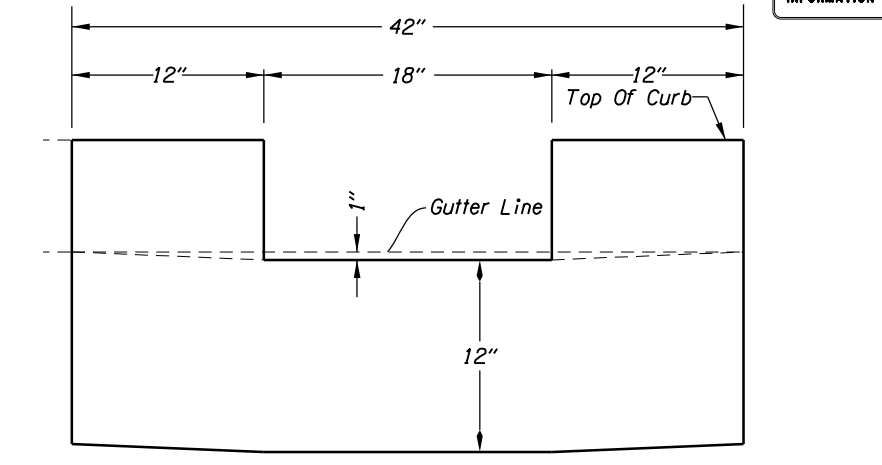


PLAN

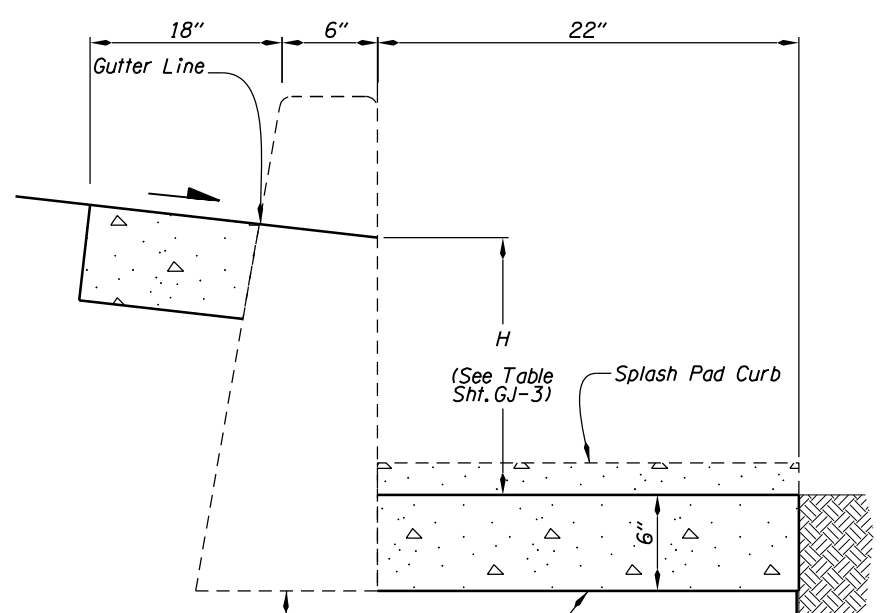


SECTION C-C

CURB OPENING INLET AND SPLASH PAD  
Not To Scale



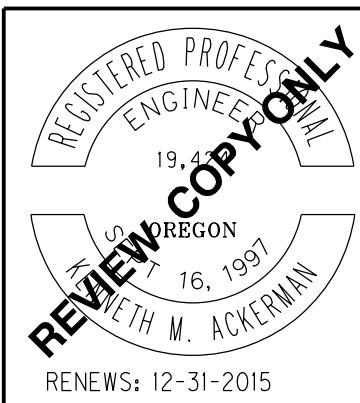
SECTION A-A



SECTION B-B

Standard Curb (Modified)  
(Shown For Reference Only.  
See Detail, Sht. GJ-4)

Conc. Splash Pad Base  
Drainage Geotextile, Type 1  
Water Quality Mix



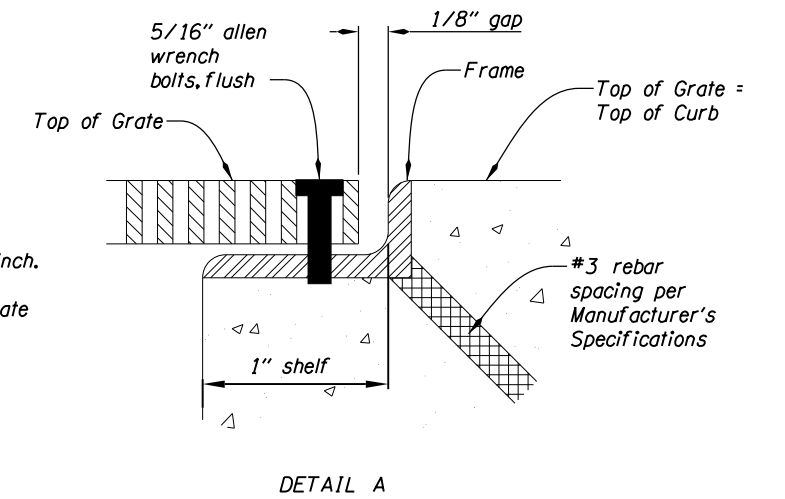
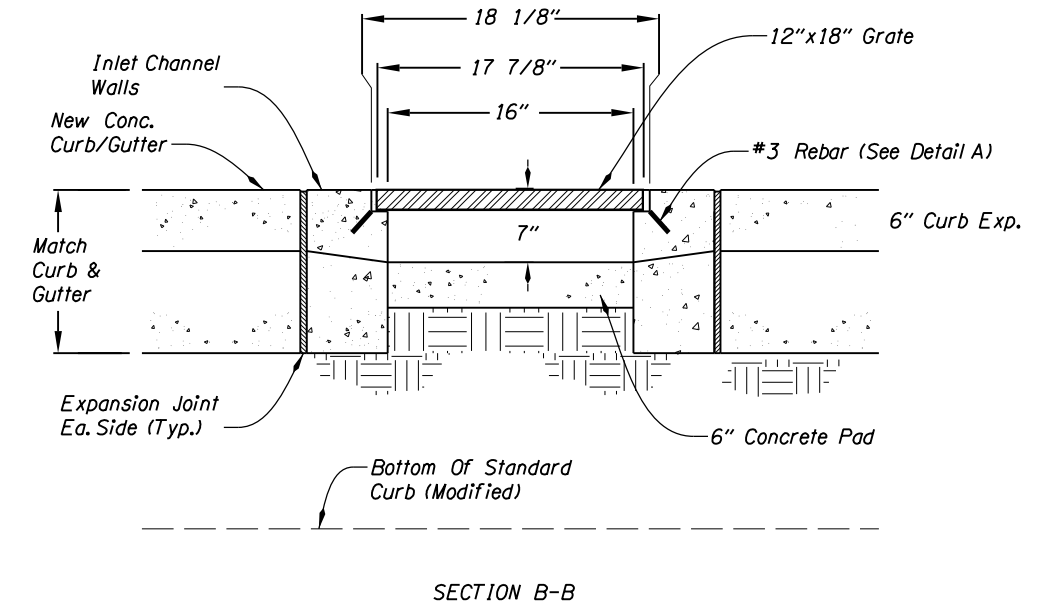
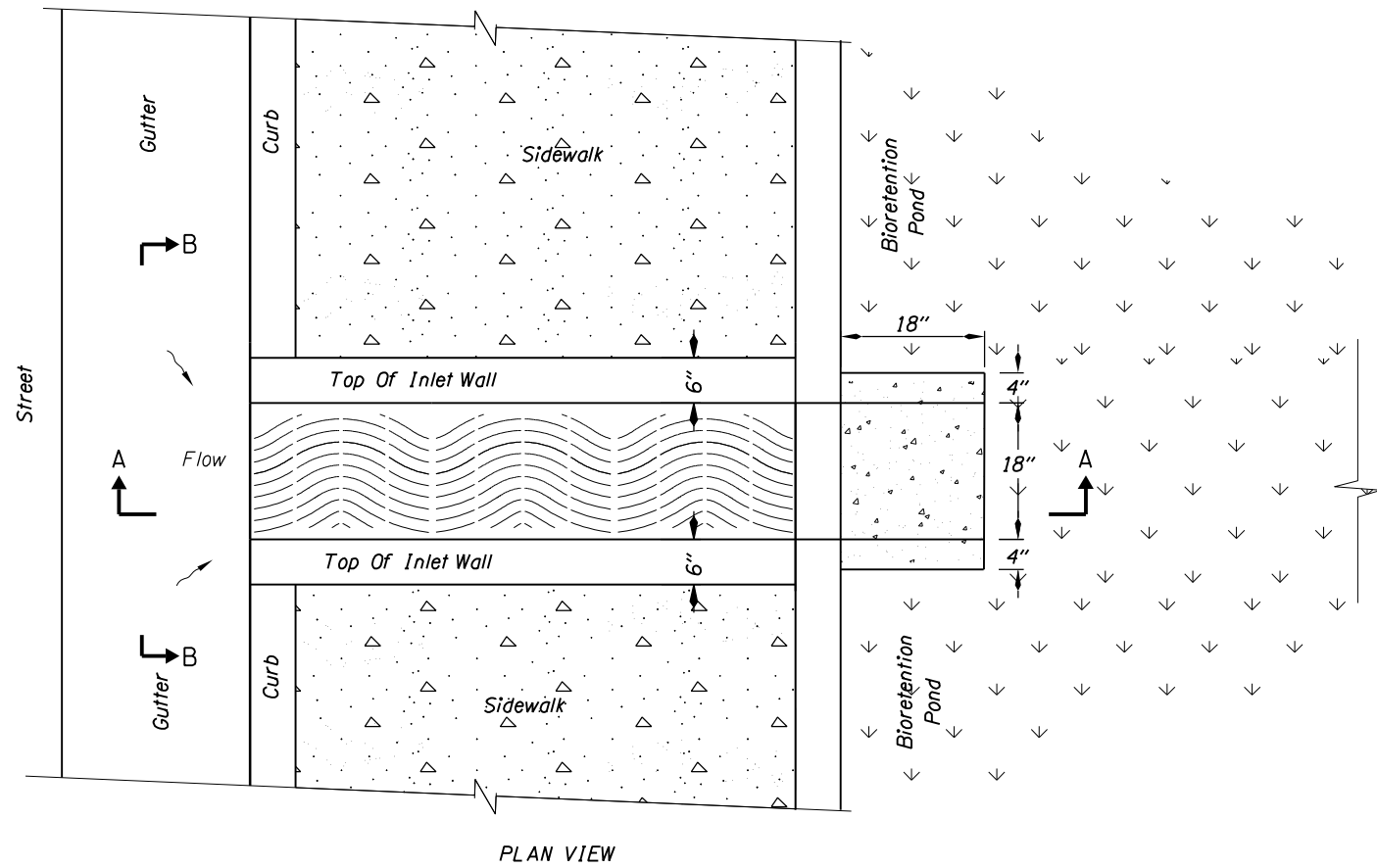
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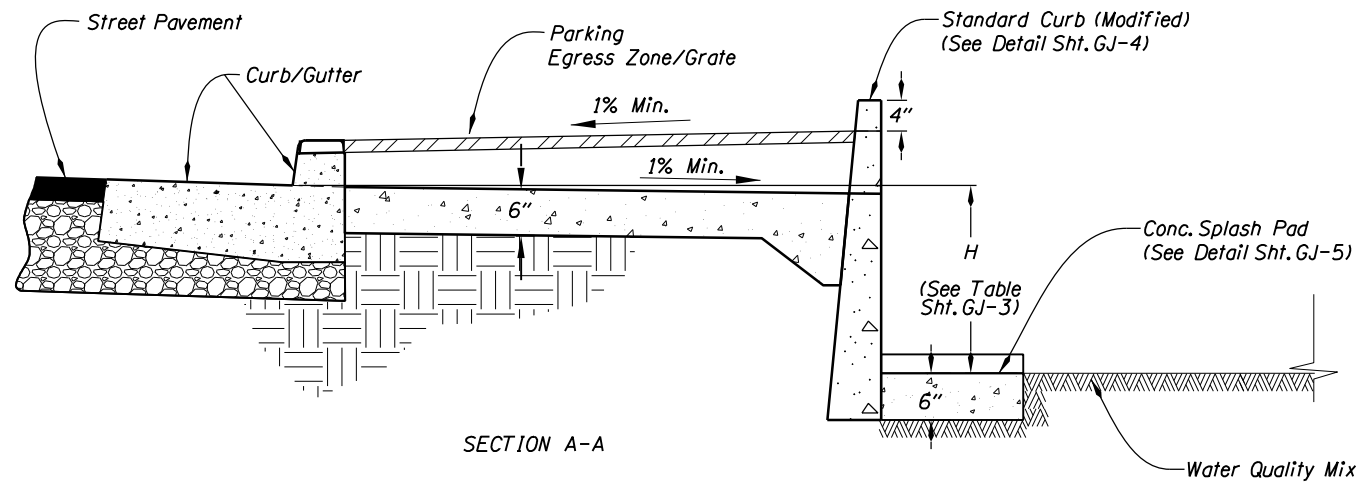
**PACIFIC COAST NSB: AGATE BEACH  
WAYSIDE (NEWPORT)**  
US HWY 101  
LINCOLN COUNTY

Reviewed By - T Connolly  
Designed By - M McCandless  
Drafted By - M McCandless

**WATER QUALITY DETAILS** SHEET NO. GJ-5



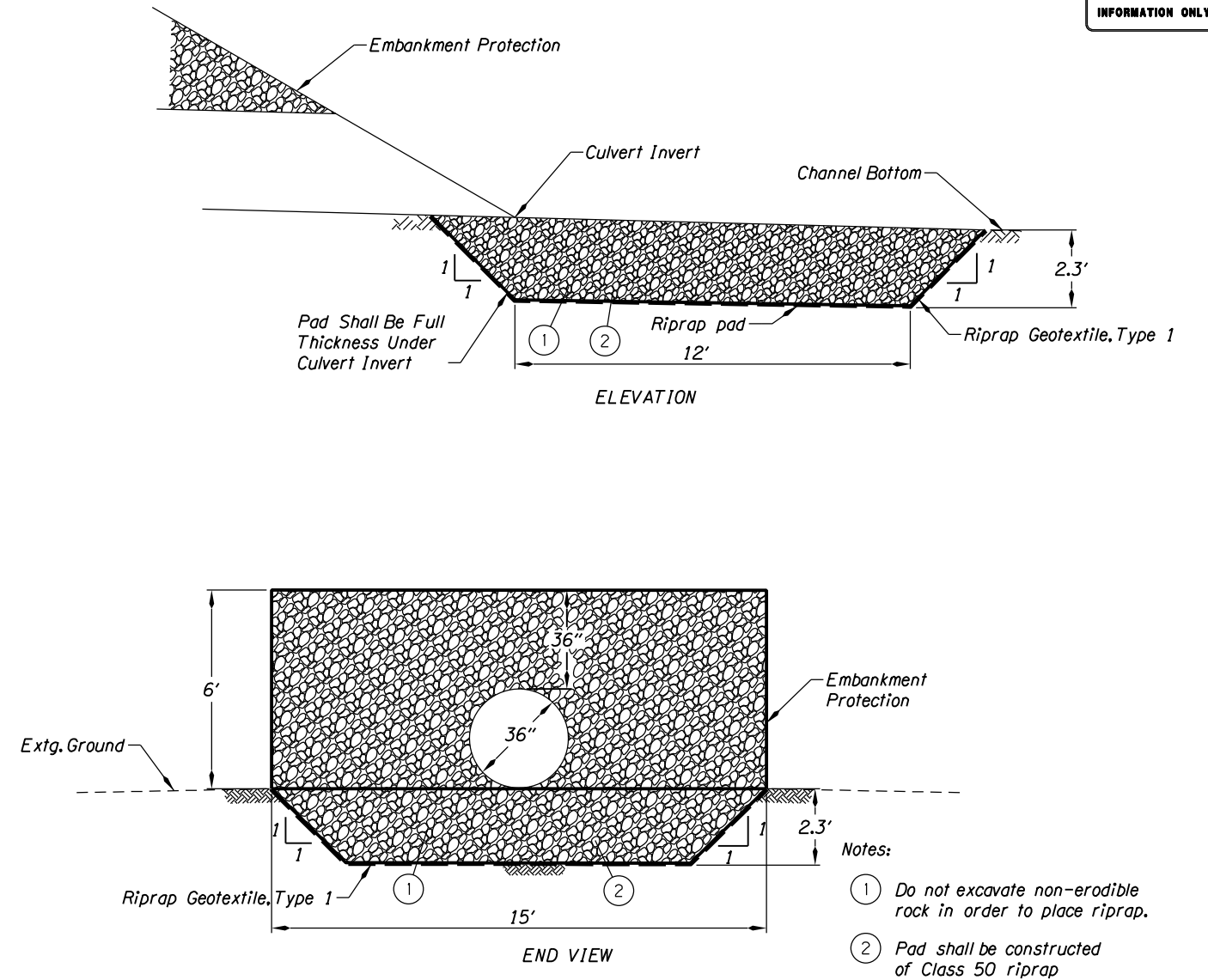
Note:  
Maximum grate hole width (open) 1/4 inch.  
Grate size 18"x24".  
Cast iron Urban Accessories Trench grate and frame, Title Wave model or equal.



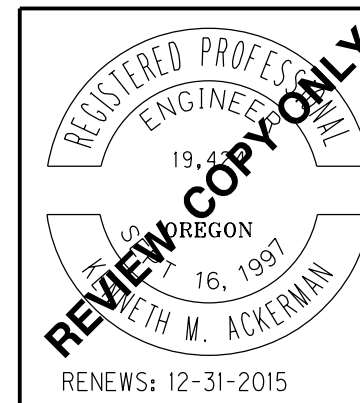
CONCRETE CHANNEL INLET  
Not To Scale



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<p><b>PACIFIC COAST NSB: AGATE BEACH WAYSIDE (NEWPORT)</b> US HWY 101 LINCOLN COUNTY</p>	
<p>Reviewed By - T Connolly Designed By - M McCandless Drafted By - M McCandless</p>	
<p><b>WATER QUALITY DETAILS</b></p>	<p>SHEET NO. <b>GJ-6</b></p>

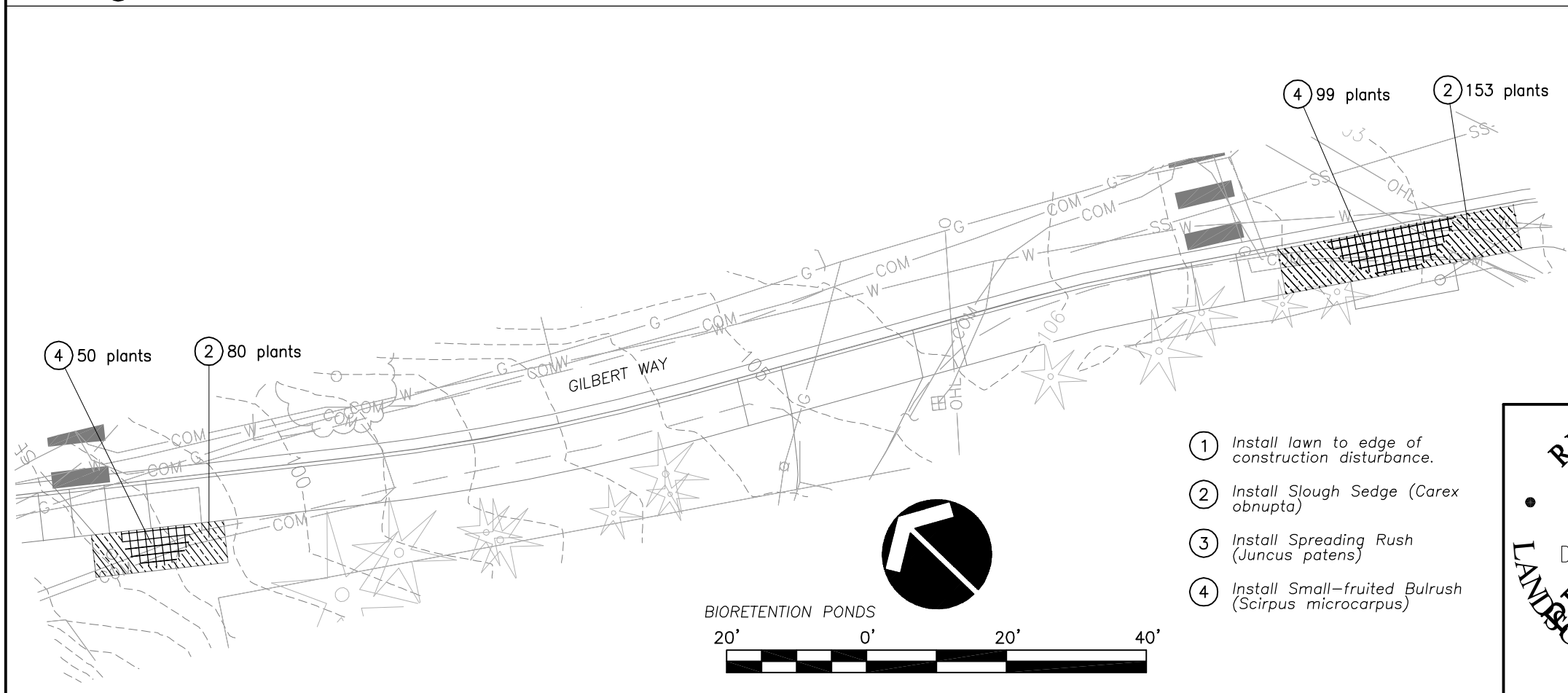
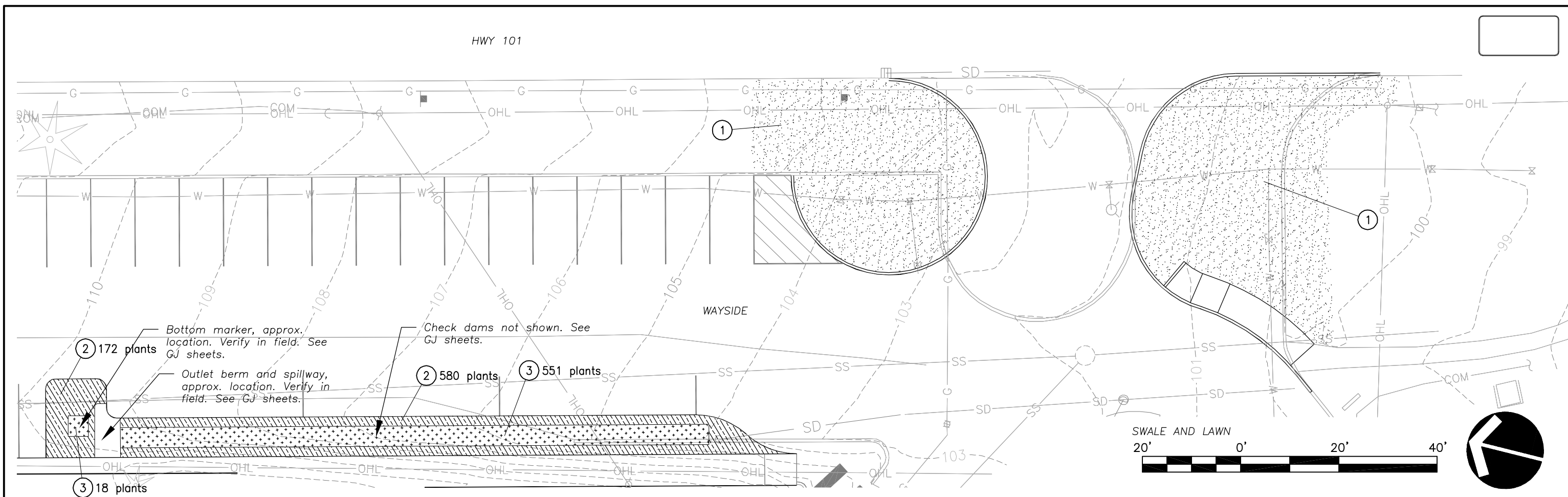


RIPRAP PAD  
N.T.S.



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	<b>Otak Inc.</b> <small>Hanmi Global Partner</small>
<small>808 SW 3rd Ave, Ste. 300          Portland, OR 97204          Phone: 503.287.6825 Fax: 503.415.2304</small>	
<b>PACIFIC COAST NSB: AGATE BEACH          WAYSIDE (NEWPORT)</b> <small>US HWY 101          LINCOLN COUNTY</small>	
<small>Reviewed By - T Connolly          Designed By - M McCandless          Drafted By - M McCandless</small>	
<b>WATER QUALITY DETAILS</b>	<small>SHEET NO.</small> <b>GJ-7</b>





**LANDSCAPE LEGEND**

Symbol	Qty	Description
	569	SPREADING RUSH Juncus patens, 1 GAL, 1' o.c.
	987	SLOUGH SEDGE Carex obnupta, 1 GAL, 1' o.c.
	149	SMALL FRUITED BULRUSH Scirpus microcarpus: 1 GAL, 1' o.c.
	3,180 SF	Lawn Seeding: Permanent Seed Mix #1

- ① Install lawn to edge of construction disturbance.
- ② Install Slough Sedge (*Carex obnupta*)
- ③ Install Spreading Rush (*Juncus patens*)
- ④ Install Small-fruited Bulrush (*Scirpus microcarpus*)



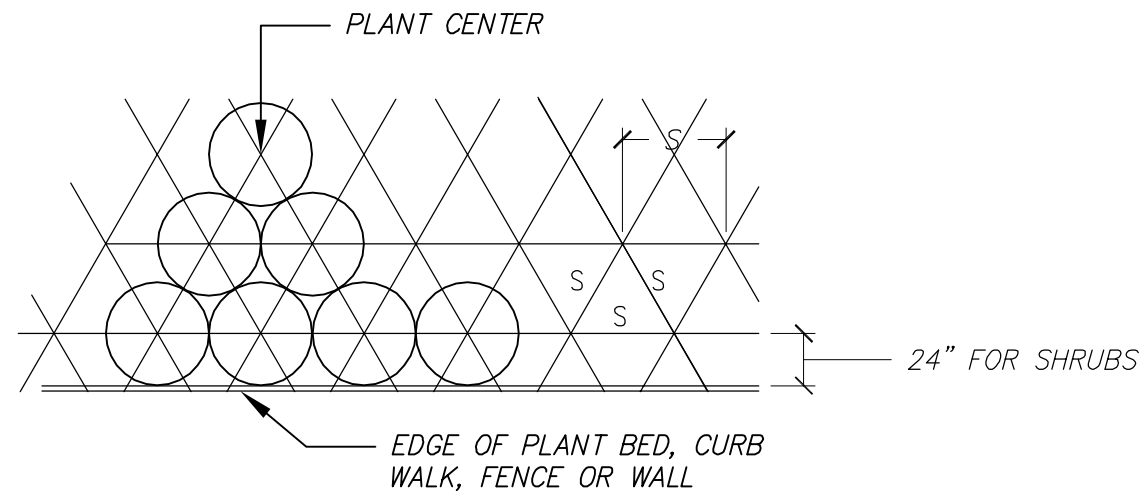
 Hanmi Global Partner <a href="http://www.otak.com">www.otak.com</a>	<b>808 SW 3rd Ave., Ste. 300</b> <b>Portland, OR 97204</b> Phone: (503) 287-6825 Fax: (503) 415-2304
	US HWY 101 LINCOLN COUNTY Design Team Leader - Ken Ackerman Designed By - Maggie Daly Drafted By - MLD
PLANTING PLAN	SHEET NO. <b>GN</b>

UTILITY NOTE:

Contractor is cautioned that existing underground facilities occur throughout the work areas including but not limited to power, gas, telephone, water supply, and irrigation. Contractor shall mark the facilities before work, pothole where necessary, and protect during construction. Immediately notify owner's representative if any conflicts are found.

LANDSCAPE NOTES:

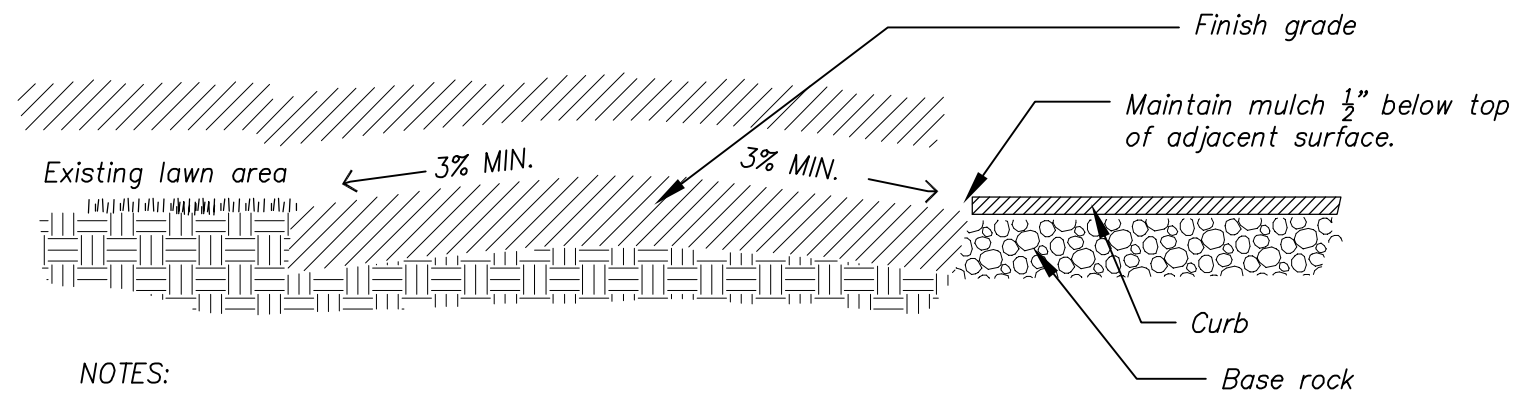
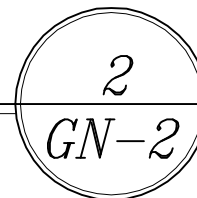
1. General: several of the following notes summarize the project specifications for the contractors convenience. If a discrepancy exists between these notes and the project specifications the specifications shall override.
2. The landscape contractor is to thoroughly review the site. If there are any discrepancies between the plan and the existing conditions the owners representative is to be notified immediately.
3. If the landscape contractor starts work before site conditions are ready or continues work in adverse conditions without prior approval they will be responsible for any additional costs relating to the condition.
4. Immediately notify owners representative concerning any condition at any time during construction that is detrimental to the health and vigorous growth of the specified plant material.
5. Provide quantity of plant material indicated in plant list or the quantity required to cover areas indicated at specified spacing, whichever is greater.
6. If an area differs significantly in size from that scaled on drawing and requires more or less material the owners representative is to be informed.
7. Topsoil: 4" depth import topsoil shall be prepared and amended in accordance with the details and specifications. Do not apply topsoil at storm facilities.
8. Soil analysis: contractor shall obtain a copy of owner-provided soil test and amend and fertilize in conformance with recommendations indicated in the report.
9. Compost: apply 2 inch depth specified compost over all planting areas except storm facilities. Till in to import topsoil to a depth of 4 inches.
10. Fertilizer: apply fertilizer to all plant holes and turf areas of the type, quantity, application method, and timing noted in the specifications. Do not apply fertilizer at storm facilities.
11. Plant material: all plant material shall meet minimum quality and size requirements established in the American Standard for Nursery Stock guidelines.
12. Where plant bed slope is less than 3% mound planting bed areas 3% minimum for positive drainage.
13. See specifications for final inspection, maintenance, and warranty requirements unique to this project.
14. See specifications for other landscape construction requirements.



S = SPACING ON CENTER (O.C.) AS SHOWN ON PLANS

**PLANT SPACING**

SCALE: N.T.S.

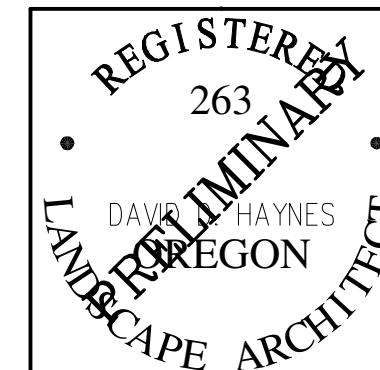
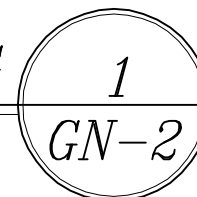


NOTES:

1. The minimum slope for the planting area is 3%.

**SECTION - PLANTING BED GRADING**

SCALE: N.T.S.



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PLANTING NOTES AND DETAILS		SHEET NO. <b>GN-2</b>