OPERATION & MAINTENANCE MANUAL

D00556

INDEX

1. Identification

Drainage Facility ID (DFI): 00556

Facility Name: **Bly Water Quality And Detention Pond West**

Project Name: OR140: Modoc Billy Creek – Fish Hole Creek (Bly Section)

Facility Type: Extended Detention Dry Pond

Drawings: See Plan Drawings GJ through GJ-6

Location: West end of town of Bly adjacent to Hwy. 140, behind the Maintenance Yard. MP 53.47

2. Designer

Michael Ogden, PE, ODOT Region 4 Hydraulics Engineer (541) 388-6288

3. Construction

Construction is to be completed in the year 2011.
The contractor is Houck Construction Co.

4. System Overview

The system consists of an extended detention dry pond. The drainage area extends from the contributory area up the hill south of Hwy 140 and the roadway impervious area drained from a collected system of inlets running from curb and gutter and conveyed to a water quality manhole, which then drains to a detention pond.

The crest of the roadway just west of Gerber St. is the dividing line between the west draining and the east draining section of the project. This system is on the west draining section of the project. All flows run from the project to this system, it is not separated by a flow splitter manhole. The outfall is into a grassy swale, which then runs to a culvert under the old OC&E railroad bed, which then drains into another grassy swale, which drains eventually into Fish Hole Creek.

5. Haz Mat Spill Operation

The pond is not designed to collect hazardous material liquid.

The pond can be used to collect large volumes of liquid by blocking off the orifice in the flow control manhole.

6. Overflow System

Elevation And Type

The overflow system for the pond utilizes the top of the riser pipe in the flow control manhole at elevation 4349.40 ft.

Direction and Flowpath

The pipe leaving the pond flow control manhole was designed to carry the 100 Year check storm. The flow goes to the grassy swale which then runs to a culvert under the old OC&E railroad bed, which then drains into another grassy swale, which drains eventually into Fish Hole Creek. If water nears the top of the berm, check for blockage of the overflow riser in the flow control manhole.

7. Maintenance Requirements

Schedule

Special
(Over first 2 –years after each 24 hr. rainfall>0.50 inches).
Inspection and maintenance as needed.

Semi-annual
-Inspection and maintenance as needed of pond (prior to fall rains)
-Mow Grass
-Remove sediment from sumped inlets.

Every 5 to 10 Years
Remove sediment from pond bottom.
Reconstruct pond bottom.

A. Embankments/Berms/Sideslopes-

Check for and repair for these problems:

Cracking
Erosion from overtopping
Sloughing
Piping
Rodent Holes

Settlement over 4 inches.

B. Pond Bottom

Remove sediment or debris when 4” thick or accumulation impedes growth of grass or even flow across bottom.
Till, reconstruct, and replant if does not drain within 72 hours.
Toxicity of accumulated sediment and the depth of toxicity increases when sediment. removal activities decrease (see section 8).

C. Outlet Control Structures-

Remove debris from grates.
Remove sediment from sump inlet.
Check outlet pipe for debris blockage.

D. Vegetation

Shall be healthy enough to provide filtering of stormwater while protecting underlying soils from erosion.

Mow pond bottom to uniform height of 6”.
Seed or reseed areas where necessary.
Remove any small woody growth that may make future maintenance difficult.
Remove vegetation of noxious or poisonous variety.
Dead vegetation and woody material shall be removed.
Herbicides should not be used to control vegetation.
Designer must provide seed mixture recommendation.

F. Haz Mat Spill

Remove all contaminated sediment and sludge from all portions of the affected system immediately following any HazMat spill event. Dispose of material off-site. Reconstruct pond bottom after contaminated soil removal. See section 8 for more information on waste material handling. Seed disturbed pond bottom and protect from erosion with erosion control matting and water as necessary during grass establishment.

G. Access

Remove obstructions from equipment path.

H. Insects & Rodents

Control insects that breed or congregate in or around pond.

Remove large rodents from swale and outlet control structures.
Remove burrowing animals from berms and pond bottom.

Routine maintenance tables 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 as selected below:

Table 1 (general maintenance)
Table 2 (stormwater ponds)

8. Waste Material Handling

Material cleaned from the facility is defined as waste by DEQ. This means the material must be disposed at a permitted waste management facility (landfill, incinerator, etc.) or managed, reused, or recycled according to DEQ waste rules.

Management of road waste and the rules that surround it are extremely complicated. ODOT has done research on this subject and a report that offers more detailed guidance can be found posted at the ODOT Research website:

http://www.odot.state.or.us/tddresearch/reports.htm

(see October 2000-"Roadwaste Management-A Tool for Developing District Plans").

Road waste materials can be contaminated with chemical pollutants such as heavy metals or hydrocarbons generated from highway vehicles. If cleanings are sent to a permitted waste management facility (landfill or incinerator), facility operators may require testing for specific pollutants (such as lead) before the material will be accepted for disposal.

If clean out material is being stockpiled or recycled it should be known if the material is contaminated with pollutants and at what levels. Chemical testing for total metals (lead, arsenic, cadmium, and chromium) and hydrocarbons (polycyclic aromatic hydrocarbons-PAHs) is usually adequate. However, be aware of other pollutants that might be present and test accordingly (for example a facility may have a history of heavy pesticide use, highway spills etc.) All trash and litter must be removed and properly disposed. In general, whenever placing road waste material, be sure it will not migrate or erode and that it does not contain pollutants that will negatively impact adjacent land waterways, or groundwater.

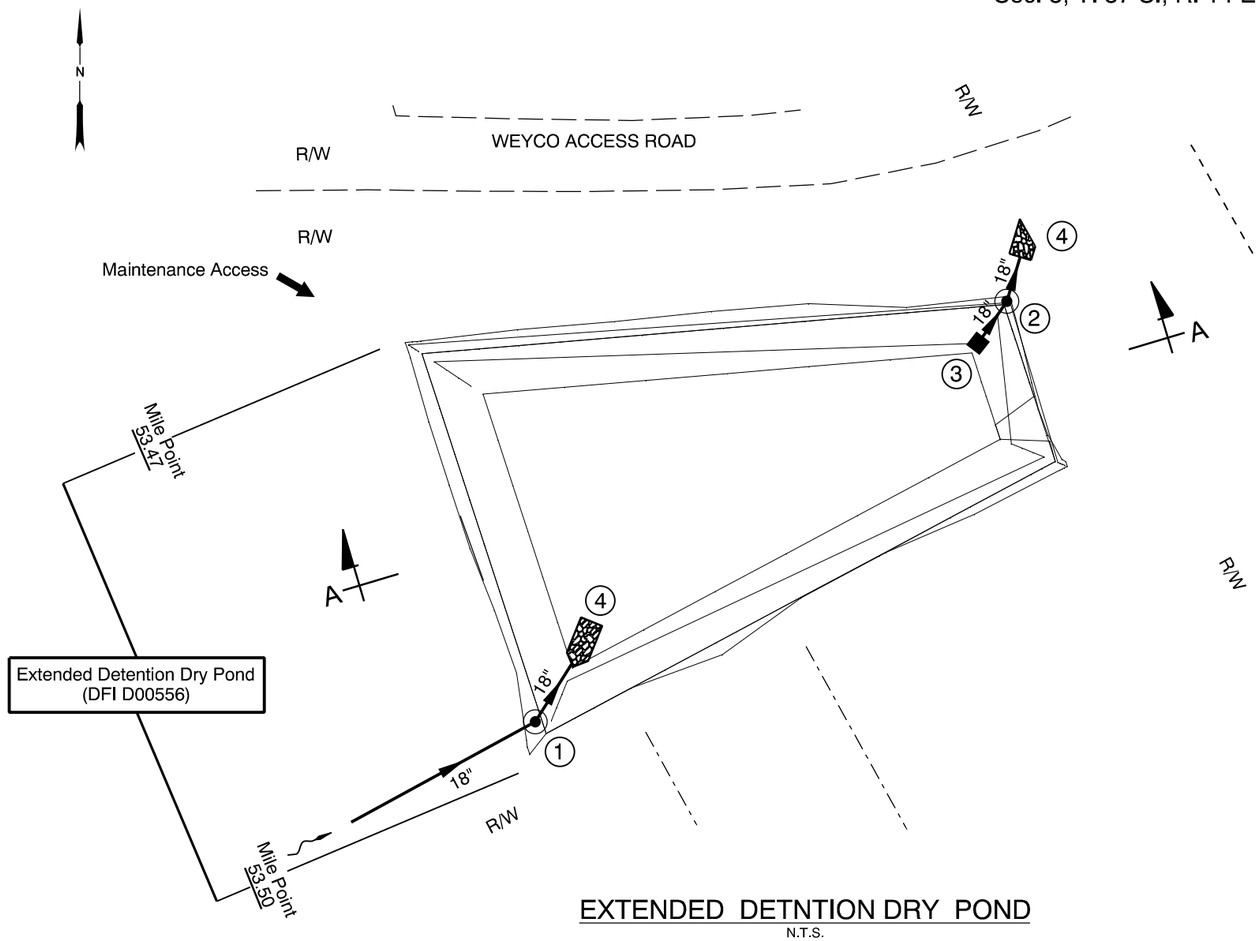
If you are planning on reusing your clean out material, DEQ will likely require a "solid waste letter of authorization" for its final placement. Typically DEQ will work with you to ensure proper permits and papers are obtained, needed pollutant testing is completed, and final placement of materials is appropriate.

Contact any of the following for more detailed information about management of this waste material:

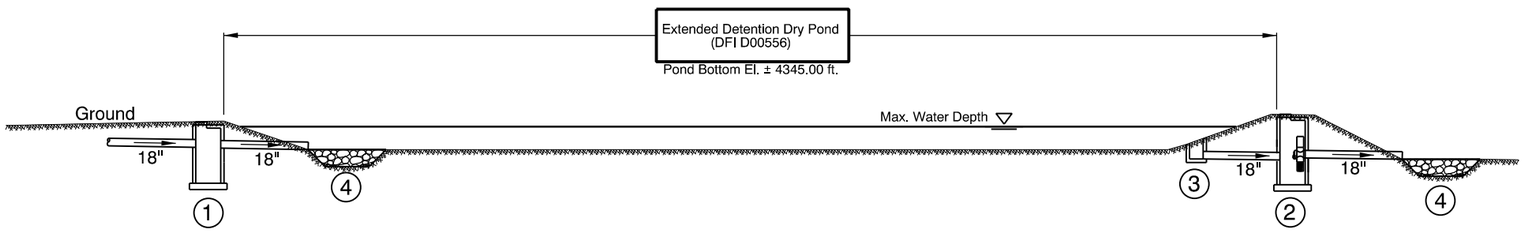
ODOT Clean Water Unit	(503) 986-3008
ODOT Statewide Hazmat Coordinator	(503) 731-8252
ODOT Region 4 Hazmat Coordinator	(541) 388-6329
ODEQ Region Office	(541) 388-6146

APPENDIX A

Sec. 34, T. 36 S., R. 14 E., W.M.
Sec. 3, T. 37 S., R. 14 E., W.M.



EXTENDED DETNTION DRY POND
N.T.S.



SECTION A-A
N.T.S.

LEGEND:

- (1) Manhole
- (2) Flow Control Manhole
- (3) Type 'D' Inlet
- (4) Flow Spreader/Energy Dissipator
- Manhole
- Inlet
- Storm Pipe (Facility) — 18"
- Flow Path
- Conveyance Direction

OREGON DEPARTMENT OF TRANSPORTATION

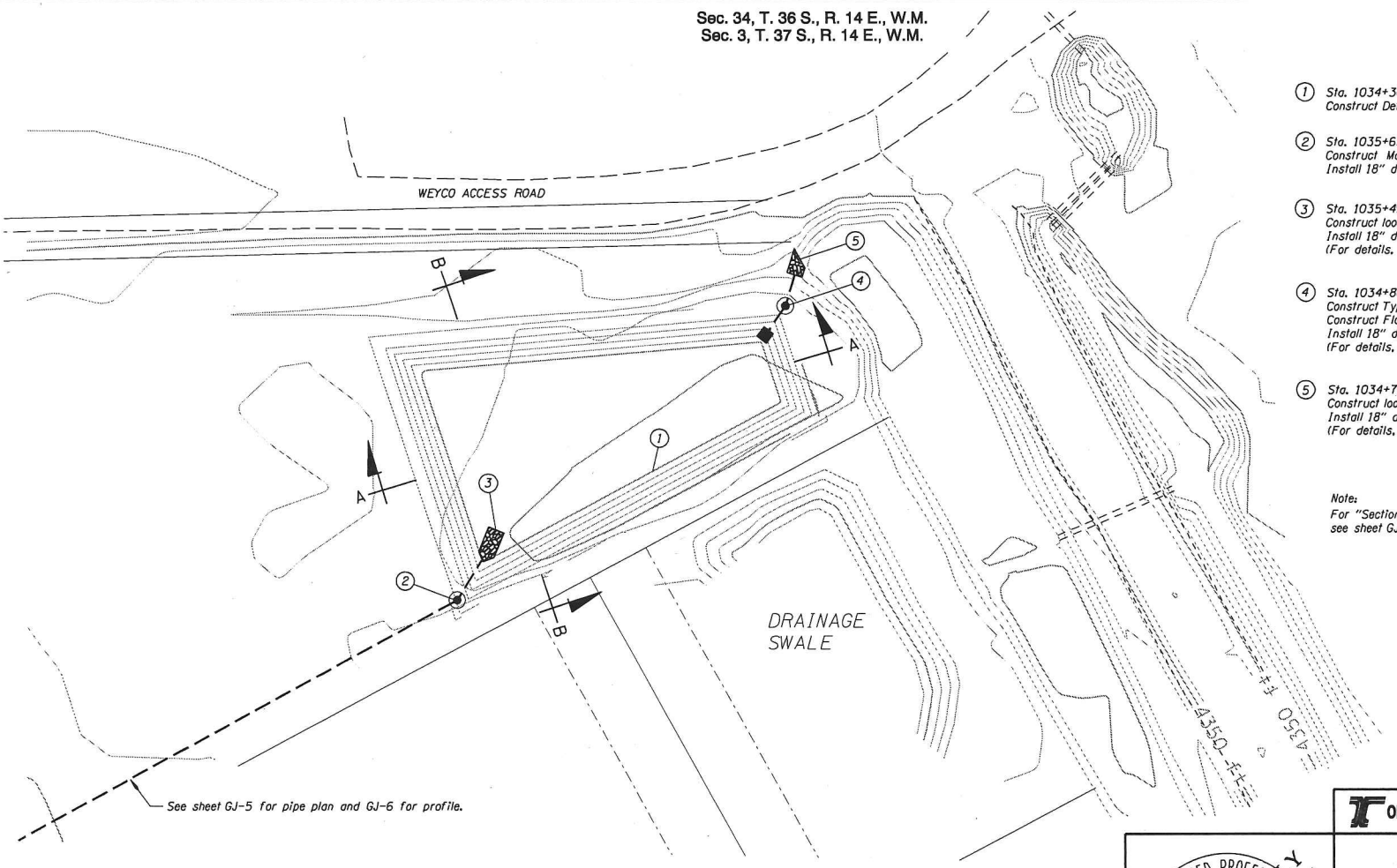
Prepared By: Michael W. Ogden

Drafted By: Michael L. Graves

DFI D00556
MAINTENANCE DISTRICT 11 HWY 020
EXTENDED DETENTION DRY POND
KLAMATH FALLS-LAKEVIEW HIGHWAY MP 53.47 - 53.60
KLAMATH COUNTY

APPENDIX B

Sec. 34, T. 36 S., R. 14 E., W.M.
Sec. 3, T. 37 S., R. 14 E., W.M.



(1) *Sta. 1034+30 to Sta. 1035.72 Lt.*
Construct Detention Pond.

(2) *Sta. 1035+63 Lt.*
Construct Manhole
Install 18" dia. Sewer Pipe - 456.0' length at 10.0' depth.

(3) *Sta. 1035+49 Lt.*
Construct loose Rip Rap basin (Class 50) - 4.0 yd.³
Install 18" dia. Sewer Pipe - 22.0' length at 5.0' depth.
(For details, see sheet GJ-4)

(4) *Sta. 1034+86 to Sta. 1034+95 Lt.*
Construct Type "D" Inlet
Construct Flow Control Manhole
Install 18" dia. Sewer Pipe - 16.4' length at 5.0' depth.
(For details, see sheet GJ-3)

(5) *Sta. 1034+73 Lt.*
Construct loose Rip Rap basin (Class 50) - 4.0 yd.³
Install 18" dia. Sewer Pipe - 15.3' length at 5.0' depth.
(For details, see sheet GJ-4)

Note:
For "Section A-A" and "Section B-B", see sheet GJ-2.

N

Scale (ft.)
20 0 50

SEDIMENTATION-RETENTION-INFILTRATION FACILITY

1" = 50'

SCALE WARNING
If scale bar doesn't measure one inch then drawing is not to scale

REGISTERED PROFESSIONAL ENGINEER
56111
OREGON
NOVEMBER 9, 2003
MICHAEL W. OGDEN
RENEWAL DATE: DEC. 31, 2010
FOR REVIEW ONLY

OREGON DEPARTMENT OF TRANSPORTATION

REGION 4 TECHNICAL CENTER

OR140: MODOC BILLY CR. - FISH HOLE CR. (BEATTY/BLY) SEC.
KLAMATH FALLS - LAKEVIEW HIGHWAY
KLAMATH COUNTY

Reviewed By - Michael L. Morris
Designed By - Michael W. Ogden
Drafted By - Michael L. Graves

STORMWATER PLAN

SHEET NO. GJ

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Sec. 34, T. 36 S., R. 14 E., W.M.
Sec. 3, T. 37 S., R. 14 E., W.M.

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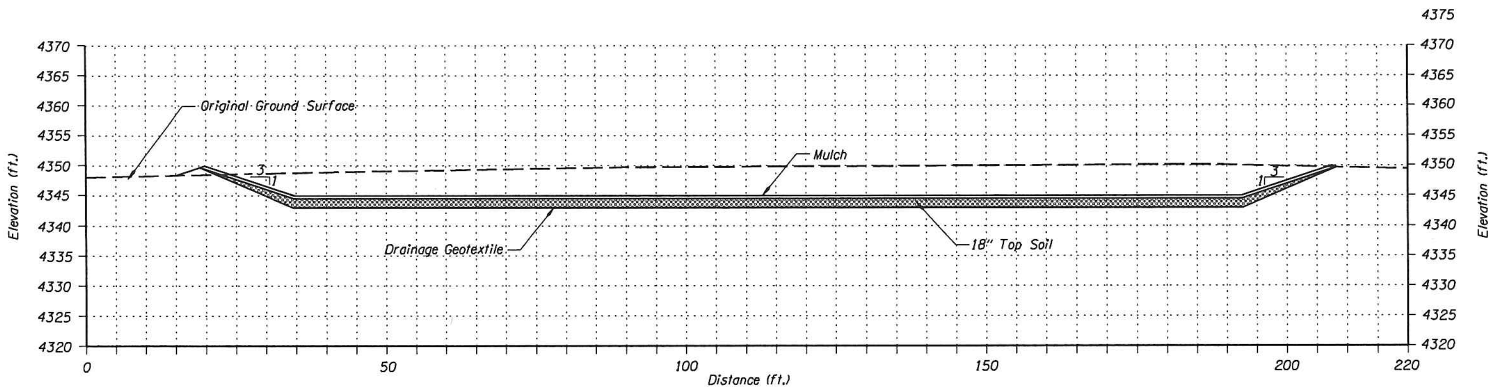
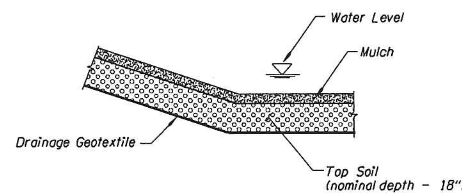
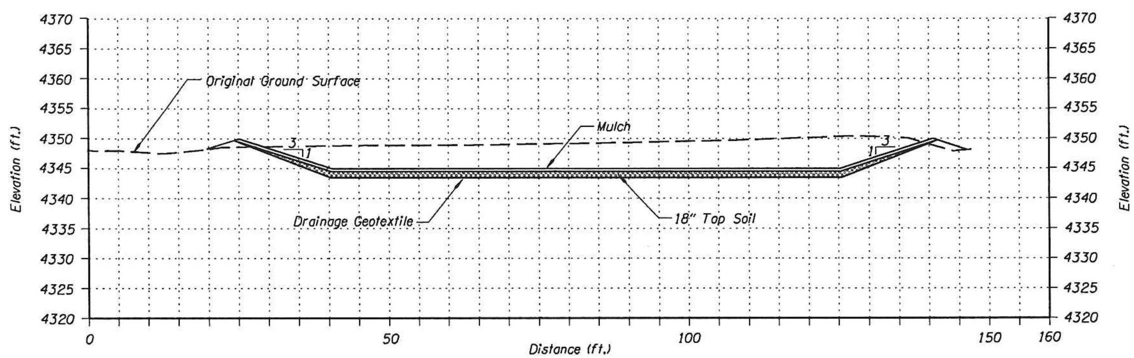


Note:
For location of "Section A-A", see sheet GJ.

SECTION A-A
1" = 20'



FILTER LAYER DETAIL
Not to Scale



SECTION B-B
1" = 20'

Note:
For location of "Section B-B", see sheet GJ.

SCALE WARNING
If scale bar doesn't measure one inch then drawing is not to scale

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OR140: MODOC BILLY CR. - FISH HOLE CR. (BEATTY/BLY) SEC.
KLAMATH FALLS - LAKEVIEW HIGHWAY
KLAMATH COUNTY
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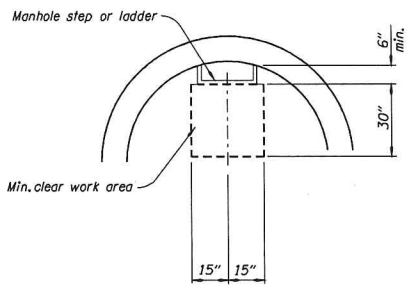
Drafted By - Michael L. Groves
STORMWATER DETAILS
SHEET NO. GJ-2

Sec. 34, T. 36 S., R. 14 E., W.M.
Sec. 3, T. 37 S., R. 14 E., W.M.

ITEM	VALUE	DESCRIPTION
A1	5.0"	Detention Orifice Diameter
A2	4344.50'	Elevation of Orifice
B	4345.00'	Elevation of Pond Bottom
C	4346.08'	Elevation of Inlet Lip
D	4346.08'	Flow Elevation of 18" dia. Outlet Pipe
E	4345.03'	Elevation of W.Q. Water Surface
F	312.0 ft.^{3}	Pond Design W.Q. Volume at "E"
G	4348.79'	Elevation of Detention Water Surface
H	4349.40'	Auxillary Spillway Flow Elevation
I	4349.41'	Elevation of Check Storm Water Surface
J	4346.00'	Flow Elevation of 18" dia. Inlet Pipe
K	4346.00'	Flow Elevation of 18" dia. Outlet Pipe



DETAIL "A"
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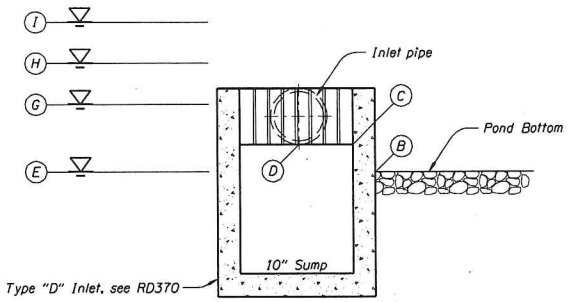

SECTION E-E
FLOW CONTROL INLETS
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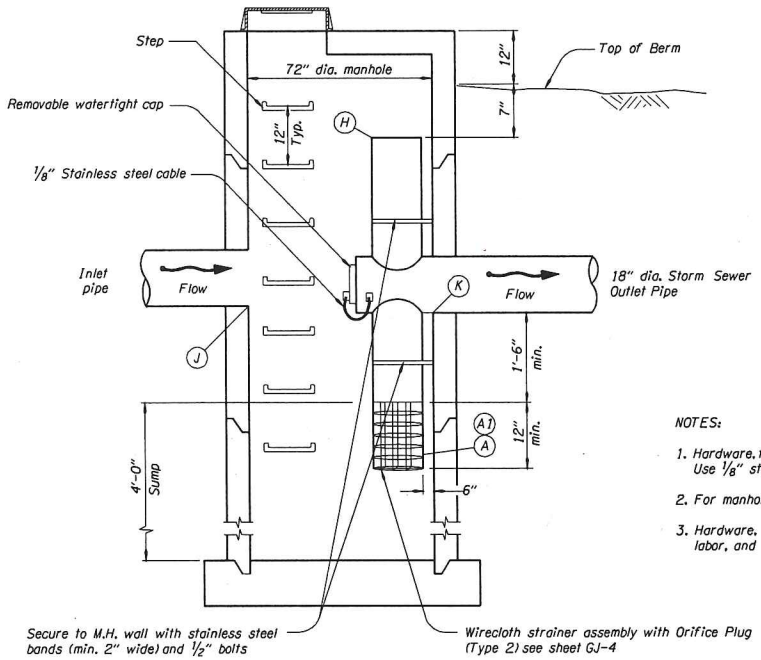
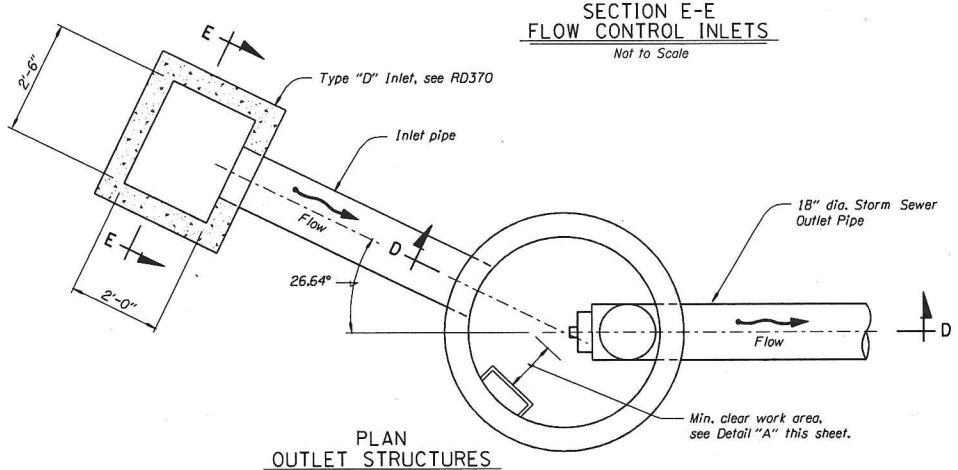


SECTION D-D
FLOW CONTROL MANHOLE
Not to Scale



PLAN
OUTLET STRUCTURES
Not to Scale

NOTES:

1. Hardware, fasteners and anchors to be stainless steel: Use 1/8" stainless steel cable.
2. For manhole details not shown, see RD340 and RD346
3. Hardware, fasteners, anchors, fittings, appurtenances, labor, and equipment are incidental.

OREGON DEPARTMENT OF TRANSPORTATION

REGION 4 TECHNICAL CENTER

OR140: MODOC BILLY CR. - FISH HOLE CR. (BEATTY/BLY) SEC.
KLAMATH FALLS - LAKEVIEW HIGHWAY
KLAMATH COUNTY

Reviewed By - Michael L. Morris
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Drafted By - Michael L. Graves

REGISTERED PROFESSIONAL ENGINEER 56149 OREGON OCTOBER 9, 2003 MICHAEL W. OGDEN
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RENEWAL DATE: DEC. 31, 2010

STORMWATER PLAN

SHEET NO. GJ-3

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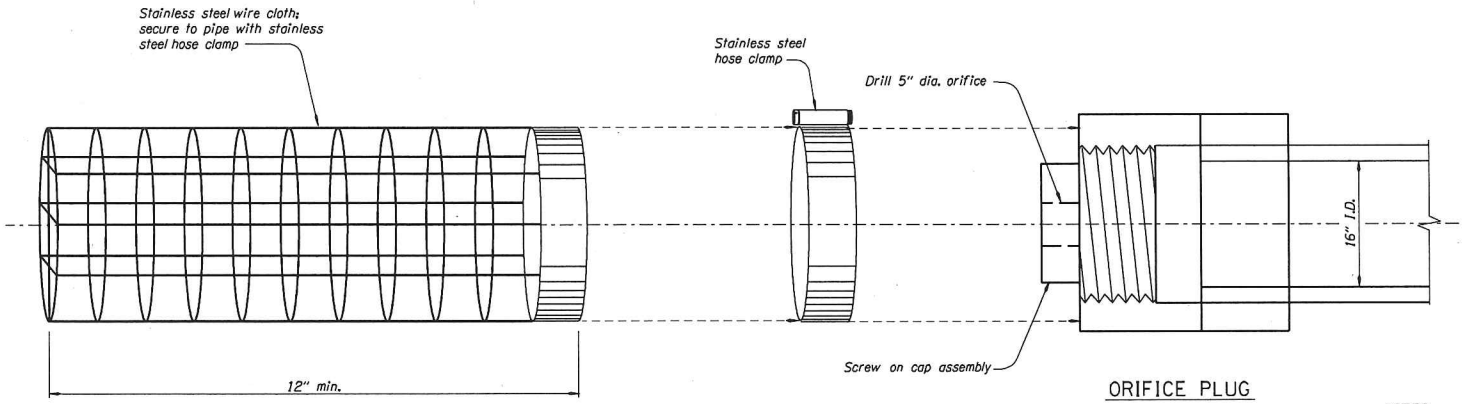


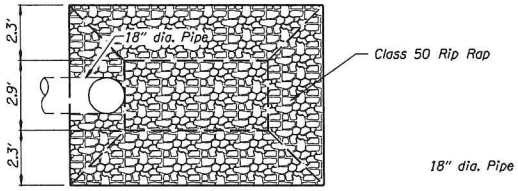
ORIFICE PLUG

FLOW CONTROL MANHOLE WIRE CLOTH STRAINER ASSEMBLY AND ORIFICE PLUG (TYPE 2)

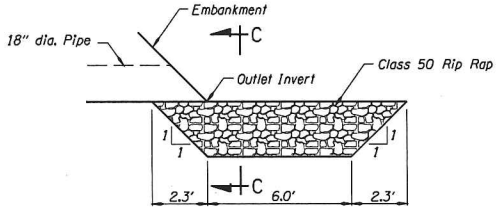
Not to Scale

NOTES:

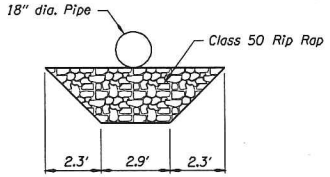
1. Hardware, fasteners and anchors to be stainless steel: Use 1/8" stainless steel cable.
2. See plan sheets for pipe size.
3. See plan sheets for manhole size.
4. See plan sheets for sump depth.
5. Manhole and base per manhole standard drawings.
6. Hardware, fasteners, anchors, fittings, appurtenances, labor and equipment are incidental.



PLAN



ELEVATION



SECTION C-C

RIP RAP PAD DETAIL

Not to Scale

REGISTERED PROFESSIONAL ENGINEER
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OREGON DEPARTMENT OF TRANSPORTATION

REGION 4 TECHNICAL CENTER

OR140: MODOC BILLY CR. - FISH HOLE CR. (BEATTY/BLY) SEC.
KLAMATH FALLS - LAKEVIEW HIGHWAY
KLAMATH COUNTY

Reviewed By - Michael L. Morris
Designed By - Michael W. Ogden
Drafted By - Michael L. Graves

STORMWATER DETAILS

SHEET NO. GJ-4

Sec. 34, T. 36 S., R. 14 E., W.M.
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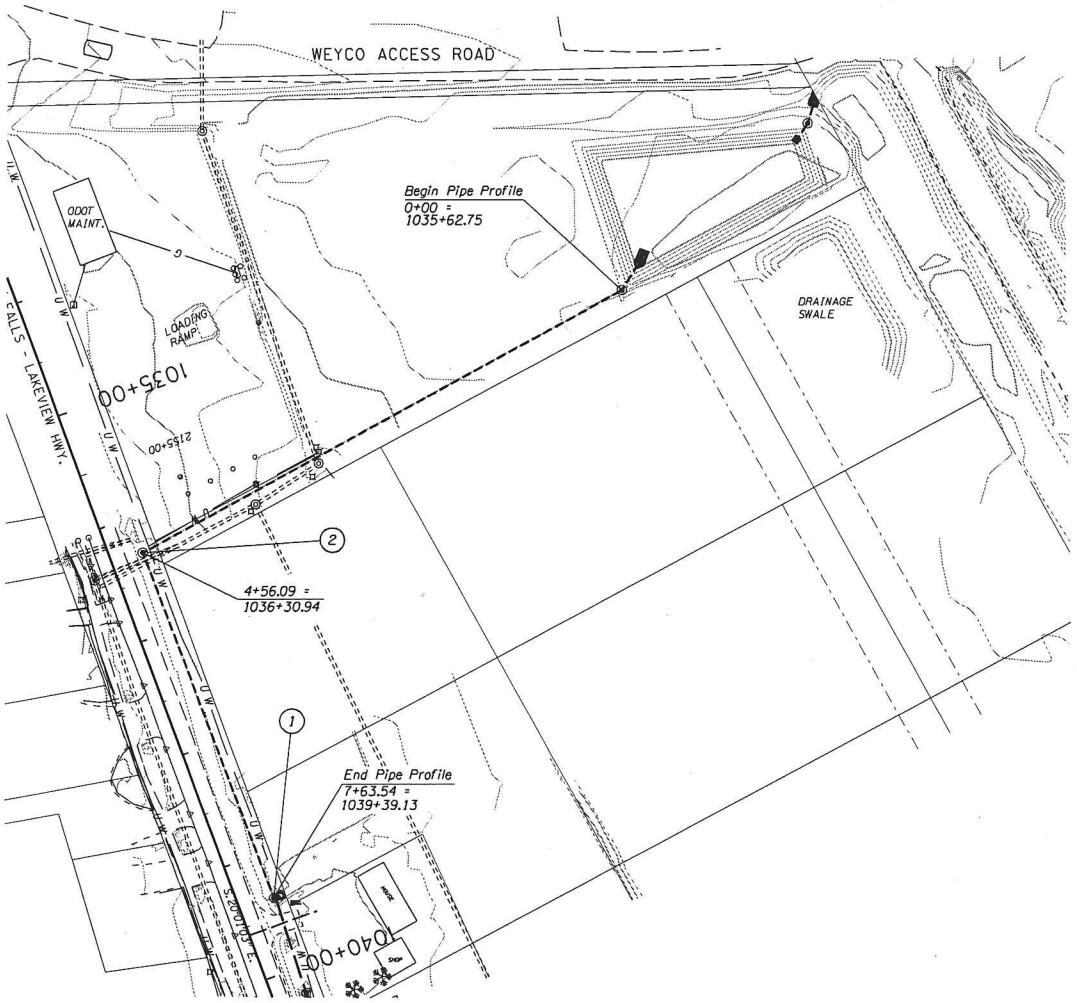

PLAN
1" = 100'

(1) Sta. 1039+39.13 Lt.
Connect 18" dia. Sewer Pipe
to Existing Manhole.

(2) Sta. 1036+30.94 Lt.
Construct Manhole
Install 18" dia. Sewer Pipe
307.5' Length at 10' Depth.

N

Scale (ft.)
20 0 100

NOTE: For pipe profile, see sheet GJ-6.

SCALE WARNING
If scale bar doesn't measure one inch then drawing is not to scale

REGISTERED PROFESSIONAL ENGINEER
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NOVEMBER 9, 2003
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RENEWAL DATE: DEC. 31, 2010
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FISH HOLE CR. (BEATTY/BLY) SEC.
KLAMATH FALLS - LAKEVIEW HIGHWAY
KLAMATH COUNTY

Reviewed By - Michael L. Morris
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Drafted By - Michael L. Graves

STORMWATER
PIPE PLAN

SHEET NO.
GJ-5

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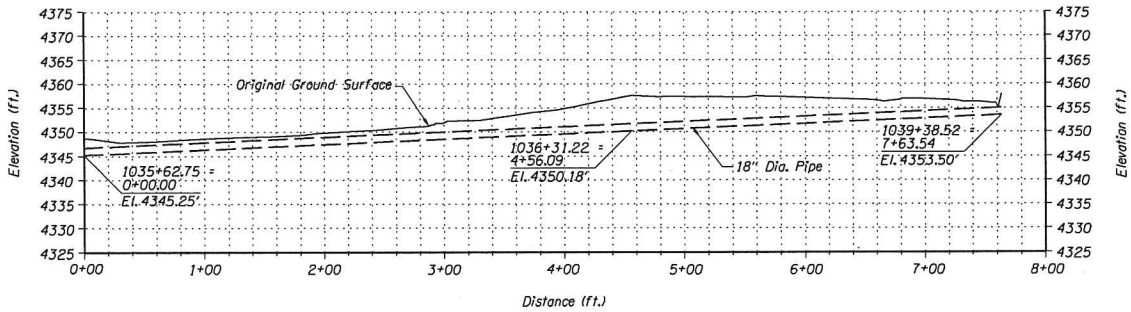
Sec. 3, T. 37 S., R. 14 E., W.M.

42V-007



PIPE PROFILE

Vert. 1" = 25'
Horiz. 1" = 100'

NOTE: For pipe plan, see sheet GJ-5.

SCALE WARNING
If scale bar doesn't measure one inch then drawing is not to scale

REGISTERED PROFESSIONAL ENGINEER
56[illegible]
OREGON
SEPTEMBER 9, 2003
MICHAEL W. OGDEN
FOR REVIEW ONLY
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RENEWAL DATE: DEC. 31, 2010

OREGON DEPARTMENT OF TRANSPORTATION

REGION 4 TECHNICAL CENTER

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KLAMATH FALLS - LAKEVIEW HIGHWAY
KLAMATH COUNTY

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Designed By - Michael W. Ogden
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STORMWATER PIPE PROFILE

SHEET NO. GJ-6

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