

# CANEMAH SOUTH ROAD SYSTEM IMPROVEMENTS

## FOREST ROAD STABILIZATION PLANS

COVER SHEET

CANEMAH SOUTH  
ROAD SYSTEM IMPROVEMENTS  
CLACKAMAS COUNTY  
OREGON

**AKS**  
ENGINEERING & FORESTRY  
ENGINEERING • PLANNING  
SURVEYING • FORESTRY  
13910 SW GALBREATH DR.,  
SUITE 100  
SHERWOOD, OR 97140  
PHONE: (503) 925-8799  
FAX: (503) 925-8969

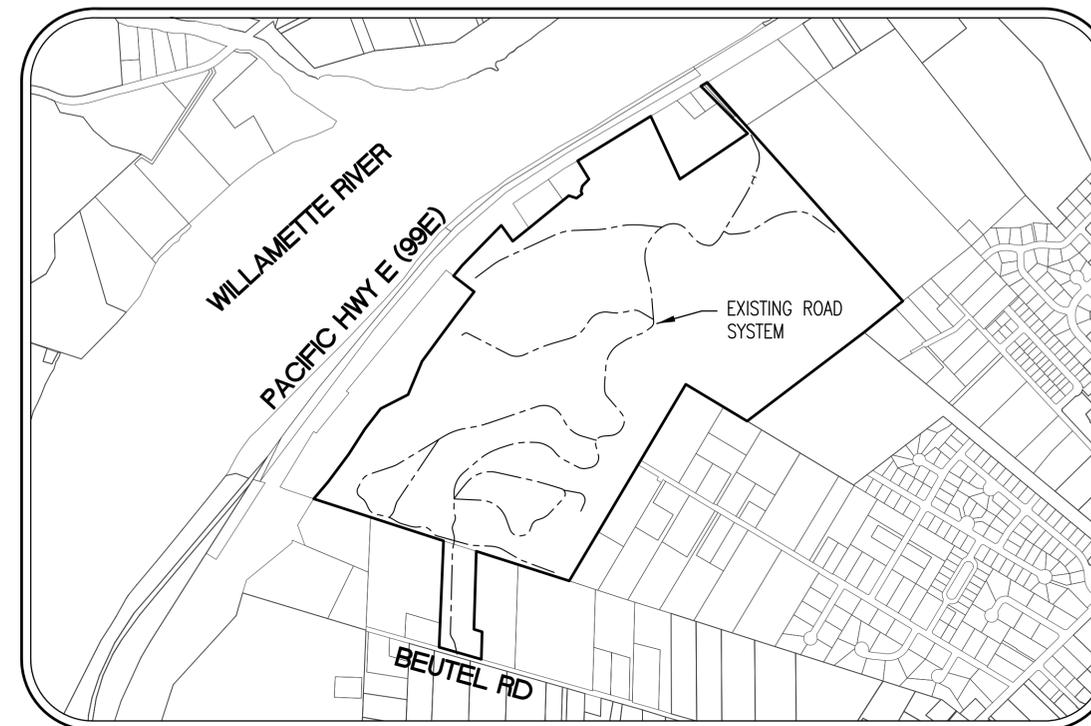
DESIGNED BY: BRB  
DRAWN BY: BRB  
CHECKED BY: AHH  
DRAWING NO.: ROAD MAP  
SCALE: AS NOTED  
PREPARED FOR:  
METRO  
600 NE GRAND AVE  
PORTLAND, OR 97232  
PH: 503-638-7240

DATE: 1-10-13  
REGISTERED PROFESSIONAL  
ENGINEER  
ALEXANDER H. HURLEY  
RENEWAL DATE: 6/30/13

JOB NUMBER  
3232  
SHEET  
1 OF 7



**VICINITY MAP**  
NOT TO SCALE



**SITE MAP**  
NOT TO SCALE

**OWNER**

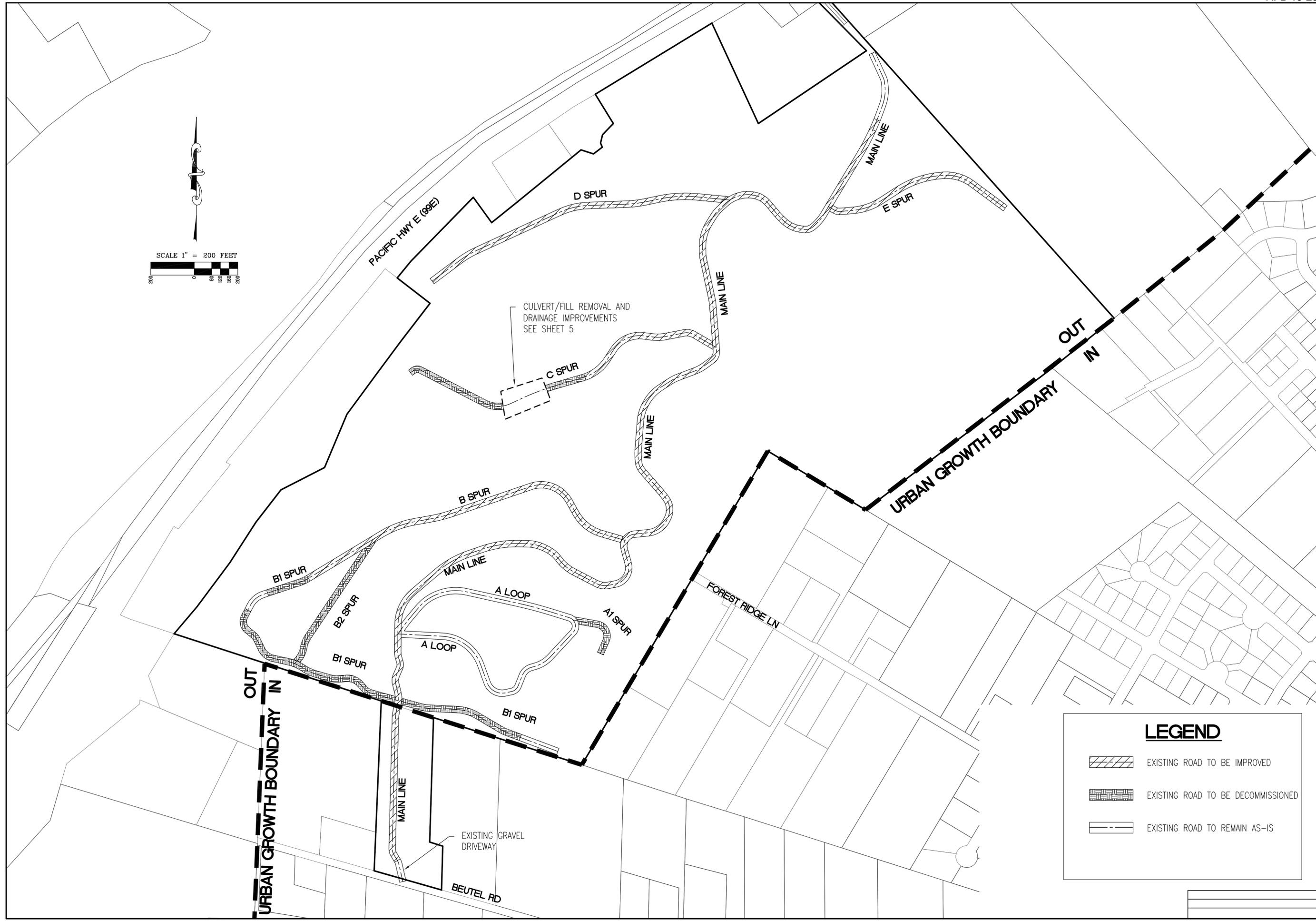
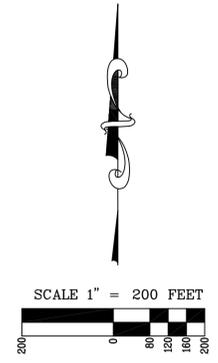
METRO  
CONTACT: RYAN JONES  
600 NE GRAND AVE  
PORTLAND, OR 97232  
PH: 503-638-2736

**ENGINEERING FIRM:**

AKS ENGINEERING & FORESTRY, LLC.  
CONTACT: ALEX HURLEY  
13910 SW GALBREATH DRIVE, SUITE 100  
SHERWOOD, OR 97140  
PH: 503-925-8799  
FAX: 503-925-8969

**SHEET INDEX**

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- 2 ROAD BASE MAP
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- 4 EXISTING ROAD IMPROVEMENTS PLAN AND SECTIONS
- 5 C SPUR CULVERT/FILL REMOVAL AND DRAINAGE IMPROVEMENT PLAN
- 6 DETAILS
- 7 ROAD NOTES



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**LEGEND**

	EXISTING ROAD TO BE IMPROVED
	EXISTING ROAD TO BE DECOMMISSIONED
	EXISTING ROAD TO REMAIN AS-IS

NEW ROAD  
CONSTRUCTION PLAN  
AND SECTION

CANEMAH SOUTH  
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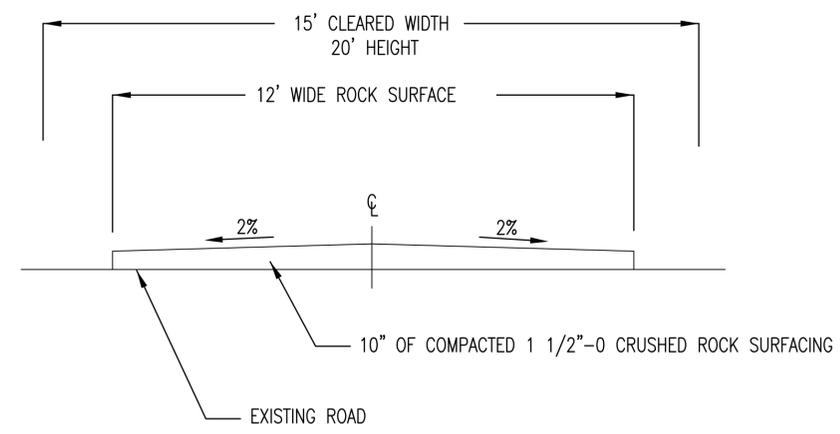
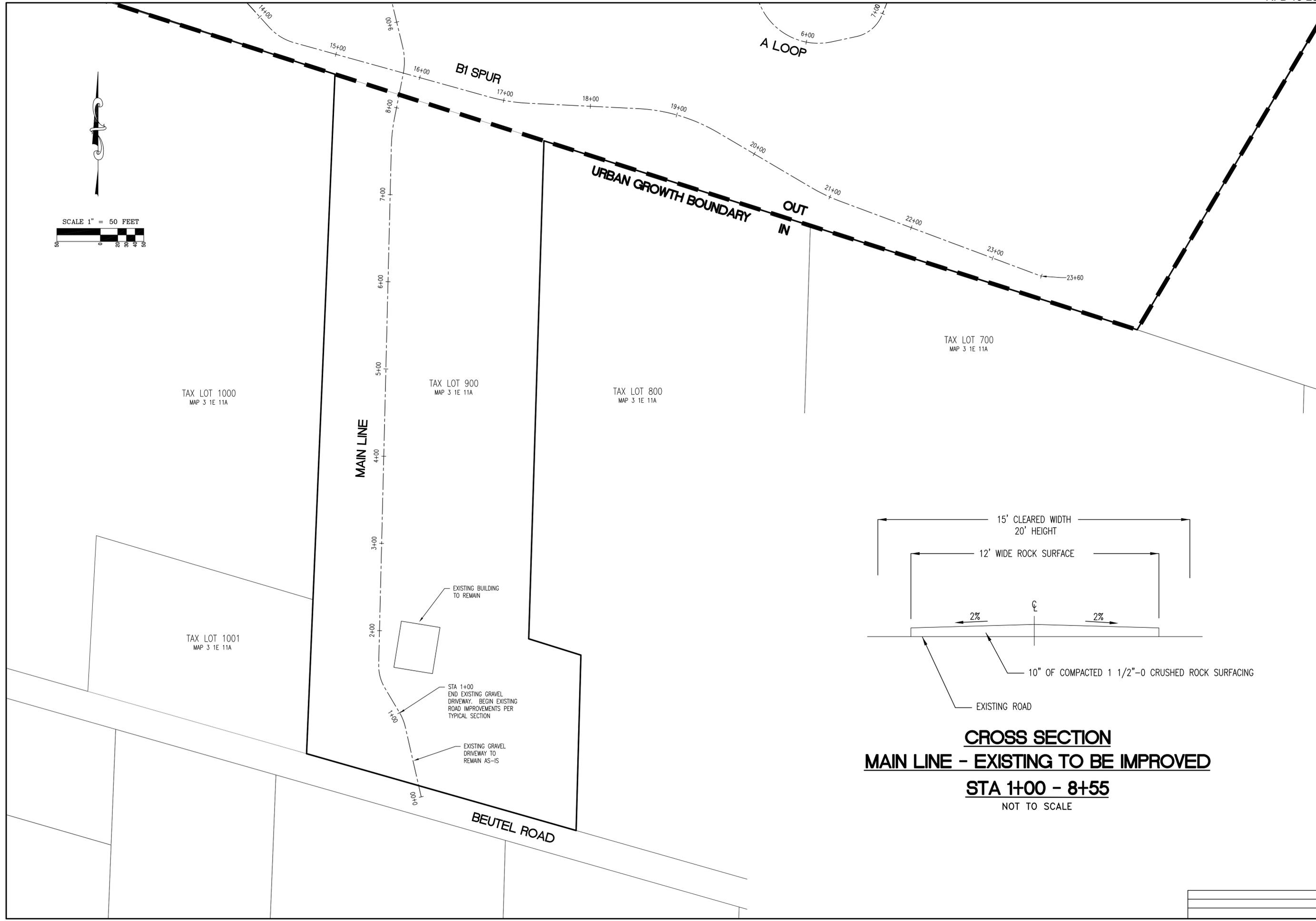
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3 OF 7



**CROSS SECTION**  
**MAIN LINE - EXISTING TO BE IMPROVED**  
**STA 1+00 - 8+55**  
NOT TO SCALE

TAX LOT 1000  
MAP 3 1E 11A

TAX LOT 900  
MAP 3 1E 11A

TAX LOT 800  
MAP 3 1E 11A

TAX LOT 700  
MAP 3 1E 11A

TAX LOT 1001  
MAP 3 1E 11A

BI SPUR

A LOOP

URBAN GROWTH BOUNDARY  
OUT  
IN

MAIN LINE

BEUTEL ROAD

EXISTING BUILDING  
TO REMAIN

STA 1+00  
END EXISTING GRAVEL  
DRIVEWAY. BEGIN EXISTING  
ROAD IMPROVEMENTS PER  
TYPICAL SECTION

EXISTING GRAVEL  
DRIVEWAY TO  
REMAIN AS-IS

EXISTING ROAD  
IMPROVEMENTS PLAN  
AND SECTIONS

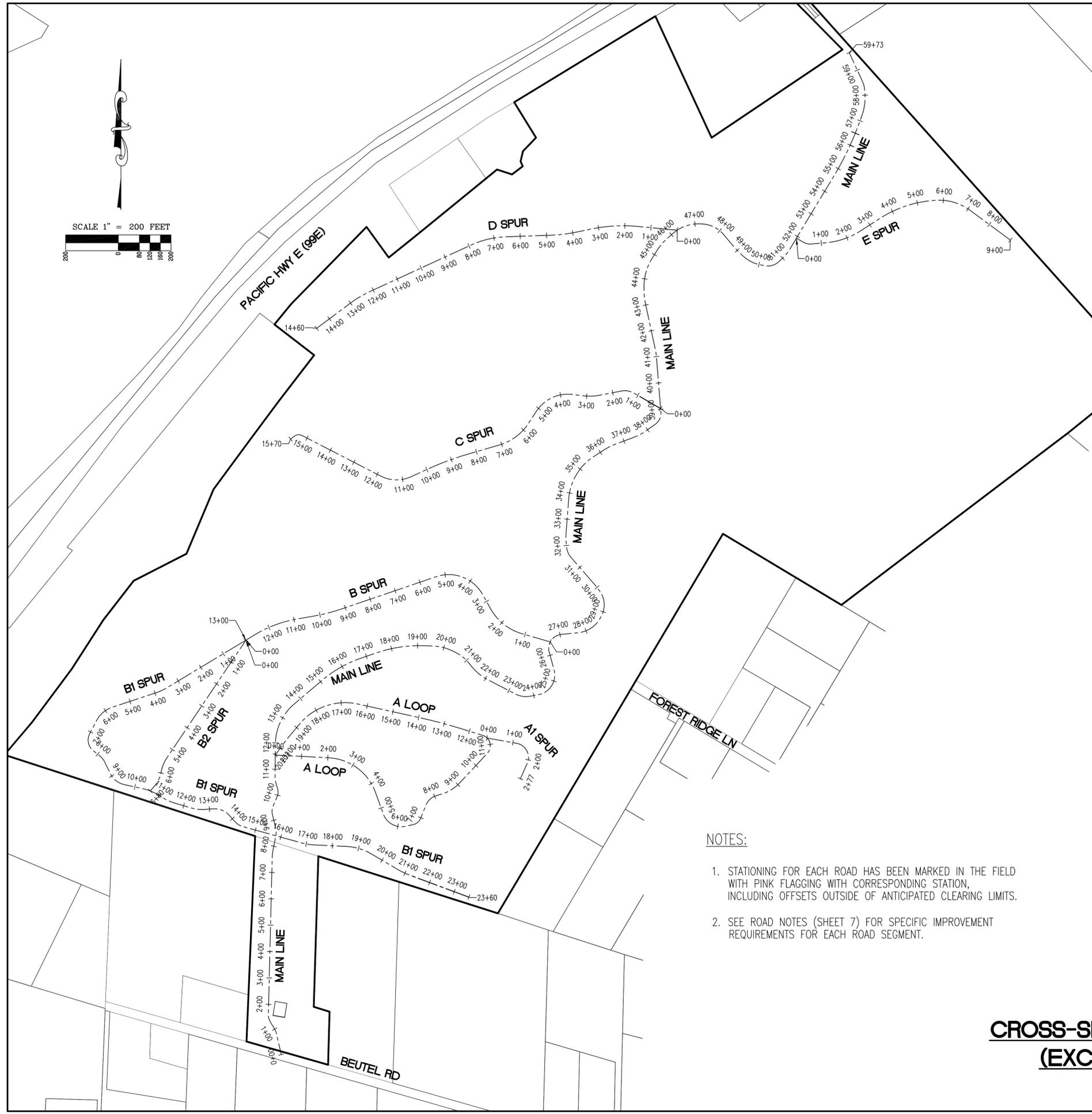
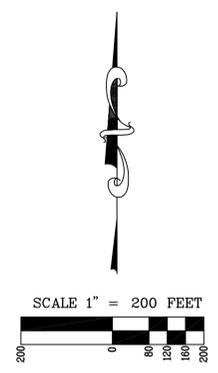
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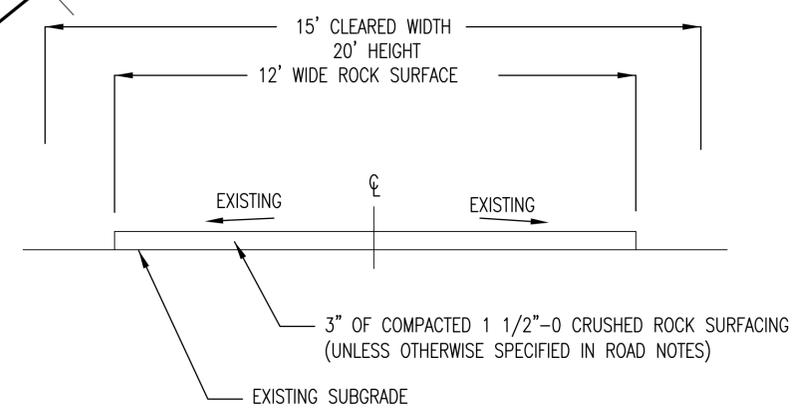
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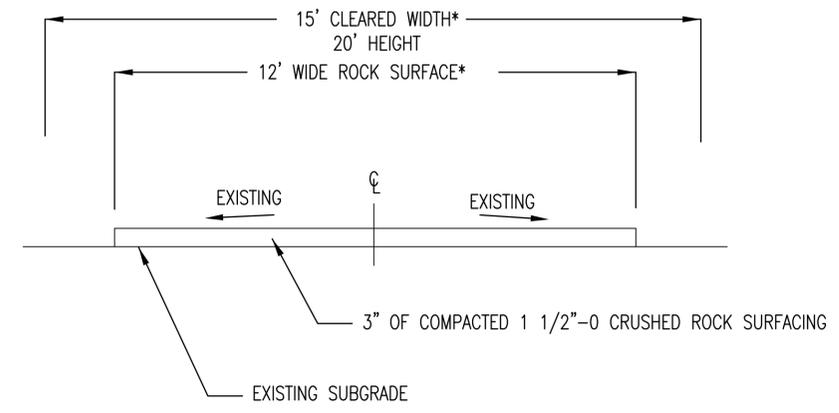


NOTES:

1. STATIONING FOR EACH ROAD HAS BEEN MARKED IN THE FIELD WITH PINK FLAGGING WITH CORRESPONDING STATION, INCLUDING OFFSETS OUTSIDE OF ANTICIPATED CLEARING LIMITS.
2. SEE ROAD NOTES (SHEET 7) FOR SPECIFIC IMPROVEMENT REQUIREMENTS FOR EACH ROAD SEGMENT.

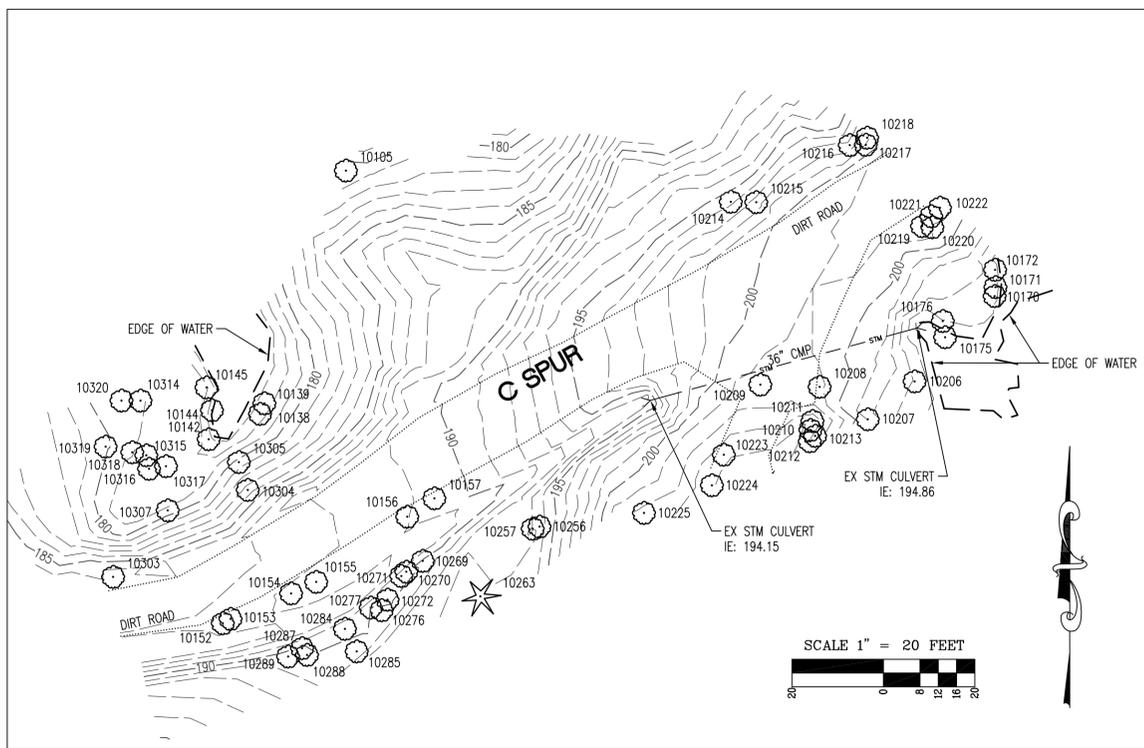


**CROSS-SECTION**  
**MAIN LINE - EXISTING TO BE IMPROVED**  
**STA 8+55 - 56+50**  
NOT TO SCALE

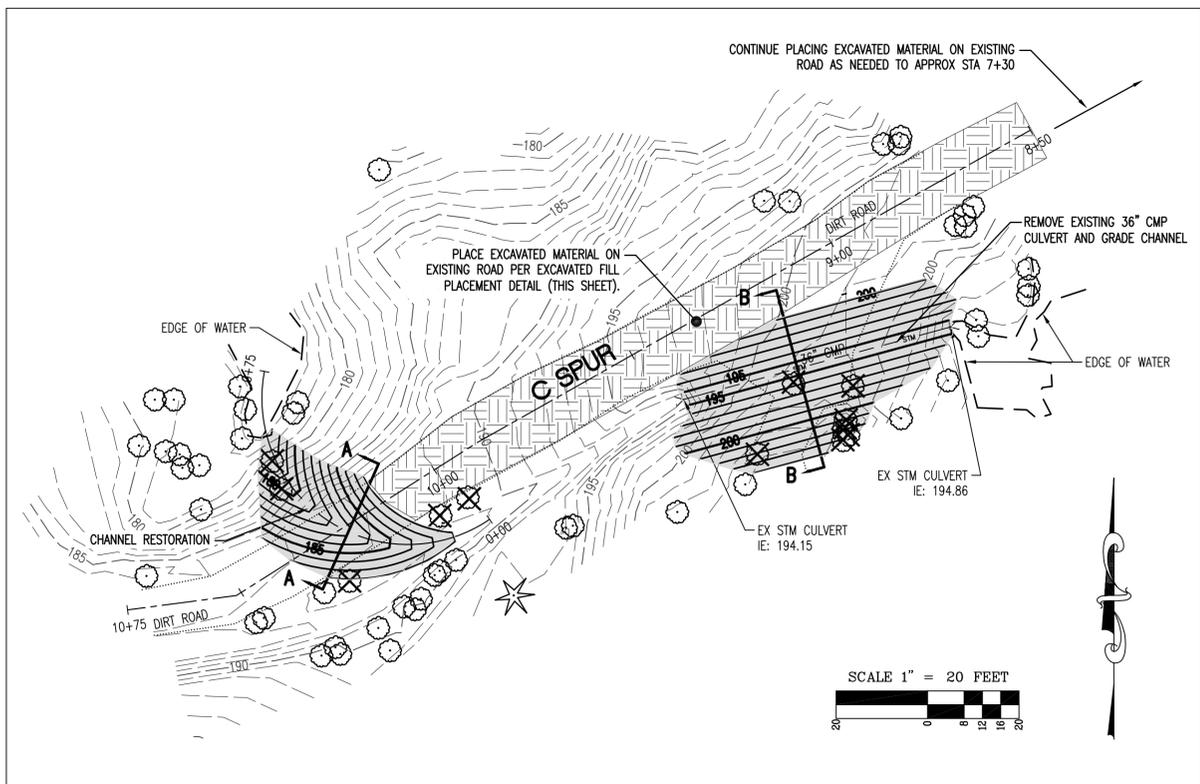


**CROSS-SECTION: A LOOP, SPUR'S B, B1, B2, C, D, AND E**  
**(EXCEPT SECTIONS TO BE DECOMMISSIONED)**

NOT TO SCALE  
\* WHERE SPECIFIED IN ROAD NOTES



EXISTING CONDITIONS PLAN



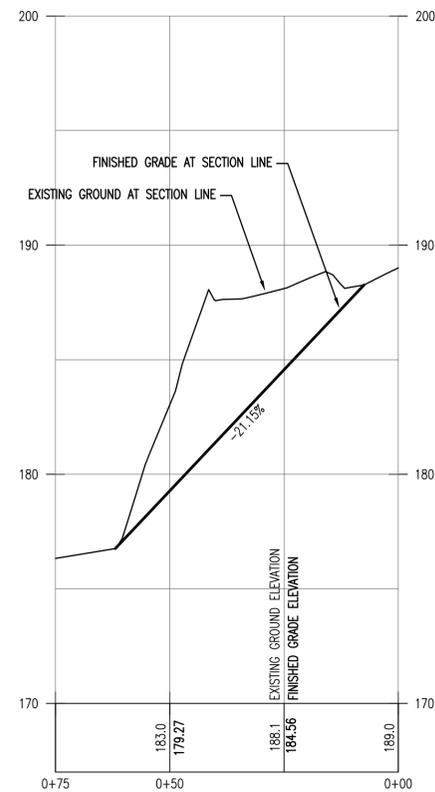
CHANNEL RESTORATION PLAN

**TREE TABLE**

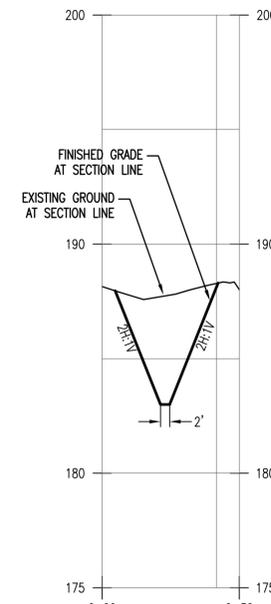
TREE NO.	SPECIES	DBH(IN.)	
10105	ALDER	12	
10138	COTTONWOOD	21	
10139	COTTONWOOD	13	
10142	COTTONWOOD	9	
10144	COTTONWOOD	5	
10145	COTTONWOOD	10	
10152	ALDER	7	
10153	ALDER	5	
10154	ALDER	7	
10155	ALDER	5	REMOVE
10156	ALDER	7	REMOVE
10157	ALDER	9	REMOVE
10170	ALDER	8	
10171	ALDER	6	
10172	ALDER	7	
10175	WALNUT	5,6	
10176	ALDER	10	
10206	ALDER	5	
10207	ALDER	4,5	
10208	ALDER	4,4,6	REMOVE
10209	ALDER	7	REMOVE
10210	ALDER	4	REMOVE
10211	ALDER	6	REMOVE
10212	ALDER	9	REMOVE
10213	ALDER	6	REMOVE
10214	ALDER	6	
10215	ALDER	6	
10216	ALDER	4	
10217	ALDER	4	
10218	ALDER	4	
10219	ALDER	4	
10220	ALDER	4	
10221	ALDER	3	
10222	ALDER	4	REMOVE
10223	ALDER	6	
10224	ALDER	6	
10225	ALDER	11	
10256	ALDER	9	
10257	ALDER	6	
10263	DOUGLAS FIR	30	
10269	ALDER	5	
10270	ALDER	8	
10271	ALDER	3	
10272	ALDER	8	
10276	ALDER	3	
10277	ALDER	5	
10284	ALDER	4,6	
10285	ALDER	7	
10287	ALDER	6	
10288	ALDER	6	
10289	ALDER	6	
10303	POPLAR	16	
10304	MAPLE	12	REMOVE
10305	COTTONWOOD	19	REMOVE
10307	ALDER	7,8,9	
10314	ALDER	5,5,7,9,11,12	
10315	ALDER	6	
10316	ALDER	6	
10317	COTTONWOOD	17	
10318	COTTONWOOD	16	
10319	ALDER	5,6,10,12	
10320	ALDER	5,6,8	

**LEGEND**

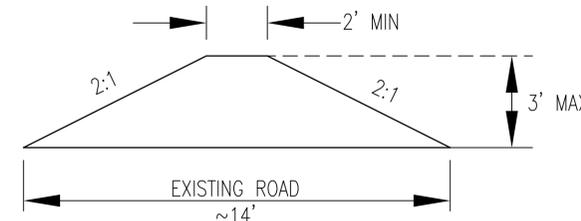
- INSTALL MATTING IN CHANNEL AND SIDE SLOPES PER DETAILS ON SHEET 6
- EXCAVATED FILL PLACEMENT PER DETAIL THIS SHEET. SEED AND MULCH AFTER PLACEMENT.
- EXISTING TREE TO REMAIN
- EXISTING TREE TO BE REMOVED
- EXISTING GROUND CONTOUR (1 FT)
- EXISTING GROUND CONTOUR (5 FT)
- FINISHED GRADE CONTOUR (1 FT)
- FINISHED GRADE CONTOUR (5 FT)



CHANNEL RESTORATION  
Hor. Scale: 1" = 20'  
Vert. Scale: 1" = 4'



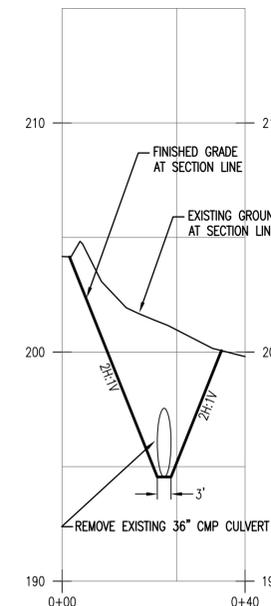
SECTION A-A  
Hor. Scale: 1" = 20'  
Vert. Scale: 1" = 4'



EXCAVATED FILL PLACEMENT DETAIL

NOTES:

1. COMPACT FILL MATERIAL BY TRACK WALKING.
2. SEED AND MULCH FILL MATERIAL AFTER PLACEMENT.



SECTION B-B  
Hor. Scale: 1" = 20'  
Vert. Scale: 1" = 4'

**C SPUR CULVERT / FILL  
REMOVAL AND DRAINAGE  
IMPROVEMENT PLAN**  
  
**CANEMAH SOUTH  
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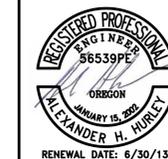


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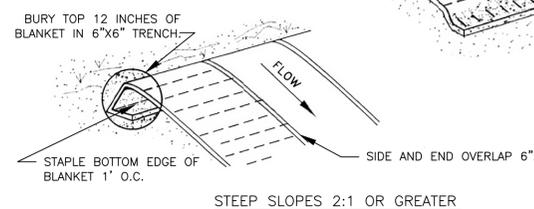
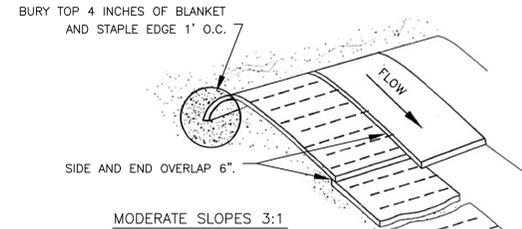
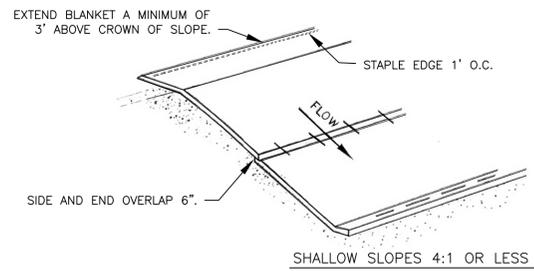
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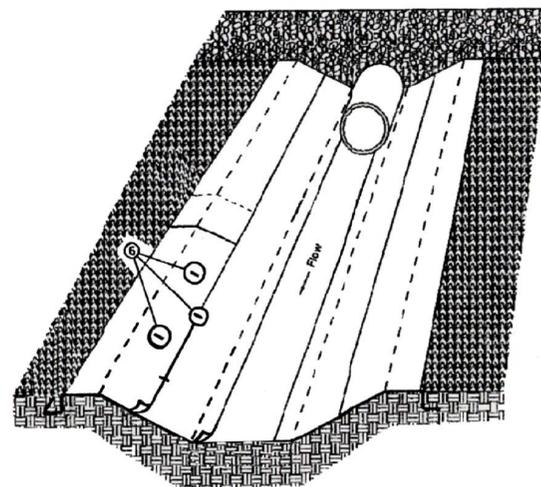
JOB NUMBER  
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SHEET  
**5 OF 7**



- NOTES:
- ON SHALLOW SLOPES BLANKETS MAY BE APPLIED ACROSS THE SLOPE.
  - ALL BLANKET STAPLE REQUIRED AS PER TABLE.

MATting SLOPE INSTALLATION

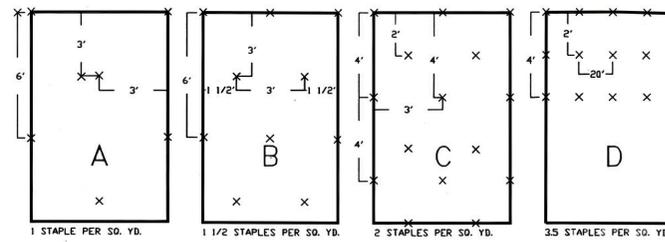


CHANNEL INSTALLATION

- NOTES:
- INFORMATION PROVIDED IS MINIMUM REQUIREMENTS. MANUFACTURERS REQUIREMENTS WHICH ARE MORE STRINGENT SHALL BE USED.
  - INSTALL MAT PARALLEL IN CENTER OF CHANNEL IN THE DIRECTION OF FLOW. FOR CULVERT OUTFALLS, PLACE MAT UNDER CULVERT OR RIPRAP A MINIMUM OF 12 INCHES.
  - IN CHANNEL BOTTOM, OVERLAP LENGTH ENDS A MINIMUM OF 12 INCHES.
  - ANCHOR MATTING WITH 12 INCH STAPLES ON DITCH SIDES AND DITCH BOTTOM.

MATting CHANNEL INSTALLATION

STAPLE PATTERN



LENGTH AND SLOPE TABLE

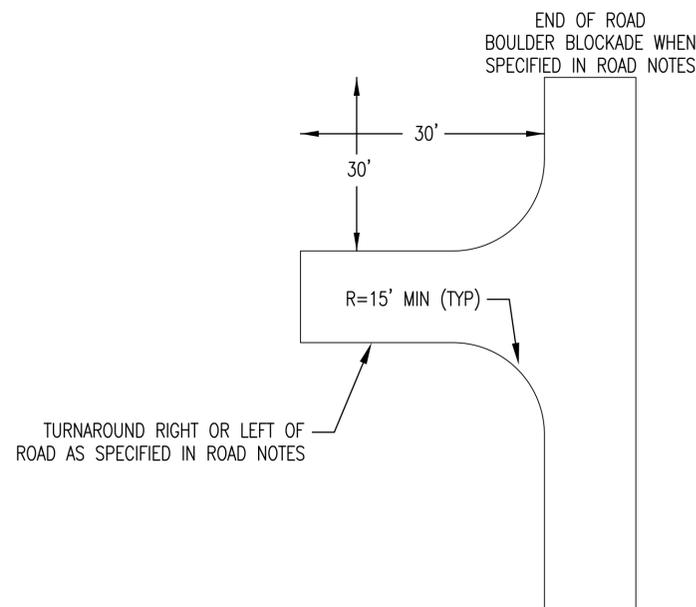
300						
275						
250						
225						
200						
175						
150						
125						
100						
75						
50						
25						
ft						
	4:1	3:1	2:1	1:1	LOW FLOW CHANNEL	MED/HIGH FLOW CHANNEL

\*MINIMUM STAPLE PATTERN GUIDE AND RECOMMENDATION FOR SLOPE AND CHANNEL APPLICATION.

NOTE: STAPLES SHALL BE 12" LONG.

STAPLE TABLE

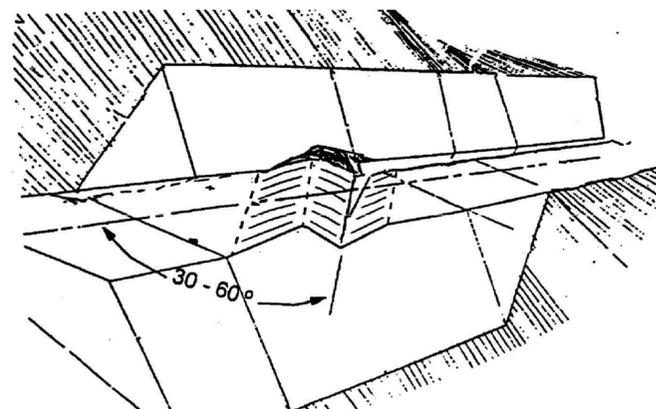
WATER BAR CONSTRUCTION DETAILS



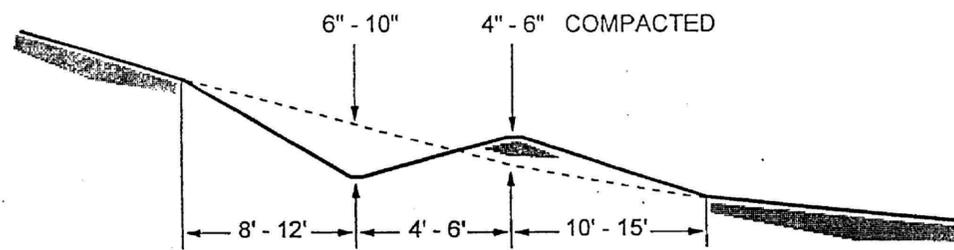
TURNAROUND DETAIL  
NOT TO SCALE

NOTES:

- TURNAROUNDS SHALL HAVE A 15' CLEARED WIDTH (14' HEIGHT) AND 12' WIDE COMPACTED NATIVE MATERIAL SUBGRADE. CUT AND FILL SLOPES SHALL NOT EXCEED 2H:1V. TURNAROUND LEG SHALL HAVE A MAXIMUM SLOPE OF 10%. SEED AND MULCH TURNAROUND AFTER CONSTRUCTION.



PERSPECTIVE VIEW



PROFILE -- TYPE II

WATER BAR CONSTRUCTION NOTES:

- WHEN WATER BARS ARE SPECIFIED FOR ROAD SECTIONS WITH A ROCKED SURFACE, WATER BARS SHALL BE CONSTRUCTED PRIOR TO THE PLACEMENT OF SURFACE ROCK AND THE SURFACE ROCK SHALL BE A MINIMUM OF 6 INCHES THICK WITHIN THE EXTENTS OF THE WATER BAR.
- ALL WATER BARS SHALL BEGIN AT THE INTERSECTION OF THE ROADBED AND CUT SLOPE AND RUN ACROSS THE ENTIRE WIDTH OF THE ROADBED. IF A DITCH EXISTS, BLOCK DITCH WITH COMPACTED EXCAVATED MATERIAL TO PREVENT DITCH WATER FROM BYPASSING WATER BAR.
- ALL WATER BARS SHALL HAVE FREE FLOWING OUTLETS (GRADE OUTLET AS NECESSARY TO DRAIN).

DETAILS

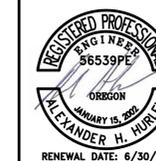
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6 OF 7

**MAIN LINE**

**ROAD NOTES**

STATION	COMMENT
0+00	BEUTEL ROAD EXISTING EDGE OF PAVEMENT / BEGIN EXISTING DRIVEWAY
1+00	END EXISTING DRIVEWAY / BEGIN ROAD IMPROVEMENTS
8+55	CONTINUE 10" ROCK SECTION
11+50	A-LOOP JUNCTION RIGHT / END 10" ROCK SECTION / BEGIN STANDARD 3" ROCK SECTION / INSTALL 3" STANDARD ROCK SECTION 50 FT LONG BY 50 FT WIDE ALONG A LOOP FROM JUNCTION
26+75	B SPUR JUNCTION LEFT / INSTALL 3" STANDARD ROCK SECTION FOR 50 FT ALONG B SPUR FROM JUNCTION
39+25	C SPUR JUNCTION LEFT / INSTALL 3" STANDARD ROCK SECTION FOR 50 FT ALONG C SPUR FROM JUNCTION
46+50	D SPUR JUNCTION LEFT / INSTALL 3" STANDARD ROCK SECTION FOR 50 FT ALONG D SPUR FROM JUNCTION
47+62	EXISTING 24" CMP STREAM CROSSING CULVERT / INSTALL 12" ROCK SECTION 50 FT EACH SIDE
50+05	EXISTING 18" CMP CROSS DRAIN CULVERT AT LOW POINT / CLEAN CULVERT AND EXCAVATE 1 CY INLET SUMP
52+15	E SPUR JUNCTION RIGHT / INSTALL STANDARD ROCK SECTION FOR 50 FT ALONG E SPUR FROM JUNCTION
52+30	CONSTRUCT WATER BAR - DRAIN LEFT
55+50	BEGIN GEOTEXTILE SUBGRADE FABRIC AND 12" ROCK SECTION
56+20	INSTALL TURNAROUND LEFT
56+50	END GEOTEXTILE SUBGRADE FABRIC AND 12" ROCK SECTION / END ROAD IMPROVEMENTS

**A LOOP**

**ROAD NOTES**

STATION	COMMENT
0+00	MAIN LINE JUNCTION / MAIN LINE STATION 11+50 / BEGIN STANDARD 3" ROCK SECTION 50 FT WIDE
0+50	END STANDARD 3" ROCK SECTION 50 FT WIDE
11+32	SPUR A1 JUNCTION RIGHT
20+32	MAIN LINE JUNCTION / MAIN LINE STATION 11+50

**A1 SPUR**

**ROAD NOTES**

STATION	COMMENT
0+00	A LOOP JUNCTION / A LOOP STATION 11+32 / INSTALL BOULDER BLOCKADE / BEGIN ROAD DECOMMISSIONING - RIP, SEED, MULCH
2+77	END OF ROAD / END ROAD DECOMMISSIONING - RIP, SEED, MULCH

**B SPUR**

**ROAD NOTES**

STATION	COMMENT
0+00	MAIN LINE JUNCTION / MAIN LINE STATION 26+75 / BEGIN STANDARD 3" ROCK SECTION
0+50	END STANDARD 3" ROCK SECTION
1+00	CONSTRUCT WATER BAR
3+00	CONSTRUCT WATER BAR
13+00	JUNCTION B1 AND B2 SPURS / B1 AND B2 SPURS STATION 0+00 / CONSTRUCT WATER BAR

**B1 SPUR**

**ROAD NOTES**

STATION	COMMENT
0+00	B AND B2 SPURS JUNCTION / B SPUR STATION 13+00 / B2 SPUR STATION 0+00 / CONSTRUCT WATER BAR
1+00	CONSTRUCT WATER BAR
3+50	CONSTRUCT TURNAROUND LEFT / INSTALL BOULDER BLOCKADE AT END OF TURNAROUND / BEGIN ROAD DECOMMISSIONING - RIP, SEED, MULCH
5+50	EXISTING ROAD BECOMES DRAINAGE DAM / END ROAD DECOMMISSIONING
5+70	EXISTING 12" CMP CULVERT TO REMAIN
6+75	END OF EXISTING ROAD DRAINAGE DAM / BEGIN ROAD DECOMMISSIONING - RIP, SEED, MULCH
7+50	CONSTRUCT WATER BAR
8+25	CONSTRUCT WATER BAR
10+55	SPUR B2 JUNCTION LEFT
11+45	CONSTRUCT WATER BAR
12+25	CONSTRUCT WATER BAR
13+00	CONSTRUCT WATER BAR
15+80	CL-CL INTERSECTION WITH MAIN LINE / NO DECOMMISSIONING ACROSS MAIN LINE
22+75	EXISTING BOULDER, EARTH, LOG BLOCKADE TO REMAIN / END ROAD DECOMMISSIONING
23+60	END ROAD

**B2 SPUR**

**ROAD NOTES**

STATION	COMMENT
0+00	B AND B1 SPURS JUNCTION / B SPUR STATION 13+00 / B1 SPUR STATION 0+00 / INSTALL BOULDER BLOCKADE / BEGIN ROAD DECOMMISSIONING - RIP, SEED, MULCH
2+50	CONSTRUCT WATER BAR
3+50	CONSTRUCT WATER BAR
4+50	CONSTRUCT WATER BAR
5+50	CONSTRUCT WATER BAR
6+60	B1 SPUR JUNCTION / END ROAD DECOMMISSIONING

**C SPUR**

**ROAD NOTES**

STATION	COMMENT
0+00	MAIN LINE JUNCTION / MAIN LINE STATION 39+25 / BEGIN STANDARD 3" ROCK SECTION / BEGIN VEGETATION CLEARING
0+50	END STANDARD 3" ROCK SECTION
1+00	CONSTRUCT WATER BAR
2+00	CONSTRUCT WATER BAR
3+00	CONSTRUCT WATER BAR
4+50	EXISTING SPUR ROAD JUNCTION RIGHT / INSTALL BOULDER BLOCKADE AT BEGINNING OF SPUR ROAD
5+75	CONSTRUCT WATER BAR
7+00	CONSTRUCT TURNAROUND RIGHT / INSTALL BOULDER BLOCKADE AT END OF TURNAROUND / BEGIN ROAD FILL FROM DRAINAGE EXCAVATION (SEE PLANS)
8+85	INLET OF EXISTING 36" CMP CULVERT / BEGIN CULVERT AND FILL REMOVAL (SEE PLANS)
9+40	OUTLET OF EXISTING 36" CMP CULVERT / END CULVERT AND FILL REMOVAL (SEE PLANS)
10+10	BEGIN DRAINAGE CHANNEL RESTORATION (SEE PLANS) / END ROAD FILL FROM DRAINAGE EXCAVATION (SEE PLANS)
10+40	END FILL REMOVAL AND DRAINAGE IMPROVEMENTS (SEE PLANS) / END VEGETATION CLEARING / BEGIN ROAD DECOMMISSIONING - RIP, SEED, MULCH
11+75	CONSTRUCT WATER BAR
14+00	CONSTRUCT WATER BAR
15+70	END OF ROAD / END ROAD DECOMMISSIONING

**D SPUR**

**ROAD NOTES**

STATION	COMMENT
0+00	MAIN LINE JUNCTION / MAIN LINE STATION 46+50 / BEGIN STANDARD 3" ROCK SECTION
0+50	END STANDARD 3" ROCK SECTION
1+00	CONSTRUCT WATER BAR
2+00	CONSTRUCT WATER BAR
3+00	CONSTRUCT WATER BAR
4+00	CONSTRUCT WATER BAR
5+00	CONSTRUCT WATER BAR
6+00	CONSTRUCT WATER BAR
12+00	CONSTRUCT WATER BAR
12+75	CONSTRUCT WATER BAR
14+60	END OF ROAD / CONSTRUCT TURNAROUND RIGHT

**E SPUR**

**ROAD NOTES**

STATION	COMMENT
0+00	MAIN LINE JUNCTION / MAIN LINE STATION 52+15 / BEGIN STANDARD 3" ROCK SECTION
0+50	END STANDARD 3" ROCK SECTION / INSTALL BOULDER BLOCKADE
1+00	CONSTRUCT WATER BAR
2+00	CONSTRUCT WATER BAR
6+00	CONSTRUCT WATER BAR
7+00	CONSTRUCT WATER BAR
9+00	END OF ROAD

ROAD NOTES

CANEMAH SOUTH ROAD SYSTEM IMPROVEMENTS CLACKAMAS COUNTY OREGON



DESIGNED BY: BRB

DRAWN BY: BRB

CHECKED BY: AHH

DRAWING NO.: ROAD MAP

SCALE: AS NOTED

PREPARED FOR:  
METRO  
600 NE GRAND AVE  
PORTLAND, OR 97232  
PH: 503-638-7240

DATE: 1-10-13



JOB NUMBER  
3232

SHEET  
7 OF 7