OPERATION & MAINTENANCE MANUAL

DFI No.: D00115
Facility Type: Water Quality Biofiltration Swale

JUNE 2011

INDEX

1. Identification

Drainage Facility ID (DFI):	**D00115**
Facility Type:	Water Quality Biofiltration Swale
Construction Drawings:	(V-File Number) 33V-100
Location:	District: 2B (Old 2A)
	Highway No.: 047
	Mile Post: 70.92/70.95 (beg./end)
	Description: This facility is located south of US 26 (Hwy 047) between the eastbound on-ramp from S.W. Canyon Road to US 26 (Hwy 047) and S.W. Raab Road just west of S.W. 64th Avenue. Access would be from the south side of the swale from SW Raab Road.

2. Facility Contact Information

Contact the Engineer of Record, Region Technical Center, or Geo-Environmental's Senior Hydraulics Engineer for:

- Operational clarification
- Maintenance clarification
- Repair or restoration assistance

Engineering Contacts:

Region Technical Center Hydro Unit Manager

Or

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

3. Construction

Engineer of Record:	ODOT Designer – Region 1 Tech. Center, Bruce Council, P.E., (503) 731-8319
Facility construction:	2000
Contractor:	Mowat Construction Company

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.

The facility is located south of US26 (Hwy 047) between the eastbound on-ramp from SW Canyon Road to US26 (Hwy 047) and SW Raab Road just west of SW 64th Avenue. The drainage basin for this facility includes the eastbound on-ramp to US26 (Hwy 047), and a portion of US 26 (Hwy 047) immediately north and east of the facility.

The swale is an off-line facility where the water quality flow is diverted from the primary conveyance and directed to the swale through a 12-inch storm pipe. The flow is diverted with a high-low split flow manhole structure approximately 20 feet north of the facility (within the eastbound on-ramp to US26) (point B on Operational Plan).

After treatment through the swale, which is approximately 184 feet long, the water is directed into a 12-inch storm pipe, passing underneath the swale. This 12-inch storm pipe directs all flow back into the main 12-inch conveyance piping system, west of the facility.

This swale facility is lined with grass over HDPE porous pavers (Refer to the Operational Plan for details.)

A. Maintenance equipment access:
   The facility can be accessed directly from S.W. Raab Road (Photo 1; point H on the Operational Plan).

B. Heavy equipment access into facility:

   ☒ Allowed (no limitations)
   ☐ Allowed (with limitations)
   ☐ Not allowed

C. Special Features:

   ☒ Amended Soils – Top Soil
   ☒ Porous Pavers – HDPE Porous Pavers
   ☐ Liners
   ☒ Underdrains

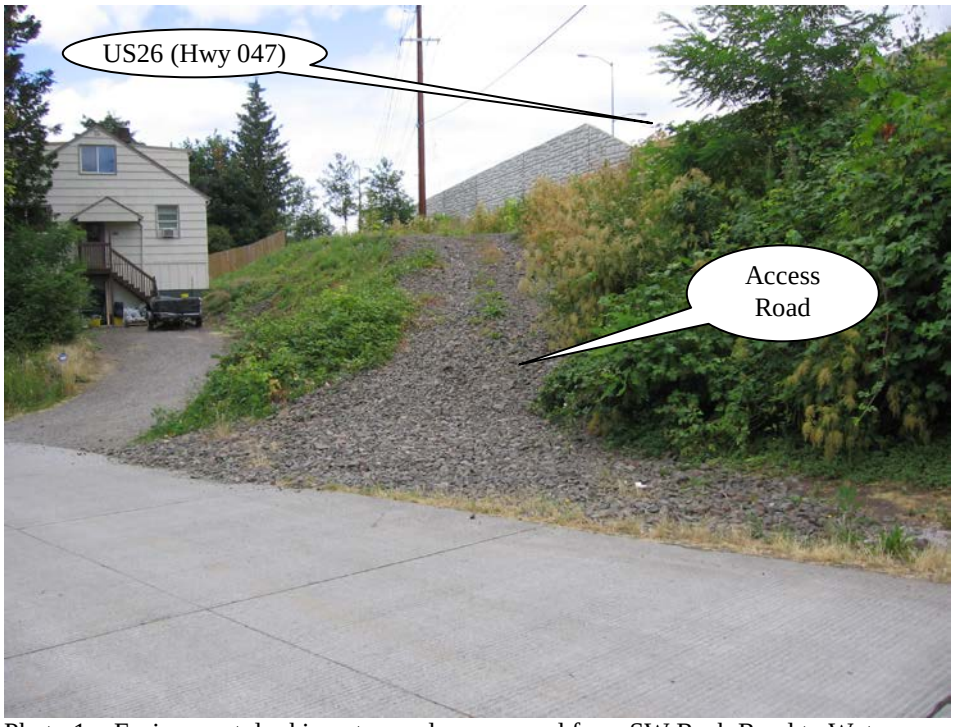


Photo 1: Facing west, looking at gravel access road from SW Raab Road to Water Quality Biofiltration Swale (DFI D00115) (point H on Operational Plan.).

Photo 2: Ditch inlet at swale outlet.

Photo 3: Outfall of 12-inch diameter pipe at swale inlet south of split flow manhole.

Photo 4: Overview of water quality biofiltration swale (DFI D00115.). Looking eastward with US26 (Hwy 047) behind the wall on the left.

Photo 5: On-ramp from SW Canyon Road to eastbound lanes of US26 (Hwy 047.) Looking west, the water quality manhole is shown in the foreground. The split flow manhole is seen in the background.

5. Facility Haz Mat Spill Feature(s)

The water quality biofiltration swale can be used to store a volume of liquid by blocking the 12-inch diameter outlet pipe located at the outlet of the water quality biofiltration swale. This pipe is noted as point D in the Operational Plan and shown in Photo 2.

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

☒ Other, as noted below
Only water quality flows are directed into this swale.

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:

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

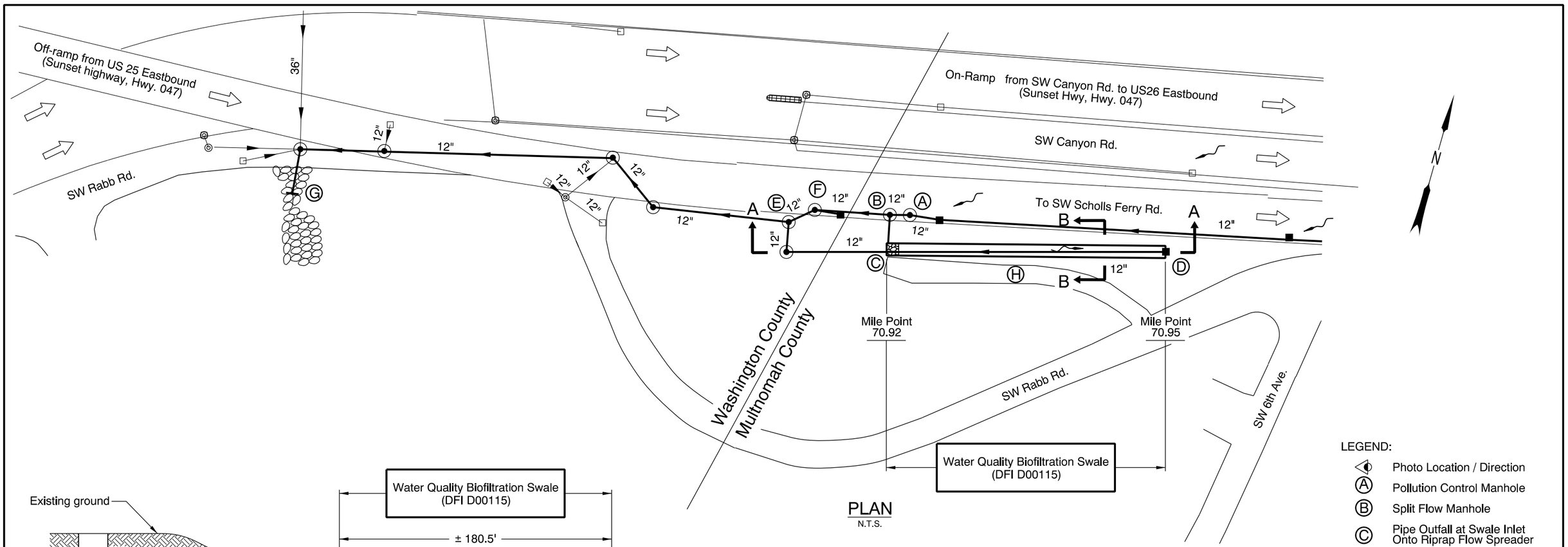
Contact any of the following for more detailed information about management of waste materials found on site:

ODOT Clean Water Unit	(503) 986-3008
ODOT Statewide Hazmat Coordinator	(503) 229-5129
ODOT Region Hazmat Coordinator	(503) 731-8304
ODEQ Northwest Region Office	(503) 229-5263

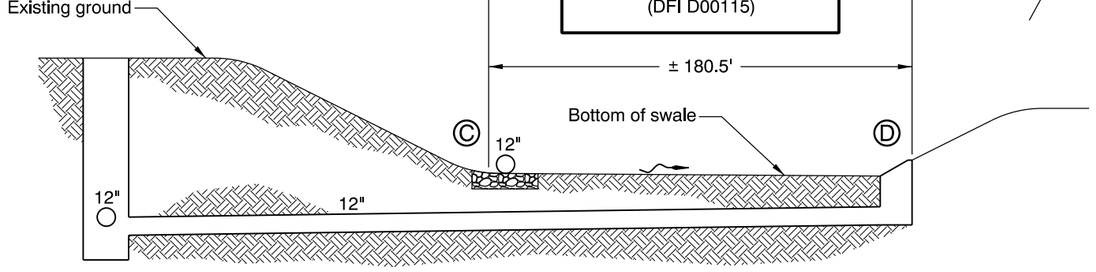
Appendix A

Content:

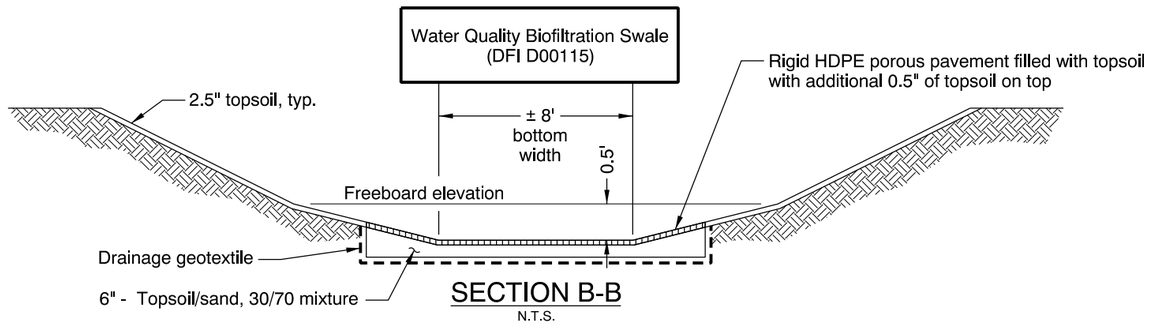
- **Operational Plan and Profile Drawing(s)**



PLAN
N.T.S.



SECTION A-A
N.T.S.



SECTION B-B
N.T.S.

LEGEND:

- Photo Location / Direction
- Pollution Control Manhole
- Split Flow Manhole
- Pipe Outfall at Swale Inlet Onto Riprap Flow Spreader
- Inlet Culvert at Swale Outlet
- Drop Manhole
- Drop Manhole
- Pipe Outfall to Sylvan Creek
- Access Rd.
- Manhole
- Inlet
- Traffic Flow/Direction
- Storm Pipe (Facility)
- Storm Pipe
- Conveyance Direction
- Pavement / Facility Flow Path
- Riprap
- Concrete Barrier

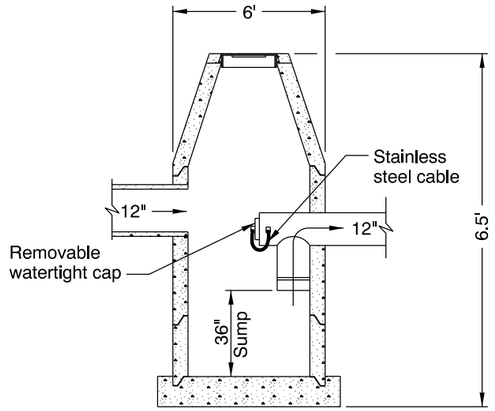
Sht. 1 of 2

OREGON DEPARTMENT OF TRANSPORTATION

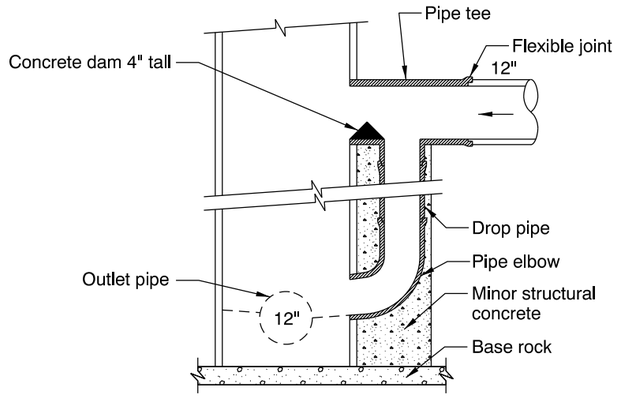
Prepared By: Wynee Hu

Drafted By: Mathew Bunde

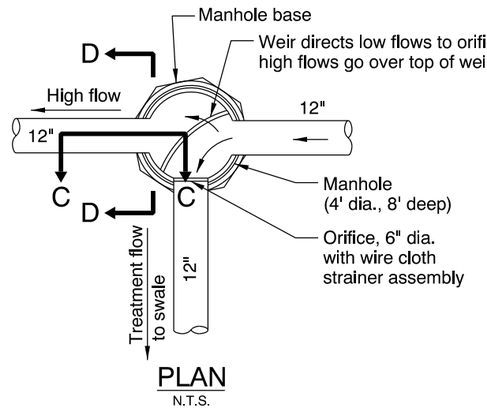
DFI D00115
MAINTENANCE DISTRICT 2B HWY 047
WATER QUALITY BIOFILTRATION SWALE
SUNSET HIGHWAY MP 70.92-70.95
MULTNOMAH COUNTY



POLLUTION CONTROL MANHOLE
FOR WATER QUALITY
BIOFILTRATION SWALE AT POINT Ⓐ
N.T.S.



DROP MANHOLE
FOR WATER QUALITY
BIOFILTRATION SWALE AT POINT Ⓔ
N.T.S.



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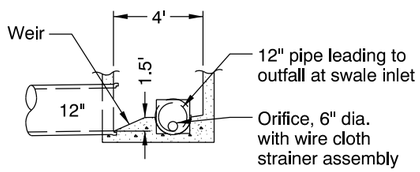
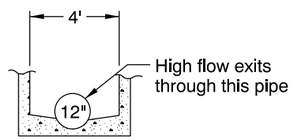
N.T.S.



SECTION C-C
N.T.S.



SECTION D-D
N.T.S.

SPLIT FLOW MANHOLE
FOR WATER QUALITY
BIOFILTRATION SWALE AT POINT Ⓑ
N.T.S.

LEGEND:

- Photo Location / Direction
- Ⓐ Pollution Control Manhole
- Ⓑ Split Flow Manhole
- Ⓒ Pipe Outfall at Swale Inlet Onto Riprap Flow Spreader
- Ⓓ Inlet Culvert at Swale Outlet
- Ⓔ Drop Manhole
- Ⓕ Drop Manhole
- Ⓖ Pipe Outfall to Sylvan Creek
- Ⓗ Access Rd.
- ◉ and/or ◎ Manhole
- ■ and/or □ Inlet
- Traffic Flow/Direction
- Storm Pipe (Facility)
- Storm Pipe
- Conveyance Direction
- Pavement / Facility Flow Path

Sht. 2 of 2

OREGON DEPARTMENT OF TRANSPORTATION

Prepared By: Wynee Hu

Drafted By: Mathew Bunde

DFI D00115
MAINTENANCE DISTRICT 2B HWY 047
WATER QUALITY BIOFILTRATION SWALE
SUNSET HIGHWAY MP 70.92-70.95
MULTNOMAH COUNTY

Appendix B

Content:

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

INDEX OF SHEETS	
SHEET NO.	DESCRIPTION
1	Title Sheet
1A	Index Of Sheets
1A-2	Index Of Sheets Cont'd.
1A-3	Standard Drawing Nos.
2, 2A Thru 2A-18 Incl.	Typical Sections
2B Thru 2B-11 Incl.	Details
2C Thru 2C-8 Incl.	Traffic Control Plans
2CA-1 Thru 2CA-27 Incl.	Traffic Control Plans - Pointer Road Work Area
2CB-1 Thru 2CB-22 Incl.	Traffic Control Plans - South Side Work Area
2CC-1 Thru 2CC-61 Incl.	Traffic Control Plans - Sylvan Work Area
2D Thru 2D-9 Incl.	Water Quality Plans
2E Thru 2E-15 Incl.	Erosion Control Plans
2F	Hazardous Material Remediation Plans
2G Thru 2G-6 Incl.	Pipe Data
3	Alignment & All Construction
4	Alignment
4A	Right Of Way
4B, 4B-2	General Construction Plans
4C, 4C-2	Drainage Plans
4D, 4E	Profiles
5	Alignment
5A	Right Of Way
5B, 5B-2	General Construction Plans
5C	Drainage Plan
5D, 5E	Profiles
6	Alignment
6A	Right Of Way
6B, 6B-2	General Construction Plans
6C	Detour Plan
6D, 6D-2	Drainage Plans
6E, 6F, 6G, 6H, 6J	Profiles
7	Alignment
7A	Right Of Way
7B, 7B-2	General Construction Plans
7C	Detour Plan
7D, 7D-2	Drainage Plans
7E, 7F, 7G, 7H	Profiles
8	Alignment
8A	Right Of Way
8B, 8B-2	General Construction Plans
8C, 8C-2	Drainage Plans
8D, 8E, 8F	Profiles
9	Alignment
9A	Right Of Way
9B, 9B-2	General Construction Plans
9C	Detour Plan
9D, 9D-2	Drainage Plans

STATE OF OREGON

DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED PROJECT

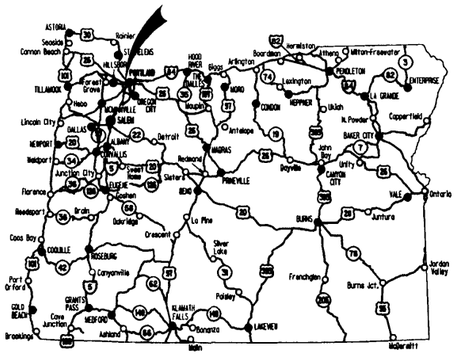
GRADING, STRUCTURES, PAVING, SIGNING, ILLUMINATION, SIGNALS, ROADSIDE DEVELOPMENT & UTILITY RELOCATIONS

CAMELOT INTCHGE. - SYLVAN INTCHGE. (PHASE 2) SEC.

SUNSET HIGHWAY

MULTNOMAH & WASHINGTON COUNTIES

OCTOBER 2000

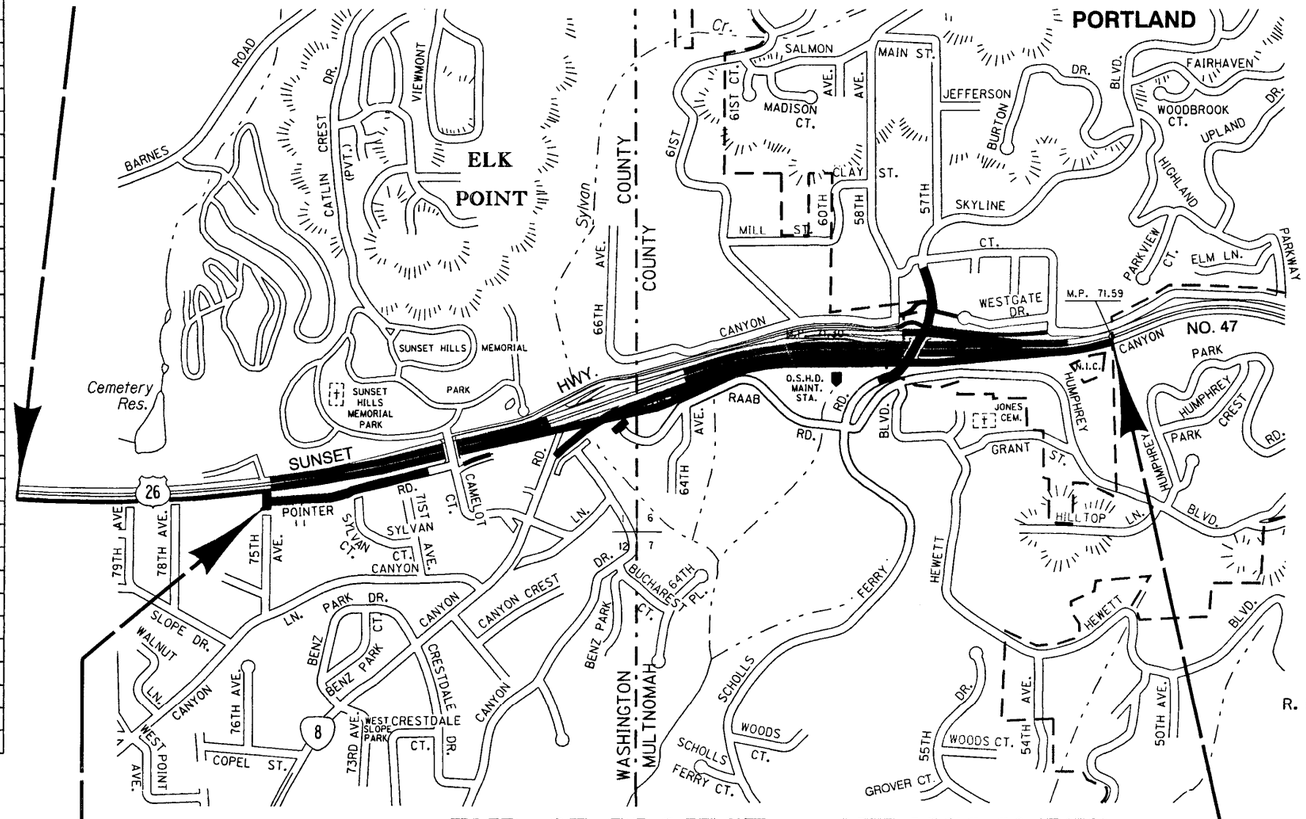


Overall Length Of Project - 2.013 km (1.25 Miles)

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 From The Center, Or Answers To Questions About The Rules By Calling (503) 232-1987.

LET'S ALL WORK TOGETHER TO MAKE THIS JOB SAFE

BEGIN. OF CONTRACT
STA. "L" 98+700.801 (M.P. 70.06)



T. 1 S.,
R. 1 W., 1 E., W.M.

END OF PROJECT NH-MGS-S047(32)
STA. "L" 101+210 (M.P. 71.62)

NH-MGS-S047(32)
BEGINNING OF PROJECT
STA. "L" 99+197.000 (M.P. 70.37)

OREGON TRANSPORTATION COMMISSION

Henry H. Hewitt	CHAIRMAN
Susan Brody	VICE CHAIRMAN
Steven H. Corey	COMMISSIONER
Stuart Foster	COMMISSIONER
John Russell	COMMISSIONER
Grace Crunican	DIRECTOR OF TRANSPORTATION

REGISTERED PROFESSIONAL ENGINEER
18,458
OREGON
MAY 14, 1996
JEFFREY SCHEICK
Expires Jun. 30, 2002

Jeffrey Scheick

TECHNICAL SERVICES MANAGING ENGINEER

CAMELOT INTCHGE. - SYLVAN INTCHGE. (PHASE 2) SEC.
SUNSET HIGHWAY
MULTNOMAH & WASHINGTON COUNTIES

FEDERAL HIGHWAY ADMINISTRATION	PROJECT NUMBER	SHEET NO.
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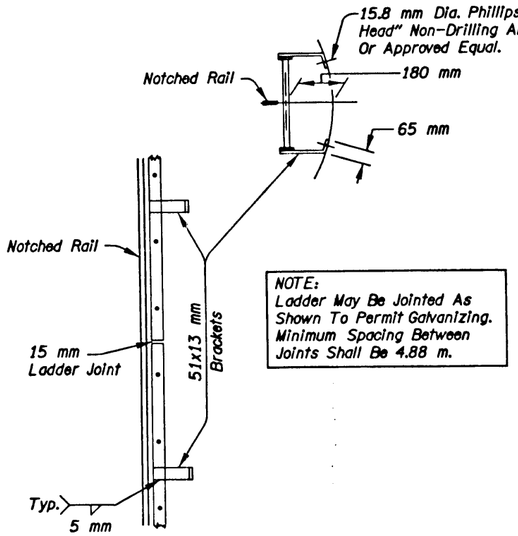
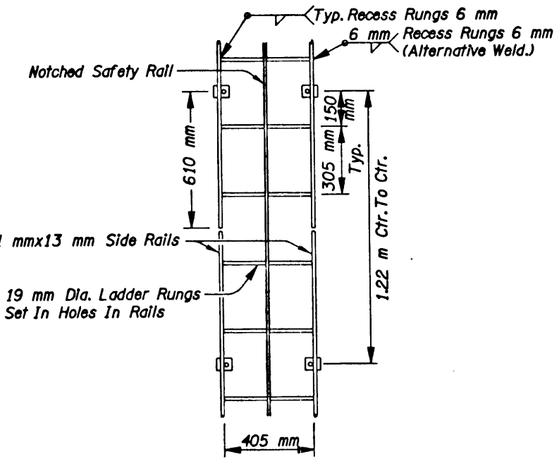


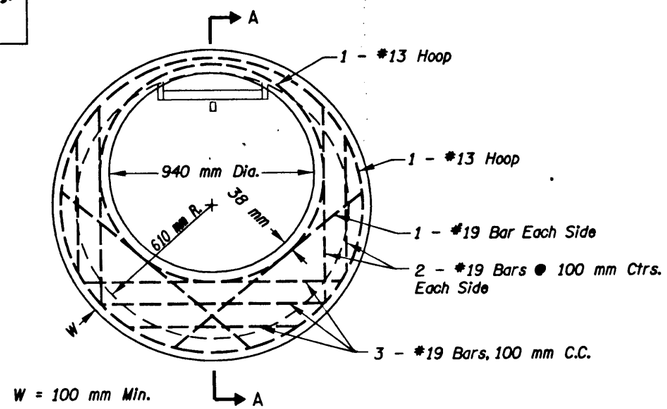
NOTE:
Ladder May Be Jointed As Shown To Permit Galvanizing. Minimum Spacing Between Joints Shall Be 4.88 m.



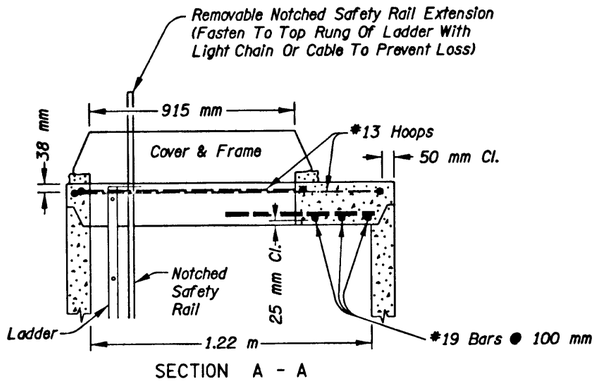
NOTE:
All Structural Steel Shall Be A36M.
All Bolts Shall Be A307.
All Material Shall Be Hot - Dipped Galvanized After Fabrication.

SAFETY LADDER

(For Details Not Shown, See Drg. Nos. RD324 & RD327)

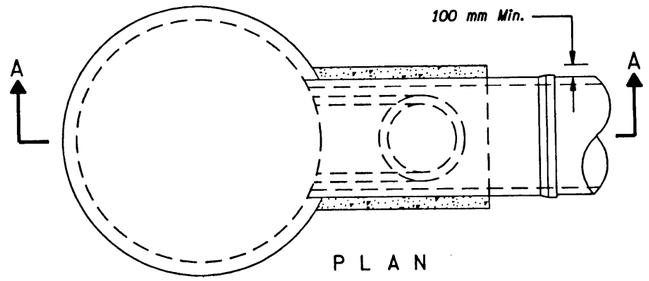


TOP VIEW

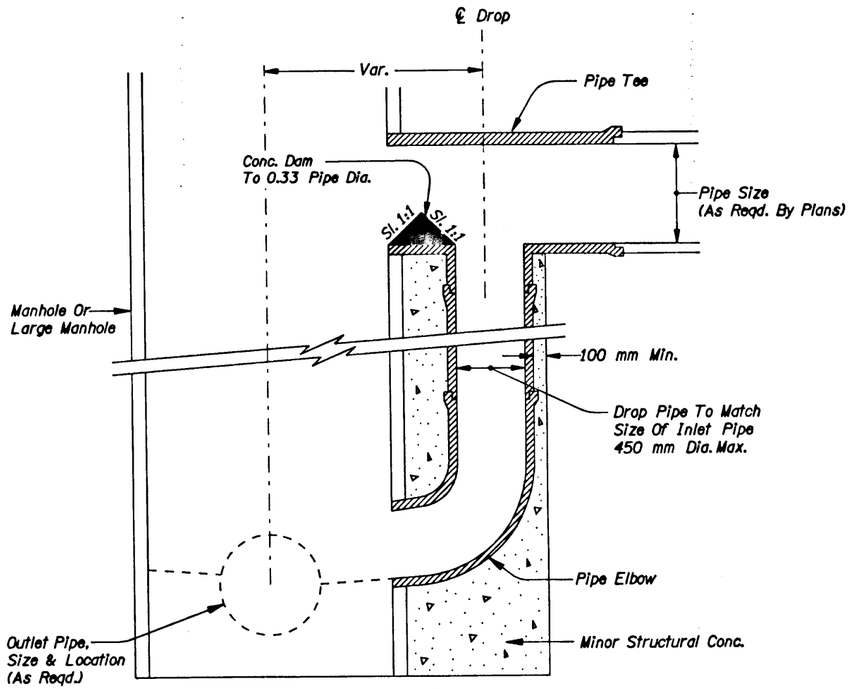


SECTION A - A

NOTE:
Provide Steel Notched Safety Rail, Removable Extension And All Required Mounting Hardware At Each Access Manhole Similar To That Manufactured By D.B.I. Enterprises Inc., (612) 388-8282 (See Special Provisions)



PLAN



SECTION A-A

DROP MANHOLE

(For Details Not Shown, See Drg. Nos. RD324, RD327 & RD330)

All Dimensions Are In Meters (m) Unless Otherwise Noted.

REGISTERED PROFESSIONAL ENGINEER 19156 OREGON JULY 15, 1997 BRUCE S. COUNCIL Expires Dec. 31, 2001

OREGON DEPARTMENT OF TRANSPORTATION
ROADWAY ENGINEERING SECTION

CAMELOT INTCHGE. -
SYLVAN INTCHGE. (PHASE 2) SEC.
SUNSET HIGHWAY
MULTNOMAH & WASHINGTON COUNTIES

Design Team Leader - David Joe Polly
Designed By - Magnolia M. Bartley
Drafted By - Larry D. Garrison & Sandra Gish

DETAILS

SHEET NO. 2B-6

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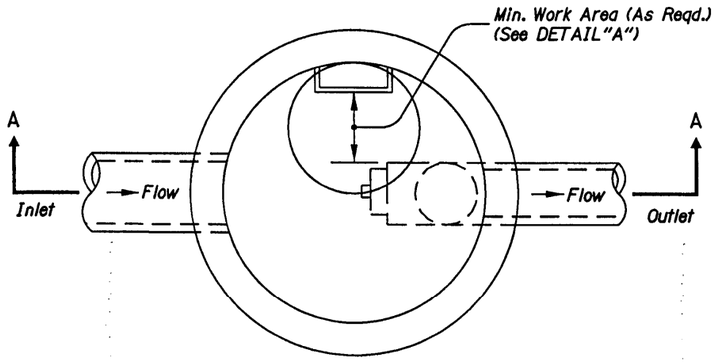
VIEW 2

WATER QUALITY MANHOLE - VARIOUS LOCATIONS



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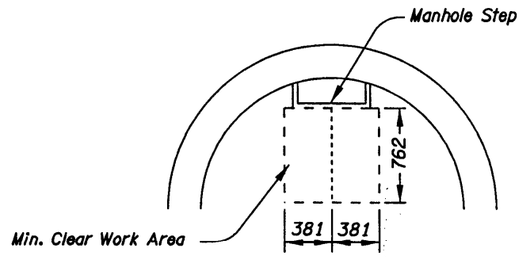
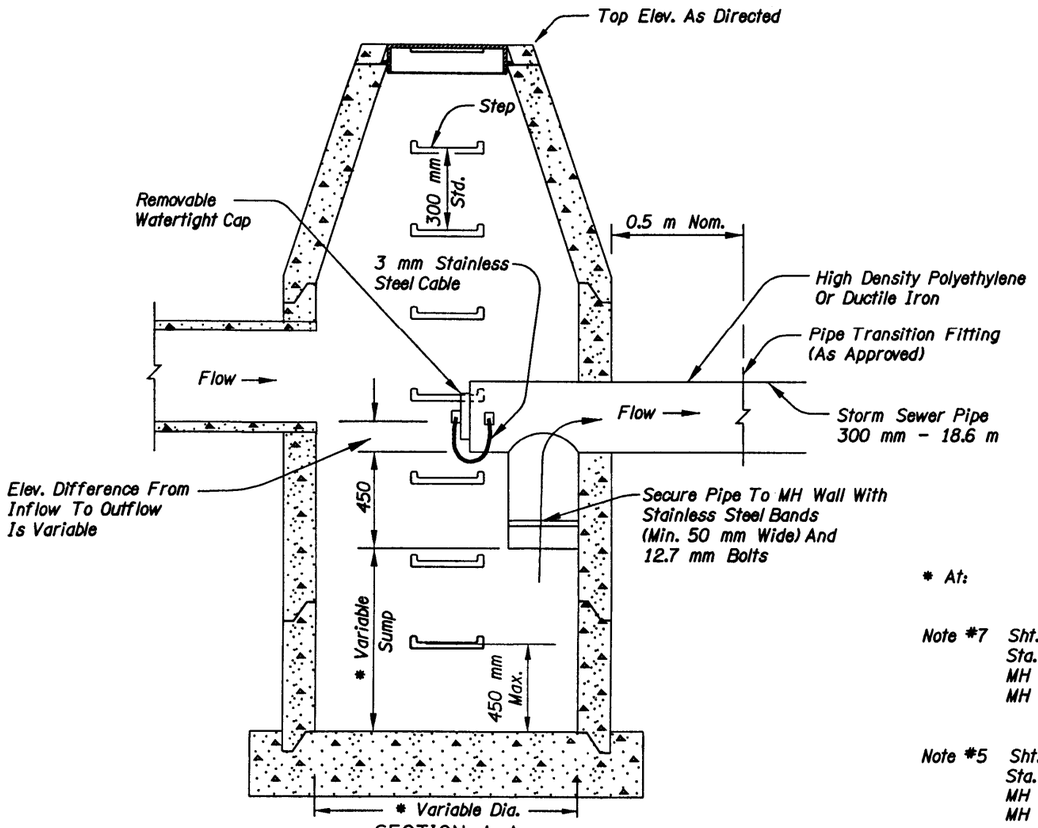


DETAIL "A"

NOTE:
Locate Pipes, Etc. So That No Portion Of Them Are Within Min. Clear Work Area.



SECTION A-A
(For Details Not Shown, See RD324, RD327 & RD330)

SUMP VOLUME REQUIREMENTS

Single Family Residential	.245 m^3/hectare
Multi Family Residential	1.539 m^3/hectare
Commercial/Industrial	6.577 m^3/hectare

* At:

Note #7 Sht. 7D-2
Sta. "SES" 100+064.5 m Rt.
MH Sump = 900 mm
MH Dia. = 1800 mm

Note #5 Sht. 8C-2
Sta. "SES" 100+436.4.9 m Rt.
MH Sump = 900 mm
MH Dia. = 1500 mm

Note #9 Sht. 9D-2
Sta. "SEE" 100+704.2, 18.83 Lt.
MH Sump = 1800 mm
MH Dia. = 1800 mm

NOTES:

1. Hardware, Fasteners And Anchors To Be Stainless Steel; Use 3 mm Stainless Steel Cable
2. See Pipe Data Sheet And Plan Sheets For Pipe Size(s).
3. See Pipe Data Sheet And Plan Sheets For Manhole Size(s).
4. See Pipe Data Sheet And Plan Sheets For Sump Depth.
5. Manhole And Base Per Manhole Standard Drawings.
6. Hardware, Fasteners, Anchors, Fittings, Appurtenances, Labor And Equipment Is Incidental To Water Quality Manhole Item.

All Dimensions Are Shown In Millimeters (mm) Unless Otherwise Noted.

REGISTERED PROFESSIONAL ENGINEER 19156 OREGON JULY 15, 1997 BRUCE S. COUNCIL Expires Dec. 31, 2001

OREGON DEPARTMENT OF TRANSPORTATION
ROADWAY ENGINEERING SECTION

CAMELOT INTCHGE. -
SYLVAN INTCHGE. (PHASE 2) SEC.
SUNSET HIGHWAY
MULTNOMAH & WASHINGTON COUNTIES

Design Team Leader - David Joe Polly
Designed By - Magnolia M. Bartley
Drafted By - Larry D. Garrison & Sandra Gish

DETAILS

SHEET NO. 2B-7

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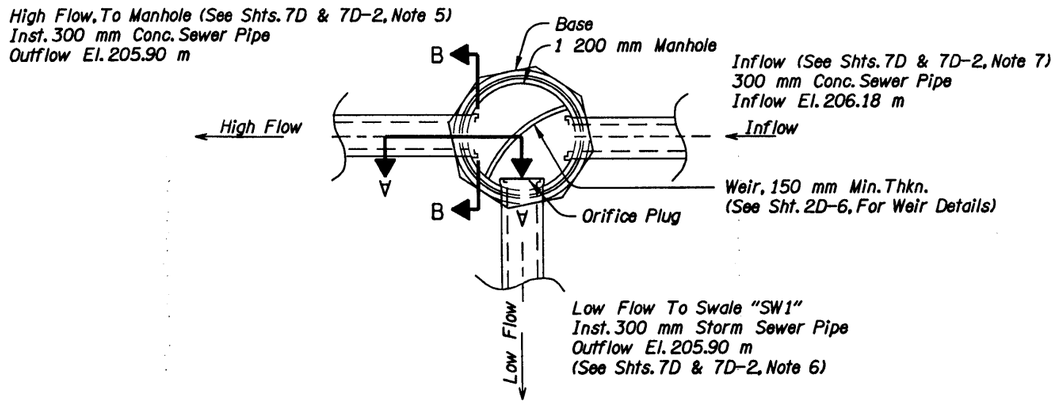
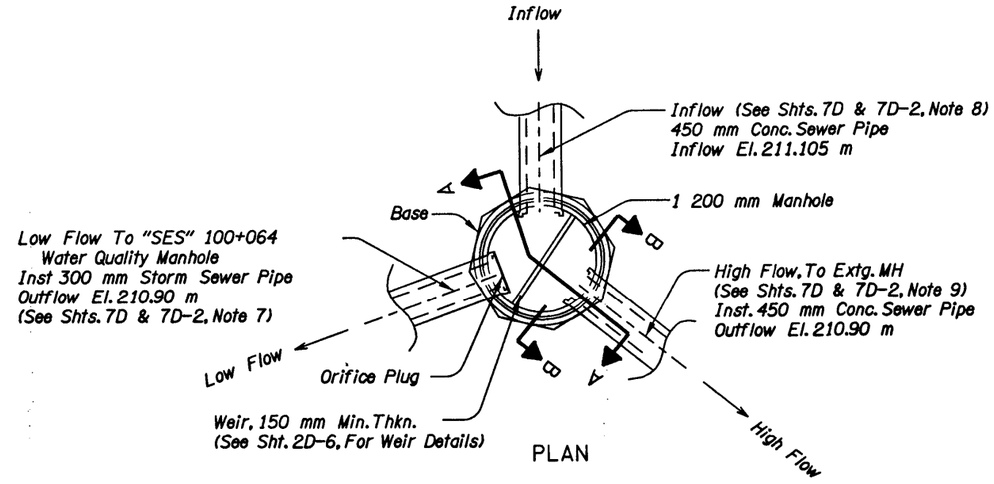
VIEW 3



PLAN

SPLIT FLOW MANHOLE @ "SES" 100+060, Rt.

(For Details Not Shown, See Drg. Nos. RD327 & RD330)



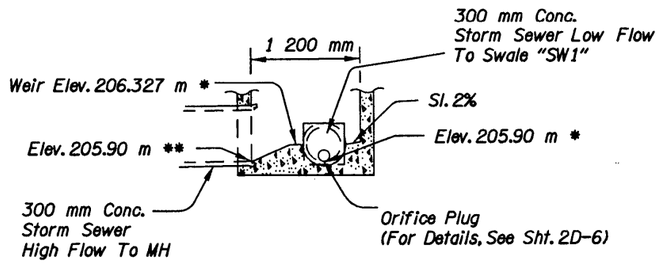
PLAN

SPLIT FLOW MANHOLE @ "SES" 100+225, Rt.

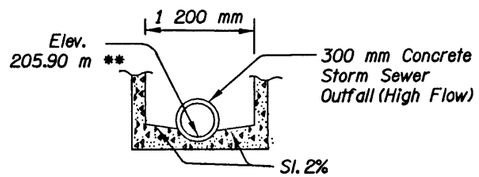
(For Details Not Shown, See Drg. Nos. RD327 & RD330)

* Field Verify Elevation, Adjust Weir Height To 0.427 m Above Actual F.L. Height

** Outfall (High Flow) 300 mm Storm Sew. To MH Outflow El. 205.90 m



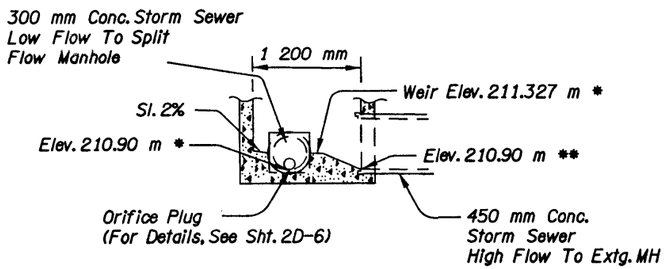
SECTION A-A



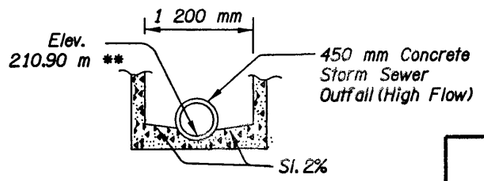
SECTION B-B

* Field Verify Elevation, Adjust Weir Height To 0.427 m Above Actual F.L. Height

** Outfall (High Flow) 450 mm Storm Sew. To Extg. MH Outflow El. 210.90 m



SECTION A-A



SECTION B-B

REGISTERED PROFESSIONAL ENGINEER 19156 Bruce S. Council OREGON JULY 15, 1997 BRUCE S. COUNCIL Expires Dec. 31, 2001

OREGON DEPARTMENT OF TRANSPORTATION
ROADWAY ENGINEERING SECTION

CAMELOT INTCHGE. - SYLVAN INTCHGE. (PHASE 2) SEC.
SUNSET HIGHWAY
MULTNOMAH & WASHINGTON COUNTIES

Reviewed By - Bruce S. Council
Designed By - Magnolia Bartley
Drafted By - Martin G. Casillas

WATER QUALITY DETAILS

SHEET NO. 2D

28-JUL-2000 16:13
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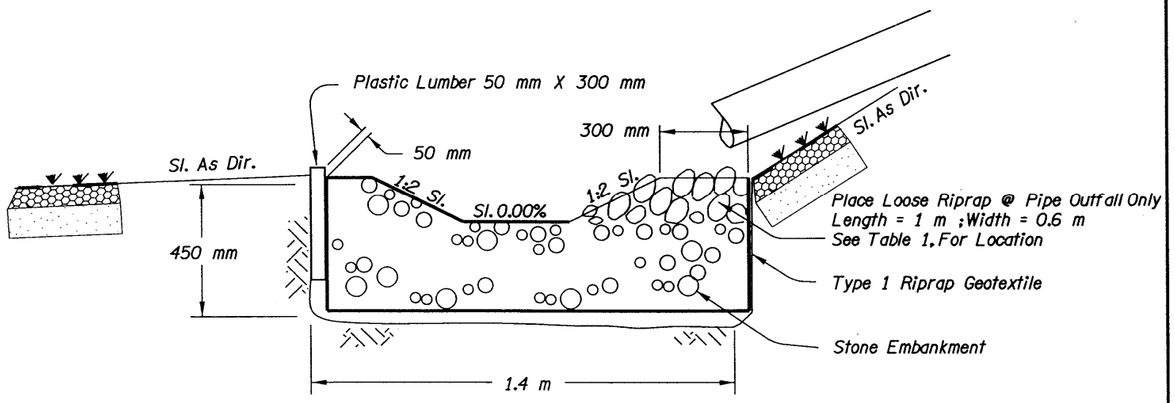
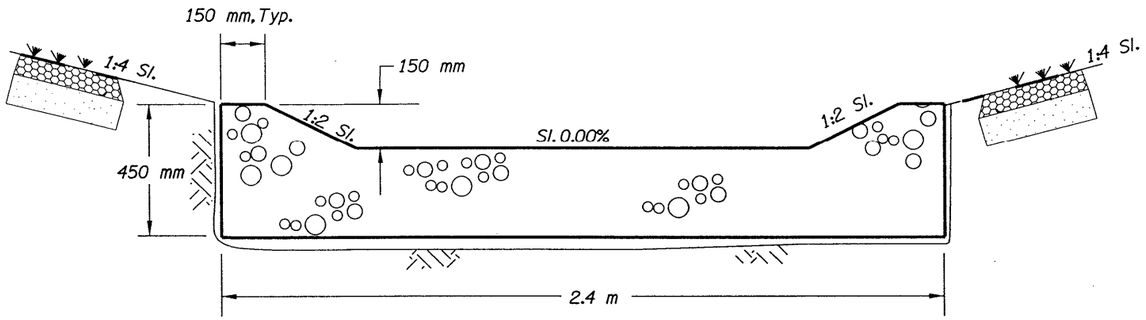
VIEW 1

VIEW 1



SECTION B-B

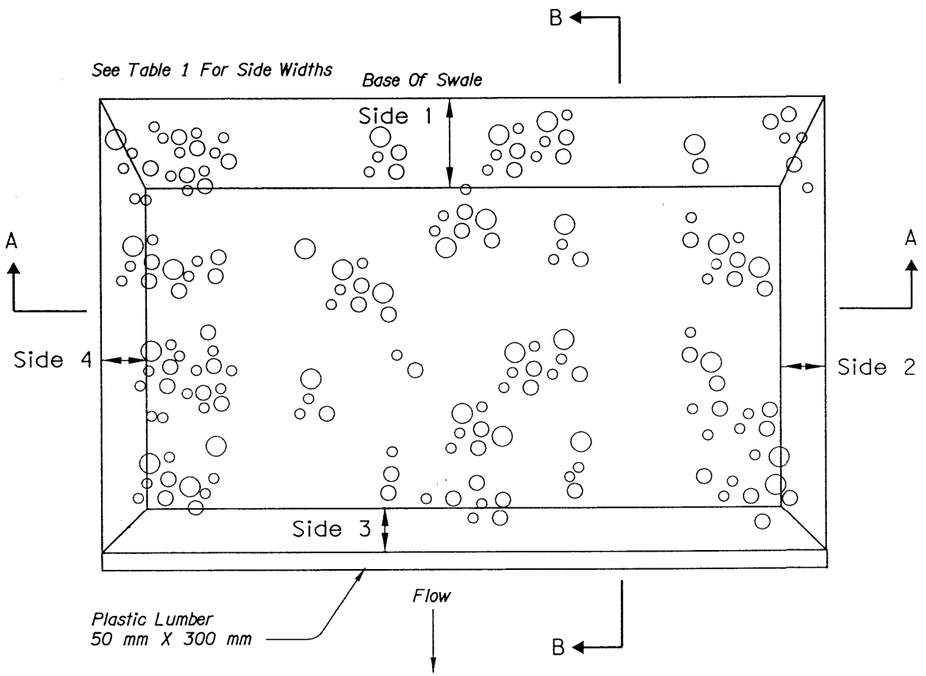


SECTION A-A

No.	REVISION	DATE	BY
1	Added The Word "Swale"	10-04-00	BSC

Table 1

	Side Widths (mm)				
Swale	1	2	3	4	Pipe Outfall Side
SW1	150	300	150	150	2
SW2	300	150	150	150	1
TSW	300	150	150	150	1



W* = Width of Swale Bottom

PLAN

SWALE FLOW SPREADER

1

All Dimensions Shown Are In mm (Millimeters) Unless Otherwise Noted

REGISTERED PROFESSIONAL ENGINEER 19156 OREGON JULY 15, 1997 BRUCE S. COUNCIL Expires Dec. 31, 2001

OREGON DEPARTMENT OF TRANSPORTATION
ROADWAY ENGINEERING SECTION

CAMELOT INTCHGE. -
SYLVAN INTCHGE. (PHASE 2) SEC.
SUNSET HIGHWAY
MULTNOMAH & WASHINGTON COUNTIES

Reviewed By - Bruce S. Council
Designed By - Magnolia Bartley
Drafted By - Magnolia Bartley

WATER QUALITY DETAILS

SHEET NO. 2D-3

03-OCT-2000 19:25
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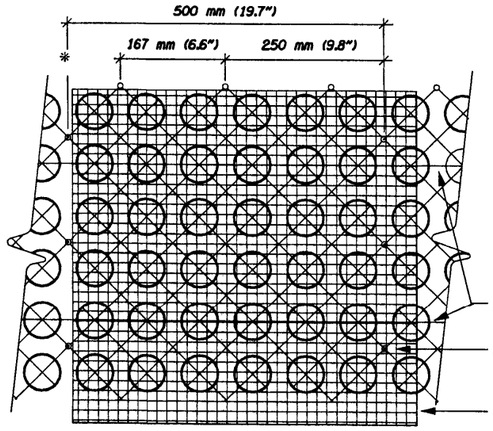
VIEW 3

VIEW



Strength - 402 kg/cm² (5720 psi)
Color - Black (Standard)
Resin - 95% Post-Consumer Recycled HDPE/LDPE

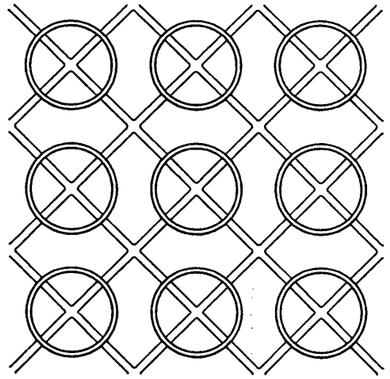
Fabric
Weight - 76.3 gm/m² (2.25 oz./S.Y.)
Tensile - 585 kg/m² (65 x 40 lb./ft.)

Rigid HDPE Porous Pavement System Cross-Bracing

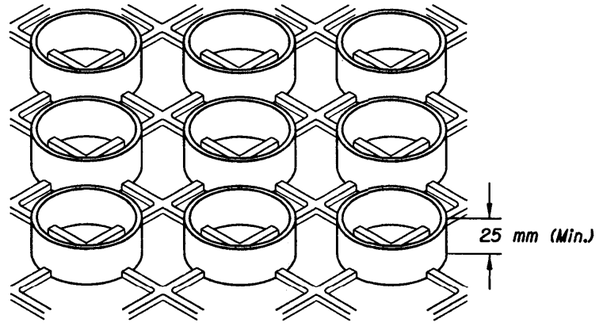
Rigid HDPE Porous Pavement System Units

Rigid HDPE Porous Pavement Fabric

PLAN

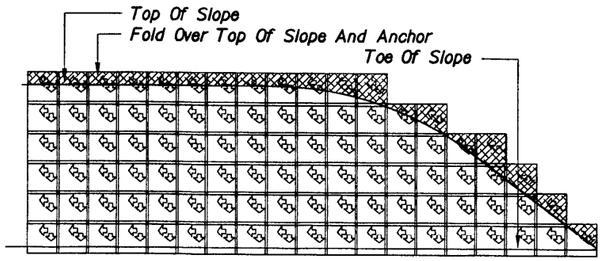


TOP VIEW

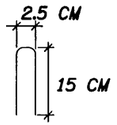


ISOMETRIC VIEW

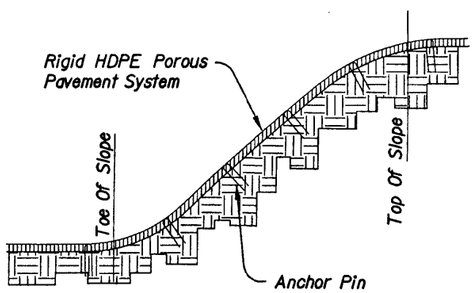
RIGID HDPE POROUS PAVEMENT SYSTEM



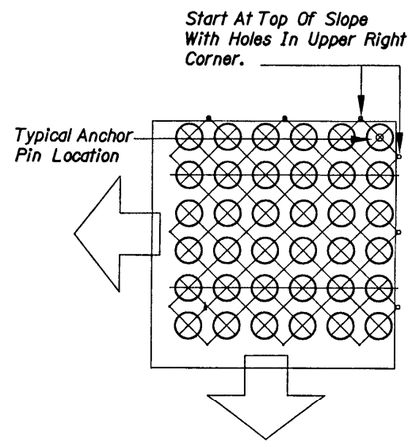
FACE OF SLOPE



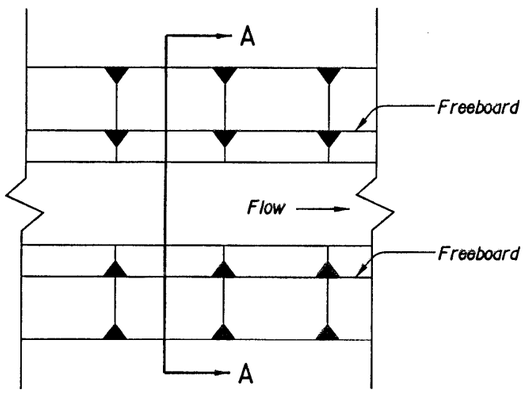
TYPICAL ANCHOR PIN



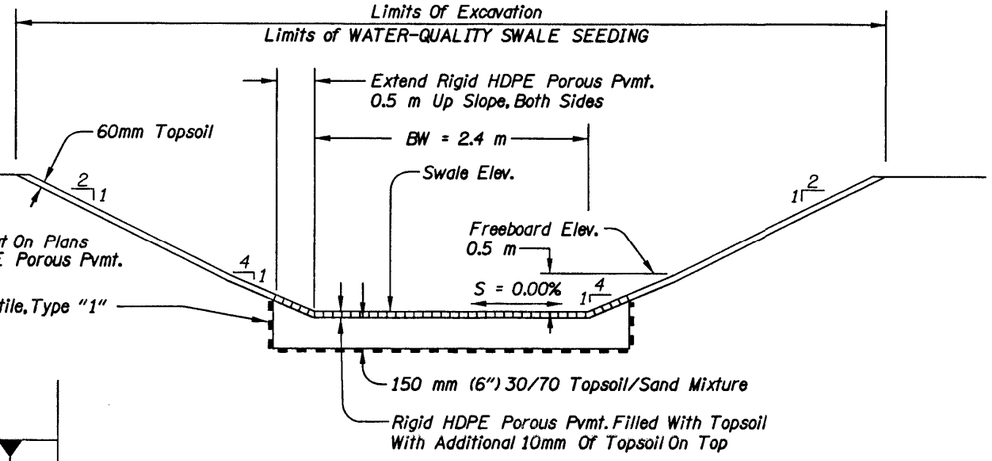
SLOPE CROSS SECTION



TYPICAL RIGID HDPE POROUS PAVEMENT SYSTEM AND ANCHORAGE



PLAN
GENERAL SWALE LAYOUT



SECTION A-A
SWALE SOIL STRUCTURE

REGISTERED PROFESSIONAL ENGINEER
19156
Bruce S. Council
OREGON
JULY 15, 1997
BRUCE S. COUNCIL
Expires Dec. 31, 2001

OREGON DEPARTMENT OF TRANSPORTATION
ROADWAY ENGINEERING SECTION

CAMELOT INTCHGE. -
SYLVAN INTCHGE. (PHASE 2) SEC.
SUNSET HIGHWAY
MULTNOMAH & WASHINGTON COUNTIES

Reviewed By - Bruce S. Council
Designed By - Magnolia Bartley
Drafted By - Martin G. Casillas

WATER QUALITY DETAILS

SHEET NO. 2D-4

28-JUL-2000 16:17
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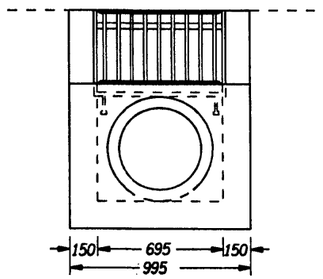
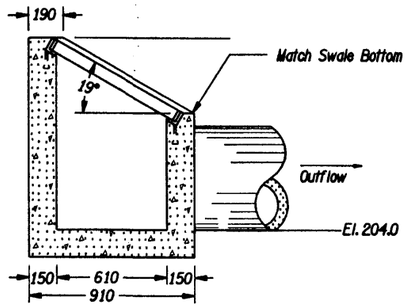
VIEW 4

VIEW 4



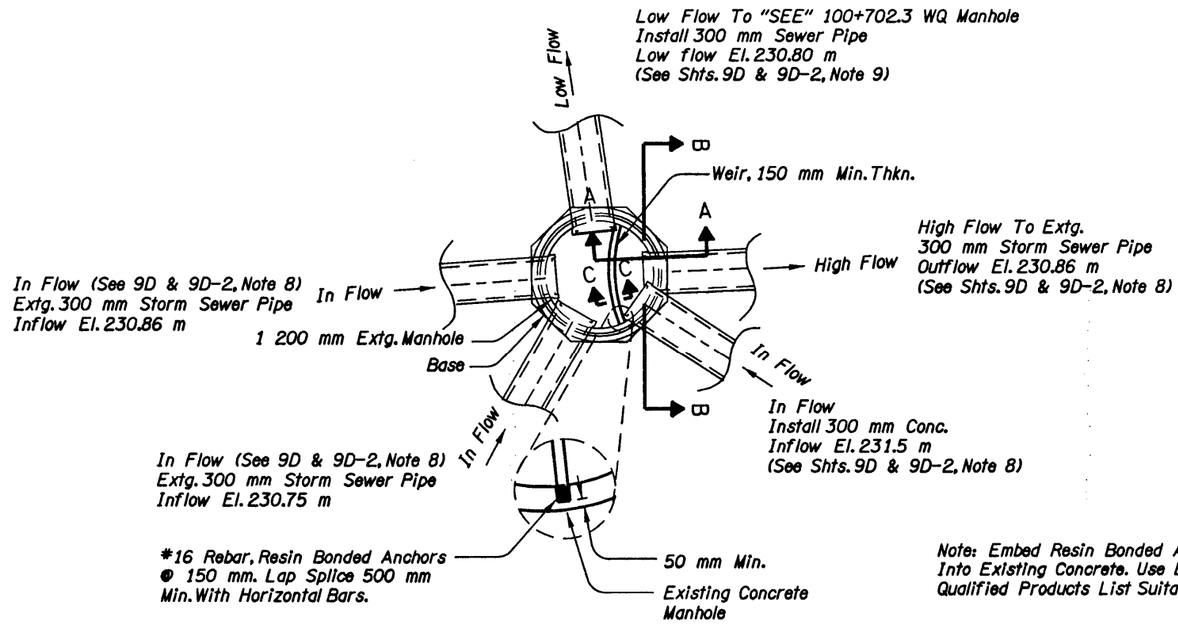
ELEVATION E-E



SECTION F-F

PLAN

TYPE D-MODIFIED

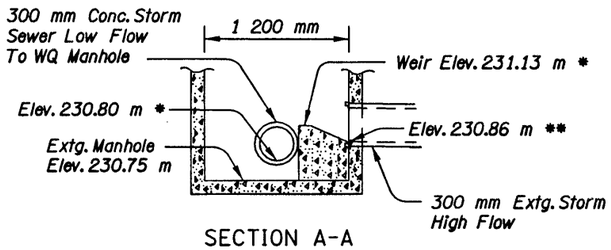


Note: Embed Resin Bonded Anchors 250 mm Min. Into Existing Concrete. Use Epoxy System From ODOT's Qualified Products List Suitable For Wet Locations.

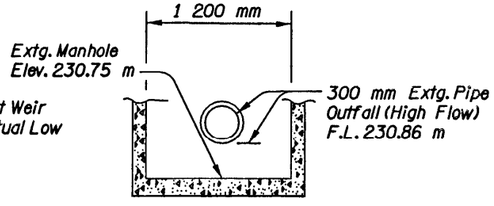
PLAN

SPLIT FLOW MANHOLE @ "SEE" 100+702.3

(For Details Not Shown, See Drg. Nos. RD327 & RD330)



SECTION A-A

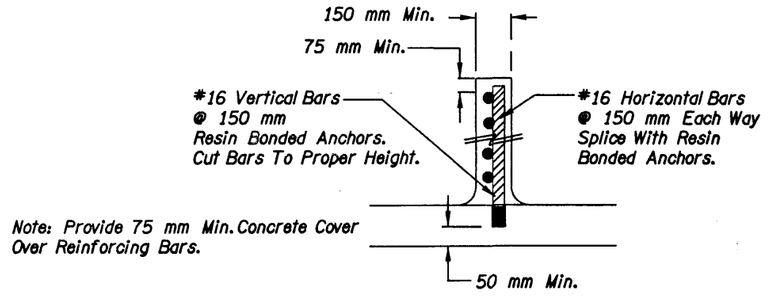


SECTION B-B

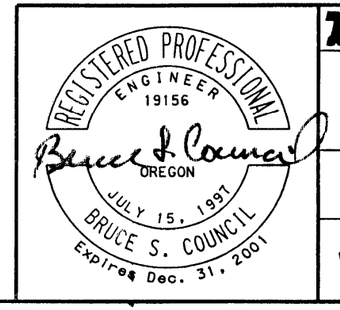
* Field Verify Elevation, Adjust Weir Height To 0.33 m Above Actual Low Flow Pipe F.L. Elevation

** Outfall (High Flow)
300 mm Extg. Storm Sew.
Outflow El. 230.86 m

All Dimensions Shown Are In Meters Unless Otherwise Noted



SECTION C-C
WEIR DETAILS



OREGON DEPARTMENT OF TRANSPORTATION
ROADWAY ENGINEERING SECTION

CAMELOT INTCHGE. -
SYLVAN INTCHGE. (PHASE 2) SEC.
SUNSET HIGHWAY
MULTNOMAH & WASHINGTON COUNTIES

Reviewed By - Bruce S. Council
Designed By - Magnolia Bartley
Drafted By - Martin G. Casillas

WATER QUALITY DETAILS

SHEET NO. 2D-5

28-JUL-2000 16:18
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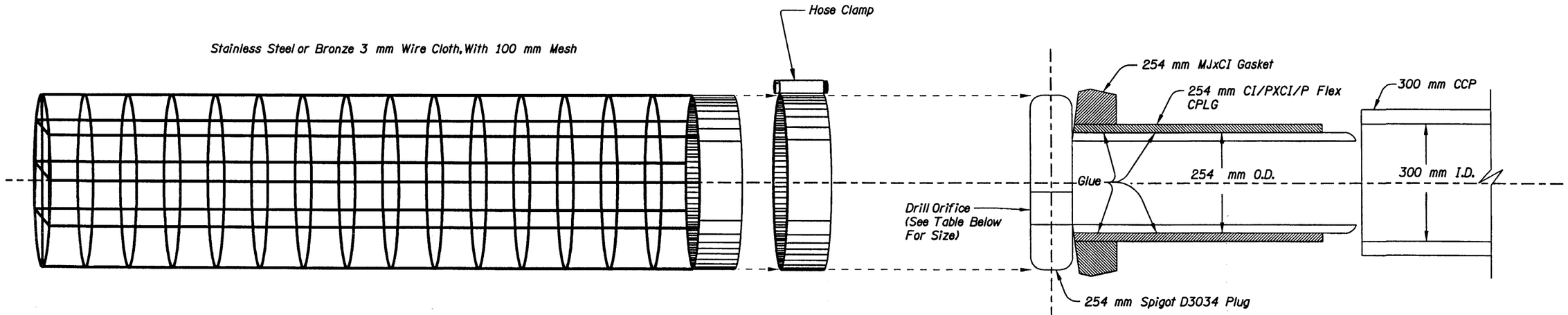
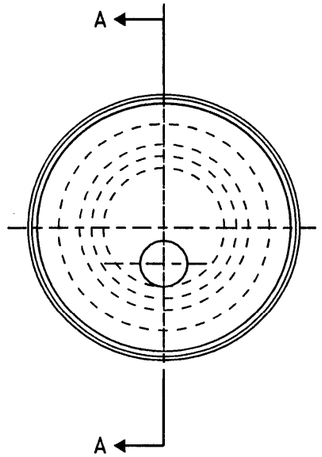
VIEW 5



WIRE CLOTH STRAINER ASSEMBLY

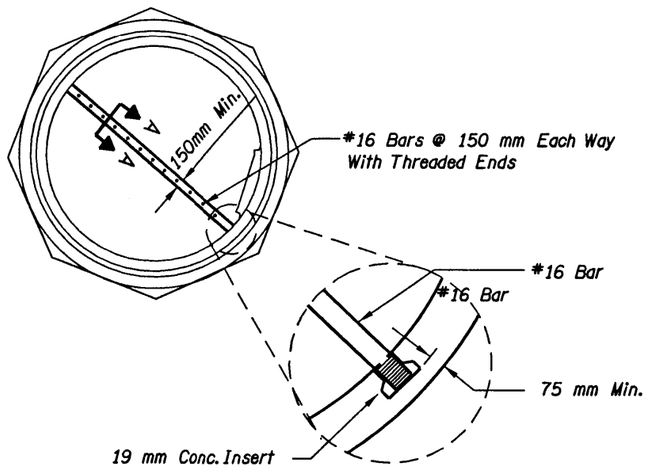
SECTION A-A



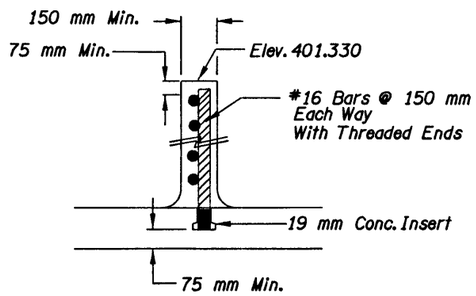
ORIFICE PLUG

(For Location, See Plans)

Split Flow MH Sta.	Orifice Dia. (mm)	Sht. Nos.
"SES" 100+060	150	2D, 2D-7 & 7D
"SES" 100+225	150	2D & ??
"SES" 100+468	150	2D-2, 2D-8 & 8C



PLAN



SECTION A-A

NEW CONSTRUCTION SPLIT FLOW MANHOLE WEIR DETAILS

NOTE:
1. *All Dimensions Are Shown In Meters (m) Unless Otherwise Noted.*
2. *Side-Slopes Are Shown As Vert. To Horiz.*

REGISTERED PROFESSIONAL ENGINEER 19156 OREGON JULY 15, 1997 BRUCE S. COUNCIL Expires Dec. 31, 2001

OREGON DEPARTMENT OF TRANSPORTATION
ROADWAY ENGINEERING SECTION

CAMELOT INTCHGE. - SYLVAN INTCHGE. (PHASE 2) SEC.
SUNSET HIGHWAY
MULTNOMAH & WASHINGTON COUNTIES

Reviewed By - Henry M. Allen
Designed By - Magnolia Bartley
Drafted By - Martin G. Casillas

WATER QUALITY DETAILS

SHEET NO. 2D-6

28-JUL-2000 16:18
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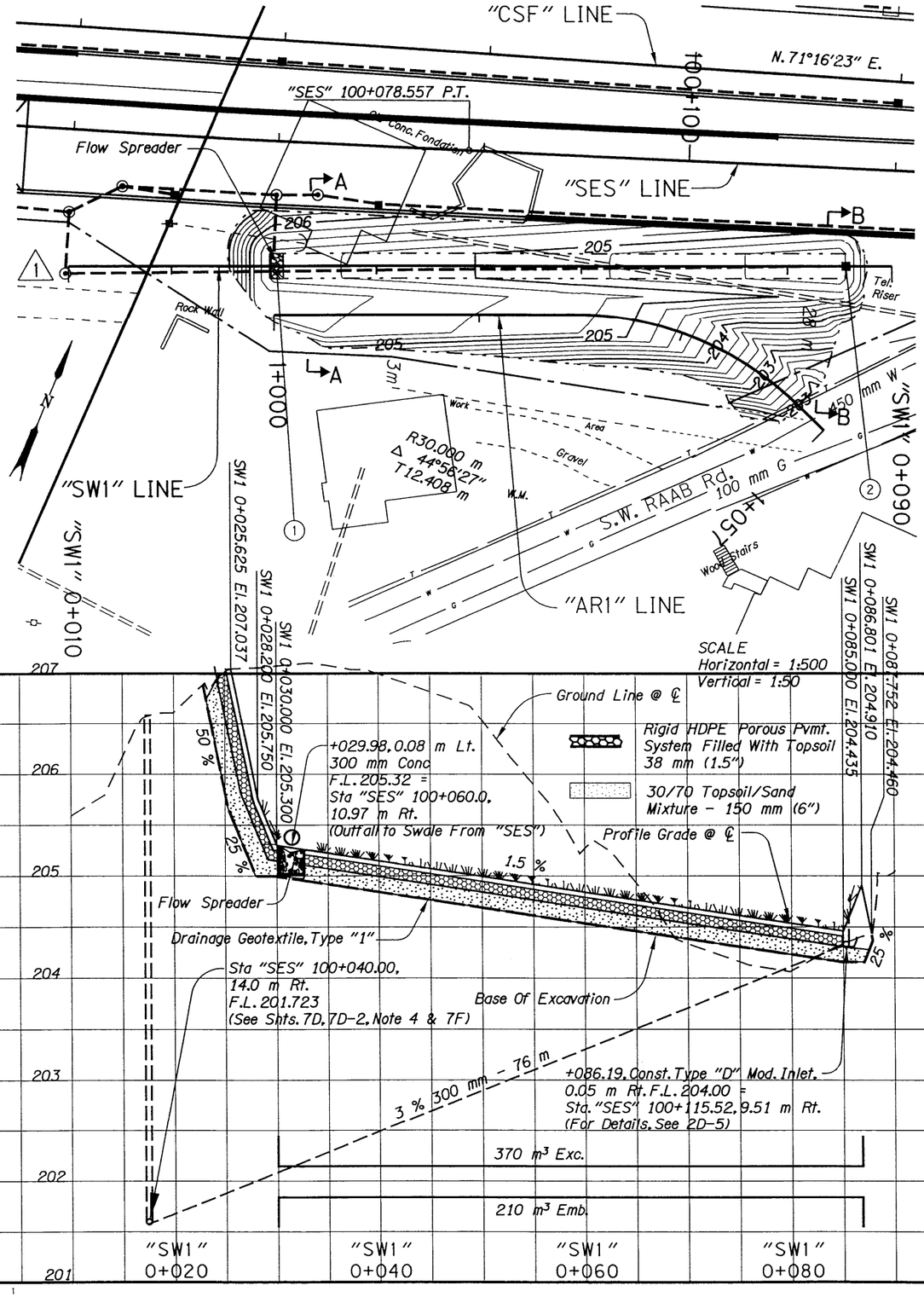
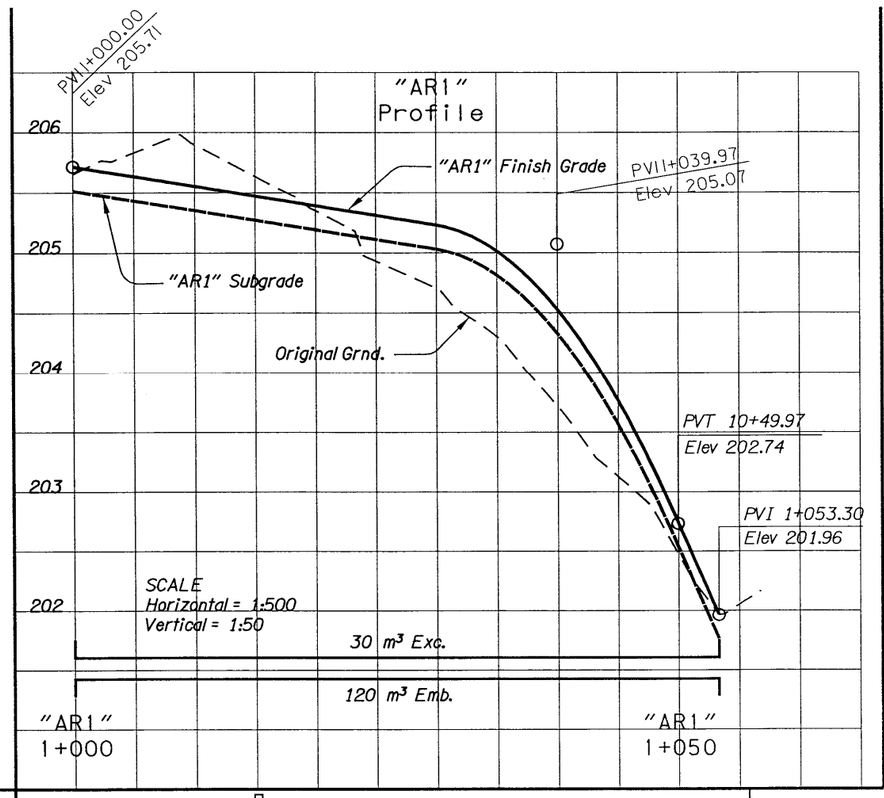
VIEW 6

VIEW 6

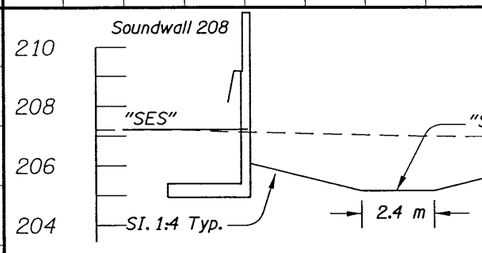
Sec. 1, T. 1 S., R. 1 W., & Sec. 6, T. 1 S., R. 1 E., W.M.



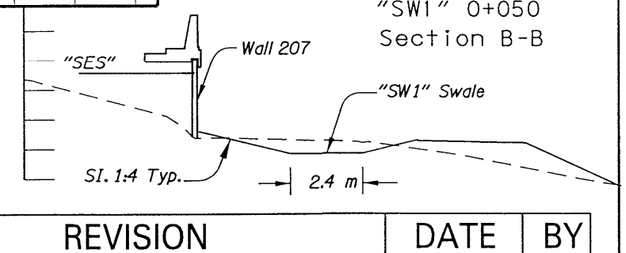


① Sta. "SW1" 0+029.98, 0.08 m Lt. △1
Const. Swale Flow Spreader,
Stone Emb. Matl. - 1.2 m³
Loose Riprap, Class 25 - 0.1 m³
Const. Water Quality Swale, "SW1" △2
Inst. Rigid HDPE Porous Pvmt. System - 210 m²
Exc. 370 m³
Emb. 210 m³
Const. Access Rd.
Exc. 30 m³
Emb. 120 m³
Riprap Geotextile, Type 1 - 4 m²
(For Details, See Shts. 2D-3 & 2D-4)

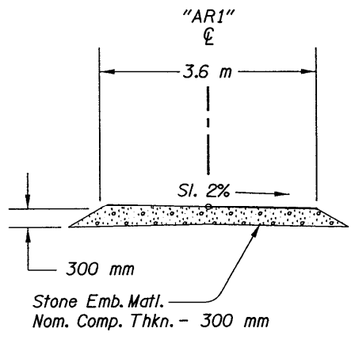
② Sta. "SW1" 0+086.19, 0.08 m Rt.
Const. Ditch Inlet Mod.
See Shts. 7D & 7D-2, Note 4



"SW1" 0+030
Section A-A



"SW1" 0+050
Section B-B



Typical Section For "AR1"

No.	REVISION	DATE	BY
△1	Changed "Flow Spreader" To "Swale Flow Spreader"	10-04-00	BSC
△2	Changed "Cellular Confinement System" To "Rigid HDPE Porous Pvmt. System"	10-04-00	BSC

All Dimensions Are In Millimeters (mm) Unless Otherwise Noted.

REGISTERED PROFESSIONAL ENGINEER 19156 OREGON JULY 15, 1997 BRUCE S. COUNCIL Expires Dec. 31, 2001

OREGON DEPARTMENT OF TRANSPORTATION
ROADWAY ENGINEERING SECTION

CAMELOT INTCHGE. -
SYLVAN INTCHGE. (PHASE 2) SEC.
SUNSET HIGHWAY
MULTNOMAH & WASHINGTON COUNTIES

Reviewed By - Henry M. Allen
Designed By - Bruce S. Council
Drafted By - Martin G. Casillas

WATER QUALITY PLAN

SHEET NO. 2D-7

03-OCT-2000 19:26
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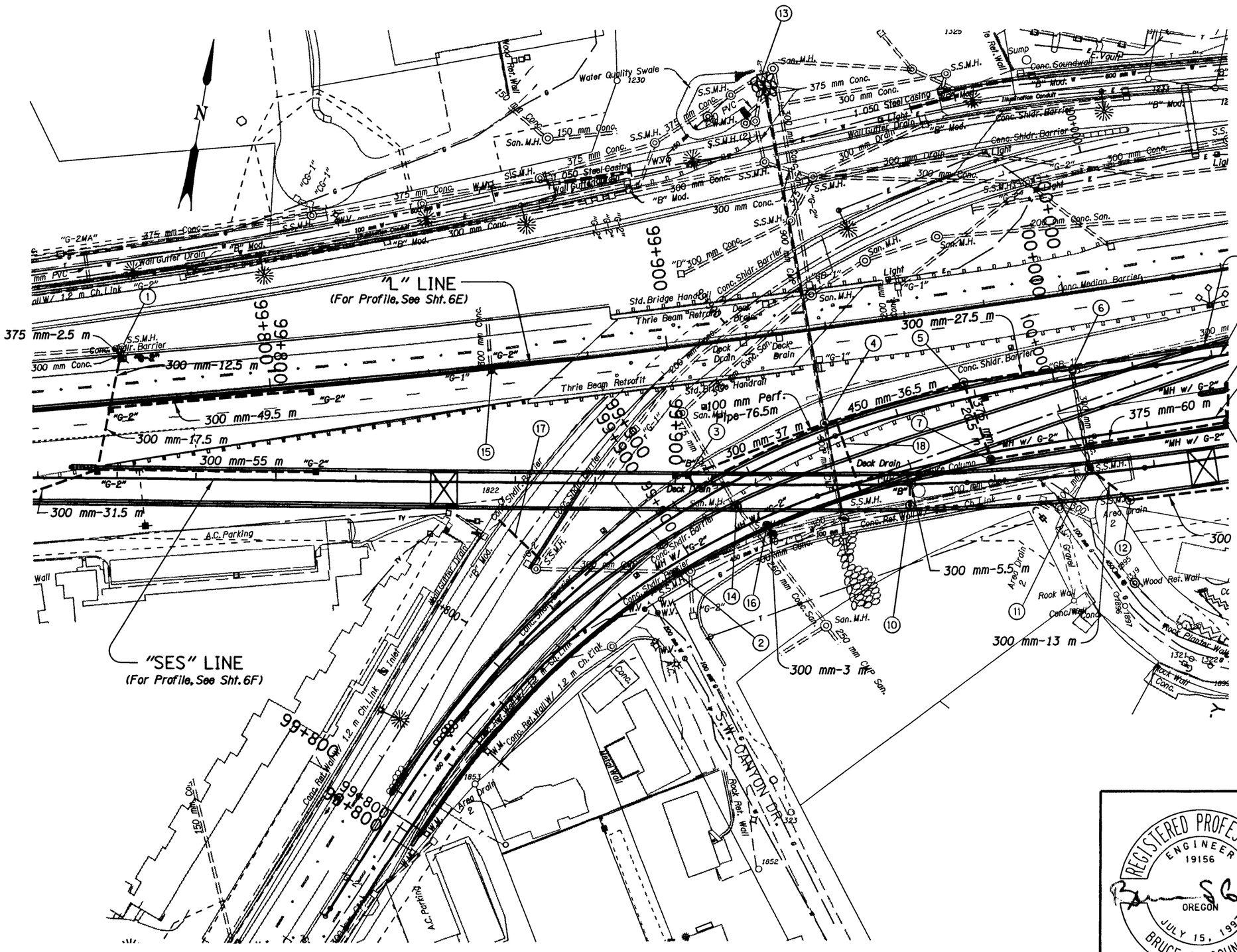
VIEW 1
VIEW 1

Sec. 1, T. 1 S., R. 1 W., W.M.



Plug & Abandon Pipe Shown Thus:

NOTE: Field Verify With The Engr. All Locations Of Drainage Structures & Pipes.

REGISTERED PROFESSIONAL ENGINEER 19156 OREGON JULY 15, 1997 BRUCE S. COUNCIL Expires Dec. 31, 2001

OREGON DEPARTMENT OF TRANSPORTATION
ROADWAY ENGINEERING SECTION

CAMELOT INTCHGE. -
SYLVAN INTCHGE. (PHASE 2) SEC.
SUNSET HIGHWAY
MULTNOMAH & WASHINGTON COUNTIES

Reviewed By-Bruce S. Council
Designed By-Magnolia Bartley-Lam Han
Drafted By-Martin G. Casillas

DRAINAGE & UTILITIES

SHEET NO. 6D

VIEW 3

VIEW 3

(1) *Sta. "SES" 99+725.6, 8.1 m Rt.*
Remove Extg. Inlet - 2
Const. Type "BP" Manhole, Conn. Extg. Pipes
Const. Type "G-2" Inlet - 5
Inst. 375 mm Sew. Pipe - 2.5 m
Inst. 300 mm Sew. Pipe - 166 m
Inst. 25 mm Preformed Expansion Joint @ Wall Connection
Tr. Exc. - 76 m^3
Under Pvmt. - 79 m

(2) *Sta. "CSF" 99+895, Rt.*
300 mm Sew. Pipe - In Place
Remove - 1.2 m
Const. Manhole With Type "G-2" Inlet
(See Drg. No. RD333)

(3) *Sta. "SES" 99+903.3, 2.11 m Lt.*
Const. Type "B" Inlet
Conn. Deck Drain
Const. Subsurface Drain Outlet
Inst. 100 mm Perf. Pipe - 76.5 m
Drainage Geotextile Type "1" - 36 m^2
(For Bridge No. 18647, See Sht. 1A)

(4) *Sta. "L" 99+936.33, 23.92 m Rt.*
900 mm Sew. Pipe - In Place
Remove - 1.8 m
Const. Drop Manhole Over Extg. 900 mm Pipe - 1.8 m Dia.
Inst. 300 mm Sew. Pipe - 37 m
Inst. 450 mm Sew. Pipe - 36.5 m
Tr. Exc. - 280 m^3
(For Details, See Sht. 2B-6)
(See Drg. Nos. RD324 & RD330)

(5) *Sta. "L" 99+972, 18.5 m Rt.*
Const. Drop Manhole
Inst. 375 mm Sew. Pipe - 20.5 m
Inst. 300 mm Sew. Pipe - 27.5 m
Inst. 300 mm Perf. Pipe - 198 m
Drainage Geotextile Type "1" -36 m^2
Const. Subsurface Drain Outlet
Tr. Exc. - 84 m^3
(For Details, See Sht. 2B-6)

(6) *Sta. "CSUN" 100+005, Lt.*
Cap Inlet

(7) *Sta. "CSF" 99+980, 1.6 m Rt.*
Const. Manhole With Type "G-2" Inlet
Inst. 375 mm Sew. Pipe - 60 m
Tr. Exc. - 101 m^3

(8) *See Sht. 7D-2, Note 2*

(9) *See Sht. 7D-2, Note 1*

(10) *Sta. "BP5" 10+069, 1.4 m Lt.*
300 mm Sew. Pipe - In Place
Remove - 1.2 m
Const. Manhole Over Extg. 300 mm Pipe
Const. Type "B" Inlet
Inst. 300 mm Sew. Pipe - 5.5 m
Under Pvmt. - 1 m
Conn. Deck Drain
Tr. Exc. - 5 m^3
(For Bridge No. 18647, See Sht. 1A)

(11) *Sta. "BP5" 10+114.75, 1.8 m Lt.*
Inst. 300 mm Sew. Pipe - 13 m
Under Pvmt. - 6.7 m
Reconst. Manhole
Tr. Exc. - 29.2 m^3

(12) *Sta. "SES" 100+013, 7.6 m Rt.*
Const. Manhole
Inst. 300 mm Sew. Pipe - 27.5 m
Tr. Exc. - 120 m^3

(13) *Sta. "SCS" 99+938, 47 m Lt*
Extg. 900 mm In-Place
Saw Cut & Remove Pipe - 2 m
Inst. Cure-In-Place-Pipe Lining
Nom. Thkn. - 22 mm
Inst. Metal Flare End Section At Pipe Inlet
Place Loose Riprap (Class 200) - 28 m^3
Inst. Type "1" Riprap Geotextile - 40 m^2
(For Details, See Sht. 2B-8)

(14) *Sta. "CSF" 99+916, Lt.*
Adjust Manhole, Use Method "B"
(For Details, See Sht. 2B)

(15) *Sta. "L" 99+855.6, Lt.*
Remove Extg. Inlet
Const. Type "G-2" Inlet
Conn. To Extg. Pipe

(16) *Sta. "CSF" 99+921, 2.1 m Rt.*
Const. Manhole With Type "G-2" Inlet
Inst. 300 mm Sew. Pipe - 3 m
Reconst. Extg. Manhole
Tr. Exc. - 1 m^3

(17) *Sta. "CSUN" 99+865.38, 19 m Lt.*
Inst. 150 mm PVC Conduit - 14.5 m

(18) *Sta. "BP5" 10+069, 1.4 m Lt.*
Inst. 150 mm PVC Conduit - 20.5 m

REGISTERED PROFESSIONAL ENGINEER
19156
OREGON
JULY 15, 1997
BRUCE S. COUNCIL
Expires Dec. 31, 2001

OREGON DEPARTMENT OF TRANSPORTATION
ROADWAY ENGINEERING SECTION

CAMELOT INTCHGE. -
SYLVAN INTCHGE. (PHASE 2) SEC.
SUNSET HIGHWAY
MULTNOMAH & WASHINGTON COUNTIES

Reviewed By - Bruce Council
Designed By - Magnolia Bartley
Drafted By - Heather Gonsior

DRAINAGE NOTES

SHEET NO. 6D-2

24-AUG-2000 14:12
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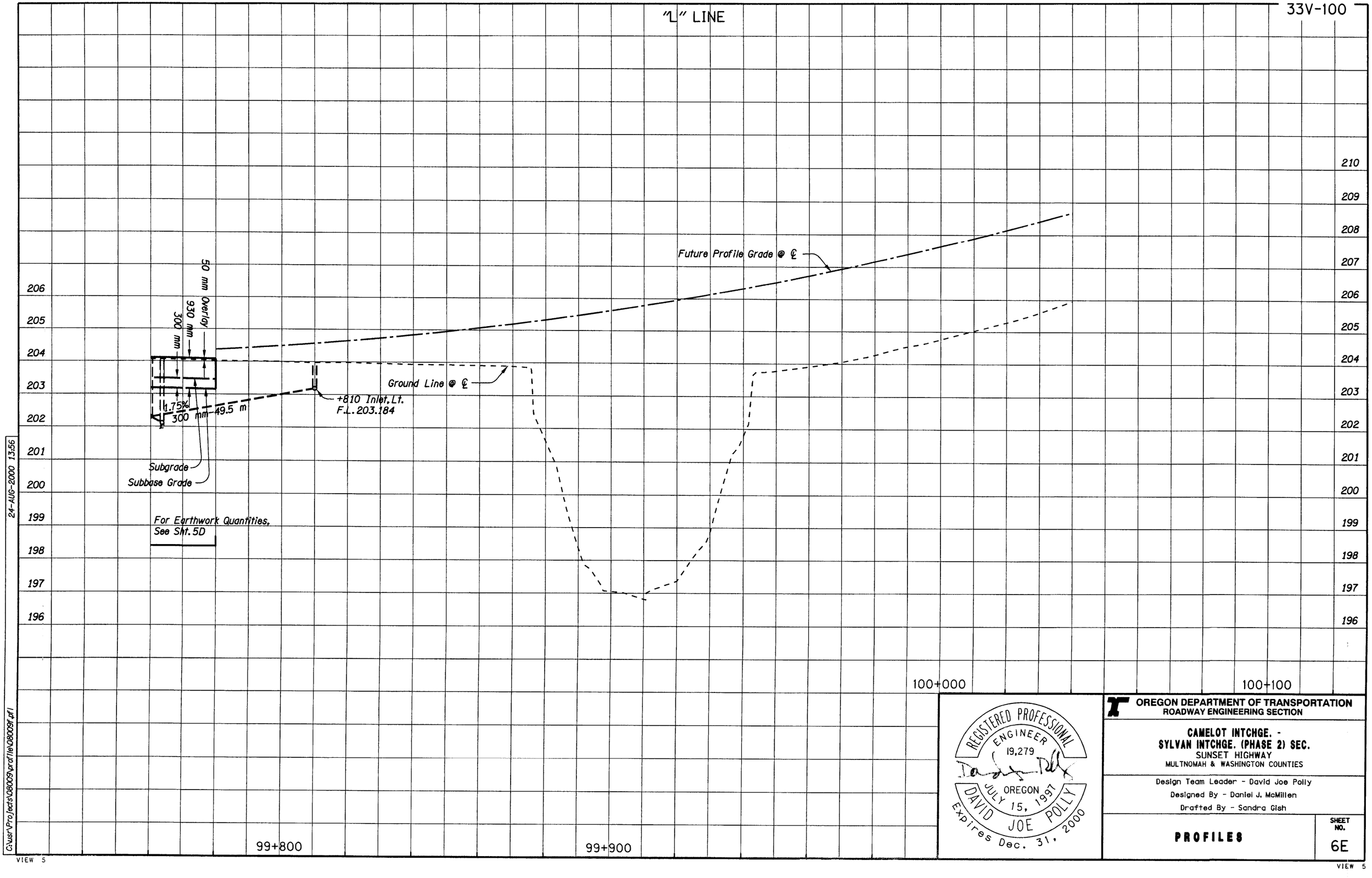
VIEW 2

VIEW 2

"L" LINE



24-AUG-2000 13:56

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VIEW 5

REGISTERED PROFESSIONAL ENGINEER
19,279
OREGON
JULY 15, 1997
DAVID JOE POLLY
Expires Dec. 31, 2000

OREGON DEPARTMENT OF TRANSPORTATION
ROADWAY ENGINEERING SECTION

CAMELOT INTCHGE. -
SYLVAN INTCHGE. (PHASE 2) SEC.
SUNSET HIGHWAY
MULTNOMAH & WASHINGTON COUNTIES

Design Team Leader - David Joe Polly
Designed By - Daniel J. McMillen
Drafted By - Sandra Gish

PROFILES

SHEET NO. 6E

VIEW 5

"SES" LINE

Bridge End Panel +838.770

Bridge No. 18647

Profile Grade @ ℄

+1.252%

+0.476%

700 mm

300 mm

204.560

70 m V.C.

Subgrade

Subbase Grade

1.4%

300 mm–55 m

+755 Inlet, Lt.
F.L. 202.555

+760.000

+804.000

+810 Inlet, Lt.
F.L. 203.34

Ground Line @ ℄

+845.500

+900 Inlet, Lt.
Deck Drain (Bent 2)
Connects To M.H. @ +903.28

+961 Inlet, Lt.
Deck Drain (Bent 3)
Connects To Inlet @
"BP5" 10+070, Lt.

Granular Emb. 1390

+903.28 Inlet, 2.11 m Lt.
F.L. 196.791
Conn. Deck Drain

4% 300 mm–37 m
To "L" 99+936.330 M.H.
(See "CSF" Profile, Sht. 6H)

+941.746 Extg. M.H., 8.251 m Rt.
F.L. 190.6626 m

+941.746 Extg. M.H., 8.251 m, Rt.
F.L. 183.906

3.0%
Extg. 300 mm–
17.22 m

"BP5" 10+070 Inlet, 6.7 m Lt.
F.L. 193.000
Conn. Deck Drain

3.0% 300 mm–5.5 m

"BP5" 10+069 M.H., 1.4 m Lt.
F.L. 192.825

Bridge End Panel +035.430

700 mm

300 mm

Subbase Grade

Subgrade

3.0%
300 mm–5.5 m

+050 Inlet, Rt.
F.L. 206.524

+028.700

+050.000

6.0% 300 mm–15.5 m

+045 M.H., 5.2 m Rt. F.L. 202.500
8.0% 300 mm–6 m

+054 M.H., 15.5 m Rt. F.L. 201.600
8.0% 300 mm–16 m

+040 M.H., 8 m Rt. F.L. 200.150

10.0% 300 mm–27.5 m

+013 M.H., 7.6 m Rt.
F.L. 196.820

15% 300 mm–13 m

Exc. 90 (Excess)

Granular Emb. 90

SES 100+003.81,
Extg. M.H., 1.22 m Lt.
F.L. 194.200

99+800 99+900 100+000 100+100

206 205 204 203 202 201 200 199 198 197 196 195 194 193 192

209 208 207 206 205 204 203 202 201 200 199 198 197 196 195 194 193 192

BRIDGE DETAILS CHECKED

24-AUG-2000 13:56

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VIEW 6

REGISTERED PROFESSIONAL ENGINEER
19,279
OREGON
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OREGON DEPARTMENT OF TRANSPORTATION
ROADWAY ENGINEERING SECTION

CAMELOT INTCHGE. -
SYLVAN INTCHGE. (PHASE 2) SEC.
SUNSET HIGHWAY
MULTNOMAH & WASHINGTON COUNTIES

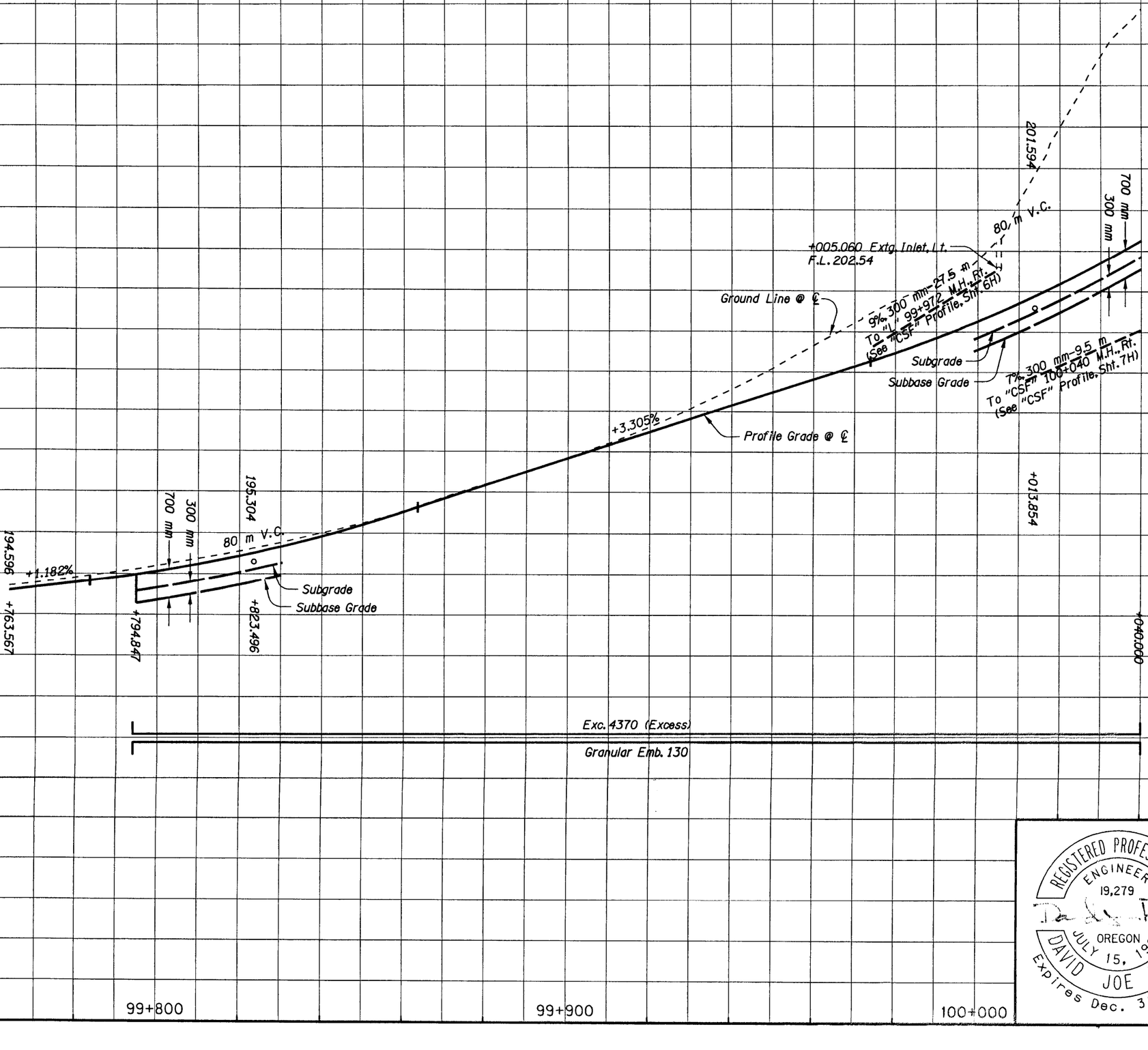
Design Team Leader - David Joe Polly
Designed By - Daniel J. McMillen
Drafted By - Sandra Gish

PROFILES

SHEET NO. 6F

VIEW 6

"CSUN" LINE



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SUNSET HIGHWAY
MULTNOMAH & WASHINGTON COUNTIES

Design Team Leader - David Joe Polly
Designed By - Daniel J. McMillen
Drafted By - Sandra Gish

PROFILES

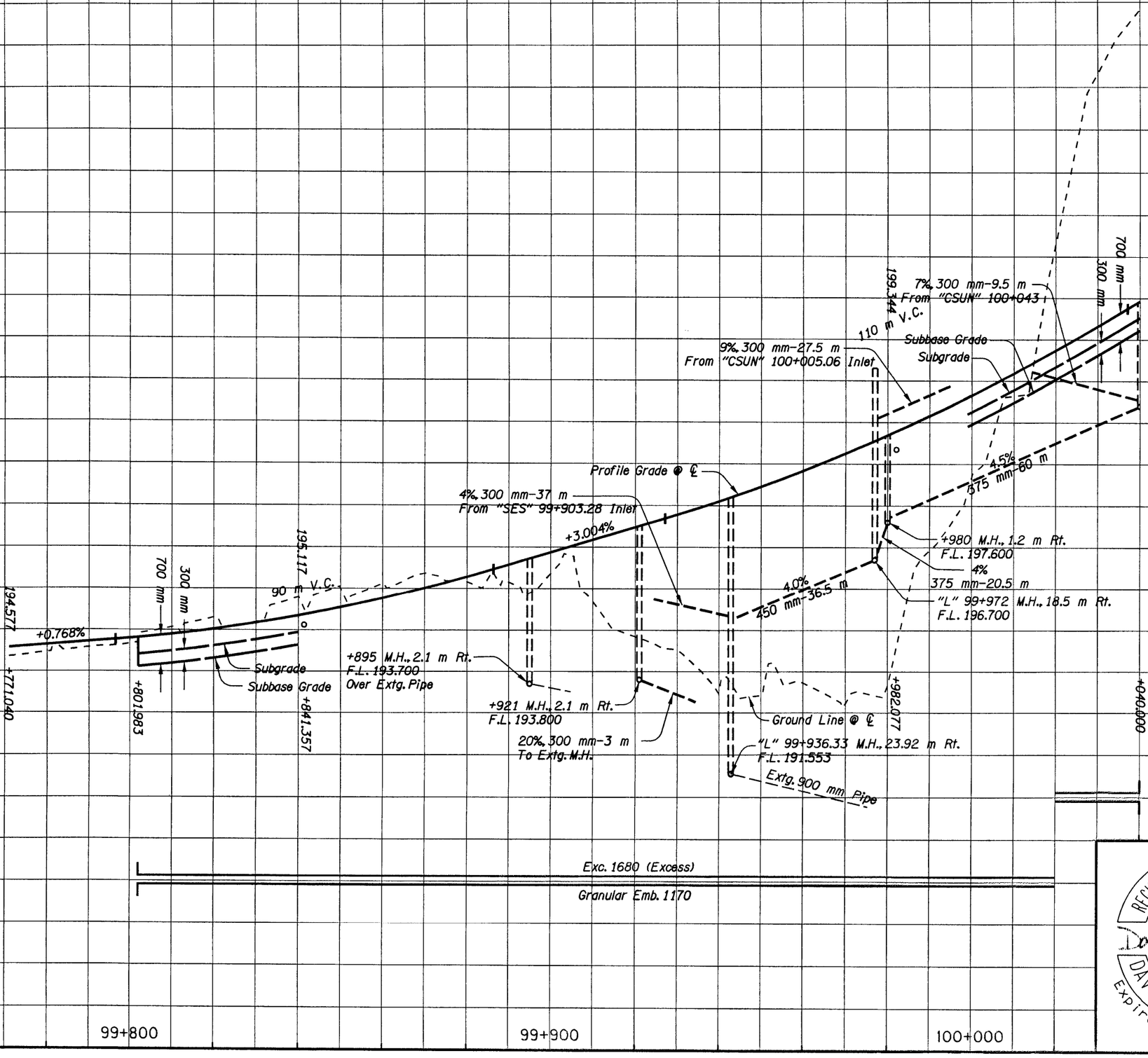
SHEET NO. 6G

24-AUG-2000 14:05
C:\usr\Projects\08009\profile\08009f.prf2

VIEW 1

VIEW 1

"CSF" LINE



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19,279
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DAVID JOE POLLY
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OREGON DEPARTMENT OF TRANSPORTATION
ROADWAY ENGINEERING SECTION

CAMELOT INTCHGE. -
SYLVAN INTCHGE. (PHASE 2) SEC.
SUNSET HIGHWAY
MULTNOMAH & WASHINGTON COUNTIES

Design Team Leader - David Joe Polly
Designed By - Daniel J. McMillen
Drafted By - Sandra Gish

PROFILES

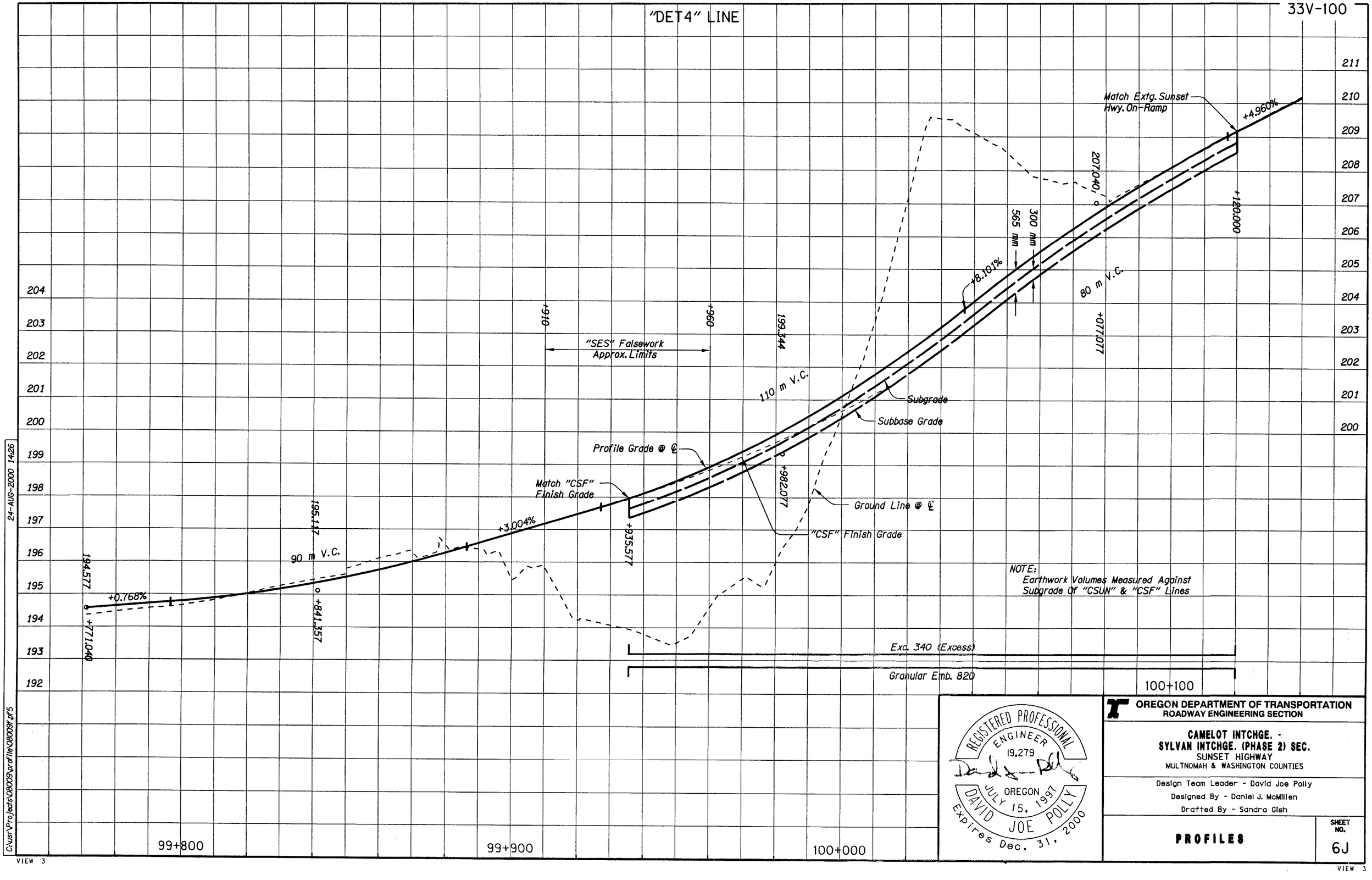
SHEET NO. 6H

24-AUG-2000 14:06
C:\usr\Projects\08009\profile\08009f.prf2

VIEW 2

VIEW 2

"DET4" LINE



REGISTERED PROFESSIONAL ENGINEER
19,279
OREGON
JULY 15, 1997
DAVID JOE POLLY
Expires Dec. 31, 2000

OREGON DEPARTMENT OF TRANSPORTATION
ROADWAY ENGINEERING SECTION

CAMELOT INTCHGE. -
SYLVAN INTCHGE. (PHASE 2) SEC.
SUNSET HIGHWAY
MULTNOMAH & WASHINGTON COUNTIES

Design Team Leader - David Joe Polly
Designed By - Daniel J. McMillen
Drafted By - Sandra Gish

PROFILES

SHEET NO. 6J

24-AUG-2000 14:26
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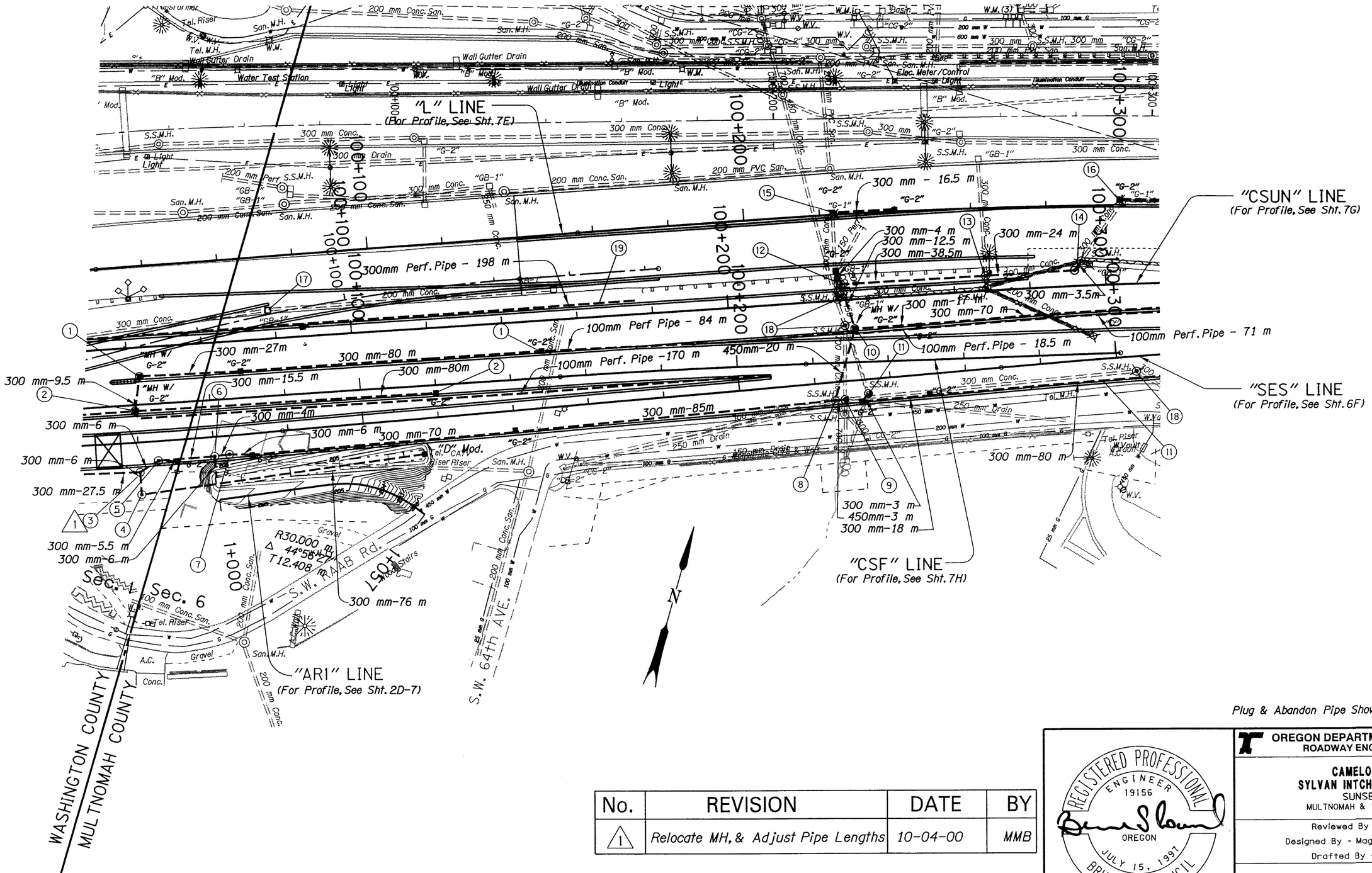
VIEW 3

VIEW 3

T. 1 S., R. 1 E., W.M.



Plug & Abandon Pipe Shown Thus:

No.	REVISION	DATE	BY
1	Relocate MH. & Adjust Pipe Lengths	10-04-00	MMB

NOTE: Field Verify With The Engr. All Locations Of Drainage Structures & Pipes.

REGISTERED PROFESSIONAL ENGINEER 19156 OREGON JULY 15, 1997 BRUCE S. COUNCIL Expires Dec. 31, 2001

OREGON DEPARTMENT OF TRANSPORTATION
ROADWAY ENGINEERING SECTION

CAMELOT INTCHGE. -
SYLVAN INTCHGE. (PHASE 2) SEC.
SUNSET HIGHWAY
MULTNOMAH & WASHINGTON COUNTIES

Reviewed By - Bruce S. Council
Designed By - Magnolia Bartley - Lam Han
Drafted By - Martin G. Casillas

DRAINAGE & UTILITIES

SHEET NO. 7D

d:\user\projects\08009\martin\08009f.dri 03-OCT-2000 19:31

VIEW 4

VIEW 4

(1) Sta. "CSUN" 100+043, 7.7 m Rt.
Const. Manhole With Type "G-2" Inlet
Const. Type "G-2" Inlet - 2
Inst. 300 mm Sew. Pipe - 107 m
Inst. 100 mm Perf. Pipe - 84 m
Drainage Geotextile Type "1" - 39 m^2
Tr. Exc. - 114 m^3
Const. Open Grade Wearing Surface Drain - 11 m
Const. Wearing Surface Drain Outlet
Const. Subsurface Drain Outlet
(See Drg. No. RD306)

(2) Sta. "CSF" 100+040, 1.6 m Rt.
Const. Manhole With Type "G-2" Inlet
Const. Type "G-2" Inlet
Inst. 300 mm Sew. Pipe - 89.5 m
Inst. 100 mm Perf. Pipe - 170 m
Drainage Geotextile Type "1" - 79 m^2
Tr. Exc. - 112 m^3
Const. Open Grade Wearing Surface Drain - 8 m
Const. Wearing Surface Drain Outlet
Const. Subsurface Drain Outlet

1 (3) Sta. "SES" 100+040, 8 m Rt.
Const. Drop Manhole
Inst. 300 mm Sew. Pipe - 12 m
Tr. Exc. - 51 m^3

1 (4) Sta. "SES" 100+040, 14.0 m Rt.
Const. Water Quality Swale, "SW1"
Const. Manhole
Const. Ditch Inlet, Mod.
Inst. 300 mm Sew. Pipe - 76 m
Tr. Exc. - 170 m^3
(For Details See Shts. 2D-3, 2D-4, 2D-5 & 2D-7)

(5) Sta. "SES" 100+045, 5.2 m Rt.
Const. Drop Manhole With Bolt Down Cover
Const. Type "G-2" Inlet
Inst. 300 mm Sew. Pipe - 21 m
Tr. Exc. - 19 m^3
(For Details See Shts. 2B & 2B-6)

(6) Sta. "SES" 100+060, 5.2 m Rt.
Const. Split Flow Manhole With Bolt Down Cover
Inst. 300 mm Sew. Pipe - 10 m
Inst. 25 mm Preformed Expansion Joint
@ Wall Connection
Tr. Exc. - 4 m^3
(For Details See Shts. 2B, 2D & 2D-6)

(7) Sta. "SES" 100+064, 5.0 m Rt.
Const. Water Quality Manhole With Bolt Down Cover
1.8 m Dia., 0.9 m Sump
Const. Type "G-2" Inlet - 2
Inst. 300 mm Sew. Pipe - 161 m
Tr. Exc. - 1 m^3
Const. Open Grade Wearing Surface Drain - 9 m
Const. Wearing Surface Drain Outlet
(For Details See Shts. 2B & 2B-7)

(8) Sta. "SES" 100+225, 4.9 m Rt.
Const. Split Flow Manhole With Bolt Down Cover
Inst. 450 mm Sew. Pipe - 20 m
(For Details, See Shts. 2B, 2D & 2D-6)

(9) Sta. "SES" 100+227.59, 4.84 m Rt.
Inst. 450 mm Sew. Pipe - 3 m
Reconst. Manhole
Const. Storm Sewer Piped Inside Drop Connection
(For Details, See Shts. 2B & 2B-9)

(10) Sta. "CSUN" 100+233, 7.3 m Rt.
Const. Manhole With "G-2" Inlet
Const. Type "G-2" Inlet - 3
Inst. 300 mm Sew. Pipe - 175 m
Inst. 100 mm Perf. Pipe - 250 m
Drainage Geotextile Type "1" - 117 m^2
Tr. Exc. - 103 m^3
Const. Open Grade Wearing Surface Drain - 32.5 m
Const. Wearing Surface Drain Outlet - 2
Const. Subsurface Drain Outlet - 4

(11) Sta. "SES" 100+233.92, 3.82 m Rt.
Const. Type "G-2" Inlet - 3
Const. Type "CG-2" Inlet
Const. Open Grade Wearing Surface Drain - 28 m
Const. Wearing Surface Drain Outlet - 2
Inst. 300 mm Sew. Pipe - 180 m
Reconst. Manhole
Const. Storm Sewer Piped Inside Drop Connection
Tr. Exc. - 165 m^3
(For Details, See Shts. 2B & 2B-9)

(12) Sta. "L" 100+224.6, 18.6 m Rt.
Remove Inlet - 2
Remove Pipe - 13.5 m
Const. Type "BP" Manhole
Const. Type "G-2" Inlet
Const. Open Grade Wearing Surface Drain - 14.5 m
Const. Wearing Surface Drain Outlet
Inst. 300 mm Sew. Pipe - 42.5 m
Conn. Extg. Pipes
Tr. Exc. - 39 m^3

(13) Sta. "L" 100+263.4, 18 m Rt.
Remove Extg. Inlet & Manhole
Remove Extg. Pipe - 57 m
300 mm Sew. Pipe - In Place
Remove - 1.2 m
Const. Manhole
Inst. 300 mm Sew. Pipe - 24 m
Tr. Exc. - 37 m^3

(14) Sta. "L" 100+287.4, 17 m Rt.
Remove Extg. Manhole
Remove Extg. Inlet
Remove Extg. Pipe - 2.5 m
Const. Manhole With Bolt Down Cover
300 mm Sew. Pipe - In Place
Extend 3.5 m
Tr. Exc. - 5 m^3
(For Details, See Sht. 2B)

(15) Sta. "L" 100+223.5, Lt.
Remove Extg. Inlet
Const. Type "G-2" Inlet - 2
Inst. 300 mm Sew. Pipe - 16.5 m
Under Pvmt. - 16.5 m
Conn. To Extg. Pipe
Tr. Exc. - 16 m^3
Const. Open Grade Wearing Surf. Drain - 11 m
Const. Wearing Surface Drain Outlet

(16) See Sht. 8C-2, Note 3

(17) Sta. "L" 100+072.5, Rt.
Cap Inlet During "DT5" Const.

(18) Adjust Manhole, Use Method "A" - 3
(For Details, See Sht. 2B)

(19) See Sht. 6D-2, Note 5

No.	REVISION	DATE	BY
1	Relocate MH. & Adjust Pipe Lengths	10-04-00	MMB

REGISTERED PROFESSIONAL ENGINEER
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OREGON
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BRUCE S. COUNCIL
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OREGON DEPARTMENT OF TRANSPORTATION
ROADWAY ENGINEERING SECTION

CAMELOT INTCHGE. -
SYLVAN INTCHGE. (PHASE 2) SEC.
SUNSET HIGHWAY
MULTNOMAH & WASHINGTON COUNTIES

Reviewed By - Bruce Council
Designed By - Magnolia Bartley
Drafted By - Heather Gonsior

DRAINAGE NOTES

SHEET NO. 7D-2

03-OCT-2000 19:23
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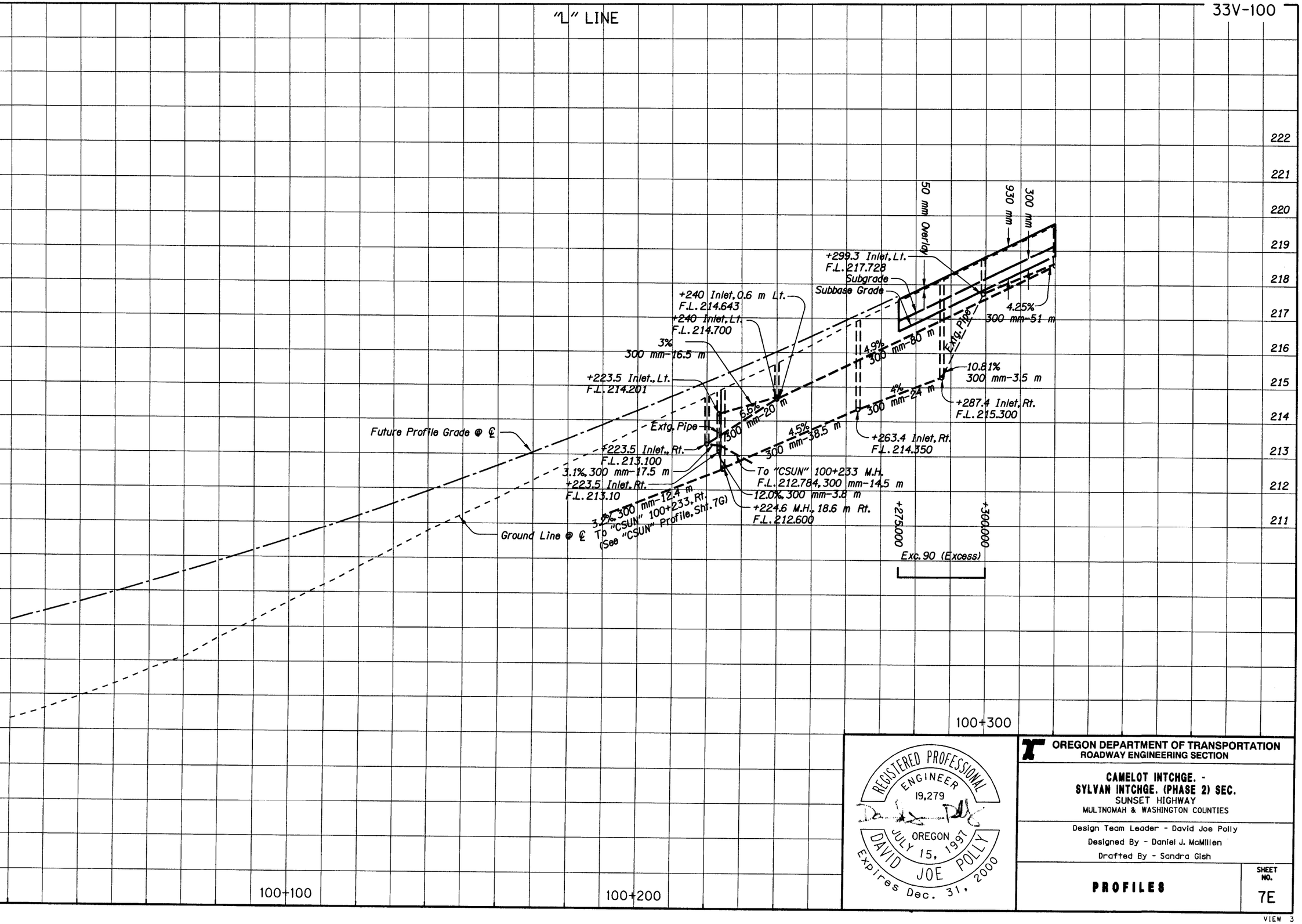
VIEW 3
VIEW 3

"L" LINE



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VIEW 3

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19,279
OREGON
JULY 15, 1997
DAVID JOE POLLY
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OREGON DEPARTMENT OF TRANSPORTATION
ROADWAY ENGINEERING SECTION

CAMELOT INTCHGE. -
SYLVAN INTCHGE. (PHASE 2) SEC.
SUNSET HIGHWAY
MULTNOMAH & WASHINGTON COUNTIES

Design Team Leader - David Joe Polly
Designed By - Daniel J. McMillen
Drafted By - Sandra Gish

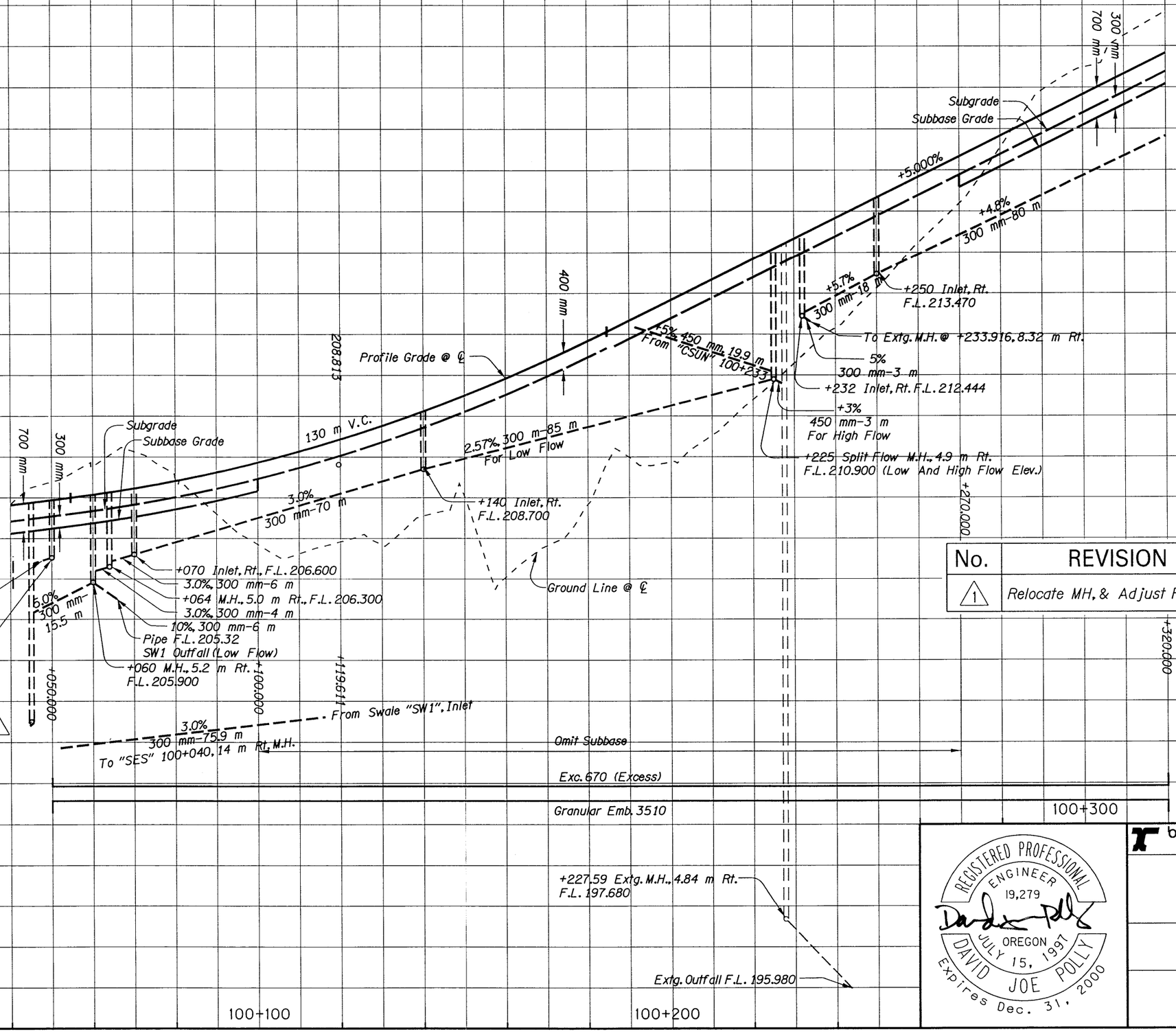
PROFILES

SHEET NO. 7E

VIEW 3

33V-100

"SES" LINE



No.	REVISION	DATE	BY
1	Relocate MH, & Adjust Pipe Lengths	10-04-00	MMB

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OREGON
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OREGON DEPARTMENT OF TRANSPORTATION

CAMELOT INTCHGE. -
SYLVAN INTCHGE. (PHASE 2) SEC.
SUNSET HIGHWAY
MULTNOMAH & WASHINGTON COUNTIES

Design Team Leader - David Joe Polly
Designed By - Daniel J. McMillen
Drafted By - Sandra Gish

PROFILES

SHEET NO. 7F

03-OCT-2000 19:33
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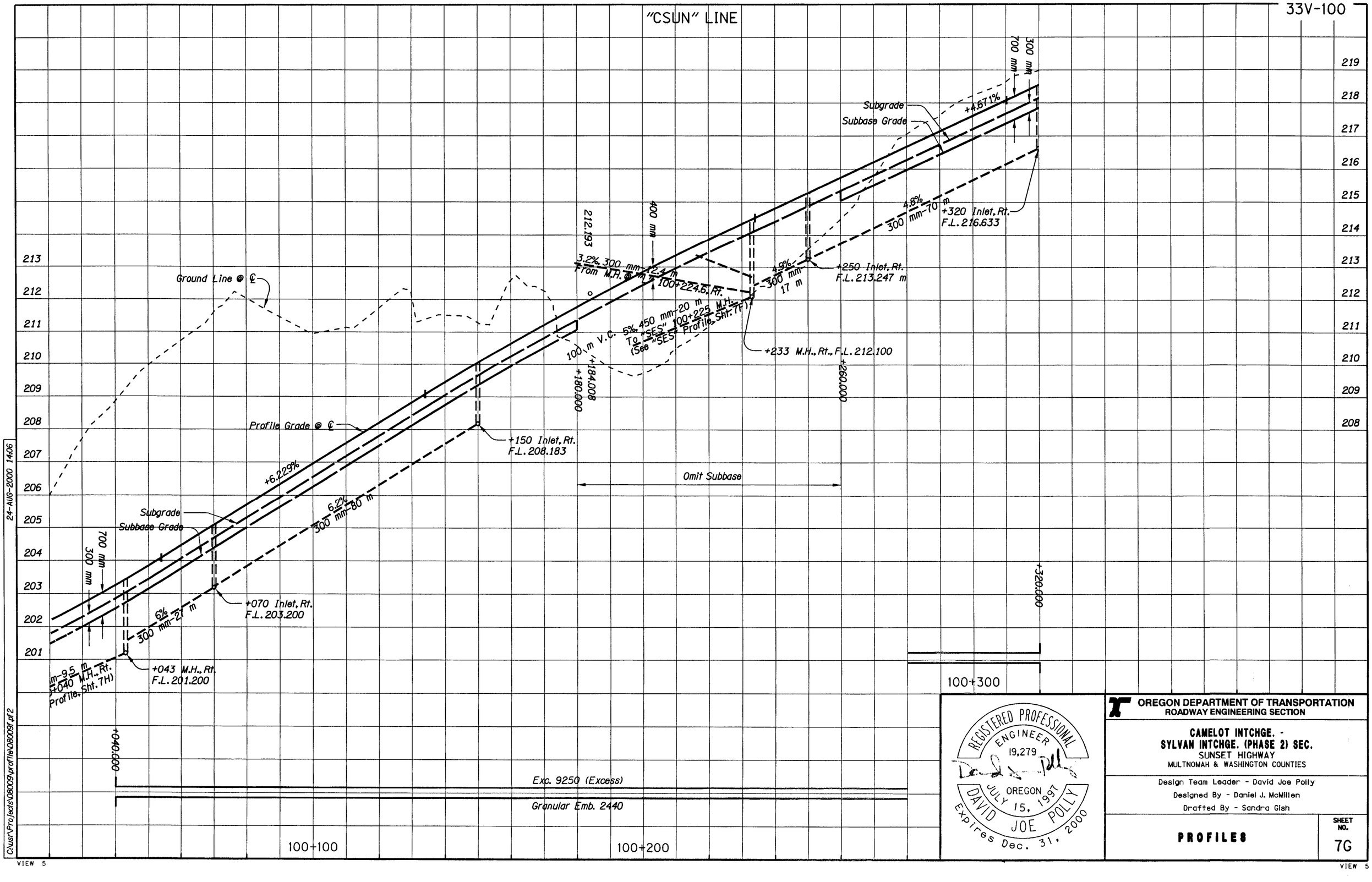
VIEW 4

VIEW 4

"CSUN" LINE



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VIEW 5

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CAMELOT INTCHGE. -
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SUNSET HIGHWAY
MULTNOMAH & WASHINGTON COUNTIES

Design Team Leader - David Joe Polly
Designed By - Daniel J. McMillen
Drafted By - Sandra Gish

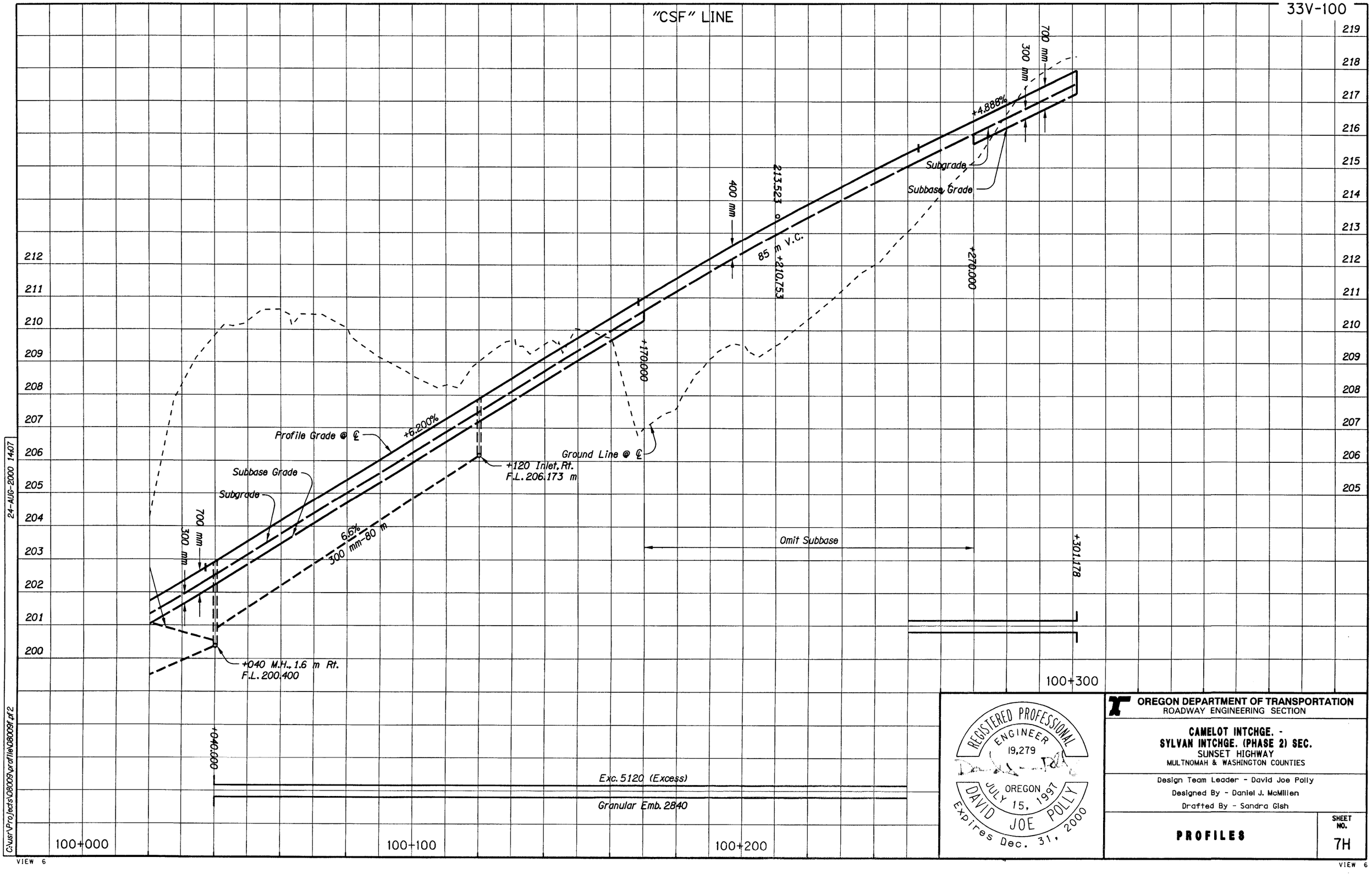
PROFILES

SHEET NO. 7G

VIEW 5

33V-100

"CSF" LINE



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VIEW 6

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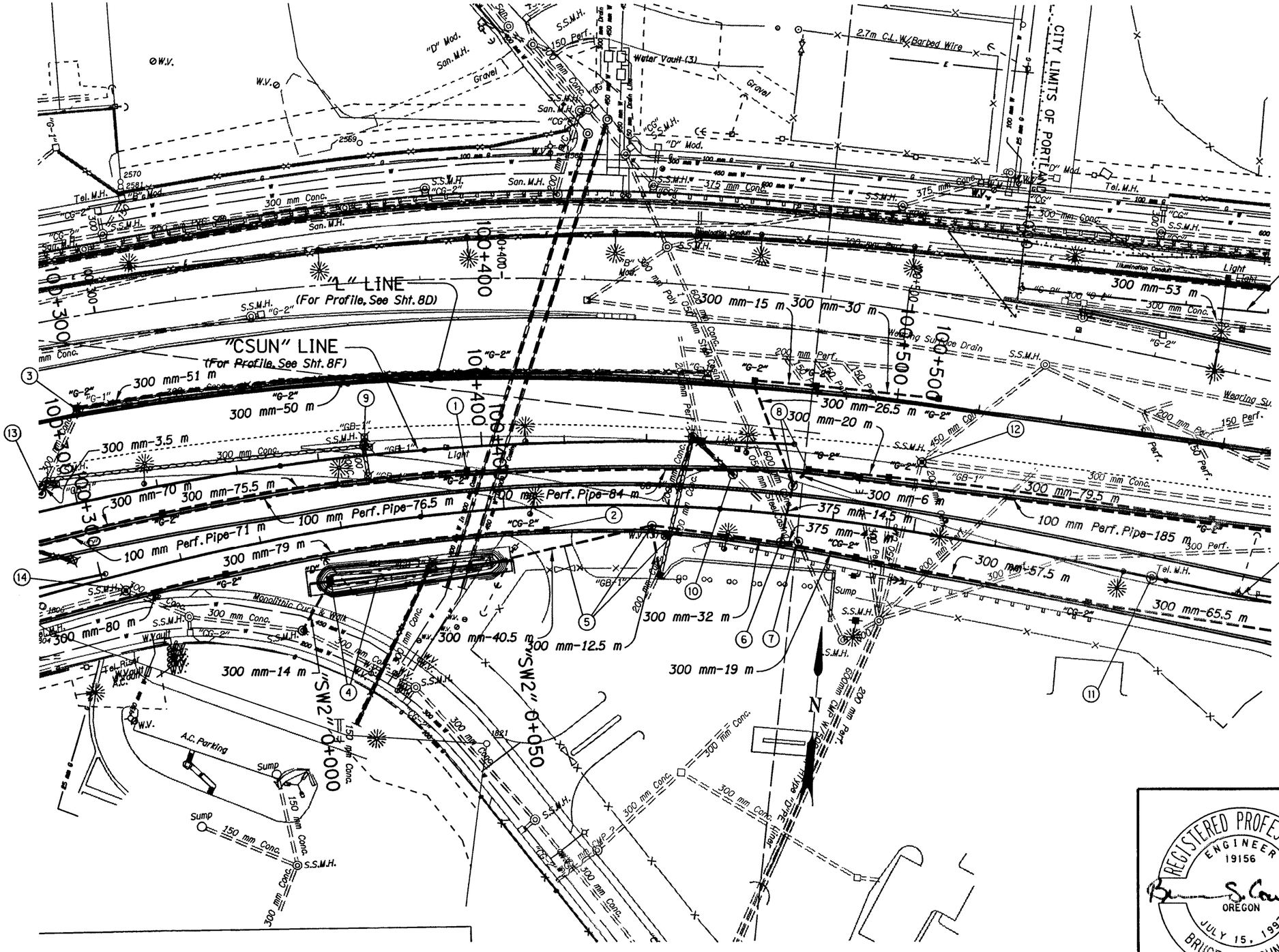
MULTNOMAH & WASHINGTON COUNTIES

Design Team Leader - David Joe Polly
Designed By - Daniel J. McMillen
Drafted By - Sandra Gish

PROFILES

SHEET NO. 7H

VIEW 6



Plug & Abandon Pipe Shown Thus:

NOTE: Field Verify With The Engr. All Locations Of Drainage Structures & Pipes.

REGISTERED PROFESSIONAL ENGINEER
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OREGON
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ROADWAY ENGINEERING SECTION

CAMELOT INTCHGE. - SYLVAN INTCHGE. (PHASE 2) SEC.
SUNSET HIGHWAY
MULTNOMAH & WASHINGTON COUNTIES

Reviewed By-Bruce S. Council
Designed By-Magnolia Bartley-Lam Han
Drafted By-Martin G. Casillas

DRAINAGE & UTILITIES

SHEET NO. 8C

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VIEW 5

VIEW 5

(1) See Sht. 7D-2, Note 10

(2) See Sht. 7D-2, Note 11

(3) Sta. "L" 100+299.3, Lt.
Remove Extg. Inlet - 2
Remove Extg. Pipe - 153.5 m
Const. Type "G-2" Inlet - 3
Inst. 300 mm Sew. Pipe - 101 m
Under Pvmt. - 101 m
Conn. To Extg. Pipe
Const. Open Grade Wearing Surface Drain - 13.5 m
Const. Wearing Surface Drain Outlet
Tr. Exc. - 134 m^3

(4) Sta. "SES" 100+345.82, 23.1 m Rt.
Remove Inlet
Const. Water Quality Swale, "SW2"
Const. Type "D" Inlet
Reconst. Manhole
Inst. 300 mm Sew. Pipe - 14 m
Under Pvmt. - 5 m
Tr. Exc. - 27 m^3
(For Details, See Shts., 2D-3, 2D-4, 2D-8)

(5) Sta. "SES" 100+436.4.9 m Rt.
Remove Inlet
Const. Type "G-2" Inlet
Const. WQ Manhole With Bolt Down Cover
1.5 m Dia., 0.9 m Sump
Inst. 300 mm Pipe - 85 m
Tr. Exc. - 125 m^3
(For Details, See Shts. 2B & 2B-7)

(6) Sta. "SES" 100+468.7 m Rt.
Const. Split-Flow Drop Manhole With Bolt Down Cover
Const. Type "CG-2" Inlet - 3
Inst. 300 mm Sew. Pipe - 142 m
Inst. 375 mm Sew. Pipe - 14.5 m
Tr. Exc. - 75 m^3
(For Details, See Shts. 2B, 2B-6, 2D-2 & 2D-6)

(7) Sta. "SES" 100+472.3, 6.3 m Rt.
600 mm Sew. Pipe - In Place
Remove 1.2 m
Const. Drop Manhole
Inst. 375 mm Sew. Pipe - 4.5 m
Const. Open Grade Wearing Surface Drain - 13.5 m
Const. Wearing Surface Drain Outlet
Tr. Exc. - 8 m^3
(For Details, See Sht. 2B-6)

(8) Sta. "L" 100+476.5, 23 m Rt.
Const. Manhole
Const. Type "G-2" Inlet - 6
Inst. 300 mm Sew. Pipe - 177 m
Inst. 100 mm Perf. Pipe - 185 m
Drainage Geotextile Type "1" - 86 m^2
Tr. Exc. - 172 m^3
Inst. 900 mm Steel Casing - 26.5 m
Const. Subsurface Drain Outlet - 3
Under Pvmt. - 45 m
(For Details, See Sht. 2B-11)

(9) Remove Manhole
Remove Inlets - 3

(10) Sta. "L" 100+461.4, 21.4 m Rt.
Remove Extg. Manhole
Remove Extg. Inlet - 2
Const. Manhole
200 mm Perf. Pipe - In Place
Extend - 28 m
Tr. Exc. - 33 m^3

(11) Sta. "SES" 100+559, Lt
Remove Telephone Manhole - By Others

(12) Sta. "L" 100+507.69, 14.08 Rt.
Adjust Manhole, Use Method "B"
(For Details, See Sht. 2B)

(13) See Sht. 7D-2, Note 14

(14) See Sht. 7D-2, Note 18

REGISTERED PROFESSIONAL ENGINEER
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Bruce S. Council
OREGON
JULY 15, 1997
BRUCE S. COUNCIL
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OREGON DEPARTMENT OF TRANSPORTATION
ROADWAY ENGINEERING SECTION

CAMELOT INTCHGE. -
SYLVAN INTCHGE. (PHASE 2) SEC.
SUNSET HIGHWAY
MULTNOMAH & WASHINGTON COUNTIES

Reviewed By - Bruce S. Council
Designed By - Magnolia Bartley
Drafted By - Heather Gonsior

DRAINAGE NOTES

SHEET NO. 8C-2

24-AUG-2000 14:13
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VIEW 4

VIEW 4

"L" LINE

+540 Inlet, 0.6 m Lt.
F.L. 226.294

+510 Inlet, Lt.
F.L. 225.610

+480 Inlet, Lt. F.L. 224.860
Ground Line @ ℄

3.0%
300 mm-15 m

+465 Inlet, Lt.
F.L. 224.41

50 mm Overlay

930 mm

300 mm

2.4%
300 mm-60 m

2.2%
300 mm-79.5 m

2.5%
300 mm-30 m

3.3%
300 mm-19.7 m

Subgrade
Subbase Grade

+580 Inlet, Rt.
F.L. 226.525

+500 Inlet, Rt. F.L. 224.700

+465 Inlet, 0.6 m Lt.
F.L. 224.407

1.8%
300 mm-21.5 m

2.8%
300 mm-26.5 m

+480 Inlet, 18.3 m Rt., F.L. 224.000

3.3%
300 mm-6 m

+476.5 M.H., 23 m Rt. F.L. 223.650

Exist. Pipe

2.5%, 375 mm-14.5 m
To "SES" 100+468 M.H.
(See "SES" Profile, Sht. 8E)

+461.40 M.H., 21.4 m Rt.
F.L. 221.690
Field Verify

+400 Inlet, Lt.
F.L. 222.351

+400 Inlet, 0.6 m Lt.
F.L. 222.163

+350 Inlet, Lt.
F.L. 219.901

4.9%
300 mm-50 m

4.5%
300 mm-80 m

930 mm

300 mm

Subgrade
Subbase Grade

+320 Inlet, 0.6m Lt.
F.L. 218.563

4.25%
300 mm-51 m

Exc. 1290 (Excess)

+600.000

+300.000

226 225 224 223 222 221 220 219 218 217

229 228 227 226 225 224 223 222

100+300 100+400 100+500 100+600

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VIEW 1

REGISTERED PROFESSIONAL ENGINEER
19,279
OREGON
JULY 15, 1997
DAVID JOE POLLY
Expires Dec. 31, 2000

OREGON DEPARTMENT OF TRANSPORTATION
ROADWAY ENGINEERING SECTION

CAMELOT INTCHGE. -
SYLVAN INTCHGE. (PHASE 2) SEC.
SUNSET HIGHWAY
MULTNOMAH & WASHINGTON COUNTIES

Design Team Leader - David Joe Polly
Designed By - Daniel J. McMillen
Drafted By - Sandra Gish

PROFILES

SHEET NO. 8D

VIEW 1

"SES" LINE

234 233 232 231 230 229 228 227 226 225 224 223 222 221 220 219 218 217 216

700 mm
300 mm
Subgrade
Subbase Grade
5.3%
300 mm-65.5 m
+545 Inlet, Rt.
F.L. 228.000 m
Profile Grade @ ℄
From "L" 100+476.5 M.H.
+2.5%, 375 mm-14.5 m
5.4%
300 mm-57.5 m
+3.25%, 300 mm-40.5 m
To SW2 Swale
+5.000%
+487 Inlet, Rt.
F.L. 224.845
5.0%
300 mm-19 m
2% 300 mm-32 m
Low Flow
8.0%
375 mm-4.5 m
High Flow
+468 Split Flow Drop M.H., 7.0 m Rt.
F.L. 223.120
Subbase Grade
Subgrade
+4.8%
300 mm-79 m
+410 Inlet, Rt.
F.L. 221.206
+436 M.H., 4.9 m Rt.
F.L. 221.900
Ground Line @ ℄
Exist. 600 mm Pipe
with 1050 mm Steel Casing
+472.300 M.H., 6.3 m Rt.
F.L. 219.263
+355.2 Inlet, 12.55 m Rt.
F.L. 219.40
Swale "SW2" Outlet
+9%
300 mm-14 m
"R" 10+275 Extg. M.H., 0.013 m Lt.
F.L. 217.60
+330 Inlet, Rt.
F.L. 217.314
Exc. 1480 (Excess)
Granular Emb. 2660
+320.000
+600.000
100+600
100+300
100+400
100+500

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VIEW 2

REGISTERED PROFESSIONAL ENGINEER
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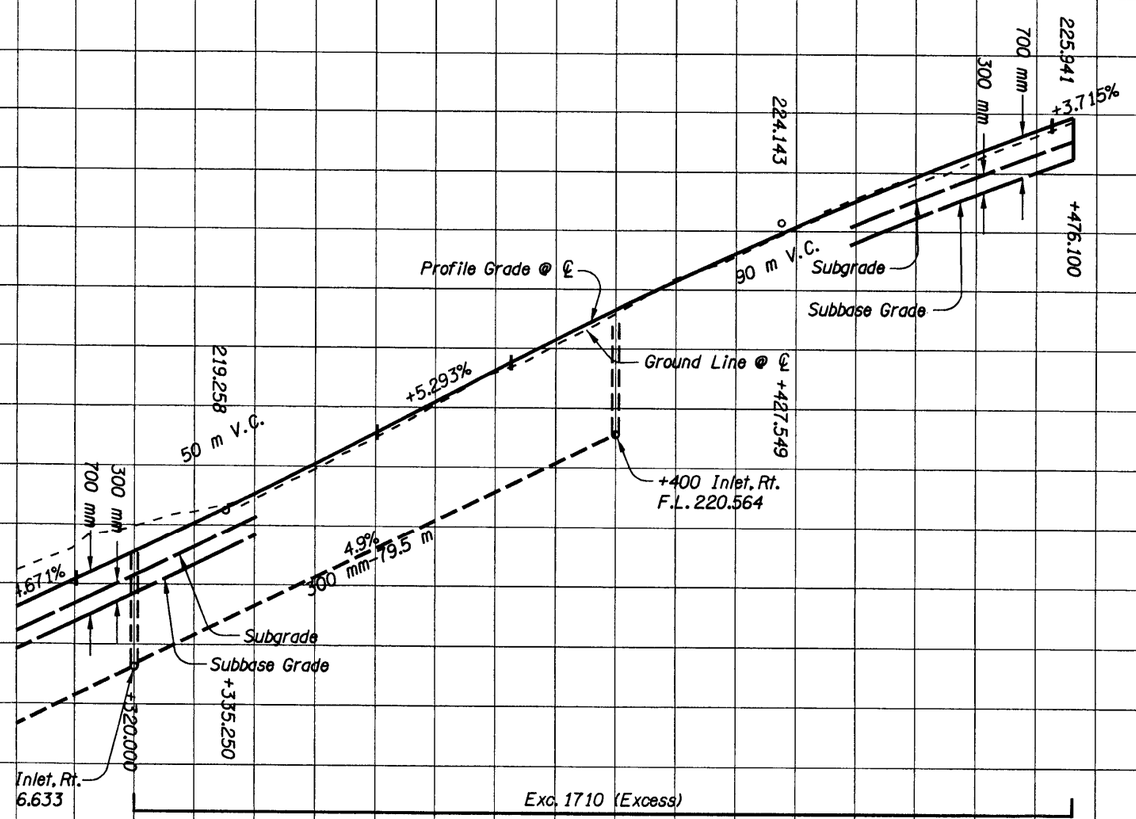
Designed By - Daniel J. McMillen
Drafted By - Sandra Gish

PROFILES

SHEET NO. 8E

VIEW 2

"CSUN" LINE



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PROFILES

SHEET NO. 8F

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VIEW 3

VIEW 3