

OPERATION & MAINTENANCE MANUAL

DFI No. : D00871

**Facility Type: Water Quality
Biofiltration Swale**



[July, 2015]

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1. Identification

Drainage Facility ID (DFI): **D00871**
Facility Type: Water Quality Biofiltration Swale
Construction Drawings: (V-File Number) 48V-038
Location: District: 2C
Highway No.: 171
Mile Post: 11.51; 11.52 (beg./end)
Description:
The facility is located on the north side of OR-224, west of the SE 197th Ave. intersection. The facility can be accessed via the shoulder of westbound OR-224.

2. Facility Contact Information

Contact the Engineer of Record (see section 3), Region Technical Center, or Geo-Environmental's Senior Hydraulics Engineer for:

- Operational clarification
- Maintenance clarification
- Repair or restoration assistance

Engineering Contacts:

Region Technical Center Geo-Environmental Unit Manager
(503) 731-8455.

Or

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

3. Construction

Engineer of Record: ODOT Designer – Region 1 Tech. Center,
David McDonald P.E., (503) 731-3160

Facility construction: 2015
Contractor: Eagle Elsner

4. Storm Drain System and Facility Overview

Biofiltration swales are flat-bottomed channels engineered to treat stormwater runoff. They are designed with gentle slopes, shallow flows and lined with grass. Biofiltration facilities are intended to maximize the amount of stormwater that flows through dense vegetation, compost or soil, and to increase the potential for infiltration as compared to standard conveyance systems. Biofiltration swales are very popular because of their low construction and maintenance cost, few design limitations, and ability to be located in median strips, along the shoulders of roadways, and parking lots.

This facility is located on the north side of OR-224, west of the SE 197th Avenue intersection. The biofiltration swale extends approximately 150 ft. from east to west along the north shoulder of OR-224. There is a turn-off onto a Clackamas County road immediately north of the facility. The facility can be accessed by foot from a vehicle parked at this turnoff or can be accessed directly via the road shoulder.

Contributing drainage includes stormwater runoff and sheet flow from the highway. This swale outlets into the adjacent wetland area towards a 12" culvert. The culvert drains under the county access road to the north.

A. Maintenance equipment access:

Maintenance crews and equipment can access the facility by parking on the shoulder of westbound OR-224 between mileposts 11.51 and 11.54.

Heavy equipment access into facility:

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

Heavy equipment access is allowed with limitations. Access is allowed for light to mid weight equipment such as mowers and small excavators.

B. Special Features:

- Amended Soils
- Porous Pavers
- Liners

Underdrains



Photo 1: Looking south from the County access road at the bioswale located along the east side of OR-224.



Photo 2: Looking north at bioswale and facility ID marker. A county road and perimeter fences are visible.



Photo 3: Looking northeast, a view of the facility ID marker, county road and adjacent wetland (outlet area).

5. Facility Haz Mat Spill Feature(s)

This facility has no Haz Mat spill features.

The water quality bioswale can be used to temporarily store a small volume of liquid by blocking the flow path and outlet channel. This can be accomplished by constructing a sandbag dam near the outlet. However, hazardous liquid and contaminated materials will need to be removed and the previous condition of the swale restored per the original plan.

6. Auxiliary Outlet (High Flow Bypass)

There is no auxiliary for this facility. The swale was designed to flow out onto the adjacent wetland area.

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/Engineering/Pages/Manuals.aspx>

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:

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://www.oregon.gov/ODOT/Engineering/Pages/Manuals.aspx>

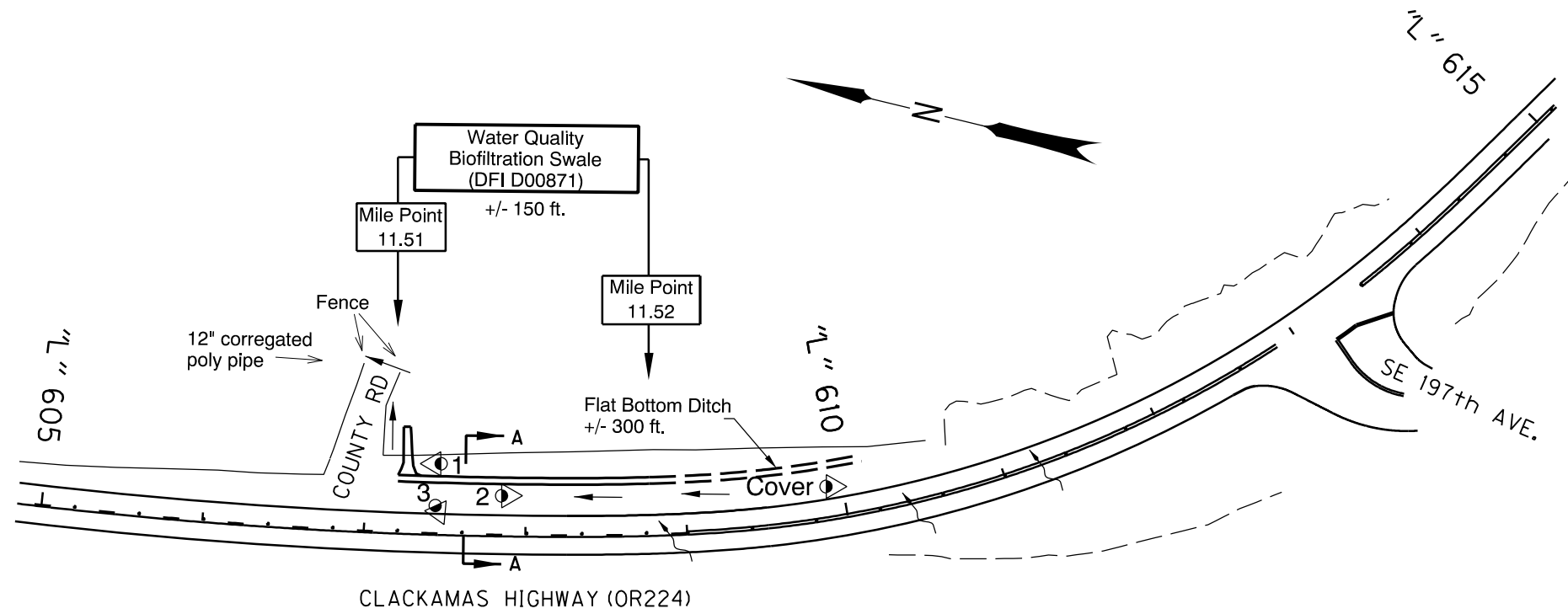
Contact any of the following for more detailed information about management of waste materials found on site:

| | |
|-----------------------------------|----------------|
| ODOT Clean Water Unit | (503) 986-3008 |
| ODOT Statewide Hazmat Coordinator | (503) 667-7442 |
| ODOT Region Hazmat Coordinator | (503) 731-8290 |
| ODEQ Northwest Region Office | (503) 229-5263 |

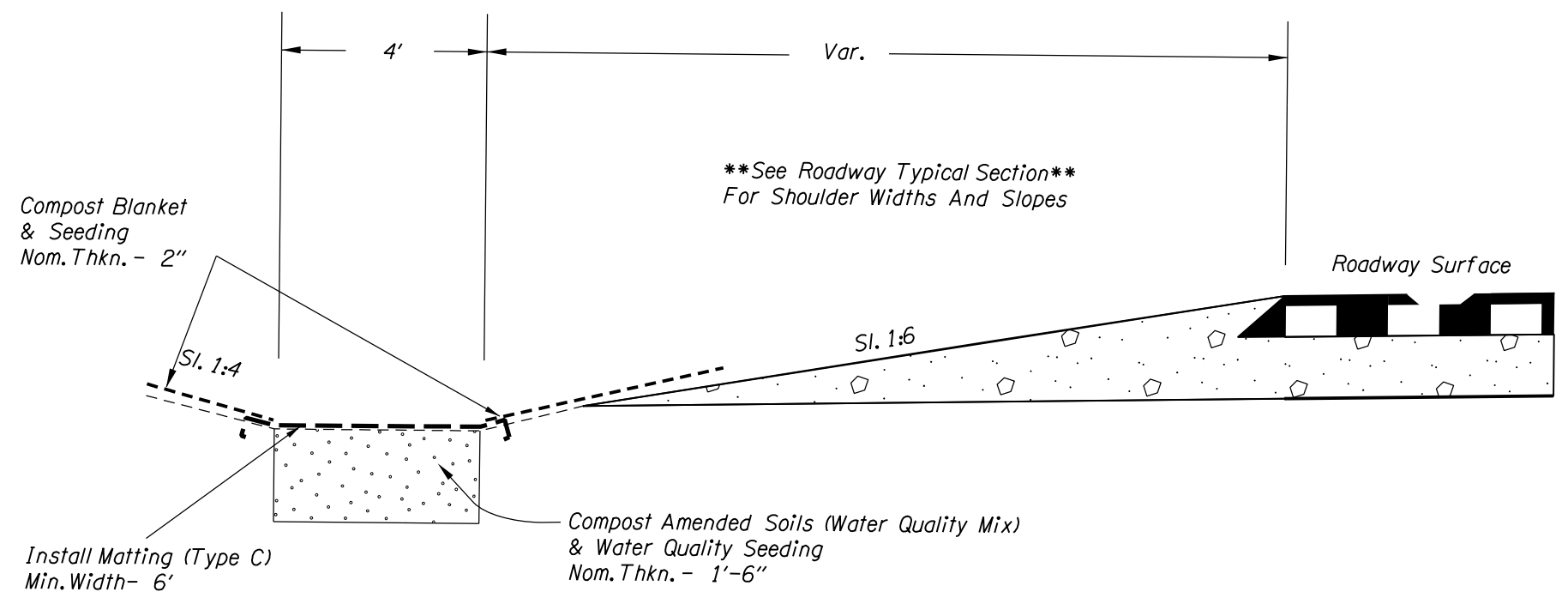
Appendix A

Content:

- Operational Plan and Section Drawing(s)



PLAN
N.T.S.



SECTION A-A
N.T.S.

MP 11.51 - MP 11.54 LT.

- LEGEND:**
- Photo Location / Direction
 - Manhole
 - Inlet
 - Swale Bottom
 - Flat Bottom Ditch
 - Storm Pipe
 - Conveyance Direction
 - Pavement / Facility Flow Path

OREGON DEPARTMENT OF TRANSPORTATION

Prepared By: David McDonald
 Drafted By: Zoe Keve

DFI D00871
MAINTENANCE DISTRICT 2C HWY # 171
BIOSWALE
 HIGHWAY MP 11.51-11.52
 CLACKAMAS COUNTY

Appendix B

Content:

- **ODOT Project Plan Sheets**
 - *Cover/Title Sheet*
 - *Drainage and Utilities (3B)*
 - *Water Quality Details (GJ)*

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

STATE OF OREGON
DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED PROJECT

GRADING, DRAINAGE, PAVING, SIGNING

OR224 (CLACKAMAS HWY): SE 197TH AVE. SEC.

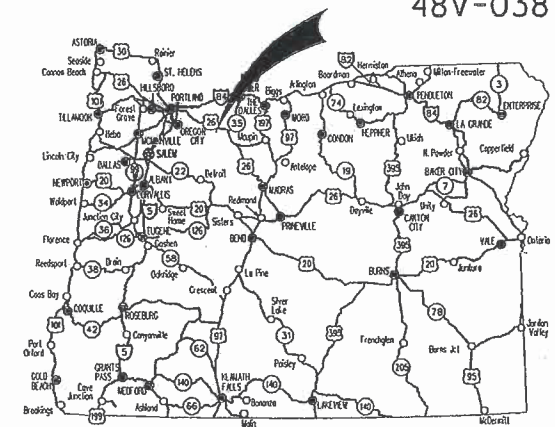
CLACKAMAS HIGHWAY

CLACKAMAS COUNTY

APRIL 2015

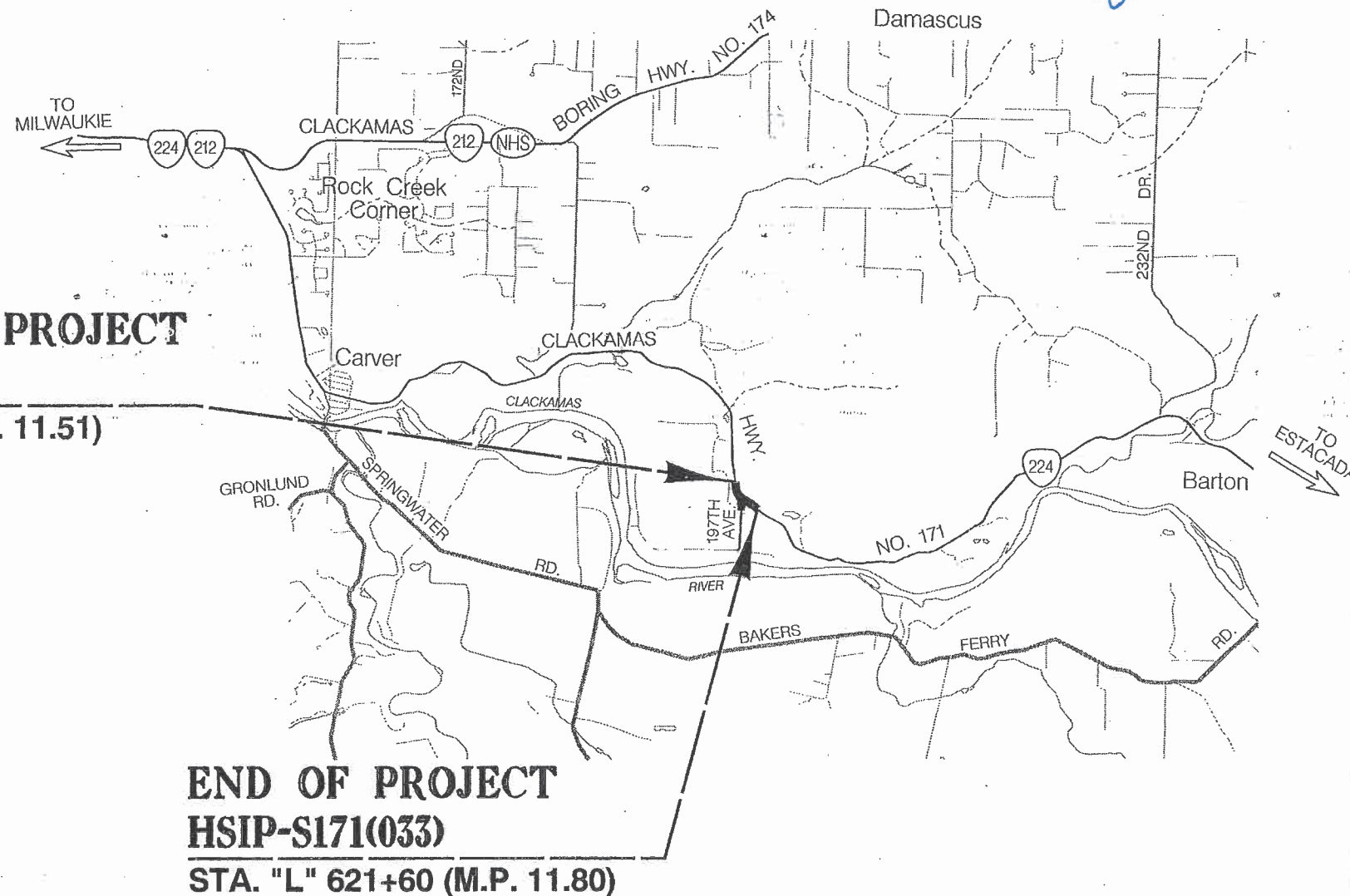
NOT REVISED AS CONSTRUCTED
30 SEP 2015 CONTRACT 14803
PROJ. MGR. MARJORIE WEST

Marjorie West 12/9/15



Overall Length Of Project - 0.29 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.)



BEGINNING OF PROJECT
HSIP-S171(033)

STA. "L" 606+70 (M.P. 11.51)

END OF PROJECT
HSIP-S171(033)

STA. "L" 621+60 (M.P. 11.80)

OREGON TRANSPORTATION COMMISSION

- | | |
|--------------------|----------------------------|
| Tammy Boney | CHAIR |
| David Lohman | COMMISSIONER |
| Susan Morgan | COMMISSIONER |
| Alando Simpson | 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: *Tamira J. Clark*
Tamira J. Clark
Technical Center Manager, Region 1

Thomas Jones
Concurrence by ODOT Chief Engineer

OR224 (CLACKAMAS HWY): SE 197TH AVE. SEC.
CLACKAMAS HIGHWAY
CLACKAMAS COUNTY

| | | |
|--------------------------------|----------------|-----------|
| FEDERAL HIGHWAY ADMINISTRATION | PROJECT NUMBER | SHEET NO. |
| OREGON DIVISION | HSIP-S171(033) | 1 |

T. 2 S., R. 3 E., W.M.



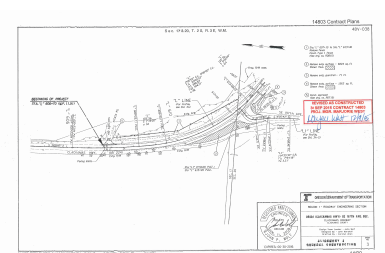
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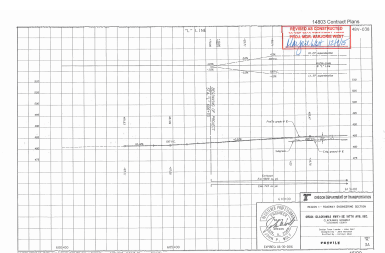
| 1985 Contract Plans | |
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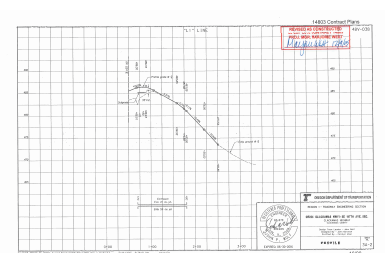
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| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
| 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 |
| 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 |
| 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 |
| 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 |
| 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 |
| 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 |

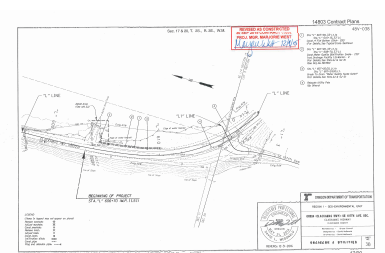
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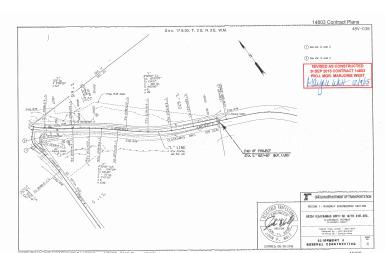
Bottom Section:
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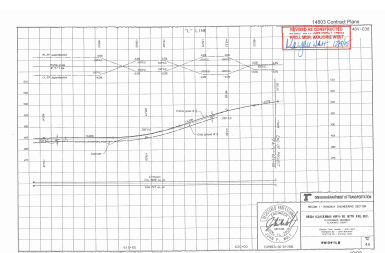


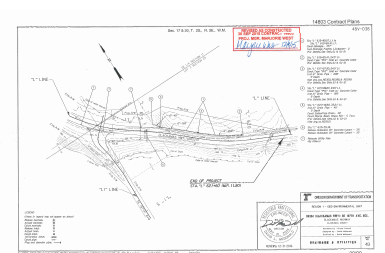


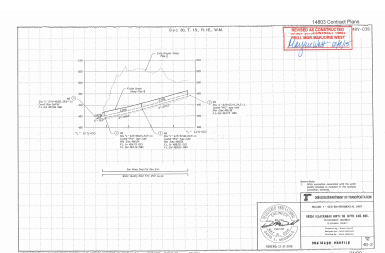


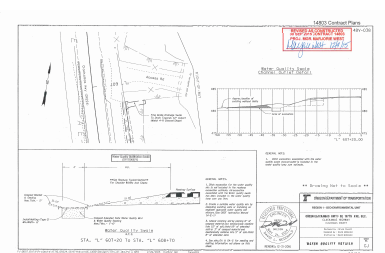












SECTION 05100 - PAINTS AND COATINGS
05100-01 - PAINTS AND COATINGS

Notes:
 1. See Section 05100-01 for material specifications.
 2. All surfaces to be painted as shown.

| ITEM NO. | DESCRIPTION | QUANTITY | UNIT |
|----------|-------------|----------|---------|
| 1 | PRIMER | 100 | SQ. YD. |
| 2 | PAINT | 200 | SQ. YD. |

CONTRACT DOCUMENTS
 1. SPECIFICATIONS FOR PAINTS AND COATINGS
 2. GENERAL CONDITIONS
 3. SUPPLEMENTAL CONDITIONS

DATE: 10/15/2010
BY: [Signature]