STORMWATER FACILITY

OPERATION & MAINTENANCE MANUAL

US 30 @ Eilertsen Creek Project

Lower Columbia River Hwy

Columbia County

Prepared for:

Oregon Department of Transportation

ODOT Project Key No. 17037

Drainage Facility ID		Facility Type	Highway Name	Highway Number	Route Number	MP (Begin)	MP (End)	County
D	00548	Biofiltration Swale and Filter Strip	Lower Columbia River Hwy	092	US 30	67.94 (Rt.)	67.87 (Rt.)	Columbia
D	00549	Water Quality Biofiltration Swale	Lower Columbia River Hwy	092	US 30	67.93 (Lt.)	67.88 (Lt.)	Columbia
D	00550	Water Quality Biofiltration Swale	Lower Columbia River Hwy	092	US 30	67.81 (Rt.)	67.83 (Rt.)	Columbia
D	00551	Water Quality Filter Strip	Lower Columbia River Hwy	092	US 30	67.85 (Lt.)	67.84 (Lt.)	Columbia
D	00552	Water Quality Filter Strip	Lower Columbia River Hwy	092	US 30	67.84 (Lt.)	67.81 (Lt.)	Columbia

Prepared By:

David Evans and Associates, Inc.
2100 SW River Parkway
Portland, Oregon 97201

DEA Project No. ODOT0000-0700

November 2010

Table of Contents

1.0 IDENTIFICATION

Project Name: **US 30 @ Eilertsen Creek Project (K17037)**

Facility Type: Storm Drainage, Biofiltration Swales, and Filter Strips

Location: US 30 @ Eilertsen Creek in Columbia County (M.P. 67.99 to M.P. 67.72)

2.0 DESIGNER

Company: David Evans and Associates, Inc.

Contact: Christine Higgins, PE (503) 223-6663

3.0 SYSTEM OVERVIEW

The project area includes US Hwy 30 from MP 67.99 to MP 67.72, and the intersections of US Hwy 30 with Woodson Road and Marshland District Road. Project improvements include replacing the 6-foot by 8-foot box culvert with a single span bridge and the roadway improvements associated with the work. Additional work includes replacing two 6-foot diameter CMP culverts crossing the Portland and Western Railroad (P&WRR) tracks with a single span bridge. The project also includes installing water quality facilities and new drainage system as needed.

Stormwater from the total contributing project impervious area will be treated with four filter strips and three biofiltration swales. A filter strip and biofiltration swale on the south side of the highway from Station 468+76 (M.P. 67.94) to Station 472+34 (M.P. 67.87) will treat 7,899 square feet. A second filter strip and biofiltration swale is proposed on the north side of the highway between Station 469+05 (M.P. 67.93) and Station 472+07 (M.P. 67.88) to treat 8,020 square feet. The proposed bridge will be curbed and the water will not be allowed to flow directly into Eilertsen Creek. Drainage curb is proposed from the end of the bride east to Station 473+67 (M.P. 67.85). The stormwater from this project segment will be piped to a biofiltration swale located on the south side of the highway from Station 475+50 (M.P. 67.81) to Station 474+24 (M.P. 67.83). A third filter strip is proposed at the northwest corner of Marshland District Road and US Hwy 30 and extends to the northside of the P&WRR tracks. This filter strip drains to an existing vegetated swale, where additional water quality treatment will occur prior to draining into Eilertsen Creek.

At the same intersection a fourth filter strip is proposed at the northeast corner and will extend to the northside of the P&WRR tracks and to Station 475+70 (M.P. 67.81). The filter strip will drain to the existing vegetated roadside ditch where infiltration most likely occurs.

System layout and details are shown in Appendix A of the Advance Stormwater Management Plan.

4.0 MAINTENANCE REQUIREMENTS

The treatment swales and filter strips are constructed for biofiltration. All facility components and vegetation need to be inspected for proper operation and structural stability.

4.1 Schedule

- Conduct a special inspection of the facility after the first 24-hr rainfall that is greater than 0.50 inches. Regular inspections should occur, at a minimum, quarterly for the first 2 years from the date of installation, and 2 times per year thereafter, and within 48 hours after each major storm event. Perform maintenance as necessary.
- Every two to five years, remove sediment from the pond bottom and from sumped inlets.

4.2 Inlets and Pipe

- Visually inspect and remove sediment and debris from inlets and manholes.
- Remove debris from surface grates as required.
- Visually inspect, supplemented by remote television inspection, all pipe. Clean accumulations of sediment from all pipe.

4.3 Embankments, Berms, & Side Slopes

- Check for, repair, and identify the sources of the following along all embankments, berms, and side slopes:
  - Cracking,
  - Erosion channels deeper than 2 inches,
  - Sloughing,
  - Piping,
  - Rodent holes,
  - Debris,
  - Settlement greater than 4 inches.
- Slopes shall be stabilized using appropriate erosion control measures if native soil is exposed or erosion channels are forming.
- **All material from side slope sloughing shall be removed and disposed of outside of the swale limits.**

4.4 Sediment & Debris Management

Sediment & debris management shall prevent loss of swale volume caused by sedimentation.

- The swale shall be dredged when 2 inches of sediment accumulates.
- Debris in quantities sufficient to inhibit operation shall be removed routinely, e.g. no less than quarterly, or upon discovery.

4.5 Vegetation

Vegetation shall be healthy and dense enough to provide filtering while protecting underlying soils from erosion.

- Vegetation, large shrubs or trees that limit access, shade, or otherwise interfere with swale or filter operation shall be pruned.
- Grass along the bottom and side slopes and where applicable shall be mowed to a height of between 4 and 6 inches, and grass clippings shall be removed.
- Fallen leaves and debris from deciduous plant foliage shall be raked and removed.
- Remove noxious or foul smelling vegetation.
- Dead vegetation shall be removed when it exceeds 10% of area coverage or when function is impaired. Vegetation shall be replaced within 3 months, or immediately if required to maintain cover density and control erosion where soils are exposed.
- Herbicides shall not be used to control vegetation.

4.6 Hazardous Material Spill

Hazardous material spills can harmfully impact the surface water, groundwater and soils. Spills should be prevented.

- Spill Prevention measures shall be exercised when handling substances that can contaminate stormwater.
- Remove all contaminated sediment and sludge from all portions of the affected system immediately following any hazardous material spill event.
- Dispose of all removed hazardous material off-site in an appropriate manner.

4.7 Access

Access to the swale or filter strip shall be safe and efficient. Access shall be maintained to accommodate size and weight of maintenance vehicles. Access by vehicles should be limited to dry weather to prevent rutting and erosion.

- Obstacles preventing maintenance personnel and/or equipment access to the swale shall be removed.
- Gravel or ground cover shall be added if erosion occurs.

4.8 Insects & Rodents

Insects and rodents shall be discouraged from congregating in or around the swale.

- Control insects that breed or congregate in the swale.
- Remove burrowing animals from side slopes.
- Holes in the ground located in and around the swale shall be filled and compacted.

5.0 WASTE MATERIAL HANDLING

Material cleaned from the facility is defined as waste by DEQ. All waste must be disposed of at a permitted waste management facility or managed, reused, or recycled according to DEQ waste rules.

Road waste materials can be contaminated with chemical pollutants. If waste material is sent to a permitted waste management facility, facility operators may require testing for specific pollutants before the material will be accepted for disposal.

If waste material is being stockpiled or recycled, it should be determined if the material is contaminated with pollutants and at what levels. Chemical testing for total metals and hydrocarbons is usually adequate. Be aware, other pollutants might be present and test accordingly. All trash and litter must be removed and properly disposed. Whenever placing roadwaste material, ensure it will not migrate or erode and does not contain pollutants that will impact adjacent land, waterways, or groundwater.

If waste material is to be reused, DEQ will likely require a "Solid Waste Letter of Authorization" for approval of the waste material's final placement. Typically, DEQ will assist to ensure the proper permits and papers are obtained, needed pollutant testing is completed, and final placement of material is appropriate.

More detailed guidance on management of roadwaste can be found at the ODOT Research website: http://www.odot.state.or.us/tddresearch/reports.htm. Contact any of the following departments for more detailed waste material management information and assistance:

ODOT Clean Water Unit	(503) 986-3008
ODOT Statewide Hazmat Coordinator	(503) 731-8252
ODOT Region Hazmat Coordinator	(503) 731-8304
ODEQ Northwest Region Office	(503) 229-5263

6.0 MAINTENANCE CHECKLIST

All facility components, vegetation, and source controls need to be inspected for proper operation and structural stability. These inspections should occur quarterly for the first 2 years from the date of installation. At a minimum, the swales and filter strips shall be inspected twice a year, and sediment removed as necessary.

INLETS, PIPE AND RIPRAP OUTFALL

The pipe and riprap outfall shall assure unrestricted stormwater flow to the swale.

- ☐ **Sediment and Debris Removal –** Remove sediment and debris when sediment and debris is more than 2 inches thick or is damaging vegetation.
- ☐ **Catch Basins and Manholes** - Remove sediment and debris from inlets when accumulated to 3 inches below pipe invert elevation.
- ☐ **Pipe Clearing –** Remove sediment and debris when sediment and debris fills half the pipe diameter

SIDE SLOPES

Side slopes retain water in the swale.

- ☐ **Slope Maintenance (Stabilization) –** Stabilize slopes using appropriate erosion control measures when native soil is exposed or erosion channels are forming

SWALE AND FILTER STRIP MEDIA

Swale and filter strip media shall be maintained so that the swale flows freely with no debris present.

- ☐ **Tilling and Replanting** - Till and replant swale according to design specifications if the swale does not drain within 48 hours
- ☐ **Debris Removal** - Remove debris that inhibits the swale operation

SWALE AND FILTER STRIP

Vegetation shall be healthy and dense enough to provide filtering while protecting underlying soils from erosion and minimizing solar exposure of open water areas.

Vegetation Control

- ☐ Prune large shrubs or trees that interfere with the swale operation
- ☐ Remove fallen leaves and debris from deciduous plant foliage
- ☐ Remove nuisance vegetation, such as blackberries or English Ivy
- ☐ Remove invasive vegetation contributing up to 25% of vegetation of all species
- ☐ Remove dead vegetation and woody material and replace to maintain cover density

Insects and Rodent Removal

- ☐ Remove pests and/or rodents when present.
- ☐ Fill burrows and compact. Reestablish vegetation.

Maintenance Record:
Record date, description, and contractor (if applicable) for all structural repairs, landscape maintenance, and facility cleanout activities.

EXAMPLE
Date: 10/1/07 Initial____BJK____
Work performed by: AAA Landscaper under 3yr contract.
Work performed: Replanted parking lot swale with sedges & rushes.
Details:*Work Order on file and available upon request.

Date:_____ Initials:_____
Work performed by: _____
Work performed: _____
_____
Details: _____
_____

Date:_____ Initials:_____
Work performed by: _____
Work performed: _____
_____
Details: _____
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Date:_____ Initials:_____
Work performed by: _____
Work performed: _____
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Details: _____
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Date:_____ Initials:_____
Work performed by: _____
Work performed: _____
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Details: _____
_____

Date:_____ Initials:_____
Work performed by: _____
Work performed: _____
_____
Details: _____
_____

Appendix A

Drainage Plans And Details

44V-031

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

STATE OF OREGON

DEPARTMENT OF TRANSPORTATION

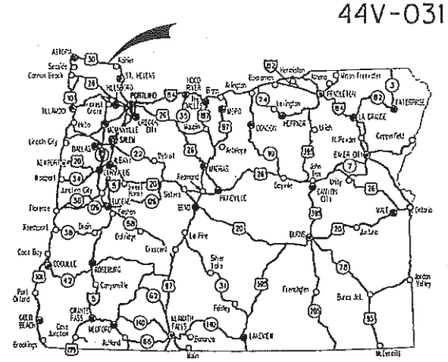
PLANS FOR PROPOSED PROJECT

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

US 30 @ EILERTSEN CREEK PROJECT

LOWER COLUMBIA RIVER HWY.

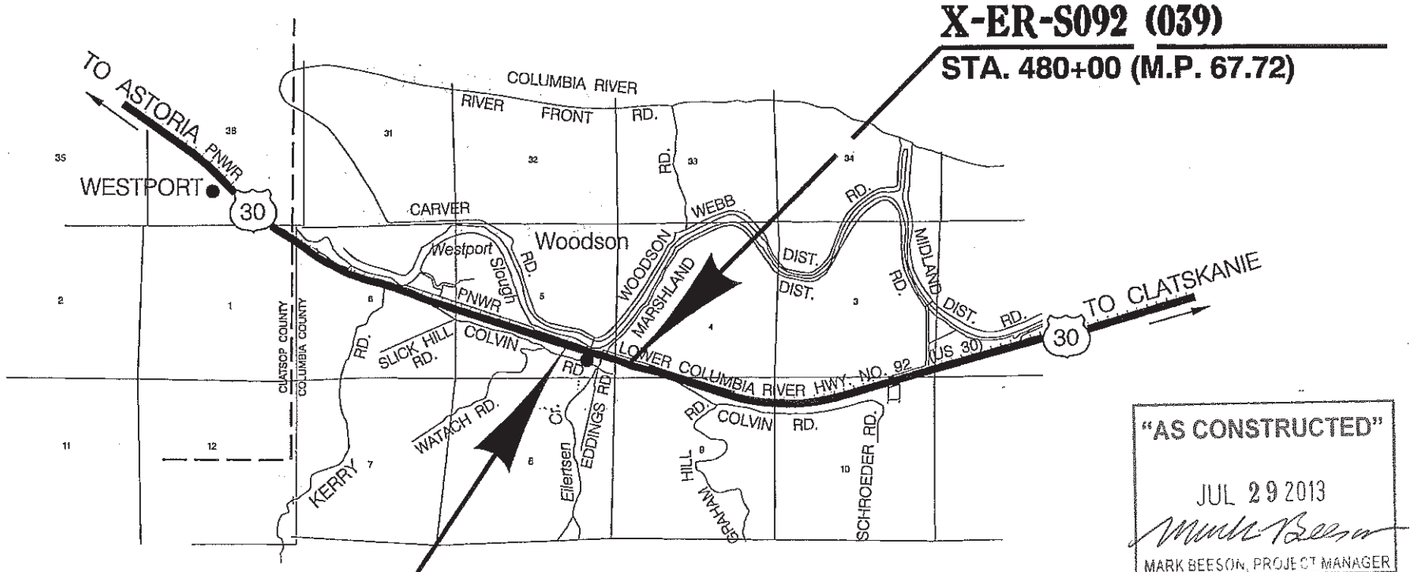
COLUMBIA COUNTY
FEBRUARY 2011



Overall Length Of Project – 0.27 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



END OF PROJECT
X-ER-S092 (039)
STA. 480+00 (M.P. 67.72)

BEGINNING OF PROJECT
X-ER-S092 (039)
STA. 466+00 (M.P. 67.99)

"AS CONSTRUCTED"
JUL 29 2013
MARK BEESON, PROJECT MANAGER

N

T. 7 N., R. 5 W., W.M.

OREGON TRANSPORTATION COMMISSION

Gail Achterman	CHAIR
Michael Nelson	VICE-CHAIR
Mary F. Olson	COMMISSIONER
Alan Brown	COMMISSIONER
David Lohman	COMMISSIONER
Matthew L. Garrett	DIRECTOR OF TRANSPORTATION

PLANS PREPARED FOR
ODOT
BY:
DAVID EVANS AND ASSOCIATES INC.
2100 Southwest River Parkway
Portland Oregon 97201 Ph: 503.223.6663

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: 12-09-10
Signature & date

JEFFREY PARKER - PROJECT MANAGER
Print name and title

Concurrence by ODOT Chief Engineer

US 30 @ EILERTSEN CREEK PROJECT
LOWER COLUMBIA RIVER HWY.
COLUMBIA COUNTY

FEDERAL HIGHWAY ADMINISTRATION	PROJECT NUMBER	SHEET NO.
OREGON DIVISION	X-ER-S092 (039)	1

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1/1198 001

PIPE 2007

SHEET NUMBER	NOTE NO. ON PLANS	① DESIGN HEIGHT OF COVER (FEET)	PIPE: CIRCULAR OR ELLIPTICAL — SIZE IN (Inches) 6 8 10 12 18 21 24 30 36 — LENGTH IN FEET	PIPE - ARCH: HELICAL RIVETED WELDED OR LOCK SEAM EQUIV. RND SIZE (In.)	PIPE - ARCH: LENGTH (Ft.)	PIPE - ARCH: CROSS - SECTIONAL DIMENSIONS ② SPAN (Ft-In.)	RISE (Ft-In.)	CORNER RADII (In.)	USE / INSTALLATION CRITERIA: DRAIN (PERFORATED)	CULVERT (ROAD APPROACH)	CULVERT (CONDUIT)	CULVERT	IRRIGATION	SIPHON	STORM SEWER	SANITARY SEWER	OTHERS (SEE REMARKS)	WATERTIGHT JOINTS	SLOPE ANCHORS	WATERLINE	PH	RESISTIVITY (HUNDREDS)	TERMINAL TREATMENT: LT/RT SLOPED ENDS Not for Conc. Pipe Over 60" Dia.	SKEW NUMBER	PAVED END SLOPES No.
3A-2	1	0.6	81									✓						✓			5.4	46			2
	2	1.5	33									✓						✓			4.9	35			2
	3	1.5	33									✓						✓			4.9	35			2
	4	0.1	71									✓						✓			5.4	46			2
	5	1.6	33									✓						✓			4.9	35			2
	6																								
	7	-1.1	45												✓			✓			5.4	46			
	26	0.8	50									✓						✓			5.4	46			2
3B	5		130						✓																
4A	1	-0.9	182												✓			✓			5.4	46			
	4	0.5	20												✓			✓			5.4	46			
GG	1	4.5	84									✓						✓			5.4	46			
	2		33									✓						✓			4.9	35			

ALTERNATE MATERIALS — HELICAL CORRUGATED METAL

ALUMINUM — SIZE OF CORRUGATIONS

SHEET NUMBER	RIVETED, WELDED OR LOCK SEAM 1-1/2"x1/4" PLATE THKN. (In.)	③ CROSS SECTION	2-2/3"x1/2" PLATE THKN. (In.)	③ CROSS SECTION	3"x1" PLATE THKN. (In.)	③ CROSS SECTION	⑤ COATING	LOCK SEAM SMOOTHWALL 3/4"x3/4" @ 7-1/2" O.C. or 3/4"x1" @ 11-1/2" O.C. PLATE THKN. (Inches)	SPIRAL RIB 5/8"x3/4" @ 12" O.C. PLATE THKN. (Inches)	③ CROSS SECTION	⑤ COATING
GG			0.060	R			U	0.060	0.075	R	U

ALUMINIZED OR GALVANIZED IRON AND STEEL — SIZE OF CORRUGATIONS

SHEET NUMBER	RIVETED, WELDED OR LOCK SEAM 1-1/2"x1/4" PLATE THKN. (In.)	③ CROSS SECTION	2-2/3"x1/2" PLATE THKN. (In.)	③ CROSS SECTION	3"x1" PLATE THKN. (In.)	③ CROSS SECTION	COATING ⑤ GALVANIZED	⑤ ALUMINIZED	LOCK SEAM SMOOTHWALL 3/4"x1/4" @ 7-1/2" O.C. or 3/4"x1" @ 11-1/2" O.C. PLATE THKN. (Inches)	SPIRAL RIB 5/8"x3/4" @ 12" O.C. PLATE THKN. (Inches)	③ CROSS SECTION	COATING ⑤ GALVANIZED	⑤ ALUMINIZED
GG			0.064	R				U	0.064	0.064	R		U

RIGID — PRE-CAST CONCRETE

SHEET NUMBER	④ PLAIN 1	2	3	REINF. III	IV	V
GG					✓	

SPECIAL

SHEET NUMBER	DUCTILE IRON	HDPE	SPECIAL - SEE COMMENTS
3A-2	✓		
4A	✓		
GG		✓	

APPURTENANCES — MANHOLES

SHEET NUMBER	DEPTH, TOP OF COVER TO INVERT (Feet)	DIAMETER OF LARGEST PIPE IN BASE (In.)	CONC. PRECAST	CAST-IN-PLACE	DROP MANHOLE	SPECIAL	CMP
4A	2.4	12	✓				

APPURTENANCES — INLETS

SHEET NUMBER	TYPE G-2	G-2 Open Grade HMAC	G-2M/A	Ditch Inlet - Type D	Number Required
3A-2				1	1
3A-2					1

EXTENSION

SHEET NUMBER	⑥ LEFT (Feet)	RIGHT	EXTG. PIPE MATERIAL

SHEET NUMBER	REMARKS
4A	Shallow Manhole
4A	Riprap Basin

44V-031

"AS CONSTRUCTED"
JUL 29 2013
MARK PEESON, PROJECT MANAGER

GENERAL NOTES:

1. A check (✓) indicates column heading applies.
2. A new pipe culvert installation shall be of like material throughout.
3. Extension of existing metal culverts may be of unlike metal or corrugations. For connecting details, see Standard Drg. No. RD326.
4. Dimensions shown are nominal.
5. All pipes shall conform to the AASHTO specification applicable for the type of material and the diameter of the pipe involved

FOOTNOTES:

① Design height of cover is the critical design height used to select pipe materials. The height of cover for any given run of pipe may vary. Design height of cover shall be measured to subgrade.

② Cross-sectional dimensions may vary with different materials. When galvanized iron or steel and aluminum are acceptable alternates use a separate line for each type of material.

③ Cross-sectional shape of pipe normal to longitudinal axis, prior to loading
A = Pipe - Arch
R = Round
E = Elliptical (5% nominal elongation)

④ Minimum allowable diameter for Class 1 nonreinforced concrete pipe is 15".

⑤ Abbreviations for protective coatings for metal pipe
PM = Polymeric, ¼" thkn. coated both sides
PO = Polyethylene inside lining, polymeric outside
U = Uncoated
CIM = Chevron industrial membrane
Ep = Epoxy coated

⑥ Abbreviations for existing pipe materials
AB = Asbestos cement
Al = Corrugated aluminum
Co = Concrete
Pl = Plastic
St = Corrugated steel
X = Other material, see remarks column

NOTE:
This is a list of the most common drainage Standard Drawings used on projects. It does not contain sanitary sewer drawings, nor does it contain the more unique drainage items. Consult the construction notes for all standard drawing references.

- ■ RD300 Trench Backfill, Bedding, Pipe Zone And Multiple Installations
- ■ RD302 Street Cut
- □ RD304 Arch Pipe Backfill/Compaction
- ■ RD312 Subsurface Drain
- □ RD314 Open Grade HMAC Drainage Details
- □ RD316 Sloped Ends For Metal Pipes
- □ RD318 Sloped Ends For Concrete Pipe
- ■ RD320 Paved End Slope For Culverts 5'-0" Maximum Pipe Size
- □ RD322 Safety End Section Metal Pipe
- □ RD324 Safety End Section Concrete Pipe
- □ RD326 Coupling Bands For Corrugated Metal Pipe
- □ RD328 Slotted C.M.P. Drain Details
- □ RD330 Metal Pipe Slope Anchors
- □ RD336 Standard Storm Sewer Manhole
- □ RD340 Storm Sewer Pollution Control Manhole
- ■ RD342 Shallow Manholes
- □ RD344 Standard 48" Diameter Manhole Base Section
- □ RD346 Large Precast Manhole
- □ RD348 Manhole With Inlet
- □ RD352 Outside Drop Manholes
- ■ RD356 Manhole Covers And Frames
- □ RD358 Manhole Slope Protectors
- □ RD360 Manhole Frame Adjustment
- ■ RD364 Concrete Inlets Types G-1, G-2 & G-2M
- □ RD366 Concrete Inlets Type CG-1, CG-2 And Curb Inlet Channel
- □ RD368 Concrete Inlets Type ME, M-O, B And B-SL
- □ RD370 Ditch Inlet Type D
- □ RD372 Concrete Inlets Type CG-3
- □ RD374 Area Drainage Basin Or Field Inlet
- □ RD376 Miscellaneous Drainage Structures Siphon Box & Inlet Adj. Cap
- □ RD380 Fill Height Table - Alum. & Steel Corrugated
- □ RD382 Fill Height Table - Alum. & Steel Pipe Arch
- □ RD384 Fill Height Table - Alum. & Steel Spiral Rib Pipe
- □ RD386 Fill Height Table - Concrete Pipe

REGISTERED PROFESSIONAL ENGINEER 58552 OREGON JULY 21, 1998 CHRISTINE J. HIGGINS
EXPIRES 06-30-11

OREGON DEPARTMENT OF TRANSPORTATION

DAVID EVANS AND ASSOCIATES INC.
2100 Southwest River Parkway
Portland Oregon 97201 Ph: 503.223.6663

US 30 @ EILERTSEN CREEK PROJECT
LOWER COLUMBIA RIVER HWY.
COLUMBIA COUNTY

Reviewed By CH
Designed By - Korina Nordahl
Drafted By - Edita Boguslawski/Mike Youngs

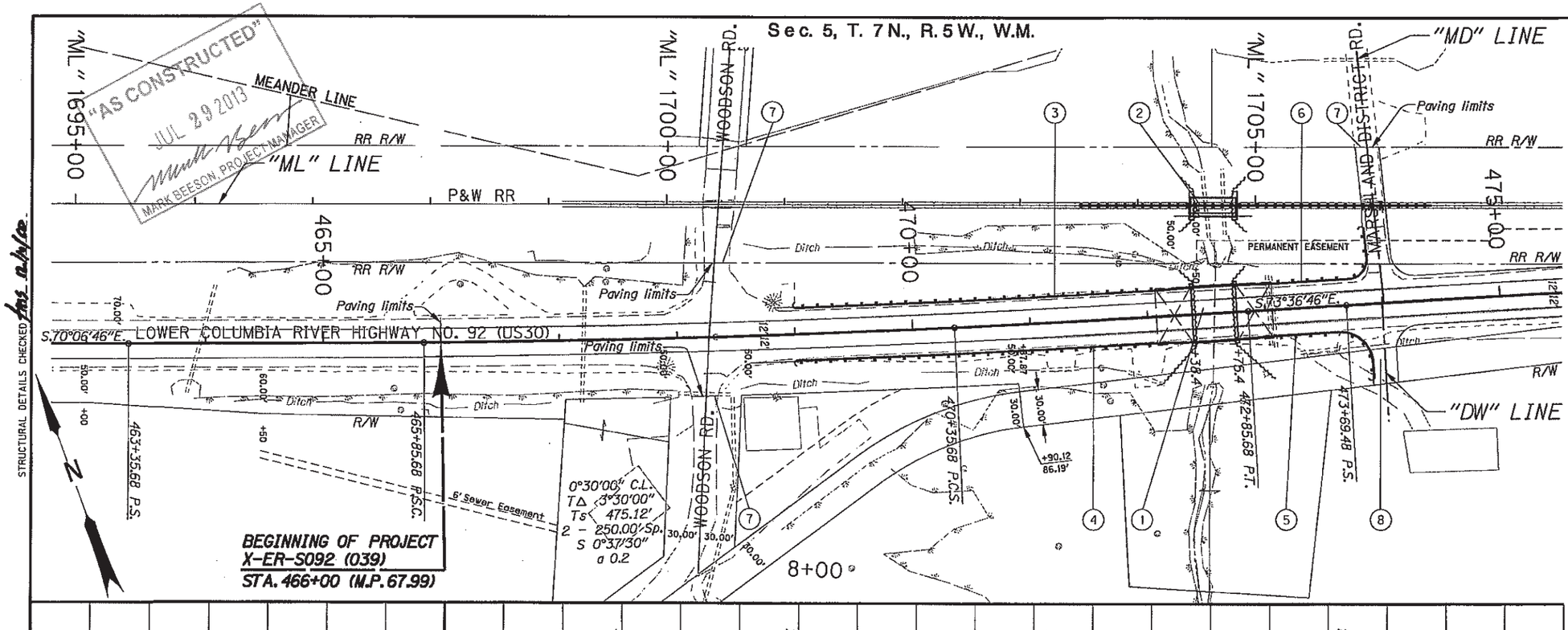
PIPE DATA SHEET

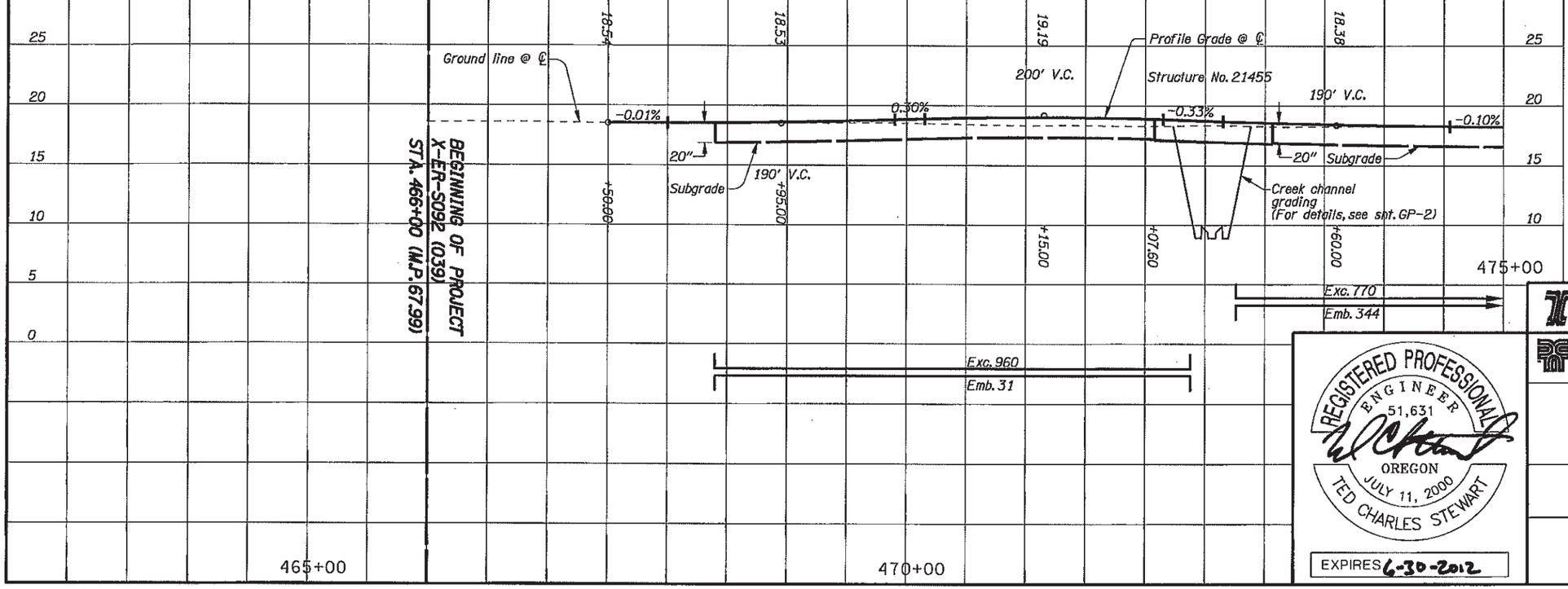
SHEET NO. 2D

STRUCTURAL DETAILS CHECKED Not Applic.

Sec. 5, T. 7N., R. 5W., W.M.

44V-031





1. Structure no. 21455
   Remove extg. 8'x6' box culvert
   Const. structure – 37'
   Rdwy. width 45'–4"
   and reinf. panel at bridge ends
   (For drg. nos., see sht. 1A)
2. Structure no. 21454
   Remove pipes – (2–60" CMP)
   Const. structure – 37'
   (For drg. nos., see sht. 1A)
3. Sta. 469+01 to Sta. 472+07, Lt.
   Const. guardrail – 237.5' (Type 2A)
   Const. guardrail – 12.5' (Type 3)
   Const. guardrail terminal, non–flared
   Test level 3
   Const. guardrail to bridge transition
   (See drg. nos. RD400, RD405, RD410, RD415, RD420, RD440 & BR203)
4. Sta. 469+01 to Sta. 472+07, Rt.
   Const. guardrail – 237.5' (Type 2A)
   Const. guardrail – 12.5' (Type 3)
   Const. guardrail terminal, non–flared
   Test level 3
   Const. guardrail to bridge transition
5. Sta. 473+06 to Sta. 473+94, Rt.
   Const. guardrail – 37.5' (Type 2A)
   Const. guardrail – 43.8' (Type 2A, mod.)
   Const. guardrail – 12.5' (Type 3)
   Const. anchor (Type 1, mod.)
   Const. anchor (Type 5)
   Const. guardrail to bridge transition
   (See drg. no. RD450)
   (For details, see shts. 2B–3 & 2B–4)
6. Sta. 473+06 to Sta. 473+88, Lt.
   Const. guardrail – 31.3' (Type 2A)
   Const. guardrail – 31.3' (Type 2A, mod.)
   Const. guardrail – 12.5' (Type 3)
   Const. guardrail terminal, non–flared
   Test level 2
   Const. anchor (Type 1, mod.)
   Const. guardrail to bridge transition
   (For details, see sht. 2B–3)
7. Const. street connection
   (For details, see sht. 2B–2)
8. Const. appr.
   (For details, see sht. 2B–2)

OREGON DEPARTMENT OF TRANSPORTATION

DAVID EVANS AND ASSOCIATES INC.
2100 Southwest River Parkway
Portland Oregon 97201 Ph: 503.223.6663

REGISTERED PROFESSIONAL ENGINEER
51,631
OREGON
JULY 11, 2000
TED CHARLES STEWART
EXPIRES 6-30-2012

US 30 @ EILERTSEN CREEK PROJECT
LOWER COLUMBIA RIVER HWY.
COLUMBIA COUNTY

Reviewed By - DYH
Designed By - Ted Stewart
Drafted By - Mike Youngs

ALIGNMENT AND GENERAL CONSTRUCTION

SHEET NO. 3

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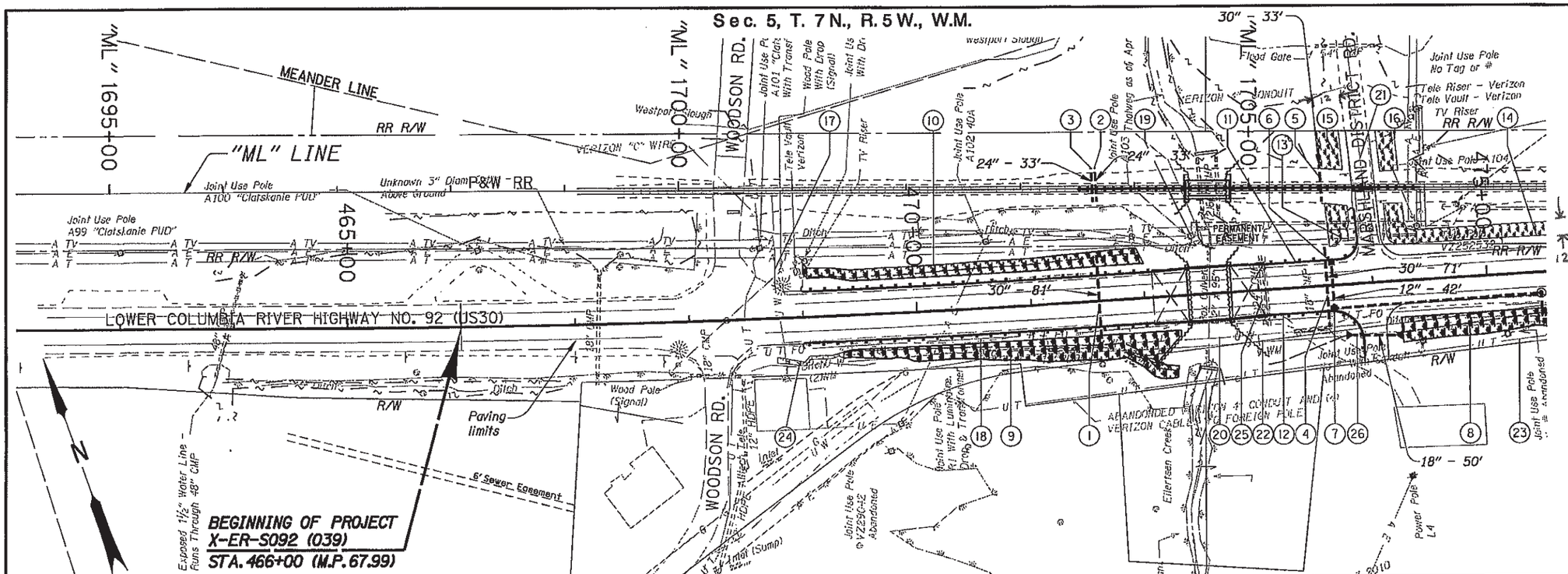
44V-031

Sec. 5, T. 7N., R. 5W., W.M.



Filter strip Laid out Based on x-sections Approx. Toe of Slope Min. 12'

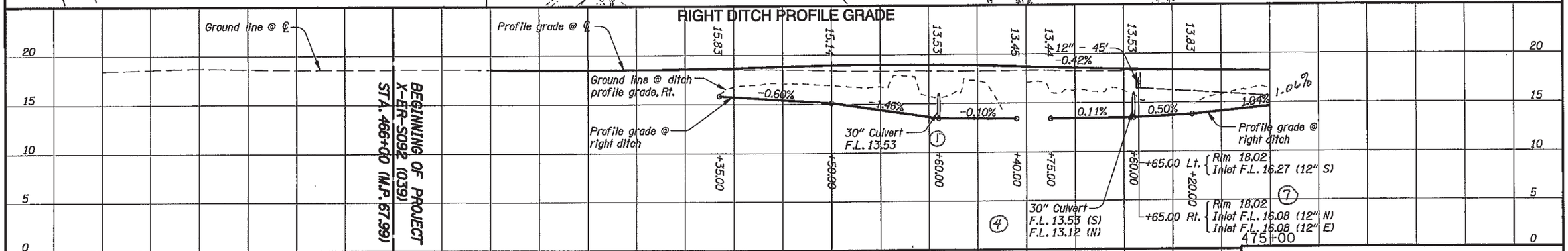
"AS CONSTRUCTED"
JUL 29 2013
MARK BEESON, PROJECT MANAGER

Ordinary high water line shown thus: — ~ — ~ —

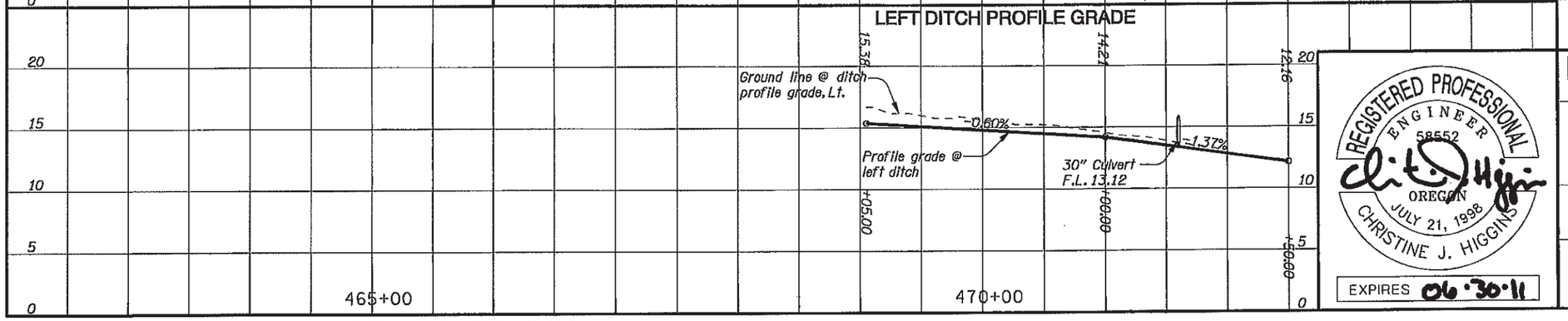
Abandon extg. storm sew. pipe shown thus:

Note: Utility engineering performed by Convergent Pacific.

RIGHT DITCH PROFILE GRADE



LEFT DITCH PROFILE GRADE



REGISTERED PROFESSIONAL ENGINEER
58552
OREGON
JULY 21, 1998
CHRISTINE J. HIGGINS
EXPIRES 06-30-11

OREGON DEPARTMENT OF TRANSPORTATION

DAVID EVANS AND ASSOCIATES INC.
2100 Southwest River Parkway
Portland Oregon 97201 Ph: 503.223.6663

US 30 @ EILERTSEN CREEK PROJECT
LOWER COLUMBIA RIVER HWY.
COLUMBIA COUNTY

Reviewed By - CPH
Designed By - Korma Nordahl
Drafted By - Edita Baguslawski/Mike Youngs

DRAINAGE AND UTILITIES

SHEET NO. 3A

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(1) Sta. 471+60.00, 39.90' Rt. to 40.50' Lt.
Inst. 30" culv. pipe - 81'
5' depth
Const. paved end slopes Lt. and Rt. - 94 SF
(See drg. nos. RD300 & RD320)

(2) Sta. 471+60.00, 86.90' Lt. to 116.80' Lt.
Inst. 24" culv. pipe - 33'
5' depth
F.L. 12.34 (24" S)
F.L. 12.18 (24" N)
Const. paved end slopes Lt. - 74 SF

(3) Sta. 471+63.00, 86.90' Lt. to 116.80' Lt.
Inst. 24" culv. pipe - 33'
5' depth
F.L. 12.34 (24" S)
F.L. 12.18 (24" N)
Const. paved end slopes Lt. - 74 SF

(4) Sta. 473+60.00, 36.10' Lt. to 34.10' Lt.
Inst. 30" ductile iron pipe - 71'
5' depth
Const. paved end slopes Lt. & Rt. - 94 SF (1)

(5) Sta. 473+60.00, 74.00' Lt. to 106.20' Lt.
Inst. 30" culv. pipe - 33'
5' depth
F.L. 11.34 (30" S)
F.L. 11.18 (30" N)
Const. paved end slopes Lt. - 94 SF

(6) Sta. 473+65.00, Lt.
Const. type "G-2" inlet
(See drg. no. RD364)

(7) Sta. 473+65.00, Rt.
Const. type "G-2" inlet
Inst. 12" ductile iron pipe - 42'
5' depth
(See drg. no. RD300)

(8) Sta. 474+23.55 Rt. to Sta. 475+50.00 Rt.
Const. biofiltration swale - 42.9 Cu.Yd.
Inst. delineators, type S1-2
Inst. delineators, type S2-2
(For details, see shts. GJ & GJ-2)

(9) Sta. 469+35.00 Rt. to Sta. 472+33.72 Rt.
Const. biofiltration swale - 96.9 Cu.Yd.
Inst. delineators, type S1
Inst. delineators, type S2
(For details, see shts. GJ & GJ-2)

(10) Sta. 469+05.00 Lt. to Sta. 472+07.00 Lt.
Const. biofiltration swale - 59.3 Cu.Yd.
Inst. delineators, type S1-2
(For details, see sht. GJ & GJ-2)

(11) Sta. 473+06.94 Lt. to Sta. 473+67.00 Lt.
Inst. drainage curb - 60'
(See drg. no. RD701)

(12) Sta. 473+06.92 Rt. to Sta. 473+67.00 Rt.
Inst. drainage curb - 60'

(13) Sta. "MD" 11+29.00 Rt. to Sta. "MD" 11+75.00 Rt.
Const. filter strip - 11.2 Cu.Yd.
Inst. delineators, Type S1
(For details, see shts. GJ & GJ-2)

(14) Sta. "MD" 11+34.50 Lt. to Sta. 475+69.50 Lt.
Const. filter strip - 41.3 Cu.Yd.
Inst. delineators, type S1
(For details, see sht. GJ & GJ-2)

(15) Sta. "MD" 10+97.50 Rt. to Sta. "MD" 10+64.50 Rt.
Const. filter strip - 11.9 Cu.Yd.
Inst. delineators, type S1
(For details, see sht. GJ & GJ-2) (1)

(16) Sta. "MD" 11+03.60 Lt. to Sta. "MD" 10+77.50 Lt.
Const. filter strip - 10.6 Cu.Yd.
Inst. delineators, type S1 (1)
(For details, see shts. GJ & GJ-2)

(17) Protect extg. waterline

(18) Relocate fiber optics line (by others)

(19) Relocate power pole (by others)

(20) Abandon waterline

(21) Abandon communication line

(22) Relocate gas line (by others)

(23) Abandon communication line

(24) Sta. 468+76.34 Rt. to Sta. 469+35.00 Rt.
Const. filter strip - 4 Cu.Yd.
Inst. delineators, type S1
Inst. delineators, type S2
(For details, see sht. GJ & GJ-2)

(25) Salvage and stockpile 24 inch pipe - 120'

(26) Sta. 473+74.00, 44.42 Rt. to Sta. 474+23.55, 46.88 Rt.
Inst. 18" culv. pipe - 50'
5' depth
Const. paved end slopes Rt. - 88 SF (1)

"AS CONSTRUCTED"
JUL 29 2013
MARK BEESON, PROJECT MANAGER

Revisions
(1) Revised 1-24-2011 Changed quantity of delineators, clarified paved end slopes

REGISTERED PROFESSIONAL ENGINEER
58552
OREGON
JULY 21, 1998
CHRISTINE J. HIGGINS
EXPIRES: 12-30-11

OREGON DEPARTMENT OF TRANSPORTATION

DAVID EVANS AND ASSOCIATES INC.
2100 Southwest River Parkway
Portland Oregon 97201 Ph: 503.223.6663

US 30 @ EILERTSEN CREEK PROJECT
LOWER COLUMBIA RIVER HWY.
COLUMBIA COUNTY

Reviewed By -
Designed By - Karina Nardahl
Drafted By - Edita Bagustawski/Mike Youngs

DRAINAGE AND UTILITY NOTES

SHEET NO. 3A-2

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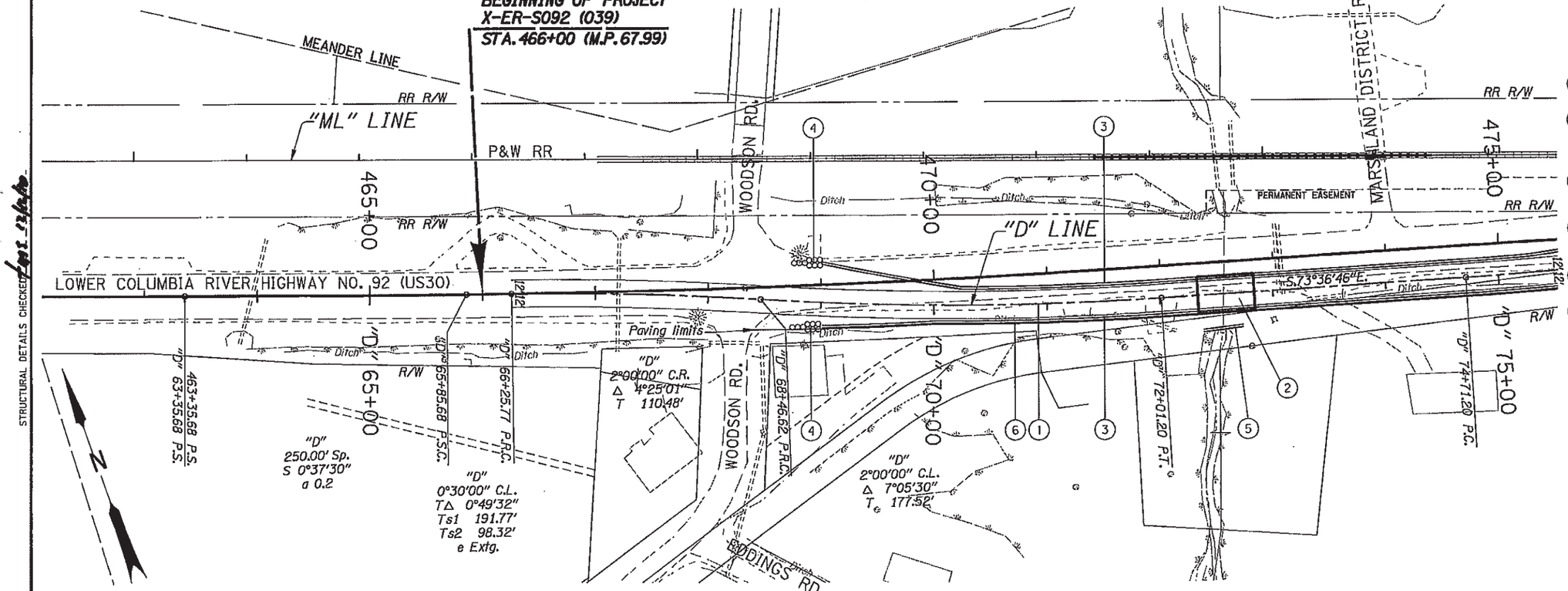
44V-031

STRUCTURAL DETAILS CHECKED

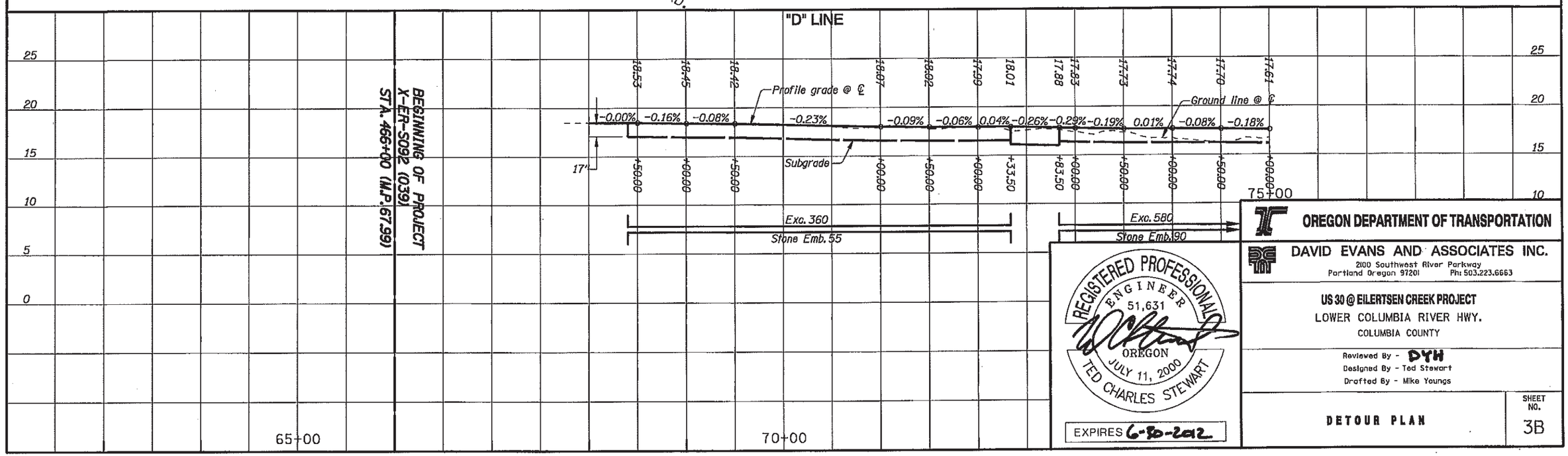
Sec. 5, T. 7N., R. 5W., W.M.

BEGINNING OF PROJECT
X-ER-S092 (039)
STA. 466+00 (M.P. 67.99)



1. Const. detour
   Remove detour
2. Sta. "D" 72+33.5 to Sta. "D" 72+83.5
   Const. detour structure – 50'
   Rdwy. width – 28'
   Remove detour structure
3. Const. temp. conc. barrier
   Remove temp. conc. barrier
   (For details, see traffic control plans)
4. Const. temp. impact attenuator
   Remove temp. impact attenuator
   (For details, see traffic control plans)
5. Const. containment shoring
   (For bridge drg. nos., see sht. 1A)
6. Sta. "D" 69+80.0 To Sta. "D" 71+10.0, rt.
   Inst. 6" subsurface drain pipe – 130'
   Inst. 6" subsurface drain outlet – 2
   (See drg. no. RD312)

"AS CONSTRUCTED"
JUL 29 2013
MARK BEESON, PROJECT MANAGER



BEGINNING OF PROJECT
X-ER-S092 (039)
STA. 466+00 (M.P. 67.99)

REGISTERED PROFESSIONAL ENGINEER
51,631
OREGON
JULY 11, 2000
TED CHARLES STEWART
EXPIRES 6-30-2012

OREGON DEPARTMENT OF TRANSPORTATION

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2100 Southwest River Parkway
Portland Oregon 97201 Ph: 503.223.6663

US 30 @ EILERTSEN CREEK PROJECT
LOWER COLUMBIA RIVER HWY.
COLUMBIA COUNTY

Reviewed By - DYH
Designed By - Ted Stewart
Drafted By - Mike Youngs

DETOUR PLAN

SHEET NO. 3B

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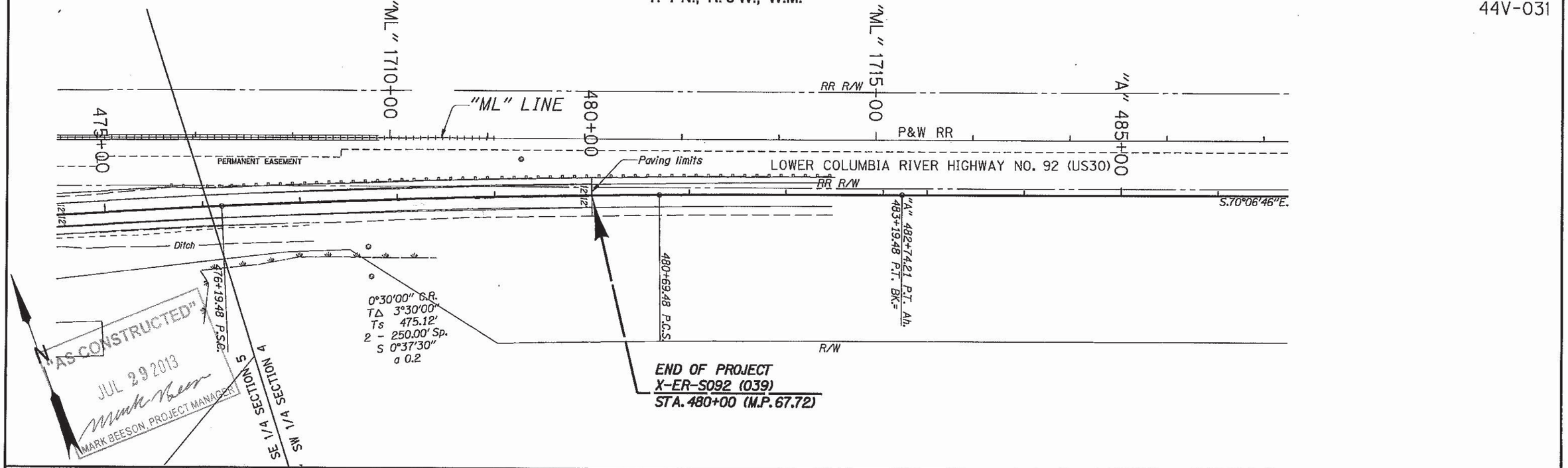
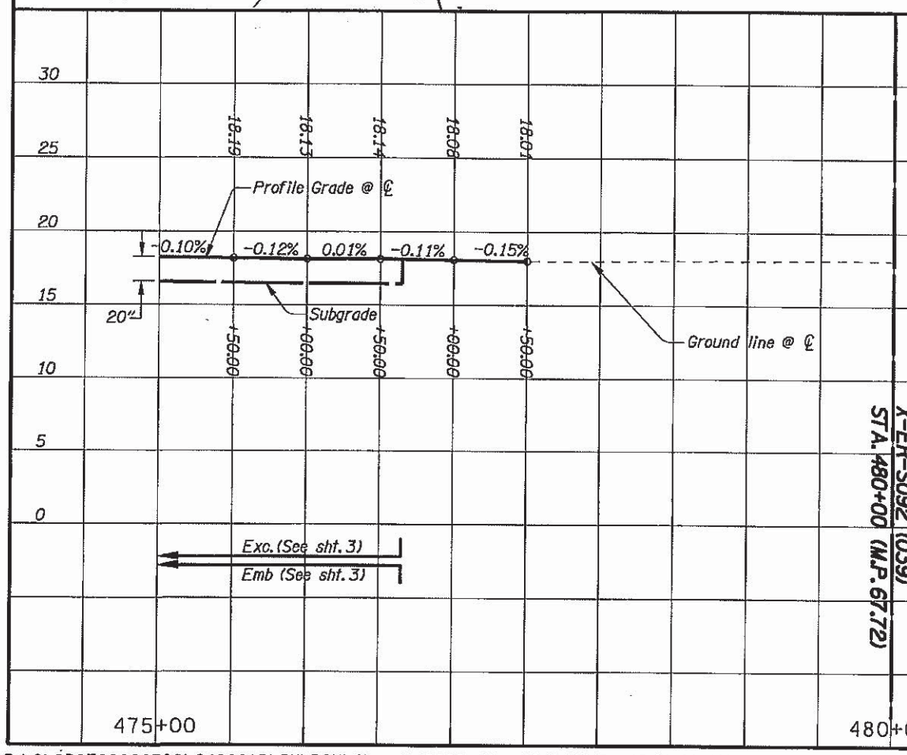
T. 7 N., R. 5 W., W.M.

44V-031





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EXPIRES 6-30-2012

OREGON DEPARTMENT OF TRANSPORTATION

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US 30 @ EILERTSEN CREEK PROJECT
LOWER COLUMBIA RIVER HWY.
COLUMBIA COUNTY

Reviewed By - DYH
Designed By - Ted Stewart
Drafted By - Mike Youngs

ALIGNMENT AND GENERAL CONSTRUCTION

SHEET NO. 4

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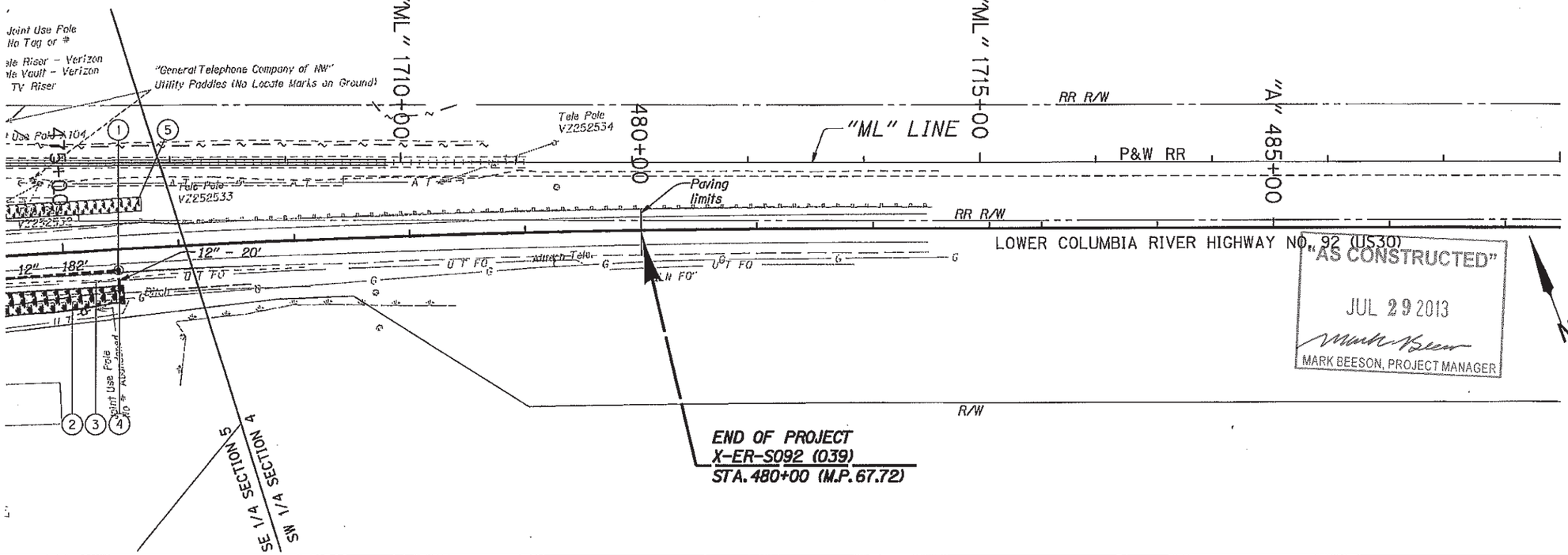
T. 7 N., R. 5 W., W.M.

44V-031

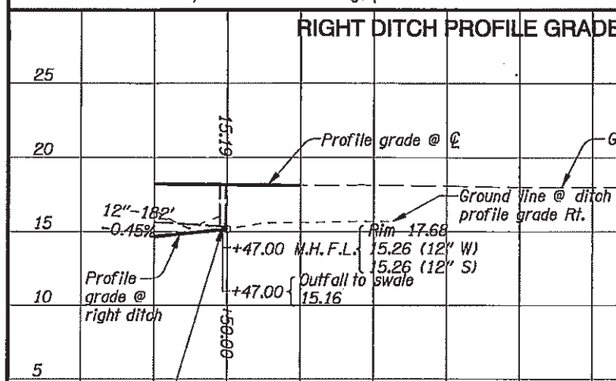


1. Sta. 475+47.00, 18.19' Rt.
   Const. shallow manhole
   Inst. 12" ductile iron pipe - 182'
   5' depth
   (See drg. no. RD342)
2. Relocate gas line (by others)
3. Relocate fiber optics line (by others)
4. Sta. 475+47.00, 38.71' Rt.
   Const. riprap basin
   Inst. 12" storm sew. pipe - 20'
   5' depth
   (For details, see sht. GJ)
5. See sht. 3A, note 14

Ordinary high water line shown thus: — ~ — ~ —

Note:
Utility engineering performed by Convergent Pacific.

RIGHT DITCH PROFILE GRADE



REGISTERED PROFESSIONAL ENGINEER
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OREGON
JULY 21, 1998
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US 30 @ EILERTSEN CREEK PROJECT
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COLUMBIA COUNTY

Reviewed By - CJH
Designed By - Korina Nordahl
Drafted By - Edita Boguslawski/Mike Youngs

DRAINAGE AND UTILITIES

SHEET NO. 4A

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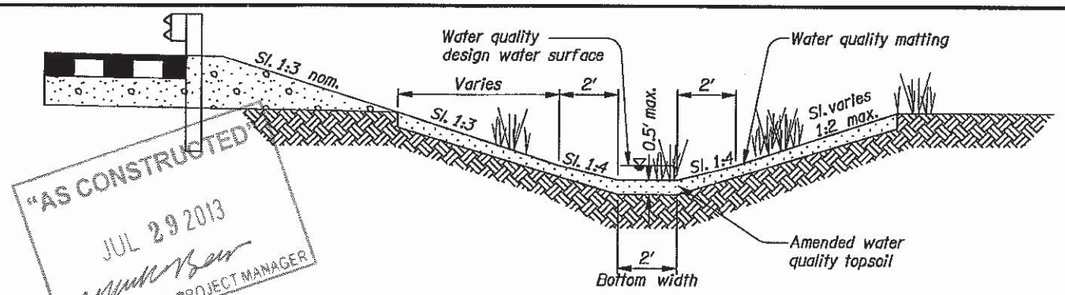
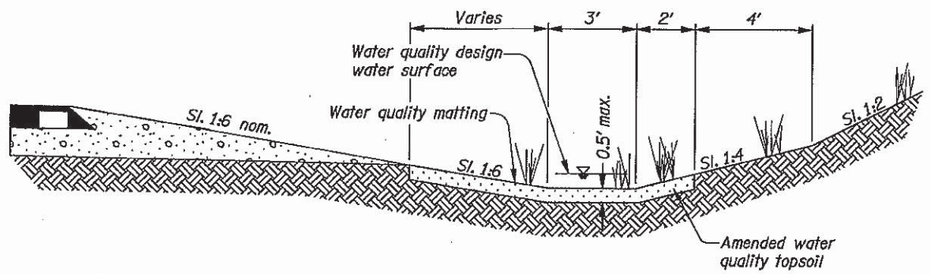
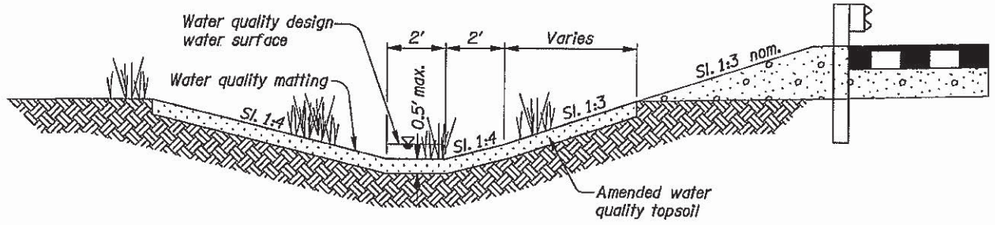


"AS CONSTRUCTED"
JUL 29 2013
MARK BERGER PROJECT MANAGER

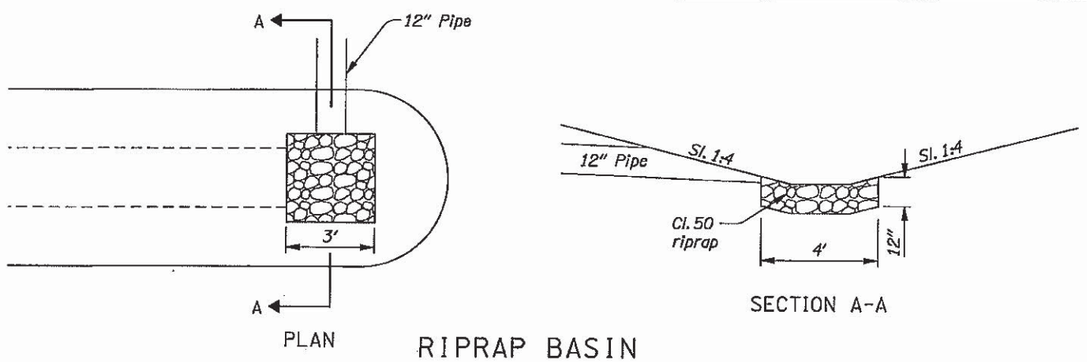
WATER QUALITY BIOFILTRATION SWALE CROSS SECTION
STA. 469+35.00 RT. To STA. 472+33.72 RT.



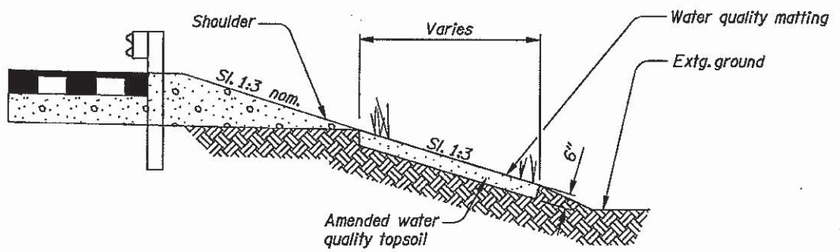
WATER QUALITY BIOFILTRATION SWALE CROSS SECTION
STA. 474+23.55 RT. To STA. 475+50.00 RT.



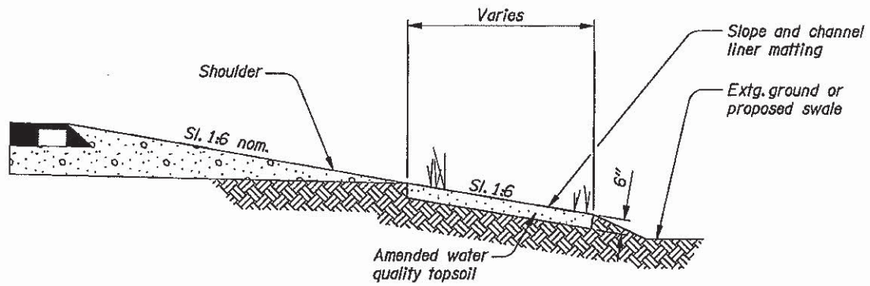
WATER QUALITY BIOFILTRATION SWALE CROSS SECTION
STA. 469+05.00 LT. To STA. 472+07.00 LT.



RIPRAP BASIN



WATER QUALITY FILTER STRIP
STA. 468+76.34 RT. To STA. 469+35.00 RT.
STA. "MD" 11+29.00 RT. To STA. "MD" 11+75.00 RT.



WATER QUALITY FILTER STRIP
STA. "MD" 11+34.50 LT. To STA. 475+69.50 LT.
STA. "MD" 10+97.50 RT. To STA. "MD" 10+64.50 RT.
STA. "MD" 11+03.60 LT. To STA. "MD" 10+64.50 RT.

REGISTERED PROFESSIONAL ENGINEER
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Reviewed By - CH
Designed By - Karina Nordahl
Drafted By - Edita Bogusiawski/Mike Youngs

DRAINAGE DETAILS

SHEET NO. GJ

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